AURIX™ TC33x/TC32x

About this document

Scope and purpose

The Appendix supplies information specific for the TC33x/TC32x supplementing the family documentation.

Table of Contents

1 Introduction

For Introduction, block diagrams and feature set consult the family document.

For Pinning consult the Data Sheet.

2 Memory Maps (MEMMAP)

This is the automatically generated memory map of the TC33x/TC32x.

2.1 Overview

The memory map describes the address locations and access possibilities for the units, memories, and reserved areas as “seen” from the different on-chip buses’ point of view.

2.2 Functional Description

The bus-specific address maps describe how the different bus master devices react on accesses to on-chip memories and modules, and which address ranges are valid or invalid for the corresponding buses.

The detailed address mapping of e.g. control registers, SRAM blocks or flash banks/sectors within a module is described in the related module chapter.

The SFI is an uni-directional bridge for access from SPB to SRI and therefore not mentioned here as an SRI master in the Address Map. The SFI is fully transparent and does not include an address translation mechanism.

Note: In addition to the here described system address map, each TriCore has a TriCore IP internal access to its PSPR via $C000\_0000_H$ and an internal access to its DSPR via $D000\_0000_H$. This additional/private view to the local scratch pad SRAMs is described in the CPU chapter.

Table 1 defines the acronyms and other terms that are used in the address maps.

Table 1 Definition of Acronyms and Terms

Term	Description
BE	A bus access is terminated with a bus error.
ok	A bus access is allowed and is executed.
16	A bus access with width 16 and 32 bits is allowed and executed.
32	A bus access with width 32 bits is allowed and executed.
Access	A bus access is allowed and is executed.

2.2.1 Segments

This section summarizes the contents of the segments.

Segments 0 and 2

These memory segments are reserved.

Segments 1 and 3-7

These memory segments allow access to the CPUs Program and Data Scratch Pad SRAM (PSPR, DSPR), Program and Data Cache SRAMs (PCACHE, DCACHE) as well as TAG SRAMs related to Program and Data Cache (PTAG SRAM[1)] and DTAG SRAM[1)]).

Where DCACHE is supported, DCACHE and DTAG SRAM[1)] can be only accessed if the Data Cache is disabled.

PCACHE and PTAG SRAMs[1)] can be only accessed if the related Program Cache is disabled.

1) TAG SRAMs are not meant to be used as general SRAMs and can be accessed only with single data access and only with 64 bit aligned address.

The attribute of these segments (cached / non-cached) can be partially configured[1] for each CPUs data and program side individually (see CPU chapter: Physical Memory Attribute Registers, PMAx).

Segment 8

This memory segment allows cached access to PFlash and BROM.

Segment 9

This memory segment allows cached access to LMU and to EMEM.

Segment 10

This memory segment allows non-cached access to PFlash, DFlash and BROM.

Segment 11

This memory segment allows non-cached access to LMU and to EMEM.

Segment 12

This memory segment is reserved.

Segment 13

This memory segment is reserved.

Segment 14

This memory segment is reserved.

Segment 15

The lower 128 Mbyte is SPB address space and the upper 128 Mbyte is SRI address space.

2.3 Bus Fabric SRI

This is the merged view of all SRI Bus Segments as used in the TC33x/TC32x.

Table 2 Address Map as seen by Bus Masters on Bus SRI

Address Range		Size	Unit	Access Type	
from	to			Read	Write
00000000_H	$6FFFFFFF_H$	-	Reserved	BE	BE
70000000_H	$7002FFFF_H$	192 Kbyte	Data ScratchPad RAM (CPU0)	ok	ok
70030000_H	$70033FFF_H$	16 Kbyte	Data Cache RAM (CPU0)	ok	ok
70034000_H	$700BFFFF_H$	-	Reserved	BE	BE
$700C0000_H$	$700C17FF_H$	6 Kbyte	Data Cache Tag RAM (CPU0)	ok	ok
$700C1800_H$	$700FFFFF_H$	-	Reserved	BE	BE
70100000_H	$70101FFF_H$	8 Kbyte	Program ScratchPad RAM (CPU0)	ok	ok
70102000_H	$70109FFF_H$	32 Kbyte	Program Cache RAM (CPU0)	ok	ok
$7010A000_H$	$701BFFFF_H$	-	Reserved	BE	BE

1) Mapping of Cache and TAG SRAMs is controlled via the MTU register MTU_MEMMAP.

Table 2 Address Map as seen by Bus Masters on Bus SRI (cont'd)

Address Range		Size	Unit	Access Type	
from	to			Read	Write
$701C0000_H$	$701C2FFF_H$	12 Kbyte	Program Cache TAG RAM (CPU0)	ok	ok
$701C3000_H$	$7FFFFFFF_H$	-	Reserved	BE	BE
80000000_H	$802FFFFF_H$	3 Mbyte	Program Flash (PFI0)	ok	ok
80300000_H	$8FDFFFFF_H$	-	Reserved	BE	BE
$8FE00000_H$	$8FE7FFFF_H$	512 Kbyte	Online Data Acquisition (OLDA) (DOM0)	BE	ok
$8FE80000_H$	$8FFEFFFF_H$	-	Reserved	BE	BE
$8FFF0000_H$	$8FFFFFFF_H$	64 Kbyte	Boot ROM (BROM) (DMU)	ok	ok
90000000_H	$90001FFF_H$	8 Kbyte	DLMU RAM (CPU0)	ok	ok
90002000_H	$9FFFFFFF_H$	-	Reserved	BE	BE
$A0000000_H$	$A02FFFFF_H$	3 Mbyte	Program Flash (PFI0_NC)	ok	ok
$A0300000_H$	$A7FFFFFF_H$	-	Reserved	BE	BE
$A8000000_H$	$A8003FFF_H$	16 Kbyte	Erase Counter (PFI0)	ok	ok
$A8004000_H$	$A807FFFF_H$	-	Reserved	BE	BE
$A8080000_H$	$A80FFFFF_H$	512 Kbyte	Register address space (PFI0)	ok	ok
$A8100000_H$	$AEFFFFFF_H$	-	Reserved	BE	BE
$AF000000_H$	$AF0FFFFF_H$	1 Mbyte	Data Flash 0 EEPROM (DF0) and Host Command Sequence Interpreter (DMU)	ok	ok
$AF100000_H$	$AF3FFFFF_H$	-	Reserved	BE	BE

Table 2 Address Map as seen by Bus Masters on Bus SRI (cont'd)

Address Range		Size	Unit	Access Type	
from	to			Read	Write
$AF400000_H$	$AF405FFF_H$	24 Kbyte	UCB_BMHD0_ORIG (UCB)	ok	ok
			UCB_BMHD1_ORIG (UCB)	ok	ok
			UCB_BMHD2_ORIG (UCB)	ok	ok
			UCB_BMHD3_ORIG (UCB)	ok	ok
			UCB_SSW (UCB)	ok	ok
			UCB_USER (UCB)	ok	ok
			UCB_TEST (UCB)	ok	ok
			UCB_HSMCFG (UCB)	ok	ok
			UCB_BMHD0_COPY (UCB)	ok	ok
			UCB_BMHD1_COPY (UCB)	ok	ok
			UCB_BMHD2_COPY (UCB)	ok	ok
			UCB_BMHD3_COPY (UCB)	ok	ok
			UCB_REDSEC (UCB)	ok	ok
			Reserved (UCB)	ok	ok
			Reserved (UCB)	ok	ok
			UCB_RETEST (UCB)	ok	ok
			UCB_PFLASH_ORIG (UCB)	ok	ok
			UCB_DFLASH_ORIG (UCB)	ok	ok
			UCB_DBG_ORIG (UCB)	ok	ok
			UCB_HSM_ORIG (UCB)	ok	ok
			UCB_HSMCOTP0_ORIG (UCB)	ok	ok
			UCB_HSMCOTP1_ORIG (UCB)	ok	ok
			UCB_ECPRIO_ORIG (UCB)	ok	ok
			UCB_SWAP_ORIG (UCB)	ok	ok
			UCB_PFLASH_COPY (UCB)	ok	ok
			UCB_DFLASH_COPY (UCB)	ok	ok
			UCB_DBG_COPY (UCB)	ok	ok
			UCB_HSM_COPY (UCB)	ok	ok
			UCB_HSMCOTP0_COPY (UCB)	ok	ok
			UCB_HSMCOTP1_COPY (UCB)	ok	ok
			UCB_ECPRIO_COPY (UCB)	ok	ok
			UCB_SWAP_COPY (UCB)	ok	ok

Table 2 Address Map as seen by Bus Masters on Bus SRI (cont'd)

Address Range		Size	Unit	Access Type	
from	to			Read	Write
cont'd			UCB_OTP0_ORIG (UCB)	ok	ok
			UCB_OTP1_ORIG (UCB)	ok	ok
			UCB_OTP2_ORIG (UCB)	ok	ok
			UCB_OTP3_ORIG (UCB)	ok	ok
			UCB_OTP4_ORIG (UCB)	ok	ok
			UCB_OTP5_ORIG (UCB)	ok	ok
			UCB_OTP6_ORIG (UCB)	ok	ok
			UCB_OTP7_ORIG (UCB)	ok	ok
			UCB_OTP0_COPY (UCB)	ok	ok
			UCB_OPT1_COPY (UCB)	ok	ok
			UCB_OPT2_COPY (UCB)	ok	ok
			UCB_OPT3_COPY (UCB)	ok	ok
			UCB_OPT4_COPY (UCB)	ok	ok
			UCB_OPT5_COPY (UCB)	ok	ok
			UCB_OPT6_COPY (UCB)	ok	ok
			UCB_OPT7_COPY (UCB)	ok	ok
$AF406000_H$	$AF7FFFFF_H$	-	Reserved	BE	BE
$AF800000_H$	$AF80FFFF_H$	64 Kbyte	Configuration Sector Layout (CFS)	ok	ok
$AF810000_H$	$AFBFFFFF_H$	-	Reserved	BE	BE
$AFC00000_H$	$AFC1FFFF_H$	128 Kbyte	Data Flash 1 EEPROM (DF1) and HSM Command Sequence Interpreter (DMU)	ok	ok
$AFC20000_H$	$AFDFFFFF_H$	-	Reserved	BE	BE
$AFE00000_H$	$AFE7FFFF_H$	512 Kbyte	Online Data Acquisition (OLDA) (DOM0_NC)	BE	ok
$AFE80000_H$	$AFFEFFFF_H$	-	Reserved	BE	BE
$AFFF0000_H$	$AFFFFFFF_H$	64 Kbyte	Boot ROM (BROM) (DMU)	ok	ok
$B0000000_H$	$B0001FFF_H$	8 Kbyte	DLMU RAM (CPU0_NC)	ok	ok
$B0002000_H$	$F801FFFF_H$	-	Reserved	BE	BE
$F8020000_H$	$F8029FFF_H$	40 Kbyte	sri slave interface (FSIRAM)	ok	ok
$F802A000_H$	$F802FFFF_H$	-	Reserved	BE	BE
$F8030000_H$	$F80300FF_H$	256 byte	sri slave interface (FSI)	ok	ok
$F8030100_H$	$F8037FFF_H$	-	Reserved	BE	BE
$F8038000_H$	$F803FFFF_H$	32 Kbyte	sri slave interface (PMU)	ok	ok
$F8040000_H$	$F807FFFF_H$	256 Kbyte	sri slave interface (DMU)	ok	ok
$F8080000_H$	$F86FFFFF_H$	-	Reserved	BE	BE
$F8700000_H$	$F870FFFF_H$	64 Kbyte	sri slave interface (DOM0)	ok	ok
$F8710000_H$	$F87FFFFF_H$	-	Reserved	BE	BE

Table 2 Address Map as seen by Bus Masters on Bus SRI (cont'd)

Address Range		Size	Unit	Access Type	
from	to			Read	Write
$F8800000_H$	$F881FFFF_H$	128 Kbyte	Safety Memory Protection Register (CPU0) DLMU Safety Memory Protection registers (CPU0) Safety register protection registers (CPU0) Kernel Reset registers (CPU0) Flash Configuration registers (CPU0) Overlay Block Control registers (CPU0) Memory Integrity Registers (CPU0) Core Special Function Registers (CPU0) General Purpose Registers (CPU0) Memory Protection Registers (CPU0) Temporal Protection System registers (CPU0) Floating point register (CPU0) Core Debug Performance Counter registers (CPU0) Data Memory Interface registers (CPU0) Program Memory Interface registers (CPU0)	ok ok ok ok ok ok ok ok ok ok ok ok ok ok ok	ok ok ok ok ok ok ok ok ok ok ok ok ok ok ok
$F8820000_H$	$FFBFFFFF_H$	-	Reserved	BE	BE
$FFC00000_H$	$FFC1FFFF_H$	128 Kbyte	Data Flash 1 EEPROM (DF1) and HSM Command Sequence Interpreter (DMU)	ok	ok
$FFC20000_H$	$FFFFFFFF_H$	-	Reserved	BE	BE

2.4 Bus Instance SPB

Table 3 Address Map as seen by Bus Masters on Bus SPB

Address Range		Size	Unit	Access Type	
from	to			Read	Write
00000000_H	$0FFFFFFF_H$	-	Reserved	BE	BE
10000000_H	$EFFFFFFF_H$	3584 Mbyte	Redirection of SRI ranges (SFIBRIDGE1) Bridge to Bus Segment 00 of SRI (SFIBRIDGE1)	ok	ok
$F0000000_H$	$F00001FF_H$	512 byte	FPI slave interface (FCE)	ok	ok
$F0000200_H$	$F00003FF_H$	-	Reserved	BE	BE
$F0000400_H$	$F00005FF_H$	512 byte	FPI slave interface (CBS)	ok	ok
$F0000600_H$	$F00006FF_H$	256 byte	FPI slave interface (ASCLIN0)	ok	ok
$F0000700_H$	$F00007FF_H$	256 byte	FPI slave interface (ASCLIN1)	ok	ok
$F0000800_H$	$F00008FF_H$	256 byte	FPI slave interface (ASCLIN2)	ok	ok
$F0000900_H$	$F00009FF_H$	256 byte	FPI slave interface (ASCLIN3)	ok	ok
$F0000A00_H$	$F0000AFF_H$	256 byte	FPI slave interface (ASCLIN4)	ok	ok
$F0000B00_H$	$F0000BFF_H$	256 byte	FPI slave interface (ASCLIN5)	ok	ok
$F0000C00_H$	$F0000CFF_H$	256 byte	FPI slave interface (ASCLIN6)	ok	ok
$F0000D00_H$	$F0000DFF_H$	256 byte	FPI slave interface (ASCLIN7)	ok	ok
$F0000E00_H$	$F0000EFF_H$	256 byte	FPI slave interface (ASCLIN8)	ok	ok
$F0000F00_H$	$F0000FFF_H$	256 byte	FPI slave interface (ASCLIN9)	ok	ok

Table 3 Address Map as seen by Bus Masters on Bus SPB (cont'd)

Address Range		Size	Unit	Access Type	
from	to			Read	Write
$F0001000_H$	$F00010FF_H$	256 byte	FPI slave interface (STM0)	ok	ok
$F0001100_H$	$F00017FF_H$	-	Reserved	BE	BE
$F0001800_H$	$F00018FF_H$	256 byte	FPI slave interface (GPT120)	ok	ok
$F0001900_H$	$F0001BFF_H$	-	Reserved	BE	BE
$F0001C00_H$	$F0001CFF_H$	256 byte	Register block QSPI0 (QSPI0)	ok	ok
$F0001D00_H$	$F0001DFF_H$	256 byte	Register block QSPI1 (QSPI1)	ok	ok
$F0001E00_H$	$F0001EFF_H$	256 byte	Register block QSPI2 (QSPI2)	ok	ok
$F0001F00_H$	$F0001FFF_H$	256 byte	Register block QSPI3 (QSPI3)	ok	ok
$F0002000_H$	$F00029FF_H$	-	Reserved	BE	BE
$F0002A00_H$	$F0002AFF_H$	256 byte	FPI slave interface (CCU60)	ok	ok
$F0002B00_H$	$F0002BFF_H$	256 byte	FPI slave interface (CCU61)	ok	ok
$F0002C00_H$	$F0002FFF_H$	-	Reserved	BE	BE
$F0003000_H$	$F0003AFF_H$	2.7 Kbyte	FPI slave interface (SENT)	ok	ok
$F0003B00_H$	$F000FFFF_H$	-	Reserved	BE	BE
$F0010000_H$	$F0013FFF_H$	16 Kbyte	FPI slave interface (DMA)	ok	ok
$F0014000_H$	$F001BFFF_H$	-	Reserved	BE	BE
$F001C000_H$	$F001CFFF_H$	4 Kbyte	FPI slave interface (ERAY0) ERAY RAM (ERAY0)	ok ok	ok ok
$F001D000_H$	$F001FFFF_H$	-	Reserved	BE	BE
$F0020000_H$	$F0023FFF_H$	16 Kbyte	FPI slave interface (EVADC)	ok	ok
$F0024000_H$	$F0024FFF_H$	-	Reserved	BE	BE
$F0025000_H$	$F00250FF_H$	256 byte	FPI slave interface (CONVCTRL)	ok	ok
$F0025100_H$	$F002FFFF_H$	-	Reserved	BE	BE
$F0030000_H$	$F00300FF_H$	256 byte	BCU Registers (SBCU)	ok	ok
$F0030100_H$	$F0034FFF_H$	-	Reserved	BE	BE
$F0035000_H$	$F00351FF_H$	512 byte	FPI slave interface (IOM)	ok	ok
$F0035200_H$	$F0035FFF_H$	-	Reserved	BE	BE
$F0036000_H$	$F00363FF_H$	1 Kbyte	SCU: Connections to FPI/BPI bus (SCU) Clocking System Registers (SCU) Power Management Registers (SCU)	ok ok ok	ok ok ok
$F0036400_H$	$F00367FF_H$	-	Reserved	BE	BE
$F0036800_H$	$F0036FFF_H$	2 Kbyte	FPI slave interface (SMU)	ok	ok
$F0037000_H$	$F0037FFF_H$	4 Kbyte	IR Status and Control Registers (INT)	ok	ok
$F0038000_H$	$F0039FFF_H$	8 Kbyte	IR Service Request Control Registers (SRC) (SRC)	ok	ok
$F003A000_H$	$F003A0FF_H$	256 byte	SPB bus slave interface (P00)	ok	ok
$F003A100_H$	$F003A1FF_H$	-	Reserved	BE	BE
$F003A200_H$	$F003A2FF_H$	256 byte	SPB bus slave interface (P02)	ok	ok

Table 3 Address Map as seen by Bus Masters on Bus SPB (cont'd)

Address Range		Size	Unit	Access Type	
from	to			Read	Write
$F003A300_H$	$F003A9FF_H$	-	Reserved	BE	BE
$F003AA00_H$	$F003AAFF_H$	256 byte	SPB bus slave interface (P10)	ok	ok
$F003AB00_H$	$F003ABFF_H$	256 byte	SPB bus slave interface (P11)	ok	ok
$F003AC00_H$	$F003ACFF_H$	-	Reserved	BE	BE
$F003AD00_H$	$F003ADFF_H$	256 byte	SPB bus slave interface (P13)	ok	ok
$F003AE00_H$	$F003AEFF_H$	256 byte	SPB bus slave interface (P14)	ok	ok
$F003AF00_H$	$F003AFFF_H$	256 byte	SPB bus slave interface (P15)	ok	ok
$F003B000_H$	$F003B3FF_H$	-	Reserved	BE	BE
$F003B400_H$	$F003B4FF_H$	256 byte	SPB bus slave interface (P20)	ok	ok
$F003B500_H$	$F003B5FF_H$	256 byte	SPB bus slave interface (P21)	ok	ok
$F003B600_H$	$F003B6FF_H$	256 byte	SPB bus slave interface (P22)	ok	ok
$F003B700_H$	$F003B7FF_H$	256 byte	SPB bus slave interface (P23)	ok	ok
$F003B800_H$	$F003BFFF_H$	-	Reserved	BE	BE
$F003C000_H$	$F003C0FF_H$	256 byte	SPB bus slave interface (P32)	ok	ok
$F003C100_H$	$F003C1FF_H$	256 byte	SPB bus slave interface (P33)	ok	ok
$F003C200_H$	$F003C2FF_H$	256 byte	SPB bus slave interface (P34)	ok	ok
$F003C300_H$	$F003C7FF_H$	-	Reserved	BE	BE
$F003C800_H$	$F003C8FF_H$	256 byte	SPB bus slave interface (P40)	ok	ok
$F003C900_H$	$F003FFFF_H$	-	Reserved	BE	BE
$F0040000_H$	$F005FFFF_H$	128 Kbyte	System Registers (HSM) Debug Registers (HSM) Communication Registers (HSM) HSM Reset (HSM)	32 32 32 32	32 32 32 32
$F0060000_H$	$F006FFFF_H$	64 Kbyte	FPI slave interface (MTU) FPI slave interface (MTU)	ok ok	ok ok
$F0070000_H$	$F00FFFFF_H$	-	Reserved	BE	BE
$F0100000_H$	$F01FFFFF_H$	1 Mbyte	FPI slave interface (GTM) FPI slave interface (GTM) Mapped RAMs (GTM) Embedded DPLL RAM 2 (GTM)	ok ok ok ok	ok ok ok ok
$F0200000_H$	$F0208FFF_H$	36 Kbyte	RAM Area (CAN0) Register Area (CAN0)	ok ok	ok ok
$F0209000_H$	$F020FFFF_H$	-	Reserved	BE	BE
$F0210000_H$	$F0218FFF_H$	36 Kbyte	RAM Area (CAN1) Register Area (CAN1)	ok ok	ok ok
$F0219000_H$	$F023FFFF_H$	-	Reserved	BE	BE
$F0240000_H$	$F0241FFF_H$	8 Kbyte	Standby Controller XRAM (PMS)	ok	ok
$F0242000_H$	$F0247FFF_H$	-	Reserved	BE	BE

Table 3 Address Map as seen by Bus Masters on Bus SPB (cont'd)

Address Range		Size	Unit	Access Type	
from	to			Read	Write
$F0248000_H$	$F02481FF_H$	512 byte	FPI slave interface (PMS) SMU registers in Standby power domain (PMS)	ok ok	ok ok
$F0248200_H$	$F02C09FF_H$	-	Reserved	BE	BE
$F02C0A00_H$	$F02C0AFF_H$	256 byte	FPI slave interface (ASCLIN10)	ok	ok
$F02C0B00_H$	$F02C0BFF_H$	256 byte	FPI slave interface (ASCLIN11)	ok	ok
$F02C0C00_H$	$F7FFFFFF_H$	-	Reserved	BE	BE
$F8000000_H$	$FFFFFFFF_H$	128 Mbyte	Redirection of SRI ranges (SFIBRIDGE1)	ok	ok

2.5 Revision History

Table 4 Revision History

Reference	Change to Previous Version	Comment
V0.1.12		
–	First release for TC33x/TC32x.	–
V0.1.13		
–	No changes. Only version number changed to keep alignment with family address map.	–
V0.1.14		
–	No changes. Only version number changed to keep alignment with family address map.	–
V0.1.15		
–	No changes. Only version number changed to keep alignment with family address map.	–
V0.1.16		
–	No changes. Only version number changed to keep alignment with family address map.	–
V0.1.17		
–	No changes. Only version number changed to keep alignment with family address map.	–
V0.1.18		
–	No changes. Only version number changed to keep alignment with family address map.	–
V0.1.19		
–	No changes. Only version number changed to keep alignment with family address map.	
V0.1.20		
–	No changes. Only version number changed to keep alignment with family address map.	
V0.1.21		
Page 6	In bus instance SPB several address ranges corrected to “BE”.	

3 TC33x/TC32x Firmware

This chapter supplements the family documentation with device specific information for TC33x/TC32x devices.

3.1 Checker Software exit information for ALL CHECKS PASSED

Below the SCU_STMEM3...SCU_STMEM6 registers' content corresponding to "ALL CHECKS PASSED" result from Checker Software (CHSW) upon different device reset types is shown.

Table 5 "ALL CHECKS PASSED" indication by CHSW for TC33x/TC32x

Reset type	Additional conditions	SCU_STMEM3	SCU_STMEM4	SCU_STMEM5	SCU_STMEM6
Cold power-on [1)]	--	A010FB1FH	00000001H	A010FB1FH	A010FB1FH
Warm power-on	--	A000F82FH	00000001H	A000F82FH	A000F82FH
System reset	--	2000B84FH	00000001H	2000B84FH	2000B84FH
Application reset	--	2000088FH	00000001H	2000088FH	2000088FH

1) Device start-up after LBIST execution is handled by AURIX™ TC3xx Firmware as cold power-on, therefore the SCU_STMEMx values in this row apply also in such a case (after LBIST).

3.2 Revision History

Table 6 Revision History

Reference	Change to Previous Version	Comment
V1.1.0.1.14		
	First version of this document	
V1.1.0.1.15, V1.1.0.1.16		
	No change	
V1.1.0.1.17		
Table 5	Footnote added, explaining FW handling after LBIST execution (documentation improvement only, no change in implementation)	
V1.1.0.1.18		
–	No functional changes	

4 On-Chip System Connectivity {and Bridges}

Text with reference to family spec.

4.1 TC33x/TC32x Specific IP Configuration

Table 7 TC33x/TC32x specific configuration of DOM

Parameter	DOM0
Application Reset	Application Reset
Access only when any Endinit (SCU_WDTCPUxCON0.EI = 0 for any CPUx)	ENDINIT
Access only when Safety Endinit (SCU_SEICON.EI = 0)	Safety ENDINIT
Access only from HSM Master or HSM debug (or FPRO.PROINHSMCFG=0)	HSM Access
Access only when PSW = Supervisor Mode	Supervisor Mode
Access only when PSW = User Mode 0 or 1	User Mode
Access only when OCDS enabled	Debug Mode
Access only from Master x (when MOD_ACCEN0.ENx = 1 or MOD_ACCEN1.ENx = 1)	Valid Master
Access only from Master x (when MOD_ACCEN0.ENx = 1)	Valid Master (0)
Access only from Master x (when MOD_ACCEN1.ENx = 1)	Valid Master (1)
Number of SCI interfaces	16
sri base address	$F8700000_H$
sri address range	10000_H
OLDA base address	$8FE00000_H$
OLDA range	80000_H
OLDA base address (non-cached)	$AFE00000_H$
OLDA range (non-cached)	80000_H

4.2 TC33x/TC32x Specific Register Set

Register Address Space Table

Table 8 Register Address Space - DOM

Module	Base Address	End Address	Note
(DOM0)	$8FE00000_H$	$8FE7FFFF_H$	Online Data Acquisition (OLDA)
	$AFE00000_H$	$AFE7FFFF_H$	Online Data Acquisition (OLDA)
DOM0	$F8700000_H$	$F870FFFF_H$	sri slave interface

Register Overview Table

Table 9 Register Overview - DOM0 (ascending Offset Address)

Short Name	Description	Offset Address	Access Mode		Page Number
			Read	Write	
DOM0_PECONx (x=0-15)	Protocol Error Control Register x	00000_H+ x*20_H	32,U,SV	32,P,SV	See Family Spec
DOM0_PRIORITYx (x=0-15)	SCIx Arbiter Priority Register	00008_H+ x*20_H	32,U,SV	32,P,SV	See Family Spec
DOM0_ERRADDRx (x=0-15)	SCI x Error Address Capture Register	00010_H+ x*20_H	32,U,SV	32,P,SV	See Family Spec
DOM0_ERRx (x=0-15)	SCI x Error Capture Register	00018_H+ x*20_H	32,U,SV	32,P,SV	See Family Spec
DOM0_ID	Identification Register	00408_H	32,U,SV	BE	See Family Spec
DOM0_PESTAT	Protocol Error Status Register	00410_H	32,U,SV	32,P,SV	See Family Spec
DOM0_TIDSTAT	Transaction ID Status Register	00418_H	32,U,SV	32,P,SV	See Family Spec
DOM0_TIDEN	Transaction ID Enable Register	00420_H	32,U,SV	32,P,SV	See Family Spec
DOM0_BRCON	Domain 0 Bridge Control Register	00430_H	32,U,SV	32,P,SV	4

Table 9 Register Overview - DOM0 (ascending Offset Address) (cont'd)

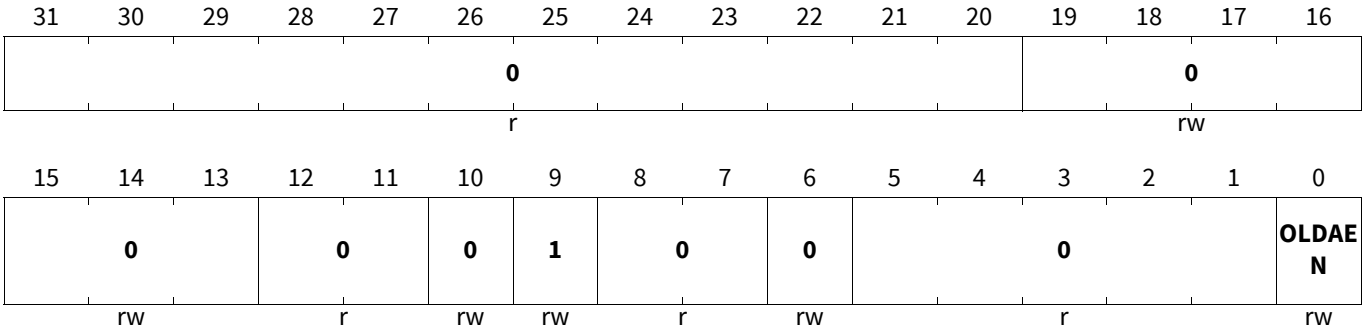
Short Name	Description	Offset Address	Access Mode		Page Number
			Read	Write	
DOM0_ACCEN0	Access Enable Register 0	$004F0_H$	32,U,SV	32,SV,SE	See Family Spec
DOM0_ACCEN1	Access Enable Register 1	$004F8_H$	32,U,SV	32,SV,SE	See Family Spec

4.3 TC33x/TC32x Specific Registers

4.3.1 sri slave interface

Domain 0 Bridge Control Register

DOM0_BRCON
Domain 0 Bridge Control Register **(00430_H)** **Application Reset Value: $0000\ 0200_H$**



Field	Bits	Type	Description
OLDAEN	0	rw	**Online Data Acquisition Enable** This bit is used to control trap generated for write accesses to the OLDA address range associated with this domain. 0_B Trap generated on a write access to the OLDA memory range. 1_B No trap generated on a write access to the OLDA memory range.
0	5:1, 8:7, 12:11, 31:20	r	**Reserved** Read as 0; shall be written with 0.
0	6, 10, 19:13	rw	**Reserved** Read as 0; shall be written with 0.
1	9	rw	**Reserved** Read as 1; shall be written with 1.

4.4 Connectivity

No connections in TC33x/TC32x

4.5 Interconnection Matrices

4.5.1 Domain 0 Interconnection Matrix

By default the crossbar connects MCIs to SCIs. The following connectivity matrix highlights (in red and yellow) the MCI to SCI interconnects that are non-standard in the TC33x/TC32x. The unimplemented connections are redundant as they would not be useful (illegal or trapping) therefore do not restrict the functionality.

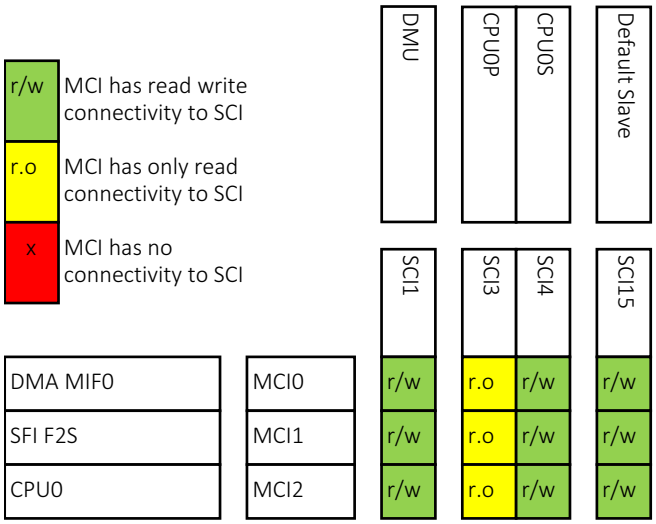


Figure 1 TC33x/TC32x Domain0 Connectivity Matrix

4.6 Revision History

Table 10 Revision History

Reference	Change to Previous Version	Comment
V1.1.13		
	Initial TC33x appendix version	
V1.1.14		
	No change.	
V1.1.15		
	No change.	
V1.1.16		
	No change.	
V1.1.17		
	No change.	

4.7 FPI Bus Control Units (SBCU)

This chapter supplements the family documentation with device specific information for TC33x/TC32x.

4.7.1 TC33x/TC32x Specific IP Configuration

The TC33x/TC32x includes one FPI Bus instance. Each FPI Bus instance has its dedicated Bus Control Unit:

Table 11 Register Address Space - BCU

Module	Base Address	End Address	Note
(SBCU)	$F0000000_H$	$F7FFFFFF_H$	FPI default slave
SBCU	$F0030000_H$	$F00300FF_H$	BCU Registers

- System Peripheral Bus (SPB) -> SBCU. The SBCU registers are described in **Chapter 4.7.2**

4.7.2 SBCU Control Unit Registers

Figure 2 and **Table 12** are showing the address maps with all registers of the System Bus Control Unit (SBCU) module.

SBCU Control Registers Overview

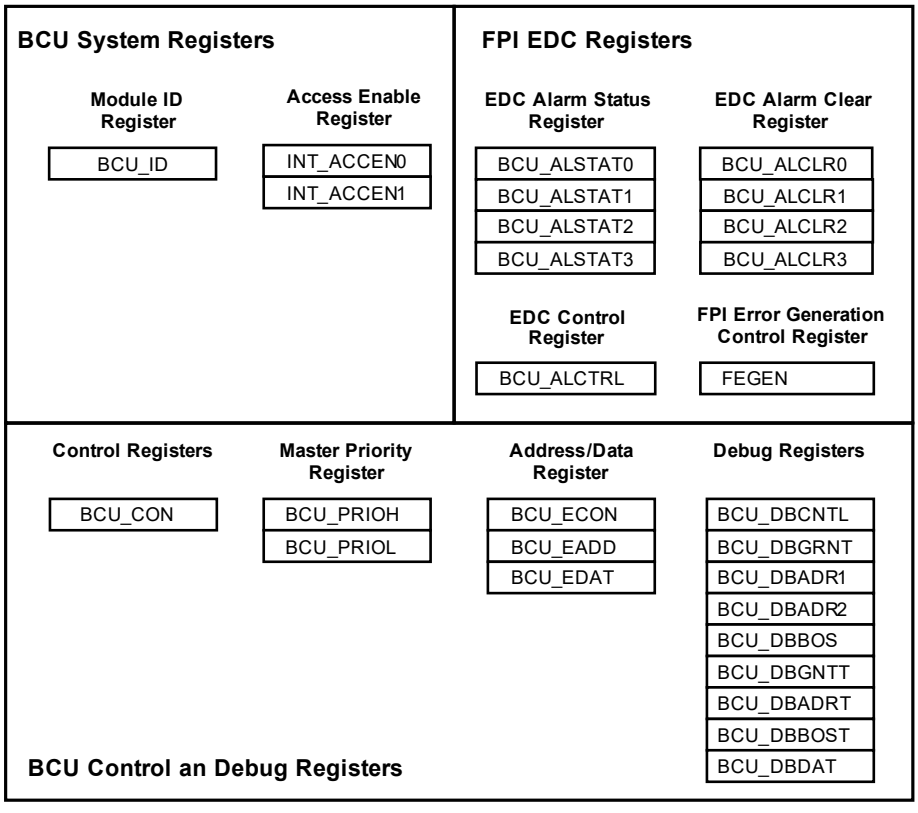


Figure 2 SBCU Registers

Table 12 Register Overview - SBCU (ascending Offset Address)

Short Name	Long Name	Offset Address	Access Mode		Reset	Page Number
			Read	Write		
SBCU_ID	Module Identification Register	0008_H	U,SV	BE	Application Reset	See Family Spec
SBCU_CON	BCU Control Register	0010_H	U,SV	SV,P	Application Reset	See Family Spec
SBCU_PRIOH	Arbiter Priority Register High	0014_H	U,SV	SV,E,P	Application Reset	8
SBCU_PRIOL	Arbiter Priority Register Low	0018_H	U,SV	SV,E,P	Application Reset	9
SBCU_ECON	BCU Error Control Capture Register	0020_H	U,SV	SV,P	Application Reset	See Family Spec
SBCU_EADD	BCU Error Address Capture Register	0024_H	U,SV	SV,P	Application Reset	See Family Spec
SBCU_EDAT	BCU Error Data Capture Register	0028_H	U,SV	SV,P	Application Reset	See Family Spec
SBCU_DBCNTL	BCU Debug Control Register	0030_H	U,SV	SV,P	Debug Reset	See Family Spec
SBCU_DBGRNT	SBCU Debug Grant Mask Register	0034_H	U,SV	SV,P	Debug Reset	10
SBCU_DBADR1	BCU Debug Address 1 Register	0038_H	U,SV	SV,P	Debug Reset	See Family Spec
SBCU_DBADR2	BCU Debug Address 2 Register	$003C_H$	U,SV	SV,P	Debug Reset	See Family Spec
SBCU_DBBOS	BCU Debug Bus Operation Signals Register	0040_H	U,SV	SV,P	Debug Reset	See Family Spec
SBCU_DBGNTT	SBCU Debug Trapped Master Register	0044_H	U,SV	BE	Debug Reset	11
SBCU_DBADRT	BCU Debug Trapped Address Register	0048_H	U,SV	BE	Debug Reset	See Family Spec
SBCU_DBBOST	BCU Debug Trapped Bus Operation Signals Register	$004C_H$	U,SV	BE	Debug Reset	See Family Spec

Table 12 Register Overview - SBCU (ascending Offset Address) (cont'd)

Short Name	Long Name	Offset Address	Access Mode		Reset	Page Number
			Read	Write		
SBCU_DBDAT	BCU Debug Data Status Register	0050_H	U,SV	BE	Debug Reset	See Family Spec
SBCU_ALSTATx (x=0-3)	BCU EDC Alarm Status Register x	0060_H+x *4	U,SV	SV,P	Application Reset	12
SBCU_ALCLRx (x=0-3)	BCU EDC Alarm Clear Register x	0070_H+x *4	U,SV	SV,P	Application Reset	See Family Spec
SBCU_ALCTRL	BCU EDC Alarm Control Register	0080_H	U,SV	SV,P	Application Reset	See Family Spec
SBCU_FEGEN	FPI Error Generation Control Register	0084_H	U,SV	SV,SE	Application Reset	See Family Spec
SBCU_ACCEN1	Access Enable Register 1	$00F8_H$	U,SV	SV,SE	Application Reset	See Family Spec
SBCU_ACCEN0	Access Enable Register 0	$00FC_H$	U,SV	SV,SE	Application Reset	See Family Spec

4.7.2.1 SBCU Control Registers Descriptions

Note: For all PRIOH / PRIOL bit fields, a lower number has a higher priority in the arbitration round than a higher one.

Arbiter Priority Register High

SBCU_PRIOH
Arbiter Priority Register High (0014_H) Application Reset Value: $FEDC\ 8888_H$

31	30	29	28	27	26	25	24	23	22	21	20	19	18	17	16
RESERVED				RESERVED				HSMCMI				HSMRMI			
rw				rw				rw				rw			

15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
RESERVED				RESERVED				RESERVED				RESERVED			
rw				rw				rw				rw			

Field	Bits	Type	Description
RESERVED	3:0, 7:4, 11:8, 15:12, 27:24, 31:28	rw	**Reserved** Read as reset value or last written value; should be written with 0.
HSMRMI	19:16	rw	**HSMRMI Priority (Index 12)** This bit field defines the priority on the SPB for HSMRMI access to the SPB.
HSMCMI	23:20	rw	**HSMCMI Priority (Index 13)** This bit field defines the priority on the SPB for HSMCMI access to the SPB.

Arbiter Priority Register Low

SBCU_PRIOL
Arbiter Priority Register Low **(0018_H)** **Application Reset Value: $8854\ 3210_H$**

31	30	29	28	27	26	25	24	23	22	21	20	19	18	17	16
RESERVED				**CPU0**				**RESERVED**				**RESERVED**			
rw				rw				rw				rw			

15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
RESERVED				**RESERVED**				**RESERVED**				**DMA**			
rw				rw				rw				rw			

Field	Bits	Type	Description
DMA	3:0	rw	**DMA / Cerberus Priority (Index 0)** This bit field defines the priority on the SPB for DMA and Cerberus access to the SPB.
RESERVED	7:4, 11:8, 15:12, 19:16, 23:20, 31:28	rw	**Reserved** Read as reset value or last written value; should be written with 0.
CPU0	27:24	rw	**CPU0 Priority (Index 6)** This bit field defines the priority on the SPB for CPU0 access to the SPB.

4.7.2.2 SBCU OCDS Registers Descriptions

SBCU Debug Grant Mask Register

SBCU_DBGRNT
SBCU Debug Grant Mask Register **(0034_H)** **Debug Reset Value: $0000\ FFFF_H$**

31	30	29	28	27	26	25	24	23	22	21	20	19	18	17	16
0															
r															

15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
1	1	HSMCMI	HSMRMI	1	1	1	1	1	CPU0	1	1	1	1	1	DMA
rw	rw	rw	rw	rw	rw	rw	rw	rw	rw	rw	rw	rw	rw	rw	rw

Field	Bits	Type	Description
DMA	0	rw	**DMA / Cerberus Trigger Enable** 0_B FPI Bus transactions with DMA / Cerberus as bus master are enabled for grant trigger event generation. 1_B FPI Bus transactions with DMA / Cerberus as bus master are disabled for grant trigger event generation.
CPU0	6	rw	**CPU0 Grant Trigger Enable** 0_B FPI Bus transactions with CPU0 as bus master are enabled for grant trigger event generation. 1_B FPI Bus transactions with CPU as bus master are disabled for grant trigger event generation.
HSMRMI	12	rw	**HSM Register Master Interface Grant Trigger Enable** 0_B FPI Bus transactions requested by the HSM bus master are enabled for grant trigger event generation. 1_B FPI Bus transactions requested by the HSM bus master are disabled for grant trigger event generation.
HSMCMI	13	rw	**HSM Cache Master Interface Grant Trigger Enable** 0_B FPI Bus transactions requested by the HSM bus master are enabled for grant trigger event generation. 1_B FPI Bus transactions requested by the HSM bus master are disabled for grant trigger event generation.

Field	Bits	Type	Description
1	1, 2, 3, 4, 5, 7, 8, 9, 10, 11, 14, 15	rw	**Reserved** Read as 1 after reset; reading these bits will return the value last written.
0	31:16	r	**Reserved** Read as 0; should be written with 0.

SBCU Debug Trapped Master Register

SBCU_DBGNTT

SBCU Debug Trapped Master Register **(0044$_H$)** **Debug Reset Value: 0000 FFFF$_H$**

31	30	29	28	27	26	25	24	23	22	21	20	19	18	17	16
0															
rh															

15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
1	**1**	**HSMCMI**	**HSMRMI**	**1**	**1**	**1**	**1**	**1**	**CPU0**	**1**	**1**	**1**	**1**	**1**	**DMA**
rh	rh	rh	rh	rh	rh	rh	rh	rh	rh	rh	rh	rh	rh	rh	rh

Field	Bits	Type	Description
DMA	0	rh	**DMA / Cerberus FPI Bus Master Status** 0_B The DMA or Cerberus was the FPI bus master. 1_B Neither DMA nor Cerberus was the FPI Bus master.
CPU0	6	rh	**CPU0 FPI Bus Master Status** This bit indicates whether the CPU0 was FPI Bus master when the break trigger event occurred. 0_B The CPU0 was the FPI Bus master. 1_B The CPU0 was not the FPI Bus master.
HSMRMI	12	rh	**HSM Register FPI Bus Master Interface Status** This bit indicates whether the HSM was FPI Bus master when the break trigger event occurred. 0_B HSMRMI was the FPI bus master. 1_B HSMRMI was not the FPI Bus master.

Field	Bits	Type	Description
HSMCMI	13	rh	**HSM Cache FPI Bus Master Interface Status** This bit indicates whether the HSM was FPI Bus master when the break trigger event occurred. 0_B HSMCMI was the FPI bus master. 1_B HSMCMI was not the FPI Bus master.
1	1, 2, 3, 4, 5, 7, 8, 9, 10, 11, 14, 15	rh	**Reserved** Read as 1 after reset; reading these bits will return the value last written.
0	31:16	rh	**Reserved** Read as 1 after reset; reading these bits will return the value last written.

BCU EDC Alarm Status Register x

The BCU provides one Alarm Status Register bit for each implemented FPI master and FPI slave.

Register bits without constant definition are reserved in this product.

SBCU_ALSTATx (x=0)

BCU EDC Alarm Status Register x **(0060_H+x*4)** **Application Reset Value: 0000 0000_H**

31	30	29	28	27	26	25	24	23	22	21	20	19	18	17	16
AL31	**AL30**	**AL29**	**AL28**	**AL27**	**AL26**	**AL25**	**AL24**	**AL23**	**AL22**	**AL21**	**AL20**	**AL19**	**AL18**	**AL17**	**AL16**
rh	rh	rh	rh	rh	rh	rh	rh	rh	rh	rh	rh	rh	rh	rh	rh
15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
AL15	**AL14**	**AL13**	**AL12**	**AL11**	**AL10**	**AL09**	**AL08**	**AL07**	**AL06**	**AL05**	**AL04**	**AL03**	**AL02**	**AL01**	**AL00**
rh	rh	rh	rh	rh	rh	rh	rh	rh	rh	rh	rh	rh	rh	rh	rh

Field	Bits	Type	Description
ALy (y=00)	y	rh	**Alarm y** 1_B **SBCU_S**, an EDC error was detected in an active phase of the SBCU Slave Interface.
ALy (y=01)	y	rh	**Alarm y** 1_B **DMA_S**,
ALy (y=02)	y	rh	**Alarm y** 1_B **IR_S**,
ALy (y=03)	y	rh	**Alarm y** 1_B **SFI_F2S_S**,

Field	Bits	Type	Description
ALy (y=04)	y	rh	**Alarm y** 1_B **SCU_S,**
ALy (y=05)	y	rh	**Alarm y** 1_B **SMU_S,**
ALy (y=06)	y	rh	**Alarm y** 1_B **PMC_SCR_S,**
ALy (y=07)	y	rh	**Alarm y** 1_B **MTU_S,**
ALy (y=08)	y	rh	**Alarm y** 1_B **IOM_S,**
ALy (y=09,18-19,21,23-29,31)	y	rh	**Alarm y**
ALy (y=10)	y	rh	**Alarm y** 1_B **ASCLIN01_S,**
ALy (y=11)	y	rh	**Alarm y** 1_B **ASCLIN23_S,**
ALy (y=12)	y	rh	**Alarm y** 1_B **ASCLIN45_S,**
ALy (y=13)	y	rh	**Alarm y** 1_B **ASCLIN67_S,**
ALy (y=14)	y	rh	**Alarm y** 1_B **QSPI0_S,**
ALy (y=15)	y	rh	**Alarm y** 1_B **QSPI1_S,**
ALy (y=16)	y	rh	**Alarm y** 1_B **QSPI2_S,**
ALy (y=17)	y	rh	**Alarm y** 1_B **QSPI3_S,**
ALy (y=20)	y	rh	**Alarm y** 1_B **FCE0_S,**
ALy (y=22)	y	rh	**Alarm y** 1_B **STM0_S,**
ALy (y=30)	y	rh	**Alarm y** 1_B **ERAY0_S,**

SBCU_ALSTATx (x=1)

BCU EDC Alarm Status Register x **(0060_H+x*4)** **Application Reset Value: 0000 0000_H**

31	30	29	28	27	26	25	24	23	22	21	20	19	18	17	16
AL31	**AL30**	**AL29**	**AL28**	**AL27**	**AL26**	**AL25**	**AL24**	**AL23**	**AL22**	**AL21**	**AL20**	**AL19**	**AL18**	**AL17**	**AL16**
rh	rh	rh	rh	rh	rh	rh	rh	rh	rh	rh	rh	rh	rh	rh	rh

15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
AL15	**AL14**	**AL13**	**AL12**	**AL11**	**AL10**	**AL09**	**AL08**	**AL07**	**AL06**	**AL05**	**AL04**	**AL03**	**AL02**	**AL01**	**AL00**
rh	rh	rh	rh	rh	rh	rh	rh	rh	rh	rh	rh	rh	rh	rh	rh

Field	Bits	Type	Description
ALy (y=00)	y	rh	**Alarm y** 1_B **GPT12_S**, an EDC error was detected in an active phase of the GPT12 Slave Interface.
ALy (y=01)	y	rh	**Alarm y** 1_B **CCU6_S**,
ALy (y=02)	y	rh	**Alarm y** 1_B **GTM_S**,
ALy (y=03-06,08,10,12,15-18,22-30)	y	rh	**Alarm y**
ALy (y=07)	y	rh	**Alarm y** 1_B **SENT_S**,
ALy (y=09)	y	rh	**Alarm y** 1_B **EVADC_S**,
ALy (y=11)	y	rh	**Alarm y** 1_B **HSM_S**,
ALy (y=13)	y	rh	**Alarm y** 1_B **CAN0_S**,
ALy (y=14)	y	rh	**Alarm y** 1_B **CAN1_S**,
ALy (y=19)	y	rh	**Alarm y** 1_B **CONVCTRL_S**,
ALy (y=20)	y	rh	**Alarm y** 1_B **ASCLIN89_S**,
ALy (y=21)	y	rh	**Alarm y** 1_B **ASCLIN1011_S**,
ALy (y=31)	y	rh	**Alarm y** 1_B **CERBERUS_S**,

SBCU_ALSTATx (x=2)
BCU EDC Alarm Status Register x **(0060_H+x*4)** **Application Reset Value: $0000\ 0000_H$**

31	30	29	28	27	26	25	24	23	22	21	20	19	18	17	16
AL31	**AL30**	**AL29**	**AL28**	**AL27**	**AL26**	**AL25**	**AL24**	**AL23**	**AL22**	**AL21**	**AL20**	**AL19**	**AL18**	**AL17**	**AL16**
rh	rh	rh	rh	rh	rh	rh	rh	rh	rh	rh	rh	rh	rh	rh	rh

15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
AL15	**AL14**	**AL13**	**AL12**	**AL11**	**AL10**	**AL09**	**AL08**	**AL07**	**AL06**	**AL05**	**AL04**	**AL03**	**AL02**	**AL01**	**AL00**
rh	rh	rh	rh	rh	rh	rh	rh	rh	rh	rh	rh	rh	rh	rh	rh

Field	Bits	Type	Description
ALy (y=00)	y	rh	**Alarm y** 1_B **P00_S**, an EDC error was detected in an active phase of the Port 00 Slave Interface.
ALy (y=01,03,06,10,15-20,24,26-30)	y	rh	**Alarm y**
ALy (y=02)	y	rh	**Alarm y** 1_B **P02_S**,
ALy (y=04)	y	rh	**Alarm y** 1_B **P10_S**,
ALy (y=05)	y	rh	**Alarm y** 1_B **P11_S**,
ALy (y=07)	y	rh	**Alarm y** 1_B **P13_S**,
ALy (y=08)	y	rh	**Alarm y** 1_B **P14_S**,
ALy (y=09)	y	rh	**Alarm y** 1_B **P15_S**,
ALy (y=11)	y	rh	**Alarm y** 1_B **P20_S**,
ALy (y=12)	y	rh	**Alarm y** 1_B **P21_S**,
ALy (y=13)	y	rh	**Alarm y** 1_B **P22_S**,
ALy (y=14)	y	rh	**Alarm y** 1_B **P23_S**,
ALy (y=21)	y	rh	**Alarm y** 1_B **P32_S**,
ALy (y=22)	y	rh	**Alarm y** 1_B **P33_S**,

Field	Bits	Type	Description
ALy (y=23)	y	rh	**Alarm y** 1_B **P34_S**,
ALy (y=25)	y	rh	**Alarm y** 1_B **P40_S**,
ALy (y=31)	y	rh	**Alarm y** 1_B **SBCU_M**, an EDC error was detected in an active phase of the SBCU Master Interface.

SBCU_ALSTATx (x=3)
BCU EDC Alarm Status Register x **(0060_H+x*4)** **Application Reset Value: 0000 0000_H**

31	30	29	28	27	26	25	24	23	22	21	20	19	18	17	16
AL31	**AL30**	**AL29**	**AL28**	**AL27**	**AL26**	**AL25**	**AL24**	**AL23**	**AL22**	**AL21**	**AL20**	**AL19**	**AL18**	**AL17**	**AL16**
rh	rh	rh	rh	rh	rh	rh	rh	rh	rh	rh	rh	rh	rh	rh	rh
15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
AL15	**AL14**	**AL13**	**AL12**	**AL11**	**AL10**	**AL09**	**AL08**	**AL07**	**AL06**	**AL05**	**AL04**	**AL03**	**AL02**	**AL01**	**AL00**
rh	rh	rh	rh	rh	rh	rh	rh	rh	rh	rh	rh	rh	rh	rh	rh

Field	Bits	Type	Description
ALy (y=00)	y	rh	**Alarm y** 1_B **A_EN**, multiple output enables active: A_EN_N (Master)
ALy (y=01)	y	rh	**Alarm y** 1_B **ABORT_EN**, multiple output enables active: ABORT_EN_N (Master)
ALy (y=02)	y	rh	**Alarm y** 1_B **ACK_EN**, multiple output enables active: ACK_EN_N (Default Master and Slave)
ALy (y=03)	y	rh	**Alarm y** 1_B **D_EN**, multiple output enables active: D_EN_N (Master and Slave)
ALy (y=04-15,17-21,23-27,30-31)	y	rh	**Alarm y**
ALy (y=16)	y	rh	**Alarm y** 1_B **DMA_M**, an EDC error was detected in an active phase of the DMA / Cerberus Master Interface.
ALy (y=22)	y	rh	**Alarm y** 1_B **CPU0_M**,
ALy (y=28)	y	rh	**Alarm y** 1_B **HSMRMI_M**,
ALy (y=29)	y	rh	**Alarm y** 1_B **HSMCMI_M**,

4.7.3 Connectivity

4.7.3.1 SBCU Connectivity

Table 13 List of SBCU Interface Signals

Interface Signals	I/O	Description
INT	out	**Bus Control Unit SPB Service Request**
INT	out	**Bus Control Unit BBB Service Request**

Table 14 Connections of SBCU

Interface Signals	connects		Description
SBCU:INT	to	INT:sbcu.INT	Bus Control Unit SPB Service Request

4.7.4 Revision History

Table 15 Revision History

Reference	Change to Previous Version	Comment
V1.2.7		
	No functional change.	
V1.2.8		
–	No functional changes.	–
V1.2.9		
–	No functional changes.	–

5 CPU Subsystem (CPU)

This chapter describes the CPU subsystem module of the TC33x/TC32x.

5.1 TC33x/TC32x Specific Configuration

No product specific configuration for CPU

5.2 TC33x/TC32x Specific Register Set

Register Address Space Table

Table 16 Register Address Space - CPU

Module	Base Address	End Address	Note
(CPU0)	70000000_H	$7002FFFF_H$	Data ScratchPad RAM interface
	70030000_H	$70033FFF_H$	Data Cache RAM interface
	$700C0000_H$	$700C17FF_H$	Data Cache Tag RAM interface
	70100000_H	$70101FFF_H$	Program ScratchPad RAM interface
	70102000_H	$70109FFF_H$	Program Cache RAM interface
	$701C0000_H$	$701C2FFF_H$	Program Cache TAG RAM interface
	90000000_H	$90001FFF_H$	DLMU RAM interface (cached)
	$B0000000_H$	$B0001FFF_H$	DLMU RAM interface (non-cached)
CPU0	$F8800000_H$	$F881FFFF_H$	SRI slave interface for SFR+CSFR

Register Overview Table

Register Overview Tables of CPU

Table 17 Register Overview - CPU0 (ascending Offset Address)

Short Name	Long Name	Offset Address	Page Number
CPU0_FLASHCON0	CPUx Flash Configuration Register 0	01100_H	10
CPU0_FLASHCON1	CPUx Flash Configuration Register 1	01104_H	See Family Spec
CPU0_FLASHCON2	CPUx Flash Configuration Register 2	01108_H	See Family Spec
CPU0_FLASHCON3	CPUx Flash Configuration Register 3	$0110C_H$	See Family Spec

Table 17 Register Overview - CPU0 (ascending Offset Address) (cont'd)

Short Name	Long Name	Offset Address	Page Number
CPU0_FLASHCON4	CPUx Flash Configuration Register 4	01110_H	See Family Spec
CPU0_KRST0	CPUx Reset Register 0	$0D000_H$	See Family Spec
CPU0_KRST1	CPUx Reset Register 1	$0D004_H$	See Family Spec
CPU0_KRSTCLR	CPUx Reset Clear Register	$0D008_H$	See Family Spec
CPU0_SPR_SPROT_RGNLAi (i=0-7)	CPUx Safety Protection SPR Region Lower Address Register i	$0E000_H$+i*10_H	See Family Spec
CPU0_SPR_SPROT_RGNUAi (i=0-7)	CPUx Safety Protection SPR Region Upper Address Register i	$0E004_H$+i*10_H	See Family Spec
CPU0_SPR_SPROT_RGNACCENAi_W (i=0-7)	CPUx Safety Protection SPR Region Write Access Enable Register Ai	$0E008_H$+i*10_H	See Family Spec
CPU0_SPR_SPROT_RGNACCENBi_W (i=0-7)	CPUx Safety Protection SPR Region Write Access Enable Register Bi	$0E00C_H$+i*10_H	See Family Spec
CPU0_SPR_SPROT_RGNACCENAi_R (i=0-7)	CPUx Safety Protection SPR Region Read Access Enable Register Ai	$0E088_H$+i*10_H	See Family Spec
CPU0_SPR_SPROT_RGNACCENBi_R (i=0-7)	CPUx Safety Protection SPR Region Read Access Enable Register Bi	$0E08C_H$+i*10_H	See Family Spec
CPU0_SFR_SPROT_ACCENA_W	CPUx Safety Protection Register Access Enable Register A	$0E100_H$	See Family Spec
CPU0_SFR_SPROT_ACCENB_W	CPUx Safety Protection Region Access Enable Register B	$0E104_H$	See Family Spec
CPU0_LPB_SPROT_ACCENA_R	CPUx Safety Protection Region LPB Read Access Enable Register A	$0E110_H$	See Family Spec
CPU0_LPB_SPROT_ACCENB_R	CPUx Safety Protection Region LPB Read Access Enable Register B	$0E114_H$	See Family Spec

Table 17 Register Overview - CPU0 (ascending Offset Address) (cont'd)

Short Name	Long Name	Offset Address	Page Number
CPU0_DLMU_SPROT_RGNLAi (i=0-7)	CPUx Safety Protection DLMU Region Lower Address Register i	$0E200_H$+i*10_H	See Family Spec
CPU0_DLMU_SPROT_RGNUAi (i=0-7)	CPUx Safety protection DLMU Region Upper Address Register i	$0E204_H$+i*10_H	See Family Spec
CPU0_DLMU_SPROT_RGNACCENAi_W (i=0-7)	CPUx Safety Protection Region DLMU Write Access Enable Register Ai	$0E208_H$+i*10_H	See Family Spec
CPU0_DLMU_SPROT_RGNACCENBi_W (i=0-7)	CPUx Safety Protection Region DLMU Write Access Enable Register Bi	$0E20C_H$+i*10_H	See Family Spec
CPU0_DLMU_SPROT_RGNACCENAi_R (i=0-7)	CPUx Safety Protection Region DLMU Read Access Enable Register Ai	$0E288_H$+i*10_H	See Family Spec
CPU0_DLMU_SPROT_RGNACCENBi_R (i=0-7)	CPUx Safety Protection Region DLMU Read Access Enable Register Bi	$0E28C_H$+i*10_H	See Family Spec
CPU0_OSEL	CPUx Overlay Range Select Register	$0FB00_H$	See Family Spec
CPU0_RABRi (i=0-31)	CPUx Redirected Address Base Register i	$0FB10_H$+i*12	See Family Spec
CPU0_OTARi (i=0-31)	CPUx Overlay Target Address Register i	$0FB14_H$+i*12	See Family Spec
CPU0_OMASKi (i=0-31)	CPUx Overlay Mask Register i	$0FB18_H$+i*12	See Family Spec
CPU0_SEGEN	CPUx SRI Error Generation Register	11030_H	See Family Spec
CPU0_TASK_ASI	CPUx Task Address Space Identifier Register	18004_H	See Family Spec
CPU0_PMA0	CPUx Data Access CacheabilityRegister	18100_H	See Family Spec
CPU0_PMA1	CPUx Code Access CacheabilityRegister	18104_H	See Family Spec

Table 17 Register Overview - CPU0 (ascending Offset Address) (cont'd)

Short Name	Long Name	Offset Address	Page Number
CPU0_PMA2	CPUx Peripheral Space Identifier register	18108_H	See Family Spec
CPU0_DCON2	CPUx Data Control Register 2	19000_H	See Family Spec
CPU0_SMACON	CPUx SIST Mode Access Control Register	$1900C_H$	See Family Spec
CPU0_DSTR	CPUx Data Synchronous Trap Register	19010_H	See Family Spec
CPU0_DATR	CPUx Data Asynchronous Trap Register	19018_H	See Family Spec
CPU0_DEADD	CPUx Data Error Address Register	$1901C_H$	See Family Spec
CPU0_DIEAR	CPUx Data Integrity Error Address Register	19020_H	See Family Spec
CPU0_DIETR	CPUx Data Integrity Error Trap Register	19024_H	See Family Spec
CPU0_DCON0	CPUx Data Memory Control Register	19040_H	See Family Spec
CPU0_PSTR	CPUx Program Synchronous Trap Register	19200_H	See Family Spec
CPU0_PCON1	CPUx Program Control 1	19204_H	See Family Spec
CPU0_PCON2	CPUx Program Control 2	19208_H	See Family Spec
CPU0_PCON0	CPUx Program Control 0	$1920C_H$	See Family Spec
CPU0_PIEAR	CPUx Program Integrity Error Address Register	19210_H	See Family Spec

Table 17 Register Overview - CPU0 (ascending Offset Address) (cont'd)

Short Name	Long Name	Offset Address	Page Number
CPU0_PIETR	CPUx Program Integrity Error Trap Register	19214_H	See Family Spec
CPU0_COMPAT	CPUx Compatibility Control Register	19400_H	See Family Spec
CPU0_FPU_TRAP_CON	CPUx Trap Control Register	$1A000_H$	See Family Spec
CPU0_FPU_TRAP_PC	CPUx Trapping Instruction Program Counter Register	$1A004_H$	See Family Spec
CPU0_FPU_TRAP_OPC	CPUx Trapping Instruction Opcode Register	$1A008_H$	See Family Spec
CPU0_FPU_TRAP_SRC1	CPUx Trapping Instruction Operand Register	$1A010_H$	See Family Spec
CPU0_FPU_TRAP_SRC2	CPUx Trapping Instruction Operand Register	$1A014_H$	See Family Spec
CPU0_FPU_TRAP_SRC3	CPUx Trapping Instruction Operand Register	$1A018_H$	See Family Spec
CPU0_DPRy_L (y=0-17)	CPUx Data Protection Range y, Lower Bound Register	$1C000_H$+y*8	See Family Spec
CPU0_DPRy_U (y=0-17)	CPUx Data Protection Range y, Upper Bound Register	$1C004_H$+y*8	See Family Spec
CPU0_CPRy_L (y=0-9)	CPUx Code Protection Range y Lower Bound Register	$1D000_H$+y*8	See Family Spec
CPU0_CPRy_U (y=0-9)	CPUx Code Protection Range y Upper Bound Register	$1D004_H$+y*8	See Family Spec
CPU0_CPXE_y (y=0-3)	CPUx Code Protection Execute Enable Register Set y	$1E000_H$+y*4	See Family Spec
CPU0_DPRE_y (y=0-3)	CPUx Data Protection Read Enable Register Set y	$1E010_H$+y*4	See Family Spec

Table 17 Register Overview - CPU0 (ascending Offset Address) (cont'd)

Short Name	Long Name	Offset Address	Page Number
CPU0_DPWE_y (y=0-3)	CPUx Data Protection Write Enable Register Set y	$1E020_H$+y*4	See Family Spec
CPU0_CPXE_y (y=4-5)	CPUx Code Protection Execute Enable Register Set y	$1E040_H$+(y-4)*4	See Family Spec
CPU0_DPRE_y (y=4-5)	CPUx Data Protection Read Enable Register Set y	$1E050_H$+(y-4)*4	See Family Spec
CPU0_DPWE_y (y=4-5)	CPUx Data Protection Write Enable Register Set y	$1E060_H$+(y-4)*4	See Family Spec
CPU0_TPS_CON	CPUx Temporal Protection System Control Register	$1E400_H$	See Family Spec
CPU0_TPS_TIMERy (y=0-2)	CPUx Temporal Protection System Timer Register y	$1E404_H$+y*4	See Family Spec
CPU0_TPS_EXTIM_ENTRY_LVAL	CPUx Exception Entry Timer Load Value	$1E440_H$	See Family Spec
CPU0_TPS_EXTIM_ENTRY_CVAL	CPUx Exception Entry Timer Current Value	$1E444_H$	See Family Spec
CPU0_TPS_EXTIM_EXIT_LVAL	CPUx Exception Exit Timer Load Value	$1E448_H$	See Family Spec
CPU0_TPS_EXTIM_EXIT_CVAL	CPUx Exception Exit Timer Current Value	$1E44C_H$	See Family Spec
CPU0_TPS_EXTIM_CLASS_EN	CPUx Exception Timer Class Enable Register	$1E450_H$	See Family Spec
CPU0_TPS_EXTIM_STAT	CPUx Exception Timer Status Register	$1E454_H$	See Family Spec
CPU0_TPS_EXTIM_FCX	CPUx Exception Timer FCX Register	$1E458_H$	See Family Spec
CPU0_TRiEVT (i=0-7)	CPUx Trigger Event i	$1F000_H$+i*8	See Family Spec

Table 17 Register Overview - CPU0 (ascending Offset Address) (cont'd)

Short Name	Long Name	Offset Address	Page Number
CPU0_TRiADR (i=0-7)	CPUx Trigger Address i	$1F004_H$+i*8	See Family Spec
CPU0_CCTRL	CPUx Counter Control	$1FC00_H$	See Family Spec
CPU0_CCNT	CPUx CPU Clock Cycle Count	$1FC04_H$	See Family Spec
CPU0_ICNT	CPUx Instruction Count	$1FC08_H$	See Family Spec
CPU0_M1CNT	CPUx Multi-Count Register 1	$1FC0C_H$	See Family Spec
CPU0_M2CNT	CPUx Multi-Count Register 2	$1FC10_H$	See Family Spec
CPU0_M3CNT	CPUx Multi-Count Register 3	$1FC14_H$	See Family Spec
CPU0_DBGSR	CPUx Debug Status Register	$1FD00_H$	See Family Spec
CPU0_EXEVT	CPUx External Event Register	$1FD08_H$	See Family Spec
CPU0_CREVT	CPUx Core Register Access Event	$1FD0C_H$	See Family Spec
CPU0_SWEVT	CPUx Software Debug Event	$1FD10_H$	See Family Spec
CPU0_TRIG_ACC	CPUx TriggerAddressx	$1FD30_H$	See Family Spec
CPU0_DMS	CPUx Debug Monitor Start Address	$1FD40_H$	See Family Spec
CPU0_DCX	CPUx Debug Context Save Area Pointer	$1FD44_H$	See Family Spec

Table 17 Register Overview - CPU0 (ascending Offset Address) (cont'd)

Short Name	Long Name	Offset Address	Page Number
CPU0_DBGTCR	CPUx Debug Trap Control Register	$1FD48_H$	See Family Spec
CPU0_PCXI	CPUx Previous Context Information Register	$1FE00_H$	See Family Spec
CPU0_PSW	CPUx Program Status Word	$1FE04_H$	See Family Spec
CPU0_PC	CPUx Program Counter	$1FE08_H$	See Family Spec
CPU0_SYSCON	CPUx System Configuration Register	$1FE14_H$	See Family Spec
CPU0_CPU_ID	CPUx Identification Register TC1.6.2P	$1FE18_H$	See Family Spec
CPU0_CORE_ID	CPUx Core Identification Register	$1FE1C_H$	See Family Spec
CPU0_BIV	CPUx Base Interrupt Vector Table Pointer	$1FE20_H$	See Family Spec
CPU0_BTV	CPUx Base Trap Vector Table Pointer	$1FE24_H$	See Family Spec
CPU0_ISP	CPUx Interrupt Stack Pointer	$1FE28_H$	See Family Spec
CPU0_ICR	CPUx Interrupt Control Register	$1FE2C_H$	See Family Spec
CPU0_FCX	CPUx Free CSA List Head Pointer	$1FE38_H$	See Family Spec
CPU0_LCX	CPUx Free CSA List Limit Pointer	$1FE3C_H$	See Family Spec
CPU0_CUS_ID	CPUx Customer ID register	$1FE50_H$	See Family Spec

Table 17 Register Overview - CPU0 (ascending Offset Address) (cont'd)

Short Name	Long Name	Offset Address	Page Number
CPU0_Dy (y=0-15)	CPUx Data General Purpose Register y	$1FF00_H$+y*4	See Family Spec
CPU0_Ay (y=0-15)	CPUx Address General Purpose Register y	$1FF80_H$+y*4	See Family Spec

5.3 TC33x/TC32x Specific Registers

5.3.1 SRI slave interface for SFR+CSFR

CPUx Flash Configuration Register 0

Software may program a Flash Prefetch Buffer with a master tag identifier stored in Flash Configuration Register 0.

If a CPU instance does not have a local PFlash bank then the FLASHCON0 register associated with that instance will have no functionality.

CPU0_FLASHCON0
CPUx Flash Configuration Register 0 **(01100_H)** **Reset Value: Table 18**

31	30	29	28	27	26	25	24	23	22	21	20	19	18	17	16
RES		TAG4						RES		TAG3					
r		rw						r		rw					

15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
RES		TAG2						RES		TAG1					
r		rw						r		rw					

Field	Bits	Type	Description
TAG1	5:0	rw	**Flash Prefetch Buffer 1 Configuration** FPB is assigned to on chip bus master with master tag id equal to TAG1.
RES	7:6, 15:14, 23:22, 31:30	r	**Reserved** Always read as 0; should be written with 0.
TAG2	13:8	rw	**Flash Prefetch Buffer 2 Configuration** FPB is assigned to on chip bus master with master tag id equal to TAG2.
TAG3	21:16	rw	**Flash Prefetch Buffer 3 Configuration** FPB is assigned to on chip bus master with master tag id equal to TAG3.
TAG4	29:24	rw	**Flash Prefetch Buffer 4 Configuration** FPB is assigned to on chip bus master with master tag id equal to TAG4.

Table 18 Reset Values of CPU0_FLASHCON0

Reset Type	Reset Value	Note
Application Reset	3F3F 3F3F$_H$	
CFS Value	2020 2020$_H$	

5.4 Connectivity

No connections in TC33x/TC32x

5.5 Revision History

Table 19 Revision History

Reference	Change to Previous Version	Comment
V1.1.16		
	No change	
V1.1.17		
	No change	
V1.1.18		
	No change	
V1.1.19		
	No change	
V1.1.20		
Page 1	Change index variable from 'x' to intended 'i' for registers SPR_SPROT_RGNACCENAi_R and SPR_SPROT_RGNACCENBi_R to remove confusion with CPU instance variable.	
Page 1	Change index variable from 'x' to intended 'i' for registers all DLMU_SPROT registers to remove confusion with CPU instance variable.	
V1.1.21		
	No change	

6 Non Volatile Memory (NVM) Subsystem

6.1 Overview

The Non Volatile Memory (NVM) Subsystem comprises of the Data Memory Unit (DMU), Program Flash Interface (PFI), and Non Volatile Memory module (comprising of the Flash Standard Interface (FSI), Program and Data Flash memories and Program Flash Read Write buffer (PFRWB)).

- Data Memory Unit (DMU): Controls command sequences executed on all program and data flash memories.
- Flash Standard Interface (FSI): Executes erase, program and verify operations on all flash memories.
- Program Flash (PFLASH): Divided into one or more banks each connected to a CPU. It is used by the application to store program code and data constants. Compute performance is optimized by using a point-to-point interface to minimize latency and maximize bandwidth. Each PFLASH is connected to a PFlash Read Write Buffer (PFRWB) that performs the ECC correction and detection and provides the read data to the system.
- Program Flash Interface (PFI): Each PFLASH bank has a unique point-to-point fast connection to a CPU provided by a PFI. The PFI interfaces between the CPU and the PFRWB and contains the Prefetch Buffers for storing speculative data.
- Data Flash (DFLASH): The Data Flash Module is used to emulate EEPROM and store data and divided into two banks. DFLASH read accesses are relatively slow compared to PFLASH accesses. The DFlash Read Write Buffer (DFRWB) in the FSI interfaces to the DFLASH to provide the read data. Data Flash Module also contains regions to store configuration data - User Configuration Blocks (UCBs), and Configuration Sector (CFS) which is not accessible by user.
- Boot ROM (BROM): Connected to the system via the DMU SRI port.
  - Tuning protection (commonly called the “Secure Watchdog”) to protect user software and data from maltuning data.

Attention: ***The ‘Non Volatile Memory Subsystem’ chapter is the AURIX PMU chapter re-structured for closer alignment to AURIXTC3XX product architecture. It comprises of the DMU, PFI, NVM and UCB Chapters. Please note that the application accessible registers located in the FSI, and the PFLASH read status and control registers are described in the NVM chapter.***

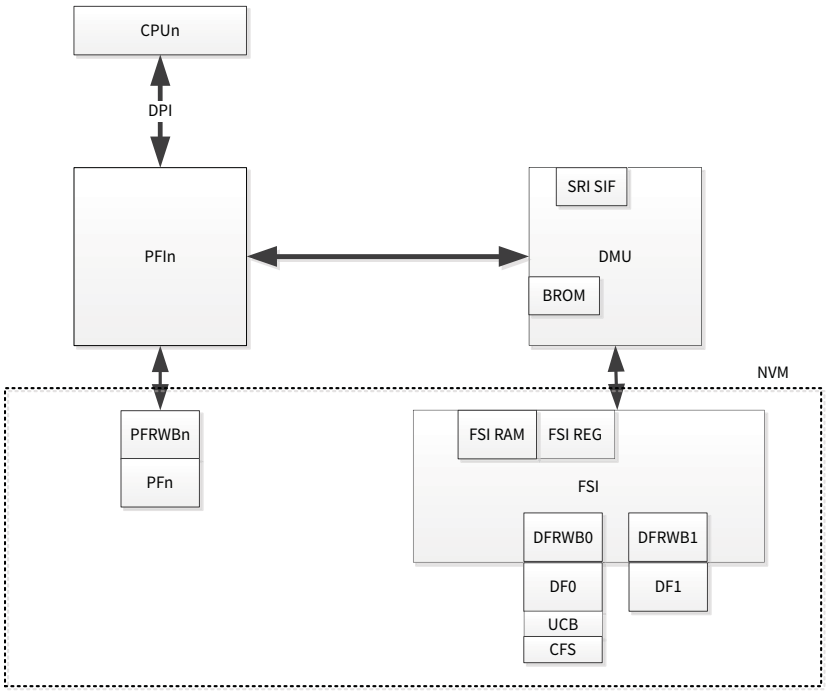


Figure 3 Non Volatile Memory (NVM) Subsystem

The purpose of the PFLASH NVM is:

- One or more PFLASH banks stores program code and data constants.
- Implementation of Erase Counters.

The purpose of the DFLASH NVM is:

- Emulation of Electrically Erasable Programmable Read Only Memory (EEPROM):
  - CPU-EEPROM used by the user application.
  - HSM-EEPROM used by the security application.
- Multiple User Configuration Blocks (UCB) used for:
  - Password based read protection combined with write protection.
  - Read-only UCB configured by IFX with unique chip identifier and trimming data.
- Configuration Sector (CFS) stores system set-up data not accessible by the user.

Data stored in the NVM is protected by ECC checksum.

- An ECC decoder at the output of the NVM corrects and detects faults in the NVM array.
- The NVM is fault tolerant and supports system operation in the presence of a number of NVM bit errors.
- For Program Flash the calculation of the ECC checksum is extended across the address to provide read protection against addressing faults.

If the Flash is not operating in the application then the NVM may be programmed and erased by command sequences executed by the FSI micro controller. All read accesses to Flash are memory mapped reads. Margin read levels may be used to check how completely a cell is programmed or erased.

The Non Volatile Memory interface micro architecture includes a security layer and a safety layer.

Security Layer (provided by DMU and PFI)

- Read protection is enabled/disabled with a Flash Module (Bank) granularity.

- Write protection is enabled/disabled with a Flash Module sector based granularity.

Safety Layer

- Master specific read access protection to each Flash Module (Bank).
- Master specific read and write access control to individual Special Function Registers (SFRs).
- Integrity of data stored in the NVM is ensured by an ECC checksum
- Integrity of PFlash read path is ensured by monitoring of read parameters in the FSI (MISR, redundant Flip Flops etc.), PFI partial lockstep mechanism, protection of PFlash wait cycles with ECC checksum, protection of data from PFI to CPU by ECC checksum and an additional safety mechanism to ensure that the local PFlash is not being programmed/erased when not expected by PFI.

6.2 Revision History

Table 20 Revision History

Reference	Change to Previous Version	Comment
V2.0.3		
	Created to form a concise introduction chapter for the appendices	
V2.0.4		
	No Changes.	
V2.0.5		
	No Changes.	
V2.0.6		
	No Changes.	
V2.0.7		
	No Changes.	

6.3 Data Memory Unit (DMU)

This chapter supplements the family documentation with the device specific information for TC33x/TC32x.

6.3.1 TC33x/TC32x Specific Register Set

Register Address Space Table

Table 21 Register Address Space - PMU

Module	Base Address	End Address	Note
PMU	$F8038000_H$	$F803FFFF_H$	sri slave interface

Table 22 Register Address Space - DMU

Module	Base Address	End Address	Note
(DMU)	$8FFF0000_H$	$8FFFFFFF_H$	Boot ROM (BROM)
	$AF000000_H$	$AF01FFFF_H$	Data Flash 0 EEPROM (DF0) and Host Command Sequence Interpreter
	$AFC00000_H$	$AFC1FFFF_H$	Data Flash 1 EEPROM (DF1) and HSM Command Sequence Interpreter
	$AFFF0000_H$	$AFFFFFFF_H$	Boot ROM (BROM)
DMU	$F8040000_H$	$F807FFFF_H$	SRI slave interface - Register Address Space
(DMU)	$FFC00000_H$	$FFC1FFFF_H$	Data Flash 1 EEPROM (DF1) and HSM Command Sequence Interpreter

Register Overview Table

Table 23 Register Overview - PMU (ascending Offset Address)

Short Name	Long Name	Offset Address	Access Mode		Reset	Page Number
			Read	Write		
PMU_ID	Module Identification Register	0508_H	U,SV	BE	Application Reset	See Family Spec

Table 24 Register Overview - DMU (ascending Offset Address)

Short Name	Long Name	Offset Address	Access Mode		Reset	Page Number
			Read	Write		
DMU_HF_ID	Module Identification Register	0000008 H	U,SV	BE	Application Reset	See Family Spec
DMU_HF_STATUS	Flash Status Register	0000010 H	U,SV	BE	Application Reset	11

Table 24 Register Overview - DMU (ascending Offset Address) (cont'd)

Short Name	Long Name	Offset Address	Access Mode		Reset	Page Number
			Read	Write		
DMU_HF_CONTROL	Flash Control Register	0000014H	U,SV	P,SV,E	Application Reset	See Family Spec
DMU_HF_OPERATION	Flash Operation Register	0000018H	U,SV	BE	System Reset	See Family Spec
DMU_HF_PROTECT	Flash Protection Status Register	000001CH	U,SV	BE	Application Reset	13
DMU_HF_CONFIRM0	Flash Confirm Status Register 0	0000020H	U,SV	BE	Application Reset	See Family Spec
DMU_HF_CONFIRM1	Flash Confirm Status Register 1	0000024H	U,SV	BE	Application Reset	See Family Spec
DMU_HF_CONFIRM2	Flash Confirm Status Register 2	0000028H	U,SV	BE	Application Reset	See Family Spec
DMU_HF_EER	Enable Error Interrupt Control Register	0000030H	U,SV	P,SV	Application Reset	See Family Spec
DMU_HF_ERRSR	Error Status Register	0000034H	U,SV	BE	Application Reset	See Family Spec
DMU_HF_CLRE	Clear Error Register	0000038H	U,SV	P,SV	Application Reset	See Family Spec
DMU_HF_ECCR	DF0 ECC Read Register	0000040H	U,SV	BE	Application Reset	See Family Spec
DMU_HF_ECCS	DF0 ECC Status Register	0000044H	U,SV	BE	Application Reset	See Family Spec
DMU_HF_ECCC	DF0 ECC Control Register	0000048H	U,SV	P,SV,E	Application Reset	See Family Spec
DMU_HF_ECCW	DF0 ECC Write Register	000004CH	U,SV	P,SV,E	Application Reset	See Family Spec
DMU_HF_CCONTROL	Cranking Control Register	0000050H	U,SV	P,SV	System Reset	See Family Spec

Table 24 Register Overview - DMU (ascending Offset Address) (cont'd)

Short Name	Long Name	Offset Address	Access Mode		Reset	Page Number
			Read	Write		
DMU_HF_PSTATUS	Power Status Register	0000060H	U,SV	BE	Application Reset	See Family Spec
DMU_HF_PCONTROL	Power Control Register	0000064H	U,SV	P,SV	Application Reset	See Family Spec
DMU_HF_PWAIT	PFLASH Wait Cycle Register	0000068H	U,SV	P,SV,E	System Reset	See Family Spec
DMU_HF_DWAIT	DFLASH Wait Cycle Register	000006CH	U,SV	P,SV,E	System Reset	See Family Spec
DMU_HF_PROCONUSR	DF0 User Mode Control	0000074H	U,SV	BE	See Family Spec	See Family Spec
DMU_HF_PROCONPF	PFLASH Protection Configuration	0000080H	U,SV	BE	See Family Spec	See Family Spec
DMU_HF_PROCONTP	Tuning Protection Configuration	0000084H	U,SV	BE	See page 15	15
DMU_HF_PROCONDF	DFLASH Protection Configuration	0000088H	U,SV	BE	See Family Spec	See Family Spec
DMU_HF_PROCONRAM	RAM Configuration	000008CH	U,SV	BE	See Family Spec	See Family Spec
DMU_HF_PROCONDBG	Debug Interface Protection Configuration	0000090H	U,SV	BE	See Family Spec	See Family Spec
DMU_HF_SUSPEND	Suspend Control Register	00000F0H	U,SV	P,U,SV	Application Reset	See Family Spec
DMU_HF_MARGIN	Margin Control Register	00000F4H	U,SV	P,U,SV	Application Reset	See Family Spec
DMU_HF_ACCEN1	Access Enable Register 1	00000F8H	U,SV	SV,SE	Application Reset	See Family Spec
DMU_HF_ACCEN0	Access Enable Register 0	00000FCH	U,SV	SV,SE	Application Reset	See Family Spec

Table 24 Register Overview - DMU (ascending Offset Address) (cont'd)

Short Name	Long Name	Offset Address	Access Mode		Reset	Page Number
			Read	Write		
DMU_HP_PROCONPi0 (i=0)	PFLASH Bank i Protection Configuration 0	0010000H	U,SV	BE	See Family Spec	See Family Spec
DMU_HP_PROCONPi1 (i=0)	PFLASH Bank i Protection Configuration 1	0010004H	U,SV	BE	See Family Spec	See Family Spec
DMU_HP_PROCONPi2 (i=0)	PFLASH Bank i Protection Configuration 2	0010008H	U,SV	BE	See Family Spec	See Family Spec
DMU_HP_PROCONPi3 (i=0)	PFLASH Bank i Protection Configuration 3	001000CH	U,SV	BE	See Family Spec	See Family Spec
DMU_HP_PROCONPi4 (i=0)	PFLASH Bank i Protection Configuration 4	0010010H	U,SV	BE	See Family Spec	See Family Spec
DMU_HP_PROCONPi5 (i=0)	PFLASH Bank i Protection Configuration 5	0010014H	U,SV	BE	See Family Spec	See Family Spec
DMU_HP_PROCONOTPi0 (i=0)	PFLASH Bank i OTP Protection Configuration 0	0010040H	U,SV	BE	See Family Spec	See Family Spec
DMU_HP_PROCONOTPi1 (i=0)	PFLASH Bank i OTP Protection Configuration 1	0010044H	U,SV	BE	See Family Spec	See Family Spec
DMU_HP_PROCONOTPi2 (i=0)	PFLASH Bank i OTP Protection Configuration 2	0010048H	U,SV	BE	See Family Spec	See Family Spec
DMU_HP_PROCONOTPi3 (i=0)	PFLASH Bank i OTP Protection Configuration 3	001004CH	U,SV	BE	See Family Spec	See Family Spec
DMU_HP_PROCONOTPi4 (i=0)	PFLASH Bank i OTP Protection Configuration 4	0010050H	U,SV	BE	See Family Spec	See Family Spec
DMU_HP_PROCONOTPi5 (i=0)	PFLASH Bank i OTP Protection Configuration 5	0010054H	U,SV	BE	See Family Spec	See Family Spec
DMU_HP_PROCONWOPi0 (i=0)	PFLASH Bank i WOP Configuration 0	0010080H	U,SV	BE	See Family Spec	See Family Spec
DMU_HP_PROCONWOPi1 (i=0)	PFLASH Bank i WOP Configuration 1	0010084H	U,SV	BE	See Family Spec	See Family Spec

Table 24 Register Overview - DMU (ascending Offset Address) (cont'd)

Short Name	Long Name	Offset Address	Access Mode		Reset	Page Number
			Read	Write		
DMU_HP_PROCONWOPi2 (i=0)	PFLASH Bank i WOP Configuration 2	0010088H	U,SV	BE	See Family Spec	See Family Spec
DMU_HP_PROCONWOPi3 (i=0)	PFLASH Bank i WOP Configuration 3	001008CH	U,SV	BE	See Family Spec	See Family Spec
DMU_HP_PROCONWOPi4 (i=0)	PFLASH Bank i WOP Configuration 4	0010090H	U,SV	BE	See Family Spec	See Family Spec
DMU_HP_PROCONWOPi5 (i=0)	PFLASH Bank i WOP Configuration 5	0010094H	U,SV	BE	See Family Spec	See Family Spec
DMU_HP_ECPRIOi0 (i=0)	PFLASH Bank i Erase Counter Priority configuration 0	00100A0H	U,SV	BE	See Family Spec	See Family Spec
DMU_HP_ECPRIOi1 (i=0)	PFLASH Bank i Erase Counter Priority Configuration 1	00100A4H	U,SV	BE	See Family Spec	See Family Spec
DMU_HP_ECPRIOi2 (i=0)	PFLASH Bank i Erase Counter Priority Configuration 2	00100A8H	U,SV	BE	See Family Spec	See Family Spec
DMU_HP_ECPRIOi3 (i=0)	PFLASH Bank i Erase Counter Priority Configuration 3	00100ACH	U,SV	BE	See Family Spec	See Family Spec
DMU_HP_ECPRIOi4 (i=0)	PFLASH Bank i Erase Counter Priority Configuration 4	00100B0H	U,SV	BE	See Family Spec	See Family Spec
DMU_HP_ECPRIOi5 (i=0)	PFLASH Bank i Erase Counter Priority Configuration 5	00100B4H	U,SV	BE	See Family Spec	See Family Spec
DMU_SF_STATUS	HSM Flash Status Register	0020010H	H	BE	Application Reset	See Family Spec
DMU_SF_CONTROL	HSM Flash Configuration Register	0020014H	H	H	Application Reset	See Family Spec
DMU_SF_OPERATION	HSM Flash Operation Register	0020018H	H	BE	System Reset	See Family Spec
DMU_SF_EER	HSM Enable Error Interrupt Control Register	0020030H	H	H	Application Reset	See Family Spec

Table 24 Register Overview - DMU (ascending Offset Address) (cont'd)

Short Name	Long Name	Offset Address	Access Mode		Reset	Page Number
			Read	Write		
DMU_SF_ERRSR	HSM Error Status Register	0020034 H	H	BE	Application Reset	See Family Spec
DMU_SF_CLRE	HSM Clear Error Register	0020038 H	H	H	Application Reset	See Family Spec
DMU_SF_ECCR	HSM DF1 ECC Read Register	0020040 H	H	BE	Application Reset	See Family Spec
DMU_SF_ECCS	HSM DF1 ECC Status Register	0020044 H	H	BE	Application Reset	See Family Spec
DMU_SF_ECCC	HSM DF1 ECC Control Register	0020048 H	H	H	Application Reset	See Family Spec
DMU_SF_ECCW	HSM DF1 ECC Write Register	002004C H	H	H	Application Reset	See Family Spec
DMU_SF_PROCONUSR	HSM DF1 User Mode Control	0020074 H	U,SV	BE	See Family Spec	See Family Spec
DMU_SF_SUSPEND	HSM Suspend Control Register	00200E8 H	H	H	Application Reset	See Family Spec
DMU_SF_MARGIN	HSM DF1 Margin Control Register	00200EC H	H	H	Application Reset	See Family Spec
DMU_SP_PROCONHSMCFG	HSM Protection Configuration	0030000 H	U,SV	BE	See Family Spec	See Family Spec
DMU_SP_PROCONHSMCBS	HSM Code Boot Sector	0030004 H	U,SV	BE	See Family Spec	See Family Spec
DMU_SP_PROCONHSMCX0	HSM Code Exclusive Protection Configuration	0030008 H	U,SV	BE	See Family Spec	See Family Spec
DMU_SP_PROCONHSMCX1	HSM Code Exclusive Protection Configuration	003000C H	U,SV	BE	See Family Spec	See Family Spec
DMU_SP_PROCONHSMCOTP0	HSM Code OTP Protection Configuration	0030010 H	U,SV	BE	See Family Spec	See Family Spec

Table 24 Register Overview - DMU (ascending Offset Address) (cont'd)

Short Name	Long Name	Offset Address	Access Mode		Reset	Page Number
			Read	Write		
DMU_SP_PROCONHSMCOTP1	HSM Code OTP Protection Configuration	0030014H	U,SV	BE	See Family Spec	See Family Spec
DMU_SP_PROCONHSM	HSM Interface Protection Configuration	0030040H	U,SV	BE	See Family Spec	See Family Spec

6.3.2 TC33x/TC32x Specific Registers

6.3.2.1 SRI slave interface - Register Address Space

Flash Status Register

The Flash Status Register reflects the status of the Flash Banks after reset.

Note: The DxBUSY and PxBUSY flags cannot be cleared with the "Clear Status" command or with the "Reset to Read" command. These flags are controlled by HW.

Note: After every reset, the busy bits are set while the Flash module is busy with startup (until the operation mode is entered). Also the protection installation bits are always set until end of startup.

DMU_HF_STATUS
Flash Status Register (0000010$_H$) Application Reset Value: 0000 00FF$_H$

31	30	29	28	27	26	25	24	23	22	21	20	19	18	17	16
RES						RES		RES	RES	PFPAGE	DFPAGE	RES	RES	RES	RES
r						rX		r	rX	rh	rh	rX	rX	rX	rX

15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
RES								RES	RES	RES	RES	RES	P0BUSY	D1BUSY	D0BUSY
r								r	r	r	r	r	rh	rh	rh

Field	Bits	Type	Description
D0BUSY	0	rh	**Data Flash Bank 0 Busy** HW-controlled status flag. Indication of busy state of DFLASH bank 0 because of active execution of an operation; DF0 busy state is also indicated during Flash startup after reset or in sleep mode; while in busy state the DF0 does not allow read access. 0_B DF0 ready, not busy; DF0 in operation mode. 1_B DF0 busy; DF0 not in operation mode.

Field	Bits	Type	Description
D1BUSY	1	rh	**Data Flash Bank 1 Busy** HW-controlled status flag. Indication of busy state of DFLASH bank 1 because of active execution of an operation; DF1 busy state is also indicated during Flash startup after reset or in sleep mode; while in busy state the DF1 does not allow read access. Bit is not set for program/erase operations initiated by the HSM interface. 0_B DF1 ready, not busy; DF1 in operation mode. 1_B DF1 busy; DF1 not in operation mode.
PxBUSY (x=0)	x+2	rh	**Program Flash PFxBUSY** HW-controlled status flag. Indication of busy state of PFx because of active execution of an operation; PFx busy state is also indicated during Flash startup after reset or in sleep mode; while in busy state the PFx does not allow read access. 0_B PFx ready, not busy; PFx in operation mode. 1_B PFx busy; PFx not in operation mode.
RES (x=1-5)	x+2	r	**Reserved** Always read as 0; should be written with 0.
RES	15:8, 23, 31:26	r	**Reserved** Always read as 0; should be written with 0.
RES	16, 17, 18, 19, 22, 25:24	rX	**Reserved** Undefined.
DFPAGE	20	rh	**Data Flash in Page Mode** HW-controlled status flag. Set with Enter Page Mode for DFLASH, cleared with Write Page command. This bit is not set by “Enter Page Mode” initiated by the HSM interface. *Note: Read accesses are allowed while in page mode.* 0_B Data Flash not in page mode 1_B Data Flash in page mode

Field	Bits	Type	Description
PFPAGE	21	rh	**Program Flash in Page Mode** HW-controlled status flag. Set with Enter Page Mode for Flash, cleared with Write Page command This bit is not set by “Enter Page Mode” initiated by the HSM interface. *Note: Read accesses are allowed while in page mode.* 0_B Flash not in page mode. 1_B Flash in page mode.

Flash Protection Status Register

This register reports the state of the Flash protection and contains protection relevant control fields.

DMU_HF_PROTECT
Flash Protection Status Register **($000001C_H$)** **Application Reset Value: $0000\ 0000_H$**

31	30	29	28	27	26	25	24	23	22	21	20	19	18	17	16
RES							SRT	RES							
r							rh	r							

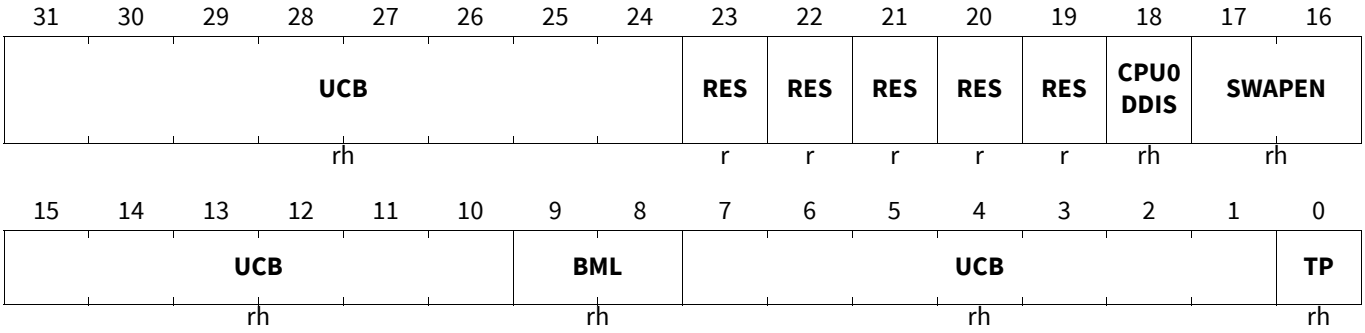
15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
RES		RES	RES	RES	RES	RES	PRODISP0	RES		PRODISSWAP	PRODISBMHD	PRODISEC	PRODISDBG	PRODISD	PRODISP
r		r	r	r	r	r	rh	r		rh	rh	rh	rh	rh	rh

Field	Bits	Type	Description
PRODISP	0	rh	**PFLASH Protection Disabled** The protection configured by UCB_PFLASH_ORIG and UCB_PFLASH_COPY was successfully disabled by supplying the correct password to “Disable Protection”. *Note: Cleared with command “Resume Protection”.*
PRODISD	1	rh	**DFLASH Protection Disabled** The protection configured by UCB_DFLASH_ORIG and UCB_DFLASH_COPY was successfully disabled by supplying the correct password to “Disable Protection”. *Note: Cleared with command “Resume Protection”.*
PRODISDBG	2	rh	**Debug Interface Password Protection Disabled** The password configured by UCB_DBG_ORIG and UCB_DBG_COPY was correctly received with “Disable Protection”. When DMU_SP_PROCONHSMCFG.DESTDBG is “destructive” then only the SSW can disable this protection. *Note: Cleared with command “Resume Protection”.*

Field	Bits	Type	Description
PRODISEC	3	rh	**Erase Counter Priority Protection Disabled** The protection configured by UCB_ECPRIO_ORIG and UCB_ECPRIO_COPY was successfully disabled by supplying the correct password to “Disable Protection”. *Note: Cleared with command "Resume Protection".*
PRODISBMHD	4	rh	**BMHD Protection Disabled** The protection configured by UCB_BMHD0_ORIG and UCB_BMHD0_COPY was successfully disabled by supplying the correct password to “Disable Protection”. *Note: Cleared with command "Resume Protection".*
PRODISSWAP	5	rh	**UCB_SWAP protection Disabled** The protection configured by UCB_SWAP_ORIG and UCB_SWAP_COPY was successfully disabled by supplying the correct password to “Disable Protection”. *Note: Cleared with command "Resume Protection".*
RES	7:6, 23:14, 31:25	r	**Reserved** Always read as 0; should be written with 0.
PRODISPx (x=0)	x+8	rh	**Program Flash Protection Disable PRODISPx** The protection configured for PFx by UCB_PFLASH_ORIG and UCB_PFLASH_COPY was successfully disabled by supplying the correct password to “Disable Protection”. *Note: Cleared with command "Resume Protection".*
RES (x=1-5)	x+8	r	**Reserved** Always read as 0; should be written with 0.
SRT	24	rh	**Secure Retest Password Protection Disabled** *Note: Cleared with command “Resume Protection”.* 0_B Secure Retest protection is not disabled. 1_B Secure Retest protection is disabled.

Tuning Protection Configuration

DMU_HF_PROCONTP
Tuning Protection Configuration **(0000084$_H$)** **Reset Value: Table 25**



Field	Bits	Type	Description
TP	0	rh	**Tuning Protection** This bit indicates whether tuning protection is installed or not. 0_B Tuning protection is not configured. 1_B Tuning protection is configured and installed, if correctly confirmed.
UCB	7:1, 15:10, 31:24	rh	**Reserved for UCB** Deliver the corresponding content of UCB.
BML	9:8	rh	**Boot Mode Lock** Used by the SSW to restrict the boot mode selection. 00_B Boot flow with standard evaluation of boot headers. 01_B Restricted boot flow, never evaluating HWCFG pins and without fallback to boot loader. … 11_B Restricted boot flow, never evaluating HWCFG pins and without fallback to boot loader.
SWAPEN	17:16	rh	**Enable SOTA mode** This field enables the entry into "Software update Over the Air(SOTA) mode". In this mode, an alternate PFLASH address map can be selected. Please refer to the SOTA section of the Introduction chapter for more details. 00_B **Disabled**, SOTA mode disabled. … 10_B **Disabled**, SOTA mode disabled. 11_B **Enabled**, SOTA mode enabled.
CPUxDDIS (x=0)	x+18	rh	**Disable direct LPB access** Disable direct LPB access by the CPU to the Local PFlash Bank (LPB). 0_B Direct LPB access is enabled. 1_B Direct LPB access is disabled.
RES (x=1-5)	x+18	r	**Reserved** Always read as 0; should be written with 0.

Table 25 Reset Values of DMU_HF_PROCONTP

Reset Type	Reset Value	Note
Application Reset	$0000\ 0000_H$	
CFS Value	$0000\ 0000_H$	

6.3.3 Connectivity

Table 26 Connections of DMU

Interface Signals	connects		Description
DMU:HOST_INT	to	INT:dmu.HOST_INT	PMU Host Service Request
DMU:FSI_INT	to	INT:dmu.FSI_INT	PMU FSI Service Request

6.3.4 Revision History

Table 27 Revision History

Reference	Change to Previous Version	Comment
V2.0.9		
	No document changes - version update to remain aligned with family document.	
V2.0.10		
	No document changes - version update to remain aligned with family document.	
V2.0.11		
Page 11	Updated register **DMU_HF_STATUS**.	
Page 16	**Connectivity** - Table updated.	
	No functional changes.	
V2.0.12		
–	No functional changes.	

6.4 Non Volatile Memory (NVM)

This chapter supplements the family documentation with the device specific information for TC33x/TC32x.

6.4.1 TC33x/TC32x Specific Register Set

Register Address Space Table

Table 28 Register Address Space - FSI

Module	Base Address	End Address	Note
FSI	$F8030000_H$	$F80300FF_H$	sri slave interface

Table 29 Register Address Space - PFI

Module	Base Address	End Address	Note
(PFI0)	80000000_H	$801FFFFF_H$	Program Flash cached address space
	$A0000000_H$	$A01FFFFF_H$	Program Flash non-cached address space
	$A8000000_H$	$A8003FFF_H$	Erase Counter address space
PFI0	$A8080000_H$	$A80FFFFF_H$	Register address space

Register Overview Table

Table 30 Register Overview - FSI (ascending Offset Address)

Short Name	Long Name	Offset Address	Access Mode		Reset	Page Number
			Read	Write		
FSI_COMM_1	Communication Register 1	0004_H	U,SV	U,SV	System Reset	See Family Spec
FSI_COMM_2	Communication Register 2	0005_H	U,SV	U,SV	System Reset	See Family Spec
FSI_HSMCOMM_1	HSM Communication Register 1	0006_H	H	H	System Reset	See Family Spec
FSI_HSMCOMM_2	HSM Communication Register 2	0007_H	H	H	System Reset	See Family Spec

Table 31 Register Overview - PFI (ascending Offset Address)

Short Name	Long Name	Offset Address	Page Number
PFI0_ECCR	ECC Read Register	000000_H	See Family Spec
PFI0_ECCS	ECC Status Register	000020_H	See Family Spec
PFI0_SBABRECORDx (x=0-16)	SBAB Record x	002000_H+x*20 H	See Family Spec
PFI0_DBABRECORDx (x=0-1)	DBAB Record x	004000_H+x*20 H	See Family Spec
PFI0_MBABRECORDx (x=0)	MBAB Record 0	008000_H	See Family Spec
PFI0_ZBABRECORDx (x=0-3)	ZBAB Record x	$00C000_H$+x*20 H	See Family Spec

6.4.2 Connectivity

No connections in device.

6.4.3 Revision History

Table 32 Revision History

Reference	Change to Previous Version	Comment
V2.0.4		
	No document changes - version update to remain aligned with family document.	
V2.0.5		
Page 17	**Register Address Space Table** - Corrected PFI address ranges to match size. PFI instances not used in this device removed.	
V2.0.6		
	No functional changes.	

7 Local Memory Unit (LMU)

This device doesn’t contain a LMU module.

8 Default Application Memory (LMU_DAM)

This device doesn’t contain LMU_DAM.

9 System Control Unit (SCU)

This chapter describes the System Control Unit (short SCU) Module of the TC33x/TC32x.

9.1 TC33x/TC32x Specific IP Configuration

Table 33 TC33x/TC32x specific configuration of SCU

Parameter	SCU
Number of WDT linked to the number of CPU	1
Name of the ssw value	After SSW execution
CFS value for DTSCBGOCTRL register	40_H
CFS value for DTSCCON register	200_H

The following sections describe several differences that are device specific at the SCU level.

9.1.1 LBIST considerations for TC33x/TC32x

The LBIST function can be controlled via four registers available at SCU level: LBISTCTRL0, LBISTCTRL1, LBISTCTRL2 and LBISTCTRL3 (for a complete description of these register, please address the family specification).

The LBISTCTRL3 register contains the MISR signature value that can be read back via software, after the LBIST execution (and the execution is valid).

9.1.1.1 TC33x AA

LBIST Configuration A

LBISTCTRL0.PATTERNS = 0x140;

LBISTCTRL2.LENGTH = 0x39;

With LBISTCTRL1.BODY = 0:

- LBISTCTRL1 = 0x54000007
- LBISTCTRL3 = 0x740EF25A

With LBISTCTRL1.BODY = 1:

- LBISTCTRL1 = 0x5C000007
- LBISTCTRL3 = 0x8AA15905

9.2 TC33x/TC32x Specific Register Set

The address space for the module registers is defined in **Register Address Space - SCU**.

Table 34 Register Address Space - SCU

Module	Base Address	End Address	Note
SCU	$F0036000_H$	$F00363FF_H$	SCU: Connections to FPI/BPI bus

Table 35 Register Overview - SCU (ascending Offset Address)

Short Name	Long Name	Offset Address	Access Mode		Reset	Page Number
			Read	Write		
	Reserved (0010_H Byte)	0000_H	BE	BE		
SCU_ID	Identification Register	0008_H	U,SV	BE	System Reset	See Family Spec
	Reserved (0010_H Byte)	$000C_H$	BE	BE		
SCU_OSCCON	OSC Control Register	0010_H	U,SV	SV,SE,P0	See Family Spec	See Family Spec
SCU_SYSPLLSTAT	System PLL Status Register	0014_H	U,SV	BE	See Family Spec	See Family Spec
SCU_SYSPLLCON0	System PLL Configuration 0 Register	0018_H	U,SV	SV,SE,P0	System Reset	See Family Spec
SCU_SYSPLLCON1	System PLL Configuration 1 Register	$001C_H$	U,SV	SV,SE,P0	System Reset	See Family Spec
SCU_SYSPLLCON2	System PLL Configuration 2 Register	0020_H	U,SV	SV,SE,P0	System Reset	See Family Spec
SCU_PERPLLSTAT	Peripheral PLL Status Register	0024_H	U,SV	BE	System Reset	See Family Spec
SCU_PERPLLCON0	Peripheral PLL Configuration 0 Register	0028_H	U,SV	SV,SE,P0	System Reset	See Family Spec
SCU_PERPLLCON1	Peripheral PLL Configuration 1 Register	$002C_H$	U,SV	SV,SE,P0	System Reset	See Family Spec
SCU_CCUCON0	CCU Clock Control Register 0	0030_H	U,SV	SV,SE,P0	See Family Spec	See Family Spec

Table 35 Register Overview - SCU (ascending Offset Address) (cont'd)

Short Name	Long Name	Offset Address	Access Mode		Reset	Page Number
			Read	Write		
SCU_CCUCON1	CCU Clock Control Register 1	0034_H	U,SV	SV,SE,P0	System Reset	See Family Spec
SCU_FDR	Fractional Divider Register	0038_H	U,SV	SV,SE,P0	System Reset	See Family Spec
SCU_EXTCON	External Clock Control Register	$003C_H$	U,SV	SV,SE,P0	System Reset	See Family Spec
SCU_CCUCON2	CCU Clock Control Register 2	0040_H	U,SV	SV,SE,P0	System Reset	See Family Spec
SCU_CCUCON3	CCU Clock Control Register 3	0044_H	U,SV	SV,SE,P0	System Reset	See Family Spec
SCU_CCUCON4	CCU Clock Control Register 4	0048_H	U,SV	SV,SE,P0	System Reset	See Family Spec
SCU_CCUCON5	CCU Clock Control Register 5	$004C_H$	U,SV	SV,SE,P0	System Reset	See Family Spec
SCU_RSTSTAT	Reset Status Register	0050_H	U,SV	BE	See page **15**	**15**
	Reserved (0004_H Byte)	0054_H	BE	BE		
SCU_RSTCON	Reset Configuration Register	0058_H	U,SV	SV,SE,P0	See page **17**	**17**
SCU_ARSTDIS	Application Reset Disable Register	$005C_H$	U,SV	SV,E,P0	PowerOn Reset	**19**
SCU_SWRSTCON	Software Reset Configuration Register	0060_H	U,SV	SV,E,P0	See Family Spec	See Family Spec
SCU_RSTCON2	Additional Reset Control Register	0064_H	U,SV	SV,E,P0	See Family Spec	See Family Spec
SCU_RSTCON3	Reset Configuration Register 3	0068_H	U,SV	SV,E,P0	See Family Spec	See Family Spec
	Reserved (0004_H Byte)	$006C_H$	BE	BE		
SCU_ESRCFGx (x=0-1)	ESRx Input Configuration Register	0070_H+x *4	U,SV	SV,E,P0	System Reset	See Family Spec

Table 35 Register Overview - SCU (ascending Offset Address) (cont'd)

Short Name	Long Name	Offset Address	Access Mode		Reset	Page Number
			Read	Write		
SCU_ESROCFG	ESR Output Configuration Register	0078_H	U,SV	SV,E,P0	System Reset	See Family Spec
SCU_SYSCON	System Control Register	$007C_H$	U,SV	U,SV,P0	System Reset	See Family Spec
SCU_CCUCON6	CCU Clock Control Register 6	0080_H	U,SV	SV,SE,P0	System Reset	See Family Spec
SCU_CCUCON7	CCU Clock Control Register 7	0084_H	U,SV	SV,SE,P0	System Reset	See Family Spec
	Reserved (0004_H Byte)	0098_H	BE	BE		
SCU_PDR	ESR Pad Driver Mode Register	$009C_H$	U,SV	SV,E,P0	System Reset	See Family Spec
SCU_IOCR	Input/Output Control Register	$00A0_H$	U,SV	U,SV,P0	System Reset	See Family Spec
SCU_OUT	ESR Output Register	$00A4_H$	U,SV	U,SV,P0	System Reset	See Family Spec
SCU_OMR	ESR Output Modification Register	$00A8_H$	U,SV	U,SV,P0	System Reset	See Family Spec
SCU_IN	ESR Input Register	$00AC_H$	U,SV	BE	System Reset	See Family Spec
	Reserved (0004_H Byte)	$00BC_H$	BE	BE		
SCU_STSTAT	Start-up Status Register	$00C0_H$	U,SV	BE	PowerOn Reset	See Family Spec
SCU_STCON	Start-up Configuration Register	$00C4_H$	U,SV	ST,P0	Application Reset	See Family Spec
SCU_PMCSR0	Power Management Control and Status Register	$00C8_H$	U,SV	SE,CE0,SV, P0	Application Reset	See Family Spec
SCU_PMCSR1	Power Management Control and Status Register	$00CC_H$	U,SV	SE,CE1,SV, P0	Application Reset	See Family Spec

Table 35 Register Overview - SCU (ascending Offset Address) (cont'd)

Short Name	Long Name	Offset Address	Access Mode		Reset	Page Number
			Read	Write		
SCU_PMCSR2	Power Management Control and Status Register	$00D0_H$	U,SV	SE,CE2,SV, P0	Application Reset	See Family Spec
SCU_PMCSR3	Power Management Control and Status Register	$00D4_H$	U,SV	SE,CE3,SV, P0	Application Reset	See Family Spec
SCU_PMCSR4	Power Management Control and Status Register	$00D8_H$	U,SV	SE,CE4,SV, P0	Application Reset	See Family Spec
SCU_PMCSR5	Power Management Control and Status Register	$00DC_H$	U,SV	SE,CE5,SV, P0	Application Reset	See Family Spec
SCU_PMSTAT0	Power Management Status Register 0	$00E4_H$	U,SV	BE	Application Reset	See Family Spec
SCU_PMSWCR1	Standby and Wake-up Control Register 1	$00E8_H$	U,SV	SV,SE,P0	Cold PowerOn Reset	See Family Spec
	Reserved (0020_H Byte)	$00F0_H$	BE	BE		
SCU_EMSR	Emergency Stop Register	$00FC_H$	U,SV	SV,SE,P0	Application Reset	See Family Spec
SCU_EMSSW	Emergency Stop Software set and clear register	0100_H	U,SV	U,SV,P0	Application Reset	See Family Spec
SCU_DTSCSTAT	Core Die Temperature Sensor Status Register	0104_H	U,SV	BE	Application Reset	See Family Spec
SCU_DTSCLIM	Core Die Temperature Sensor Limit Register	0108_H	U,SV	U,SV,P	Application Reset	See Family Spec
	Reserved (0060_H Byte)	0114_H	BE	BE		
SCU_TRAPDIS1	Trap Disable Register 1	0120_H	U,SV	SV,E,P0	Application Reset	19
SCU_TRAPSTAT	Trap Status Register	0124_H	U,SV	BE	System Reset	See Family Spec
SCU_TRAPSET	Trap Set Register	0128_H	U,SV	SV,E,P0	System Reset	See Family Spec

Table 35 Register Overview - SCU (ascending Offset Address) (cont'd)

Short Name	Long Name	Offset Address	Access Mode		Reset	Page Number
			Read	Write		
SCU_TRAPCLR	Trap Clear Register	$012C_H$	U,SV	U,SV,P0	System Reset	See Family Spec
SCU_TRAPDIS0	Trap Disable Register 0	0130_H	U,SV	SV,E,P0	Application Reset	20
SCU_LCLCON0	LCL CPU0 and CPU2 Control Register	0134_H	U,SV	SV,SE,ST,P0	See page 10	10
SCU_LCLCON1	LCL CPU1 and CPU3 Control Register	0138_H	U,SV	SV,SE,ST,P0	See page 10	10
SCU_LCLTEST	LCL Test Register	$013C_H$	U,SV	U,SV,P0	System Reset	11
SCU_CHIPID	Chip Identification Register	0140_H	U,SV	ST,P0	See Family Spec	See Family Spec
SCU_MANID	Manufacturer Identification Register	0144_H	U,SV	BE	System Reset	See Family Spec
SCU_SWAPCTRL	Address Map Control Register	$014C_H$	U,SV	ST,P0	System Reset	See Family Spec
	Reserved (0060_H Byte)	0158_H	BE	BE		
	Reserved (0060_H Byte)	$015C_H$	BE	BE		
	Reserved (0060_H Byte)	0160_H	BE	BE		
SCU_LBISTCTRL0	Logic BIST Control 0 Register	0164_H	U,SV	SV,SE,P0	See Family Spec	See Family Spec
SCU_LBISTCTRL1	Logic BIST Control 1 Register	0168_H	U,SV	SV,SE,P0	See Family Spec	See Family Spec
SCU_LBISTCTRL2	Logic BIST Control 2 Register	$016C_H$	U,SV	SV,SE,P0	See page 12	12
SCU_LBISTCTRL3	Logic BIST Control 3 Register	0170_H	U,SV	BE	See Family Spec	See Family Spec
	Reserved (0020_H Byte)	0178_H	BE	BE		
SCU_STMEM1	Start-up Memory Register 1	0184_H	U,SV	ST,P0	PowerOn Reset	See Family Spec
SCU_STMEM2	Start-up Memory Register 2	0188_H	U,SV	ST,P0	System Reset	See Family Spec

Table 35 Register Overview - SCU (ascending Offset Address) (cont'd)

Short Name	Long Name	Offset Address	Access Mode		Reset	Page Number
			Read	Write		
SCU_PDISC	Pad Disable Control Register	$018C_H$	U,SV	SV,E,P0	System Reset	See Family Spec
	Reserved (0020_H Byte)	0194_H	BE	BE		
SCU_PMTRCSR0	Power Management Transition Control and Status Register 0	0198_H	U,SV	SV,SE,P0	Cold PowerOn Reset	See Family Spec
SCU_PMTRCSR1	Power Management Transition Control and Status Register 1	$019C_H$	U,SV	SV,SE,P0	Cold PowerOn Reset	See Family Spec
SCU_PMTRCSR2	Power Management Transition Control and Status Register 2	$01A0_H$	U,SV	SV,SE,P0	Cold PowerOn Reset	See Family Spec
SCU_PMTRCSR3	Power Management Transition Control and Status Register 3	$01A4_H$	U,SV	SV,SE,P0	Cold PowerOn Reset	See Family Spec
SCU_STMEM3	Start-up Memory Register 3	$01C0_H$	U,SV	ST,P0	Application Reset	See Family Spec
SCU_STMEM4	Start-up Memory Register 4	$01C4_H$	U,SV	ST,P0	Cold PowerOn Reset	See Family Spec
SCU_STMEM5	Start-up Memory Register 5	$01C8_H$	U,SV	ST,P0	PowerOn Reset	See Family Spec
SCU_STMEM6	Start-up Memory Register 6	$01CC_H$	U,SV	ST,P0	System Reset	See Family Spec
SCU_OVCENABLE	Overlay Enable Register	$01E0_H$	U,SV	SV,SE,P0	Application Reset	13
SCU_OVCCON	Overlay Control Register	$01E4_H$	U,SV	SV,P0	Application Reset	13
SCU_EIFILT	External Input Filter Register	$020C_H$	U,SV	SE,SV,P0	Application Reset	See Family Spec
SCU_EICRi (i=0-3)	External Input Channel Register i	0210_H+i*4	U,SV	SE,SV,P0	Application Reset	See Family Spec
SCU_EIFR	External Input Flag Register	0220_H	U,SV	BE	Application Reset	See Family Spec

Table 35 Register Overview - SCU (ascending Offset Address) (cont'd)

Short Name	Long Name	Offset Address	Access Mode		Reset	Page Number
			Read	Write		
SCU_FMR	Flag Modification Register	0224_H	U,SV	U,SV,P0	Application Reset	See Family Spec
SCU_PDRR	Pattern Detection Result Register	0228_H	U,SV	BE	Application Reset	See Family Spec
SCU_IGCRj (j=0-3)	Flag Gating Register j	$022C_H$+j* 4	U,SV	SE,SV,P0	Application Reset	See Family Spec
	Reserved (0030_H Byte)	$023C_H$	BE	BE		
SCU_WDTCPUyCON0 (y=0)	CPUy WDT Control Register 0	$024C_H$	U,SV	U,SV,32,CPUy (y=CPU number)	Application Reset	See Family Spec
SCU_WDTCPUyCON1 (y=0)	CPUy WDT Control Register 1	0250_H	U,SV	SV,CEy,P0	Application Reset	See Family Spec
SCU_WDTCPUySR (y=0)	CPUy WDT Status Register	0254_H	U,SV	BE	Application Reset	See Family Spec
	Reserved (0030_H Byte)	0264_H	BE	BE		
SCU_EICON0	ENDINIT Global Control Register 0	$029C_H$	U,SV	U,SV,32,P0	Application Reset	See Family Spec
SCU_EICON1	ENDINIT Global Control Register 1	$02A0_H$	U,SV	SV,E,P0	Application Reset	See Family Spec
SCU_EISR	ENDINIT Timeout Counter Status Register	$02A4_H$	U,SV	BE	Application Reset	See Family Spec
SCU_WDTSCON0	Safety WDT Control Register 0	$02A8_H$	U,SV	U,SV,32,P1	Application Reset	See Family Spec
SCU_WDTSCON1	Safety WDT Control Register 1	$02AC_H$	U,SV	SV,SE,P1	Application Reset	See Family Spec
SCU_WDTSSR	Safety WDT Status Register	$02B0_H$	U,SV	BE	Application Reset	See Family Spec
SCU_SEICON0	Safety ENDINIT Control Register 0	$02B4_H$	U,SV	U,SV,32,P1	Application Reset	See Family Spec

Table 35 Register Overview - SCU (ascending Offset Address) (cont'd)

Short Name	Long Name	Offset Address	Access Mode		Reset	Page Number
			Read	Write		
SCU_SEICON1	Safety ENDINIT Control Register 1	$02B8_H$	U,SV	SV,SE,P1	Application Reset	See Family Spec
SCU_SEISR	Safety ENDINIT Timeout Status Register	$02BC_H$	U,SV	BE	Application Reset	See Family Spec
	Reserved (0440_H Byte)	$02DC_H$	BE	BE		
SCU_ACCEN11	Access Enable Register 11	$03F0_H$	U,SV	SV,SE	Application Reset	See Family Spec
SCU_ACCEN10	Access Enable Register 10	$03F4_H$	U,SV	SV,SE	Application Reset	See Family Spec
SCU_ACCEN01	Access Enable Register 01	$03F8_H$	U,SV	SV,SE	Application Reset	See Family Spec
SCU_ACCEN00	Access Enable Register 00	$03FC_H$	U,SV	SV,SE	Application Reset	See Family Spec
	Reserved (0440_H Byte)	0400_H	BE	BE		

9.3 TC33x/TC32x Specific Registers

9.3.1 SCU: Connections to FPI/BPI bus

LCL CPU0 and CPU2 Control Register

Provides control for CPU0and CPU2 Lockstep Comparator Logic blocks.

SCU_LCLCON0

LCL CPU0 and CPU2 Control Register **(0134_H)** **Reset Value: Table 36**

31	30	29	28	27	26	25	24	23	22	21	20	19	18	17	16
LSEN0								**0**							**LS0**
rw								r							rh

15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
1								**0**							**0**
rw								r							r

Field	Bits	Type	Description
LS0	16	rh	**Lockstep Mode Status** This bit indicates whether CPU0 is currently running in lockstep monitor mode 0_B Not in lockstep mode 1_B Running in lockstep mode
LSEN0	31	rw	**Lockstep Enable** This bit may only be written by SSW during boot. Enable lockstep CPU monitoring for the associated processor core, CPU0. After cold reset, lockstep is enabled by default. The LSEN bit may be cleared during the boot to disable lockstep mode. SMU lockstep fault reporting should be disabled when lockstep is disabled. 0_B Lockstep is disabled 1_B Lockstep enabled (Default after Cold Power-On Reset)
0	0, 14:1, 30:17	r	**Reserved in this product** Reserved
1	15	rw	**Reserved in this product** Reserved

Table 36 Reset Values of SCU_LCLCON0

Reset Type	Reset Value	Note
Cold PowerOn Reset	$8001\ 0000_H$	

LCL CPU1 and CPU3 Control Register

Provides control for CPU1 and CPU3 Lockstep Comparator Logic blocks.

SCU_LCLCON1

LCL CPU1 and CPU3 Control Register **(0138_H)** **Reset Value: Table 37**

31	30	29	28	27	26	25	24	23	22	21	20	19	18	17	16
1								**0**							**0**
rw								r							r

15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
1								**0**							**0**
rw								r							r

Field	Bits	Type	Description
0	0, 14:1, 16, 30:17	r	**Reserved in this product** Reserved
1	15, 31	rw	**Reserved in this product** Reserved

Table 37 Reset Values of SCU_LCLCON1

Reset Type	Reset Value	Note
Cold PowerOn Reset	$0000\ 0000_H$	

LCL Test Register

Provides the capability for software to inject a fault condition into the comparators of each Lockstep Comparator Logic block. The implementation should generate a single cycle fault each time the bit is written with '1'.

SCU_LCLTEST

LCL Test Register **($013C_H$)** **System Reset Value: $0000\ 0000_H$**

31	30	29	28	27	26	25	24	23	22	21	20	19	18	17	16
					0					**0**	**0**	**0**	**0**	**0**	**PLCLT0**
					r					r	r	r	r	r	w

15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
					0					**0**	**0**	**0**	**0**	**0**	**LCLT0**
					r					r	r	r	r	r	w

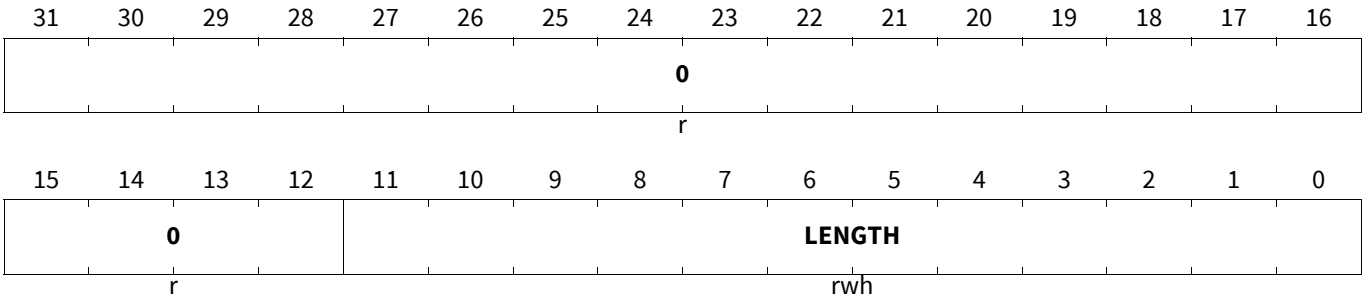
Field	Bits	Type	Description
LCLT0	0	w	**LCL0 Lockstep Test** Fault injection for LCL0. Reads as zero. 0_B No action 1_B Inject single fault in LCL0

Field	Bits	Type	Description
PLCLT0	16	w	**PFI0 Lockstep Test** Fault injection for PFI0 lockstep. Reads as zero. 0_B No action 1_B Inject single fault in PFI0 lockstep
0	1, 2, 3, 4, 5, 15:6, 17, 18, 19, 20, 21, 31:22	r	**Reserved in this product** will be read as 0 , should be written as 0

Logic BIST Control 2 Register

SCU_LBISTCTRL2

Logic BIST Control 2 Register **($016C_H$)** **Reset Value: Table 38**



Field	Bits	Type	Description
LENGTH	11:0	rwh	**LBIST Maximum Scan-Chain Length** This field defines the number of shift-cycles for each LBIST scan-load. It will be automatically loaded with the product-specific value, stored in Flash config-sector during startup-software execution.
0	31:12	r	**Reserved** Read as 0; should be written with 0.

Table 38 Reset Values of SCU_LBISTCTRL2

Reset Type	Reset Value	Note
System Reset	$0000\ 0000_H$	
CFS Value	$0000\ 0039_H$	

Overlay Enable Register

SCU_OVCENABLE

Overlay Enable Register **($01E0_H$)** **Application Reset Value: $0000\ 0000_H$**

31	30	29	28	27	26	25	24	23	22	21	20	19	18	17	16
0															
r															

15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
0										0	0	0	0	0	OVEN0
r										rw	rw	rw	rw	rw	rw

Field	Bits	Type	Description
OVEN0	0	rw	**Overlay Enable 0** 0_B OVC is disabled on CPU0. All Overlay redirections are disabled regardless of the state of OVC0_RABRy.OVEN. 1_B OVC is enabled on CPU0.
0	1, 2, 3, 4, 5	rw	**Reserved in this Product** will be read as 0 , should be written as 0
0	31:6	r	**Reserved** Read/write 0.

Overlay Control Register

SCU_OVCCON

Overlay Control Register **($01E4_H$)** **Application Reset Value: $0000\ 0000_H$**

31	30	29	28	27	26	25	24	23	22	21	20	19	18	17	16
0						POVCONF	OVCONF			0			DCINVAL	OVSTP	OVSTRT
r						w	rw			r			w	w	w

15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
0										0	0	0	0	0	CSEL0
r										r	r	r	r	r	w

Field	Bits	Type	Description
CSEL0	0	w	**CPU Select 0** Return 0 if read. 0_B CPU0 not affected, 1_B Action selected by OVSTRT, OVSTP, DCINVAL bits, set by the same register write access, is applied to CPU0.

Field	Bits	Type	Description
OVSTRT	16	w	**Overlay Start** CPUs which are not selected are not affected. No action is taken if OVSTP is also set. Return 0 if read. 0_B No action 1_B For each CPU selected with CSEL, all the blocks selected with OVCx_OSEL will be activated. In the selected CPUs all the blocks deselected with OVCx_OSEL will be deactivated.
OVSTP	17	w	**Overlay Stop** CPUs which are not selected are not affected No action is taken if OVSTRT is also set. Return 0 if read. 0_B No action 1_B For CPUs selected with CSEL, all the overlay blocks are deactivated. OVCx_RABRy.OVEN bits are cleared.
DCINVAL	18	w	**Data Cache Invalidate** No function in devices without data cache in CPU. Data Cache is affected only in the CPUs selected with CSEL. Return 0 if read. 0_B No action 1_B Data Cache Lines in DMI are invalidated[1)]
OVCONF	24	rw	**Overlay Configured** Overlay configured status bit This bit may be used as handshake bit between a debug device (via JTAG interface and Cerberus) and CPU(s). 0_B Overlay is not configured or it has been already started 1_B Overlay block control registers are configured and ready for overlay start
POVCONF	25	w	**Write Protection for OVCONF** This bit enables OVCONF write during OVCCON write. Return 0 if read. 0_B OVCONF remains unchanged. 1_B OVCONF can be changed with write access to register OVCCON
0	1, 2, 3, 4, 5, 15:6, 23:19, 31:26	r	**Reserved in this Product** Return 0 if read.

1) Dirty (modified) cache lines are not effected by this operation. If data cache contains modified data, it is not invalidated, and has to be written-back and invalidated by the user. Therefore, it is highly recommended to either: access overlaid data in read-only mode, or use only non-cached access.

Reset Status Register

SCU_RSTSTAT

Reset Status Register **(0050_H)** **Reset Value: Table 39**

31	30	29	28	27	26	25	24	23	22	21	20	19	18	17	16
0	**LBTERM**	**LBPORST**	**STBYR**	**HSMA**	**HSMS**	**SWD**	**EVR33**	**EVRC**	**R22**	**R21**	**CB3**	**CB1**	**CB0**	**0**	**PORST**
r	rh	rh	rh	rh	rh	rh	rh	rh	rX	rX	rh	rh	rh	r	rh

15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
		0			**0**	**0**	**0**	**0**	**0**	**STM0**	**SW**	**SMU**	**0**	**ESR1**	**ESR0**
		r			r	r	r	r	r	rh	rh	rh	r	rh	rh

Field	Bits	Type	Description
ESR0	0	rh	**Reset Request Trigger Reset Status for ESR0** 0_B The last reset was not requested by this reset trigger 1_B The last reset was requested by this reset trigger
ESR1	1	rh	**Reset Request Trigger Reset Status for ESR1** 0_B The last reset was not requested by this reset trigger 1_B The last reset was requested by this reset trigger
SMU	3	rh	**Reset Request Trigger Reset Status for SMU** (See SMU section for SMU trigger sources, including Watchdog Timers) 0_B The last reset was not requested by this reset trigger 1_B The last reset was requested by this reset trigger
SW	4	rh	**Reset Request Trigger Reset Status for SW** 0_B The last reset was not requested by this reset trigger 1_B The last reset was requested by this reset trigger
STM0	5	rh	**Reset Request Trigger Reset Status for STM0 Compare Match** 0_B The last reset was not requested by this reset trigger 1_B The last reset was requested by this reset trigger
PORST	16	rh	**Reset Request Trigger Reset Status for PORST** This bit is also set if the bits CB0, CB1, and CB3 are set in parallel. 0_B This reset trigger has not occurred since the last clear (by RSTCON2.CLRC) 1_B This reset trigger has occurred since the last clear (by RSTCON2.CLRC)
CB0	18	rh	**Reset Request Trigger Reset Status for Cerberus System Reset** 0_B The last reset was not requested by this reset trigger 1_B The last reset was requested by this reset trigger
CB1	19	rh	**Reset Request Trigger Reset Status for Cerberus Debug Reset** 0_B The last reset was not requested by this reset trigger 1_B The last reset was requested by this reset trigger
CB3	20	rh	**Reset Request Trigger Reset Status for Cerberus Application Reset** 0_B The last reset was not requested by this reset trigger 1_B The last reset was requested by this reset trigger

Field	Bits	Type	Description
R21	21	rX	**Reserved - 0** Read as 0; should be written with 0.
R22	22	rX	**Reserved - 0** Read as 0; should be written with 0.
EVRC	23	rh	**Reset Request Trigger Reset Status for EVRC** 0_B This reset trigger has not occurred since the last clear (by RSTCON2.CLRC) 1_B This reset trigger has occurred since the last clear (by RSTCON2.CLRC)
EVR33	24	rh	**Reset Request Trigger Reset Status for EVR33** 0_B This reset trigger has not occurred since the last clear (by RSTCON2.CLRC) 1_B This reset trigger has occurred since the last clear (by RSTCON2.CLRC)
SWD	25	rh	**Reset Request Trigger Reset Status for Supply Watchdog (SWD)** The Supply Watchdog trigger is described in Power Management Controller “Supply Monitoring” chapter 0_B This reset trigger has not occurred since the last clear (by RSTCON2.CLRC) 1_B This reset trigger has occurred since the last clear (by RSTCON2.CLRC)
HSMS	26	rh	**Reset Request Trigger Reset Status for HSM System Reset (HSM S)** 0_B The last reset was not requested by this reset trigger 1_B The last reset was requested by this reset trigger
HSMA	27	rh	**Reset Request Trigger Reset Status for HSM Application Reset (HSM A)** 0_B The last reset was not requested by this reset trigger 1_B The last reset was requested by this reset trigger
STBYR	28	rh	**Reset Request Trigger Reset Status for Standby Regulator Watchdog (STBYR)** 0_B This reset trigger has not occurred since the last clear (by RSTCON2.CLRC) 1_B This reset trigger has occurred since the last clear (by RSTCON2.CLRC)
LBPORST	29	rh	**LBIST termination due to PORST** This bitfield indicates if the LBIST was early terminated due to the occurrence of a Power On Reset. If the status of this bitfield is 0, the application must still check the LBTERM to check if the LBIST was terminated properly. This bitfield is cleared when the RSTCON2.CLRC is set. 0_B LBIST was not terminated early due to a Power On Reset 1_B LBIST early termination due to the occurrence of Power On Reset

Field	Bits	Type	Description
LBTERM	30	rh	**LBIST was properly terminated** This bitfield indicates if the LBIST was terminated properly. This bitfield is cleared when the RSTCON2.CLRC is set. 0_B LBIST was not terminated properly 1_B LBIST was terminated properly
0	2, 6, 7, 8, 9, 10, 15:11, 17, 31	r	**Reserved** Read as 0; should be written with 0.

Table 39 Reset Values of SCU_RSTSTAT

Reset Type	Reset Value	Note
Cold PowerOn Reset	$0XX1\ 0000_H$	RSTSTAT
Cold PowerOn Reset	$1001\ 0000_H$	RSTSTAT (Triggered by LVD Reset)

Reset Configuration Register

SCU_RSTCON
Reset Configuration Register **(0058_H)** **Reset Value: Table 40**

31	30	29	28	27	26	25	24	23	22	21	20	19	18	17	16
0										0		0		0	
rw										rw		rw		rw	

15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
0		0		STM0		SW		SMU		0		ESR1		ESR0	
rw		rw		rw		rw		rw		rw		rw		rw	

Field	Bits	Type	Description
ESR0	1:0	rw	**ESR0 Reset Request Trigger Reset Configuration** This bit field defines which reset is generated by a reset request trigger from ESR0 reset. 00_B No reset is generated for a trigger of ESR0 01_B A System Reset is generated for a trigger of ESR0 reset 10_B An Application Reset is generated for a trigger of ESR0 reset 11_B Reserved, do not use this combination

Field	Bits	Type	Description
ESR1	3:2	rw	**ESR1 Reset Request Trigger Reset Configuration** This bit field defines which reset is generated by a reset request trigger from ESR1 reset. 00_B No reset is generated for a trigger of ESR1 01_B A System Reset is generated for a trigger of ESR1 reset 10_B An Application Reset is generated for a trigger of ESR1 reset 11_B Reserved, do not use this combination
SMU	7:6	rw	**SMU Reset Request Trigger Reset Configuration** This bit field defines which reset is generated by a reset request trigger from SMU reset. 00_B No reset is generated for a trigger of SMU 01_B A System Reset is generated for a trigger of SMU reset 10_B An Application Reset is generated for a trigger of SMU reset 11_B Reserved, do not use this combination
SW	9:8	rw	**SW Reset Request Trigger Reset Configuration** This bit field defines which reset is generated by a reset request trigger from software reset. 00_B No reset is generated for a trigger of software reset 01_B A System Reset is generated for a trigger of Software reset 10_B An Application Reset is generated for a trigger of Software reset 11_B Reserved, do not use this combination
STM0	11:10	rw	**STM0 Reset Request Trigger Reset Configuration** This bit field defines which reset is generated by a reset request trigger from STM0 compare match reset. 00_B No reset is generated for an STM0 trigger 01_B A System Reset is generated for a trigger of STM0 reset 10_B An Application Reset is generated for a trigger of STM0 reset 11_B Reserved, do not use this combination
0	5:4, 13:12, 15:14, 17:16, 19:18, 21:20, 31:22	rw	**Reserved** Should be written with 0.

Table 40 Reset Values of SCU_RSTCON

Reset Type	Reset Value	Note
PowerOn Reset	$0000\ 0282_H$	RSTCON

Application Reset Disable Register

SCU_ARSTDIS

Application Reset Disable Register (005C$_H$) PowerOn Reset Value: 0000 0000$_H$

31	30	29	28	27	26	25	24	23	22	21	20	19	18	17	16
0															
r															

15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
0								0		0	0	0	0	0	STM0DIS
r								rw		rw	rw	rw	rw	rw	rw

Field	Bits	Type	Description
STM0DIS	0	rw	**STM0 Disable Reset** This bit field defines if an Application Reset leads to an reset for the STM0. 0_B An Application Reset resets the STM0 1_B An Application Reset has no effect for the STM0
0	1, 2, 3, 4, 5, 7:6	rw	**Reserved** Should be written with 0.
0	31:8	r	**Reserved** Read as 0; should be written with 0.

Trap Disable Register 1

SCU_TRAPDIS1

Trap Disable Register 1 (0120$_H$) Application Reset Value: 0000 FFFF$_H$

31	30	29	28	27	26	25	24	23	22	21	20	19	18	17	16
0															
r															

15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
1				CPU5xT				1				CPU4xT			
r				rw				r				rw			

Field	Bits	Type	Description
CPU4xT	3:0	rw	**Reserved in this product**
CPU5xT	11:8	rw	**Reserved in this product**

Field	Bits	Type	Description
1	7:4, 15:12	r	**Reserved** Must only be written with one. Read as one.
0	31:16	r	**Reserved** Read as zero

Trap Disable Register 0

SCU_TRAPDIS0
Trap Disable Register 0 **(0130_H)** **Application Reset Value: FFFF FFFF$_H$**

31	30	29	28	27	26	25	24	23	22	21	20	19	18	17	16
1				**CPU3xT**				**1**				**CPU2xT**			
r				rw				r				rw			

15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
1				**CPU1xT**				**1**				**CPU0SMUT**	**CPU0TRAP2T**	**CPU0ESR1T**	**CPU0ESR0T**
r				rw				r				rw	rw	rw	rw

Field	Bits	Type	Description
CPU0ESR0T	0	rw	**Disable Trap Request ESR0T on CPU0** 0_B A CPU0 trap request can be generated for this source 1_B No trap request can be generated for this source
CPU0ESR1T	1	rw	**Disable Trap Request ESR1T on CPU0** 0_B A CPU0 trap request can be generated for this source 1_B No trap request can be generated for this source
CPU0TRAP2T	2	rw	**Disable Trap Request TRAP2T on CPU0** 0_B A CPU0 trap request can be generated for this source 1_B No trap request can be generated for this source
CPU0SMUT	3	rw	**Disable Trap Request SMUT on CPU0** 0_B A CPU0 trap request can be generated for this source 1_B No trap request can be generated for this source
CPU1xT	11:8	rw	**Reserved in this product**
CPU2xT	19:16	rw	**Reserved in this product**
CPU3xT	27:24	rw	**Reserved in this product**
1	7:4, 15:12, 23:20, 31:28	r	**Reserved** Must only be written with one. Read as one.

9.4 Connectivity

Table 41 Connections of SCU

Interface Signals	connects		Description
SCU:CBS_ENDINIT_DIS	from	CBS:ocds_oc(3)	Watchdog ENDINIT disable from Cerberus
SCU:CBS_WDT_SUSP	from	CBS:ocds_wdtsus	Watchdog suspend from Cerberus
SCU:EMGSTOP_PORT_A	from	SMU:FSPSCU	Emergency stop Port Pin A input request
SCU:EMGSTOP_PORT_B	from	P21.2:IN	Emergency stop Port Pin B input request
SCU:ESR0_PORT_IN	from	TC33x/TC32x:ESR0	ESR0 Port Pin input - can be used to trigger a reset or an NMI
SCU:ESR1_PORT_IN	from	TC33x/TC32x:ESR1	ESR1 Port Pin input - can be used to trigger a reset or an NMI
SCU:E_IOUT(0)	to	EVADC:G0REQTRH	ERU IOUTn output (MSB is IOUT7 and LSB is IOUT0)
		EVADC:G8REQTRH	
SCU:E_IOUT(1)	to	EVADC:G1REQTRH	ERU IOUTn output (MSB is IOUT7 and LSB is IOUT0)
		EVADC:G9REQTRH	
SCU:E_IOUT(3:2)	to	CAN0:ttc_ectt(4:3)	ERU IOUTn output (MSB is IOUT7 and LSB is IOUT0)
SCU:E_IOUT(4)	to	CAN0:ttc_ltrc_trig(4)	ERU IOUTn output (MSB is IOUT7 and LSB is IOUT0)
SCU:E_PDOUT(0)	to	CCU60:CTRAPD	ERU PDOUTn output (MSB is PDOUT7 and LSB is PDOUT0)
		CCU60:T12HRH	
		EVADC:G0REQGTM	
		EVADC:G8REQGTM	
		GTM:TIM0_IN0(12)	
SCU:E_PDOUT(1)	to	CCU61:CTRAPD	ERU PDOUTn output (MSB is PDOUT7 and LSB is PDOUT0)
		CCU61:T12HRH	
		EVADC:G1REQGTM	
		EVADC:G9REQGTM	
		GTM:TIM0_IN1(12)	
SCU:E_PDOUT(2)	to	GTM:TIM0_IN2(12)	ERU PDOUTn output (MSB is PDOUT7 and LSB is PDOUT0)
SCU:E_PDOUT(3:0)	to	ERAY0:STPWT(3:0)	ERU PDOUTn output (MSB is PDOUT7 and LSB is PDOUT0)
SCU:E_PDOUT(3)	to	GTM:TIM0_IN3(12)	ERU PDOUTn output (MSB is PDOUT7 and LSB is PDOUT0)
SCU:E_PDOUT(4)	to	CCU60:CC62IND	ERU PDOUTn output (MSB is PDOUT7 and LSB is PDOUT0)
		GPT120:T3INC	
		GTM:TIM0_IN4(12)	
SCU:E_PDOUT(5)	to	CCU61:CC62IND	ERU PDOUTn output (MSB is PDOUT7 and LSB is PDOUT0)
		GTM:TIM0_IN5(12)	
SCU:E_PDOUT(6)	to	GPT120:CAPINB	ERU PDOUTn output (MSB is PDOUT7 and LSB is PDOUT0)
		GTM:TIM0_IN6(12)	

Table 41 Connections of SCU (cont'd)

Interface Signals	connects		Description
SCU:E_PDOUT(7)	to	GTM:TIM0_IN7(12)	ERU PDOUTn output (MSB is PDOUT7 and LSB is PDOUT0)
SCU:E_REQ0(0)	from	P15.4:IN	ERU Channel 0 input X; x=0-5, where 0 is input A and 5 is input F.
SCU:E_REQ0(1)	from	CCU60:COUT60	ERU Channel 0 input X; x=0-5, where 0 is input A and 5 is input F.
SCU:E_REQ0(2)	from	P10.7:IN	ERU Channel 0 input X; x=0-5, where 0 is input A and 5 is input F.
SCU:E_REQ1(0)	from	P14.3:IN	ERU Channel 1 input X; x=0-5, where 0 is input A and 5 is input F.
SCU:E_REQ1(1)	from	CCU61:COUT60	ERU Channel 1 input X; x=0-5, where 0 is input A and 5 is input F.
SCU:E_REQ1(2)	from	P10.8:IN	ERU Channel 1 input X; x=0-5, where 0 is input A and 5 is input F.
SCU:E_REQ1(3)	from	STM0:STMIR(0)	ERU Channel 1 input X; x=0-5, where 0 is input A and 5 is input F.
SCU:E_REQ2(0)	from	P10.2:IN	ERU Channel 2 input X; x=0-5, where 0 is input A and 5 is input F.
SCU:E_REQ2(1)	from	P02.1:IN	ERU Channel 2 input X; x=0-5, where 0 is input A and 5 is input F.
SCU:E_REQ2(2)	from	P00.4:IN	ERU Channel 2 input X; x=0-5, where 0 is input A and 5 is input F.
SCU:E_REQ2(3)	from	ERAY0:MT	ERU Channel 2 input X; x=0-5, where 0 is input A and 5 is input F.
SCU:E_REQ3(0)	from	P10.3:IN	ERU Channel 3 input X; x=0-5, where 0 is input A and 5 is input F.
SCU:E_REQ3(1)	from	P14.1:IN	ERU Channel 3 input X; x=0-5, where 0 is input A and 5 is input F.
SCU:E_REQ3(2)	from	P02.0:IN	ERU Channel 3 input X; x=0-5, where 0 is input A and 5 is input F.
SCU:E_REQ4(0)	from	P33.7:IN	ERU Channel 4 input X; x=0-5, where 0 is input A and 5 is input F.
SCU:E_REQ4(1)	from	GTM:SCU_TRIG(0)	ERU Channel 4 input X; x=0-5, where 0 is input A and 5 is input F.
SCU:E_REQ4(2)	from	GPT120:T3OUT	ERU Channel 4 input X; x=0-5, where 0 is input A and 5 is input F.
SCU:E_REQ4(3)	from	P15.5:IN	ERU Channel 4 input X; x=0-5, where 0 is input A and 5 is input F.
SCU:E_REQ5(0)	from	P15.8:IN	ERU Channel 5 input X; x=0-5, where 0 is input A and 5 is input F.
SCU:E_REQ5(1)	from	GTM:SCU_TRIG(1)	ERU Channel 5 input X; x=0-5, where 0 is input A and 5 is input F.

Table 41 Connections of SCU (cont'd)

Interface Signals	connects		Description
SCU:E_REQ5(2)	from	GPT120:T6OUT	ERU Channel 5 input X; x=0-5, where 0 is input A and 5 is input F.
SCU:E_REQ6(0)	from	P20.0:IN	ERU Channel 6 input X; x=0-5, where 0 is input A and 5 is input F.
SCU:E_REQ6(1)	from	TC33x/TC32x:ESR0	ERU Channel 6 input X; x=0-5, where 0 is input A and 5 is input F.
SCU:E_REQ6(3)	from	P11.10:IN	ERU Channel 6 input X; x=0-5, where 0 is input A and 5 is input F.
SCU:E_REQ7(0)	from	P20.9:IN	ERU Channel 7 input X; x=0-5, where 0 is input A and 5 is input F.
SCU:E_REQ7(1)	from	TC33x/TC32x:ESR1	ERU Channel 7 input X; x=0-5, where 0 is input A and 5 is input F.
SCU:E_REQ7(2)	from	P15.1:IN	ERU Channel 7 input X; x=0-5, where 0 is input A and 5 is input F.
SCU:RST_REQ_STM(10)	from	HSM:SYSRST	Reset request from STMn (MSB is STM5 and LSB is STM0)
SCU:RST_REQ_STM(11)	from	HSM:APPRST	Reset request from STMn (MSB is STM5 and LSB is STM0)
SCU:SMU_EMGSTP_REQ	from	SMU:EMERGENCYSTOPREQ	Emergency stop request from SMU
SCU:SMU_TRAP_REQ	from	SMU:NMIREQ	TRAP request from the SMU
SCU:TRAP_CPU(0)	to	cpu_pfi_pfrwb_0:tc162p_nmi_trap	TRAP output to CPUn (MSB is CPU5 and LSB is CPU0)
SCU:ERU_INT(3:0)	to	INT:scu.ERU_INT(3:0)	SCU ERU Service Request x

9.5 Revision History

The following table contains the revision history of the SCU that is relevant for the TC33x/TC32x device. For a complete revision history please address the family user manual.

This section only includes entries, respective to the Clock System, that are related to register updates. For a complete Clock System revision history please address the family user manual.

Table 42 Revision History

Reference	Change to Previous Version	Comment
V2.1.21		
	Initial version for TC33x.	
V2.1.22		
Page 15	Cold PORST reset value changed from 1xx10000 to 0xx10000 in RSTSTAT register.	
Page 15	Additional cold_power_on_reset value "LVD Reset" added to RSTSTAT register.	
Page 2	SCU_CHIPID register, CHPK bitfield: Corrected description for constant value "2" to TQFP-80.	

Table 42 Revision History (cont'd)

Reference	Change to Previous Version	Comment
Page 10	LCLCON0 and LCLCON1: Cold PORST reset table values updated/corrected.	
Page 23	Revision History cleanup and update.	
V2.1.23		
Page 1	LBISTCTRL register configuration corrected.	
Page 2	Connectivity table updated due to update of Connexion DB.	
Page 2, Page 10	LBISTCTRL2 added at specific registers section.	
V2.1.24		
Page 10	Updated Cold PowerOn Reset Value of LCLCONx.	
Page 10	Removed mistakenly mentioned bits in registers LCLTEST (PLCLT1), OVCENABLE (OVEN1), OVCCON (CSEL1), RSTSTAT (STM1), RSTCON (STM1), ARSTDIS (STM1DIS) and TRAPDIS0 (CPU1SMUT, CPU1TRAP2T, CPU1ESR1T, CPU1ESR0T).	
V2.1.25		
	No functional changes.	
V2.1.26		
	No functional changes.	
V2.1.27		
	No functional changes.	

10 Clocking System

Device specific information about the clocking system is contained in the SCU chapter as both modules share a common bus interface.

11 Power Management System (PMS)

This device doesn’t contain a PMS module.

12 Power Management System for Low-End (PMSLE)

This chapter describes the Power Management System (PMSLE) Module of the TC33x/TC32x.

12.1 TC33x/TC32x Specific IP Configuration

No product specific configuration for PMS

12.2 TC33x/TC32x Specific Register Set

The PMS related SCU registers are specified in the SCU section of this appendix.

Table 43 Register Address Space - PMS

Module	Base Address	End Address	Note
(PMS)	$F0240000_H$	$F0241FFF_H$	
PMS	$F0248000_H$	$F02481FF_H$	FPI slave interface

Table 44 Register Overview - PMS (ascending Offset Address)

Short Name	Long Name	Offset Address	Access Mode		Reset	Page Number
			Read	Write		
PMS_ID	Identification Register	0008_H	U,SV	BE	Application Reset	See Family Spec
	Reserved (0020_H Byte)	$000C_H$	BE	BE		
PMS_EVRSTAT	EVR Status Register	$002C_H$	U,SV	BE	See Family Spec	See Family Spec
	Reserved (0004_H Byte)	0030_H	BE	BE		
PMS_EVRADCSTAT	EVR Primary ADC Status Register	0034_H	U,SV	BE	LVD Reset	See Family Spec
	Reserved (0004_H Byte)	0038_H	BE	BE		
PMS_EVRRSTCON	EVR Reset Control Register	$003C_H$	U,SV	SV,SE,P	See Family Spec	See Family Spec
PMS_EVRRSTSTAT	EVR Reset Status Register	0044_H	U,SV	BE	See Family Spec	See Family Spec
PMS_EVRTRIM	EVR Trim Control Register	$004C_H$	U,SV	SV,SE,P	See Family Spec	See Family Spec
PMS_EVRTRIMSTAT	EVR Trim Status Register	0050_H	U,SV	BE	See Family Spec	See Family Spec
	Reserved (0008_H Byte)	0058_H	BE	BE		
PMS_EVRMONSTAT1	EVR Secondary ADC Status Register 1	0060_H	U,SV	BE	See Family Spec	See Family Spec
PMS_EVRMONSTAT2	EVR Secondary ADC Status Register 2	0064_H	U,SV	BE	See Family Spec	See Family Spec

Table 44 Register Overview - PMS (ascending Offset Address) (cont'd)

Short Name	Long Name	Offset Address	Access Mode		Reset	Page Number
			Read	Write		
PMS_EVRMONCTRL	EVR Secondary Monitor Control Register	0068_H	U,SV	SV,SE,P	See Family Spec	See Family Spec
	Reserved (0004_H Byte)	$006C_H$	BE	BE		
PMS_EVRMONFILT	EVR Secondary Monitor Filter Register	0070_H	U,SV	SV,SE,P	See Family Spec	See Family Spec
PMS_PMSIEN	PMS Interrupt Enable Register	0074_H	U,SV	SV,SE,P	See Family Spec	See Family Spec
PMS_EVRUVMON	EVR Secondary Under-voltage Monitor Register	0078_H	U,SV	SV,SE,P	See Family Spec	See Family Spec
PMS_EVROVMON	EVR Secondary Over-voltage Monitor Register	$007C_H$	U,SV	SV,SE,P	See Family Spec	See Family Spec
PMS_EVRUVMON2	EVR Secondary Under-voltage Monitor Register 2	0080_H	U,SV	SV,SE,P	See Family Spec	See Family Spec
PMS_EVROVMON2	EVR Secondary Over-voltage Monitor Register 2	0084_H	U,SV	SV,SE,P	See Family Spec	See Family Spec
PMS_HSMUVMON	EVR Primary HSM Under-voltage Monitor Register	0088_H	U,SV	SV,SE,P	See Family Spec	See Family Spec
PMS_HSMOVMON	EVR Primary HSM Over-voltage Monitor Register	$008C_H$	U,SV	SV,SE,P	See Family Spec	See Family Spec
PMS_EVR33CON	EVR33 Control Register	0090_H	U,SV	SV,SE,P	See Family Spec	See Family Spec
PMS_EVROSCCTRL	EVR Oscillator Control Register	$00A0_H$	U,SV	SV,SE,P	See Family Spec	See Family Spec
	Reserved (0008_H Byte)	$00AC_H$	BE	BE		
PMS_PMSWCR0	Standby and Wake-up Control Register 0	$00B4_H$	U,SV	SV,SE,P	LVD Reset	See Family Spec
PMS_PMSWCR2	Standby and Wake-up Control Register 2	$00B8_H$	U,SV	SV,SE,P	LVD Reset	See Family Spec
	Reserved (0004_H Byte)	$00BC_H$	BE	BE		

Table 44 Register Overview - PMS (ascending Offset Address) (cont'd)

Short Name	Long Name	Offset Address	Access Mode		Reset	Page Number
			Read	Write		
PMS_PMSWCR3	Standby and Wake-up Control Register 3	$00C0_H$	U,SV	SV,SE,P	LVD Reset	See Family Spec
PMS_PMSWCR4	Standby and Wake-up Control Register 4	$00C4_H$	U,SV	SV,SE,P	LVD Reset	See Family Spec
PMS_PMSWCR5	Standby and Wake-up Control Register 5	$00C8_H$	U,SV	SV,SE,P	LVD Reset	See Family Spec
PMS_PMSWSTAT	Standby and Wake-up Status Register	$00D4_H$	U,SV	BE	LVD Reset	See Family Spec
PMS_PMSWSTAT2	Standby and Wake-up Status Register 2	$00D8_H$	U,SV	BE	LVD Reset	See Family Spec
PMS_PMSWUTCNT	Standby WUT Counter Register	$00DC_H$	U,SV	BE	LVD Reset	See Family Spec
	Reserved (0008_H Byte)	$00E0_H$	BE	BE		
PMS_PMSWSTATCLR	Standby and Wake-up Status Clear Register	$00E8_H$	U,SV	SV,SE,P	LVD Reset	See Family Spec
	Reserved (0010_H Byte)	$00EC_H$	BE	BE		
PMS_EVRSDSTAT0	EVR SD Status Register 0	$00FC_H$	U,SV	BE	See Family Spec	See Family Spec
	Reserved (0008_H Byte)	0100_H	BE	BE		
PMS_EVRSDCTRL0	EVRC SD Control Register 0	0108_H	U,SV	SV,SE,P	See Family Spec	See Family Spec
PMS_EVRSDCTRL1	EVRC SD Control Register 1	$010C_H$	U,SV	SV,SE,P	See Family Spec	See Family Spec
PMS_EVRSDCTRL2	EVRC SD Control Register 2	0110_H	U,SV	SV,SE,P	See Family Spec	See Family Spec
PMS_EVRSDCTRL3	EVRC SD Control Register 3	0114_H	U,SV	SV,SE,P	See Family Spec	See Family Spec
PMS_EVRSDCTRL4	EVRC SD Control Register 4	0118_H	U,SV	SV,SE,P	See Family Spec	See Family Spec

Table 44 Register Overview - PMS (ascending Offset Address) (cont'd)

Short Name	Long Name	Offset Address	Access Mode		Reset	Page Number
			Read	Write		
PMS_EVRSDCTRL5	EVRC SD Control Register 5	$011C_H$	U,SV	SV,SE,P	See Family Spec	See Family Spec
PMS_EVRSDCTRL6	EVRC SD Control Register 6	0120_H	U,SV	SV,SE,P	See Family Spec	See Family Spec
PMS_EVRSDCTRL7	EVRC SD Control Register 7	0124_H	U,SV	SV,SE,P	See Family Spec	See Family Spec
PMS_EVRSDCTRL8	EVRC SD Control Register 8	0128_H	U,SV	SV,SE,P	See Family Spec	See Family Spec
PMS_EVRSDCTRL9	EVRC SD Control Register 9	$012C_H$	U,SV	SV,SE,P	See Family Spec	See Family Spec
PMS_EVRSDCTRL10	EVRC SD Control Register 10	0130_H	U,SV	SV,SE,P	See Family Spec	See Family Spec
	Reserved (0010_H Byte)	0138_H	BE	BE		
PMS_EVRSDCOEFF0	EVRC SD Coefficient Register 0	0148_H	U,SV	SV,SE,P	See Family Spec	See Family Spec
PMS_EVRSDCOEFF1	EVRC SD Coefficient Register 1	$014C_H$	U,SV	SV,SE,P	See Family Spec	See Family Spec
PMS_EVRSDCOEFF2	EVRC SD Coefficient Register 2	0150_H	U,SV	SV,SE,P	See Family Spec	See Family Spec
PMS_EVRSDCOEFF3	EVRC SD Coefficient Register 3	0154_H	U,SV	SV,SE,P	See Family Spec	See Family Spec
	Reserved (0050_H Byte)	0170_H	BE	BE		
PMS_AG2i_STDBY (i=0-1)	Alarm Status Register	0188_H+i*4	U,SV	SV,SE,P	LVD Reset	See Family Spec
PMS_MONBISTSTAT	SMU_stdby BIST Status Register	0190_H	U,SV	BE	See Family Spec	See Family Spec
	Reserved (0050_H Byte)	0194_H	BE	BE		
PMS_MONBISTCTRL	SMU_stdby BIST Control Register	0198_H	U,SV	SV,SE,P	See Family Spec	See Family Spec

Table 44 Register Overview - PMS (ascending Offset Address) (cont'd)

Short Name	Long Name	Offset Address	Access Mode		Reset	Page Number
			Read	Write		
PMS_CMD_STDBY	SMU_stdby Command Register	$019C_H$	U,SV	SV,SE,P	See Family Spec	See Family Spec
	Reserved (0050_H Byte)	$01A0_H$	BE	BE		
PMS_AG2iFSP_STDBY (i=0-1)	SMU_stdby FSP Configuration Register	$01A4_H$+i*4	U,SV	SV,SE,P	See Family Spec	See Family Spec
	Reserved (0050_H Byte)	$01AC_H$	BE	BE		
PMS_DTSSTAT	Die Temperature Sensor Status Register	$01C0_H$	U,SV	BE	See Family Spec	See Family Spec
PMS_DTSLIM	Die Temperature Sensor Limit Register	$01C8_H$	U,SV	U,SV,P	See Family Spec	See Family Spec
	Reserved (0014_H Byte)	$01CC_H$	BE	BE		
PMS_OTSS	OCDS Trigger Set Select Register	$01E0_H$	U,SV	U,SV,P	See Family Spec	See Family Spec
PMS_OTSC0	OCDS Trigger Set Control 0 Register	$01E4_H$	U,SV	U,SV,P	See Family Spec	See Family Spec
PMS_OTSC1	OCDS Trigger Set Control 1 Register	$01E8_H$	U,SV	U,SV,P	See Family Spec	See Family Spec
PMS_ACCEN0	Access Enable Register 0	$01F8_H$	U,SV	SV,SE,32	Application Reset	See Family Spec
PMS_ACCEN1	Access Enable Register 1	$01FC_H$	U,SV	SV,SE,32	Application Reset	See Family Spec

12.3 TC33x/TC32x Specific Registers

No deviations from the Family Spec

12.4 Connectivity

Table 45 Connections of PMS

Interface Signals	connects		Description
PMS:ESR0PORST	to	TC33x/TC32x:ESR0	ESR0 control output during PORST activation
PMS:ESR0WKP	from	TC33x/TC32x:ESR0	ESR0 pin input
PMS:ESR1WKP	from	TC33x/TC32x:ESR1	ESR1 pin input
PMS:HWCFG1IN	from	TC33x/TC32x:P14.5	HWCFG1 pin input
PMS:HWCFG2IN	from	TC33x/TC32x:P14.2	HWCFG2 pin input
PMS:HWCFG4IN	from	TC33x/TC32x:P10.5	HWCFG4 pin input
PMS:HWCFG5IN	from	TC33x/TC32x:P10.6	HWCFG5 pin input
PMS:HWCFG6IN	from	TC33x/TC32x:P14.4	HWCFG6 pin input
PMS:PINAWKP	from	TC33x/TC32x:P14.1	PINA (P14.1) pin input
PMS:PINBWKP	from	TC33x/TC32x:P33.12	PINB (P33.12) pin input
PMS:PORSTIN	from	TC33x/TC32x:PORST	PORST pin input
PMS:PORSTOUT	to	TC33x/TC32x:PORST	PORST pin output
PMS:TESTMODEIN	from	TC33x/TC32x:P20.2	TESTMODE pin input
PMS:VDDMLVL	to	converter_0:converter_low_supp	VDDM monitor signal to Converter

12.5 Revision History

Table 46 Revision History

Reference	Change to Previous Version	Comment
V1.0.2		
–	No changes.	
V1.0.3		
Page 2	Enabled description of EVR33CON register for EVR33 short detection configuration.	
V1.0.4		
–	No functional changes.	
V1.0.5		
–	No functional changes.	
V1.0.6		
–	No functional changes.	
V1.0.7		
–	No functional changes.	

13 Memory Test Unit (MTU)

For the generic description of the Memory Test Unit (MTU) and the SRAM Support Hardware (SSH), please refer to the platform chapter.

13.1 TC33x/TC32x Specific IP Configuration

There is no device specific IP configuration. MTU+SSH is generic across all derivates in the platforms. Only the SSH instances vary.

13.2 Handling of Large DSPR SRAMs

On this device, the CPU0 and CPU1 have large DSPR SRAMs. Therefore, there are two SSHs to support these SRAMs. These are named as CPUxDMEM and CPUxDMEM1 (x=0,1).

Logically, these 2 SSHs behave as separate SSHs, with their own MEMTEST_EN bits, Alarms to the SMU, error status flags etc. However special handling is required to enter test mode for these SSHs.

When running a Non-Destructive-test, only one of the DMEM SSHs shall be enabled at a time. This is because the ECC encoder and decoder are shared between the two SSHs.

However, as long as destructive tests or SSH register accesses are to be performed, then both SSHs can be enabled together.

Please note that when one of the DMEM SSH is enabled, the complete DSPR+DCACHE is unavailable for functional access. This is due to internal interleaving of the logical address space.

Although the DCACHE is also split equally between the two SRAMs, the entire cache has to be mapped at once to the system address map. Hence only a single bit is provided in the MTU_MEMMAP register for the entire DMEM.

The partial-erase (i.e. erasing the Cache area; refer the family spec) is triggered separately when each MEMTEST_EN bit is set.

The MEMMAP bit triggers the partial erase in both SSHs at the same time.

If both the SSHs are enabled / disabled at the same time, the software should check either the bits in the MTU_MEMSTAT register, or ensure that the EN bits for both the SSHs are set / cleared in the MEMTEST registers to ensure that the partial-erase has completed.

13.3 TC33x/TC32x Specific Register Set

Register Address Space Table

Table 47 Register Address Space - MTU

Module	Base Address	End Address	Note
MTU	$F0060000_H$	$F006FFFF_H$	FPI slave interface

Register Overview Table

Table 48 Register Overview - MTU (ascending Offset Address)

Short Name	Long Name	Offset Address	Access Mode		Reset	Page Number
			Read	Write		
MTU_CLC	Clock Control Register	0000_H	U,SV	SV,E,P	Application Reset	See Family Spec
MTU_ID	Identification Register	0008_H	U,SV	BE	Application Reset	See Family Spec
MTU_MEMTESTi (i=0-2)	Memory MBIST Enable Register i	0010_H+i* 4	U,SV	SV,SE,P	Application Reset	3
MTU_MEMMAP	Memory Mapping Enable Register	$001C_H$	U,SV	SV,SE,P	Application Reset	7
MTU_MEMSTATi (i=0-2)	Memory Status Register i	0038_H+i* 4	U,SV	BE	Application Reset	9
MTU_MEMDONEi (i=0-2)	Memory Test Done Status Register i	0050_H+i* 4	U,SV	BE	Application Reset	12
MTU_MEMFDAi (i=0-2)	Memory Test FDA Status Register i	0060_H+i* 4	U,SV	BE	Application Reset	14
MTU_ACCEN1	Access Enable Register 1	$00F8_H$	U,SV	BE	Application Reset	See Family Spec
MTU_ACCEN0	Access Enable Register 0	$00FC_H$	U,SV	SV,SE	Application Reset	See Family Spec
MTU_MCi_CONFIG0 (i=0-95)	Configuration Registers	1000_H+i* 100_H	U,SV,16	U,SV,P,16	Application Reset	See Family Spec
MTU_MCi_CONFIG1 (i=0-95)	Configuration Register 1	1002_H+i* 100_H	U,SV,16	U,SV,P,16	Application Reset	See Family Spec

Table 48 Register Overview - MTU (ascending Offset Address) (cont'd)

Short Name	Long Name	Offset Address	Access Mode		Reset	Page Number
			Read	Write		
MTU_MCi_MCONTROL (i=0-95)	MBIST Control Register	1004_H+i* 100_H	U,SV,16	SV,SE,P,16	Application Reset	See Family Spec
MTU_MCi_MSTATUS (i=0-95)	Status Register	1006_H+i* 100_H	U,SV,16	BE	Application Reset	See Family Spec
MTU_MCi_RANGE (i=0-95)	Range Register, single address mode	1008_H+i* 100_H	U,SV,16	U,SV,P,16	Application Reset	See Family Spec
MTU_MCi_REVID (i=0-95)	Revision ID Register	$100C_H$+i* 100_H	U,SV,16	BE	Application Reset	See Family Spec
MTU_MCi_ECCS (i=0-95)	ECC Safety Register	$100E_H$+i* 100_H	U,SV,16	SV,SE,P,16	Application Reset	See Family Spec
MTU_MCi_ECCD (i=0-95)	Memory ECC Detection Register	1010_H+i* 100_H	U,SV,16	SV,P,16	See Family Spec	See Family Spec
MTU_MCi_ETRRx (i=0-95;x=0-4)	Error Tracking Register x	1012_H+i* 100_H+x* 2	U,SV,16	BE	PowerOn Reset	See Family Spec
MTU_MCi_RDBFLy (i=0-95;y=0-66)	Read Data and Bit Flip Register y	1060_H+i* 100_H+y* 2	U,SV,16	U,SV,P,16	Application Reset	See Family Spec
MTU_MCi_ALMSRCS (i=0-95)	Alarm Sources Configuration Register	$10EE_H$+i* 100_H	U,SV,16	SV,SE,P,16	Application Reset	See Family Spec
MTU_MCi_FAULTSTS (i=0-95)	SSH Safety Faults Status Register	$10F0_H$+i* 100_H	U,SV,16	SV,SE,P,16	PowerOn Reset	See Family Spec
MTU_MCi_ERRINFOx (i=0-95;x=0-4)	Error Information Register x	$10F2_H$+i* 100_H+x* 2	U,SV,16	BE	PowerOn Reset	See Family Spec

13.4 TC33x/TC32x Specific Registers

13.4.1 MEMTEST Implementation

Memory MBIST Enable Register i

The memory test register MEMTEST holds CPU configurable select bits for the various SSH instances. See the product specific appendix for mapping of memory controller numbers.

MTU_MEMTESTi (i=0)

Memory MBIST Enable Register i **(0010_H+i*4)** **Application Reset Value: $0000\ 0000_H$**

31	30	29	28	27	26	25	24	23	22	21	20	19	18	17	16
RES31	RES30	RES29	RES28	RES27	RES26	RES25	RES24	RES23	RES22	RES21	RES20	RES19	RES18	RES17	RES16
r	r	r	r	r	r	r	r	r	r	r	r	r	r	r	r

15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
RES15	RES14	RES13	RES12	RES11	RES10	RES9	RES8	RES7	RES6	RES5	CPU0_DLMU_STBY_EN	CPU0_PTAG_EN	CPU0_PMEM_EN	CPU0_DTAG_EN	CPU0_DMEM_EN
r	r	r	r	r	r	r	r	r	r	r	rwh	rwh	rwh	rwh	rwh

Field	Bits	Type	Description
CPU0_DMEM_EN	0	rwh	**CPU0 DMEM SSH instance Enable** 0_B SSH instance is disabled 1_B SSH instance is enabled
RESx (x=5-31)	x	r	**Reserved** Reserved. Shall be written with zero.
CPU0_DTAG_EN	1	rwh	**CPU0 DTAG SSH instance Enable** 0_B SSH instance is disabled 1_B SSH instance is enabled
CPU0_PMEM_EN	2	rwh	**CPU0 PMEM SSH instance Enable** 0_B SSH instance is disabled 1_B SSH instance is enabled
CPU0_PTAG_EN	3	rwh	**CPU0 PTAG SSH instance Enable** 0_B SSH instance is disabled 1_B SSH instance is enabled
CPU0_DLMU_STBY_EN	4	rwh	**CPU0 STANDBY DLMU SSH instance Enable** 0_B SSH instance is disabled 1_B SSH instance is enabled

MTU_MEMTESTi (i=1)

Memory MBIST Enable Register i **(0010_H+i*4)** **Application Reset Value: $0000\ 0000_H$**

31	30	29	28	27	26	25	24	23	22	21	20	19	18	17	16
MCAN20_EN	MCAN10_EN	RES29	RES28	RES27	RES26	RES25	RES24	RES23	RES22	RES21	RES20	RES19	RES18	RES17	RES16
rwh	rwh	r	r	r	r	r	r	r	r	r	r	r	r	r	r

15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
RES15	RES14	RES13	RES12	RES11	RES10	SADMA_EN	R8	RES7	RES6	RES5	RES4	RES3	CPU0_DMEM1_EN	RES1	RES0
r	r	r	r	r	r	rwh	rwh	r	r	r	r	r	rwh	r	r

Field	Bits	Type	Description
RESx (x=0-1,3-7,10-29)	x	r	**Reserved** Reserved. Shall be written with zero.
CPU0_DMEM1_EN	2	rwh	**CPU0 DMEM1 SSH instance Enable** 0_B SSH instance is disabled 1_B SSH instance is enabled [1].
R8	8	rwh	**Reserved - Res** Reserved. Not used in this product. Shall be written with zero.
SADMA_EN	9	rwh	**Safety DMA SSH instance Enable** 0_B SSH instance is disabled 1_B SSH instance is enabled
MCAN10_EN	30	rwh	**MCAN10 memory SSH instance Enable** 0_B SSH instance is disabled 1_B SSH instance is enabled
MCAN20_EN	31	rwh	**MCAN20 memory SSH instance Enable** 0_B SSH instance is disabled 1_B SSH instance is enabled

1) Please refer to separate section related to handling of the large DMEM on this device.

MTU_MEMTESTi (i=2)

Memory MBIST Enable Register i **(0010_H+i*4)** **Application Reset Value: $0000\ 0000_H$**

31	30	29	28	27	26	25	24	23	22	21	20	19	18	17	16
RES31	**RES30**	**RES29**	**RES28**	**RES27**	**RES26**	**RES25**	**RES24**	**RES23**	**RES22**	**RES21**	**RES20**	**RES19**	**RES18**	**RES17**	**RES16**
r	r	r	r	r	r	r	r	r	r	r	r	r	r	r	r
15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
RES15	**SCR_RAMINT_EN**	**SCR_XRAM_EN**	**R12**	**R11**	**R10**	**R9**	**R8**	**RES7**	**ERAY_MBF0_EN**	**RES5**	**ERAY_TBF_IBF0_EN**	**RES3**	**ERAY_OBF0_EN**	**RES1**	**RES0**
r	rwh	rwh	rwh	rwh	rwh	rwh	rwh	r	rwh	r	rwh	r	rwh	r	r

Field	Bits	Type	Description
RESx (x=0-1,3,5,7,15-31)	x	r	**Reserved** Reserved. Shall be written with zero.
ERAY_OBF0_EN	2	rwh	**ERAY OBF0 SSH instance Enable** 0_B SSH instance is disabled 1_B SSH instance is enabled
ERAY_TBF_IBF0_EN	4	rwh	**ERAY TBF IBF0 memory SSH instance Enable** 0_B SSH instance is disabled 1_B SSH instance is enabled

Field	Bits	Type	Description
ERAY_MBF0_EN	6	rwh	**ERAY MBF0 memory SSH instance Enable** 0_B SSH instance is disabled 1_B SSH instance is enabled
R8	8	rwh	**Reserved - Res** Reserved. Not used in this product. Shall be written with zero.
R9	9	rwh	**Reserved - Res** Reserved. Not used in this product. Shall be written with zero.
R10	10	rwh	**Reserved - Res** Reserved. Not used in this product. Shall be written with zero.
R11	11	rwh	**Reserved - Res** Reserved. Not used in this product. Shall be written with zero.
R12	12	rwh	**Reserved - Res** Reserved. Not used in this product. Shall be written with zero.
SCR_XRAM_EN	13	rwh	**SCR XRAM SSH instance Enable** 0_B SSH instance is disabled 1_B SSH instance is enabled
SCR_RAMINT_EN	14	rwh	**SCR Internal RAM SSH instance Enable** 0_B SSH instance is disabled 1_B SSH instance is enabled

13.4.2 MEMMAP Implementation

The Memory Mapping Enable register MEMMAP has configurable control bits to select memory-mapped test mode for each CPU memory.

Cache and Scratchpad memories are physically implemented as a single RAM, but this register function assumes two separate logical RAM partitions. In this register additional bits CPUxDCMAP and CPUxPCMAP are defined. These control the Cache partitions of the RAMs for Data Side and Program side respectively. Since cache content and tags of a cache must be simultaneously switched from memory mapped to cache functional mode, the control bits are mirrored and only one bit is writeable for each cache. The bits corresponding to the tag memories of the same cache will always take the same value as that written to the main Cache Memory control bit. This linkage is product specific.

Please note that the MEMMAP register is used only to map the Cache/Tag memories to system address space. These bits have no effect on testing these memories itself. For system address range into which the memories will be mapped, please refer to the memory map chapter.

Memory Mapping Enable Register

The Memory Mapping Enable register MEMMAP has configurable control bits to select memory-mapped test mode. See the Integration Section for mapping of memory controller numbers.

MTU_MEMMAP
Memory Mapping Enable Register **($001C_H$)** **Application Reset Value: $0000\ 0000_H$**

31	30	29	28	27	26	25	24	23	22	21	20	19	18	17	16
R29			MEM28MAP	MEM27MAP	MEM26MAP	MEM25MAP	R24	MEM23MAP	MEM22MAP	MEM21MAP	MEM20MAP	R19	MEM18MAP	MEM17MAP	MEM16MAP
r			r	r	r	r	r	r	r	r	r	r	r	r	r

15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
MEM15MAP	R14	MEM13MAP	MEM12MAP	MEM11MAP	MEM10MAP	R9	MEM8MAP	MEM7MAP	MEM6MAP	MEM5MAP	R4	CPU0_PTMAP	CPU0_PCMAP	CPU0_DTMAP	CPU0_DCMAP
r	r	r	r	r	r	r	r	r	r	r	r	rh	rwh	rh	rwh

Field	Bits	Type	Description
CPU0_DCMAP	0	rwh	**CPU0 DCache Mapping** 0_B Normal cache function 1_B Memory-mapped
MEMxMAP (x=5-8,10-13,15-18,20-23,25-28)	x	r	**MEMx Mapping Enable** Reserved; Not used in this product. Shall be written with zero.
CPU0_DTMAP	1	rh	**CPU0 DTAG Mapping** Read only. Mirrors the state of CPU0_DCMAP. CPU D-cache memories may only be mapped simultaneously. 0_B Normal cache function 1_B Memory-mapped

Field	Bits	Type	Description
CPU0_PCMAP	2	rwh	**CPU0 PCACHE Mapping** 0_B Normal cache function 1_B Memory-mapped
CPU0_PTMAP	3	rh	**CPU0 PTAG Mapping** Read only. Mirrors the state of CPU0_PCMAP. CPU P-cache memories may only be mapped simultaneously. 0_B Normal cache function 1_B Memory-mapped
R4	4	r	**Reserved - Res** Reserved. Not used in this product.
R9	9	r	**Reserved - Res** Reserved. Not used in this product.
R14	14	r	**Reserved - Res** Reserved. Not used in this product.
R19	19	r	**Reserved - Res** Reserved. Not used in this product.
R24	24	r	**Reserved - Res** Reserved. Not used in this product.
R29	31:29	r	**Reserved - Res** Reserved. Not used in this product.

13.4.3 MEMSTAT Implementation

The Memory Status Registers MEMSTATx have an implemented bit for each security relevant RAM.

The Data- and Program- Cache and Scratchpad memories are physically implemented as a single RAM with a single MBIST. Hence CPUx_DMEM_AIU and CPUx_PMEM_AIU give the status of the partial initialization of the cache partitions for the Data and Program memories respectively.

Memory Status Register i

The memory status register MEMSTAT shows whether each SSH instance is currently executing an automatic initialization sequence.

MTU_MEMSTATi (i=0)
Memory Status Register i **(0038_H+i*4)** **Application Reset Value: 0000 0000_H**

31	30	29	28	27	26	25	24	23	22	21	20	19	18	17	16
R29			RES28	RES27	RES26	RES25	R24	RES23	RES22	RES21	RES20	R19	RES18	RES17	RES16
	r		r	r	r	r	r	r	r	r	r	r	r	r	r

15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
RES15	R14	RES13	RES12	RES11	RES10	R9	RES8	RES7	RES6	RES5	R4	CPU0_PTAG_AIU	CPU0_PMEM_AIU	CPU0_DTAG_AIU	CPU0_DMEM_AIU
r	r	r	r	r	r	r	r	r	r	r	r	rh	rh	rh	rh

Field	Bits	Type	Description
CPU0_DMEM_AIU	0	rh	**CPU0 DMEM Partial AutoInitialize of Cache Partition Underway** This bit indicates whether an automatic data initialization has been triggered by a change of state of MEMTEST.MEMxEN or MEMxMAP but that the intialization sequence has not yet completed. 0_B MBIST not running autoinitialize 1_B MBIST running autoinitialize
RESx (x=5-8,10-13,15-18,20-23,25-28)	x	r	**Reserved** Reserved. Not used in this product.
CPU0_DTAG_AIU	1	rh	**CPU0 DTAG MBIST AutoInitialize Underway** This bit indicates whether an automatic data initialization has been triggered by a change of state of MEMTEST.MEMxEN or MEMxMAP but that the intialization sequence has not yet completed. 0_B MBIST not running autoinitialize 1_B MBIST running autoinitialize
CPU0_PMEM_AIU	2	rh	**CPU0 PMEM Partial AutoInitialize of Cache Partition Underway** This bit indicates whether an automatic data initialization has been triggered by a change of state of MEMTEST.MEMxEN or MEMxMAP but that the intialization sequence has not yet completed. 0_B MBIST not running autoinitialize 1_B MBIST running autoinitialize

Field	Bits	Type	Description
CPU0_PTAG_AIU	3	rh	**CPU0 PTAG MBIST AutoInitialize Underway** This bit indicates whether an automatic data initialization has been triggered by a change of state of MEMTEST.MEMxEN or MEMxMAP but that the intialization sequence has not yet completed. 0_B MBIST not running autoinitialize 1_B MBIST running autoinitialize
R4	4	r	**Reserved - Res** Reserved. Not used in this product.
R9	9	r	**Reserved - Res** Reserved. Not used in this product.
R14	14	r	**Reserved - Res** Reserved. Not used in this product.
R19	19	r	**Reserved - Res** Reserved. Not used in this product.
R24	24	r	**Reserved - Res** Reserved. Not used in this product.
R29	31:29	r	**Reserved - Res** Reserved. Not used in this product.

MTU_MEMSTATi (i=1)

Memory Status Register i **(0038_H+i*4)** **Application Reset Value: 0000 0000_H**

31	30	29	28	27	26	25	24	23	22	21	20	19	18	17	16
R9															
r															

15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
R9							R8	R5			R4	RES3	CPU0_DMEM1_AIU	R0	
r							rh	r			r	r	rh	r	

Field	Bits	Type	Description
R0	1:0	r	**Reserved - Res** Reserved. Not used in this product.
RESx (x=3)	x	r	**Reserved** Reserved. Not used in this product.
CPU0_DMEM1_AIU	2	rh	**CPU0 DMEM1 Partial AutoInitialize of Cache Partition Underway** 0_B SSH instance is disabled 1_B SSH instance is enabled [1].
R4	4	r	**Reserved - Res** Reserved. Not used in this product.
R5	7:5	r	**Reserved - Res** Reserved. Not used in this product.

Field	Bits	Type	Description
R8	8	rh	**Reserved - Res** Reserved. Not used in this product.
R9	31:9	r	**Reserved - Res** Reserved. Not used in this product.

1) Please refer to separate section related to handling of the large DMEM on this device.

MTU_MEMSTATi (i=2)

Memory Status Register i **(0038_H+i*4)** **Application Reset Value: 0000 0000_H**

31	30	29	28	27	26	25	24	23	22	21	20	19	18	17	16
R18														R17	R13
r														r	r

15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
R13			R12	R11	R10	R9	R8	R5			R4	R2		R0	
r			rh	rh	rh	rh	rh	r			r	r		r	

Field	Bits	Type	Description
R0	1:0	r	**Reserved - Res** Reserved. Not used in this product.
R2	3:2	r	**Reserved - Res** Reserved. Not used in this product.
R4	4	r	**Reserved - Res** Reserved. Not used in this product.
R5	7:5	r	**Reserved - Res** Reserved. Not used in this product.
R8	8	rh	**Reserved - Res** Reserved. Not used in this product.
R9	9	rh	**Reserved - Res** Reserved. Not used in this product.
R10	10	rh	**Reserved - Res** Reserved. Not used in this product.
R11	11	rh	**Reserved - Res** Reserved. Not used in this product.
R12	12	rh	**Reserved - Res** Reserved. Not used in this product.
R13	16:13	r	**Reserved - Res** Reserved. Not used in this product.
R17	17	r	**Reserved - Res** Reserved. Not used in this product.
R18	31:18	r	**Reserved - Res** Reserved. Not used in this product.

13.4.4 MEMDONE Implementation

Memory Test Done Status Register i

Each bit in one of the memory test done status registers MEMDONEx reflects the status of the MSTATUS.DONE bit in the corresponding SSH. See the implementation section for the implemented register bits.

MTU_MEMDONEi (i=0)

Memory Test Done Status Register i **(0050_H+i*4)** **Application Reset Value: FFFF $FFFF_H$**

31	30	29	28	27	26	25	24	23	22	21	20	19	18	17	16
RES31	**RES30**	**RES29**	**RES28**	**RES27**	**RES26**	**RES25**	**RES24**	**RES23**	**RES22**	**RES21**	**RES20**	**RES19**	**RES18**	**RES17**	**RES16**
r	r	r	r	r	r	r	r	r	r	r	r	r	r	r	r

15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
RES15	**RES14**	**RES13**	**RES12**	**RES11**	**RES10**	**RES9**	**RES8**	**RES7**	**RES6**	**RES5**	**CPU0_DLMU_STBY_DON**	**CPU0_PTAG_DONE**	**CPU0_PMEM_DONE**	**CPU0_DTAG_DONE**	**CPU0_DMEM_DONE**
r	r	r	r	r	r	r	r	r	r	r	rh	rh	rh	rh	rh

Field	Bits	Type	Description
CPU0_DMEM_DONE	0	rh	**CPU0 DMEM Test Done Status** 0_B SSH MSTATUS.DONE = 0 1_B SSH MSTATUS.DONE = 1
RESz (z=5-31)	z	r	**Reserved** Reserved. Not used in this product.
CPU0_DTAG_DONE	1	rh	**CPU0 DTAG Test Done Status** 0_B SSH MSTATUS.DONE = 0 1_B SSH MSTATUS.DONE = 1
CPU0_PMEM_DONE	2	rh	**CPU0 PMEM Test Done Status** 0_B SSH MSTATUS.DONE = 0 1_B SSH MSTATUS.DONE = 1
CPU0_PTAG_DONE	3	rh	**CPU0 PTAG Test Done Status** 0_B SSH MSTATUS.DONE = 0 1_B SSH MSTATUS.DONE = 1
CPU0_DLMU_STBY_DONE	4	rh	**CPU0 STANDBY DLMU Test Done Status** 0_B SSH MSTATUS.DONE = 0 1_B SSH MSTATUS.DONE = 1

MTU_MEMDONEi (i=1)

Memory Test Done Status Register i **(0050_H+i*4)** **Application Reset Value: FFFF FFFF$_H$**

31	30	29	28	27	26	25	24	23	22	21	20	19	18	17	16
MCAN20_DONE	MCAN10_DONE	RES29	RES28	RES27	RES26	RES25	RES24	RES23	RES22	RES21	RES20	RES19	RES18	RES17	RES16
rh	rh	r	r	r	r	r	r	r	r	r	r	r	r	r	r

15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
RES15	RES14	RES13	RES12	RES11	RES10	SADMA_DONE	R8	RES7	RES6	RES5	RES4	RES3	CPU0_DMEM1_DONE	RES1	RES0
r	r	r	r	r	r	rh	rh	r	r	r	r	r	rh	r	r

Field	Bits	Type	Description
RESz (z=0-1,3-7,10-29)	z	r	**Reserved** Reserved. Not used in this product.
CPU0_DMEM1_DONE	2	rh	**CPU0 DMEM1 Test Done Status** 0_B SSH instance is disabled 1_B SSH instance is enabled [1].
R8	8	rh	**Reserved - Res** Reserved. Not used in this product.
SADMA_DONE	9	rh	**Safety DMA Test Done Status** 0_B SSH MSTATUS.DONE = 0 1_B SSH MSTATUS.DONE = 1
MCAN10_DONE	30	rh	**MCAN10 memory Test Done Status** 0_B SSH MSTATUS.DONE = 0 1_B SSH MSTATUS.DONE = 1
MCAN20_DONE	31	rh	**MCAN20 memory Test Done Status** 0_B SSH MSTATUS.DONE = 0 1_B SSH MSTATUS.DONE = 1

1) Please refer to separate section related to handling of the large DMEM on this device.

MTU_MEMDONEi (i=2)

Memory Test Done Status Register i **(0050_H+i*4)** **Application Reset Value: FFFF FFFF$_H$**

31	30	29	28	27	26	25	24	23	22	21	20	19	18	17	16
RES31	RES30	RES29	RES28	RES27	RES26	RES25	RES24	RES23	RES22	RES21	RES20	RES19	RES18	RES17	RES16
r	r	r	r	r	r	r	r	r	r	r	r	r	r	r	r

15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
RES15	SCR_RAMINT_DONE	SCR_XRAM_DONE	R12	R11	R10	R9	R8	RES7	ERAY_MBF0_DONE	RES5	ERAY_TBF_IBF0_DONE	RES3	ERAY_OBF0_DONE	RES1	RES0
r	rh	rh	rh	rh	rh	rh	rh	r	rh	r	rh	r	rh	r	r

Field	Bits	Type	Description
RESz (z=0-1,3,5,7,15-31)	z	r	**Reserved** Reserved. Not used in this product.
ERAY_OBF0_DONE	2	rh	**ERAY OBF0 Test Done Status** 0_B SSH MSTATUS.DONE = 0 1_B SSH MSTATUS.DONE = 1
ERAY_TBF_IBF0_DONE	4	rh	**ERAY TBF IBF0 memory Test Done Status** 0_B SSH MSTATUS.DONE = 0 1_B SSH MSTATUS.DONE = 1
ERAY_MBF0_DONE	6	rh	**ERAY MBF0 memory Test Done Status** 0_B SSH MSTATUS.DONE = 0 1_B SSH MSTATUS.DONE = 1
R8	8	rh	**Reserved - Res** Reserved. Not used in this product.
R9	9	rh	**Reserved - Res** Reserved. Not used in this product.
R10	10	rh	**Reserved - Res** Reserved. Not used in this product.
R11	11	rh	**Reserved - Res** Reserved. Not used in this product.
R12	12	rh	**Reserved - Res** Reserved. Not used in this product.
SCR_XRAM_DONE	13	rh	**SCR XRAM Test Done Status** 0_B SSH MSTATUS.DONE = 0 1_B SSH MSTATUS.DONE = 1
SCR_RAMINT_DONE	14	rh	**SCR Internal RAM Test Done Status** 0_B SSH MSTATUS.DONE = 0 1_B SSH MSTATUS.DONE = 1

13.4.5 MEMFDA Implementation

Memory Test FDA Status Register i

Each bit in one of the memory test done status registers MEMFDAx reflects the status of the MSTATUS.FDA bit in the corresponding SSH. See the implementation section for the implemented register bits.

MTU_MEMFDAi (i=0)

Memory Test FDA Status Register i **(0060_H+i*4)** **Application Reset Value: 0000 0000_H**

31	30	29	28	27	26	25	24	23	22	21	20	19	18	17	16
RES31	RES30	RES29	RES28	RES27	RES26	RES25	RES24	RES23	RES22	RES21	RES20	RES19	RES18	RES17	RES16
r	r	r	r	r	r	r	r	r	r	r	r	r	r	r	r

15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
RES15	RES14	RES13	RES12	RES11	RES10	RES9	RES8	RES7	RES6	RES5	CPU0_DLMU_STBY_FDA	CPU0_PTAG_FDA	CPU0_PMEM_FDA	CPU0_DTAG_FDA	CPU0_DMEM_FDA
r	r	r	r	r	r	r	r	r	r	r	rh	rh	rh	rh	rh

Field	Bits	Type	Description
CPU0_DMEM_FDA	0	rh	**CPU0 DMEM Test FDA Status** 0_B SSH MSTATUS.FDA = 0 1_B SSH MSTATUS.FDA = 1
RESz (z=5-31)	z	r	**Reserved** Reserved. Not used in this product.
CPU0_DTAG_FDA	1	rh	**CPU0 DTAG Test FDA Status** 0_B SSH MSTATUS.FDA = 0 1_B SSH MSTATUS.FDA = 1
CPU0_PMEM_FDA	2	rh	**CPU0 PMEM Test FDA Status** 0_B SSH MSTATUS.FDA = 0 1_B SSH MSTATUS.FDA = 1
CPU0_PTAG_FDA	3	rh	**CPU0 PTAG Test FDA Status** 0_B SSH MSTATUS.FDA = 0 1_B SSH MSTATUS.FDA = 1
CPU0_DLMU_STBY_FDA	4	rh	**CPU0 STANDBY DLMU Test FDA Status** 0_B SSH MSTATUS.FDA = 0 1_B SSH MSTATUS.FDA = 1

MTU_MEMFDAi (i=1)

Memory Test FDA Status Register i **(0060_H+i*4)** **Application Reset Value: 0000 0000_H**

31	30	29	28	27	26	25	24	23	22	21	20	19	18	17	16
MCAN20_FDA	MCAN10_FDA	RES29	RES28	RES27	RES26	RES25	RES24	RES23	RES22	RES21	RES20	RES19	RES18	RES17	RES16
rh	rh	r	r	r	r	r	r	r	r	r	r	r	r	r	r

15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
RES15	RES14	RES13	RES12	RES11	RES10	SADMA_FDA	R8	RES7	RES6	RES5	RES4	RES3	CPU0_DMEM1_FDA	RES1	RES0
r	r	r	r	r	r	rh	rh	r	r	r	r	r	rh	r	r

Field	Bits	Type	Description
RESz (z=0-1,3-7,10-29)	z	r	**Reserved** Reserved. Not used in this product.
CPU0_DMEM1_FDA	2	rh	**CPU0 DMEM1 Test FDA Status** 0_B SSH MSTATUS.FDA = 0 1_B SSH MSTATUS.FDA = 1
R8	8	rh	**Reserved - Res** Reserved. Not used in this product.
SADMA_FDA	9	rh	**Safety DMA Test FDA Status** 0_B SSH MSTATUS.FDA = 0 1_B SSH MSTATUS.FDA = 1
MCAN10_FDA	30	rh	**MCAN10 memory Test FDA Status** 0_B SSH MSTATUS.FDA = 0 1_B SSH MSTATUS.FDA = 1
MCAN20_FDA	31	rh	**MCAN20 memory Test FDA Status** 0_B SSH MSTATUS.FDA = 0 1_B SSH MSTATUS.FDA = 1

MTU_MEMFDAi (i=2)

Memory Test FDA Status Register i **(0060_H+i*4)** **Application Reset Value: $0000\ 0000_H$**

31	30	29	28	27	26	25	24	23	22	21	20	19	18	17	16
RES31	**RES30**	**RES29**	**RES28**	**RES27**	**RES26**	**RES25**	**RES24**	**RES23**	**RES22**	**RES21**	**RES20**	**RES19**	**RES18**	**RES17**	**RES16**
r	r	r	r	r	r	r	r	r	r	r	r	r	r	r	r

15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
RES15	**SCR_RAMINT_FDA**	**SCR_XRAM_FDA**	**R12**	**R11**	**R10**	**R9**	**R8**	**RES7**	**ERAY_MBF0_FDA**	**RES5**	**ERAY_TBF_IBF0_FDA**	**RES3**	**ERAY_OBF0_FDA**	**RES1**	**RES0**
r	rh	rh	rh	rh	rh	rh	rh	r	rh	r	rh	r	rh	r	r

Field	Bits	Type	Description
RESz (z=0-1,3,5,7,15-31)	z	r	**Reserved** Reserved. Not used in this product.
ERAY_OBF0_FDA	2	rh	**ERAY OBF0 Test FDA Status** 0_B SSH MSTATUS.FDA = 0 1_B SSH MSTATUS.FDA = 1
ERAY_TBF_IBF0_FDA	4	rh	**ERAY TBF IBF0 memory Test FDA Status** 0_B SSH MSTATUS.FDA = 0 1_B SSH MSTATUS.FDA = 1
ERAY_MBF0_FDA	6	rh	**ERAY MBF0 memory Test FDA Status** 0_B SSH MSTATUS.FDA = 0 1_B SSH MSTATUS.FDA = 1

Field	Bits	Type	Description
R8	8	rh	**Reserved - Res** Reserved. Not used in this product.
R9	9	rh	**Reserved - Res** Reserved. Not used in this product.
R10	10	rh	**Reserved - Res** Reserved. Not used in this product.
R11	11	rh	**Reserved - Res** Reserved. Not used in this product.
R12	12	rh	**Reserved - Res** Reserved. Not used in this product.
SCR_XRAM_FDA	13	rh	**SCR XRAM Test FDA Status** 0_B SSH MSTATUS.FDA = 0 1_B SSH MSTATUS.FDA = 1
SCR_RAMINT_FDA	14	rh	**SCR Internal RAM Test FDA Status** 0_B SSH MSTATUS.FDA = 0 1_B SSH MSTATUS.FDA = 1

13.5 SSH Instances

The system SRAMs do not all have the same configuration. **Table 49 "SSH instances" on Page 18** shows the instance-specific configurations of the SRAM Support Hardware.

The ECC values for all SRAMs are computed only out of the data information*.

The base address of an SSH instance MCx can be calculated from the MC_BASE (defined in the platform chapter) as: Base Address of SSH instance x (MCx) = MC_BASE + x*0x100

Table 49 SSH instances

(MCx) x =	Module	Error Addr Buffer (ETRR) Depth	ECC type	ECC granularity	Mux Factor
0	CPU0_DMEM	5	SECDED	2	16
1	CPU0_DTAG	5	SECDED	2	4
2	CPU0_PMEM	5	SECDED	2	8
3	CPU0_PTAG	5	DED	2	4
4	CPU0_DLMU_STBY	5	SECDED	2	8
5	Reserved				
6	Reserved				
7	Reserved				
8	Reserved				
9	Reserved				
10	Reserved				
11	Reserved				
12	Reserved				
13	Reserved				
14	Reserved				
15	Reserved				
16	Reserved				
17	Reserved				
18	Reserved				
19	Reserved				
20	Reserved				
21	Reserved				
22	Reserved				
23	Reserved				
24	Reserved				
25	Reserved				
26	Reserved				
27	Reserved				
28	Reserved				
29	Reserved				

Table 49 SSH instances (cont'd)

(MCx) x =	Module	Error Addr Buffer (ETRR) Depth	ECC type	ECC granularity	Mux Factor
30	Reserved				
31	Reserved				
32	Reserved				
33	Reserved				
34	CPU0_DMEM1	5	SECDED	2	16
35	Reserved				
36-37	Reserved				
38	Reserved				
39	Reserved				
41	SADMA	5	SECDED	1	4
42	Reserved				
43	Reserved				
44	Reserved				
45	Reserved				
46	Reserved				
47	Reserved				
48	Reserved				
49	Reserved				
50	Reserved				
51	Reserved				
52	Reserved				
53	Reserved				
54	Reserved				
55	Reserved				
56	Reserved				
57	Reserved				
58	Reserved				
59	Reserved				
60	Reserved				
61	Reserved				
62	MCAN10	5	SECDED	1	16
63	MCAN20	5	SECDED	1	16
64	Reserved				
65	Reserved				
66	ERAY_OBF0	5	SECDED	1	4
67	Reserved				
68	ERAY_TBF_IBF0	5	SECDED	1	4

Table 49 SSH instances (cont'd)

(MCx) x =	Module	Error Addr Buffer (ETRR) Depth	ECC type	ECC granularity	Mux Factor
69	Reserved				
70	ERAY_MBF0	5	SECDED	1	4
71	Reserved				
77	SCR_XRAM	5	SECDED	2	8
78	SCR_RAMINT	5	SECDED	1	4
79	Reserved				
80	Reserved				
81	Reserved				
82	Reserved				
83	Reserved				
84	Reserved				
85	Reserved				
86- 87	Reserved				
88	Reserved				
89	Reserved				
90	Reserved				
91	Reserved				
92	Reserved				
93	Reserved				
94	Reserved				
95	Reserved				

13.5.1 Ganging for SRAM test and initialization

Whenever an MBIST test or SRAM initialization is started via the MTU/SSH, there is a certain jump in the current consumption, due to the parallel accesses to the SRAM cells during the test or initialization. This current jump is different for the different SRAMs in the product, and depends on the size of the SRAM, the clock frequency e.t.c.

If too many SRAMs are tested or initialized in parallel, it may result in a significant current jump, which may put the device outside of the specified operating conditions. On the other hand, in order to reduce the overall test and/or initialization time, it may be imperative for the application to perform the test or initialization of many SRAMs in parallel.

In order to achieve this trade-off between current jump and test/initialization time - it is advised to partition the available SRAMs into different “Gangs”. This is referred to as Ganging. The SRAMs in each Gang are all initialized/tested in parallel - while the Gangs themselves are executed in sequence, one after the other. This ensures that the current jump never exceeds the allowed limits, while at the same time the overall test time is minimized.

Gangs 0-16 are defined for the platform. Depending on the device and the number of implemented SRAMs, the number of gangs needed may be less. The numbering of the gangs is not important and does not signify any order.

In the below ganging tables, a ganging configuration for this product is shown. This assumes a 4-march element (4N) non-destructive test (r,w*,r*,w) on a zero-data background (i.e. the SRAM is cleared with ECC-correct zero data). The same gangs may be used for SRAM initialization.

The provided ganging example is ensured to satisfy the specified limitations in current jumps of this device, while at the same time optimizing the overall test time. All implemented SRAMs are considered here. If certain SRAMs are not of interest to a particular application, then the gangs may be modified appropriately.

Table 50 GANG-0

MCx(x=)	Module / SRAM
00	CPU0_DMEM
02	CPU0_PMEM
04	CPU0_DLMU_STBY
34	CPU0_DMEM1
62	MCAN10
63	MCAN20
70	ERAY_MBF0
77	SCR_XRAM
78	SCR_RAMINT

Table 51 GANG-1

MCx(x=)	Module / SRAM
01	CPU0_DTAG
03	CPU0_PTAG
41	SADMA
66	ERAY_OBF0
68	ERAY_TBF_IBF0

13.6 Connectivity

Table 52 Connections of MTU

Interface Signals	connects		Description
MTU:CPU0DCMAP	to	cpu_pfi_pfrwb_0:tc162p_dcache_map	CPU dcache mapped indicator per cpu
MTU:CPU0PCMAP	to	cpu_pfi_pfrwb_0:tc162p_pcache_map	CPU pcache mapped indicator per cpu
MTU:dmu_no_ram_init	from	DMU:MTU_NO_RAMIN	Disable RAM auto-initialization
MTU:scu_hsm_dbg	from	SCU:scu_hsm_dbg	HSM debug enable from SCU
MTU:sleep_n	from	SCU:scu_syst_sleep_n	Sleep request
MTU:DONE_INT	to	INT:mtu.DONE_INT	MTU Done Service Request
MTU:tcu_hsm_dbg_analysis_en	from	TCU:hsm_debug_mode	HSM debug request from TCU

13.7 Revision History

Table 53 Revision History

Reference	Change to Previous Version	Comment
V7.4.7		
	Initial version for TC33X.	
V7.4.8		
Page 22	Revision History entries up to V7.4.7 removed.	
Page 7	MEMMAP Reserved (not implemented) bits changed to “read”.	
	Settings for bitfield CPU1_DMEM1 corrected in MEMTEST, MEMSTAT, MEMDONE and MEMFDA registers.	
Page 21	Ganging information: Typo for CPU0_DMEM1 corrected.	
Page 3, **Page 12**, **Page 14**	"SADMA" changed to "Safety DMA" in short description of MEMTEST1/9, MEMDONE1/9 and MEMFDA1/9 bit fields.	
V7.4.9		
Page 21	Unhide for external audience: MCAN10.	
Page 21	Unhide for external audience: CPU0_PTAG, CPU0_DTAG.	
V7.4.10		
–	No functional changes.	
V7.4.11		
–	No functional changes.	
V7.4.12		
–	No functional changes.	
V7.4.13		
Page 9	Wrongly mentioned bit field in MTU_MEMSTATi (i=2) fixed.	

14 General Purpose I/O Ports and Peripheral I/O Lines (Ports)

This chapter supplements the family documentation with device specific information for TC33x/TC32x.

14.1 TC33x/TC32x Specific IP Configuration

The Ports configuration (which Port modules are implemented, their width and functionality) is represented by the device specific register set shown in this chapter.

14.2 TC33x/TC32x Specific Register Set

Table 54 Register Address Space - Pn

Module	Base Address	End Address	Note
P00	$F003A000_H$	$F003A0FF_H$	SPB bus slave interface
P02	$F003A200_H$	$F003A2FF_H$	SPB bus slave interface
P10	$F003AA00_H$	$F003AAFF_H$	SPB bus slave interface
P11	$F003AB00_H$	$F003ABFF_H$	SPB bus slave interface
P13	$F003AD00_H$	$F003ADFF_H$	SPB bus slave interface
P14	$F003AE00_H$	$F003AEFF_H$	SPB bus slave interface
P15	$F003AF00_H$	$F003AFFF_H$	SPB bus slave interface
P20	$F003B400_H$	$F003B4FF_H$	SPB bus slave interface
P21	$F003B500_H$	$F003B5FF_H$	SPB bus slave interface
P22	$F003B600_H$	$F003B6FF_H$	SPB bus slave interface
P23	$F003B700_H$	$F003B7FF_H$	SPB bus slave interface
P32	$F003C000_H$	$F003C0FF_H$	SPB bus slave interface
P33	$F003C100_H$	$F003C1FF_H$	SPB bus slave interface
P34	$F003C200_H$	$F003C2FF_H$	SPB bus slave interface
P40	$F003C800_H$	$F003C8FF_H$	SPB bus slave interface

Register Overview Tables of Pn

Table 55 Register Overview - P00 (ascending Offset Address)

Short Name	Long Name	Offset Address	Access Mode		Reset	Page Number
			Read	Write		
P00_OUT	Port 00 Output Register	000_H	U,SV	U,SV,P	Application Reset	25
P00_OMR	Port 00 Output Modification Register	004_H	U,SV	U,SV,P	Application Reset	28
P00_ID	Port 00 Identification Register	008_H	U,SV	BE	Application Reset	33
	Reserved (004_H Byte)	$00C_H$	BE	BE		
P00_IOCR0	Port 00 Input/Output Control Register 0	010_H	U,SV	U,SV,P	See page 34	34

Table 55 Register Overview - P00 (ascending Offset Address) (cont'd)

Short Name	Long Name	Offset Address	Access Mode		Reset	Page Number
			Read	Write		
P00_IOCR4	Port 00 Input/Output Control Register 4	014_H	U,SV	U,SV,P	See page 39	39
P00_IOCR8	Port 00 Input/Output Control Register 8	018_H	U,SV	U,SV,P	See page 42	42
P00_IOCR12	Port 00 Input/Output Control Register 12	$01C_H$	U,SV	U,SV,P	See page 43	43
	Reserved (004_H Byte)	020_H	BE	BE		
P00_IN	Port 00 Input Register	024_H	U,SV	BE	Application Reset	45
	Reserved (004_H Byte) (x=0-5)	028_H+x* 4	BE	BE		
P00_PDR0	Port 00 Pad Driver Mode Register 0	040_H	U,SV	SV,E,P	See page 48	48
P00_PDR1	Port 00 Pad Driver Mode Register 1	044_H	U,SV	SV,E,P	See page 53	53
	Reserved (004_H Byte) (x=0-1)	048_H+x* 4	BE	BE		
P00_ESR	Port 00 Emergency Stop Register	050_H	U,SV	SV,E,P	Application Reset	55
	Reserved (004_H Byte) (x=0-2)	054_H+x* 4	BE	BE		
P00_PDISC	Port 00 Pin Function Decision Control Register	060_H	U,SV	SV,E,P	See page 62	62
P00_PCSR	Port 00 Pin Controller Select Register	064_H	U,SV	SV,SE	Application Reset	67
	Reserved (004_H Byte) (x=0-1)	068_H+x* 4	BE	BE		
P00_OMSR0	Port 00 Output Modification Set Register 0	070_H	U,SV	U,SV,P	Application Reset	73
P00_OMSR4	Port 00 Output Modification Set Register 4	074_H	U,SV	U,SV,P	Application Reset	76
P00_OMSR8	Port 00 Output Modification Set Register 8	078_H	U,SV	U,SV,P	Application Reset	78
P00_OMSR12	Port 00 Output Modification Set Register 12	$07C_H$	U,SV	U,SV,P	Application Reset	80
P00_OMCR0	Port 00 Output Modification Clear Register 0	080_H	U,SV	U,SV,P	Application Reset	81
P00_OMCR4	Port 00 Output Modification Clear Register 4	084_H	U,SV	U,SV,P	Application Reset	83
P00_OMCR8	Port 00 Output Modification Clear Register 8	088_H	U,SV	U,SV,P	Application Reset	86

Table 55 Register Overview - P00 (ascending Offset Address) (cont'd)

Short Name	Long Name	Offset Address	Access Mode		Reset	Page Number
			Read	Write		
P00_OMCR12	Port 00 Output Modification Clear Register 12	$08C_H$	U,SV	U,SV,P	Application Reset	87
P00_OMSR	Port 00 Output Modification Set Register	090_H	U,SV	U,SV,P	Application Reset	88
P00_OMCR	Port 00 Output Modification Clear Register	094_H	U,SV	U,SV,P	Application Reset	91
	Reserved (004_H Byte) (x=0-1)	098_H+x* 4	BE	BE		
	Reserved (004_H Byte) (x=0-13)	$0C0_H$+x* 4	BE	BE		
P00_ACCEN1	Port 00 Access Enable Register 1	$0F8_H$	U,SV	SV,SE	Application Reset	97
P00_ACCEN0	Port 00 Access Enable Register 0	$0FC_H$	U,SV	SV,SE	Application Reset	99

Table 56 Register Overview - P02 (ascending Offset Address)

Short Name	Long Name	Offset Address	Access Mode		Reset	Page Number
			Read	Write		
P02_OUT	Port 02 Output Register	000_H	U,SV	U,SV,P	Application Reset	26
P02_OMR	Port 02 Output Modification Register	004_H	U,SV	U,SV,P	Application Reset	30
P02_ID	Port 02 Identification Register	008_H	U,SV	BE	Application Reset	33
	Reserved (004_H Byte)	$00C_H$	BE	BE		
P02_IOCR0	Port 02 Input/Output Control Register 0	010_H	U,SV	U,SV,P	See page 34	34
P02_IOCR4	Port 02 Input/Output Control Register 4	014_H	U,SV	U,SV,P	See page 39	39
P02_IOCR8	Port 02 Input/Output Control Register 8	018_H	U,SV	U,SV,P	See page 42	42
	Reserved (004_H Byte)	020_H	BE	BE		
P02_IN	Port 02 Input Register	024_H	U,SV	BE	Application Reset	46
	Reserved (004_H Byte) (x=0-5)	028_H+x* 4	BE	BE		
P02_PDR0	Port 02 Pad Driver Mode Register 0	040_H	U,SV	SV,E,P	See page 48	48
P02_PDR1	Port 02 Pad Driver Mode Register 1	044_H	U,SV	SV,E,P	See page 54	54

Table 56 Register Overview - P02 (ascending Offset Address) (cont'd)

Short Name	Long Name	Offset Address	Access Mode		Reset	Page Number
			Read	Write		
	Reserved (004_H Byte) (x=0-1)	048_H+x* 4	BE	BE		
P02_ESR	Port 02 Emergency Stop Register	050_H	U,SV	SV,E,P	Application Reset	57
	Reserved (004_H Byte) (x=0-2)	054_H+x* 4	BE	BE		
P02_PDISC	Port 02 Pin Function Decision Control Register	060_H	U,SV	SV,E,P	See page 64	64
P02_PCSR	Port 02 Pin Controller Select Register	064_H	U,SV	SV,SE	Application Reset	69
	Reserved (004_H Byte) (x=0-1)	068_H+x* 4	BE	BE		
P02_OMSR0	Port 02 Output Modification Set Register 0	070_H	U,SV	U,SV,P	Application Reset	73
P02_OMSR4	Port 02 Output Modification Set Register 4	074_H	U,SV	U,SV,P	Application Reset	76
P02_OMSR8	Port 02 Output Modification Set Register 8	078_H	U,SV	U,SV,P	Application Reset	78
P02_OMCR0	Port 02 Output Modification Clear Register 0	080_H	U,SV	U,SV,P	Application Reset	81
P02_OMCR4	Port 02 Output Modification Clear Register 4	084_H	U,SV	U,SV,P	Application Reset	83
P02_OMCR8	Port 02 Output Modification Clear Register 8	088_H	U,SV	U,SV,P	Application Reset	86
P02_OMSR	Port 02 Output Modification Set Register	090_H	U,SV	U,SV,P	Application Reset	89
P02_OMCR	Port 02 Output Modification Clear Register	094_H	U,SV	U,SV,P	Application Reset	93
	Reserved (004_H Byte) (x=0-1)	098_H+x* 4	BE	BE		
	Reserved (004_H Byte) (x=0-13)	$0C0_H$+x* 4	BE	BE		
P02_ACCEN1	Port 02 Access Enable Register 1	$0F8_H$	U,SV	SV,SE	Application Reset	97
P02_ACCEN0	Port 02 Access Enable Register 0	$0FC_H$	U,SV	SV,SE	Application Reset	99

Table 57 Register Overview - P10 (ascending Offset Address)

Short Name	Long Name	Offset Address	Access Mode		Reset	Page Number
			Read	Write		
P10_OUT	Port 10 Output Register	000_H	U,SV	U,SV,P	Application Reset	26
P10_OMR	Port 10 Output Modification Register	004_H	U,SV	U,SV,P	Application Reset	30
P10_ID	Port 10 Identification Register	008_H	U,SV	BE	Application Reset	33
	Reserved (004_H Byte)	$00C_H$	BE	BE		
P10_IOCR0	Port 10 Input/Output Control Register 0	010_H	U,SV	U,SV,P	See page 34	34
P10_IOCR4	Port 10 Input/Output Control Register 4	014_H	U,SV	U,SV,P	See page 39	39
P10_IOCR8	Port 10 Input/Output Control Register 8	018_H	U,SV	U,SV,P	See page 42	42
	Reserved (004_H Byte)	020_H	BE	BE		
P10_IN	Port 10 Input Register	024_H	U,SV	BE	Application Reset	46
	Reserved (004_H Byte) (x=0-5)	028_H+x* 4	BE	BE		
P10_PDR0	Port 10 Pad Driver Mode Register 0	040_H	U,SV	SV,E,P	See page 48	48
P10_PDR1	Port 10 Pad Driver Mode Register 1	044_H	U,SV	SV,E,P	See page 54	54
	Reserved (004_H Byte) (x=0-1)	048_H+x* 4	BE	BE		
P10_ESR	Port 10 Emergency Stop Register	050_H	U,SV	SV,E,P	Application Reset	57
	Reserved (004_H Byte) (x=0-2)	054_H+x* 4	BE	BE		
P10_PDISC	Port 10 Pin Function Decision Control Register	060_H	U,SV	SV,E,P	See page 64	64
P10_PCSR	Port 10 Pin Controller Select Register	064_H	U,SV	SV,SE	Application Reset	69
	Reserved (004_H Byte) (x=0-1)	068_H+x* 4	BE	BE		
P10_OMSR0	Port 10 Output Modification Set Register 0	070_H	U,SV	U,SV,P	Application Reset	73
P10_OMSR4	Port 10 Output Modification Set Register 4	074_H	U,SV	U,SV,P	Application Reset	76
P10_OMSR8	Port 10 Output Modification Set Register 8	078_H	U,SV	U,SV,P	Application Reset	78

Table 57 Register Overview - P10 (ascending Offset Address) (cont'd)

Short Name	Long Name	Offset Address	Access Mode		Reset	Page Number
			Read	Write		
P10_OMCR0	Port 10 Output Modification Clear Register 0	080_H	U,SV	U,SV,P	Application Reset	81
P10_OMCR4	Port 10 Output Modification Clear Register 4	084_H	U,SV	U,SV,P	Application Reset	83
P10_OMCR8	Port 10 Output Modification Clear Register 8	088_H	U,SV	U,SV,P	Application Reset	86
P10_OMSR	Port 10 Output Modification Set Register	090_H	U,SV	U,SV,P	Application Reset	89
P10_OMCR	Port 10 Output Modification Clear Register	094_H	U,SV	U,SV,P	Application Reset	93
	Reserved (004_H Byte) (x=0-1)	098_H+x* 4	BE	BE		
	Reserved (004_H Byte) (x=0-13)	$0C0_H$+x* 4	BE	BE		
P10_ACCEN1	Port 10 Access Enable Register 1	$0F8_H$	U,SV	SV,SE	Application Reset	97
P10_ACCEN0	Port 10 Access Enable Register 0	$0FC_H$	U,SV	SV,SE	Application Reset	99

Table 58 Register Overview - P11 (ascending Offset Address)

Short Name	Long Name	Offset Address	Access Mode		Reset	Page Number
			Read	Write		
P11_OUT	Port 11 Output Register	000_H	U,SV	U,SV,P	Application Reset	25
P11_OMR	Port 11 Output Modification Register	004_H	U,SV	U,SV,P	Application Reset	28
P11_ID	Port 11 Identification Register	008_H	U,SV	BE	Application Reset	33
	Reserved (004_H Byte)	$00C_H$	BE	BE		
P11_IOCR0	Port 11 Input/Output Control Register 0	010_H	U,SV	U,SV,P	See page 34	34
P11_IOCR4	Port 11 Input/Output Control Register 4	014_H	U,SV	U,SV,P	See page 39	39
P11_IOCR8	Port 11 Input/Output Control Register 8	018_H	U,SV	U,SV,P	See page 42	42
P11_IOCR12	Port 11 Input/Output Control Register 12	$01C_H$	U,SV	U,SV,P	See page 43	43
	Reserved (004_H Byte)	020_H	BE	BE		
P11_IN	Port 11 Input Register	024_H	U,SV	BE	Application Reset	45

Table 58 Register Overview - P11 (ascending Offset Address) (cont'd)

Short Name	Long Name	Offset Address	Access Mode		Reset	Page Number
			Read	Write		
	Reserved (004_H Byte) (x=0-5)	028_H+x* 4	BE	BE		
P11_PDR0	Port 11 Pad Driver Mode Register 0	040_H	U,SV	SV,E,P	See page 48	48
P11_PDR1	Port 11 Pad Driver Mode Register 1	044_H	U,SV	SV,E,P	See page 53	53
	Reserved (004_H Byte) (x=0-1)	048_H+x* 4	BE	BE		
P11_ESR	Port 11 Emergency Stop Register	050_H	U,SV	SV,E,P	Application Reset	55
	Reserved (004_H Byte) (x=0-2)	054_H+x* 4	BE	BE		
P11_PDISC	Port 11 Pin Function Decision Control Register	060_H	U,SV	SV,E,P	See page 62	62
P11_PCSR	Port 11 Pin Controller Select Register	064_H	U,SV	SV,SE	Application Reset	67
	Reserved (004_H Byte) (x=0-1)	068_H+x* 4	BE	BE		
P11_OMSR0	Port 11 Output Modification Set Register 0	070_H	U,SV	U,SV,P	Application Reset	73
P11_OMSR4	Port 11 Output Modification Set Register 4	074_H	U,SV	U,SV,P	Application Reset	76
P11_OMSR8	Port 11 Output Modification Set Register 8	078_H	U,SV	U,SV,P	Application Reset	78
P11_OMSR12	Port 11 Output Modification Set Register 12	$07C_H$	U,SV	U,SV,P	Application Reset	80
P11_OMCR0	Port 11 Output Modification Clear Register 0	080_H	U,SV	U,SV,P	Application Reset	81
P11_OMCR4	Port 11 Output Modification Clear Register 4	084_H	U,SV	U,SV,P	Application Reset	83
P11_OMCR8	Port 11 Output Modification Clear Register 8	088_H	U,SV	U,SV,P	Application Reset	86
P11_OMCR12	Port 11 Output Modification Clear Register 12	$08C_H$	U,SV	U,SV,P	Application Reset	87
P11_OMSR	Port 11 Output Modification Set Register	090_H	U,SV	U,SV,P	Application Reset	88
P11_OMCR	Port 11 Output Modification Clear Register	094_H	U,SV	U,SV,P	Application Reset	91
	Reserved (004_H Byte) (x=0-1)	098_H+x* 4	BE	BE		

Table 58 Register Overview - P11 (ascending Offset Address) (cont'd)

Short Name	Long Name	Offset Address	Access Mode		Reset	Page Number
			Read	Write		
	Reserved (004_H Byte) (x=0-13)	$0C0_H$+x*4	BE	BE		
P11_ACCEN1	Port 11 Access Enable Register 1	$0F8_H$	U,SV	SV,SE	Application Reset	97
P11_ACCEN0	Port 11 Access Enable Register 0	$0FC_H$	U,SV	SV,SE	Application Reset	99

Table 59 Register Overview - P13 (ascending Offset Address)

Short Name	Long Name	Offset Address	Access Mode		Reset	Page Number
			Read	Write		
P13_OUT	Port 13 Output Register	000_H	U,SV	U,SV,P	Application Reset	27
P13_OMR	Port 13 Output Modification Register	004_H	U,SV	U,SV,P	Application Reset	31
P13_ID	Port 13 Identification Register	008_H	U,SV	BE	Application Reset	33
	Reserved (004_H Byte)	$00C_H$	BE	BE		
P13_IOCR0	Port 13 Input/Output Control Register 0	010_H	U,SV	U,SV,P	See page 34	34
	Reserved (004_H Byte)	020_H	BE	BE		
P13_IN	Port 13 Input Register	024_H	U,SV	BE	Application Reset	46
	Reserved (004_H Byte) (x=0-5)	028_H+x*4	BE	BE		
P13_PDR0	Port 13 Pad Driver Mode Register 0	040_H	U,SV	SV,E,P	See page 52	52
	Reserved (004_H Byte) (x=0-1)	048_H+x*4	BE	BE		
P13_ESR	Port 13 Emergency Stop Register	050_H	U,SV	SV,E,P	Application Reset	58
	Reserved (004_H Byte) (x=0-2)	054_H+x*4	BE	BE		
P13_PDISC	Port 13 Pin Function Decision Control Register	060_H	U,SV	SV,E,P	See page 65	65
P13_PCSR	Port 13 Pin Controller Select Register	064_H	U,SV	SV,SE	Application Reset	70
	Reserved (004_H Byte) (x=0-1)	068_H+x*4	BE	BE		
P13_OMSR0	Port 13 Output Modification Set Register 0	070_H	U,SV	U,SV,P	Application Reset	73

Table 59 Register Overview - P13 (ascending Offset Address) (cont'd)

Short Name	Long Name	Offset Address	Access Mode		Reset	Page Number
			Read	Write		
P13_OMCR0	Port 13 Output Modification Clear Register 0	080_H	U,SV	U,SV,P	Application Reset	81
P13_OMSR	Port 13 Output Modification Set Register	090_H	U,SV	U,SV,P	Application Reset	90
P13_OMCR	Port 13 Output Modification Clear Register	094_H	U,SV	U,SV,P	Application Reset	94
	Reserved (004_H Byte) (x=0-1)	098_H+x* 4	BE	BE		
	Reserved (004_H Byte) (x=0-13)	$0C0_H$+x* 4	BE	BE		
P13_ACCEN1	Port 13 Access Enable Register 1	$0F8_H$	U,SV	SV,SE	Application Reset	97
P13_ACCEN0	Port 13 Access Enable Register 0	$0FC_H$	U,SV	SV,SE	Application Reset	99

Table 60 Register Overview - P14 (ascending Offset Address)

Short Name	Long Name	Offset Address	Access Mode		Reset	Page Number
			Read	Write		
P14_OUT	Port 14 Output Register	000_H	U,SV	U,SV,P	Application Reset	26
P14_OMR	Port 14 Output Modification Register	004_H	U,SV	U,SV,P	Application Reset	30
P14_ID	Port 14 Identification Register	008_H	U,SV	BE	Application Reset	33
	Reserved (004_H Byte)	$00C_H$	BE	BE		
P14_IOCR0	Port 14 Input/Output Control Register 0	010_H	U,SV	U,SV,P	See page 34	34
P14_IOCR4	Port 14 Input/Output Control Register 4	014_H	U,SV	U,SV,P	See page 39	39
P14_IOCR8	Port 14 Input/Output Control Register 8	018_H	U,SV	U,SV,P	See page 42	42
	Reserved (004_H Byte)	020_H	BE	BE		
P14_IN	Port 14 Input Register	024_H	U,SV	BE	Application Reset	46
	Reserved (004_H Byte) (x=0-5)	028_H+x* 4	BE	BE		
P14_PDR0	Port 14 Pad Driver Mode Register 0	040_H	U,SV	SV,E,P	See page 48	48
P14_PDR1	Port 14 Pad Driver Mode Register 1	044_H	U,SV	SV,E,P	See page 54	54

Table 60 Register Overview - P14 (ascending Offset Address) (cont'd)

Short Name	Long Name	Offset Address	Access Mode		Reset	Page Number
			Read	Write		
	Reserved (004_H Byte) (x=0-1)	048_H+x* 4	BE	BE		
P14_ESR	Port 14 Emergency Stop Register	050_H	U,SV	SV,E,P	Application Reset	57
	Reserved (004_H Byte) (x=0-2)	054_H+x* 4	BE	BE		
P14_PDISC	Port 14 Pin Function Decision Control Register	060_H	U,SV	SV,E,P	See page 64	64
P14_PCSR	Port 14 Pin Controller Select Register	064_H	U,SV	SV,SE	Application Reset	69
	Reserved (004_H Byte) (x=0-1)	068_H+x* 4	BE	BE		
P14_OMSR0	Port 14 Output Modification Set Register 0	070_H	U,SV	U,SV,P	Application Reset	73
P14_OMSR4	Port 14 Output Modification Set Register 4	074_H	U,SV	U,SV,P	Application Reset	76
P14_OMSR8	Port 14 Output Modification Set Register 8	078_H	U,SV	U,SV,P	Application Reset	78
P14_OMCR0	Port 14 Output Modification Clear Register 0	080_H	U,SV	U,SV,P	Application Reset	81
P14_OMCR4	Port 14 Output Modification Clear Register 4	084_H	U,SV	U,SV,P	Application Reset	83
P14_OMCR8	Port 14 Output Modification Clear Register 8	088_H	U,SV	U,SV,P	Application Reset	86
P14_OMSR	Port 14 Output Modification Set Register	090_H	U,SV	U,SV,P	Application Reset	89
P14_OMCR	Port 14 Output Modification Clear Register	094_H	U,SV	U,SV,P	Application Reset	93
	Reserved (004_H Byte) (x=0-1)	098_H+x* 4	BE	BE		
	Reserved (004_H Byte) (x=0-13)	$0C0_H$+x* 4	BE	BE		
P14_ACCEN1	Port 14 Access Enable Register 1	$0F8_H$	U,SV	SV,SE	Application Reset	97
P14_ACCEN0	Port 14 Access Enable Register 0	$0FC_H$	U,SV	SV,SE	Application Reset	99

Table 61 Register Overview - P15 (ascending Offset Address)

Short Name	Long Name	Offset Address	Access Mode		Reset	Page Number
			Read	Write		
P15_OUT	Port 15 Output Register	000_H	U,SV	U,SV,P	Application Reset	26
P15_OMR	Port 15 Output Modification Register	004_H	U,SV	U,SV,P	Application Reset	30
P15_ID	Port 15 Identification Register	008_H	U,SV	BE	Application Reset	33
	Reserved (004_H Byte)	$00C_H$	BE	BE		
P15_IOCR0	Port 15 Input/Output Control Register 0	010_H	U,SV	U,SV,P	See page 34	34
P15_IOCR4	Port 15 Input/Output Control Register 4	014_H	U,SV	U,SV,P	See page 39	39
P15_IOCR8	Port 15 Input/Output Control Register 8	018_H	U,SV	U,SV,P	See page 42	42
	Reserved (004_H Byte)	020_H	BE	BE		
P15_IN	Port 15 Input Register	024_H	U,SV	BE	Application Reset	46
	Reserved (004_H Byte) (x=0-5)	028_H+x* 4	BE	BE		
P15_PDR0	Port 15 Pad Driver Mode Register 0	040_H	U,SV	SV,E,P	See page 48	48
P15_PDR1	Port 15 Pad Driver Mode Register 1	044_H	U,SV	SV,E,P	See page 54	54
	Reserved (004_H Byte) (x=0-1)	048_H+x* 4	BE	BE		
P15_ESR	Port 15 Emergency Stop Register	050_H	U,SV	SV,E,P	Application Reset	57
	Reserved (004_H Byte) (x=0-2)	054_H+x* 4	BE	BE		
P15_PDISC	Port 15 Pin Function Decision Control Register	060_H	U,SV	SV,E,P	See page 64	64
P15_PCSR	Port 15 Pin Controller Select Register	064_H	U,SV	SV,SE	Application Reset	69
	Reserved (004_H Byte) (x=0-1)	068_H+x* 4	BE	BE		
P15_OMSR0	Port 15 Output Modification Set Register 0	070_H	U,SV	U,SV,P	Application Reset	73
P15_OMSR4	Port 15 Output Modification Set Register 4	074_H	U,SV	U,SV,P	Application Reset	76
P15_OMSR8	Port 15 Output Modification Set Register 8	078_H	U,SV	U,SV,P	Application Reset	78

Table 61 Register Overview - P15 (ascending Offset Address) (cont'd)

Short Name	Long Name	Offset Address	Access Mode		Reset	Page Number
			Read	Write		
P15_OMCR0	Port 15 Output Modification Clear Register 0	080_H	U,SV	U,SV,P	Application Reset	81
P15_OMCR4	Port 15 Output Modification Clear Register 4	084_H	U,SV	U,SV,P	Application Reset	83
P15_OMCR8	Port 15 Output Modification Clear Register 8	088_H	U,SV	U,SV,P	Application Reset	86
P15_OMSR	Port 15 Output Modification Set Register	090_H	U,SV	U,SV,P	Application Reset	89
P15_OMCR	Port 15 Output Modification Clear Register	094_H	U,SV	U,SV,P	Application Reset	93
	Reserved (004_H Byte) (x=0-1)	098_H+x* 4	BE	BE		
	Reserved (004_H Byte) (x=0-13)	$0C0_H$+x* 4	BE	BE		
P15_ACCEN1	Port 15 Access Enable Register 1	$0F8_H$	U,SV	SV,SE	Application Reset	97
P15_ACCEN0	Port 15 Access Enable Register 0	$0FC_H$	U,SV	SV,SE	Application Reset	99

Table 62 Register Overview - P20 (ascending Offset Address)

Short Name	Long Name	Offset Address	Access Mode		Reset	Page Number
			Read	Write		
P20_OUT	Port 20 Output Register	000_H	U,SV	U,SV,P	Application Reset	25
P20_OMR	Port 20 Output Modification Register	004_H	U,SV	U,SV,P	Application Reset	28
P20_ID	Port 20 Identification Register	008_H	U,SV	BE	Application Reset	33
	Reserved (004_H Byte)	$00C_H$	BE	BE		
P20_IOCR0	Port 20 Input/Output Control Register 0	010_H	U,SV	U,SV,P	See page 34	34
P20_IOCR4	Port 20 Input/Output Control Register 4	014_H	U,SV	U,SV,P	See page 39	39
P20_IOCR8	Port 20 Input/Output Control Register 8	018_H	U,SV	U,SV,P	See page 42	42
P20_IOCR12	Port 20 Input/Output Control Register 12	$01C_H$	U,SV	U,SV,P	See page 43	43
	Reserved (004_H Byte)	020_H	BE	BE		
P20_IN	Port 20 Input Register	024_H	U,SV	BE	Application Reset	45

Table 62 Register Overview - P20 (ascending Offset Address) (cont'd)

Short Name	Long Name	Offset Address	Access Mode		Reset	Page Number
			Read	Write		
	Reserved (004_H Byte) (x=0-5)	028_H+x* 4	BE	BE		
P20_PDR0	Port 20 Pad Driver Mode Register 0	040_H	U,SV	SV,E,P	See page 48	48
P20_PDR1	Port 20 Pad Driver Mode Register 1	044_H	U,SV	SV,E,P	See page 53	53
	Reserved (004_H Byte) (x=0-1)	048_H+x* 4	BE	BE		
P20_ESR	Port 20 Emergency Stop Register	050_H	U,SV	SV,E,P	Application Reset	55
	Reserved (004_H Byte) (x=0-2)	054_H+x* 4	BE	BE		
P20_PDISC	Port 20 Pin Function Decision Control Register	060_H	U,SV	SV,E,P	See page 62	62
P20_PCSR	Port 20 Pin Controller Select Register	064_H	U,SV	SV,SE	Application Reset	67
	Reserved (004_H Byte) (x=0-1)	068_H+x* 4	BE	BE		
P20_OMSR0	Port 20 Output Modification Set Register 0	070_H	U,SV	U,SV,P	Application Reset	73
P20_OMSR4	Port 20 Output Modification Set Register 4	074_H	U,SV	U,SV,P	Application Reset	76
P20_OMSR8	Port 20 Output Modification Set Register 8	078_H	U,SV	U,SV,P	Application Reset	78
P20_OMSR12	Port 20 Output Modification Set Register 12	$07C_H$	U,SV	U,SV,P	Application Reset	80
P20_OMCR0	Port 20 Output Modification Clear Register 0	080_H	U,SV	U,SV,P	Application Reset	81
P20_OMCR4	Port 20 Output Modification Clear Register 4	084_H	U,SV	U,SV,P	Application Reset	83
P20_OMCR8	Port 20 Output Modification Clear Register 8	088_H	U,SV	U,SV,P	Application Reset	86
P20_OMCR12	Port 20 Output Modification Clear Register 12	$08C_H$	U,SV	U,SV,P	Application Reset	87
P20_OMSR	Port 20 Output Modification Set Register	090_H	U,SV	U,SV,P	Application Reset	88
P20_OMCR	Port 20 Output Modification Clear Register	094_H	U,SV	U,SV,P	Application Reset	91
	Reserved (004_H Byte) (x=0-1)	098_H+x* 4	BE	BE		

Table 62 Register Overview - P20 (ascending Offset Address) (cont'd)

Short Name	Long Name	Offset Address	Access Mode		Reset	Page Number
			Read	Write		
	Reserved (004_H Byte) (x=0-13)	$0C0_H$+x* 4	BE	BE		
P20_ACCEN1	Port 20 Access Enable Register 1	$0F8_H$	U,SV	SV,SE	Application Reset	97
P20_ACCEN0	Port 20 Access Enable Register 0	$0FC_H$	U,SV	SV,SE	Application Reset	99

Table 63 Register Overview - P21 (ascending Offset Address)

Short Name	Long Name	Offset Address	Access Mode		Reset	Page Number
			Read	Write		
P21_OUT	Port 21 Output Register	000_H	U,SV	U,SV,P	Application Reset	28
P21_OMR	Port 21 Output Modification Register	004_H	U,SV	U,SV,P	Application Reset	32
P21_ID	Port 21 Identification Register	008_H	U,SV	BE	Application Reset	33
	Reserved (004_H Byte)	$00C_H$	BE	BE		
P21_IOCR0	Port 21 Input/Output Control Register 0	010_H	U,SV	U,SV,P	See page 34	34
P21_IOCR4	Port 21 Input/Output Control Register 4	014_H	U,SV	U,SV,P	See page 39	39
	Reserved (004_H Byte)	020_H	BE	BE		
P21_IN	Port 21 Input Register	024_H	U,SV	BE	Application Reset	47
	Reserved (004_H Byte) (x=0-5)	028_H+x* 4	BE	BE		
P21_PDR0	Port 21 Pad Driver Mode Register 0	040_H	U,SV	SV,E,P	See page 48	48
	Reserved (004_H Byte) (x=0-1)	048_H+x* 4	BE	BE		
P21_ESR	Port 21 Emergency Stop Register	050_H	U,SV	SV,E,P	Application Reset	59
	Reserved (004_H Byte) (x=0-2)	054_H+x* 4	BE	BE		
P21_PDISC	Port 21 Pin Function Decision Control Register	060_H	U,SV	SV,E,P	See page 66	66
P21_PCSR	Port 21 Pin Controller Select Register	064_H	U,SV	SV,SE	Application Reset	70
	Reserved (004_H Byte) (x=0-1)	068_H+x* 4	BE	BE		

Table 63 Register Overview - P21 (ascending Offset Address) (cont'd)

Short Name	Long Name	Offset Address	Access Mode		Reset	Page Number
			Read	Write		
P21_OMSR0	Port 21 Output Modification Set Register 0	070_H	U,SV	U,SV,P	Application Reset	73
P21_OMSR4	Port 21 Output Modification Set Register 4	074_H	U,SV	U,SV,P	Application Reset	76
P21_OMCR0	Port 21 Output Modification Clear Register 0	080_H	U,SV	U,SV,P	Application Reset	81
P21_OMCR4	Port 21 Output Modification Clear Register 4	084_H	U,SV	U,SV,P	Application Reset	83
P21_OMSR	Port 21 Output Modification Set Register	090_H	U,SV	U,SV,P	Application Reset	91
P21_OMCR	Port 21 Output Modification Clear Register	094_H	U,SV	U,SV,P	Application Reset	95
	Reserved (004_H Byte) (x=0-1)	098_H+x* 4	BE	BE		
P21_LPCRx	Port 21 LVDS Pad Control Register x	$0A0_H$+x* 4	U,SV	SV,E,P	See page 95	95
	Reserved (004_H Byte) (x=0-13)	$0C0_H$+x* 4	BE	BE		
P21_ACCEN1	Port 21 Access Enable Register 1	$0F8_H$	U,SV	SV,SE	Application Reset	97
P21_ACCEN0	Port 21 Access Enable Register 0	$0FC_H$	U,SV	SV,SE	Application Reset	99

Table 64 Register Overview - P22 (ascending Offset Address)

Short Name	Long Name	Offset Address	Access Mode		Reset	Page Number
			Read	Write		
P22_OUT	Port 22 Output Register	000_H	U,SV	U,SV,P	Application Reset	28
P22_OMR	Port 22 Output Modification Register	004_H	U,SV	U,SV,P	Application Reset	32
P22_ID	Port 22 Identification Register	008_H	U,SV	BE	Application Reset	33
	Reserved (004_H Byte)	$00C_H$	BE	BE		
P22_IOCR0	Port 22 Input/Output Control Register 0	010_H	U,SV	U,SV,P	See page 34	34
P22_IOCR4	Port 22 Input/Output Control Register 4	014_H	U,SV	U,SV,P	See page 39	39
	Reserved (004_H Byte)	020_H	BE	BE		
P22_IN	Port 22 Input Register	024_H	U,SV	BE	Application Reset	47

Table 64 Register Overview - P22 (ascending Offset Address) (cont'd)

Short Name	Long Name	Offset Address	Access Mode		Reset	Page Number
			Read	Write		
	Reserved (004_H Byte) (x=0-5)	028_H+x*4	BE	BE		
P22_PDR0	Port 22 Pad Driver Mode Register 0	040_H	U,SV	SV,E,P	See page 48	48
	Reserved (004_H Byte) (x=0-1)	048_H+x*4	BE	BE		
P22_ESR	Port 22 Emergency Stop Register	050_H	U,SV	SV,E,P	Application Reset	60
	Reserved (004_H Byte) (x=0-2)	054_H+x*4	BE	BE		
P22_PDISC	Port 22 Pin Function Decision Control Register	060_H	U,SV	SV,E,P	See page 66	66
P22_PCSR	Port 22 Pin Controller Select Register	064_H	U,SV	SV,SE	Application Reset	70
	Reserved (004_H Byte) (x=0-1)	068_H+x*4	BE	BE		
P22_OMSR0	Port 22 Output Modification Set Register 0	070_H	U,SV	U,SV,P	Application Reset	73
P22_OMSR4	Port 22 Output Modification Set Register 4	074_H	U,SV	U,SV,P	Application Reset	76
P22_OMCR0	Port 22 Output Modification Clear Register 0	080_H	U,SV	U,SV,P	Application Reset	81
P22_OMCR4	Port 22 Output Modification Clear Register 4	084_H	U,SV	U,SV,P	Application Reset	83
P22_OMSR	Port 22 Output Modification Set Register	090_H	U,SV	U,SV,P	Application Reset	91
P22_OMCR	Port 22 Output Modification Clear Register	094_H	U,SV	U,SV,P	Application Reset	95
	Reserved (004_H Byte) (x=0-1)	098_H+x*4	BE	BE		
	Reserved (004_H Byte) (x=0-13)	$0C0_H$+x*4	BE	BE		
P22_ACCEN1	Port 22 Access Enable Register 1	$0F8_H$	U,SV	SV,SE	Application Reset	97
P22_ACCEN0	Port 22 Access Enable Register 0	$0FC_H$	U,SV	SV,SE	Application Reset	99

Table 65 Register Overview - P23 (ascending Offset Address)

Short Name	Long Name	Offset Address	Access Mode		Reset	Page Number
			Read	Write		
P23_OUT	Port 23 Output Register	000_H	U,SV	U,SV,P	Application Reset	28
P23_OMR	Port 23 Output Modification Register	004_H	U,SV	U,SV,P	Application Reset	32
P23_ID	Port 23 Identification Register	008_H	U,SV	BE	Application Reset	34
	Reserved (004_H Byte)	$00C_H$	BE	BE		
P23_IOCR0	Port 23 Input/Output Control Register 0	010_H	U,SV	U,SV,P	See page 38	38
P23_IOCR4	Port 23 Input/Output Control Register 4	014_H	U,SV	U,SV,P	See page 39	39
	Reserved (004_H Byte)	020_H	BE	BE		
P23_IN	Port 23 Input Register	024_H	U,SV	BE	Application Reset	47
	Reserved (004_H Byte) (x=0-5)	028_H+x* 4	BE	BE		
P23_PDR0	Port 23 Pad Driver Mode Register 0	040_H	U,SV	SV,E,P	See page 48	48
	Reserved (004_H Byte) (x=0-1)	048_H+x* 4	BE	BE		
P23_ESR	Port 23 Emergency Stop Register	050_H	U,SV	SV,E,P	Application Reset	60
	Reserved (004_H Byte) (x=0-2)	054_H+x* 4	BE	BE		
P23_PDISC	Port 23 Pin Function Decision Control Register	060_H	U,SV	SV,E,P	See page 66	66
P23_PCSR	Port 23 Pin Controller Select Register	064_H	U,SV	SV,SE	Application Reset	70
	Reserved (004_H Byte) (x=0-1)	068_H+x* 4	BE	BE		
P23_OMSR0	Port 23 Output Modification Set Register 0	070_H	U,SV	U,SV,P	Application Reset	75
P23_OMSR4	Port 23 Output Modification Set Register 4	074_H	U,SV	U,SV,P	Application Reset	76
P23_OMCR0	Port 23 Output Modification Clear Register 0	080_H	U,SV	U,SV,P	Application Reset	82
P23_OMCR4	Port 23 Output Modification Clear Register 4	084_H	U,SV	U,SV,P	Application Reset	83
P23_OMSR	Port 23 Output Modification Set Register	090_H	U,SV	U,SV,P	Application Reset	91

Table 65 Register Overview - P23 (ascending Offset Address) (cont'd)

Short Name	Long Name	Offset Address	Access Mode		Reset	Page Number
			Read	Write		
P23_OMCR	Port 23 Output Modification Clear Register	094_H	U,SV	U,SV,P	Application Reset	95
	Reserved (004_H Byte) (x=0-1)	098_H+x* 4	BE	BE		
	Reserved (004_H Byte) (x=0-13)	$0C0_H$+x* 4	BE	BE		
P23_ACCEN1	Port 23 Access Enable Register 1	$0F8_H$	U,SV	SV,SE	Application Reset	98
P23_ACCEN0	Port 23 Access Enable Register 0	$0FC_H$	U,SV	SV,SE	Application Reset	101

Table 66 Register Overview - P32 (ascending Offset Address)

Short Name	Long Name	Offset Address	Access Mode		Reset	Page Number
			Read	Write		
P32_OUT	Port 32 Output Register	000_H	U,SV	U,SV,P	Application Reset	28
P32_OMR	Port 32 Output Modification Register	004_H	U,SV	U,SV,P	Application Reset	32
P32_ID	Port 32 Identification Register	008_H	U,SV	BE	Application Reset	34
	Reserved (004_H Byte)	$00C_H$	BE	BE		
P32_IOCR0	Port 32 Input/Output Control Register 0	010_H	U,SV	U,SV,P	See page 38	38
P32_IOCR4	Port 32 Input/Output Control Register 4	014_H	U,SV	U,SV,P	See page 41	41
	Reserved (004_H Byte)	020_H	BE	BE		
P32_IN	Port 32 Input Register	024_H	U,SV	BE	Application Reset	47
	Reserved (004_H Byte) (x=0-5)	028_H+x* 4	BE	BE		
P32_PDR0	Port 32 Pad Driver Mode Register 0	040_H	U,SV	SV,E,P	See page 51	51
	Reserved (004_H Byte) (x=0-1)	048_H+x* 4	BE	BE		
P32_ESR	Port 32 Emergency Stop Register	050_H	U,SV	SV,E,P	Application Reset	60
	Reserved (004_H Byte) (x=0-2)	054_H+x* 4	BE	BE		
P32_PDISC	Port 32 Pin Function Decision Control Register	060_H	U,SV	SV,E,P	See page 66	66

Table 66 Register Overview - P32 (ascending Offset Address) (cont'd)

Short Name	Long Name	Offset Address	Access Mode		Reset	Page Number
			Read	Write		
P32_PCSR	Port 32 Pin Controller Select Register	064_H	U,SV	SV,SE	Application Reset	70
	Reserved (004_H Byte) (x=0-1)	068_H+x* 4	BE	BE		
P32_OMSR0	Port 32 Output Modification Set Register 0	070_H	U,SV	U,SV,P	Application Reset	75
P32_OMSR4	Port 32 Output Modification Set Register 4	074_H	U,SV	U,SV,P	Application Reset	77
P32_OMCR0	Port 32 Output Modification Clear Register 0	080_H	U,SV	U,SV,P	Application Reset	82
P32_OMCR4	Port 32 Output Modification Clear Register 4	084_H	U,SV	U,SV,P	Application Reset	85
P32_OMSR	Port 32 Output Modification Set Register	090_H	U,SV	U,SV,P	Application Reset	91
P32_OMCR	Port 32 Output Modification Clear Register	094_H	U,SV	U,SV,P	Application Reset	95
	Reserved (004_H Byte) (x=0-1)	098_H+x* 4	BE	BE		
	Reserved (004_H Byte) (x=0-13)	$0C0_H$+x* 4	BE	BE		
P32_ACCEN1	Port 32 Access Enable Register 1	$0F8_H$	U,SV	SV,SE	Application Reset	98
P32_ACCEN0	Port 32 Access Enable Register 0	$0FC_H$	U,SV	SV,SE	Application Reset	101

Table 67 Register Overview - P33 (ascending Offset Address)

Short Name	Long Name	Offset Address	Access Mode		Reset	Page Number
			Read	Write		
P33_OUT	Port 33 Output Register	000_H	U,SV	U,SV,P	Application Reset	25
P33_OMR	Port 33 Output Modification Register	004_H	U,SV	U,SV,P	Application Reset	28
P33_ID	Port 33 Identification Register	008_H	U,SV	BE	Application Reset	34
	Reserved (004_H Byte)	$00C_H$	BE	BE		
P33_IOCR0	Port 33 Input/Output Control Register 0	010_H	U,SV	U,SV,P	See page 38	38
P33_IOCR4	Port 33 Input/Output Control Register 4	014_H	U,SV	U,SV,P	See page 41	41

Table 67 Register Overview - P33 (ascending Offset Address) (cont'd)

Short Name	Long Name	Offset Address	Access Mode		Reset	Page Number
			Read	Write		
P33_IOCR8	Port 33 Input/Output Control Register 8	018_H	U,SV	U,SV,P	See page 42	42
P33_IOCR12	Port 33 Input/Output Control Register 12	$01C_H$	U,SV	U,SV,P	See page 43	43
	Reserved (004_H Byte)	020_H	BE	BE		
P33_IN	Port 33 Input Register	024_H	U,SV	BE	Application Reset	45
	Reserved (004_H Byte) (x=0-5)	028_H+x* 4	BE	BE		
P33_PDR0	Port 33 Pad Driver Mode Register 0	040_H	U,SV	SV,E,P	See page 51	51
P33_PDR1	Port 33 Pad Driver Mode Register 1	044_H	U,SV	SV,E,P	See page 53	53
	Reserved (004_H Byte) (x=0-1)	048_H+x* 4	BE	BE		
P33_ESR	Port 33 Emergency Stop Register	050_H	U,SV	SV,E,P	Application Reset	61
	Reserved (004_H Byte) (x=0-2)	054_H+x* 4	BE	BE		
P33_PDISC	Port 33 Pin Function Decision Control Register	060_H	U,SV	SV,E,P	See page 62	62
P33_PCSR	Port 33 Pin Controller Select Register	064_H	U,SV	SV,SE	Application Reset	71
	Reserved (004_H Byte) (x=0-1)	068_H+x* 4	BE	BE		
P33_OMSR0	Port 33 Output Modification Set Register 0	070_H	U,SV	U,SV,P	Application Reset	75
P33_OMSR4	Port 33 Output Modification Set Register 4	074_H	U,SV	U,SV,P	Application Reset	77
P33_OMSR8	Port 33 Output Modification Set Register 8	078_H	U,SV	U,SV,P	Application Reset	78
P33_OMSR12	Port 33 Output Modification Set Register 12	$07C_H$	U,SV	U,SV,P	Application Reset	80
P33_OMCR0	Port 33 Output Modification Clear Register 0	080_H	U,SV	U,SV,P	Application Reset	82
P33_OMCR4	Port 33 Output Modification Clear Register 4	084_H	U,SV	U,SV,P	Application Reset	85
P33_OMCR8	Port 33 Output Modification Clear Register 8	088_H	U,SV	U,SV,P	Application Reset	86
P33_OMCR12	Port 33 Output Modification Clear Register 12	$08C_H$	U,SV	U,SV,P	Application Reset	87

Table 67 Register Overview - P33 (ascending Offset Address) (cont'd)

Short Name	Long Name	Offset Address	Access Mode		Reset	Page Number
			Read	Write		
P33_OMSR	Port 33 Output Modification Set Register	090_H	U,SV	U,SV,P	Application Reset	88
P33_OMCR	Port 33 Output Modification Clear Register	094_H	U,SV	U,SV,P	Application Reset	91
	Reserved (004_H Byte) (x=0-1)	098_H+x* 4	BE	BE		
	Reserved (004_H Byte) (x=0-13)	$0C0_H$+x* 4	BE	BE		
P33_ACCEN1	Port 33 Access Enable Register 1	$0F8_H$	U,SV	SV,SE	Application Reset	98
P33_ACCEN0	Port 33 Access Enable Register 0	$0FC_H$	U,SV	SV,SE	Application Reset	101

Table 68 Register Overview - P34 (ascending Offset Address)

Short Name	Long Name	Offset Address	Access Mode		Reset	Page Number
			Read	Write		
P34_OUT	Port 34 Output Register	000_H	U,SV	U,SV,P	Application Reset	27
P34_OMR	Port 34 Output Modification Register	004_H	U,SV	U,SV,P	Application Reset	31
P34_ID	Port 34 Identification Register	008_H	U,SV	BE	Application Reset	34
	Reserved (004_H Byte)	$00C_H$	BE	BE		
P34_IOCR0	Port 34 Input/Output Control Register 0	010_H	U,SV	U,SV,P	See page 38	38
	Reserved (004_H Byte)	020_H	BE	BE		
P34_IN	Port 34 Input Register	024_H	U,SV	BE	Application Reset	46
	Reserved (004_H Byte) (x=0-5)	028_H+x* 4	BE	BE		
P34_PDR0	Port 34 Pad Driver Mode Register 0	040_H	U,SV	SV,E,P	See page 52	52
	Reserved (004_H Byte) (x=0-1)	048_H+x* 4	BE	BE		
P34_ESR	Port 34 Emergency Stop Register	050_H	U,SV	SV,E,P	Application Reset	58
	Reserved (004_H Byte) (x=0-2)	054_H+x* 4	BE	BE		
P34_PDISC	Port 34 Pin Function Decision Control Register	060_H	U,SV	SV,E,P	See page 65	65

Table 68 Register Overview - P34 (ascending Offset Address) (cont'd)

Short Name	Long Name	Offset Address	Access Mode		Reset	Page Number
			Read	Write		
P34_PCSR	Port 34 Pin Controller Select Register	064_H	U,SV	SV,SE	Application Reset	72
	Reserved (004_H Byte) (x=0-1)	068_H+x* 4	BE	BE		
P34_OMSR0	Port 34 Output Modification Set Register 0	070_H	U,SV	U,SV,P	Application Reset	75
P34_OMCR0	Port 34 Output Modification Clear Register 0	080_H	U,SV	U,SV,P	Application Reset	82
P34_OMSR	Port 34 Output Modification Set Register	090_H	U,SV	U,SV,P	Application Reset	90
P34_OMCR	Port 34 Output Modification Clear Register	094_H	U,SV	U,SV,P	Application Reset	94
	Reserved (004_H Byte) (x=0-1)	098_H+x* 4	BE	BE		
	Reserved (004_H Byte) (x=0-13)	$0C0_H$+x* 4	BE	BE		
P34_ACCEN1	Port 34 Access Enable Register 1	$0F8_H$	U,SV	SV,SE	Application Reset	98
P34_ACCEN0	Port 34 Access Enable Register 0	$0FC_H$	U,SV	SV,SE	Application Reset	101

Table 69 Register Overview - P40 (ascending Offset Address)

Short Name	Long Name	Offset Address	Access Mode		Reset	Page Number
			Read	Write		
P40_OUT	Port 40 Output Register	000_H	U,SV	U,SV,P	Application Reset	26
P40_OMR	Port 40 Output Modification Register	004_H	U,SV	U,SV,P	Application Reset	30
P40_ID	Port 40 Identification Register	008_H	U,SV	BE	Application Reset	34
	Reserved (004_H Byte)	$00C_H$	BE	BE		
P40_IOCR0	Port 40 Input/Output Control Register 0	010_H	U,SV	U,SV,P	See page 38	38
P40_IOCR4	Port 40 Input/Output Control Register 4	014_H	U,SV	U,SV,P	See page 41	41
P40_IOCR8	Port 40 Input/Output Control Register 8	018_H	U,SV	U,SV,P	See page 42	42
	Reserved (004_H Byte)	020_H	BE	BE		
P40_IN	Port 40 Input Register	024_H	U,SV	BE	Application Reset	46

Table 69 Register Overview - P40 (ascending Offset Address) (cont'd)

Short Name	Long Name	Offset Address	Access Mode		Reset	Page Number
			Read	Write		
	Reserved (004_H Byte) (x=0-5)	028_H+x* 4	BE	BE		
P40_PDR0	Port 40 Pad Driver Mode Register 0	040_H	U,SV	SV,E,P	See page 51	51
P40_PDR1	Port 40 Pad Driver Mode Register 1	044_H	U,SV	SV,E,P	See page 54	54
	Reserved (004_H Byte) (x=0-1)	048_H+x* 4	BE	BE		
P40_ESR	Port 40 Emergency Stop Register	050_H	U,SV	SV,E,P	Application Reset	61
	Reserved (004_H Byte) (x=0-2)	054_H+x* 4	BE	BE		
P40_PDISC	Port 40 Pin Function Decision Control Register	060_H	U,SV	SV,E,P	See page 64	64
P40_PCSR	Port 40 Pin Controller Select Register	064_H	U,SV	SV,SE	Application Reset	69
	Reserved (004_H Byte) (x=0-1)	068_H+x* 4	BE	BE		
P40_OMSR0	Port 40 Output Modification Set Register 0	070_H	U,SV	U,SV,P	Application Reset	75
P40_OMSR4	Port 40 Output Modification Set Register 4	074_H	U,SV	U,SV,P	Application Reset	77
P40_OMSR8	Port 40 Output Modification Set Register 8	078_H	U,SV	U,SV,P	Application Reset	78
P40_OMCR0	Port 40 Output Modification Clear Register 0	080_H	U,SV	U,SV,P	Application Reset	82
P40_OMCR4	Port 40 Output Modification Clear Register 4	084_H	U,SV	U,SV,P	Application Reset	85
P40_OMCR8	Port 40 Output Modification Clear Register 8	088_H	U,SV	U,SV,P	Application Reset	86
P40_OMSR	Port 40 Output Modification Set Register	090_H	U,SV	U,SV,P	Application Reset	89
P40_OMCR	Port 40 Output Modification Clear Register	094_H	U,SV	U,SV,P	Application Reset	93
	Reserved (004_H Byte) (x=0-1)	098_H+x* 4	BE	BE		
	Reserved (004_H Byte) (x=0-13)	$0C0_H$+x* 4	BE	BE		

Table 69 Register Overview - P40 (ascending Offset Address) (cont'd)

Short Name	Long Name	Offset Address	Access Mode		Reset	Page Number
			Read	Write		
P40_ACCEN1	Port 40 Access Enable Register 1	$0F8_H$	U,SV	SV,SE	Application Reset	98
P40_ACCEN0	Port 40 Access Enable Register 0	$0FC_H$	U,SV	SV,SE	Application Reset	101

14.3 Pn Registers

14.3.1 SPB bus slave interface

Port 00 Output Register

The port output register determines the value of a GPIO pin when it is selected by Pn_IOCRx as output. Writing a 0 to a Pn_OUT.Px (x = 0-15) bit position delivers a low level at the corresponding output pin. A high level is output when the corresponding bit is written with a 1. Note that the bits of Pn_OUT.Px can be individually set or cleared by writing appropriate values into the port output modification set register Pn_OMSR or port output modification clear register Pn_OMCR, respectively. The Pn_OUT.Px bits can also be set, cleared or toggled with register Pn_OMR within the same write operation.

P00_OUT
Port 00 Output Register **(000_H)** **Application Reset Value: 0000 0000_H**
P11_OUT
Port 11 Output Register **(000_H)** **Application Reset Value: 0000 0000_H**
P20_OUT
Port 20 Output Register **(000_H)** **Application Reset Value: 0000 0000_H**
P33_OUT
Port 33 Output Register **(000_H)** **Application Reset Value: 0000 0000_H**

31	30	29	28	27	26	25	24	23	22	21	20	19	18	17	16
0															
r															

15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
P15	**P14**	**P13**	**P12**	**P11**	**P10**	**P9**	**P8**	**P7**	**P6**	**P5**	**P4**	**P3**	**P2**	**P1**	**P0**
rwh	rwh	rwh	rwh	rwh	rwh	rwh	rwh	rwh	rwh	rwh	rwh	rwh	rwh	rwh	rwh

Field	Bits	Type	Description
Px (x=0-15)	x	rwh	**Output Bit x** This bit determines the level at the output pin Pn.x if the output is selected as GPIO output. Pn.x can also be set or cleared by control bits of the Pn_OMSR, Pn_OMCR or Pn_OMR registers. 0_B The output level of Pn.x is 0. 1_B The output level of Pn.x is 1.
0	31:16	r	**Reserved** Read as 0; should be written with 0.

Table 70 Access Mode Restrictions sorted by descending priority

Applies to **P00_OUT**
Applies to **P11_OUT**
Applies to **P20_OUT**
Applies to **P33_OUT**

Mode Name	Access Mode		Description
Master enabled in ACCEN	rwh	Px (x=0-15)	write access for enabled masters
Otherwise (default)	rh	Px (x=0-15)	

P02_OUT
Port 02 Output Register **(000_H)** **Application Reset Value: $0000\ 0000_H$**
P10_OUT
Port 10 Output Register **(000_H)** **Application Reset Value: $0000\ 0000_H$**
P14_OUT
Port 14 Output Register **(000_H)** **Application Reset Value: $0000\ 0000_H$**
P15_OUT
Port 15 Output Register **(000_H)** **Application Reset Value: $0000\ 0000_H$**
P40_OUT
Port 40 Output Register **(000_H)** **Application Reset Value: $0000\ 0000_H$**

31	30	29	28	27	26	25	24	23	22	21	20	19	18	17	16
0															
r															

15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
0	**0**	**0**	**0**	**P11**	**P10**	**P9**	**P8**	**P7**	**P6**	**P5**	**P4**	**P3**	**P2**	**P1**	**P0**
r	r	r	r	rwh	rwh	rwh	rwh	rwh	rwh	rwh	rwh	rwh	rwh	rwh	rwh

Field	Bits	Type	Description
Px (x=0-11)	x	rwh	**Output Bit x** This bit determines the level at the output pin Pn.x if the output is selected as GPIO output. Pn.x can also be set or cleared by control bits of the Pn_OMSR, Pn_OMCR or Pn_OMR registers. 0_B The output level of Pn.x is 0. 1_B The output level of Pn.x is 1.
0	15, 14, 13, 12, 31:16	r	**Reserved** Read as 0; should be written with 0.

Table 71 Access Mode Restrictions sorted by descending priority

Applies to **P02_OUT**
Applies to **P10_OUT**
Applies to **P14_OUT**
Applies to **P15_OUT**
Applies to **P40_OUT**

Mode Name	Access Mode		Description
Master enabled in ACCEN	rwh	Px (x=0-11)	write access for enabled masters
Otherwise (default)	rh	Px (x=0-11)	

P13_OUT
Port 13 Output Register **(000_H)** **Application Reset Value: 0000 0000_H**
P34_OUT
Port 34 Output Register **(000_H)** **Application Reset Value: 0000 0000_H**

31	30	29	28	27	26	25	24	23	22	21	20	19	18	17	16
0															
r															

15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
0	0	0	0	0	0	0	0	0	0	0	0	P3	P2	P1	P0
r	r	r	r	r	r	r	r	r	r	r	r	rwh	rwh	rwh	rwh

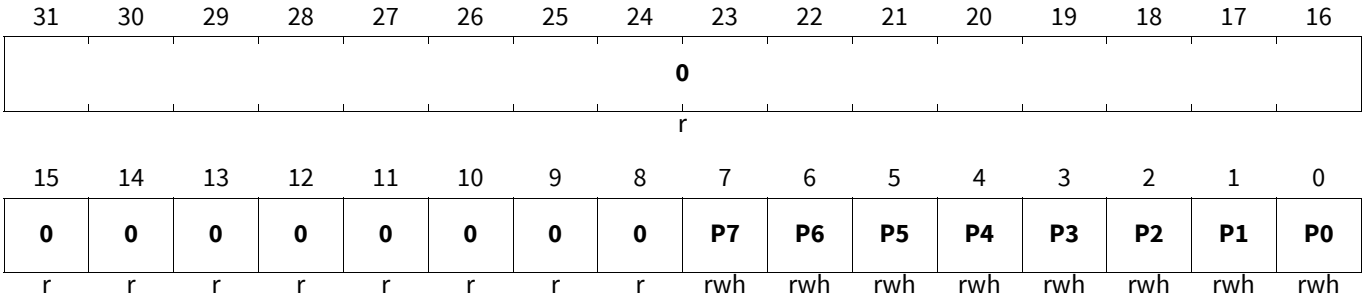
Field	Bits	Type	Description
Px (x=0-3)	x	rwh	**Output Bit x** This bit determines the level at the output pin Pn.x if the output is selected as GPIO output. Pn.x can also be set or cleared by control bits of the Pn_OMSR, Pn_OMCR or Pn_OMR registers. 0_B The output level of Pn.x is 0. 1_B The output level of Pn.x is 1.
0	15, 14, 13, 12, 11, 10, 9, 8, 7, 6, 5, 4, 31:16	r	**Reserved** Read as 0; should be written with 0.

Table 72 Access Mode Restrictions sorted by descending priority

Applies to **P13_OUT**
Applies to **P34_OUT**

Mode Name	Access Mode		Description
Master enabled in ACCEN	rwh	Px (x=0-3)	write access for enabled masters
Otherwise (default)	rh	Px (x=0-3)	

P21_OUT
Port 21 Output Register **(000_H)** **Application Reset Value: $0000\ 0000_H$**
P22_OUT
Port 22 Output Register **(000_H)** **Application Reset Value: $0000\ 0000_H$**
P23_OUT
Port 23 Output Register **(000_H)** **Application Reset Value: $0000\ 0000_H$**
P32_OUT
Port 32 Output Register **(000_H)** **Application Reset Value: $0000\ 0000_H$**



Field	Bits	Type	Description
Px (x=0-7)	x	rwh	**Output Bit x** This bit determines the level at the output pin Pn.x if the output is selected as GPIO output. Pn.x can also be set or cleared by control bits of the Pn_OMSR, Pn_OMCR or Pn_OMR registers. 0_B The output level of Pn.x is 0. 1_B The output level of Pn.x is 1.
0	15, 14, 13, 12, 11, 10, 9, 8, 31:16	r	**Reserved** Read as 0; should be written with 0.

Table 73 Access Mode Restrictions sorted by descending priority

Applies to **P21_OUT**
Applies to **P22_OUT**
Applies to **P23_OUT**
Applies to **P32_OUT**

Mode Name	Access Mode		Description
Master enabled in ACCEN	rwh	Px (x=0-7)	write access for enabled masters
Otherwise (default)	rh	Px (x=0-7)	

Port 00 Output Modification Register

The port output modification register contains control bits that make it possible to individually set, clear or toggle the logic state of a single port line by manipulating the output register.

P00_OMR
Port 00 Output Modification Register **(004_H)** **Application Reset Value: $0000\ 0000_H$**
P11_OMR
Port 11 Output Modification Register **(004_H)** **Application Reset Value: $0000\ 0000_H$**
P20_OMR
Port 20 Output Modification Register **(004_H)** **Application Reset Value: $0000\ 0000_H$**
P33_OMR
Port 33 Output Modification Register **(004_H)** **Application Reset Value: $0000\ 0000_H$**

31	30	29	28	27	26	25	24	23	22	21	20	19	18	17	16
PCL15	**PCL14**	**PCL13**	**PCL12**	**PCL11**	**PCL10**	**PCL9**	**PCL8**	**PCL7**	**PCL6**	**PCL5**	**PCL4**	**PCL3**	**PCL2**	**PCL1**	**PCL0**
w0	w0	w0	w0	w0	w0	w0	w0	w0	w0	w0	w0	w0	w0	w0	w0
15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
PS15	**PS14**	**PS13**	**PS12**	**PS11**	**PS10**	**PS9**	**PS8**	**PS7**	**PS6**	**PS5**	**PS4**	**PS3**	**PS2**	**PS1**	**PS0**
w0	w0	w0	w0	w0	w0	w0	w0	w0	w0	w0	w0	w0	w0	w0	w0

Field	Bits	Type	Description
PSx (x=0-15)	x	w0	**Set Bit x** Setting this bit will set or toggle the corresponding bit in the port output register Pn_OUT. Read as 0. The function of this bit is shown in **Table 75**. 0_B No operation 1_B Sets or toggles Pn_OUT.Px.
PCLx (x=0-15)	x+16	w0	**Clear Bit x** Setting this bit will clear or toggle the corresponding bit in the port output register Pn_OUT. Read as 0. The function of this bit is shown in **Table 75**. 0_B No operation 1_B Clears or toggles Pn_OUT.Px.

Table 74 Access Mode Restrictions sorted by descending priority

Applies to **P00_OMR**
Applies to **P11_OMR**
Applies to **P20_OMR**
Applies to **P33_OMR**

Mode Name	Access Mode		Description
Master enabled in ACCEN	w0	PCLx (x=0-15), PSx (x=0-15)	write access for enabled masters
Otherwise (default)	r0	PCLx (x=0-15), PSx (x=0-15)	

Note: Register Pn_OMR is virtual and does not contain any flip-flop. A read action delivers the value of 0. One 8 or 16-bits write behaves as a 32-bit write padded with zeros.

Table 75 Function of the Bits PCLx and PSx

PCLx	PSx	Function
0	0	Bit Pn_OUT.Px is not changed.
0	1	Bit Pn_OUT.Px is set.
1	0	Bit Pn_OUT.Px is reset.
1	1	Bit Pn_OUT.Px is toggled.

P02_OMR
Port 02 Output Modification Register **(004_H)** **Application Reset Value: $0000\ 0000_H$**
P10_OMR
Port 10 Output Modification Register **(004_H)** **Application Reset Value: $0000\ 0000_H$**
P14_OMR
Port 14 Output Modification Register **(004_H)** **Application Reset Value: $0000\ 0000_H$**
P15_OMR
Port 15 Output Modification Register **(004_H)** **Application Reset Value: $0000\ 0000_H$**
P40_OMR
Port 40 Output Modification Register **(004_H)** **Application Reset Value: $0000\ 0000_H$**

31	30	29	28	27	26	25	24	23	22	21	20	19	18	17	16
0	**0**	**0**	**0**	**PCL11**	**PCL10**	**PCL9**	**PCL8**	**PCL7**	**PCL6**	**PCL5**	**PCL4**	**PCL3**	**PCL2**	**PCL1**	**PCL0**
r	r	r	r	w0	w0	w0	w0	w0	w0	w0	w0	w0	w0	w0	w0

15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
0	**0**	**0**	**0**	**PS11**	**PS10**	**PS9**	**PS8**	**PS7**	**PS6**	**PS5**	**PS4**	**PS3**	**PS2**	**PS1**	**PS0**
r	r	r	r	w0	w0	w0	w0	w0	w0	w0	w0	w0	w0	w0	w0

Field	Bits	Type	Description
PSx (x=0-11)	x	w0	**Set Bit x** Setting this bit will set or toggle the corresponding bit in the port output register Pn_OUT. Read as 0. The function of this bit is shown in **Table 75**. 0_B No operation 1_B Sets or toggles Pn_OUT.Px.
PCLx (x=0-11)	x+16	w0	**Clear Bit x** Setting this bit will clear or toggle the corresponding bit in the port output register Pn_OUT. Read as 0. The function of this bit is shown in **Table 75**. 0_B No operation 1_B Clears or toggles Pn_OUT.Px.
0	15, 14, 13, 12, 31, 30, 29, 28	r	**Reserved** Read as 0; should be written with 0.

Table 76 Access Mode Restrictions sorted by descending priority

Applies to **P02_OMR**
Applies to **P10_OMR**
Applies to **P14_OMR**
Applies to **P15_OMR**
Applies to **P40_OMR**

Mode Name	Access Mode		Description
Master enabled in ACCEN	w0	PCLx (x=0-11), PSx (x=0-11)	write access for enabled masters
Otherwise (default)	r0	PCLx (x=0-11), PSx (x=0-11)	

P13_OMR
Port 13 Output Modification Register **(004_H)** **Application Reset Value: 0000 0000$_H$**
P34_OMR
Port 34 Output Modification Register **(004_H)** **Application Reset Value: 0000 0000$_H$**

31	30	29	28	27	26	25	24	23	22	21	20	19	18	17	16
0	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**PCL3**	**PCL2**	**PCL1**	**PCL0**
r	r	r	r	r	r	r	r	r	r	r	r	w0	w0	w0	w0

15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
0	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**PS3**	**PS2**	**PS1**	**PS0**
r	r	r	r	r	r	r	r	r	r	r	r	w0	w0	w0	w0

Field	Bits	Type	Description
PSx (x=0-3)	x	w0	**Set Bit x** Setting this bit will set or toggle the corresponding bit in the port output register Pn_OUT. Read as 0. The function of this bit is shown in **Table 75**. 0_B No operation 1_B Sets or toggles Pn_OUT.Px.
PCLx (x=0-3)	x+16	w0	**Clear Bit x** Setting this bit will clear or toggle the corresponding bit in the port output register Pn_OUT. Read as 0. The function of this bit is shown in **Table 75**. 0_B No operation 1_B Clears or toggles Pn_OUT.Px.
0	15, 14, 13, 12, 11, 10, 9, 8, 7, 6, 5, 4, 31, 30, 29, 28, 27, 26, 25, 24, 23, 22, 21, 20	r	**Reserved** Read as 0; should be written with 0.

Table 77 Access Mode Restrictions sorted by descending priority

Applies to **P13_OMR**
Applies to **P34_OMR**

Mode Name	Access Mode		Description
Master enabled in ACCEN	w0	PCLx (x=0-3), PSx (x=0-3)	write access for enabled masters
Otherwise (default)	r0	PCLx (x=0-3), PSx (x=0-3)	

P21_OMR
Port 21 Output Modification Register **(004_H)** **Application Reset Value: $0000\ 0000_H$**
P22_OMR
Port 22 Output Modification Register **(004_H)** **Application Reset Value: $0000\ 0000_H$**
P23_OMR
Port 23 Output Modification Register **(004_H)** **Application Reset Value: $0000\ 0000_H$**
P32_OMR
Port 32 Output Modification Register **(004_H)** **Application Reset Value: $0000\ 0000_H$**

31	30	29	28	27	26	25	24	23	22	21	20	19	18	17	16
0	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**PCL7**	**PCL6**	**PCL5**	**PCL4**	**PCL3**	**PCL2**	**PCL1**	**PCL0**
r	r	r	r	r	r	r	r	w0	w0	w0	w0	w0	w0	w0	w0

15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
0	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**PS7**	**PS6**	**PS5**	**PS4**	**PS3**	**PS2**	**PS1**	**PS0**
r	r	r	r	r	r	r	r	w0	w0	w0	w0	w0	w0	w0	w0

Field	Bits	Type	Description
PSx (x=0-7)	x	w0	**Set Bit x** Setting this bit will set or toggle the corresponding bit in the port output register Pn_OUT. Read as 0. The function of this bit is shown in **Table 75**. 0_B No operation 1_B Sets or toggles Pn_OUT.Px.
PCLx (x=0-7)	x+16	w0	**Clear Bit x** Setting this bit will clear or toggle the corresponding bit in the port output register Pn_OUT. Read as 0. The function of this bit is shown in **Table 75**. 0_B No operation 1_B Clears or toggles Pn_OUT.Px.
0	15, 14, 13, 12, 11, 10, 9, 8, 31, 30, 29, 28, 27, 26, 25, 24	r	**Reserved** Read as 0; should be written with 0.

Table 78 Access Mode Restrictions sorted by descending priority

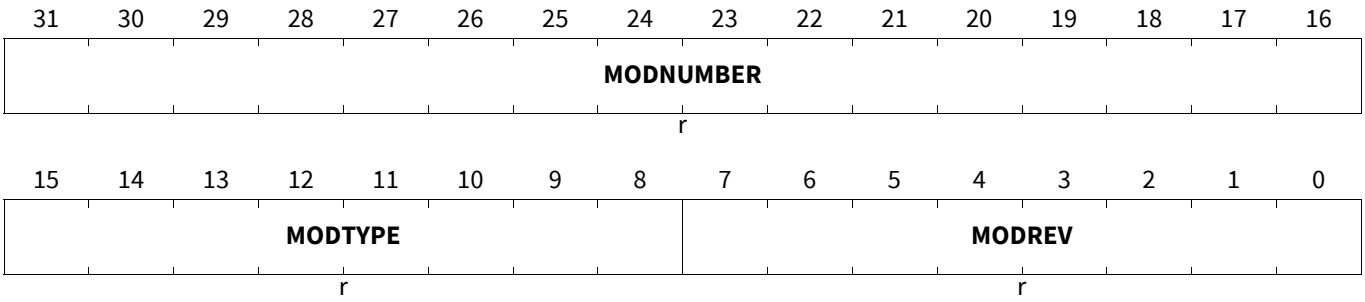
Applies to **P21_OMR**
Applies to **P22_OMR**
Applies to **P23_OMR**
Applies to **P32_OMR**

Mode Name	Access Mode		Description
Master enabled in ACCEN	w0	PCLx (x=0-7), PSx (x=0-7)	write access for enabled masters
Otherwise (default)	r0	PCLx (x=0-7), PSx (x=0-7)	

Port 00 Identification Register

The module Identification Register ID contains read-only information about the module version.

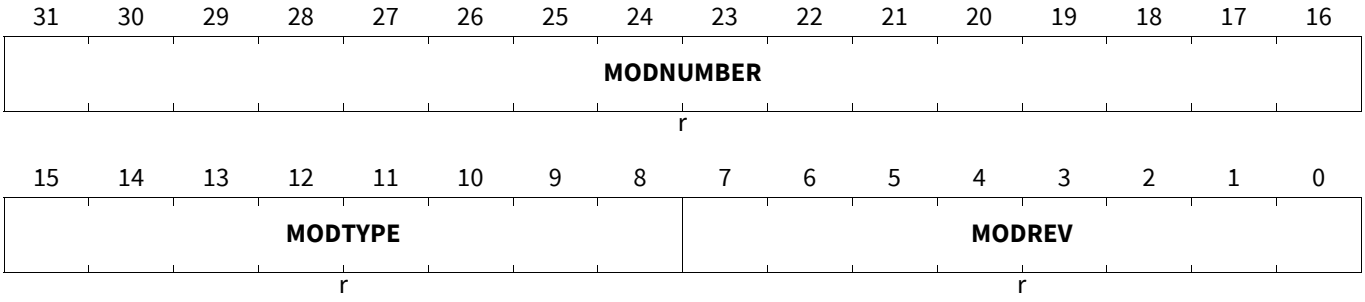
P00_ID
Port 00 Identification Register **(008_H)** **Application Reset Value: 00C8 C0XX$_H$**
P02_ID
Port 02 Identification Register **(008_H)** **Application Reset Value: 00C8 C0XX$_H$**
P10_ID
Port 10 Identification Register **(008_H)** **Application Reset Value: 00C8 C0XX$_H$**
P11_ID
Port 11 Identification Register **(008_H)** **Application Reset Value: 00C8 C0XX$_H$**
P13_ID
Port 13 Identification Register **(008_H)** **Application Reset Value: 00C8 C0XX$_H$**
P14_ID
Port 14 Identification Register **(008_H)** **Application Reset Value: 00C8 C0XX$_H$**
P15_ID
Port 15 Identification Register **(008_H)** **Application Reset Value: 00C8 C0XX$_H$**
P20_ID
Port 20 Identification Register **(008_H)** **Application Reset Value: 00C8 C0XX$_H$**
P21_ID
Port 21 Identification Register **(008_H)** **Application Reset Value: 00C8 C0XX$_H$**
P22_ID
Port 22 Identification Register **(008_H)** **Application Reset Value: 00C8 C0XX$_H$**



Field	Bits	Type	Description
MODREV	7:0	r	**Module Revision Number** This bit field indicates the revision number of the TC33x/TC32x module (01_H = first revision).

Field	Bits	Type	Description
MODTYPE	15:8	r	**Module Type** This bit field is $C0_H$. It defines a 32-bit module
MODNUMBER	31:16	r	**Module Number** This bit field defines the module identification number. The value for the Ports module is $00C8_H$

P23_ID
Port 23 Identification Register **(008_H)** **Application Reset Value: 00C8 C0XX$_H$**
P32_ID
Port 32 Identification Register **(008_H)** **Application Reset Value: 00C8 C0XX$_H$**
P33_ID
Port 33 Identification Register **(008_H)** **Application Reset Value: 00C8 C0XX$_H$**
P34_ID
Port 34 Identification Register **(008_H)** **Application Reset Value: 00C8 C0XX$_H$**
P40_ID
Port 40 Identification Register **(008_H)** **Application Reset Value: 00C8 C0XX$_H$**



Field	Bits	Type	Description
MODREV	7:0	r	**Module Revision Number** This bit field indicates the revision number of the TC33x/TC32x module (01_H = first revision).
MODTYPE	15:8	r	**Module Type** This bit field is $C0_H$. It defines a 32-bit module
MODNUMBER	31:16	r	**Module Number** This bit field defines the module identification number. The value for the Ports module is $00C8_H$

Port 00 Input/Output Control Register 0

The port input/output control registers select the digital output and input driver functionality and characteristics of a GPIO port pin. Port direction (input or output), pull-up, pull-down, or no pull devices for inputs, and push-pull or open-drain functionality for outputs can be selected by the corresponding bit fields PCx (x = 0-15). Each 32-bit wide port input/output control register controls four GPIO port lines:

Register Pn_IOCR0 controls the Pn.[3:0] port lines
Register Pn_IOCR4 controls the Pn.[7:4] port lines
Register Pn_IOCR8 controls the Pn.[11:8] port lines
Register Pn_IOCR12 controls the Pn.[15:12] port lines

The structure with one control bit field for each port pin located in different register bytes offers the possibility to configure the port pin functionality of a single pin with byte-oriented accesses without accessing the other PCx bit fields.

The reset values of 1010 1010_H and 0000 0000_H for Pn_IOCRx registers represents input pull-up and no input pull device (tri-state mode) being activated, respectively. The switching of the intended mode of the device is controlled by HWCFG6.When a cold reset is activated and HWCFG6=1, the port pins except P33.8, P40 and P41 are set to input pull-up mode, P33.8, P40 and P41 are in tri-state mode as long as PORST is activated.If HWCFG6=0, the pins have the default state of tri-state mode. The pad state can also be configured by software through PMSWCR5.TRISTREQ bit. In the event of a warm reset or wake-up from standby mode, PMSWCR5.TRISTREQ is not affected by reset, hence Pn_IOCRx registers have the reset values configured as per the last state of the TRISTREQ bit.

Note: In LVDS (RX and TX) operation the IOCR register of both pins of the LVDS pair must be configured as output, i.e. $1xxxx_B$. This ensures that the pull devices are disconnected and don't interfere with LVDS operation.

Register Pn_IOCR0 controls the Pn.[3:0] port lines

P00_IOCR0
Port 00 Input/Output Control Register 0 **(010_H)** **Reset Value: Table 80**
P02_IOCR0
Port 02 Input/Output Control Register 0 **(010_H)** **Reset Value: Table 80**
P10_IOCR0
Port 10 Input/Output Control Register 0 **(010_H)** **Reset Value: Table 80**
P11_IOCR0
Port 11 Input/Output Control Register 0 **(010_H)** **Reset Value: Table 80**
P13_IOCR0
Port 13 Input/Output Control Register 0 **(010_H)** **Reset Value: Table 80**
P14_IOCR0
Port 14 Input/Output Control Register 0 **(010_H)** **Reset Value: Table 80**
P15_IOCR0
Port 15 Input/Output Control Register 0 **(010_H)** **Reset Value: Table 80**
P20_IOCR0
Port 20 Input/Output Control Register 0 **(010_H)** **Reset Value: Table 80**
P21_IOCR0
Port 21 Input/Output Control Register 0 **(010_H)** **Reset Value: Table 80**
P22_IOCR0
Port 22 Input/Output Control Register 0 **(010_H)** **Reset Value: Table 80**

31	30	29	28	27	26	25	24	23	22	21	20	19	18	17	16
PC3					**0**			**PC2**					**0**		
rw					r			rw					r		

15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
PC1					**0**			**PC0**					**0**		
rw					r			rw					r		

Field	Bits	Type	Description
PCx (x=0-3)	8*x+7:8*x+3	rw	**Port Control for Pin x** This bit field defines the Port n line x functionality according to **Table 81**.
0	26:24, 18:16, 10:8, 2:0	r	**Reserved** Read as 0; should be written with 0.

Table 79 Access Mode Restrictions sorted by descending priority

Applies to **P00_IOCR0**
Applies to **P02_IOCR0**
Applies to **P10_IOCR0**
Applies to **P11_IOCR0**
Applies to **P13_IOCR0**
Applies to **P14_IOCR0**
Applies to **P15_IOCR0**
Applies to **P20_IOCR0**
Applies to **P21_IOCR0**
Applies to **P22_IOCR0**

Mode Name	Access Mode		Description
Master enabled in ACCEN	rw	PCx (x=0-3)	write access for enabled masters
Otherwise (default)	r	PCx (x=0-3)	

Table 80 Reset Values

Applies to **P00_IOCR0**
Applies to **P02_IOCR0**
Applies to **P10_IOCR0**
Applies to **P11_IOCR0**
Applies to **P13_IOCR0**
Applies to **P14_IOCR0**
Applies to **P15_IOCR0**
Applies to **P20_IOCR0**
Applies to **P21_IOCR0**
Applies to **P22_IOCR0**

Reset Type	Reset Value	Note
Application Reset	$0000\ 0000_H$	HWCFG6 is 0 (tri-state mode)
Application Reset	$1010\ 1010_H$	HWCFG6 is 1 (input pull-up mode)

Port Control Coding

Table 81 describes the coding of the PCx bit fields that determine the port line functionality.

Table 81 PCx Coding

PCx[4:0]	I/O	Characteristics	Selected Pull-up / Pull-down / Selected Output Function
$0XX00_B$	Input	–	No input pull device connected, tri-state mode
$0XX01_B$			Input pull-down device connected
$0XX10_B$			Input pull-up device connected[1)]
$0XX11_B$			No input pull device connected, tri-state mode
10000_B	Output	Push-pull	General-purpose output
10001_B			Alternate output function 1
10010_B			Alternate output function 2
10011_B			Alternate output function 3
10100_B			Alternate output function 4
10101_B			Alternate output function 5
10110_B			Alternate output function 6
10111_B			Alternate output function 7
11000_B		Open-drain	General-purpose output
11001_B			Alternate output function 1
11010_B			Alternate output function 2
11011_B			Alternate output function 3
11100_B			Alternate output function 4
11101_B			Alternate output function 5
11110_B			Alternate output function 6
11111_B			Alternate output function 7

1) This is the default pull device setting after reset for powertrain applications.

P23_IOCR0
Port 23 Input/Output Control Register 0 **(010_H)** **Reset Value: Table 83**
P32_IOCR0
Port 32 Input/Output Control Register 0 **(010_H)** **Reset Value: Table 83**
P33_IOCR0
Port 33 Input/Output Control Register 0 **(010_H)** **Reset Value: Table 83**
P34_IOCR0
Port 34 Input/Output Control Register 0 **(010_H)** **Reset Value: Table 83**
P40_IOCR0
Port 40 Input/Output Control Register 0 **(010_H)** **Reset Value: Table 84**

31	30	29	28	27	26	25	24	23	22	21	20	19	18	17	16
PC3					0			PC2					0		
rw					r			rw					r		

15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
PC1					0			PC0					0		
rw					r			rw					r		

Field	Bits	Type	Description
PCx (x=0-3)	8*x+7:8*x+3	rw	**Port Control for Pin x** This bit field defines the Port n line x functionality according to **Table 81**.
0	26:24, 18:16, 10:8, 2:0	r	**Reserved** Read as 0; should be written with 0.

Table 82 Access Mode Restrictions sorted by descending priority

Applies to **P23_IOCR0**
Applies to **P32_IOCR0**
Applies to **P33_IOCR0**
Applies to **P34_IOCR0**
Applies to **P40_IOCR0**

Mode Name	Access Mode		Description
Master enabled in ACCEN	rw	PCx (x=0-3)	write access for enabled masters
Otherwise (default)	r	PCx (x=0-3)	

Table 83 Reset Values variant 1

Applies to **P23_IOCR0**
Applies to **P32_IOCR0**
Applies to **P33_IOCR0**
Applies to **P34_IOCR0**

Reset Type	Reset Value	Note
Application Reset	$0000\ 0000_H$	HWCFG6 is 0 (tri-state mode)
Application Reset	$1010\ 1010_H$	HWCFG6 is 1 (input pull-up mode)

Table 84 Reset Values of P40_IOCR0

Reset Type	Reset Value	Note
Application Reset	$0000\ 0000_H$	HWCFG6 is 0 (tri-state mode)
Application Reset	$0000\ 0000_H$	HWCFG6 is 1 (input pull-up mode)

Port 00 Input/Output Control Register 4

Register Pn_IOCR4 controls the Pn.[7:4] port lines

P00_IOCR4
Port 00 Input/Output Control Register 4 (014_H) Reset Value: Table 86
P02_IOCR4
Port 02 Input/Output Control Register 4 (014_H) Reset Value: Table 86
P10_IOCR4
Port 10 Input/Output Control Register 4 (014_H) Reset Value: Table 86
P11_IOCR4
Port 11 Input/Output Control Register 4 (014_H) Reset Value: Table 86
P14_IOCR4
Port 14 Input/Output Control Register 4 (014_H) Reset Value: Table 86
P15_IOCR4
Port 15 Input/Output Control Register 4 (014_H) Reset Value: Table 86
P20_IOCR4
Port 20 Input/Output Control Register 4 (014_H) Reset Value: Table 86
P21_IOCR4
Port 21 Input/Output Control Register 4 (014_H) Reset Value: Table 86
P22_IOCR4
Port 22 Input/Output Control Register 4 (014_H) Reset Value: Table 86
P23_IOCR4
Port 23 Input/Output Control Register 4 (014_H) Reset Value: Table 86

31	30	29	28	27	26	25	24	23	22	21	20	19	18	17	16
PC7					0			PC6					0		
rw					r			rw					r		

15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
PC5					0			PC4					0		
rw					r			rw					r		

Field	Bits	Type	Description
PCx (x=4-7)	8*x-25:8*x-29	rw	**Port Control for Port 00 Pin x** This bit field defines the Port n line x functionality according to **Table 81**.
0	26:24, 18:16, 10:8, 2:0	r	**Reserved** Read as 0; should be written with 0.

Table 85 Access Mode Restrictions sorted by descending priority

Applies to **P00_IOCR4**
Applies to **P02_IOCR4**
Applies to **P10_IOCR4**
Applies to **P11_IOCR4**
Applies to **P14_IOCR4**
Applies to **P15_IOCR4**
Applies to **P20_IOCR4**
Applies to **P21_IOCR4**
Applies to **P22_IOCR4**
Applies to **P23_IOCR4**

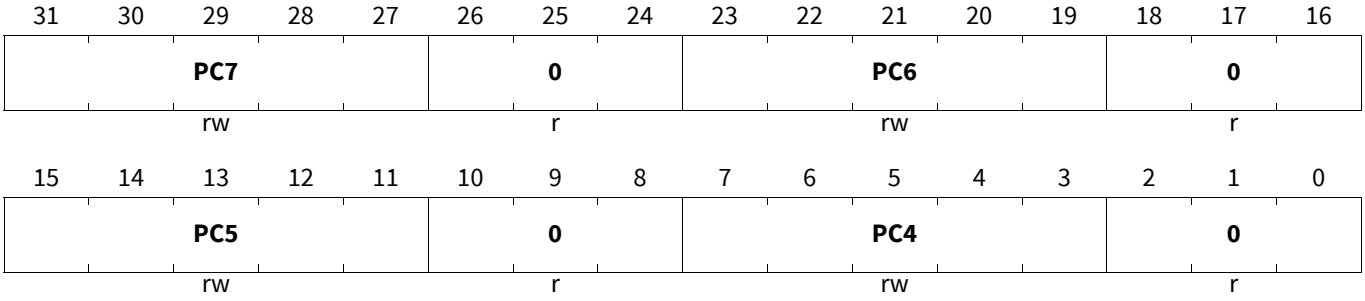
Mode Name	Access Mode		Description
Master enabled in ACCEN	rw	PCx (x=4-7)	write access for enabled masters
Otherwise (default)	r	PCx (x=4-7)	

Table 86 Reset Values

Applies to **P00_IOCR4**
Applies to **P02_IOCR4**
Applies to **P10_IOCR4**
Applies to **P11_IOCR4**
Applies to **P14_IOCR4**
Applies to **P15_IOCR4**
Applies to **P20_IOCR4**
Applies to **P21_IOCR4**
Applies to **P22_IOCR4**
Applies to **P23_IOCR4**

Reset Type	Reset Value	Note
Application Reset	$0000\ 0000_H$	HWCFG6 is 0 (tri-state mode)
Application Reset	$1010\ 1010_H$	HWCFG6 is 1 (input pull-up mode)

P32_IOCR4
Port 32 Input/Output Control Register 4 **(014_H)** **Reset Value: Table 88**
P33_IOCR4
Port 33 Input/Output Control Register 4 **(014_H)** **Reset Value: Table 88**
P40_IOCR4
Port 40 Input/Output Control Register 4 **(014_H)** **Reset Value: Table 89**



Field	Bits	Type	Description
PCx (x=4-7)	8*x-25:8*x-29	rw	**Port Control for Port 32 Pin x** This bit field defines the Port n line x functionality according to **Table 81**.
0	26:24, 18:16, 10:8, 2:0	r	**Reserved** Read as 0; should be written with 0.

Table 87 Access Mode Restrictions sorted by descending priority

Applies to **P32_IOCR4**
Applies to **P33_IOCR4**
Applies to **P40_IOCR4**

Mode Name	Access Mode		Description
Master enabled in ACCEN	rw	PCx (x=4-7)	write access for enabled masters
Otherwise (default)	r	PCx (x=4-7)	

Table 88 Reset Values variant 1

Applies to **P32_IOCR4**
Applies to **P33_IOCR4**

Reset Type	Reset Value	Note
Application Reset	$0000\ 0000_H$	HWCFG6 is 0 (tri-state mode)
Application Reset	$1010\ 1010_H$	HWCFG6 is 1 (input pull-up mode)

Table 89 Reset Values of P40_IOCR4

Reset Type	Reset Value	Note
Application Reset	$0000\ 0000_H$	HWCFG6 is 0 (tri-state mode)
Application Reset	$0000\ 0000_H$	HWCFG6 is 1 (input pull-up mode)

Port 00 Input/Output Control Register 8

Register Pn_IOCR8 controls the Pn.[11:8] port lines

P00_IOCR8
Port 00 Input/Output Control Register 8 **(018_H)** **Reset Value: Table 91**
P02_IOCR8
Port 02 Input/Output Control Register 8 **(018_H)** **Reset Value: Table 91**
P10_IOCR8
Port 10 Input/Output Control Register 8 **(018_H)** **Reset Value: Table 91**
P11_IOCR8
Port 11 Input/Output Control Register 8 **(018_H)** **Reset Value: Table 91**
P14_IOCR8
Port 14 Input/Output Control Register 8 **(018_H)** **Reset Value: Table 91**
P15_IOCR8
Port 15 Input/Output Control Register 8 **(018_H)** **Reset Value: Table 91**
P20_IOCR8
Port 20 Input/Output Control Register 8 **(018_H)** **Reset Value: Table 91**
P33_IOCR8
Port 33 Input/Output Control Register 8 **(018_H)** **Reset Value: Table 92**
P40_IOCR8
Port 40 Input/Output Control Register 8 **(018_H)** **Reset Value: Table 93**

31	30	29	28	27	26	25	24	23	22	21	20	19	18	17	16
PC11					**0**			**PC10**					**0**		
rw					r			rw					r		

15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
PC9					**0**			**PC8**					**0**		
rw					r			rw					r		

Field	Bits	Type	Description
PCx (x=8-11)	8*x-57:8*x-61	rw	**Port Control for Port 00 Pin x** This bit field defines the Port n line x functionality according to **Table 81**.
0	26:24, 18:16, 10:8, 2:0	r	**Reserved** Read as 0; should be written with 0.

Table 90 Access Mode Restrictions sorted by descending priority

Applies to **P00_IOCR8**
Applies to **P02_IOCR8**
Applies to **P10_IOCR8**
Applies to **P11_IOCR8**
Applies to **P14_IOCR8**
Applies to **P15_IOCR8**
Applies to **P20_IOCR8**
Applies to **P33_IOCR8**
Applies to **P40_IOCR8**

Mode Name	Access Mode		Description
Master enabled in ACCEN	rw	PCx (x=8-11)	write access for enabled masters
Otherwise (default)	r	PCx (x=8-11)	

Table 91 Reset Values variant 1

Applies to **P00_IOCR8**
Applies to **P02_IOCR8**
Applies to **P10_IOCR8**
Applies to **P11_IOCR8**
Applies to **P14_IOCR8**
Applies to **P15_IOCR8**
Applies to **P20_IOCR8**

Reset Type	Reset Value	Note
Application Reset	$0000\ 0000_H$	HWCFG6 is 0 (tri-state mode)
Application Reset	$1010\ 1010_H$	HWCFG6 is 1 (input pull-up mode)

Table 92 Reset Values of P33_IOCR8

Reset Type	Reset Value	Note
Application Reset	$0000\ 0000_H$	HWCFG6 is 0 (tri-state mode)
Application Reset	$1010\ 1000_H$	HWCFG6 is 1 (input pull-up mode)

Table 93 Reset Values of P40_IOCR8

Reset Type	Reset Value	Note
Application Reset	$0000\ 0000_H$	HWCFG6 is 0 (tri-state mode)
Application Reset	$0000\ 0000_H$	HWCFG6 is 1 (input pull-up mode)

Port 00 Input/Output Control Register 12

Register Pn_IOCR12 controls the Pn.[15:12] port lines

P00_IOCR12
Port 00 Input/Output Control Register 12 **($01C_H$)** **Reset Value: Table 95**
P11_IOCR12
Port 11 Input/Output Control Register 12 **($01C_H$)** **Reset Value: Table 95**
P20_IOCR12
Port 20 Input/Output Control Register 12 **($01C_H$)** **Reset Value: Table 95**
P33_IOCR12
Port 33 Input/Output Control Register 12 **($01C_H$)** **Reset Value: Table 95**

31	30	29	28	27	26	25	24	23	22	21	20	19	18	17	16
PC15					0			PC14					0		
rw					r			rw					r		

15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
PC13					0			PC12					0		
rw					r			rw					r		

Field	Bits	Type	Description
PCx (x=12-15)	8*x-89:8*x-93	rw	**Port Control for Port 00 Pin x** This bit field defines the Port n line x functionality according to **Table 81**.
0	26:24, 18:16, 10:8, 2:0	r	**Reserved** Read as 0; should be written with 0.

Table 94 Access Mode Restrictions sorted by descending priority

Applies to **P00_IOCR12**
Applies to **P11_IOCR12**
Applies to **P20_IOCR12**
Applies to **P33_IOCR12**

Mode Name	Access Mode		Description
Master enabled in ACCEN	rw	PCx (x=12-15)	write access for enabled masters
Otherwise (default)	r	PCx (x=12-15)	

Table 95 Reset Values

Applies to **P00_IOCR12**
Applies to **P11_IOCR12**
Applies to **P20_IOCR12**
Applies to **P33_IOCR12**

Reset Type	Reset Value	Note
Application Reset	$0000\ 0000_H$	HWCFG6 is 0 (tri-state mode)
Application Reset	$1010\ 1010_H$	HWCFG6 is 1 (input pull-up mode)

Port 00 Input Register

The logic level of a GPIO pin can be read via the read-only port input register Pn_IN.Reading the Pn_IN register always returns the current logical value at the GPIO pin independently whether the pin is selected as input or output.

P00_IN
Port 00 Input Register **(024_H)** **Application Reset Value: 0000 XXXX$_H$**
P11_IN
Port 11 Input Register **(024_H)** **Application Reset Value: 0000 XXXX$_H$**
P20_IN
Port 20 Input Register **(024_H)** **Application Reset Value: 0000 XXXX$_H$**
P33_IN
Port 33 Input Register **(024_H)** **Application Reset Value: 0000 XXXX$_H$**

31	30	29	28	27	26	25	24	23	22	21	20	19	18	17	16
0															
r															

15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
P15	P14	P13	P12	P11	P10	P9	P8	P7	P6	P5	P4	P3	P2	P1	P0
rh	rh	rh	rh	rh	rh	rh	rh	rh	rh	rh	rh	rh	rh	rh	rh

Field	Bits	Type	Description
Px (x=0-15)	x	rh	**Input Bit x** This bit indicates the level at the input pin Pn.x. 0_B The input level of Pn.x is 0. 1_B The input level of Pn.x is 1.
0	31:16	r	**Reserved** Read as 0.

P02_IN
Port 02 Input Register **(024_H)** **Application Reset Value: 0000 0XXX$_H$**
P10_IN
Port 10 Input Register **(024_H)** **Application Reset Value: 0000 0XXX$_H$**
P14_IN
Port 14 Input Register **(024_H)** **Application Reset Value: 0000 0XXX$_H$**
P15_IN
Port 15 Input Register **(024_H)** **Application Reset Value: 0000 0XXX$_H$**
P40_IN
Port 40 Input Register **(024_H)** **Application Reset Value: 0000 0XXX$_H$**

31	30	29	28	27	26	25	24	23	22	21	20	19	18	17	16
0															
r															

15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
0	**0**	**0**	**0**	**P11**	**P10**	**P9**	**P8**	**P7**	**P6**	**P5**	**P4**	**P3**	**P2**	**P1**	**P0**
r	r	r	r	rh	rh	rh	rh	rh	rh	rh	rh	rh	rh	rh	rh

Field	Bits	Type	Description
Px (x=0-11)	x	rh	**Input Bit x** This bit indicates the level at the input pin Pn.x. 0_B The input level of Pn.x is 0. 1_B The input level of Pn.x is 1.
0	15, 14, 13, 12, 31:16	r	**Reserved** Read as 0; should be written with 0.

P13_IN
Port 13 Input Register **(024_H)** **Application Reset Value: 0000 000X$_H$**
P34_IN
Port 34 Input Register **(024_H)** **Application Reset Value: 0000 000X$_H$**

31	30	29	28	27	26	25	24	23	22	21	20	19	18	17	16
0															
r															

15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
0	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**P3**	**P2**	**P1**	**P0**
r	r	r	r	r	r	r	r	r	r	r	r	rh	rh	rh	rh

Field	Bits	Type	Description
Px (x=0-3)	x	rh	**Input Bit x** This bit indicates the level at the input pin Pn.x. 0_B The input level of Pn.x is 0. 1_B The input level of Pn.x is 1.

Field	Bits	Type	Description
0	15, 14, 13, 12, 11, 10, 9, 8, 7, 6, 5, 4, 31:16	r	**Reserved** Read as 0; should be written with 0.

P21_IN
Port 21 Input Register **(024_H)** **Application Reset Value: 0000 00XX$_H$**
P22_IN
Port 22 Input Register **(024_H)** **Application Reset Value: 0000 00XX$_H$**
P23_IN
Port 23 Input Register **(024_H)** **Application Reset Value: 0000 00XX$_H$**
P32_IN
Port 32 Input Register **(024_H)** **Application Reset Value: 0000 00XX$_H$**

31	30	29	28	27	26	25	24	23	22	21	20	19	18	17	16
0															
r															

15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
0	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**P7**	**P6**	**P5**	**P4**	**P3**	**P2**	**P1**	**P0**
r	r	r	r	r	r	r	r	rh	rh	rh	rh	rh	rh	rh	rh

Field	Bits	Type	Description
Px (x=0-7)	x	rh	**Input Bit x** This bit indicates the level at the input pin Pn.x. 0_B The input level of Pn.x is 0. 1_B The input level of Pn.x is 1.
0	15, 14, 13, 12, 11, 10, 9, 8, 31:16	r	**Reserved** Read as 0; should be written with 0.

Port 00 Pad Driver Mode Register 0

P00_PDR0
Port 00 Pad Driver Mode Register 0 **(040_H)** **Reset Value: Table 97**
P02_PDR0
Port 02 Pad Driver Mode Register 0 **(040_H)** **Reset Value: Table 97**
P10_PDR0
Port 10 Pad Driver Mode Register 0 **(040_H)** **Reset Value: Table 97**
P11_PDR0
Port 11 Pad Driver Mode Register 0 **(040_H)** **Reset Value: Table 97**
P14_PDR0
Port 14 Pad Driver Mode Register 0 **(040_H)** **Reset Value: Table 97**
P15_PDR0
Port 15 Pad Driver Mode Register 0 **(040_H)** **Reset Value: Table 97**
P20_PDR0
Port 20 Pad Driver Mode Register 0 **(040_H)** **Reset Value: Table 97**
P21_PDR0
Port 21 Pad Driver Mode Register 0 **(040_H)** **Reset Value: Table 97**
P22_PDR0
Port 22 Pad Driver Mode Register 0 **(040_H)** **Reset Value: Table 97**
P23_PDR0
Port 23 Pad Driver Mode Register 0 **(040_H)** **Reset Value: Table 97**

31	30	29	28	27	26	25	24	23	22	21	20	19	18	17	16
PL7		PD7		PL6		PD6		PL5		PD5		PL4		PD4	
rw		rw		rw		rw		rw		rw		rw		rw	

15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
PL3		PD3		PL2		PD2		PL1		PD1		PL0		PD0	
rw		rw		rw		rw		rw		rw		rw		rw	

Field	Bits	Type	Description
PDx (x=0-7)	4*x+1:4*x	rw	**Pad Driver Mode for Pin x**
PLx (x=0-7)	4*x+3:4*x+2	rw	**Pad Level Selection for Pin x**

Table 96 Access Mode Restrictions sorted by descending priority

Applies to **P00_PDR0**
Applies to **P02_PDR0**
Applies to **P10_PDR0**
Applies to **P11_PDR0**
Applies to **P14_PDR0**
Applies to **P15_PDR0**
Applies to **P20_PDR0**
Applies to **P21_PDR0**
Applies to **P22_PDR0**
Applies to **P23_PDR0**

Mode Name	Access Mode		Description
Master enabled in ACCEN and Supervisor Mode and ENDINIT	rw	PDx (x=0-7), PLx (x=0-7)	write access for enabled masters
Otherwise (default)	r	PDx (x=0-7), PLx (x=0-7)	

Table 97 Reset Values

Applies to **P00_PDR0**
Applies to **P02_PDR0**
Applies to **P10_PDR0**
Applies to **P11_PDR0**
Applies to **P14_PDR0**
Applies to **P15_PDR0**
Applies to **P20_PDR0**
Applies to **P21_PDR0**
Applies to **P22_PDR0**
Applies to **P23_PDR0**

Reset Type	Reset Value	Note
After SSW execution	$2222\ 2222_H$	Initial value in largest package
After SSW execution	$----\ ----_H$	Initial value package dependent

Output Characteristics

The pad structure of the GPIO lines offers the possibility to select the output driver strength and the slew rate. These two parameters are controlled by the PDx bit fields in the pad driver mode registers Pn_PDR0/1 for output modes. The available modes depend on the respective pad type.

Table 98 Pad Driver Mode Selection for RFast Pads

PDx.1	PDx.0	Speed Grade	Driver Setting
0	0	1	Strong driver, sharp edge (“ss”)
0	1	2	Strong driver, medium edge (“sm”)
1	0	3	Medium driver (“m”)
1	1	4	RGMII driver.

Table 99 Pad Driver Mode Selection for Fast Pads

PDx.1	PDx.0	Speed Grade	Driver Setting
0	0	1	Strong driver, sharp edge (“ss”)
0	1	2	Strong driver, medium edge (“sm”)
1	0	3	Medium driver (“m”)
1	1	4	TC39x A-Step: Medium driver (“m”) Else: Reserved when operating as output. When operating as input see below “Pad Level Selection for Input Function”.

Table 100 Pad Driver Mode Selection for Slow Pads

PDx.1	PDx.0	Speed Grade	Driver Setting
X	0	1	Medium driver, sharp edge (“sm”)[1)]
X	1	2	Medium driver (“m”)

1) This setting is marked “sm” as the electrical characteristics are identical to the strong driver medium edge setting. The Data Sheet contains also only common “sm” tables.

Note: The Data Sheet describes the DC characteristics of all pad classes.

TTL/Automotive Input Selection

The input function can operate with different VIH and VIL levels depending on the pad supply voltage, the pad type and the selection done by the PLx bits of the Pn_PDRx as of **Table 101**. PLx.1 changes additionally the pull-up and pull-down resistors.

Table 101 Pad Level Selection for Input Function

PLx.1	PLx.0	Input Levels
0	X	Automotive level “AL”.
1	0	TTL level for 5V pad supply. Degraded TTL level used for CIF when pad supply is 3.3V
1	1	TTL level for 3.3V pad supply.
X	X	Only for pads with RGMII input buffer (marked “RGMII_Input” in the pinning table): • when PDx.1=1 and PDx.0=1 the input level RGMII is selected. • for other PDx values the input level is determined by PLx as for all other pads (first three rows of this table).

LVDS

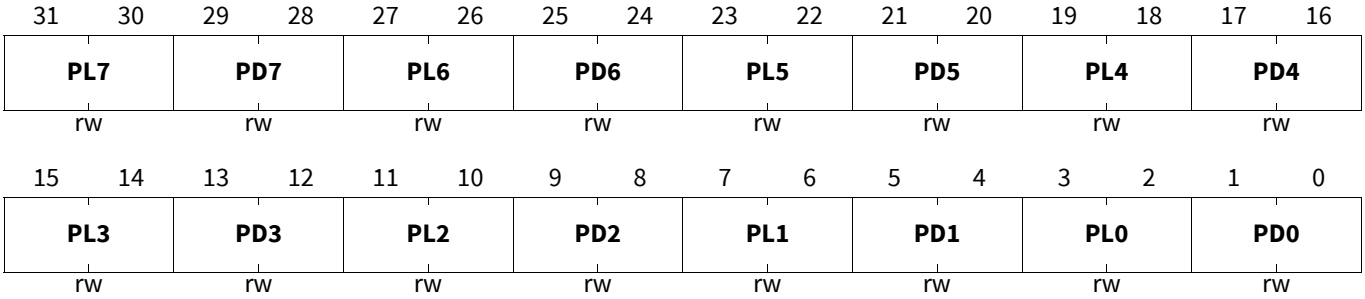
The default CMOS mode can be switched to LVDS mode in LVDS pads through the LPCRx register.

Pad Driver Mode Registers

This is the general description of the PDR registers. Each port contains its own specific PDR registers, described additionally at each port, that can contain between one and eight PDx fields for PDR0 and PDR1 registers, respectively. Each PDx field controls 1 pin. For coding of PDx, see **Table 98**, **Table 99** and **Table 100**. Similarly, each PLx bit controls 1 pin. For coding of PLx, see **Table 101**.

The boot software configures the reset value of Pn_PDR0 and Pn_PDR1 registers from 0000 0000$_H$ to 2222 2222$_H$ except for analog ports and if the package doesn't make any of the related pins available. The resulting value depends on the implemented port width. The documented value is valid for the largest package.

P32_PDR0
Port 32 Pad Driver Mode Register 0 **(040$_H$)** **Reset Value: Table 103**
P33_PDR0
Port 33 Pad Driver Mode Register 0 **(040$_H$)** **Reset Value: Table 103**
P40_PDR0
Port 40 Pad Driver Mode Register 0 **(040$_H$)** **Reset Value: Table 104**



Field	Bits	Type	Description
PDx (x=0-7)	4*x+1:4*x	rw	**Pad Driver Mode for Pin x**
PLx (x=0-7)	4*x+3:4*x+2	rw	**Pad Level Selection for Pin x**

Table 102 Access Mode Restrictions sorted by descending priority

Applies to **P32_PDR0**
Applies to **P33_PDR0**
Applies to **P40_PDR0**

Mode Name	Access Mode		Description
Master enabled in ACCEN and Supervisor Mode and ENDINIT	rw	PDx (x=0-7), PLx (x=0-7)	write access for enabled masters
Otherwise (default)	r	PDx (x=0-7), PLx (x=0-7)	

Table 103 Reset Values variant 1

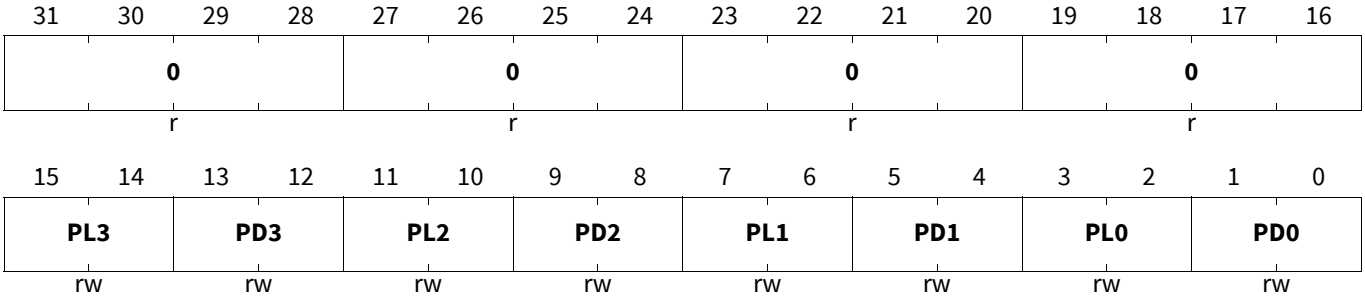
Applies to **P32_PDR0**
Applies to **P33_PDR0**

Reset Type	Reset Value	Note
After SSW execution	2222 2222$_H$	Initial value in largest package
After SSW execution	---- ----$_H$	Initial value package dependent

Table 104 Reset Values of P40_PDR0

Reset Type	Reset Value	Note
After SSW execution	0000 0000_H	Initial value in largest package
After SSW execution	---- $----_H$	Initial value package dependent

P13_PDR0
Port 13 Pad Driver Mode Register 0 **(040_H)** **Reset Value: Table 106**
P34_PDR0
Port 34 Pad Driver Mode Register 0 **(040_H)** **Reset Value: Table 106**



Field	Bits	Type	Description
PDx (x=0-3)	4*x+1:4*x	rw	**Pad Driver Mode for Pin x**
PLx (x=0-3)	4*x+3:4*x+2	rw	**Pad Level Selection for Pin x**
0	31:28, 27:24, 23:20, 19:16	r	**Reserved** Read as 0; should be written with 0.

Table 105 Access Mode Restrictions sorted by descending priority

Applies to **P13_PDR0**
Applies to **P34_PDR0**

Mode Name	Access Mode		Description
Master enabled in ACCEN and Supervisor Mode and ENDINIT	rw	PDx (x=0-3), PLx (x=0-3)	write access for enabled masters
Otherwise (default)	r	PDx (x=0-3), PLx (x=0-3)	

Table 106 Reset Values

Applies to **P13_PDR0**
Applies to **P34_PDR0**

Reset Type	Reset Value	Note
After SSW execution	0000 2222_H	Initial value in largest package
After SSW execution	0000 $----_H$	Initial value package dependent

Port 00 Pad Driver Mode Register 1

P00_PDR1
Port 00 Pad Driver Mode Register 1 **(044_H)** **Reset Value: Table 108**
P11_PDR1
Port 11 Pad Driver Mode Register 1 **(044_H)** **Reset Value: Table 108**
P20_PDR1
Port 20 Pad Driver Mode Register 1 **(044_H)** **Reset Value: Table 108**
P33_PDR1
Port 33 Pad Driver Mode Register 1 **(044_H)** **Reset Value: Table 108**

31	30	29	28	27	26	25	24	23	22	21	20	19	18	17	16
PL15		PD15		PL14		PD14		PL13		PD13		PL12		PD12	
rw		rw		rw		rw		rw		rw		rw		rw	

15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
PL11		PD11		PL10		PD10		PL9		PD9		PL8		PD8	
rw		rw		rw		rw		rw		rw		rw		rw	

Field	Bits	Type	Description
PDx (x=8-15)	4*x-31:4*x-32	rw	**Pad Driver Mode for Pin x**
PLx (x=8-15)	4*x-29:4*x-30	rw	**Pad Level Selection for Pin x**

Table 107 Access Mode Restrictions sorted by descending priority

Applies to **P00_PDR1**
Applies to **P11_PDR1**
Applies to **P20_PDR1**
Applies to **P33_PDR1**

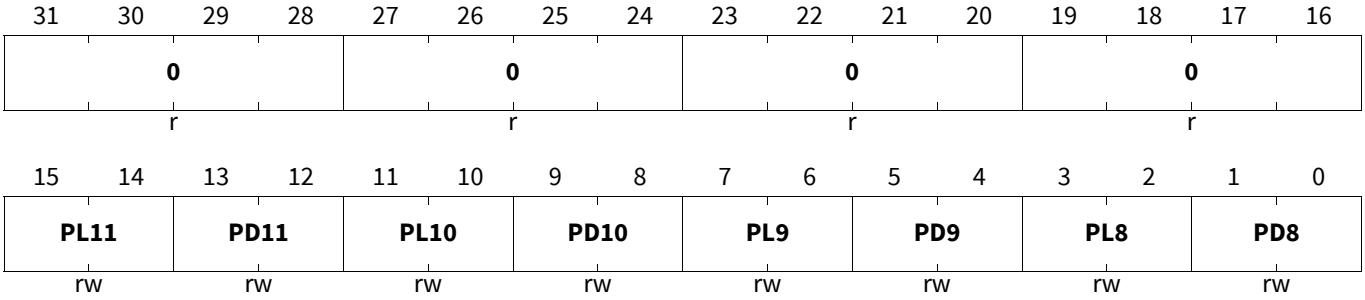
Mode Name	Access Mode		Description
Master enabled in ACCEN and Supervisor Mode and ENDINIT	rw	PDx (x=8-15), PLx (x=8-15)	write access for enabled masters
Otherwise (default)	r	PDx (x=8-15), PLx (x=8-15)	

Table 108 Reset Values

Applies to **P00_PDR1**
Applies to **P11_PDR1**
Applies to **P20_PDR1**
Applies to **P33_PDR1**

Reset Type	Reset Value	Note
After SSW execution	$2222\ 2222_H$	Initial value in largest package
After SSW execution	$----\ ----_H$	Initial value package dependent

P02_PDR1
Port 02 Pad Driver Mode Register 1 **(044_H)** **Reset Value: Table 110**
P10_PDR1
Port 10 Pad Driver Mode Register 1 **(044_H)** **Reset Value: Table 110**
P14_PDR1
Port 14 Pad Driver Mode Register 1 **(044_H)** **Reset Value: Table 110**
P15_PDR1
Port 15 Pad Driver Mode Register 1 **(044_H)** **Reset Value: Table 110**
P40_PDR1
Port 40 Pad Driver Mode Register 1 **(044_H)** **Reset Value: Table 111**



Field	Bits	Type	Description
PDx (x=8-11)	4*x-31:4*x-32	rw	**Pad Driver Mode for Pin x**
PLx (x=8-11)	4*x-29:4*x-30	rw	**Pad Level Selection for Pin x**
0	31:28, 27:24, 23:20, 19:16	r	**Reserved** Read as 0; should be written with 0.

Table 109 Access Mode Restrictions sorted by descending priority

Applies to **P02_PDR1**
Applies to **P10_PDR1**
Applies to **P14_PDR1**
Applies to **P15_PDR1**
Applies to **P40_PDR1**

Mode Name	Access Mode		Description
Master enabled in ACCEN and Supervisor Mode and ENDINIT	rw	PDx (x=8-11), PLx (x=8-11)	write access for enabled masters
Otherwise (default)	r	PDx (x=8-11), PLx (x=8-11)	

Table 110 Reset Values variant 1

Applies to **P02_PDR1**
Applies to **P10_PDR1**
Applies to **P14_PDR1**
Applies to **P15_PDR1**

Reset Type	Reset Value	Note
After SSW execution	0000 2222_H	Initial value in largest package
After SSW execution	0000 $----_H$	Initial value package dependent

Table 111 Reset Values of P40_PDR1

Reset Type	Reset Value	Note
After SSW execution	0000 0000_H	Initial value in largest package
After SSW execution	0000 $----_H$	Initial value package dependent

Port 00 Emergency Stop Register

P00_ESR
Port 00 Emergency Stop Register **(050_H)** **Application Reset Value: 0000 0000_H**
P11_ESR
Port 11 Emergency Stop Register **(050_H)** **Application Reset Value: 0000 0000_H**
P20_ESR
Port 20 Emergency Stop Register **(050_H)** **Application Reset Value: 0000 0000_H**

31	30	29	28	27	26	25	24	23	22	21	20	19	18	17	16
0															
r															

15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
EN15	**EN14**	**EN13**	**EN12**	**EN11**	**EN10**	**EN9**	**EN8**	**EN7**	**EN6**	**EN5**	**EN4**	**EN3**	**EN2**	**EN1**	**EN0**
rw	rw	rw	rw	rw	rw	rw	rw	rw	rw	rw	rw	rw	rw	rw	rw

Field	Bits	Type	Description
ENx (x=0-15)	x	rw	**Emergency Stop Enable for Pin x** This bit enables the emergency stop function for all GPIO lines. If the emergency stop condition is met and enabled, the output selection is automatically switched from alternate output function to GPIO input function. 0_B Emergency stop function for Pn.x is disabled. 1_B Emergency stop function for Pn.x is enabled.
0	31:16	r	**Reserved** Read as 0; should be written with 0.

Table 112 Access Mode Restrictions sorted by descending priority

Applies to **P00_ESR**
Applies to **P11_ESR**
Applies to **P20_ESR**

Mode Name	Access Mode		Description
Master enabled in ACCEN and Supervisor Mode and ENDINIT	rw	ENx (x=0-15)	write access for enabled masters
Otherwise (default)	r	ENx (x=0-15)	

Most GPIO lines have an emergency stop logic implemented (see Figure “General Structure of a Port Pin” in the Family chapter).

Each of these GPIO lines has its own emergency stop enable bit ENx that is located in the emergency stop register Pn_ESR of Port n. If the emergency stop signal becomes active, one of two states can be selected:

- Emergency stop function disabled (ENx = 0):
  The output line remains connected (alternate function).
- Emergency stop function enabled (ENx = 1):
  The mapped output function is disconnected and the safe state is entered by switching to input function with internal pull-up connected or tri-state, depending on the configured reset value of the corresponding Pn_IOCR register through PMSWCR5.TRISTREQ or setting of HWCFG[6].(the content of the corresponding PCx bit fields in register Pn_IOCR will not be considered).

Exceptions for Emergency Stop Implementation

The Emergency Stop function is available for all GPIO Ports with the following exceptions:

- Not available for P20.2 (General Purpose Input/GPI only, overlayed with Testmode)
- Not available for P40.x and P41.x (analog input ANx overlayed with GPI)
- Not available for P32.0 and P32.1 when using EVRC regulator.
- Not available for P21.2 (used as EMGSTOPB pin).
- Not available for P33.8 (used as EMGSTOPA pin).
- Not available for dedicated I/O without General Purpose Output function (e.g ESRx, TMS, TCK)

The Emergency Stop function can be overruled on the following GPIO Ports:

- P00.x: Emergency Stop can be overruled by the VADC. Overruling can be disabled via the control register P00_PCSR.
- P14.0 and P14.1: Emergency Stop can be overruled in the DXCPL (DAP over CAN physical layer) mode. No Overruling in the DXCM (Debug over can message) mode
- P21.6: Emergency Stop can be overruled in JTAG mode if this pin is used as TDI
- P21.7: Emergency Stop can be overruled in JTAG or Three Pin DAP mode.
- P33.0-7, P33.9-15 and P34.1: Emergency Stop can be overruled by the 8-Bit Standby Controller (SCR), if implemented. Overruling can be disabled via the control register P33_PCSR and P34_PCSR.

On pins with LVDS TX pads the Emergency Stop affects only the CMOS driver not the LVDS driver. Thus only when LPCRx.TX_EN selects CMOS mode the output is switched off. When TX_EN selects LVDS mode the output is not switched off.

P02_ESR
Port 02 Emergency Stop Register **(050_H)** **Application Reset Value: 0000 0000$_H$**
P10_ESR
Port 10 Emergency Stop Register **(050_H)** **Application Reset Value: 0000 0000$_H$**
P14_ESR
Port 14 Emergency Stop Register **(050_H)** **Application Reset Value: 0000 0000$_H$**
P15_ESR
Port 15 Emergency Stop Register **(050_H)** **Application Reset Value: 0000 0000$_H$**

31	30	29	28	27	26	25	24	23	22	21	20	19	18	17	16
0															
r															

15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
0	**0**	**0**	**0**	**EN11**	**EN10**	**EN9**	**EN8**	**EN7**	**EN6**	**EN5**	**EN4**	**EN3**	**EN2**	**EN1**	**EN0**
r	r	r	r	rw	rw	rw	rw	rw	rw	rw	rw	rw	rw	rw	rw

Field	Bits	Type	Description
ENx (x=0-11)	x	rw	**Emergency Stop Enable for Pin x** This bit enables the emergency stop function for all GPIO lines. If the emergency stop condition is met and enabled, the output selection is automatically switched from alternate output function to GPIO input function. 0_B Emergency stop function for Pn.x is disabled. 1_B Emergency stop function for Pn.x is enabled.
0	15, 14, 13, 12, 31:16	r	**Reserved** Read as 0; should be written with 0.

Table 113 Access Mode Restrictions sorted by descending priority

Applies to **P02_ESR**
Applies to **P10_ESR**
Applies to **P14_ESR**
Applies to **P15_ESR**

Mode Name	Access Mode		Description
Master enabled in ACCEN and Supervisor Mode and ENDINIT	rw	ENx (x=0-11)	write access for enabled masters
Otherwise (default)	r	ENx (x=0-11)	

P13_ESR
Port 13 Emergency Stop Register **(050_H)** **Application Reset Value: 0000 0000$_H$**
P34_ESR
Port 34 Emergency Stop Register **(050_H)** **Application Reset Value: 0000 0000$_H$**

31	30	29	28	27	26	25	24	23	22	21	20	19	18	17	16
0															
r															

15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
0	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**EN3**	**EN2**	**EN1**	**EN0**
r	r	r	r	r	r	r	r	r	r	r	r	rw	rw	rw	rw

Field	Bits	Type	Description
ENx (x=0-3)	x	rw	**Emergency Stop Enable for Pin x** This bit enables the emergency stop function for all GPIO lines. If the emergency stop condition is met and enabled, the output selection is automatically switched from alternate output function to GPIO input function. 0_B Emergency stop function for Pn.x is disabled. 1_B Emergency stop function for Pn.x is enabled.
0	15, 14, 13, 12, 11, 10, 9, 8, 7, 6, 5, 4, 31:16	r	**Reserved** Read as 0; should be written with 0.

Table 114 Access Mode Restrictions sorted by descending priority

Applies to **P13_ESR**
Applies to **P34_ESR**

Mode Name	Access Mode		Description
Master enabled in ACCEN and Supervisor Mode and ENDINIT	rw	ENx (x=0-3)	write access for enabled masters
Otherwise (default)	r	ENx (x=0-3)	

P21_ESR

Port 21 Emergency Stop Register **(050_H)** **Application Reset Value: $0000\ 0000_H$**

31	30	29	28	27	26	25	24	23	22	21	20	19	18	17	16
0															
r															

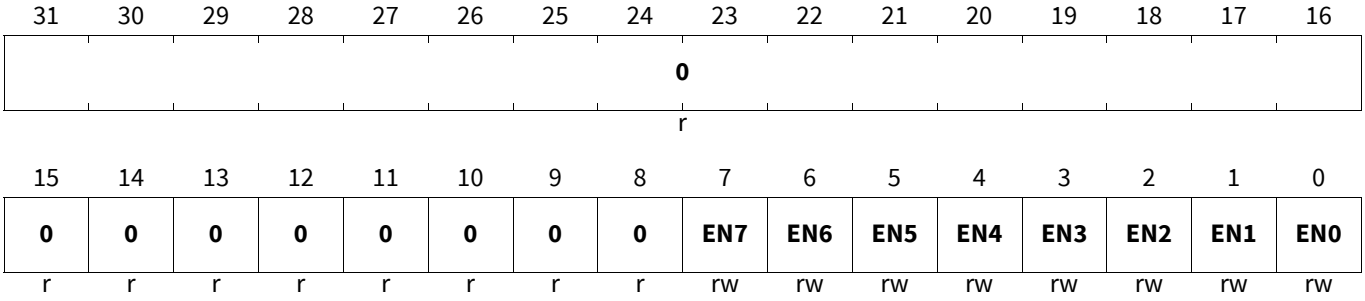
15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
0	0	0	0	0	0	0	0	EN7	EN6	EN5	EN4	EN3	0	EN1	EN0
r	r	r	r	r	r	r	r	rw	rw	rw	rw	rw	r	rw	rw

Field	Bits	Type	Description
ENx (x=0-1,3-7)	x	rw	**Emergency Stop Enable for Pin x** This bit enables the emergency stop function for all GPIO lines. If the emergency stop condition is met and enabled, the output selection is automatically switched from alternate output function to GPIO input function. 0_B Emergency stop function for Pn.x is disabled. 1_B Emergency stop function for Pn.x is enabled.
0	15, 14, 13, 12, 11, 10, 9, 8, 2, 31:16	r	**Reserved** Read as 0; should be written with 0.

Table 115 Access Mode Restrictions of P21_ESR sorted by descending priority

Mode Name	Access Mode		Description
Master enabled in ACCEN and Supervisor Mode and ENDINIT	rw	ENx (x=0-1,3-7)	write access for enabled masters
Otherwise (default)	r	ENx (x=0-1,3-7)	

P22_ESR
Port 22 Emergency Stop Register **(050_H)** **Application Reset Value: 0000 0000$_H$**
P23_ESR
Port 23 Emergency Stop Register **(050_H)** **Application Reset Value: 0000 0000$_H$**
P32_ESR
Port 32 Emergency Stop Register **(050_H)** **Application Reset Value: 0000 0000$_H$**



Field	Bits	Type	Description
ENx (x=0-7)	x	rw	**Emergency Stop Enable for Pin x** This bit enables the emergency stop function for all GPIO lines. If the emergency stop condition is met and enabled, the output selection is automatically switched from alternate output function to GPIO input function. 0_B Emergency stop function for Pn.x is disabled. 1_B Emergency stop function for Pn.x is enabled.
0	15, 14, 13, 12, 11, 10, 9, 8, 31:16	r	**Reserved** Read as 0; should be written with 0.

Table 116 Access Mode Restrictions sorted by descending priority

Applies to **P22_ESR**
Applies to **P23_ESR**
Applies to **P32_ESR**

Mode Name	Access Mode		Description
Master enabled in ACCEN and Supervisor Mode and ENDINIT	rw	ENx (x=0-7)	write access for enabled masters
Otherwise (default)	r	ENx (x=0-7)	

P33_ESR

Port 33 Emergency Stop Register **(050_H)** **Application Reset Value: $0000\ 0000_H$**

31	30	29	28	27	26	25	24	23	22	21	20	19	18	17	16
0															
r															

15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
EN15	EN14	EN13	EN12	EN11	EN10	EN9	0	EN7	EN6	EN5	EN4	EN3	EN2	EN1	EN0
rw	rw	rw	rw	rw	rw	rw	r	rw	rw	rw	rw	rw	rw	rw	rw

Field	Bits	Type	Description
ENx (x=0-7,9-15)	x	rw	**Emergency Stop Enable for Pin x** This bit enables the emergency stop function for all GPIO lines. If the emergency stop condition is met and enabled, the output selection is automatically switched from alternate output function to GPIO input function. 0_B Emergency stop function for Pn.x is disabled. 1_B Emergency stop function for Pn.x is enabled.
0	8, 31:16	r	**Reserved** Read as 0; should be written with 0.

Table 117 Access Mode Restrictions of P33_ESR sorted by descending priority

Mode Name	Access Mode		Description
Master enabled in ACCEN and Supervisor Mode and ENDINIT	rw	ENx (x=0-7,9-15)	write access for enabled masters
Otherwise (default)	r	ENx (x=0-7,9-15)	

P40_ESR

Port 40 Emergency Stop Register **(050_H)** **Application Reset Value: $0000\ 0000_H$**

31	30	29	28	27	26	25	24	23	22	21	20	19	18	17	16
0															
r															

15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
r	r	r	r	r	r	r	r	r	r	r	r	r	r	r	r

Field	Bits	Type	Description
0	15, 14, 13, 12, 11, 10, 9, 8, 7, 6, 5, 4, 3, 2, 1, 0, 31:16	r	**Reserved** Read as 0; should be written with 0.

Table 118 Access Mode Restrictions of P40_ESR sorted by descending priority

Mode Name	Access Mode		Description
Master enabled in ACCEN and Supervisor Mode and ENDINIT	-	See bit field definitions above	write access for enabled masters
Otherwise (default)	-	See bit field definitions above	

Port 00 Pin Function Decision Control Register

The pad structure of the GPIO lines offers the possibility to disable/enable port pad, select digital input or analog ADC input functionalities. Note that Class S pads have different characteristics than other digital input pads. For analog inputs, setting PDISx to 1 disables the Schmitt trigger input buffer, which would otherwise reduce analog input accuracy. For the ADC diagnostic features “PDD” and “MD” however the corresponding PDISx needs to be 0 to allow activation of their pull resistors. This feature can be controlled by individual bits in the Pn_PDISC register, independently from input/output and pull-up/pull-down control functionality as programmed in the Pn_IOCR register. One Pn_PDISC register is assigned to each port.

Note: After reset, all Px_PDISC registers have the reset value of 0000 0000$_H$. The startup software enables only the pads with digital input/output functionality which are available in that package. P40_PDISC and P41_PDISC are configured by the SSW for analog input function (kept disabled). The documented reset value shows the value in the largest package.

P00_PDISC
Port 00 Pin Function Decision Control Register (060$_H$) **Reset Value: Table 120**
P11_PDISC
Port 11 Pin Function Decision Control Register (060$_H$) **Reset Value: Table 120**
P20_PDISC
Port 20 Pin Function Decision Control Register (060$_H$) **Reset Value: Table 120**
P33_PDISC
Port 33 Pin Function Decision Control Register (060$_H$) **Reset Value: Table 120**

31	30	29	28	27	26	25	24	23	22	21	20	19	18	17	16
0															
r															

15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
PDIS15	**PDIS14**	**PDIS13**	**PDIS12**	**PDIS11**	**PDIS10**	**PDIS9**	**PDIS8**	**PDIS7**	**PDIS6**	**PDIS5**	**PDIS4**	**PDIS3**	**PDIS2**	**PDIS1**	**PDIS0**
rw	rw	rw	rw	rw	rw	rw	rw	rw	rw	rw	rw	rw	rw	rw	rw

Field	Bits	Type	Description
PDISx (x=0-15)	x	rw	**Pin Function Decision Control for Pin x** This bit selects the function of the port pad. 0_B Digital functionality of pad Pn.x is enabled. 1_B Digital functionality (including pull resistors) of pad Pn.x is disabled. Analog input function (where this is available) can be used.
0	31:16	r	**Reserved** Read as 0; should be written with 0.

Table 119 Access Mode Restrictions sorted by descending priority

Applies to **P00_PDISC**
Applies to **P11_PDISC**
Applies to **P20_PDISC**
Applies to **P33_PDISC**

Mode Name	Access Mode		Description
Master enabled in ACCEN and Supervisor Mode and ENDINIT	rw	PDISx (x=0-15)	write access for enabled masters
Otherwise (default)	r	PDISx (x=0-15)	

Table 120 Reset Values

Applies to **P00_PDISC**
Applies to **P11_PDISC**
Applies to **P20_PDISC**
Applies to **P33_PDISC**

Reset Type	Reset Value	Note
After SSW execution	$0000\ 0000_H$	Initial value in largest package
After SSW execution	$0000\ ----_H$	Initial value package dependent

P02_PDISC
Port 02 Pin Function Decision Control Register (060_H) **Reset Value: Table 122**
P10_PDISC
Port 10 Pin Function Decision Control Register (060_H) **Reset Value: Table 122**
P14_PDISC
Port 14 Pin Function Decision Control Register (060_H) **Reset Value: Table 122**
P15_PDISC
Port 15 Pin Function Decision Control Register (060_H) **Reset Value: Table 122**
P40_PDISC
Port 40 Pin Function Decision Control Register (060_H) **Reset Value: Table 123**

31	30	29	28	27	26	25	24	23	22	21	20	19	18	17	16
0															
r															

15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
0	0	0	0	PDIS11	PDIS10	PDIS9	PDIS8	PDIS7	PDIS6	PDIS5	PDIS4	PDIS3	PDIS2	PDIS1	PDIS0
r	r	r	r	rw	rw	rw	rw	rw	rw	rw	rw	rw	rw	rw	rw

Field	Bits	Type	Description
PDISx (x=0-11)	x	rw	**Pin Function Decision Control for Pin x** This bit selects the function of the port pad. 0_B Digital functionality of pad Pn.x is enabled. 1_B Digital functionality (including pull resistors) of pad Pn.x is disabled. Analog input function (where this is available) can be used.
0	15, 14, 13, 12, 31:16	r	**Reserved** Read as 0; should be written with 0.

Table 121 Access Mode Restrictions sorted by descending priority

Applies to **P02_PDISC**
Applies to **P10_PDISC**
Applies to **P14_PDISC**
Applies to **P15_PDISC**
Applies to **P40_PDISC**

Mode Name	Access Mode		Description
Master enabled in ACCEN and Supervisor Mode and ENDINIT	rw	PDISx (x=0-11)	write access for enabled masters
Otherwise (default)	r	PDISx (x=0-11)	

Table 122 Reset Values variant 1

Applies to **P02_PDISC**
Applies to **P10_PDISC**
Applies to **P14_PDISC**
Applies to **P15_PDISC**

Reset Type	Reset Value	Note
After SSW execution	0000 0000$_H$	Initial value in largest package
After SSW execution	0000 0–––$_H$	Initial value package dependent

Table 123 Reset Values of P40_PDISC

Reset Type	Reset Value	Note
After SSW execution	0000 0FFF$_H$	Initial value in largest package
After SSW execution	0000 0–––$_H$	Initial value package dependent

P13_PDISC
Port 13 Pin Function Decision Control Register (060_H) **Reset Value: Table 125**
P34_PDISC
Port 34 Pin Function Decision Control Register (060_H) **Reset Value: Table 125**

31	30	29	28	27	26	25	24	23	22	21	20	19	18	17	16
0															
r															

15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
0	0	0	0	0	0	0	0	0	0	0	0	PDIS3	PDIS2	PDIS1	PDIS0
r	r	r	r	r	r	r	r	r	r	r	r	rw	rw	rw	rw

Field	Bits	Type	Description
PDISx (x=0-3)	x	rw	**Pin Function Decision Control for Pin x** This bit selects the function of the port pad. 0_B Digital functionality of pad Pn.x is enabled. 1_B Digital functionality (including pull resistors) of pad Pn.x is disabled. Analog input function (where this is available) can be used.
0	15, 14, 13, 12, 11, 10, 9, 8, 7, 6, 5, 4, 31:16	r	**Reserved** Read as 0; should be written with 0.

Table 124 Access Mode Restrictions sorted by descending priority

Applies to **P13_PDISC**
Applies to **P34_PDISC**

Mode Name	Access Mode		Description
Master enabled in ACCEN and Supervisor Mode and ENDINIT	rw	PDISx (x=0-3)	write access for enabled masters
Otherwise (default)	r	PDISx (x=0-3)	

Table 125 Reset Values

Applies to **P13_PDISC**
Applies to **P34_PDISC**

Reset Type	Reset Value	Note
After SSW execution	0000 0000_H	Initial value in largest package
After SSW execution	0000 $000-_H$	Initial value package dependent

P21_PDISC
Port 21 Pin Function Decision Control Register (060_H) **Reset Value: Table 127**
P22_PDISC
Port 22 Pin Function Decision Control Register (060_H) **Reset Value: Table 127**
P23_PDISC
Port 23 Pin Function Decision Control Register (060_H) **Reset Value: Table 127**
P32_PDISC
Port 32 Pin Function Decision Control Register (060_H) **Reset Value: Table 127**

31	30	29	28	27	26	25	24	23	22	21	20	19	18	17	16
0															
r															

15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
0	0	0	0	0	0	0	0	PDIS7	PDIS6	PDIS5	PDIS4	PDIS3	PDIS2	PDIS1	PDIS0
r	r	r	r	r	r	r	r	rw	rw	rw	rw	rw	rw	rw	rw

Field	Bits	Type	Description
PDISx (x=0-7)	x	rw	**Pin Function Decision Control for Pin x** This bit selects the function of the port pad. 0_B Digital functionality of pad Pn.x is enabled. 1_B Digital functionality (including pull resistors) of pad Pn.x is disabled. Analog input function (where this is available) can be used.

Field	Bits	Type	Description
0	15, 14, 13, 12, 11, 10, 9, 8, 31:16	r	**Reserved** Read as 0; should be written with 0.

Table 126 Access Mode Restrictions sorted by descending priority

Applies to **P21_PDISC**
Applies to **P22_PDISC**
Applies to **P23_PDISC**
Applies to **P32_PDISC**

Mode Name	Access Mode		Description
Master enabled in ACCEN and Supervisor Mode and ENDINIT	rw	PDISx (x=0-7)	write access for enabled masters
Otherwise (default)	r	PDISx (x=0-7)	

Table 127 Reset Values

Applies to **P21_PDISC**
Applies to **P22_PDISC**
Applies to **P23_PDISC**
Applies to **P32_PDISC**

Reset Type	Reset Value	Note
After SSW execution	0000 0000_H	Initial value in largest package
After SSW execution	0000 $00--_H$	Initial value package dependent

Port 00 Pin Controller Select Register

This register has different functionality in each port:

- In Ports shared with the standby controller (SCR) it selects if the SCR or the Tricore system control data and control functions of these port lines.
- In Ports with analog inputs to the EVADC it enables control of pull by the EVADC for the Pull Down Diagnostics (PDD) / Multiplexer Diagnostics (MD) feature.
- In Ports with Ethernet output it selects between alternate output and fast RGMII/RMII/MII mode.
- In Ports with SMU FSP pin (P33.8) the PCSR.SEL bit enables the SMU to override pad configuration signals. Therefore this bit has the reset value 1_B and shall be kept 1_B by the application. The SMU override is documented in the SMU chapter (see SMU_PCTL.PCFG and Figure “SMU/PAD Control Interface to the PADs”).

P00_PCSR
Port 00 Pin Controller Select Register **(064_H)** **Application Reset Value: $0000\ 0000_H$**
P11_PCSR
Port 11 Pin Controller Select Register **(064_H)** **Application Reset Value: $0000\ 0000_H$**
P20_PCSR
Port 20 Pin Controller Select Register **(064_H)** **Application Reset Value: $0000\ 0000_H$**

31	30	29	28	27	26	25	24	23	22	21	20	19	18	17	16
0								**0**							
r								r							

15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
R15	**R14**	**R13**	**R12**	**R11**	**R10**	**R9**	**R8**	**R7**	**R6**	**R5**	**R4**	**R3**	**R2**	**R1**	**R0**
rw	rw	rw	rw	rw	rw	rw	rw	rw	rw	rw	rw	rw	rw	rw	rw

Field	Bits	Type	Description
Rx (x=0-15)	x	rw	**Reserved** Read as 0; should be written with 0.
0	30:16, 31	r	**Reserved** Read as 0; should be written with 0.

Table 128 Access Mode Restrictions sorted by descending priority

Applies to **P00_PCSR**
Applies to **P11_PCSR**
Applies to **P20_PCSR**

Mode Name	Access Mode		Description
Supervisor Mode and Safety ENDINIT	r	Rx (x=0-15)	write access only for masters with supervisor mode
Otherwise (default)	r	Rx (x=0-15)	

P02_PCSR
Port 02 Pin Controller Select Register **(064_H)** **Application Reset Value: 0000 0000$_H$**
P10_PCSR
Port 10 Pin Controller Select Register **(064_H)** **Application Reset Value: 0000 0000$_H$**
P14_PCSR
Port 14 Pin Controller Select Register **(064_H)** **Application Reset Value: 0000 0000$_H$**
P15_PCSR
Port 15 Pin Controller Select Register **(064_H)** **Application Reset Value: 0000 0000$_H$**
P40_PCSR
Port 40 Pin Controller Select Register **(064_H)** **Application Reset Value: 0000 0000$_H$**

31	30	29	28	27	26	25	24	23	22	21	20	19	18	17	16
0								**0**							
r								r							

15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
0	**0**	**0**	**0**	**R11**	**R10**	**R9**	**R8**	**R7**	**R6**	**R5**	**R4**	**R3**	**R2**	**R1**	**R0**
r	r	r	r	rw	rw	rw	rw	rw	rw	rw	rw	rw	rw	rw	rw

Field	Bits	Type	Description
Rx (x=0-11)	x	rw	**Reserved** Read as 0; should be written with 0.
0	15, 14, 13, 12, 30:16, 31	r	**Reserved** Read as 0; should be written with 0.

Table 129 Access Mode Restrictions sorted by descending priority

Applies to **P02_PCSR**
Applies to **P10_PCSR**
Applies to **P14_PCSR**
Applies to **P15_PCSR**
Applies to **P40_PCSR**

Mode Name	Access Mode		Description
Supervisor Mode and Safety ENDINIT	r	Rx (x=0-11)	write access only for masters with supervisor mode
Otherwise (default)	r	Rx (x=0-11)	

P13_PCSR
Port 13 Pin Controller Select Register **(064_H)** **Application Reset Value: 0000 0000_H**

31	30	29	28	27	26	25	24	23	22	21	20	19	18	17	16
0								**0**							
r								r							

15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
0	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**R3**	**R2**	**R1**	**R0**
r	r	r	r	r	r	r	r	r	r	r	r	rw	rw	rw	rw

Field	Bits	Type	Description
Rx (x=0-3)	x	rw	**Reserved** Read as 0; should be written with 0.
0	15, 14, 13, 12, 11, 10, 9, 8, 7, 6, 5, 4, 30:16, 31	r	**Reserved** Read as 0; should be written with 0.

Table 130 Access Mode Restrictions of P13_PCSR sorted by descending priority

Mode Name	Access Mode		Description
Supervisor Mode and Safety ENDINIT	r	Rx (x=0-3)	write access only for masters with supervisor mode
Otherwise (default)	r	Rx (x=0-3)	

P21_PCSR
Port 21 Pin Controller Select Register **(064_H)** **Application Reset Value: 0000 0000_H**
P22_PCSR
Port 22 Pin Controller Select Register **(064_H)** **Application Reset Value: 0000 0000_H**
P23_PCSR
Port 23 Pin Controller Select Register **(064_H)** **Application Reset Value: 0000 0000_H**
P32_PCSR
Port 32 Pin Controller Select Register **(064_H)** **Application Reset Value: 0000 0000_H**

31	30	29	28	27	26	25	24	23	22	21	20	19	18	17	16
0								**0**							
r								r							

15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
0	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**R7**	**R6**	**R5**	**R4**	**R3**	**R2**	**R1**	**R0**
r	r	r	r	r	r	r	r	rw	rw	rw	rw	rw	rw	rw	rw

Field	Bits	Type	Description
Rx (x=0-7)	x	rw	**Reserved** Read as 0; should be written with 0.
0	15, 14, 13, 12, 11, 10, 9, 8, 30:16, 31	r	**Reserved** Read as 0; should be written with 0.

Table 131 Access Mode Restrictions sorted by descending priority

Applies to **P21_PCSR**
Applies to **P22_PCSR**
Applies to **P23_PCSR**
Applies to **P32_PCSR**

Mode Name	Access Mode		Description
Supervisor Mode and Safety ENDINIT	r	Rx (x=0-7)	write access only for masters with supervisor mode
Otherwise (default)	r	Rx (x=0-7)	

P33_PCSR

Port 33 Pin Controller Select Register **(064_H)** **Application Reset Value: $0000\ 0100_H$**

31	30	29	28	27	26	25	24	23	22	21	20	19	18	17	16
LCK								**0**							
rh								r							

15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
SEL15	**SEL14**	**SEL13**	**SEL12**	**SEL11**	**SEL10**	**SEL9**	**SEL8**	**SEL7**	**SEL6**	**SEL5**	**SEL4**	**SEL3**	**SEL2**	**SEL1**	**SEL0**
rw	rw	rw	rw	rw	rw	rw	rw	rw	rw	rw	rw	rw	rw	rw	rw

Field	Bits	Type	Description
SELx (x=0-7,9-15)	x	rw	**Output Select for Pin x** This bit enables or disables SCR control. 0_B Tricore selected for data and control of pin x and not SCR. 1_B SCR selected for data and control of pin x.
SELx (x=8)	x	rw	**Output Select for Pin x** This bit enables or disables SMU to override pad configuration. 0_B Disable SMU override of pad configuration for FSP pin x. 1_B Enable SMU to override pad configuration for FSP pin x.

Field	Bits	Type	Description
LCK	31	rh	**Lock Status** This bit indicates if the register can be updated with a new value or if the register is locked due to an ongoing transfer to the SCR and a write action from the bus has no effect. In Ports without SCR overlay this bit is always 0_B. 0_B The register is unlocked and can be updated. 1_B The register is locked (a write transfer to SCR is ongoing) and can not be updated.
0	30:16	r	**Reserved** Read as 0; should be written with 0.

Table 132 Access Mode Restrictions of P33_PCSR sorted by descending priority

Mode Name	Access Mode		Description
Supervisor Mode and Safety ENDINIT	rh	LCK	write access only for masters with supervisor mode
	rw	SELx (x=0-7,9-15), SELx (x=8)	
Otherwise (default)	r	SELx (x=0-7,9-15), SELx (x=8)	
	rh	LCK	

P34_PCSR

Port 34 Pin Controller Select Register (064_H) Application Reset Value: $0000\ 0000_H$

31	30	29	28	27	26	25	24	23	22	21	20	19	18	17	16
LCK								**0**							
rh								r							

15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
0	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**R3**	**R2**	**SEL1**	**R0**
r	r	r	r	r	r	r	r	r	r	r	r	rw	rw	rw	rw

Field	Bits	Type	Description
SELx (x=1)	x	rw	**Output Select for Pin x** This bit enables or disables SCR control. 0_B Tricore selected for data and control of pin x and not SCR. 1_B SCR selected for data and control of pin x.
Rx (x=0,2-3)	x	rw	**Reserved** Read as 0; should be written with 0.
LCK	31	rh	**Lock Status** This bit indicates if the register can be updated with a new value or if the register is locked due to an ongoing transfer to the SCR and a write action from the bus has no effect. In Ports without SCR overlay this bit is always 0_B. 0_B The register is unlocked and can be updated. 1_B The register is locked (a write transfer to SCR is ongoing) and can not be updated.

Field	Bits	Type	Description
0	15, 14, 13, 12, 11, 10, 9, 8, 7, 6, 5, 4, 30:16	r	**Reserved** Read as 0; should be written with 0.

Table 133 Access Mode Restrictions of P34_PCSR sorted by descending priority

Mode Name	Access Mode		Description
Supervisor Mode and Safety ENDINIT	r	Rx (x=0,2-3)	write access only for masters with supervisor mode
	rh	LCK	
	rw	SELx (x=1)	
Otherwise (default)	r	Rx (x=0,2-3), SELx (x=1)	
	rh	LCK	

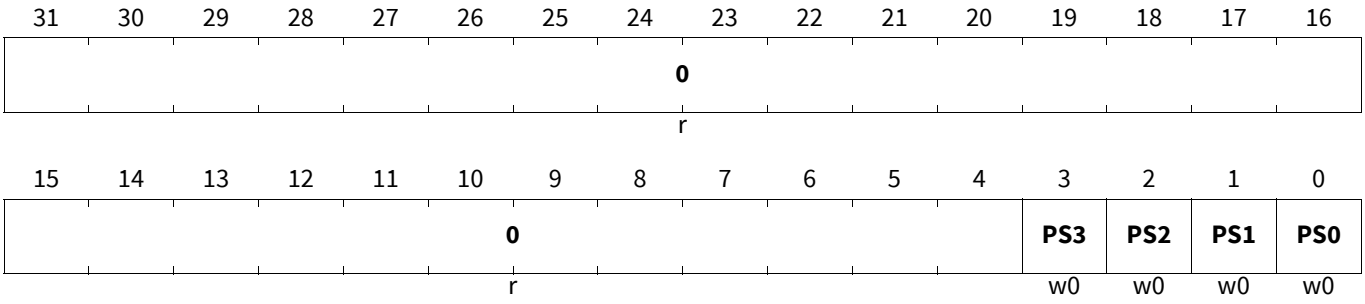
Port 00 Output Modification Set Register 0

The port output modification set register x, (x = 0, 4, 8, 12) contains control bits to individually set the logic state of a single port line by manipulating the output register.

Note: Registers Pn_OMSRx (x = 0, 4, 8, 12) are virtual and does not contain any flip-flop. A read action delivers the value of 0. One 8 or 16-bits write behaves as a 32-bit write padded with zeros.

Register Pn_OMSR0 sets the logic state of Pn.[3:0] port lines

P00_OMSR0
Port 00 Output Modification Set Register 0 **(070_H)** **Application Reset Value: 0000 0000$_H$**
P02_OMSR0
Port 02 Output Modification Set Register 0 **(070_H)** **Application Reset Value: 0000 0000$_H$**
P10_OMSR0
Port 10 Output Modification Set Register 0 **(070_H)** **Application Reset Value: 0000 0000$_H$**
P11_OMSR0
Port 11 Output Modification Set Register 0 **(070_H)** **Application Reset Value: 0000 0000$_H$**
P13_OMSR0
Port 13 Output Modification Set Register 0 **(070_H)** **Application Reset Value: 0000 0000$_H$**
P14_OMSR0
Port 14 Output Modification Set Register 0 **(070_H)** **Application Reset Value: 0000 0000$_H$**
P15_OMSR0
Port 15 Output Modification Set Register 0 **(070_H)** **Application Reset Value: 0000 0000$_H$**
P20_OMSR0
Port 20 Output Modification Set Register 0 **(070_H)** **Application Reset Value: 0000 0000$_H$**
P21_OMSR0
Port 21 Output Modification Set Register 0 **(070_H)** **Application Reset Value: 0000 0000$_H$**
P22_OMSR0
Port 22 Output Modification Set Register 0 **(070_H)** **Application Reset Value: 0000 0000$_H$**



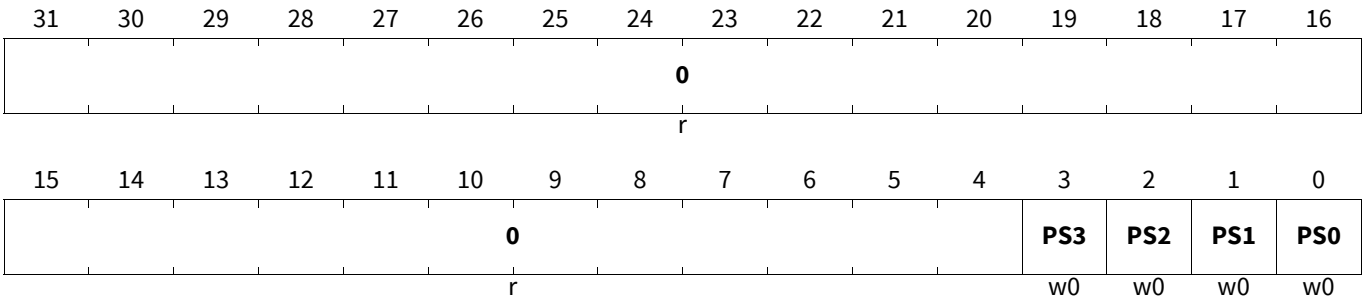
Field	Bits	Type	Description
PSx (x=0-3)	x	w0	**Set Bit x** Setting this bit will set the corresponding bit in the port output register Pn_OUT. Read as 0. 0_B No operation 1_B Sets Pn_OUT.Px
0	31:4	r	**Reserved** Read as 0; should be written with 0.

Table 134 Access Mode Restrictions sorted by descending priority

Applies to **P00_OMSR0**
Applies to **P02_OMSR0**
Applies to **P10_OMSR0**
Applies to **P11_OMSR0**
Applies to **P13_OMSR0**
Applies to **P14_OMSR0**
Applies to **P15_OMSR0**
Applies to **P20_OMSR0**
Applies to **P21_OMSR0**
Applies to **P22_OMSR0**

Mode Name	Access Mode		Description
Master enabled in ACCEN	w0	PSx (x=0-3)	write access for enabled masters
Otherwise (default)	r0	PSx (x=0-3)	

P23_OMSR0
Port 23 Output Modification Set Register 0 **(070_H)** **Application Reset Value: 0000 0000$_H$**
P32_OMSR0
Port 32 Output Modification Set Register 0 **(070_H)** **Application Reset Value: 0000 0000$_H$**
P33_OMSR0
Port 33 Output Modification Set Register 0 **(070_H)** **Application Reset Value: 0000 0000$_H$**
P34_OMSR0
Port 34 Output Modification Set Register 0 **(070_H)** **Application Reset Value: 0000 0000$_H$**
P40_OMSR0
Port 40 Output Modification Set Register 0 **(070_H)** **Application Reset Value: 0000 0000$_H$**



Field	Bits	Type	Description
PSx (x=0-3)	x	w0	**Set Bit x** Setting this bit will set the corresponding bit in the port output register Pn_OUT. Read as 0. 0_B No operation 1_B Sets Pn_OUT.Px
0	31:4	r	**Reserved** Read as 0; should be written with 0.

Table 135 Access Mode Restrictions sorted by descending priority

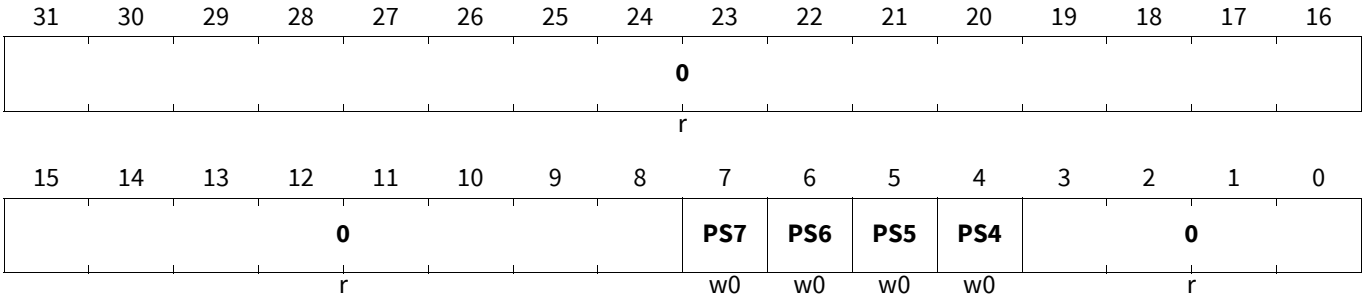
Applies to **P23_OMSR0**
Applies to **P32_OMSR0**
Applies to **P33_OMSR0**
Applies to **P34_OMSR0**
Applies to **P40_OMSR0**

Mode Name	Access Mode		Description
Master enabled in ACCEN	w0	PSx (x=0-3)	write access for enabled masters
Otherwise (default)	r0	PSx (x=0-3)	

Port 00 Output Modification Set Register 4

Register Pn_OMSR4 sets the logic state of Pn.[7:4] port lines

P00_OMSR4
Port 00 Output Modification Set Register 4 (074_H) Application Reset Value: 0000 0000$_H$
P02_OMSR4
Port 02 Output Modification Set Register 4 (074_H) Application Reset Value: 0000 0000$_H$
P10_OMSR4
Port 10 Output Modification Set Register 4 (074_H) Application Reset Value: 0000 0000$_H$
P11_OMSR4
Port 11 Output Modification Set Register 4 (074_H) Application Reset Value: 0000 0000$_H$
P14_OMSR4
Port 14 Output Modification Set Register 4 (074_H) Application Reset Value: 0000 0000$_H$
P15_OMSR4
Port 15 Output Modification Set Register 4 (074_H) Application Reset Value: 0000 0000$_H$
P20_OMSR4
Port 20 Output Modification Set Register 4 (074_H) Application Reset Value: 0000 0000$_H$
P21_OMSR4
Port 21 Output Modification Set Register 4 (074_H) Application Reset Value: 0000 0000$_H$
P22_OMSR4
Port 22 Output Modification Set Register 4 (074_H) Application Reset Value: 0000 0000$_H$
P23_OMSR4
Port 23 Output Modification Set Register 4 (074_H) Application Reset Value: 0000 0000$_H$



Field	Bits	Type	Description
PSx (x=4-7)	x	w0	**Set Bit x** Setting this bit will set the corresponding bit in the port output register Pn_OUT. Read as 0. 0_B No operation 1_B Sets Pn_OUT.Px
0	3:0, 31:8	r	**Reserved** Read as 0; should be written with 0.

Table 136 Access Mode Restrictions sorted by descending priority

Applies to **P00_OMSR4**
Applies to **P02_OMSR4**
Applies to **P10_OMSR4**
Applies to **P11_OMSR4**
Applies to **P14_OMSR4**
Applies to **P15_OMSR4**
Applies to **P20_OMSR4**
Applies to **P21_OMSR4**
Applies to **P22_OMSR4**
Applies to **P23_OMSR4**

Mode Name	Access Mode		Description
Master enabled in ACCEN	w0	PSx (x=4-7)	write access for enabled masters
Otherwise (default)	r0	PSx (x=4-7)	

P32_OMSR4
Port 32 Output Modification Set Register 4 (074_H) Application Reset Value: $0000\ 0000_H$
P33_OMSR4
Port 33 Output Modification Set Register 4 (074_H) Application Reset Value: $0000\ 0000_H$
P40_OMSR4
Port 40 Output Modification Set Register 4 (074_H) Application Reset Value: $0000\ 0000_H$

31	30	29	28	27	26	25	24	23	22	21	20	19	18	17	16
0															
r															

15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
0								PS7	PS6	PS5	PS4	0			
r								w0	w0	w0	w0	r			

Field	Bits	Type	Description
PSx (x=4-7)	x	w0	**Set Bit x** Setting this bit will set the corresponding bit in the port output register Pn_OUT. Read as 0. 0_B No operation 1_B Sets Pn_OUT.Px
0	3:0, 31:8	r	**Reserved** Read as 0; should be written with 0.

Table 137 Access Mode Restrictions sorted by descending priority

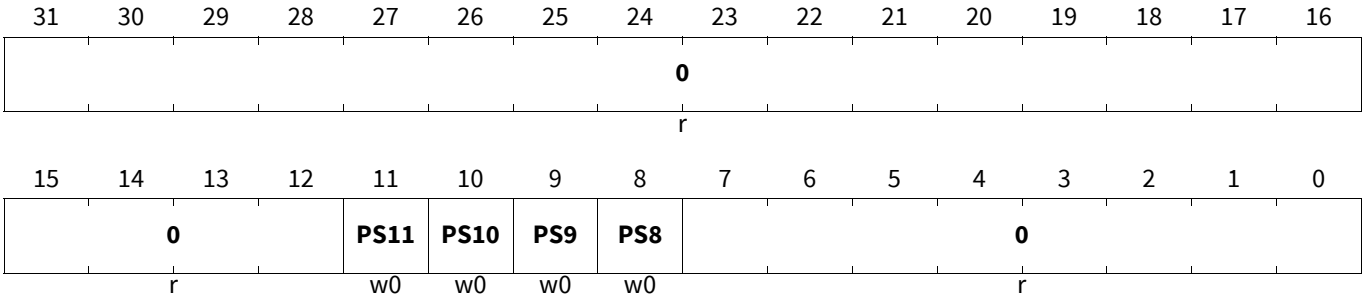
Applies to **P32_OMSR4**
Applies to **P33_OMSR4**
Applies to **P40_OMSR4**

Mode Name	Access Mode		Description
Master enabled in ACCEN	w0	PSx (x=4-7)	write access for enabled masters
Otherwise (default)	r0	PSx (x=4-7)	

Port 00 Output Modification Set Register 8

Register Pn_OMSR8 sets the logic state of Pn.[11:8] port lines

P00_OMSR8
Port 00 Output Modification Set Register 8 **(078_H)** **Application Reset Value: $0000\ 0000_H$**
P02_OMSR8
Port 02 Output Modification Set Register 8 **(078_H)** **Application Reset Value: $0000\ 0000_H$**
P10_OMSR8
Port 10 Output Modification Set Register 8 **(078_H)** **Application Reset Value: $0000\ 0000_H$**
P11_OMSR8
Port 11 Output Modification Set Register 8 **(078_H)** **Application Reset Value: $0000\ 0000_H$**
P14_OMSR8
Port 14 Output Modification Set Register 8 **(078_H)** **Application Reset Value: $0000\ 0000_H$**
P15_OMSR8
Port 15 Output Modification Set Register 8 **(078_H)** **Application Reset Value: $0000\ 0000_H$**
P20_OMSR8
Port 20 Output Modification Set Register 8 **(078_H)** **Application Reset Value: $0000\ 0000_H$**
P33_OMSR8
Port 33 Output Modification Set Register 8 **(078_H)** **Application Reset Value: $0000\ 0000_H$**
P40_OMSR8
Port 40 Output Modification Set Register 8 **(078_H)** **Application Reset Value: $0000\ 0000_H$**



Field	Bits	Type	Description
PSx (x=8-11)	x	w0	**Set Bit x** Setting this bit will set the corresponding bit in the port output register Pn_OUT. Read as 0. 0_B No operation 1_B Sets Pn_OUT.Px
0	7:0, 31:12	r	**Reserved** Read as 0; should be written with 0.

Table 138 Access Mode Restrictions sorted by descending priority

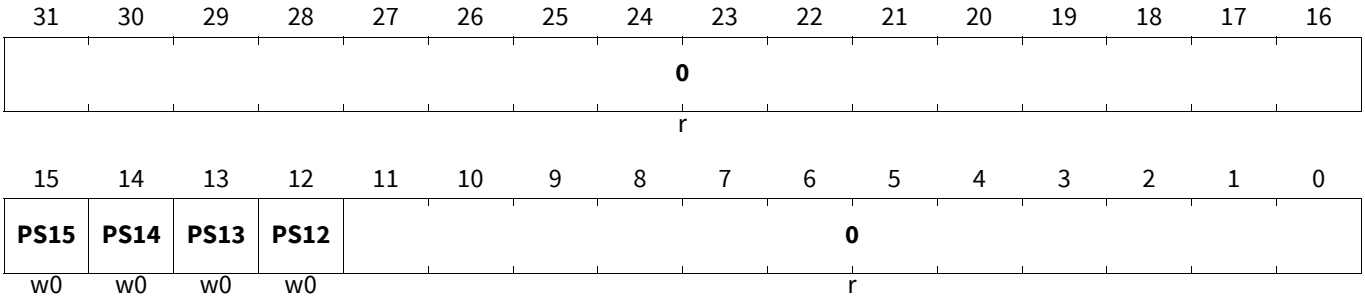
Applies to **P00_OMSR8**
Applies to **P02_OMSR8**
Applies to **P10_OMSR8**
Applies to **P11_OMSR8**
Applies to **P14_OMSR8**
Applies to **P15_OMSR8**
Applies to **P20_OMSR8**
Applies to **P33_OMSR8**
Applies to **P40_OMSR8**

Mode Name	Access Mode		Description
Master enabled in ACCEN	w0	PSx (x=8-11)	write access for enabled masters
Otherwise (default)	r0	PSx (x=8-11)	

Port 00 Output Modification Set Register 12

Register Pn_OMSR12 sets the logic state of Pn.[15:12] port lines

P00_OMSR12
Port 00 Output Modification Set Register 12 ($07C_H$) Application Reset Value: 0000 0000$_H$
P11_OMSR12
Port 11 Output Modification Set Register 12 ($07C_H$) Application Reset Value: 0000 0000$_H$
P20_OMSR12
Port 20 Output Modification Set Register 12 ($07C_H$) Application Reset Value: 0000 0000$_H$
P33_OMSR12
Port 33 Output Modification Set Register 12 ($07C_H$) Application Reset Value: 0000 0000$_H$



Field	Bits	Type	Description
PSx (x=12-15)	x	w0	**Set Bit x** Setting this bit will set the corresponding bit in the port output register Pn_OUT. Read as 0. 0_B No operation 1_B Sets Pn_OUT.Px
0	11:0, 31:16	r	**Reserved** Read as 0; should be written with 0.

Table 139 Access Mode Restrictions sorted by descending priority

Applies to **P00_OMSR12**
Applies to **P11_OMSR12**
Applies to **P20_OMSR12**
Applies to **P33_OMSR12**

Mode Name	Access Mode		Description
Master enabled in ACCEN	w0	PSx (x=12-15)	write access for enabled masters
Otherwise (default)	r0	PSx (x=12-15)	

Port 00 Output Modification Clear Register 0

The port output modification clear register x, (x = 0, 4, 8, 12) contains control bits to individually clear the logic state of a single port line by manipulating the output register.

Note: Registers Pn_OMCRx (x = 0, 4, 8, 12) are virtual and does not contain any flip-flop. A read action delivers the value of 0. One 8 or 16-bits write behaves as a 32-bit write padded with zeros.

Register Pn_OMCR0 clears the logic state of Pn.[3:0] port lines

P00_OMCR0
Port 00 Output Modification Clear Register 0 (080_H) Application Reset Value: $0000\ 0000_H$
P02_OMCR0
Port 02 Output Modification Clear Register 0 (080_H) Application Reset Value: $0000\ 0000_H$
P10_OMCR0
Port 10 Output Modification Clear Register 0 (080_H) Application Reset Value: $0000\ 0000_H$
P11_OMCR0
Port 11 Output Modification Clear Register 0 (080_H) Application Reset Value: $0000\ 0000_H$
P13_OMCR0
Port 13 Output Modification Clear Register 0 (080_H) Application Reset Value: $0000\ 0000_H$
P14_OMCR0
Port 14 Output Modification Clear Register 0 (080_H) Application Reset Value: $0000\ 0000_H$
P15_OMCR0
Port 15 Output Modification Clear Register 0 (080_H) Application Reset Value: $0000\ 0000_H$
P20_OMCR0
Port 20 Output Modification Clear Register 0 (080_H) Application Reset Value: $0000\ 0000_H$
P21_OMCR0
Port 21 Output Modification Clear Register 0 (080_H) Application Reset Value: $0000\ 0000_H$
P22_OMCR0
Port 22 Output Modification Clear Register 0 (080_H) Application Reset Value: $0000\ 0000_H$

31	30	29	28	27	26	25	24	23	22	21	20	19	18	17	16
0												PCL3	PCL2	PCL1	PCL0
r												w0	w0	w0	w0

15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
0															
r															

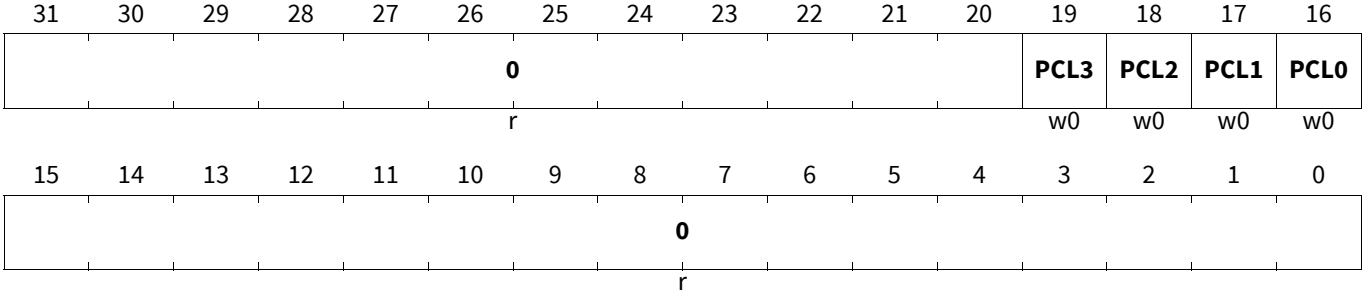
Field	Bits	Type	Description
PCLx (x=0-3)	x+16	w0	**Clear Bit x** Setting this bit will clear the corresponding bit in the port output register Pn_OUT. Read as 0. 0_B No operation 1_B Clears Pn_OUT.Px
0	15:0, 31:20	r	**Reserved** Read as 0; should be written with 0.

Table 140 Access Mode Restrictions sorted by descending priority

Applies to **P00_OMCR0**
Applies to **P02_OMCR0**
Applies to **P10_OMCR0**
Applies to **P11_OMCR0**
Applies to **P13_OMCR0**
Applies to **P14_OMCR0**
Applies to **P15_OMCR0**
Applies to **P20_OMCR0**
Applies to **P21_OMCR0**
Applies to **P22_OMCR0**

Mode Name	Access Mode		Description
Master enabled in ACCEN	w0	PCLx (x=0-3)	write access for enabled masters
Otherwise (default)	r0	PCLx (x=0-3)	

P23_OMCR0
Port 23 Output Modification Clear Register 0 **(080_H)** **Application Reset Value: $0000\ 0000_H$**
P32_OMCR0
Port 32 Output Modification Clear Register 0 **(080_H)** **Application Reset Value: $0000\ 0000_H$**
P33_OMCR0
Port 33 Output Modification Clear Register 0 **(080_H)** **Application Reset Value: $0000\ 0000_H$**
P34_OMCR0
Port 34 Output Modification Clear Register 0 **(080_H)** **Application Reset Value: $0000\ 0000_H$**
P40_OMCR0
Port 40 Output Modification Clear Register 0 **(080_H)** **Application Reset Value: $0000\ 0000_H$**



Field	Bits	Type	Description
PCLx (x=0-3)	x+16	w0	**Clear Bit x** Setting this bit will clear the corresponding bit in the port output register Pn_OUT. Read as 0. 0_B No operation 1_B Clears Pn_OUT.Px
0	15:0, 31:20	r	**Reserved** Read as 0; should be written with 0.

Table 141 Access Mode Restrictions sorted by descending priority

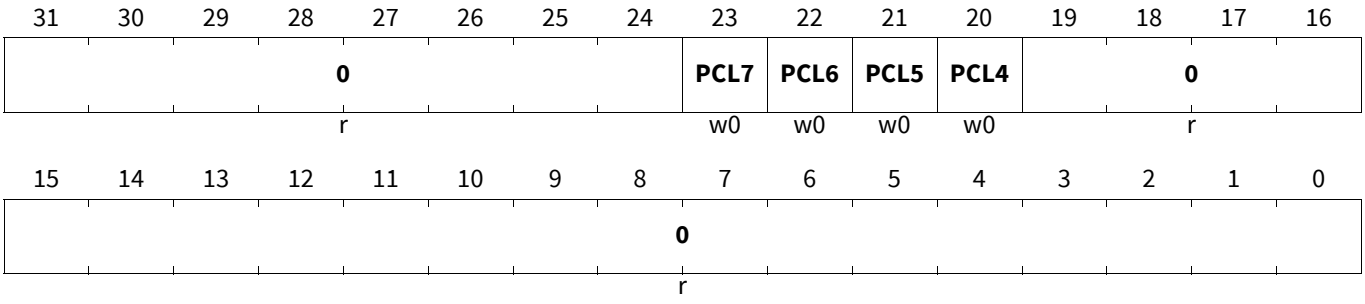
Applies to **P23_OMCR0**
Applies to **P32_OMCR0**
Applies to **P33_OMCR0**
Applies to **P34_OMCR0**
Applies to **P40_OMCR0**

Mode Name	Access Mode		Description
Master enabled in ACCEN	w0	PCLx (x=0-3)	write access for enabled masters
Otherwise (default)	r0	PCLx (x=0-3)	

Port 00 Output Modification Clear Register 4

Register Pn_OMCR4 clears the logic state of Pn.[7:4] port lines

P00_OMCR4
Port 00 Output Modification Clear Register 4 **(084_H)** **Application Reset Value: $0000\ 0000_H$**
P02_OMCR4
Port 02 Output Modification Clear Register 4 **(084_H)** **Application Reset Value: $0000\ 0000_H$**
P10_OMCR4
Port 10 Output Modification Clear Register 4 **(084_H)** **Application Reset Value: $0000\ 0000_H$**
P11_OMCR4
Port 11 Output Modification Clear Register 4 **(084_H)** **Application Reset Value: $0000\ 0000_H$**
P14_OMCR4
Port 14 Output Modification Clear Register 4 **(084_H)** **Application Reset Value: $0000\ 0000_H$**
P15_OMCR4
Port 15 Output Modification Clear Register 4 **(084_H)** **Application Reset Value: $0000\ 0000_H$**
P20_OMCR4
Port 20 Output Modification Clear Register 4 **(084_H)** **Application Reset Value: $0000\ 0000_H$**
P21_OMCR4
Port 21 Output Modification Clear Register 4 **(084_H)** **Application Reset Value: $0000\ 0000_H$**
P22_OMCR4
Port 22 Output Modification Clear Register 4 **(084_H)** **Application Reset Value: $0000\ 0000_H$**
P23_OMCR4
Port 23 Output Modification Clear Register 4 **(084_H)** **Application Reset Value: $0000\ 0000_H$**



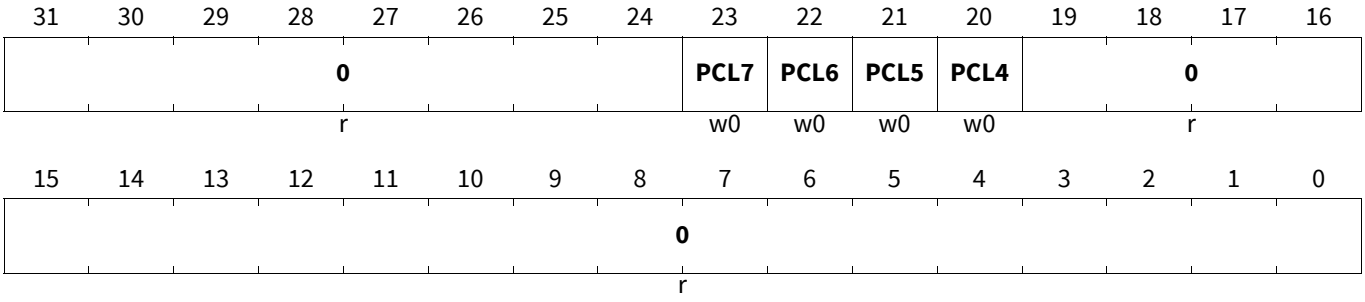
Field	Bits	Type	Description
PCLx (x=4-7)	x+16	w0	**Clear Bit x** Setting this bit will clear the corresponding bit in the port output register Pn_OUT. Read as 0. 0_B No operation 1_B Clears Pn_OUT.Px
0	19:0, 31:24	r	**Reserved** Read as 0; should be written with 0

Table 142 Access Mode Restrictions sorted by descending priority

Applies to **P00_OMCR4**
Applies to **P02_OMCR4**
Applies to **P10_OMCR4**
Applies to **P11_OMCR4**
Applies to **P14_OMCR4**
Applies to **P15_OMCR4**
Applies to **P20_OMCR4**
Applies to **P21_OMCR4**
Applies to **P22_OMCR4**
Applies to **P23_OMCR4**

Mode Name	Access Mode		Description
Master enabled in ACCEN	w0	PCLx (x=4-7)	write access for enabled masters
Otherwise (default)	r0	PCLx (x=4-7)	

P32_OMCR4
Port 32 Output Modification Clear Register 4 (084_H) Application Reset Value: 0000 0000$_H$
P33_OMCR4
Port 33 Output Modification Clear Register 4 (084_H) Application Reset Value: 0000 0000$_H$
P40_OMCR4
Port 40 Output Modification Clear Register 4 (084_H) Application Reset Value: 0000 0000$_H$



Field	Bits	Type	Description
PCLx (x=4-7)	x+16	w0	**Clear Bit x** Setting this bit will clear the corresponding bit in the port output register Pn_OUT. Read as 0. 0_B No operation 1_B Clears Pn_OUT.Px
0	19:0, 31:24	r	**Reserved** Read as 0; should be written with 0

Table 143 Access Mode Restrictions sorted by descending priority

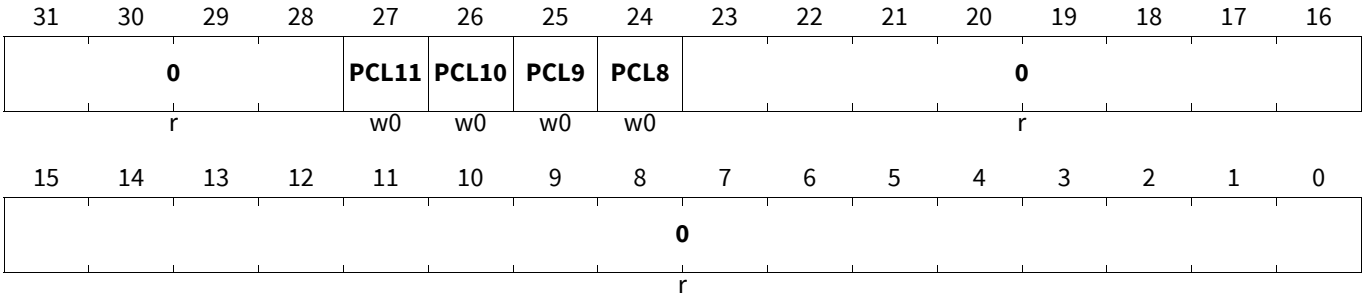
Applies to **P32_OMCR4**
Applies to **P33_OMCR4**
Applies to **P40_OMCR4**

Mode Name	Access Mode		Description
Master enabled in ACCEN	w0	PCLx (x=4-7)	write access for enabled masters
Otherwise (default)	r0	PCLx (x=4-7)	

Port 00 Output Modification Clear Register 8

Register Pn_OMCR8 clears the logic state of Pn.[11:8] port lines

P00_OMCR8
Port 00 Output Modification Clear Register 8 (088_H) Application Reset Value: 0000 0000$_H$
P02_OMCR8
Port 02 Output Modification Clear Register 8 (088_H) Application Reset Value: 0000 0000$_H$
P10_OMCR8
Port 10 Output Modification Clear Register 8 (088_H) Application Reset Value: 0000 0000$_H$
P11_OMCR8
Port 11 Output Modification Clear Register 8 (088_H) Application Reset Value: 0000 0000$_H$
P14_OMCR8
Port 14 Output Modification Clear Register 8 (088_H) Application Reset Value: 0000 0000$_H$
P15_OMCR8
Port 15 Output Modification Clear Register 8 (088_H) Application Reset Value: 0000 0000$_H$
P20_OMCR8
Port 20 Output Modification Clear Register 8 (088_H) Application Reset Value: 0000 0000$_H$
P33_OMCR8
Port 33 Output Modification Clear Register 8 (088_H) Application Reset Value: 0000 0000$_H$
P40_OMCR8
Port 40 Output Modification Clear Register 8 (088_H) Application Reset Value: 0000 0000$_H$



Field	Bits	Type	Description
PCLx (x=8-11)	x+16	w0	**Clear Bit x** Setting this bit will clear the corresponding bit in the port output register Pn_OUT. Read as 0. 0_B No operation 1_B Clears Pn_OUT.Px

Field	Bits	Type	Description
0	23:0, 31:28	r	**Reserved** Read as 0; should be written with 0

Table 144 Access Mode Restrictions sorted by descending priority

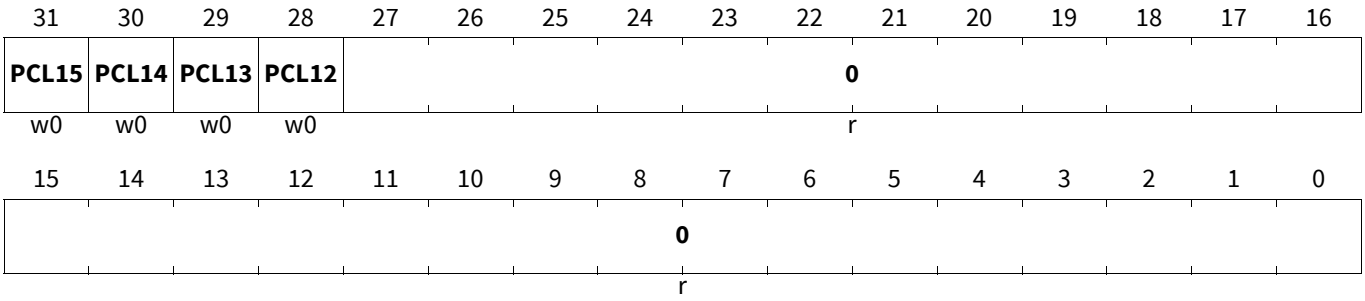
Applies to **P00_OMCR8**
Applies to **P02_OMCR8**
Applies to **P10_OMCR8**
Applies to **P11_OMCR8**
Applies to **P14_OMCR8**
Applies to **P15_OMCR8**
Applies to **P20_OMCR8**
Applies to **P33_OMCR8**
Applies to **P40_OMCR8**

Mode Name	Access Mode		Description
Master enabled in ACCEN	w0	PCLx (x=8-11)	write access for enabled masters
Otherwise (default)	r0	PCLx (x=8-11)	

Port 00 Output Modification Clear Register 12

Register Pn_OMCR12 clears the logic state of Pn.[15:12] port lines

P00_OMCR12
Port 00 Output Modification Clear Register 12 ($08C_H$) Application Reset Value: 0000 0000$_H$
P11_OMCR12
Port 11 Output Modification Clear Register 12 ($08C_H$) Application Reset Value: 0000 0000$_H$
P20_OMCR12
Port 20 Output Modification Clear Register 12 ($08C_H$) Application Reset Value: 0000 0000$_H$
P33_OMCR12
Port 33 Output Modification Clear Register 12 ($08C_H$) Application Reset Value: 0000 0000$_H$



Field	Bits	Type	Description
PCLx (x=12-15)	x+16	w0	**Clear Bit x** Setting this bit will clear the corresponding bit in the port output register Pn_OUT. Read as 0. 0_B No operation 1_B Clears Pn_OUT.Px

Field	Bits	Type	Description
0	27:0	r	**Reserved** Read as 0; should be written with 0

Table 145 Access Mode Restrictions sorted by descending priority

Applies to **P00_OMCR12**
Applies to **P11_OMCR12**
Applies to **P20_OMCR12**
Applies to **P33_OMCR12**

Mode Name	Access Mode		Description
Master enabled in ACCEN	w0	PCLx (x=12-15)	write access for enabled masters
Otherwise (default)	r0	PCLx (x=12-15)	

Port 00 Output Modification Set Register

The port output modification set register contains control bits that make it possible to individually set the logic state of a single port line by manipulating the output register.

Note: Register Pn_OMSR is virtual and does not contain any flip-flop. A read action delivers the value of 0. One 8 or 16-bits write behaves as a 32-bit write padded with zeros.

P00_OMSR
Port 00 Output Modification Set Register (090$_H$) Application Reset Value: 0000 0000$_H$
P11_OMSR
Port 11 Output Modification Set Register (090$_H$) Application Reset Value: 0000 0000$_H$
P20_OMSR
Port 20 Output Modification Set Register (090$_H$) Application Reset Value: 0000 0000$_H$
P33_OMSR
Port 33 Output Modification Set Register (090$_H$) Application Reset Value: 0000 0000$_H$

31	30	29	28	27	26	25	24	23	22	21	20	19	18	17	16
0															
r															

15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
PS15	**PS14**	**PS13**	**PS12**	**PS11**	**PS10**	**PS9**	**PS8**	**PS7**	**PS6**	**PS5**	**PS4**	**PS3**	**PS2**	**PS1**	**PS0**
w0	w0	w0	w0	w0	w0	w0	w0	w0	w0	w0	w0	w0	w0	w0	w0

Field	Bits	Type	Description
PSx (x=0-15)	x	w0	**Set Bit x** Setting this bit will set the corresponding bit in the port output register Pn_OUT. Read as 0. 0_B No operation 1_B Sets Pn_OUT.Px

Field	Bits	Type	Description
0	31:16	r	**Reserved** Read as 0; should be written with 0.

Table 146 Access Mode Restrictions sorted by descending priority

Applies to **P00_OMSR**
Applies to **P11_OMSR**
Applies to **P20_OMSR**
Applies to **P33_OMSR**

Mode Name	Access Mode		Description
Master enabled in ACCEN	w0	PSx (x=0-15)	write access for enabled masters
Otherwise (default)	r0	PSx (x=0-15)	

P02_OMSR
Port 02 Output Modification Set Register **(090_H)** **Application Reset Value: $0000\ 0000_H$**
P10_OMSR
Port 10 Output Modification Set Register **(090_H)** **Application Reset Value: $0000\ 0000_H$**
P14_OMSR
Port 14 Output Modification Set Register **(090_H)** **Application Reset Value: $0000\ 0000_H$**
P15_OMSR
Port 15 Output Modification Set Register **(090_H)** **Application Reset Value: $0000\ 0000_H$**
P40_OMSR
Port 40 Output Modification Set Register **(090_H)** **Application Reset Value: $0000\ 0000_H$**

31	30	29	28	27	26	25	24	23	22	21	20	19	18	17	16
0															
r															

15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
0	**0**	**0**	**0**	**PS11**	**PS10**	**PS9**	**PS8**	**PS7**	**PS6**	**PS5**	**PS4**	**PS3**	**PS2**	**PS1**	**PS0**
r	r	r	r	w0	w0	w0	w0	w0	w0	w0	w0	w0	w0	w0	w0

Field	Bits	Type	Description
PSx (x=0-11)	x	w0	**Set Bit x** Setting this bit will set the corresponding bit in the port output register Pn_OUT. Read as 0. 0_B No operation 1_B Sets Pn_OUT.Px
0	15, 14, 13, 12, 31:16	r	**Reserved** Read as 0; should be written with 0.

Table 147 Access Mode Restrictions sorted by descending priority

Applies to **P02_OMSR**
Applies to **P10_OMSR**
Applies to **P14_OMSR**
Applies to **P15_OMSR**
Applies to **P40_OMSR**

Mode Name	Access Mode		Description
Master enabled in ACCEN	w0	PSx (x=0-11)	write access for enabled masters
Otherwise (default)	r0	PSx (x=0-11)	

P13_OMSR
Port 13 Output Modification Set Register **(090_H)** **Application Reset Value: 0000 0000$_H$**
P34_OMSR
Port 34 Output Modification Set Register **(090_H)** **Application Reset Value: 0000 0000$_H$**

31	30	29	28	27	26	25	24	23	22	21	20	19	18	17	16
0															
r															

15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
0	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**PS3**	**PS2**	**PS1**	**PS0**
r	r	r	r	r	r	r	r	r	r	r	r	w0	w0	w0	w0

Field	Bits	Type	Description
PSx (x=0-3)	x	w0	**Set Bit x** Setting this bit will set the corresponding bit in the port output register Pn_OUT. Read as 0. 0_B No operation 1_B Sets Pn_OUT.Px
0	15, 14, 13, 12, 11, 10, 9, 8, 7, 6, 5, 4, 31:16	r	**Reserved** Read as 0; should be written with 0.

Table 148 Access Mode Restrictions sorted by descending priority

Applies to **P13_OMSR**
Applies to **P34_OMSR**

Mode Name	Access Mode		Description
Master enabled in ACCEN	w0	PSx (x=0-3)	write access for enabled masters
Otherwise (default)	r0	PSx (x=0-3)	

P21_OMSR
Port 21 Output Modification Set Register **(090_H)** **Application Reset Value: 0000 0000$_H$**
P22_OMSR
Port 22 Output Modification Set Register **(090_H)** **Application Reset Value: 0000 0000$_H$**
P23_OMSR
Port 23 Output Modification Set Register **(090_H)** **Application Reset Value: 0000 0000$_H$**
P32_OMSR
Port 32 Output Modification Set Register **(090_H)** **Application Reset Value: 0000 0000$_H$**

31	30	29	28	27	26	25	24	23	22	21	20	19	18	17	16
0															
r															

15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
0	0	0	0	0	0	0	0	PS7	PS6	PS5	PS4	PS3	PS2	PS1	PS0
r	r	r	r	r	r	r	r	w0	w0	w0	w0	w0	w0	w0	w0

Field	Bits	Type	Description
PSx (x=0-7)	x	w0	**Set Bit x** Setting this bit will set the corresponding bit in the port output register Pn_OUT. Read as 0. 0_B No operation 1_B Sets Pn_OUT.Px
0	15, 14, 13, 12, 11, 10, 9, 8, 31:16	r	**Reserved** Read as 0; should be written with 0.

Table 149 Access Mode Restrictions sorted by descending priority

Applies to **P21_OMSR**
Applies to **P22_OMSR**
Applies to **P23_OMSR**
Applies to **P32_OMSR**

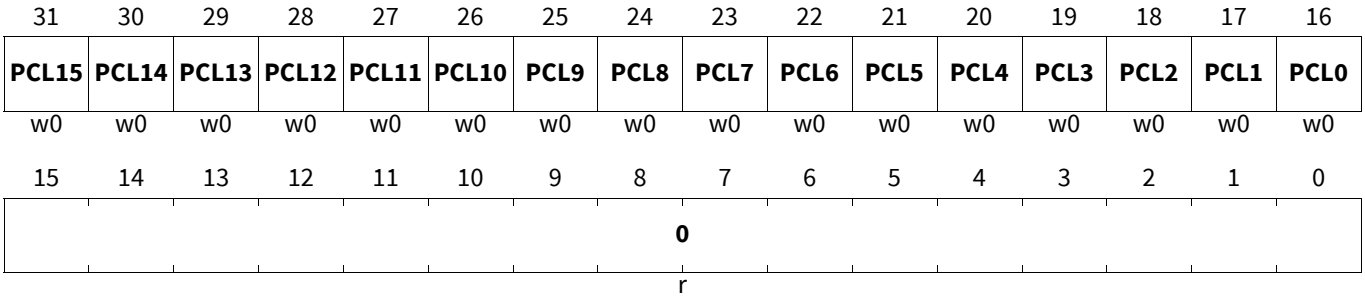
Mode Name	Access Mode		Description
Master enabled in ACCEN	w0	PSx (x=0-7)	write access for enabled masters
Otherwise (default)	r0	PSx (x=0-7)	

Port 00 Output Modification Clear Register

The port output modification clear register contains control bits that make it possible to individually clear the logic state of a single port line by manipulating the output register.

Note: Register Pn_OMCR is virtual and does not contain any flip-flop. A read action delivers the value of 0. One 8 or 16-bits write behaves as a 32-bit write padded with zeros.

P00_OMCR
Port 00 Output Modification Clear Register **(094_H)** **Application Reset Value: $0000\ 0000_H$**
P11_OMCR
Port 11 Output Modification Clear Register **(094_H)** **Application Reset Value: $0000\ 0000_H$**
P20_OMCR
Port 20 Output Modification Clear Register **(094_H)** **Application Reset Value: $0000\ 0000_H$**
P33_OMCR
Port 33 Output Modification Clear Register **(094_H)** **Application Reset Value: $0000\ 0000_H$**



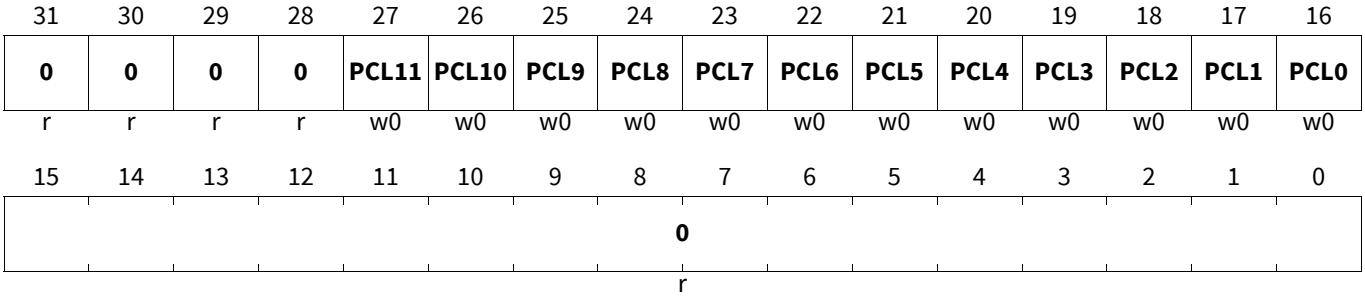
Field	Bits	Type	Description
PCLx (x=0-15)	x+16	w0	**Clear Bit x** Setting this bit will clear the corresponding bit in the port output register Pn_OUT. Read as 0. 0_B No operation 1_B Clears Pn_OUT.Px.
0	15:0	r	**Reserved** Read as 0; should be written with 0

Table 150 Access Mode Restrictions sorted by descending priority

Applies to **P00_OMCR**
Applies to **P11_OMCR**
Applies to **P20_OMCR**
Applies to **P33_OMCR**

Mode Name	Access Mode		Description
Master enabled in ACCEN	w0	PCLx (x=0-15)	write access for enabled masters
Otherwise (default)	r0	PCLx (x=0-15)	

P02_OMCR
Port 02 Output Modification Clear Register **(094_H)** **Application Reset Value: $0000\ 0000_H$**
P10_OMCR
Port 10 Output Modification Clear Register **(094_H)** **Application Reset Value: $0000\ 0000_H$**
P14_OMCR
Port 14 Output Modification Clear Register **(094_H)** **Application Reset Value: $0000\ 0000_H$**
P15_OMCR
Port 15 Output Modification Clear Register **(094_H)** **Application Reset Value: $0000\ 0000_H$**
P40_OMCR
Port 40 Output Modification Clear Register **(094_H)** **Application Reset Value: $0000\ 0000_H$**



Field	Bits	Type	Description
PCLx (x=0-11)	x+16	w0	**Clear Bit x** Setting this bit will clear the corresponding bit in the port output register Pn_OUT. Read as 0. 0_B No operation 1_B Clears Pn_OUT.Px.
0	15:0, 31, 30, 29, 28	r	**Reserved** Read as 0; should be written with 0

Table 151 Access Mode Restrictions sorted by descending priority

Applies to **P02_OMCR**
Applies to **P10_OMCR**
Applies to **P14_OMCR**
Applies to **P15_OMCR**
Applies to **P40_OMCR**

Mode Name	Access Mode		Description
Master enabled in ACCEN	w0	PCLx (x=0-11)	write access for enabled masters
Otherwise (default)	r0	PCLx (x=0-11)	

P13_OMCR
Port 13 Output Modification Clear Register **(094_H)** **Application Reset Value: $0000\ 0000_H$**
P34_OMCR
Port 34 Output Modification Clear Register **(094_H)** **Application Reset Value: $0000\ 0000_H$**

31	30	29	28	27	26	25	24	23	22	21	20	19	18	17	16
0	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**PCL3**	**PCL2**	**PCL1**	**PCL0**
r	r	r	r	r	r	r	r	r	r	r	r	w0	w0	w0	w0

15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
0															
r															

Field	Bits	Type	Description
PCLx (x=0-3)	x+16	w0	**Clear Bit x** Setting this bit will clear the corresponding bit in the port output register Pn_OUT. Read as 0. 0_B No operation 1_B Clears Pn_OUT.Px.
0	15:0, 31, 30, 29, 28, 27, 26, 25, 24, 23, 22, 21, 20	r	**Reserved** Read as 0; should be written with 0

Table 152 Access Mode Restrictions sorted by descending priority

Applies to **P13_OMCR**
Applies to **P34_OMCR**

Mode Name	Access Mode		Description
Master enabled in ACCEN	w0	PCLx (x=0-3)	write access for enabled masters
Otherwise (default)	r0	PCLx (x=0-3)	

P21_OMCR
Port 21 Output Modification Clear Register **(094_H)** **Application Reset Value: 0000 0000$_H$**
P22_OMCR
Port 22 Output Modification Clear Register **(094_H)** **Application Reset Value: 0000 0000$_H$**
P23_OMCR
Port 23 Output Modification Clear Register **(094_H)** **Application Reset Value: 0000 0000$_H$**
P32_OMCR
Port 32 Output Modification Clear Register **(094_H)** **Application Reset Value: 0000 0000$_H$**

31	30	29	28	27	26	25	24	23	22	21	20	19	18	17	16
0	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**PCL7**	**PCL6**	**PCL5**	**PCL4**	**PCL3**	**PCL2**	**PCL1**	**PCL0**
r	r	r	r	r	r	r	r	w0	w0	w0	w0	w0	w0	w0	w0

15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
0															
r															

Field	Bits	Type	Description
PCLx (x=0-7)	x+16	w0	**Clear Bit x** Setting this bit will clear the corresponding bit in the port output register Pn_OUT. Read as 0. 0_B No operation 1_B Clears Pn_OUT.Px.
0	15:0, 31, 30, 29, 28, 27, 26, 25, 24	r	**Reserved** Read as 0; should be written with 0

Table 153 Access Mode Restrictions sorted by descending priority

Applies to **P21_OMCR**
Applies to **P22_OMCR**
Applies to **P23_OMCR**
Applies to **P32_OMCR**

Mode Name	Access Mode		Description
Master enabled in ACCEN	w0	PCLx (x=0-7)	write access for enabled masters
Otherwise (default)	r0	PCLx (x=0-7)	

Port 21 LVDS Pad Control Register x

The LVDS Pad Control Register controls the RX or TX functions of the LVDS pads. For usage of RX pad, bit field [7:0] are applicable. If used for TX pad, bit field [15:7] apply.

The sleep functionality of the LVDS pads is not controllable via this register. This is exclusively controlled by the HSCT module when this is connected.

The register x controls in general the pad pair 2*x and 2*x+1 of the port n.

Exceptionally when available the pad pair P14.9 and P14.10 is controlled by P14_LPCR5.

Attention: ***The bit field P21_LPCR2.PS configures the pad supply for the LVDS bias distributor for all (not-RIF) LVDS pads and for the oscillator. Therefore even if no LVDS pad is used, this field has to be configured to the correct pad supply level.***

P21_LPCRx (x=2)

Port 21 LVDS Pad Control Register x **($0A0_H$+x*4)** **Reset Value: Table 155**

31	30	29	28	27	26	25	24	23	22	21	20	19	18	17	16
0															
r															

15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
0	0	0	0	0		0	0	PS	0		0		0	0	0
r	r	r	r	r		r	r	rw	r		r		r	r	r

Field	Bits	Type	Description
PS	7	rw	**Pad Supply Selection** Selects between 5V or 3.3V supply on V_{EXT} for the pad-pair. Used in RX and TX pads! 0_B 3.3V supply 1_B 5V supply
0	0, 1, 2, 5:3, 6, 8, 9, 11:10, 12, 13, 14, 15, 31:16	r	**Reserved** Read as 0; should be written with 0

Table 154 Access Mode Restrictions of P21_LPCRx (x=2) sorted by descending priority

Mode Name	Access Mode		Description
Master enabled in ACCEN and Supervisor Mode and ENDINIT	rw	PS	write access for enabled masters
Otherwise (default)	r	PS	

Table 155 Reset Values of P21_LPCRx (x=2)

Reset Type	Reset Value	Note
After SSW execution	0000 0080$_H$	Initial value of RX depends on trimming

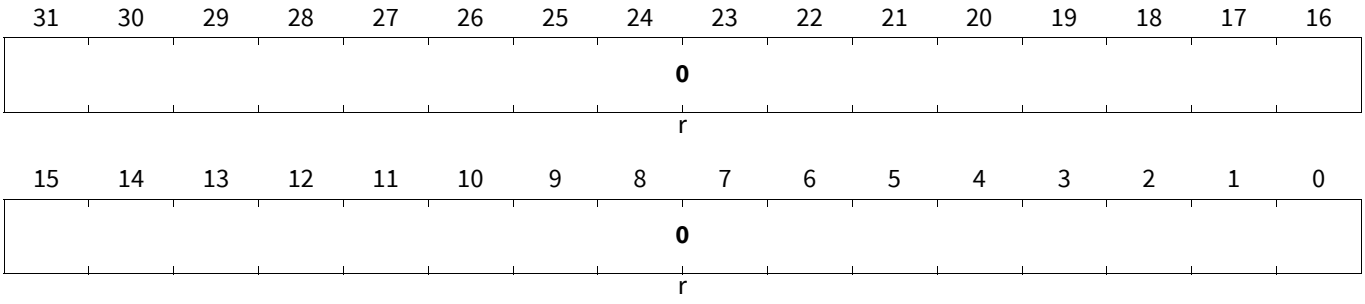
Port 00 Access Enable Register 1

Each port has its own dedicated ACCEN0 and ACCEN1 registers.

The Access Enable Register 1 controls write[1)] access for transactions with the on chip bus master TAG ID 100000B to 111111B (see On Chip Bus chapter for the products TAG ID <-> master peripheral mapping). The BPI_FPI is prepared for a 6-bit TAG ID. ACCEN1 is not implemented with register bits as the related TAG IDs are not used in this product.

Mapping of TAG IDs to ACCEN1.ENx: EN0 -> TAG ID 100000B, EN1 -> TAG ID 100001B, ... ,EN31 -> TAG ID 111111B.

P00_ACCEN1
Port 00 Access Enable Register 1 **(0F8$_H$)** **Application Reset Value: 0000 0000$_H$**
P02_ACCEN1
Port 02 Access Enable Register 1 **(0F8$_H$)** **Application Reset Value: 0000 0000$_H$**
P10_ACCEN1
Port 10 Access Enable Register 1 **(0F8$_H$)** **Application Reset Value: 0000 0000$_H$**
P11_ACCEN1
Port 11 Access Enable Register 1 **(0F8$_H$)** **Application Reset Value: 0000 0000$_H$**
P13_ACCEN1
Port 13 Access Enable Register 1 **(0F8$_H$)** **Application Reset Value: 0000 0000$_H$**
P14_ACCEN1
Port 14 Access Enable Register 1 **(0F8$_H$)** **Application Reset Value: 0000 0000$_H$**
P15_ACCEN1
Port 15 Access Enable Register 1 **(0F8$_H$)** **Application Reset Value: 0000 0000$_H$**
P20_ACCEN1
Port 20 Access Enable Register 1 **(0F8$_H$)** **Application Reset Value: 0000 0000$_H$**
P21_ACCEN1
Port 21 Access Enable Register 1 **(0F8$_H$)** **Application Reset Value: 0000 0000$_H$**
P22_ACCEN1
Port 22 Access Enable Register 1 **(0F8$_H$)** **Application Reset Value: 0000 0000$_H$**



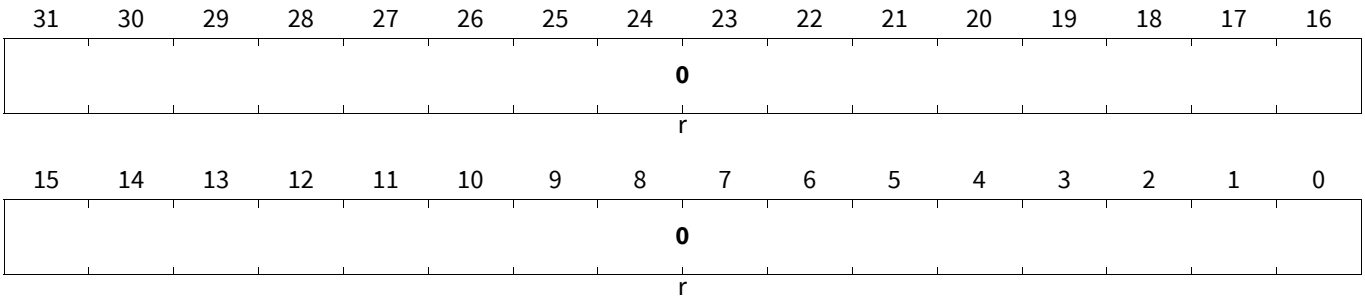
Field	Bits	Type	Description
0	31:0	r	**Reserved** Read as 0; should be written with 0

Table 156 Access Mode Restrictions sorted by descending priority

Applies to **P00_ACCEN1**
Applies to **P02_ACCEN1**
Applies to **P10_ACCEN1**
Applies to **P11_ACCEN1**
Applies to **P13_ACCEN1**
Applies to **P14_ACCEN1**
Applies to **P15_ACCEN1**
Applies to **P20_ACCEN1**
Applies to **P21_ACCEN1**
Applies to **P22_ACCEN1**

Mode Name	Access Mode		Description
Supervisor Mode and Safety ENDINIT	-	See bit field definitions above	write access only for masters with supervisor mode
Otherwise (default)	-	See bit field definitions above	

P23_ACCEN1
Port 23 Access Enable Register 1 **(0F8$_H$)** **Application Reset Value: 0000 0000$_H$**
P32_ACCEN1
Port 32 Access Enable Register 1 **(0F8$_H$)** **Application Reset Value: 0000 0000$_H$**
P33_ACCEN1
Port 33 Access Enable Register 1 **(0F8$_H$)** **Application Reset Value: 0000 0000$_H$**
P34_ACCEN1
Port 34 Access Enable Register 1 **(0F8$_H$)** **Application Reset Value: 0000 0000$_H$**
P40_ACCEN1
Port 40 Access Enable Register 1 **(0F8$_H$)** **Application Reset Value: 0000 0000$_H$**



Field	Bits	Type	Description
0	31:0	r	**Reserved** Read as 0; should be written with 0

Table 157 Access Mode Restrictions sorted by descending priority

Applies to **P23_ACCEN1**
Applies to **P32_ACCEN1**
Applies to **P33_ACCEN1**
Applies to **P34_ACCEN1**
Applies to **P40_ACCEN1**

Mode Name	Access Mode		Description
Supervisor Mode and Safety ENDINIT	-	See bit field definitions above	write access only for masters with supervisor mode
Otherwise (default)	-	See bit field definitions above	

Port 00 Access Enable Register 0

Each port has its own dedicated ACCEN0 and ACCEN1 registers.

The Access Enable Register 0 controls write[1)] access for transactions with the on chip bus master TAG ID 000000B to 011111B (see On Chip Bus chapter for the products TAG ID <-> master peripheral mapping). The BPI_FPI is prepared for a 6-bit TAG ID.The registers ACCEN0 and ACCEN1 are providing one enable bit for each possible 6-bit TAG ID encoding.

Mapping of TAG IDs to ACCEN0.ENx: EN0 -> TAG ID 000000B, EN1 -> TAG ID 000001B , ... ,EN31 -> TAG ID 011111B.

1) The BPI_FPI Access Enable functionality controls only write transactions to the kernel registers. Read transactions are not influenced. SW has to take care for destructive/modifying read functionality in kernel registers.

P00_ACCEN0
Port 00 Access Enable Register 0 **($0FC_H$)** **Application Reset Value: FFFF FFFF$_H$**
P02_ACCEN0
Port 02 Access Enable Register 0 **($0FC_H$)** **Application Reset Value: FFFF FFFF$_H$**
P10_ACCEN0
Port 10 Access Enable Register 0 **($0FC_H$)** **Application Reset Value: FFFF FFFF$_H$**
P11_ACCEN0
Port 11 Access Enable Register 0 **($0FC_H$)** **Application Reset Value: FFFF FFFF$_H$**
P13_ACCEN0
Port 13 Access Enable Register 0 **($0FC_H$)** **Application Reset Value: FFFF FFFF$_H$**
P14_ACCEN0
Port 14 Access Enable Register 0 **($0FC_H$)** **Application Reset Value: FFFF FFFF$_H$**
P15_ACCEN0
Port 15 Access Enable Register 0 **($0FC_H$)** **Application Reset Value: FFFF FFFF$_H$**
P20_ACCEN0
Port 20 Access Enable Register 0 **($0FC_H$)** **Application Reset Value: FFFF FFFF$_H$**
P21_ACCEN0
Port 21 Access Enable Register 0 **($0FC_H$)** **Application Reset Value: FFFF FFFF$_H$**
P22_ACCEN0
Port 22 Access Enable Register 0 **($0FC_H$)** **Application Reset Value: FFFF FFFF$_H$**

31	30	29	28	27	26	25	24	23	22	21	20	19	18	17	16
EN31	**EN30**	**EN29**	**EN28**	**EN27**	**EN26**	**EN25**	**EN24**	**EN23**	**EN22**	**EN21**	**EN20**	**EN19**	**EN18**	**EN17**	**EN16**
rw	rw	rw	rw	rw	rw	rw	rw	rw	rw	rw	rw	rw	rw	rw	rw

15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
EN15	**EN14**	**EN13**	**EN12**	**EN11**	**EN10**	**EN9**	**EN8**	**EN7**	**EN6**	**EN5**	**EN4**	**EN3**	**EN2**	**EN1**	**EN0**
rw	rw	rw	rw	rw	rw	rw	rw	rw	rw	rw	rw	rw	rw	rw	rw

Field	Bits	Type	Description
ENx (x=0-31)	x	rw	**Access Enable for Master TAG ID x** This bit enables write access to the module kernel addresses for transactions with the Master TAG ID n 0_B Write access will not be executed 1_B Write access will be executed

Table 158 Access Mode Restrictions sorted by descending priority

Applies to **P00_ACCEN0**
Applies to **P02_ACCEN0**
Applies to **P10_ACCEN0**
Applies to **P11_ACCEN0**
Applies to **P13_ACCEN0**
Applies to **P14_ACCEN0**
Applies to **P15_ACCEN0**
Applies to **P20_ACCEN0**
Applies to **P21_ACCEN0**
Applies to **P22_ACCEN0**

Mode Name	Access Mode		Description
Supervisor Mode and Safety ENDINIT	rw	ENx (x=0-31)	write access only for masters with supervisor mode
Otherwise (default)	r	ENx (x=0-31)	

P23_ACCEN0
Port 23 Access Enable Register 0 **(0FC$_H$)** **Application Reset Value: FFFF FFFF$_H$**
P32_ACCEN0
Port 32 Access Enable Register 0 **(0FC$_H$)** **Application Reset Value: FFFF FFFF$_H$**
P33_ACCEN0
Port 33 Access Enable Register 0 **(0FC$_H$)** **Application Reset Value: FFFF FFFF$_H$**
P34_ACCEN0
Port 34 Access Enable Register 0 **(0FC$_H$)** **Application Reset Value: FFFF FFFF$_H$**
P40_ACCEN0
Port 40 Access Enable Register 0 **(0FC$_H$)** **Application Reset Value: FFFF FFFF$_H$**

31	30	29	28	27	26	25	24	23	22	21	20	19	18	17	16
EN31	**EN30**	**EN29**	**EN28**	**EN27**	**EN26**	**EN25**	**EN24**	**EN23**	**EN22**	**EN21**	**EN20**	**EN19**	**EN18**	**EN17**	**EN16**
rw	rw	rw	rw	rw	rw	rw	rw	rw	rw	rw	rw	rw	rw	rw	rw

15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
EN15	**EN14**	**EN13**	**EN12**	**EN11**	**EN10**	**EN9**	**EN8**	**EN7**	**EN6**	**EN5**	**EN4**	**EN3**	**EN2**	**EN1**	**EN0**
rw	rw	rw	rw	rw	rw	rw	rw	rw	rw	rw	rw	rw	rw	rw	rw

Field	Bits	Type	Description
ENx (x=0-31)	x	rw	**Access Enable for Master TAG ID x** This bit enables write access to the module kernel addresses for transactions with the Master TAG ID n 0_B Write access will not be executed 1_B Write access will be executed

Table 159 Access Mode Restrictions sorted by descending priority

Applies to **P23_ACCEN0**
Applies to **P32_ACCEN0**
Applies to **P33_ACCEN0**
Applies to **P34_ACCEN0**
Applies to **P40_ACCEN0**

Mode Name	Access Mode		Description
Supervisor Mode and Safety ENDINIT	rw	ENx (x=0-31)	write access only for masters with supervisor mode
Otherwise (default)	r	ENx (x=0-31)	

14.4 Device Specific Connectivity Documentation

The connectivity of the Ports is documented in the Pinning documentation of each device.

14.5 Revision History

Table 160 Revision History

Reference	Changes to Previous Version	Comment
V1.8.20		
–	This is the first version for TC33x.	–
V1.8.21		
–	No content of this Appx changed. TC3Ax Appx added to delivery package and change in Feature List of family chapter.	

15 Safety Management Unit (SMU)

This chapter describes the Safety Management Unit (short SMU) module of the TC33x/TC32x.

15.1 TC33x/TC32x Specific IP Configuration

See features in family spec.

15.2 TC33x/TC32x Specific Register Set

SMU_core Specific Register Set

Register Address Space Table

Table 161 Register Address Space - SMU

Module	Base Address	End Address	Note
SMU	$F0036800_H$	$F0036FFF_H$	FPI slave interface

Register Overview Table

Table 162 Register Overview - SMU (ascending Offset Address)

Short Name	Long Name	Offset Address	Access Mode		Reset	Page Number
			Read	Write		
SMU_CLC	Clock Control Register	000_H	U,SV	SV,P	Application Reset	See Family Spec
SMU_ID	Module Identification Register	008_H	U,SV	BE	Application Reset	See Family Spec
SMU_CMD	Command Register	020_H	U,SV	SV,P,32	Application Reset	See Family Spec
SMU_STS	Status Register	024_H	U,SV	SV,P,32	Application Reset	See Family Spec
SMU_FSP	Fault Signaling Protocol	028_H	U,SV	SV,P,SE,32	PowerOn Reset	See Family Spec
SMU_AGC	Alarm Global Configuration	$02C_H$	U,SV	SV,P,SE,32	Application Reset	See Family Spec
SMU_RTC	Recovery Timer Configuration	030_H	U,SV	SV,P,SE,32	Application Reset	See Family Spec
SMU_KEYS	Key Register	034_H	U,SV	SV,P,SE,32	Application Reset	See Family Spec
SMU_DBG	Debug Register	038_H	U,SV	BE	PowerOn Reset	See Family Spec

Table 162 Register Overview - SMU (ascending Offset Address) (cont'd)

Short Name	Long Name	Offset Address	Access Mode		Reset	Page Number
			Read	Write		
SMU_PCTL	Port Control	$03C_H$	U,SV	SV,P,SE,32	PowerOn Reset	See Family Spec
SMU_AFCNT	Alarm and Fault Counter	040_H	U,SV	BE	PowerOn Reset	See Family Spec
SMU_RTAC00	Recovery Timer 0 Alarm Configuration 0	060_H	U,SV	SV,P,SE,32	Application Reset	See Family Spec
SMU_RTAC01	Recovery Timer 0 Alarm Configuration 1	064_H	U,SV	SV,P,SE,32	Application Reset	See Family Spec
SMU_RTAC10	Recovery Timer 1 Alarm Configuration 0	068_H	U,SV	SV,P,SE,32	Application Reset	See Family Spec
SMU_RTAC11	Recovery Timer 1 Alarm Configuration 1	$06C_H$	U,SV	SV,P,SE,32	Application Reset	See Family Spec
SMU_AEX	Alarm Executed Status Register	070_H	U,SV	BE	Application Reset	See Family Spec
SMU_AEXCLR	Alarm Executed Status Clear Register	074_H	U,SV	SV,P,SE,32	Application Reset	See Family Spec
SMU_AGiCFj (i=0;j=0-2) (i=1-5;j=0-2) (i=6;j=0-2) (i=7;j=0-2) (i=8;j=0-2) (i=9;j=0-2) (i=10;j=0-2) (i=11;j=0-2)	Alarm Configuration Register	100_H+i*12+j*4	U,SV	SV,P,SE,32	Application Reset	5
SMU_AGiFSP (i=0-11)	SMU_core FSP Configuration Register	190_H+i*4	U,SV	SV,P,SE,32	Application Reset	10
SMU_AGi (i=0-11)	Alarm Status Register	$1C0_H$+i*4	U,SV	SV,P,SE,32	Application Reset	14
SMU_ADi (i=0-11)	Alarm Debug Register	200_H+i*4	U,SV	BE	PowerOn Reset	18
SMU_RMCTL	Register Monitor Control	300_H	U,SV	SV,P,SE,32	Application Reset	See Family Spec

Table 162 Register Overview - SMU (ascending Offset Address) (cont'd)

Short Name	Long Name	Offset Address	Access Mode		Reset	Page Number
			Read	Write		
SMU_RMEF	Register Monitor Error Flags	304_H	U,SV	SV,P,SE,32	Application Reset	See Family Spec
SMU_RMSTS	Register Monitor Self Test Status	308_H	U,SV	SV,P,SE,32	Application Reset	See Family Spec
SMU_OCS	OCDS Control and Status	$7E8_H$	U,SV	SV,P,OEN	Debug Reset	See Family Spec
SMU_ACCEN1	SMU_core Access Enable Register 1	$7F8_H$	U,SV	BE	Application Reset	See Family Spec
SMU_ACCEN0	SMU_core Access Enable Register 0	$7FC_H$	U,SV	SV,SE	Application Reset	See Family Spec

SMU_stdby Specific Register Set

For SMU_stdby specific register set refer to the Power Management System chapter.

15.3 TC33x/TC32x Specific Registers

15.3.1 TC33x/TC32x Specific Registers

15.3.1.1 FPI slave interface

Alarm Configuration Register

SMU_AGiCFj (i=0;j=0-2)
Alarm Configuration Register **(100_H+i*12+j*4)** **Application Reset Value: 0000 0000$_H$**

31	30	29	28	27	26	25	24	23	22	21	20	19	18	17	16
0	**0**	**0**	**0**	**0**	**0**	**0**	**CF24**	**CF23**	**CF22**	**0**	**0**	**0**	**0**	**0**	**0**
r	r	r	r	r	r	r	rw	rw	rw	r	r	r	r	r	r

15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
0	**CF14**	**CF13**	**CF12**	**CF11**	**CF10**	**CF9**	**CF8**	**CF7**	**CF6**	**CF5**	**CF4**	**0**	**CF2**	**CF1**	**CF0**
r	rw	rw	rw	rw	rw	rw	rw	rw	rw	rw	rw	r	rw	rw	rw

Field	Bits	Type	Description
CFz (z=0-2,4-14,22-24)	z	rw	**Configuration flag x (x=0-2) for alarm z belonging to alarm group i.** The configuration flags 0, 1 and 2 must be used together to define the behavior of the SMU_core when a fault state is reported by the alarm n belonging to this group. 0_B Configuration flag x (x=0-2) is set to 0 1_B Configuration flag x (x=0-2) is set to 1
0	31, 30, 29, 28, 27, 26, 25, 21, 20, 19, 18, 17, 16, 15, 3	r	**Reserved** Read as 0; should be written with 0.

SMU_AGiCFj (i=1-5;j=0-2)
Alarm Configuration Register **(100_H+i*12+j*4)** **Application Reset Value: 0000 0000$_H$**

31	30	29	28	27	26	25	24	23	22	21	20	19	18	17	16
0	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
r	r	r	r	r	r	r	r	r	r	r	r	r	r	r	r

15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
0	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
r	r	r	r	r	r	r	r	r	r	r	r	r	r	r	r

Field	Bits	Type	Description
0	31, 30, 29, 28, 27, 26, 25, 24, 23, 22, 21, 20, 19, 18, 17, 16, 15, 14, 13, 12, 11, 10, 9, 8, 7, 6, 5, 4, 3, 2, 1, 0	r	**Reserved** Read as 0; should be written with 0.

SMU_AGiCFj (i=6;j=0-2)
Alarm Configuration Register **(100_H+i*12+j*4)** **Application Reset Value: 0000 0000_H**

31	30	29	28	27	26	25	24	23	22	21	20	19	18	17	16
0	**0**	**0**	**0**	**0**	**0**	**CF25**	**CF24**	**CF23**	**0**	**CF21**	**CF20**	**CF19**	**CF18**	**CF17**	**CF16**
r	r	r	r	r	r	rw	rw	rw	r	rw	rw	rw	rw	rw	rw
15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
CF15	**CF14**	**CF13**	**CF12**	**CF11**	**CF10**	**0**	**CF8**	**CF7**	**CF6**	**CF5**	**CF4**	**0**	**CF2**	**CF1**	**CF0**
rw	rw	rw	rw	rw	rw	r	rw	rw	rw	rw	rw	r	rw	rw	rw

Field	Bits	Type	Description
CFz (z=0-2,4-8,10-21,23-25)	z	rw	**Configuration flag x (x=0-2) for alarm z belonging to alarm group i.** The configuration flags 0, 1 and 2 must be used together to define the behavior of the SMU_core when a fault state is reported by the alarm n belonging to this group. 0_B Configuration flag x (x=0-2) is set to 0 1_B Configuration flag x (x=0-2) is set to 1
0	31, 30, 29, 28, 27, 26, 22, 9, 3	r	**Reserved** Read as 0; should be written with 0.

SMU_AGiCFj (i=7;j=0-2)
Alarm Configuration Register **(100_H+i*12+j*4)** **Application Reset Value: 0000 0000_H**

31	30	29	28	27	26	25	24	23	22	21	20	19	18	17	16
CF31	**CF30**	**CF29**	**CF28**	**CF27**	**CF26**	**CF25**	**CF24**	**CF23**	**CF22**	**0**	**CF20**	**0**	**0**	**CF17**	**0**
rw	rw	rw	rw	rw	rw	rw	rw	rw	rw	r	rw	r	r	rw	r
15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
0	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**CF2**	**CF1**	**CF0**
r	r	r	r	r	r	r	r	r	r	r	r	r	rw	rw	rw

Field	Bits	Type	Description
CFz (z=0-2,17,20,22-31)	z	rw	**Configuration flag x (x=0-2) for alarm z belonging to alarm group i.** The configuration flags 0, 1 and 2 must be used together to define the behavior of the SMU_core when a fault state is reported by the alarm n belonging to this group. 0_B Configuration flag x (x=0-2) is set to 0 1_B Configuration flag x (x=0-2) is set to 1
0	21, 19, 18, 16, 15, 14, 13, 12, 11, 10, 9, 8, 7, 6, 5, 4, 3	r	**Reserved** Read as 0; should be written with 0.

SMU_AGiCFj (i=8;j=0,2)
Alarm Configuration Register **(100_H+i*12+j*4)** **Application Reset Value: 0001 FC00$_H$**
SMU_AGiCFj (i=8;j=1)
Alarm Configuration Register **(100_H+i*12+j*4)** **Application Reset Value: 0000 0000$_H$**

31	30	29	28	27	26	25	24	23	22	21	20	19	18	17	16
CF31	**CF30**	**CF29**	**CF28**	**CF27**	**CF26**	**CF25**	**0**	**CF23**	**CF22**	**CF21**	**CF20**	**CF19**	**CF18**	**CF17**	**CF16**
rw	rw	rw	rw	rw	rw	rw	r	rw	rw	rw	rw	rw	rw	rw	rw

15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
0	**0**	**0**	**0**	**0**	**CF10**	**CF9**	**CF8**	**CF7**	**CF6**	**CF5**	**CF4**	**CF3**	**CF2**	**CF1**	**CF0**
r	r	r	r	r	rw	rw	rw	rw	rw	rw	rw	rw	rw	rw	rw

Field	Bits	Type	Description
CFz (z=0-10,16-23,25-31)	z	rw	**Configuration flag x (x=0-2) for alarm z belonging to alarm group i.** The configuration flags 0, 1 and 2 must be used together to define the behavior of the SMU_core when a fault state is reported by the alarm n belonging to this group. 0_B Configuration flag x (x=0-2) is set to 0 1_B Configuration flag x (x=0-2) is set to 1
0	24, 15, 14, 13, 12, 11	r	**Reserved** Read as 0; should be written with 0.

SMU_AGiCFj (i=9;j=0-2)
Alarm Configuration Register **(100_H+i*12+j*4)** **Application Reset Value: 0000 0000$_H$**

31	30	29	28	27	26	25	24	23	22	21	20	19	18	17	16
0	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**CF17**	**CF16**
r	r	r	r	r	r	r	r	r	r	r	r	r	r	rw	rw

15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
CF15	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**CF5**	**0**	**CF3**	**0**	**CF1**	**CF0**
rw	r	r	r	r	r	r	r	r	r	rw	r	rw	r	rw	rw

Field	Bits	Type	Description
CFz (z=0-1,3,5,15-17)	z	rw	**Configuration flag x (x=0-2) for alarm z belonging to alarm group i.** The configuration flags 0, 1 and 2 must be used together to define the behavior of the SMU_core when a fault state is reported by the alarm n belonging to this group. 0_B Configuration flag x (x=0-2) is set to 0 1_B Configuration flag x (x=0-2) is set to 1
0	31, 30, 29, 28, 27, 26, 25, 24, 23, 22, 21, 20, 19, 18, 14, 13, 12, 11, 10, 9, 8, 7, 6, 4, 2	r	**Reserved** Read as 0; should be written with 0.

SMU_AGiCFj (i=10;j=0)
Alarm Configuration Register **(100_H+i*12+j*4)** **Application Reset Value: 0000 0000$_H$**
SMU_AGiCFj (i=10;j=1-2)
Alarm Configuration Register **(100_H+i*12+j*4)** **Application Reset Value: 0003 0000$_H$**

31	30	29	28	27	26	25	24	23	22	21	20	19	18	17	16
0	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**CF22**	**CF21**	**CF20**	**0**	**CF18**	**CF17**	**CF16**
r	r	r	r	r	r	r	r	r	rw	rw	rw	r	rw	rw	rw

15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
CF15	**CF14**	**CF13**	**CF12**	**CF11**	**CF10**	**CF9**	**CF8**	**CF7**	**CF6**	**CF5**	**CF4**	**CF3**	**CF2**	**CF1**	**CF0**
rw	rw	rw	rw	rw	rw	rw	rw	rw	rw	rw	rw	rw	rw	rw	rw

Field	Bits	Type	Description
CFz (z=0-18,20-22)	z	rw	**Configuration flag x (x=0-2) for alarm z belonging to alarm group i.** The configuration flags 0, 1 and 2 must be used together to define the behavior of the SMU_core when a fault state is reported by the alarm n belonging to this group. 0_B Configuration flag x (x=0-2) is set to 0 1_B Configuration flag x (x=0-2) is set to 1
0	31, 30, 29, 28, 27, 26, 25, 24, 23, 19	r	**Reserved** Read as 0; should be written with 0.

SMU_AGiCFj (i=11;j=0-2)
Alarm Configuration Register **(100_H+i*12+j*4)** **Application Reset Value: 0000 0000_H**

31	30	29	28	27	26	25	24	23	22	21	20	19	18	17	16
0	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
r	r	r	r	r	r	r	r	r	r	r	r	r	r	r	r

15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
0	**0**	**CF13**	**CF12**	**0**	**0**	**CF9**	**0**	**0**	**0**	**CF5**	**CF4**	**CF3**	**CF2**	**0**	**0**
r	r	rw	rw	r	r	rw	r	r	r	rw	rw	rw	rw	r	r

Field	Bits	Type	Description
CFz (z=2-5,9,12-13)	z	rw	**Configuration flag x (x=0-2) for alarm z belonging to alarm group i.** The configuration flags 0, 1 and 2 must be used together to define the behavior of the SMU_core when a fault state is reported by the alarm n belonging to this group. 0_B Configuration flag x (x=0-2) is set to 0 1_B Configuration flag x (x=0-2) is set to 1
0	31, 30, 29, 28, 27, 26, 25, 24, 23, 22, 21, 20, 19, 18, 17, 16, 15, 14, 11, 10, 8, 7, 6, 1, 0	r	**Reserved** Read as 0; should be written with 0.

SMU_core FSP Configuration Register

SMU_AGiFSP (i=0)

SMU_core FSP Configuration Register **(190_H+i*4)** **Application Reset Value: 0000 0000_H**

31	30	29	28	27	26	25	24	23	22	21	20	19	18	17	16
0	**0**	**0**	**0**	**0**	**0**	**0**	**FE24**	**FE23**	**FE22**	**0**	**0**	**0**	**0**	**0**	**0**
r	r	r	r	r	r	r	rw	rw	rw	r	r	r	r	r	r

15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
0	**FE14**	**FE13**	**FE12**	**FE11**	**FE10**	**FE9**	**FE8**	**FE7**	**FE6**	**FE5**	**FE4**	**0**	**FE2**	**FE1**	**FE0**
r	rw	rw	rw	rw	rw	rw	rw	rw	rw	rw	rw	r	rw	rw	rw

Field	Bits	Type	Description
FEz (z=0-2,4-14,22-24)	z	rw	**Fault signaling configuration flag for alarm z belonging to alarm group i.** 0_B FSP disabled for this alarm event 1_B FSP enabled for this alarm event
0	31, 30, 29, 28, 27, 26, 25, 21, 20, 19, 18, 17, 16, 15, 3	r	**Reserved** Read as 0; should be written with 0.

SMU_AGiFSP (i=1-5)

SMU_core FSP Configuration Register **(190_H+i*4)** **Application Reset Value: 0000 0000_H**

31	30	29	28	27	26	25	24	23	22	21	20	19	18	17	16
0	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
r	r	r	r	r	r	r	r	r	r	r	r	r	r	r	r

15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
0	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
r	r	r	r	r	r	r	r	r	r	r	r	r	r	r	r

Field	Bits	Type	Description
0	31, 30, 29, 28, 27, 26, 25, 24, 23, 22, 21, 20, 19, 18, 17, 16, 15, 14, 13, 12, 11, 10, 9, 8, 7, 6, 5, 4, 3, 2, 1, 0	r	**Reserved** Read as 0; should be written with 0.

SMU_AGiFSP (i=6)

SMU_core FSP Configuration Register **(190_H+i*4)** **Application Reset Value: 0000 0000_H**

31	30	29	28	27	26	25	24	23	22	21	20	19	18	17	16
0	**0**	**0**	**0**	**0**	**0**	**FE25**	**FE24**	**FE23**	**0**	**FE21**	**FE20**	**FE19**	**FE18**	**FE17**	**FE16**
r	r	r	r	r	r	rw	rw	rw	r	rw	rw	rw	rw	rw	rw

15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
FE15	**FE14**	**FE13**	**FE12**	**FE11**	**FE10**	**0**	**FE8**	**FE7**	**FE6**	**FE5**	**FE4**	**0**	**FE2**	**FE1**	**FE0**
rw	rw	rw	rw	rw	rw	r	rw	rw	rw	rw	rw	r	rw	rw	rw

Field	Bits	Type	Description
FEz (z=0-2,4-8,10-21,23-25)	z	rw	**Fault signaling configuration flag for alarm z belonging to alarm group i.** 0_B FSP disabled for this alarm event 1_B FSP enabled for this alarm event
0	31, 30, 29, 28, 27, 26, 22, 9, 3	r	**Reserved** Read as 0; should be written with 0.

SMU_AGiFSP (i=7)

SMU_core FSP Configuration Register **(190_H+i*4)** **Application Reset Value: 0000 0000_H**

31	30	29	28	27	26	25	24	23	22	21	20	19	18	17	16
FE31	**FE30**	**FE29**	**FE28**	**FE27**	**FE26**	**FE25**	**FE24**	**FE23**	**FE22**	**0**	**FE20**	**0**	**0**	**FE17**	**0**
rw	rw	rw	rw	rw	rw	rw	rw	rw	rw	r	rw	r	r	rw	r

15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
0	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**FE2**	**FE1**	**FE0**
r	r	r	r	r	r	r	r	r	r	r	r	r	rw	rw	rw

Field	Bits	Type	Description
FEz (z=0-2,17,20,22-31)	z	rw	**Fault signaling configuration flag for alarm z belonging to alarm group i.** 0_B FSP disabled for this alarm event 1_B FSP enabled for this alarm event
0	21, 19, 18, 16, 15, 14, 13, 12, 11, 10, 9, 8, 7, 6, 5, 4, 3	r	**Reserved** Read as 0; should be written with 0.

SMU_AGiFSP (i=8)

SMU_core FSP Configuration Register **(190_H+i*4)** **Application Reset Value: 0000 0000_H**

31	30	29	28	27	26	25	24	23	22	21	20	19	18	17	16
FE31	**FE30**	**FE29**	**FE28**	**FE27**	**FE26**	**FE25**	**0**	**FE23**	**FE22**	**FE21**	**FE20**	**FE19**	**FE18**	**FE17**	**FE16**
rw	rw	rw	rw	rw	rw	rw	r	rw	rw	rw	rw	rw	rw	rw	rw

15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
0	**0**	**0**	**0**	**0**	**FE10**	**FE9**	**FE8**	**FE7**	**FE6**	**FE5**	**FE4**	**FE3**	**FE2**	**FE1**	**FE0**
r	r	r	r	r	rw	rw	rw	rw	rw	rw	rw	rw	rw	rw	rw

Field	Bits	Type	Description
FEz (z=0-10,16-23,25-31)	z	rw	**Fault signaling configuration flag for alarm z belonging to alarm group i.** 0_B FSP disabled for this alarm event 1_B FSP enabled for this alarm event
0	24, 15, 14, 13, 12, 11	r	**Reserved** Read as 0; should be written with 0.

SMU_AGiFSP (i=9)

SMU_core FSP Configuration Register **(190_H+i*4)** **Application Reset Value: 0000 0000_H**

31	30	29	28	27	26	25	24	23	22	21	20	19	18	17	16
0	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**FE17**	**FE16**
r	r	r	r	r	r	r	r	r	r	r	r	r	r	rw	rw

15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
FE15	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**FE5**	**0**	**FE3**	**0**	**FE1**	**FE0**
rw	r	r	r	r	r	r	r	r	r	rw	r	rw	r	rw	rw

Field	Bits	Type	Description
FEz (z=0-1,3,5,15-17)	z	rw	**Fault signaling configuration flag for alarm z belonging to alarm group i.** 0_B FSP disabled for this alarm event 1_B FSP enabled for this alarm event
0	31, 30, 29, 28, 27, 26, 25, 24, 23, 22, 21, 20, 19, 18, 14, 13, 12, 11, 10, 9, 8, 7, 6, 4, 2	r	**Reserved** Read as 0; should be written with 0.

SMU_AGiFSP (i=10)

SMU_core FSP Configuration Register **(190_H+i*4)** **Application Reset Value: 0003 0000_H**

31	30	29	28	27	26	25	24	23	22	21	20	19	18	17	16
0	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**FE22**	**FE21**	**FE20**	**0**	**FE18**	**FE17**	**FE16**
r	r	r	r	r	r	r	r	r	rw	rw	rw	r	rw	rw	rw

15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
FE15	**FE14**	**FE13**	**FE12**	**FE11**	**FE10**	**FE9**	**FE8**	**FE7**	**FE6**	**FE5**	**FE4**	**FE3**	**FE2**	**FE1**	**FE0**
rw	rw	rw	rw	rw	rw	rw	rw	rw	rw	rw	rw	rw	rw	rw	rw

Field	Bits	Type	Description
FEz (z=0-18,20-22)	z	rw	**Fault signaling configuration flag for alarm z belonging to alarm group i.** 0_B FSP disabled for this alarm event 1_B FSP enabled for this alarm event
0	31, 30, 29, 28, 27, 26, 25, 24, 23, 19	r	**Reserved** Read as 0; should be written with 0.

SMU_AGiFSP (i=11)

SMU_core FSP Configuration Register **(190_H+i*4)** **Application Reset Value: 0000 0000_H**

31	30	29	28	27	26	25	24	23	22	21	20	19	18	17	16
0	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
r	r	r	r	r	r	r	r	r	r	r	r	r	r	r	r

15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
0	**0**	**FE13**	**FE12**	**0**	**0**	**FE9**	**0**	**0**	**0**	**FE5**	**FE4**	**FE3**	**FE2**	**0**	**0**
r	r	rw	rw	r	r	rw	r	r	r	rw	rw	rw	rw	r	r

Field	Bits	Type	Description
FEz (z=2-5,9,12-13)	z	rw	**Fault signaling configuration flag for alarm z belonging to alarm group i.** 0_B FSP disabled for this alarm event 1_B FSP enabled for this alarm event
0	31, 30, 29, 28, 27, 26, 25, 24, 23, 22, 21, 20, 19, 18, 17, 16, 15, 14, 11, 10, 8, 7, 6, 1, 0	r	**Reserved** Read as 0; should be written with 0.

Alarm Status Register

Refer to Alarm Status Registers for the conditions to set and reset the status flag by software.

SMU_AGi (i=0)

Alarm Status Register **($1C0_H$+i*4)** **Application Reset Value: 0000 0000$_H$**

31	30	29	28	27	26	25	24	23	22	21	20	19	18	17	16
0	**0**	**0**	**0**	**0**	**0**	**0**	**SF24**	**SF23**	**SF22**	**0**	**0**	**0**	**0**	**0**	**0**
r	r	r	r	r	r	r	rwh	rwh	rwh	r	r	r	r	r	r

15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
0	**SF14**	**SF13**	**SF12**	**SF11**	**SF10**	**SF9**	**SF8**	**SF7**	**SF6**	**SF5**	**SF4**	**0**	**SF2**	**SF1**	**SF0**
r	rwh	rwh	rwh	rwh	rwh	rwh	rwh	rwh	rwh	rwh	rwh	r	rwh	rwh	rwh

Field	Bits	Type	Description
SFz (z=0-2,4-14,22-24)	z	rwh	**Status flag for alarm z belonging to alarm group i.** 0_B Status flag z does not report a fault condition 1_B Status flag z reports a fault condition
0	31, 30, 29, 28, 27, 26, 25, 21, 20, 19, 18, 17, 16, 15, 3	r	**Reserved** Read as 0; should be written with 0.

SMU_AGi (i=1-5)

Alarm Status Register **($1C0_H$+i*4)** **Application Reset Value: 0000 0000$_H$**

31	30	29	28	27	26	25	24	23	22	21	20	19	18	17	16
0	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
r	r	r	r	r	r	r	r	r	r	r	r	r	r	r	r

15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
0	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
r	r	r	r	r	r	r	r	r	r	r	r	r	r	r	r

Field	Bits	Type	Description
0	31, 30, 29, 28, 27, 26, 25, 24, 23, 22, 21, 20, 19, 18, 17, 16, 15, 14, 13, 12, 11, 10, 9, 8, 7, 6, 5, 4, 3, 2, 1, 0	r	**Reserved** Read as 0; should be written with 0.

SMU_AGi (i=6)

Alarm Status Register **($1C0_H$+i*4)** **Application Reset Value: 0000 0000_H**

31	30	29	28	27	26	25	24	23	22	21	20	19	18	17	16
0	**0**	**0**	**0**	**0**	**0**	**SF25**	**SF24**	**SF23**	**0**	**SF21**	**SF20**	**SF19**	**SF18**	**SF17**	**SF16**
r	r	r	r	r	r	rwh	rwh	rwh	r	rwh	rwh	rwh	rwh	rwh	rwh

15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
SF15	**SF14**	**SF13**	**SF12**	**SF11**	**SF10**	**0**	**SF8**	**SF7**	**SF6**	**SF5**	**SF4**	**0**	**SF2**	**SF1**	**SF0**
rwh	rwh	rwh	rwh	rwh	rwh	r	rwh	rwh	rwh	rwh	rwh	r	rwh	rwh	rwh

Field	Bits	Type	Description
SFz (z=0-2,4-8,10-21,23-25)	z	rwh	**Status flag for alarm z belonging to alarm group i.** 0_B Status flag z does not report a fault condition 1_B Status flag z reports a fault condition
0	31, 30, 29, 28, 27, 26, 22, 9, 3	r	**Reserved** Read as 0; should be written with 0.

SMU_AGi (i=7)

Alarm Status Register **($1C0_H$+i*4)** **Application Reset Value: 0000 0000_H**

31	30	29	28	27	26	25	24	23	22	21	20	19	18	17	16
SF31	**SF30**	**SF29**	**SF28**	**SF27**	**SF26**	**SF25**	**SF24**	**SF23**	**SF22**	**0**	**SF20**	**0**	**0**	**SF17**	**0**
rwh	rwh	rwh	rwh	rwh	rwh	rwh	rwh	rwh	rwh	r	rwh	r	r	rwh	r

15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
0	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**SF2**	**SF1**	**SF0**
r	r	r	r	r	r	r	r	r	r	r	r	r	rwh	rwh	rwh

Field	Bits	Type	Description
SFz (z=0-2,17,20,22-31)	z	rwh	**Status flag for alarm z belonging to alarm group i.** 0_B Status flag z does not report a fault condition 1_B Status flag z reports a fault condition
0	21, 19, 18, 16, 15, 14, 13, 12, 11, 10, 9, 8, 7, 6, 5, 4, 3	r	**Reserved** Read as 0; should be written with 0.

SMU_AGi (i=8)

Alarm Status Register **($1C0_H$+i*4)** **Application Reset Value: 0000 0000$_H$**

31	30	29	28	27	26	25	24	23	22	21	20	19	18	17	16
SF31	**SF30**	**SF29**	**SF28**	**SF27**	**SF26**	**SF25**	**0**	**SF23**	**SF22**	**SF21**	**SF20**	**SF19**	**SF18**	**SF17**	**SF16**
rwh	rwh	rwh	rwh	rwh	rwh	rwh	r	rwh	rwh	rwh	rwh	rwh	rwh	rwh	rwh

15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
0	**0**	**0**	**0**	**0**	**SF10**	**SF9**	**SF8**	**SF7**	**SF6**	**SF5**	**SF4**	**SF3**	**SF2**	**SF1**	**SF0**
r	r	r	r	r	rwh	rwh	rwh	rwh	rwh	rwh	rwh	rwh	rwh	rwh	rwh

Field	Bits	Type	Description
SFz (z=0-10,16-23,25-31)	z	rwh	**Status flag for alarm z belonging to alarm group i.** 0_B Status flag z does not report a fault condition 1_B Status flag z reports a fault condition
0	24, 15, 14, 13, 12, 11	r	**Reserved** Read as 0; should be written with 0.

SMU_AGi (i=9)

Alarm Status Register **($1C0_H$+i*4)** **Application Reset Value: 0000 0000$_H$**

31	30	29	28	27	26	25	24	23	22	21	20	19	18	17	16
0	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**SF17**	**SF16**
r	r	r	r	r	r	r	r	r	r	r	r	r	r	rwh	rwh

15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
SF15	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**SF5**	**0**	**SF3**	**0**	**SF1**	**SF0**
rwh	r	r	r	r	r	r	r	r	r	rwh	r	rwh	r	rwh	rwh

Field	Bits	Type	Description
SFz (z=0-1,3,5,15-17)	z	rwh	**Status flag for alarm z belonging to alarm group i.** 0_B Status flag z does not report a fault condition 1_B Status flag z reports a fault condition
0	31, 30, 29, 28, 27, 26, 25, 24, 23, 22, 21, 20, 19, 18, 14, 13, 12, 11, 10, 9, 8, 7, 6, 4, 2	r	**Reserved** Read as 0; should be written with 0.

SMU_AGi (i=10)

Alarm Status Register **($1C0_H$+i*4)** **Application Reset Value: 0000 0000$_H$**

31	30	29	28	27	26	25	24	23	22	21	20	19	18	17	16
0	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**SF22**	**SF21**	**SF20**	**0**	**SF18**	**SF17**	**SF16**
r	r	r	r	r	r	r	r	r	rwh	rwh	rwh	r	rwh	rwh	rwh

15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
SF15	**SF14**	**SF13**	**SF12**	**SF11**	**SF10**	**SF9**	**SF8**	**SF7**	**SF6**	**SF5**	**SF4**	**SF3**	**SF2**	**SF1**	**SF0**
rwh	rwh	rwh	rwh	rwh	rwh	rwh	rwh	rwh	rwh	rwh	rwh	rwh	rwh	rwh	rwh

Field	Bits	Type	Description
SFz (z=0-18,20-22)	z	rwh	**Status flag for alarm z belonging to alarm group i.** 0_B Status flag z does not report a fault condition 1_B Status flag z reports a fault condition
0	31, 30, 29, 28, 27, 26, 25, 24, 23, 19	r	**Reserved** Read as 0; should be written with 0.

SMU_AGi (i=11)

Alarm Status Register **($1C0_H$+i*4)** **Application Reset Value: 0000 0000$_H$**

31	30	29	28	27	26	25	24	23	22	21	20	19	18	17	16
0	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
r	r	r	r	r	r	r	r	r	r	r	r	r	r	r	r

15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
0	**0**	**SF13**	**SF12**	**0**	**0**	**SF9**	**0**	**0**	**0**	**SF5**	**SF4**	**SF3**	**SF2**	**0**	**0**
r	r	rwh	rwh	r	r	rwh	r	r	r	rwh	rwh	rwh	rwh	r	r

Field	Bits	Type	Description
SFz (z=2-5,9,12-13)	z	rwh	**Status flag for alarm z belonging to alarm group i.** 0_B Status flag z does not report a fault condition 1_B Status flag z reports a fault condition
0	31, 30, 29, 28, 27, 26, 25, 24, 23, 22, 21, 20, 19, 18, 17, 16, 15, 14, 11, 10, 8, 7, 6, 1, 0	r	**Reserved** Read as 0; should be written with 0.

Alarm Debug Register

Note: Writing to this register has no effect

SMU_ADi (i=0)
Alarm Debug Register **(200_H+i*4)** **PowerOn Reset Value: 0000 0000_H**

31	30	29	28	27	26	25	24	23	22	21	20	19	18	17	16
0	**0**	**0**	**0**	**0**	**0**	**0**	**DF24**	**DF23**	**DF22**	**0**	**0**	**0**	**0**	**0**	**0**
r	r	r	r	r	r	r	rh	rh	rh	r	r	r	r	r	r

15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
0	**DF14**	**DF13**	**DF12**	**DF11**	**DF10**	**DF9**	**DF8**	**DF7**	**DF6**	**DF5**	**DF4**	**0**	**DF2**	**DF1**	**DF0**
r	rh	rh	rh	rh	rh	rh	rh	rh	rh	rh	rh	r	rh	rh	rh

Field	Bits	Type	Description
DFz (z=0-2,4-14,22-24)	z	rh	**Diagnosis flag for alarm z belonging to alarm group i.** The diagnosis registers make a snapshot of the alarm group status registers when either the executed alarm action is a reset or a state machine transition to FAULT state takes place. 0_B Status flag z does not report a fault condition 1_B Status flag z reports a fault condition
0	31, 30, 29, 28, 27, 26, 25, 21, 20, 19, 18, 17, 16, 15, 3	r	**Reserved** Read as 0; should be written with 0.

SMU_ADi (i=1-5)
Alarm Debug Register **(200_H+i*4)** **PowerOn Reset Value: 0000 0000_H**

31	30	29	28	27	26	25	24	23	22	21	20	19	18	17	16
0	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
r	r	r	r	r	r	r	r	r	r	r	r	r	r	r	r

15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
0	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
r	r	r	r	r	r	r	r	r	r	r	r	r	r	r	r

Field	Bits	Type	Description
0	31, 30, 29, 28, 27, 26, 25, 24, 23, 22, 21, 20, 19, 18, 17, 16, 15, 14, 13, 12, 11, 10, 9, 8, 7, 6, 5, 4, 3, 2, 1, 0	r	**Reserved** Read as 0; should be written with 0.

SMU_ADi (i=6)

Alarm Debug Register **(200_H+i*4)** **PowerOn Reset Value: 0000 0000_H**

31	30	29	28	27	26	25	24	23	22	21	20	19	18	17	16
0	**0**	**0**	**0**	**0**	**0**	**DF25**	**DF24**	**DF23**	**0**	**DF21**	**DF20**	**DF19**	**DF18**	**DF17**	**DF16**
r	r	r	r	r	r	rh	rh	rh	r	rh	rh	rh	rh	rh	rh
15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
DF15	**DF14**	**DF13**	**DF12**	**DF11**	**DF10**	**0**	**DF8**	**DF7**	**DF6**	**DF5**	**DF4**	**0**	**DF2**	**DF1**	**DF0**
rh	rh	rh	rh	rh	rh	r	rh	rh	rh	rh	rh	r	rh	rh	rh

Field	Bits	Type	Description
DFz (z=0-2,4-8,10-21,23-25)	z	rh	**Diagnosis flag for alarm z belonging to alarm group i.** The diagnosis registers make a snapshot of the alarm group status registers when either the executed alarm action is a reset or a state machine transition to FAULT state takes place. 0_B Status flag z does not report a fault condition 1_B Status flag z reports a fault condition
0	31, 30, 29, 28, 27, 26, 22, 9, 3	r	**Reserved** Read as 0; should be written with 0.

SMU_ADi (i=7)

Alarm Debug Register **(200_H+i*4)** **PowerOn Reset Value: 0000 0000_H**

31	30	29	28	27	26	25	24	23	22	21	20	19	18	17	16
DF31	**DF30**	**DF29**	**DF28**	**DF27**	**DF26**	**DF25**	**DF24**	**DF23**	**DF22**	**0**	**DF20**	**0**	**0**	**DF17**	**0**
rh	rh	rh	rh	rh	rh	rh	rh	rh	rh	r	rh	r	r	rh	r
15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
0	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**DF2**	**DF1**	**DF0**
r	r	r	r	r	r	r	r	r	r	r	r	r	rh	rh	rh

Field	Bits	Type	Description
DFz (z=0-2,17,20,22-31)	z	rh	**Diagnosis flag for alarm z belonging to alarm group i.** The diagnosis registers make a snapshot of the alarm group status registers when either the executed alarm action is a reset or a state machine transition to FAULT state takes place. 0_B Status flag z does not report a fault condition 1_B Status flag z reports a fault condition
0	21, 19, 18, 16, 15, 14, 13, 12, 11, 10, 9, 8, 7, 6, 5, 4, 3	r	**Reserved** Read as 0; should be written with 0.

SMU_ADi (i=8)
Alarm Debug Register **(200_H+i*4)** **PowerOn Reset Value: 0000 0000$_H$**

31	30	29	28	27	26	25	24	23	22	21	20	19	18	17	16
DF31	**DF30**	**DF29**	**DF28**	**DF27**	**DF26**	**DF25**	**0**	**DF23**	**DF22**	**DF21**	**DF20**	**DF19**	**DF18**	**DF17**	**DF16**
rh	rh	rh	rh	rh	rh	rh	r	rh	rh	rh	rh	rh	rh	rh	rh
15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
0	**0**	**0**	**0**	**0**	**DF10**	**DF9**	**DF8**	**DF7**	**DF6**	**DF5**	**DF4**	**DF3**	**DF2**	**DF1**	**DF0**
r	r	r	r	r	rh	rh	rh	rh	rh	rh	rh	rh	rh	rh	rh

Field	Bits	Type	Description
DFz (z=0-10,16-23,25-31)	z	rh	**Diagnosis flag for alarm z belonging to alarm group i.** The diagnosis registers make a snapshot of the alarm group status registers when either the executed alarm action is a reset or a state machine transition to FAULT state takes place. 0_B Status flag z does not report a fault condition 1_B Status flag z reports a fault condition
0	24, 15, 14, 13, 12, 11	r	**Reserved** Read as 0; should be written with 0.

SMU_ADi (i=9)
Alarm Debug Register **(200_H+i*4)** **PowerOn Reset Value: 0000 0000$_H$**

31	30	29	28	27	26	25	24	23	22	21	20	19	18	17	16
0	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**DF17**	**DF16**
r	r	r	r	r	r	r	r	r	r	r	r	r	r	rh	rh
15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
DF15	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**DF5**	**0**	**DF3**	**0**	**DF1**	**DF0**
rh	r	r	r	r	r	r	r	r	r	rh	r	rh	r	rh	rh

Field	Bits	Type	Description
DFz (z=0-1,3,5,15-17)	z	rh	**Diagnosis flag for alarm z belonging to alarm group i.** The diagnosis registers make a snapshot of the alarm group status registers when either the executed alarm action is a reset or a state machine transition to FAULT state takes place. 0_B Status flag z does not report a fault condition 1_B Status flag z reports a fault condition
0	31, 30, 29, 28, 27, 26, 25, 24, 23, 22, 21, 20, 19, 18, 14, 13, 12, 11, 10, 9, 8, 7, 6, 4, 2	r	**Reserved** Read as 0; should be written with 0.

SMU_ADi (i=10)
Alarm Debug Register **(200_H+i*4)** **PowerOn Reset Value: 0000 0000_H**

31	30	29	28	27	26	25	24	23	22	21	20	19	18	17	16
0	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**DF22**	**DF21**	**DF20**	**0**	**DF18**	**DF17**	**DF16**
r	r	r	r	r	r	r	r	r	rh	rh	rh	r	rh	rh	rh
15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
DF15	**DF14**	**DF13**	**DF12**	**DF11**	**DF10**	**DF9**	**DF8**	**DF7**	**DF6**	**DF5**	**DF4**	**DF3**	**DF2**	**DF1**	**DF0**
rh	rh	rh	rh	rh	rh	rh	rh	rh	rh	rh	rh	rh	rh	rh	rh

Field	Bits	Type	Description
DFz (z=0-18,20-22)	z	rh	**Diagnosis flag for alarm z belonging to alarm group i.** The diagnosis registers make a snapshot of the alarm group status registers when either the executed alarm action is a reset or a state machine transition to FAULT state takes place. 0_B Status flag z does not report a fault condition 1_B Status flag z reports a fault condition
0	31, 30, 29, 28, 27, 26, 25, 24, 23, 19	r	**Reserved** Read as 0; should be written with 0.

SMU_ADi (i=11)
Alarm Debug Register **(200_H+i*4)** **PowerOn Reset Value: 0000 0000_H**

31	30	29	28	27	26	25	24	23	22	21	20	19	18	17	16
0	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
r	r	r	r	r	r	r	r	r	r	r	r	r	r	r	r

15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
0	**0**	**DF13**	**DF12**	**0**	**0**	**DF9**	**0**	**0**	**0**	**DF5**	**DF4**	**DF3**	**DF2**	**0**	**0**
r	r	rh	rh	r	r	rh	r	r	r	rh	rh	rh	rh	r	r

Field	Bits	Type	Description
DFz (z=2-5,9,12-13)	z	rh	**Diagnosis flag for alarm z belonging to alarm group i.** The diagnosis registers make a snapshot of the alarm group status registers when either the executed alarm action is a reset or a state machine transition to FAULT state takes place. 0_B Status flag z does not report a fault condition 1_B Status flag z reports a fault condition
0	31, 30, 29, 28, 27, 26, 25, 24, 23, 22, 21, 20, 19, 18, 17, 16, 15, 14, 11, 10, 8, 7, 6, 1, 0	r	**Reserved** Read as 0; should be written with 0.

15.4 TC33x/TC32x Specific Alarm Mapping

This section defines the mapping between the alarm signals at the input of the SMU in the TC33x/TC32x and the alarm. For that purpose alarm groups are defined. There is a one-to-one relationship between an alarm group index ALM<n>[index] signal and the alarm configuration and status registers (AG<n>[index]). A group is made of up to 32 alarms; for convenience some entries may be reserved.

15.4.1 TC33x/TC32x Specific Pre-Alarms

There are situations where it is not necessary to implement configuration and status registers for every internal alarm event; a typical case is a module with multiple SRAMs. For that, alarm inputs, called pre-alarms, are combined together with a logical OR internally in SMU. The result is then connected to the alarm group.

MTU Pre-Alarm Mapping

Table 163 MTU Pre-Alarm Mapping

Alarm Source	Logic	Alarm Index
CPU0.DMEM - Correctable error CPU0.DLMU - Correctable error	OR	ALM0[9]
CPU0.DMEM - Uncorrectable Critical error CPU0.DLMU - Uncorrectable Critical error	OR	ALM0[10]
CPU0.DMEM - Miscellaneous error CPU0.DLMU - Miscellaneous error	OR	ALM0[11]
SCR.XRAM - Correctable error SCR.RAMINT - Correctable error	OR	ALM6[19]
SCR.XRAM - Uncorrectable critical error SCR.RAMINT - Uncorrectable Critical error	OR	ALM6[20]
SCR.XRAM - Miscellaneous error SCR.RAMINT - Miscellaneous error	OR	ALM6[21]
CAN.MCAN0 - Correctable error CAN.MCAN1 - Correctable error	OR	ALM6[16]
CAN.MCAN0 - Uncorrectable critical error CAN.MCAN1 - Uncorrectable critical error	OR	ALM6[17]
CAN.MCAN0 - Miscellaneous error CAN.MCAN1 - Miscellaneous error	OR	ALM6[18]
ERAY.OBF0 - Correctable error ERAY.TBF_IBF0 - Correctable error ERAY.MBF0 - Correctable error	OR	ALM6[13]
ERAY.OBF0 - Uncorrectable Critical error ERAY.TBF_IBF0 - Uncorrectable Critical error ERAY.MBF0 - Uncorrectable Critical error	OR	ALM6[14]
ERAY.OBF0 - Miscellaneous error ERAY.TBF_IBF0 - Miscellaneous error ERAY.MBF0 - Miscellaneous error	OR	ALM6[15]

Safety Flip-flop Pre-Alarm Mapping

Table 164 Safety Flip-flop Pre-Alarm Mapping

Alarm Source	Logic	Alarm Index
MTU - Safety flip-flop uncorrectable error IOM - Safety flip-flop uncorrectable error IR - Safety flip-flop uncorrectable error SCU - Safety flip-flop uncorrectable error PMS - Safety flip-flop uncorrectable error DMA - Safety flip-flop uncorrectable error SYS_PLL.PER_PLL - Safety flip-flop uncorrectable error CERBERUS - Safety flip-flop uncorrectable error CCU - Safety flip-flop uncorrectable error SMU_core - Safety flip-flop uncorrectable error	OR	ALM10[21]

Module Access Enable Pre-Alarm Mapping

Table 165 Module Access Enable Pre-Alarm Mapping

Alarm Source	Logic	Alarm Index
IR - Access Enable error HSM - Access Enable error	OR	ALM10[22]

PMS Pre-Alarm Mapping

Table 166 PMS Pre-Alarm Mapping

Alarm Source	Logic	Alarm Index
PMS - Uncorrectable error SMU.SMU_stdby - Safety flip-flop Uncorrectable error	OR	ALM21[7]
HSM.VDD - Under Voltage HSM.VDDP3 - Under Voltage HSM.VEXT - Under Voltage	OR	ALM9[17]
HSM.VDD - Over Voltage HSM.VDDP3 - Over Voltage HSM.VEXT - Over Voltage	OR	ALM9[16]
PMS.VDD - Over voltage PMS.VDDPD - Over voltage PMS.VDDP3 - Over voltage PMS.VDDM - Over voltage PMS.VEXT - Over voltage PMS.VEVRSB - Over voltage	OR	ALM9[3]
PMS.VDD - Under voltage PMS.VDDPD - Under voltage PMS.VDDP3 - Under voltage PMS.VDDM - Under voltage PMS.VEXT - Under voltage PMS.VEVRSB - Under voltage	OR	ALM9[5]
PMS.EVRC - Short to Low PMS.EVRC - Short to High PMS.EVR33 - Short to Low PMS.EVR33 - Short to High	OR	ALM9[15]

15.4.2 TC33x/TC32x Specific Alarms

The following tables fully specify the mapping between the alarms provided by the safety mechanisms implemented by the microcontroller and the alarm groups.

In the following tables the column “Safety Mechanism & Error Indication” indicates to which safety mechanism the alarm is related. If multiple safety mechanisms are indicated, the alarm corresponds to the detection of an error by one of the listed safety mechanisms.

For some safety mechanisms different terms are used in the microcontroller documents; the following list provides a guideline between the term used in the alarm tables and the other definitions, in bold the definition used in the alarm tables.

- Register Access Protection or alternatively called Safety Register Protection

  - Purpose: Monitors the master identifier of a given bus-master during a write access to a configuration register. The master identifier is a hard-coded information that is provided during any bus access. If the master identifier is not enabled by the Register Access Protection configuration registers (ACCEN0) the write is aborted. Most of the modules do not provide a dedicated alarm for this event and instead will generate a bus error. Therefore the Register Access Protection is only documented where a dedicated alarm is available.
  - Note: for peripherals that implement memory-mapped SRAMs, the write accesses to the memories are monitored as well.
- Bus-level Memory Protection Unit (MPU) or alternatively called Safety Memory Protection
  - Purpose: Monitors the master identifier and the address of a given bus-master during a write access to a local SRAM. The master identifier is a hard-coded information that is provided during any bus access. If the master identifier is enabled by the Bus-level MPU configuration registers and the address is within the valid address range the write is accepted, otherwise the write is aborted and a Bus-level MPU alarm is issued.
  - The SRAMs monitored are the {PSPR, DSPR, DLMU} SRAMs of each CPU and the LMU SRAMs when available in the product.

Alarm Mapping related to ALM0 group

Table 167 Alarm Mapping related to ALM0 group

Alarm Index	Module	Safety Mechanism & Alarm Indication
ALM0[0]	cpu_pfi_pfrwb_0	Safety Mechanism: Lockstep CPU Alarm: CPU0 Lockstep Comparator Error Alarm Type: Pulse Note: For non-Lockstep CPUs (CPUs where no lockstep is implemented or where the lockstep is disabled by the user), this alarm only covers faults that might happen on the access path to the CPU side PFLASH bank. For more details about the CPU lockstep alarm, please refer to the CPU chapter.
ALM0[1]	cpu_pfi_pfrwb_0	Safety Mechanism: Bus-level Memory Protection Unit / Register Access Protection Alarm: CPU0 Bus-level MPU violation / Access Protection violation Alarm Type: Pulse
ALM0[2]	cpu_pfi_pfrwb_0	Safety Mechanism: PFLASH Read Path Monitor Alarm: CPU0 PFLASH0 Read Path Error Alarm Type: Pulse
ALM0[3]	Reserved	Reserved
ALM0[4]	MTU	Safety Mechanism: SRAM Monitor Alarm: CPU0 PCACHE TAG Uncorrectable critical error detection Alarm Type: Level
ALM0[5]	MTU	Safety Mechanism: SRAM Monitor Alarm: CPU0 PCACHE TAG Miscellaneous error detection Alarm Type: Level
ALM0[6]	MTU	Safety Mechanism: SRAM Monitor Alarm: CPU0 PSPR/PCACHE Single bit error correction Alarm Type: Level

Table 167 Alarm Mapping related to ALM0 group (cont'd)

Alarm Index	Module	Safety Mechanism & Alarm Indication
ALM0[7]	MTU	Safety Mechanism: SRAM Monitor Alarm: CPU0 PSPR/PCACHE Uncorrectable critical error detection Alarm Type: Level
ALM0[8]	MTU	Safety Mechanism: SRAM Monitor Alarm: CPU0 PSPR/PCACHE Miscellaneous critical error detection Alarm Type: Level
ALM0[9]	**Page 23**	Safety Mechanism: SRAM Monitor Alarm: CPU0 DSPR/DCACHE/DLMU Single bit error correction Alarm Type: Level
ALM0[10]	**Page 23**	Safety Mechanism: SRAM Monitor Alarm: CPU0 DSPR/DCACHE/DLMU Uncorrectable critical error detection Alarm Type: Level
ALM0[11]	**Page 23**	Safety Mechanism(s): SRAM Monitor Alarm: CPU0 DSPR/DCACHE/DLMU Miscellaneous error detection Alarm Type: Level
ALM0[12]	MTU	Safety Mechanism: SRAM Monitor Alarm: CPU0 DCACHE TAG Single bit error correction Alarm Type: Level
ALM0[13]	MTU	Safety Mechanism: SRAM Monitor Alarm: CPU0 DCACHE TAG Uncorrectable critical error detection Alarm Type: Level
ALM0[14]	MTU	Safety Mechanism: SRAM Monitor Alarm: CPU0 DCACHE TAG Miscellaneous error detection Alarm Type: Level
ALM0[21:15]	Reserved	Reserved
ALM0[22]	cpu_pfi_pfrwb_0	Safety Mechanism: SRI End-to-End EDC Alarm: CPU0 Instruction Fetch SRI Interface EDC Error Alarm Type: Pulse
ALM0[23]	cpu_pfi_pfrwb_0	Safety Mechanism: SRI End-to-End EDC Alarm: CPU0 Data SRI Interface (Load/Store) EDC Error Alarm Type: Pulse
ALM0[24]	cpu_pfi_pfrwb_0	Safety Mechanism: Exception Monitor Alarm: CPU0 exception (interrupt/trap) Alarm Type: Pulse
ALM0[31:25]	Reserved	Reserved

Alarm Mapping related to ALM1 group

Table 168 Alarm Mapping related to ALM1 group

Alarm Index	Module	Safety Mechanism & Alarm Indication
ALM1[2:0]	Reserved	Reserved
ALM1[3]	Reserved	Reserved

Table 168 Alarm Mapping related to ALM1 group (cont'd)

Alarm Index	Module	Safety Mechanism & Alarm Indication
ALM1[14:4]	Reserved	Reserved
ALM1[21:15]	Reserved	Reserved
ALM1[24:22]	Reserved	Reserved
ALM1[31:25]	Reserved	Reserved

Alarm Mapping related to ALM2 group

Table 169 Alarm Mapping related to ALM2 group

Alarm Index	Module	Safety Mechanism & Alarm Indication
ALM2[0]	Reserved	Reserved
ALM2[1]	Reserved	Reserved
ALM2[2]	Reserved	Reserved
ALM2[3]	Reserved	Reserved
ALM2[14:4]	Reserved	Reserved
ALM2[21:15]	Reserved	Reserved
ALM2[24:22]	Reserved	Reserved
ALM2[31:25]	Reserved	Reserved

Alarm Mapping related to ALM3 group

Table 170 Alarm Mapping related to ALM3 group

Alarm Index	Module	Safety Mechanism & Alarm Indication
ALM3[0]	Reserved	Reserved
ALM3[1]	Reserved	Reserved
ALM3[2]	Reserved	Reserved
ALM3[3]	Reserved	Reserved
ALM3[14:4]	Reserved	Reserved
ALM3[21:15]	Reserved	Reserved
ALM3[24:22]	Reserved	Reserved
ALM3[31:25]	Reserved	Reserved

Alarm Mapping related to ALM4 group

Table 171 Alarm Mapping related to ALM4 group

Alarm Index	Module	Safety Mechanism & Alarm Indication
ALM4[2:0]	Reserved	Reserved
ALM4[3]	Reserved	Reserved
ALM4[14:4]	Reserved	Reserved
ALM4[21:15]	Reserved	Reserved

Table 171 Alarm Mapping related to ALM4 group (cont'd)

Alarm Index	Module	Safety Mechanism & Alarm Indication
ALM4[24:22]	Reserved	Reserved
ALM4[31:25]	Reserved	Reserved

Alarm Mapping related to ALM5 group

Table 172 Alarm Mapping related to ALM5 group

Alarm Index	Module	Safety Mechanism & Alarm Indication
ALM5[2:0]	Reserved	Reserved
ALM5[3]	Reserved	Reserved
ALM5[14:4]	Reserved	Reserved
ALM5[21:15]	Reserved	Reserved
ALM5[24:22]	Reserved	Reserved
ALM5[31:25]	Reserved	Reserved

Alarm Mapping related to ALM6 group

Table 173 Alarm Mapping related to ALM6 group

Alarm Index	Module	Safety Mechanism & Alarm Indication
ALM6[0]	MTU	Safety Mechanism: Safety Flip-flop Alarm: Safety flip-flop uncorrectable error detected Alarm Type: Level
ALM6[1]	IOM	Safety Mechanism: Safety Flip-flop Alarm: Safety flip-flop uncorrectable error detected Alarm Type: Level
ALM6[2]	INT	Safety Mechanism: Safety Flip-flop Alarm: Safety flip-flop uncorrectable error detected Alarm Type: Level
ALM6[3]	Reserved	Reserved
ALM6[4]	SCU	Safety Mechanism: Safety Flip-flop Alarm: Safety flip-flop uncorrectable error detected Alarm Type: Level
ALM6[5]	PMS	Safety Mechanism: Safety Flip-flop Alarm: Safety flip-flop uncorrectable error detected Alarm Type: Level
ALM6[6]	DMA	Safety Mechanism: Safety Flip-flop Alarm: Safety flip-flop uncorrectable error detected Alarm Type: Level
ALM6[7]	SMU_CORE	Safety Mechanism: Safety Flip-flop Alarm: Safety flip-flop uncorrectable error detected Alarm Type: Level

Table 173 Alarm Mapping related to ALM6 group (cont'd)

Alarm Index	Module	Safety Mechanism & Alarm Indication
ALM6[8]	CCU	Safety Mechanism: Safety Flip-flop Alarm: SYS_PLL.PER_PLL - Safety flip-flop uncorrectable error detected Alarm Type: Level
ALM6[9]	Reserved	Reserved
ALM6[10]	MTU	Safety Mechanism: SRAM Monitor Alarm: GTM Single bit error correction Alarm Type: Level
ALM6[11]	MTU	Safety Mechanism: SRAM Monitor Alarm: GTM Uncorrectable critical error detection Alarm Type: Level
ALM6[12]	MTU	Safety Mechanism: SRAM Monitor Alarm: GTM Miscellaneous error detection Alarm Type: Level
ALM6[13]	**Page 23**	Safety Mechanism: SRAM Monitor Alarm: ERAY Single bit error correction Alarm Type: Level
ALM6[14]	**Page 23**	Safety Mechanism: SRAM Monitor Alarm: ERAY Uncorrectable critical error detection Alarm Type: Level
ALM6[15]	**Page 23**	Safety Mechanism: SRAM Monitor Alarm: ERAY Miscellaneous error detection Alarm Type: Level
ALM6[16]	**Page 23**	Safety Mechanism: SRAM Monitor Alarm: CAN Single bit error correction Alarm Type: Level
ALM6[17]	**Page 23**	Safety Mechanism: SRAM Monitor Alarm: CAN Uncorrectable critical error detection Alarm Type: Level
ALM6[18]	**Page 23**	Safety Mechanism: SRAM Monitor Alarm: CAN Miscellaneous error detection Alarm Type: Level
ALM6[19]	**Page 23**	Safety Mechanism: SRAM Monitor Alarm: MISC Single bit error correction Alarm Type: Level
ALM6[20]	**Page 23**	Safety Mechanism: SRAM Monitor Alarm: MISC Uncorrectable critical error detection Alarm Type: Level
ALM6[21]	**Page 23**	Safety Mechanism: SRAM Monitor Alarm: MISC Miscellaneous error detection Alarm Type: Level
ALM6[22]	Reserved	Reserved

Table 173 Alarm Mapping related to ALM6 group (cont'd)

Alarm Index	Module	Safety Mechanism & Alarm Indication
ALM6[23]	CBS	Safety Mechanism: Safety Flip-flop Alarm: Safety flip-flop uncorrectable error detected Alarm Type: Level
ALM6[24]	CCU	Safety Mechanism: Safety Flip-flop Alarm: Safety flip-flop correctable error detected Alarm Type: Level
ALM6[25]	CCU	Safety Mechanism: Safety Flip-flop Alarm: Safety flip-flop uncorrectable error detected Alarm Type: Level
ALM6[31:26]	Reserved	Reserved

Alarm Mapping related to ALM7 group

Table 174 Alarm Mapping related to ALM7 group

Alarm Index	Module	Safety Mechanism & Alarm Indication
ALM7[0]	MTU	Safety Mechanism: SRAM Monitor Alarm: LMU/FSI_RAM Single bit error correction Alarm Type: Level
ALM7[1]	MTU	Safety Mechanism: SRAM Monitor Alarm: LMU/FSI_RAM Uncorrectable critical error detection Alarm Type: Level
ALM7[2]	MTU	Safety Mechanism: SRAM Monitor Alarm: LMU/FSI_RAM Miscellaneous error detection Alarm Type: Level
ALM7[8:3]	Reserved	Reserved
ALM7[11:9]	Reserved	Reserved
ALM7[16:12]	Reserved	Reserved
ALM7[17]	SRI	Safety Mechanism: Built-in SRI Error Detection Alarm: XBAR0 Bus Error Event Alarm Type: Pulse
ALM7[18]	Reserved	Reserved
ALM7[19]	Reserved	Reserved
ALM7[20]	SBCU	Safety Mechanism: Built-in SPB Error Detection Alarm: SPB Bus Error Event Alarm Type: Pulse
ALM7[21]	Reserved	Reserved
ALM7[22]	FSI	Safety Mechanism: PFlash ECC Alarm: PFlash Single Bit Error Alarm Type: Level
ALM7[23]	FSI	Safety Mechanism: PFlash ECC Alarm: PFlash Double Bit Error Alarm Type: Level

Table 174 Alarm Mapping related to ALM7 group (cont'd)

Alarm Index	Module	Safety Mechanism & Alarm Indication
ALM7[24]	FSI	Safety Mechanism: PFlash ECC Alarm: Single Bit Correction Tracking Buffer Full Alarm Type: Level
ALM7[25]	FSI	Safety Mechanism: PFlash ECC Alarm: Double Bit Correction Tracking Buffer Full Alarm Type: Level
ALM7[26]	FSI	Safety Mechanism: PFlash ECC Alarm: Multiple Bit Error Detection Tracking Buffer Full Alarm Type: Level
ALM7[27]	FSI	Safety Mechanism: PFlash ECC Alarm: Zero Bit Error Tracking Buffer Full Alarm Type: Level
ALM7[28]	FSI	Safety Mechanism: PFlash ECC Monitor Alarm: PFlash ECC Error Alarm Type: Level
ALM7[29]	FSI	Safety Mechanism: PFlash EDC Monitor Alarm: PFlash EDC Error Alarm Type: Level
ALM7[30]	FSI	Safety Mechanism: PFlash Configuration Monitor Alarm: CPU FLASHCON Configuration Error Alarm Type: Level
ALM7[31]	FSI	Safety Mechanism: PFlash Configuration Monitor Alarm: Flash Stored Configuration Error Alarm Type: Level

Alarm Mapping related to ALM8 group

Table 175 Alarm Mapping related to ALM8 group

Alarm Index	Module	Safety Mechanism & Alarm Indication
ALM8[0]	SCU	Safety Mechanism: Clock Monitor Alarm: OSC clock frequency out of range Alarm Type: Pulse
ALM8[1]	CCU	Safety Mechanism: Clock Monitor Alarm: Back-up clock out-of-range alarm Alarm Type: Level
ALM8[2]	CCU	Safety Mechanism: Clock Alive Monitor Alarm: Back-up clock alive alarm Alarm Type: Level
ALM8[3]	SCU	Safety Mechanism: PLL loss of lock detection Alarm: System PLL DCO loss of lock event Alarm Type: Pulse
ALM8[4]	SCU	Safety Mechanism: PLL loss of lock detection Alarm: Peripheral PLL DCO loss of lock event Alarm Type: Pulse

Table 175 Alarm Mapping related to ALM8 group (cont'd)

Alarm Index	Module	Safety Mechanism & Alarm Indication
ALM8[5]	SCU	Safety Mechanism: LBIST Safe Reset State Alarm: LBIST Alarm Alarm Type: Level
ALM8[6]	SCU	Safety Mechanism: External Alarm Alarm: External Request Unit Alarm 0 Alarm Type: Pulse
ALM8[7]	SCU	Safety Mechanism: External Alarm Alarm: External Request Unit Alarm 1 Alarm Type: Pulse
ALM8[8]	SCU	Safety Mechanism: External Alarm Alarm: External Request Unit Alarm 2 Alarm Type: Pulse
ALM8[9]	SCU	Safety Mechanism: External Alarm Alarm: External Request Unit Alarm 3 Alarm Type: Pulse
ALM8[10]	SCU	Safety Mechanism: Watchdog Alarm: CPU0 Watchdog Time-out Alarm Type: Pulse
ALM8[11]	Reserved	Reserved
ALM8[12]	Reserved	Reserved
ALM8[13]	Reserved	Reserved
ALM8[15:14]	Reserved	Reserved
ALM8[16]	SCU	Safety Mechanism: Watchdog Alarm: Safety Watchdog Time-out Alarm Type: Pulse
ALM8[17]	SCU	Safety Mechanism: All Watchdogs Alarm: Watchdog Time-out. This alarm is a logical OR over all watchdog time-out alarms Alarm Type: Pulse
ALM8[18]	SCU	Safety Mechanism: Lockstep Dual Rail Monitor Alarm: Dual Rail Error Alarm Type: Pulse
ALM8[19]	SCU	Safety Mechanism: Emergency Stop Alarm: External Emergency Stop Signal Event Alarm Type: Pulse
ALM8[20]	SCU	Safety Mechanism: Pad Monitor Alarm: Pad Heating Alarm Alarm Type: Pulse Note: This alarm is triggered by the pad-heating enable signal of all core supply-pads. It will also be triggered by the enable signal for initialisation of security sensitive RAMs and TCU test enable signals

Table 175 Alarm Mapping related to ALM8 group (cont'd)

Alarm Index	Module	Safety Mechanism & Alarm Indication
ALM8[21]	SCU	Safety Mechanism: LBIST Test Mode Alarm: LBIST Test Mode Alarm Alarm Type: Level Note: This alarm is also set if TCU related signals are activated in the SCU causing it to fail
ALM8[22]	INT	Safety Mechanism: Interrupt Monitor Alarm: EDC Configuration and Data Path Error Alarm Type: Pulse
ALM8[23]	DMA	Safety Mechanism: DMA SRI ECC Alarm: DMA SRI ECC Error Alarm Type: Pulse
ALM8[24]	Reserved	Reserved
ALM8[25]	IOM	Safety Mechanism: External Alarm Alarm: Pin Mismatch Indication Alarm Type: Level
ALM8[26]	SCU	Safety Mechanism: External Alarm Alarm: External Request Unit Alarm 4 Alarm Type: Pulse
ALM8[27]	SCU	Safety Mechanism: External Alarm Alarm: External Request Unit Alarm 5 Alarm Type: Pulse
ALM8[28]	SCU	Safety Mechanism: External Alarm Alarm: External Request Unit Alarm 6 Alarm Type: Pulse
ALM8[29]	SCU	Safety Mechanism: External Alarm Alarm: External Request Unit Alarm 7 Alarm Type: Pulse
ALM8[30]	SCU	Safety Mechanism: Core Domain Die Temperature Sensor Alarm: Under Temperature Alarm Alarm Type: Level
ALM8[31]	SCU	Safety Mechanism: Core Domain Die Temperature Sensor Alarm: Over Temperature Alarm Alarm Type: Level

Alarm Mapping related to ALM9 group

Table 176 Alarm Mapping related to ALM9 group

Alarm Index	Module	Safety Mechanism & Alarm Indication
ALM9[0]	PMS	Safety Mechanism: Die Temperature Sensor Alarm: Temperature Overflow Alarm Type: Level
ALM9[1]	PMS	Safety Mechanism: Die Temperature Sensor Alarm: Temperature Underflow Alarm Type: Level

Table 176 Alarm Mapping related to ALM9 group (cont'd)

Alarm Index	Module	Safety Mechanism & Alarm Indication
ALM9[2]	Reserved	Reserved
ALM9[3]	**Page 24**	Safety Mechanism: Voltage Monitor Alarm: Over-voltage Alarm Alarm Type: Level
ALM9[4]	Reserved	Reserved
ALM9[5]	**Page 24**	Safety Mechanism: Voltage Monitor Alarm: Under-voltage Alarm Alarm Type: Level
ALM9[14:6]	Reserved	Reserved
ALM9[15]	**Page 24**	Safety Mechanism: Voltage Monitor Alarm: Short to Low/High Alarm Alarm Type: Level
ALM9[16]	**Page 24**	Safety Mechanism: Voltage Monitor Alarm: Over-voltage Alarm Alarm Type: Level
ALM9[17]	**Page 24**	Safety Mechanism: Voltage Monitor Alarm: Under-voltage Alarm Alarm Type: Level
ALM9[19:18]	Reserved	Reserved
ALM9[21:20]	Reserved	Reserved
ALM9[22]	Reserved	Reserved
ALM9[23]	Reserved	Reserved
ALM9[26:24]	Reserved	Reserved
ALM9[27]	Reserved	Reserved
ALM9[28]	Reserved	Reserved
ALM9[29]	Reserved	Reserved
ALM9[30]	Reserved	Reserved
ALM9[31]	Reserved	Reserved

Alarm Mapping related to ALM10 group

Table 177 Alarm Mapping related to ALM10 group

Alarm Index	Module	Safety Mechanism & Alarm Indication
ALM10[0]	Software	Safety Mechanism: Software Monitor Alarm: Software Alarm 0 Alarm Type: Pulse
ALM10[1]	Software	Safety Mechanism: Software Monitor Alarm: Software Alarm 1 Alarm Type: Pulse
ALM10[2]	Software	Safety Mechanism: Software Monitor Alarm: Software Alarm 2 Alarm Type: Pulse

Table 177 Alarm Mapping related to ALM10 group (cont'd)

Alarm Index	Module	Safety Mechanism & Alarm Indication
ALM10[3]	Software	Safety Mechanism: Software Monitor Alarm: Software Alarm 3 Alarm Type: Pulse
ALM10[4]	Software	Safety Mechanism: Software Monitor Alarm: Software Alarm 4 Alarm Type: Pulse
ALM10[5]	Software	Safety Mechanism: Software Monitor Alarm: Software Alarm 5 Alarm Type: Pulse
ALM10[6]	Software	Safety Mechanism: Software Monitor Alarm: Software Alarm 6 Alarm Type: Pulse
ALM10[7]	Software	Safety Mechanism: Software Monitor Alarm: Software Alarm 7 Alarm Type: Pulse
ALM10[8]	Software	Safety Mechanism: Software Monitor Alarm: Software Alarm 8 Alarm Type: Pulse
ALM10[9]	Software	Safety Mechanism: Software Monitor Alarm: Software Alarm 9 Alarm Type: Pulse
ALM10[10]	Software	Safety Mechanism: Software Monitor Alarm: Software Alarm 10 Alarm Type: Pulse
ALM10[11]	Software	Safety Mechanism: Software Monitor Alarm: Software Alarm 11 Alarm Type: Pulse
ALM10[12]	Software	Safety Mechanism: Software Monitor Alarm: Software Alarm 12 Alarm Type: Pulse
ALM10[13]	Software	Safety Mechanism: Software Monitor Alarm: Software Alarm 13 Alarm Type: Pulse
ALM10[14]	Software	Safety Mechanism: Software Monitor Alarm: Software Alarm 14 Alarm Type: Pulse
ALM10[15]	Software	Safety Mechanism: Software Monitor Alarm: Software Alarm 15 Alarm Type: Pulse
ALM10[16]	SMU_CORE	Safety Mechanism: Recovery Timer 0 Alarm: Timer Time-out Alarm Type: Pulse

Table 177 Alarm Mapping related to ALM10 group (cont'd)

Alarm Index	Module	Safety Mechanism & Alarm Indication
ALM10[17]	SMU_CORE	Safety Mechanism: Recovery Timer 1 Alarm: Timer Time-out Alarm Type: Pulse
ALM10[18]	FSP	Safety Mechanism: ErrorPin Alarm: ErrorPin Fault State Activation Alarm Type: Pulse
ALM10[19]	Reserved	Reserved
ALM10[20]	CCU	Safety Mechanism: Safety Flip-flop Alarm: Safety flip-flop correctable error detected Alarm Type: Level
ALM10[21]	**Page 23**	Safety Mechanism: Safety Flip-flop Alarm: Safety flip-flop uncorrectable error detected Alarm Type: Level
ALM10[22]	**Page 24**	Safety Mechanism: Access Enable Protection Alarm: Access Enable error Alarm Type: Pulse
ALM10[31:23]	Reserved	Reserved

Alarm Mapping related to ALM11 group

Table 178 Alarm Mapping related to ALM11 group

Alarm Index	Module	Safety Mechanism & Alarm Indication
ALM11[1:0]	Reserved	Reserved
ALM11[2]	SRI	Safety Mechanism: SRI Error Detection Code (EDC) Alarm: EDC Address Phase Error Alarm Type: Pulse
ALM11[3]	SRI	Safety Mechanism: SRI Error Detection Code (EDC) Alarm: EDC Write Phase Error Alarm Type: Pulse
ALM11[4]	DMU	Safety Mechanism: SRI Error Detection Code (EDC) Alarm: EDC Address Phase Error Alarm Type: Pulse
ALM11[5]	DMU	Safety Mechanism: SRI Error Detection Code (EDC) Alarm: EDC Write Phase Error Alarm Type: Pulse
ALM11[7:6]	Reserved	Reserved
ALM11[8]	Reserved	Reserved
ALM11[9]	SFIBRIDGE1	Safety Mechanism: SRI Error Detection Code (EDC) Alarm: EDC Read Phase Error Alarm Type: Pulse
ALM11[10]	Reserved	Reserved
ALM11[11]	Reserved	Reserved

Table 178 Alarm Mapping related to ALM11 group (cont'd)

Alarm Index	Module	Safety Mechanism & Alarm Indication
ALM11[12]	converter_0	Safety Mechanism: Converter Alarm: Phase Synchronizer Error Alarm Type: Level
ALM11[13]	SRI	Safety Mechanism: SRI SOTA Monitor Alarm: SOTA Swap Error Alarm Type: Pulse
ALM11[31:14]	Reserved	Reserved

Alarm Mapping related to ALM20 group

Table 179 Alarm Mapping related to ALM20 group

Alarm Index	Module	Safety Mechanism & Alarm Indication
ALM20[3:0]	Reserved	Resreved
ALM20[4]	PMS	Safety Mechanism: Voltage Monitor Alarm: VDD Over-voltage Alarm Alarm Type: Level
ALM20[5]	PMS	Safety Mechanism: Voltage Monitor Alarm: VDDPD Over-voltage Alarm Alarm Type: Level
ALM20[6]	PMS	Safety Mechanism: Voltage Monitor Alarm: VDDP3 Over-voltage Alarm Alarm Type: Level
ALM20[7]	PMS	Safety Mechanism: Voltage Monitor Alarm: VDDM Over-voltage Alarm Alarm Type: Level
ALM20[8]	PMS	Safety Mechanism: Voltage Monitor Alarm: VEXT Over-voltage Alarm Alarm Type: Level
ALM20[9]	PMS	Safety Mechanism: Voltage Monitor Alarm: VEVRSB Over-voltage Alarm Alarm Type: Level
ALM20[10]	PMS	Safety Mechanism: Voltage Monitor Alarm: VDD Under-voltage Alarm Alarm Type: Level
ALM20[11]	PMS	Safety Mechanism: Voltage Monitor Alarm: VDDPD Under-voltage Alarm Alarm Type: Level
ALM20[12]	PMS	Safety Mechanism: Voltage Monitor Alarm: VDDP3 Under-voltage Alarm Alarm Type: Level
ALM20[13]	PMS	Safety Mechanism: Voltage Monitor Alarm: VDDM Under-voltage Alarm Alarm Type: Level

Table 179 Alarm Mapping related to ALM20 group (cont'd)

Alarm Index	Module	Safety Mechanism & Alarm Indication
ALM20[14]	PMS	Safety Mechanism: Voltage Monitor Alarm: VEXT Under-voltage Alarm Alarm Type: Level
ALM20[15]	PMS	Safety Mechanism: Voltage Monitor Alarm: VEVRSB Under-voltage Alarm Alarm Type: Level
ALM20[31:16]	Reserved	Reserved

Alarm Mapping related to ALM21 group

Table 180 Alarm Mapping related to ALM21 group

Alarm Index	Module	Safety Mechanism & Alarm Indication
ALM21[0]	hsm	Safety Mechanism: Voltage Monitor Alarm: VDD Under-voltage Alarm Alarm Type: Level
ALM21[1]	hsm	Safety Mechanism: Voltage Monitor Alarm: VDDP3 Under-voltage Alarm Alarm Type: Level
ALM21[2]	hsm	Safety Mechanism: Voltage Monitor Alarm: VEXT Under-voltage Alarm Alarm Type: Level
ALM21[3]	hsm	Safety Mechanism: Voltage Monitor Alarm: VDD Over-voltage Alarm Alarm Type: Level
ALM21[4]	hsm	Safety Mechanism: Voltage Monitor Alarm: VDDP3 over-voltage Alarm Alarm Type: Level
ALM21[5]	hsm	Safety Mechanism: Voltage Monitor Alarm: VEXT over-voltage Alarm Alarm Type: Level
ALM21[6]	Reserved	Reserved
ALM21[7]	**Page 24**	Safety Mechanism: Safety Flip-flop Alarm: Safety flip-flop uncorrectable error detected Alarm Type: Level
ALM21[8]	PMS	Safety Mechanism: Die Temperature Sensor Alarm: Temperature underflow Alarm Type: Level
ALM21[9]	PMS	Safety Mechanism: Die Temperature Sensor Alarm: Temperature overflow Alarm Type: Level
ALM21[10]	PMS	Safety Mechanism: Register Access Protection Alarm: Access Protection violation Alarm Type: Pulse

Table 180 Alarm Mapping related to ALM21 group (cont'd)

Alarm Index	Module	Safety Mechanism & Alarm Indication
ALM21[11]	PMS	Safety Mechanism: Voltage Monitor Alarm: EVRC Short to Low Alarm Alarm Type: Level
ALM21[12]	PMS	Safety Mechanism: Voltage Monitor Alarm: EVRC Short to High Alarm Alarm Type: Level
ALM21[13]	PMS	Safety Mechanism: Voltage Monitor Alarm: EV33 Short to Low Alarm Alarm Type: Level
ALM21[14]	PMS	Safety Mechanism: Voltage Monitor Alarm: EV33 Short to High Alarm Alarm Type: Level
ALM21[15]	CCU	Safety Mechanism: Clock Alive Monitor Alarm: PLLx/fSPB Alive Alarm (provided on fBACK clock with x = 0..2) Alarm Type: Level Note: This alarm is also set if TCU related signals are activated in the CCU causing the clocks to fail
ALM21[16]	SMU_CORE	Safety Mechanism: SMU_core Alive Monitor Alarm: SMU_core Alive Alarm Alarm Type: Pulse
ALM21[31:17]	Reserved	Reserved

Alarm Mapping related to ALM21 group

Table 181 Alarm Mapping related to ALM21 group

Alarm Index	Module	Safety Mechanism & Alarm Indication
ALM21[0]	hsm	Safety Mechanism: Voltage Monitor Alarm: VDD Under-voltage Alarm Alarm Type: Level
ALM21[1]	hsm	Safety Mechanism: Voltage Monitor Alarm: VDDP3 Under-voltage Alarm Alarm Type: Level
ALM21[2]	hsm	Safety Mechanism: Voltage Monitor Alarm: VEXT Under-voltage Alarm Alarm Type: Level
ALM21[3]	hsm	Safety Mechanism: Voltage Monitor Alarm: VDD Over-voltage Alarm Alarm Type: Level
ALM21[4]	hsm	Safety Mechanism: Voltage Monitor Alarm: VDDP3 over-voltage Alarm Alarm Type: Level
ALM21[5]	hsm	Safety Mechanism: Voltage Monitor Alarm: VEXT over-voltage Alarm Alarm Type: Level

Table 181 Alarm Mapping related to ALM21 group (cont'd)

Alarm Index	Module	Safety Mechanism & Alarm Indication
ALM21[6]	Reserved	Reserved
ALM21[7]	**Page 24**	Safety Mechanism: Safety Flip-flop Alarm: Safety flip-flop uncorrectable error detected Alarm Type: Level
ALM21[8]	PMS	Safety Mechanism: Die Temperature Sensor Alarm: Temperature underflow Alarm Type: Level
ALM21[9]	PMS	Safety Mechanism: Die Temperature Sensor Alarm: Temperature overflow Alarm Type: Level
ALM21[10]	PMS	Safety Mechanism: Register Access Protection Alarm: Access Protection violation Alarm Type: Pulse
ALM21[11]	PMS	Safety Mechanism: Voltage Monitor Alarm: EVRC Short to Low Alarm Alarm Type: Level
ALM21[12]	PMS	Safety Mechanism: Voltage Monitor Alarm: EVRC Short to High Alarm Alarm Type: Level
ALM21[13]	PMS	Safety Mechanism: Voltage Monitor Alarm: EV33 Short to Low Alarm Alarm Type: Level
ALM21[14]	PMS	Safety Mechanism: Voltage Monitor Alarm: EV33 Short to High Alarm Alarm Type: Level
ALM21[15]	CCU	Safety Mechanism: Clock Alive Monitor Alarm: PLLx/fSPB Alive Alarm (provided on fBACK clock with x = 0..2) Alarm Type: Level Note: This alarm is also set if TCU related signals are activated in the CCU causing the clocks to fail
ALM21[16]	SMU_CORE	Safety Mechanism: SMU_core Alive Monitor Alarm: SMU_core Alive Alarm Alarm Type: Pulse
ALM21[31:17]	Reserved	Reserved

15.5 Connectivity

Table 182 Connections of SMU

Interface Signals	connects		Description
SMU:FSP(0)	to	P33.8:HWOUT(0)	FSP[1..0] Output Signals - Generated by SMU_core
SMU:FSP(1)	to	P33.10:HWOUT(0)	FSP[1..0] Output Signals - Generated by SMU_core
SMU:FSP_STS(0)	from	P33.8:IN	FSP Status Input - Shows the actual state of the FSP ErroPin
SMU:FSP_STS(1)	from	P33.10:IN	FSP Status Input - Shows the actual state of the FSP ErroPin
SMU:RUNSTATE	to	SCU:smu_wdt_run	SMU_core RUN state indication
SMU:INT(2:0)	to	INT:smu.INT(2:0)	SMU Service Request

15.6 Revision History

Table 183 Revision History

Reference	Change to Previous Version	Comment
V4.0.17		
	First release	
V4.0.18		
Page 38	Updated description of ALM21[0] and ALM21[3]	
Page 38	Added description for ALM21[6]	
Page 31	Updated description for ALM8[20]	
Page 1	Missing blank fixed	
V4.0.19		
Page 23, **Page 30**	Added FSI_RAM Alarms ALM7[0:2] which were not documented in the previous version	
Page 25	Added Alarm Types in Alarm Mapping Tables	
Page 2	Typo fixed, no functional change	
Page 41	Revision History updated	
V4.0.20		
Page 33	Updated grouping in ALM9 group, no functional change.	
V4.0.21		
–	No functional changes.	
V4.0.22		
–	No functional changes.	
V4.0.23		
Page 28	Updated description of ALM6[8]	

16 Interrupt Router (IR)

This chapter supplements the family documentation whith device specific information for TC33x/TC32x.

The Interrupt Router allocates two address ranges

- Interrupt Router System and OTGM register address range: 2 * 256 byte address range covering the Interrupt Router system registers, ICU control registers and OTGM registers (**Chapter 16.2**)
- SRC register address range: 8 KByte address range covering the Service Request Control registers (**Chapter 16.4**)

16.1 TC33x/TC32x Specific Interrupt Router Configuration

Table 184 TC33x/TC32x specific configuration of INT

Parameter	INT
Number of Interrupt Service Providers	1
Number of SRB groups	2

Table 185 TC33x/TC32x specific configuration of SRC

Parameter	SRC
Number of Service Request Nodes	1024

16.2 TC33x/TC32x Specific Control Registers

This chapter describes the TC33x/TC32x specific Interrupt Router system, OTGM and ICU registers

List of used Access Protection Register abbreviations

- P0 -> ACCEN_SRBx, write protection of the related SRBx register. Number of Service Request Broadcast registers (SRB) and the related ACCEN_SRB registers is equal to the number of implemented TriCore CPUs.
- P1 -> ACCEN_CONFIG, write protection of all SRCx[15:0] and ICUx Error Capture registers (ECRx)
- P2 -> ACCEN_SRC_TOSx, write protects bits [31:16] of all SRCs that are mapped to TOSx (SCR.TOS=x). For each implemented Interrupt Control Unit, one ACCEN_SRC_TOSx register is implemented.

Note: A violation of the access protection will not be executed (e.g. a write to a ´Px´/ACCEN protected register by an SPB access with a disabled Master TAG-ID). In this case an access protection error is signaled to the SMU. Beside this signaling to the SMU, no other error, interrupt or trap is generated.

Interrupt Router Module Registers

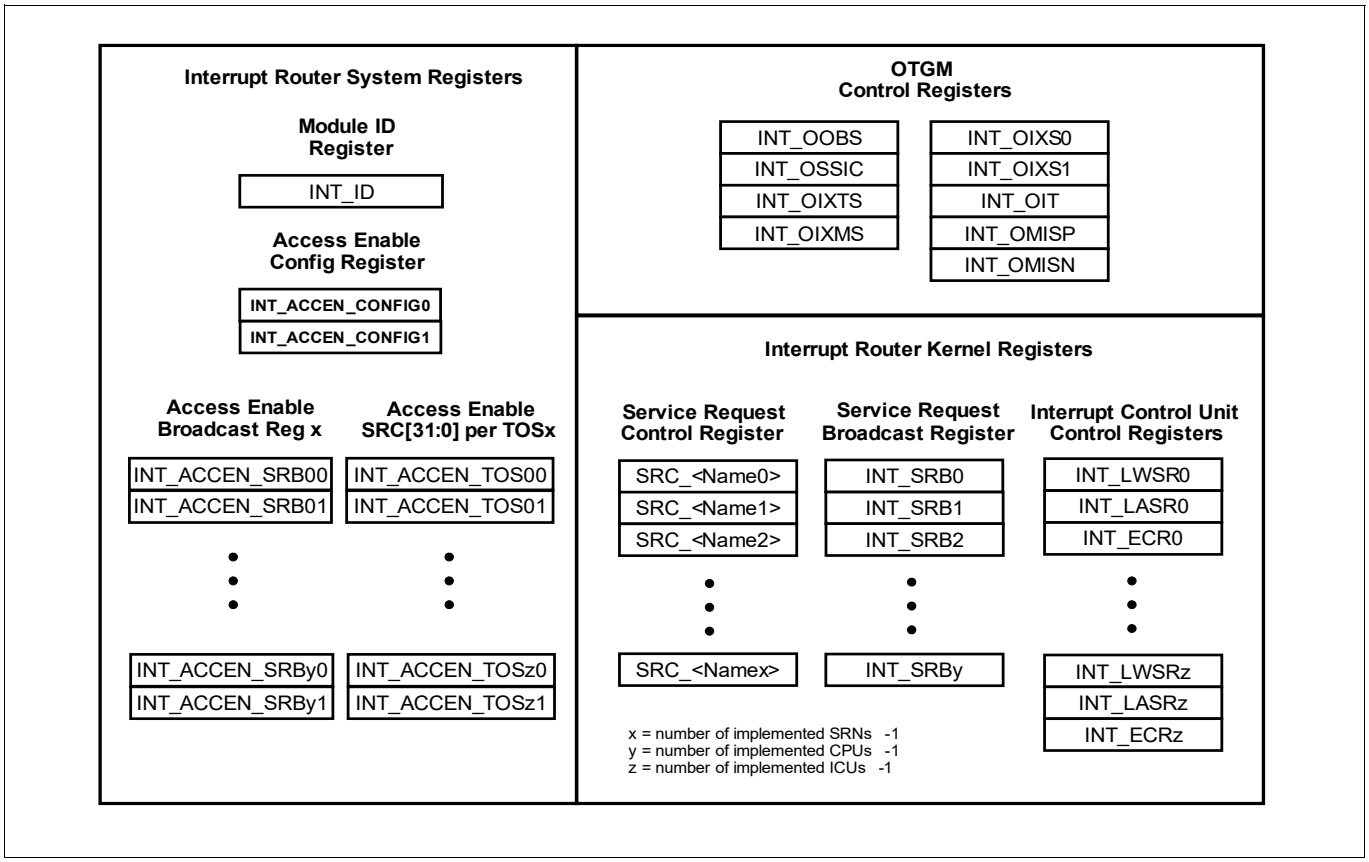


Figure 4 Interrupt Router module registers (SRC registers are described in Chapter 16.4)

Table 186 Register Address Space - INT

Module	Base Address	End Address	Note
INT	$F0037000_H$	$F0037FFF_H$	IR Status and Control Registers

Table 187 Register Overview - INT (ascending Offset Address)

Short Name	Long Name	Offset Address	Access Mode		Reset	Page Number
			Read	Write		
INT_ID	Module Identification Register	0008_H	U,SV	nBE	Application Reset	See Family Spec
INT_SRBx (x=0-1)	Service Request Broadcast Register x	0010_H+x *4	U,SV	SV,P0	Application Reset	See Family Spec
INT_OOBS	OTGM OTGB0/1 Status	0080_H	U,SV	nBE	Application Reset	See Family Spec
INT_OSSIC	OTGM SSI Control	0084_H	U,SV	SV	Application Reset	See Family Spec
INT_OIXTS	OTGM IRQ MUX Trigger Set Select	0088_H	U,SV	SV	Application Reset	See Family Spec
INT_OIXMS	OTGM IRQ MUX Missed IRQ Select	$008C_H$	U,SV	SV	Application Reset	See Family Spec
INT_OIXS0	OTGM IRQ MUX Select 0	0090_H	U,SV	SV	Application Reset	See Family Spec
INT_OIXS1	OTGM IRQ MUX Select 1	0094_H	U,SV	SV	Application Reset	See Family Spec
INT_OIT	OTGM IRQ Trace	$00A0_H$	U,SV	SV	Application Reset	5
INT_OMISP	OTGM MCDS I/F Sensitivity Posedge	$00A4_H$	U,SV	SV	Application Reset	See Family Spec
INT_OMISN	OTGM MCDS I/F Sensitivity Negedge	$00A8_H$	U,SV	SV	Application Reset	See Family Spec
INT_ACCEN_CONFIG0	Access Enable covering all INT_ECRx and all SRCy[15:0], Register 0	$00F0_H$	U,SV	SV,SE	Application Reset	See Family Spec
INT_ACCEN_CONFIG1	Access Enable covering all INT_ECRx and all SRCy[15:0], Register 1	$00F4_H$	U,SV	SV,SE	Application Reset	See Family Spec
INT_ACCEN_SRBx0 (x=0-1)	Access Enable covering SRBx, Register 0	0100_H+x *8	U,SV	SV,SE	Application Reset	See Family Spec

Table 187 Register Overview - INT (ascending Offset Address) (cont'd)

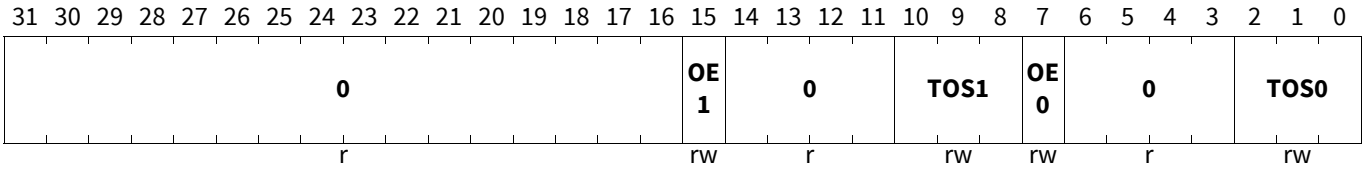
Short Name	Long Name	Offset Address	Access Mode		Reset	Page Number
			Read	Write		
INT_ACCEN_SRBx1 (x=0-1)	Access Enable covering SRBx, Register 1	0104_H+x*8	U,SV	SV,SE	Application Reset	See Family Spec
INT_ACCEN_SRC_TOSx0 (x=0)	Access Enable covering all SRCx[31:16] mapped to ICUx, Register 0	0180_H	U,SV	SV,SE	Application Reset	See Family Spec
INT_ACCEN_SRC_TOSx1 (x=0)	Access Enable covering all SRCx[31:16] mapped to ICUx, Register 1	0184_H	U,SV	SV,SE	Application Reset	See Family Spec
INT_LWSRx (x=0)	Latest Winning Service Request Register x, related to ICUx	0200_H	U,SV	nBE	Application Reset	See Family Spec
INT_LASRx (x=0)	Last Acknowledged Service Request Register x, related to ICUx	0204_H	U,SV	nBE	Application Reset	See Family Spec
INT_ECRx (x=0)	Error Capture Register x, related to ICUx	0208_H	U,SV	SV,P1	Application Reset	See Family Spec

16.3 TC33x/TC32x Specific Registers

16.3.1 IR Status and Control Registers

OTGM IRQ Trace

INT_OIT
OTGM IRQ Trace **($00A0_H$)** **Application Reset Value: $0000\ 0000_H$**



Field	Bits	Type	Description
TOS0	2:0	rw	**Type of Service for Observation on OTGB0** Trigger Set TS16_SP Family concept encoding, compatible with SRC.TOS 000_B CPU0 service is observed 001_B DMA service is observed **others**, Reserved (no action)
OE0	7	rw	**Output Enable for OTGB0** 0_B Disabled 1_B Enabled
TOS1	10:8	rw	**Type of Service for Observation on OTGB1** Trigger Set TS16_SP Family concept encoding, compatible with SRC.TOS 000_B CPU0 service is observed 001_B DMA service is observed **others**, Reserved (no action)
OE1	15	rw	**Output Enable for OTGB1** 0_B Disabled 1_B Enabled
0	6:3, 14:11, 31:16	r	**Reserved** Read as 0; must be written with 0.

16.4 TC33x/TC32x Specific Service Request Control (SRC) registers

This chapter describes the TC33x/TC32x Service Request Control (SRC) registers.

Table 189 shows all registers associated with the Interrupt Router module in the device. This chapter describes the Service Request Control registers including:

- Mapping of Aurix module interrupt triggers to SRC
- SRC offsets
- The index number of an SRC can be calculated with the SRC Offset: Index(SRC) = <SRC Address Offset> / 4

List of used Access Protection Register abbreviations

- P0 -> ACCEN_SRBx, write protection of the related SRBx register. Number of Service Request Broadcast registers (SRB) and the related ACCEN_SRB registers is equal to the number of implemented TriCore CPUs.
- P1 -> ACCEN_CONFIG, write protection of all SRCx[15:0] and ICUx Error Capture registers (ECRx)
- P2 -> ACCEN_SRC_TOSx, write protects bits [31:16] of all SRCs that are mapped to TOSx (SCR.TOS=x). For each implemented Interrupt Control Unit, one ACCEN_SRC_TOSx register is implemented.

Note: A violation of the access protection will not be executed (e.g. a write to a ´Px´/ACCEN protected register from a disabled master). In this case an access protection error is signaled to the SMU. Beside this signaling to the SMU, no other error, interrupt or trap is generated.

Table 188 Register Address Space - SRC

Module	Base Address	End Address	Note
SRC	$F0038000_H$	$F0039FFF_H$	IR Service Request Control Registers (SRC)

Table 189 Register Overview - SRC (ascending Offset Address)

Short Name	Long Name	Offset Address	Access Mode		Reset	Page Number
			Read	Write		
SRC_CPUxSB (x=0)	CPUx Software Breakpoint Service Request	00000_H	U,SV	SV,P1,P2	Debug Reset	10
SRC_BCUSPB	SBCU Service Request (SPB Bus Control Unit)	00020_H	U,SV	SV,P1,P2	Debug Reset	10
SRC_XBAR0	SRI Domain 0 Service Request	00030_H	U,SV	SV,P1,P2	Debug Reset	10
SRC_CERBERUSy (y=0-1)	Cerberus Service Request y	00040_H+ y*4	U,SV	SV,P1,P2	Debug Reset	10
SRC_ASCLINxTX (x=0-11)	ASCLINx Transmit Service Request	00050_H+ x*12	U,SV	SV,P1,P2	Application Reset	10
SRC_ASCLINxRX (x=0-11)	ASCLINx Receive Service Request	00054_H+ x*12	U,SV	SV,P1,P2	Application Reset	10
SRC_ASCLINxERR (x=0-11)	ASCLINx Error Service Request	00058_H+ x*12	U,SV	SV,P1,P2	Application Reset	10
SRC_MTUDONE	MTU Done Service Request	$000EC_H$	U,SV	SV,P1,P2	Application Reset	10

Table 189 Register Overview - SRC (ascending Offset Address) (cont'd)

Short Name	Long Name	Offset Address	Access Mode		Reset	Page Number
			Read	Write		
SRC_QSPIxTX (x=0-3)	QSPIx Transmit Service Request	$000F0_H$+ x*14_H	U,SV	SV,P1,P2	Application Reset	10
SRC_QSPIxRX (x=0-3)	QSPIx Receive Service Request	$000F4_H$+ x*14_H	U,SV	SV,P1,P2	Application Reset	10
SRC_QSPIxERR (x=0-3)	QSPIx Error Service Request	$000F8_H$+ x*14_H	U,SV	SV,P1,P2	Application Reset	13
SRC_QSPIxPT (x=0-3)	QSPIx Phase Transition Service Request	$000FC_H$+ x*14_H	U,SV	SV,P1,P2	Application Reset	13
SRC_QSPIxU (x=0-3)	QSPIx User Defined Service Request	00100_H+ x*14_H	U,SV	SV,P1,P2	Application Reset	13
SRC_QSPI2HC	QSPI2 High Speed Capture Service Request	00178_H	U,SV	SV,P1,P2	Application Reset	13
SRC_QSPI3HC	QSPI3 High Speed Capture Service Request	$0017C_H$	U,SV	SV,P1,P2	Application Reset	13
SRC_SENTx (x=0-9)	SENT TRIGx Service Request	00240_H+ x*4	U,SV	SV,P1,P2	Application Reset	13
SRC_CCU6xSRy (x=0-1;y=0-3)	CCUx Service Request y	$002C0_H$+ x*10_H+y*4	U,SV	SV,P1,P2	Application Reset	13
SRC_GPT120CIRQ	GPT120 CAPREL Service Request	$002E0_H$	U,SV	SV,P1,P2	Application Reset	13
SRC_GPT120T2	GPT120 Timer 2 Service Request	$002E4_H$	U,SV	SV,P1,P2	Application Reset	13
SRC_GPT120T3	GPT120 Timer 3 Service Request	$002E8_H$	U,SV	SV,P1,P2	Application Reset	13
SRC_GPT120T4	GPT120 Timer 4 Service Request	$002EC_H$	U,SV	SV,P1,P2	Application Reset	15
SRC_GPT120T5	GPT120 Timer 5 Service Request	$002F0_H$	U,SV	SV,P1,P2	Application Reset	15
SRC_GPT120T6	GPT120 Timer 6 Service Request	$002F4_H$	U,SV	SV,P1,P2	Application Reset	15
SRC_STMxSRy (x=0;y=0-1)	System Timer x Service Request y	00300_H+ y*4	U,SV	SV,P1,P2	Application Reset	15
SRC_FCE0	FCE0 Error Service Request	00330_H	U,SV	SV,P1,P2	Application Reset	15
SRC_DMAERRy (y=0-3)	DMA Error Service Request y	00340_H+ y*4	U,SV	SV,P1,P2	Application Reset	15
SRC_DMACHy (y=0-63)	DMA Channel y Service Request	00370_H+ y*4	U,SV	SV,P1,P2	Application Reset	15

Table 189 Register Overview - SRC (ascending Offset Address) (cont'd)

Short Name	Long Name	Offset Address	Access Mode		Reset	Page Number
			Read	Write		
SRC_CANxINTy (x=0-1;y=0-15)	CANx Service Request y	$005B0_H$+x*40_H+y*4	U,SV	SV,P1,P2	Application Reset	15
SRC_VADCGxSRy (x=0-1;y=0-3)	EVADC Group x Service Request y	00670_H+x*10_H+y*4	U,SV	SV,P1,P2	Application Reset	15
SRC_VADCG8SRy (y=0-3)	EVADC Group 8 Service Request y	$006F0_H$+y*4	U,SV	SV,P1,P2	Application Reset	15
SRC_VADCG9SRy (y=0-3)	EVADC Group 9 Service Request y	00700_H+y*4	U,SV	SV,P1,P2	Application Reset	18
SRC_VADCCGxSRy (x=0-1;y=0-3)	EVADC Common Group x Service Request y	00750_H+x*10_H+y*4	U,SV	SV,P1,P2	Application Reset	18
SRC_ERAYxINT0 (x=0)	E-RAY x Service Request 0	00800_H	U,SV	SV,P1,P2	Application Reset	18
SRC_ERAYxINT1 (x=0)	E-RAY x Service Request 1	00804_H	U,SV	SV,P1,P2	Application Reset	18
SRC_ERAYxTINT0 (x=0)	E-RAY x Timer Interrupt 0 Service Request	00808_H	U,SV	SV,P1,P2	Application Reset	18
SRC_ERAYxTINT1 (x=0)	E-RAY x Timer Interrupt 1 Service Request	$0080C_H$	U,SV	SV,P1,P2	Application Reset	18
SRC_ERAYxNDAT0 (x=0)	E-RAY x New Data 0 Service Request	00810_H	U,SV	SV,P1,P2	Application Reset	18
SRC_ERAYxNDAT1 (x=0)	E-RAY x New Data 1 Service Request	00814_H	U,SV	SV,P1,P2	Application Reset	18
SRC_ERAYxMBSC0 (x=0)	E-RAY x Message Buffer Status Changed 0 Service Request	00818_H	U,SV	SV,P1,P2	Application Reset	18
SRC_ERAYxMBSC1 (x=0)	E-RAY x Message Buffer Status Changed 1 Service Request	$0081C_H$	U,SV	SV,P1,P2	Application Reset	18
SRC_ERAYxOBUSY (x=0)	E-RAY x Output Buffer Busy	00820_H	U,SV	SV,P1,P2	Application Reset	20
SRC_ERAYxIBUSY (x=0)	E-RAY x Input Buffer Busy	00824_H	U,SV	SV,P1,P2	Application Reset	20
SRC_DMUHOST	DMU Host Service Request	00860_H	U,SV	SV,P1,P2	Application Reset	20
SRC_DMUFSI	DMU FSI Service Request	00864_H	U,SV	SV,P1,P2	Application Reset	20

Table 189 Register Overview - SRC (ascending Offset Address) (cont'd)

Short Name	Long Name	Offset Address	Access Mode		Reset	Page Number
			Read	Write		
SRC_HSMy (y=0-1)	HSM Service Request y	00870_H+ y*4	U,SV	SV,P1,P2	Application Reset	20
SRC_SCUERUx (x=0-3)	SCU ERU Service Request x	00880_H+ x*4	U,SV	SV,P1,P2	Application Reset	20
SRC_PMSDTS	PMS DTS Service Request	$008AC_H$	U,SV	SV,P1,P2	Application Reset	20
SRC_PMSx (x=0-3)	Power Management System Service Request x	$008B0_H$+ x*4	U,SV	SV,P1,P2	Application Reset	20
SRC_SCR	Stand By Controller Service Request	$008C0_H$	U,SV	SV,P1,P2	Application Reset	20
SRC_SMUy (y=0-2)	SMU Service Request y	$008D0_H$+ y*4	U,SV	SV,P1,P2	Application Reset	20
SRC_GPSRxy (x=0;y=0-7)	General Purpose Group x Service Request y	00990_H+ y*4	U,SV	SV,P1,P2	Application Reset	23
SRC_GTMAEIIRQ	AEI Shared Service Request	$00A70_H$	U,SV	SV,P1,P2	Application Reset	23
SRC_GTMARUIRQw (w=0-2)	ARU Shared Service Request w	$00A74_H$+ w*4	U,SV	SV,P1,P2	Application Reset	23
SRC_GTMBRCIRQ	BRC Shared Service Request	$00A80_H$	U,SV	SV,P1,P2	Application Reset	23
SRC_GTMCMPIRQ	CMP Shared Service Request	$00A84_H$	U,SV	SV,P1,P2	Application Reset	23
SRC_GTMSPEwIRQ (w=0-1)	SPEw Shared Service Request	$00A88_H$+ w*4	U,SV	SV,P1,P2	Application Reset	23
SRC_GTMERR	Error Service Request	$00B70_H$	U,SV	SV,P1,P2	Application Reset	23
SRC_GTMTIMwx (w=0-1;x=0-7)	TIMw Shared Service Request x	$00B90_H$+ w*20_H+x *4	U,SV	SV,P1,P2	Application Reset	23
SRC_GTMTOMwx (w=0-1;x=0-7)	TOMw Shared Service Request x	$00E10_H$+ w*20_H+x *4	U,SV	SV,P1,P2	Application Reset	23
SRC_GTMATOMwx (w=0;x=0-3)	ATOMw Shared Service Request x	$00EF0_H$+ x*4	U,SV	SV,P1,P2	Application Reset	23

16.5 TC33x/TC32x Specific Registers

16.5.1 IR Service Request Control Registers (SRC)

CPU0 Software Breakpoint Service Request

SRC_CPU0SB
CPU0 Software Breakpoint Service Request **(00000_H)** **Debug Reset Value: $0000\ 0000_H$**
SRC_BCUSPB
SBCU Service Request [SPB Bus Control Unit) **(00020_H)** **Debug Reset Value: $0000\ 0000_H$**
SRC_XBAR0
SRI Domain 0 Service Request **(00030_H)** **Debug Reset Value: $0000\ 0000_H$**
SRC_CERBERUSy (y=0-1)
Cerberus Service Request y **(00040_H+y*4)** **Debug Reset Value: $0000\ 0000_H$**
SRC_ASCLINxTX (x=0-11)
ASCLINx Transmit Service Request **(00050_H+x*12)** **Application Reset Value: $0000\ 0000_H$**
SRC_ASCLINxRX (x=0-11)
ASCLINx Receive Service Request **(00054_H+x*12)** **Application Reset Value: $0000\ 0000_H$**
SRC_ASCLINxERR (x=0-11)
ASCLINx Error Service Request **(00058_H+x*12)** **Application Reset Value: $0000\ 0000_H$**
SRC_MTUDONE
MTU Done Service Request **($000EC_H$)** **Application Reset Value: $0000\ 0000_H$**
SRC_QSPIxTX (x=0-3)
QSPIx Transmit Service Request **($000F0_H$+x*14_H)** **Application Reset Value: $0000\ 0000_H$**
SRC_QSPIxRX (x=0-3)
QSPIx Receive Service Request **($000F4_H$+x*14_H)** **Application Reset Value: $0000\ 0000_H$**

31	30	29	28	27	26	25	24	23	22	21	20	19	18	17	16
0	SWSCLR	SWS	IOVCLR	IOV	SETR	CLRR	SRR	0			ECC				
r	w	rh	w	rh	w	w	rh	r			rwh				

15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
0		TOS			SRE	0		SRPN							
r		rw			rw	r		rw							

Field	Bits	Type	Description
SRPN	7:0	rw	**Service Request Priority Number** The SRPN bit field defines the priority of a service request with respect to service requests with to the same service provider (same SRC.TOS configuration): 00_H -> Service request is on lowest priority ... FF_H -> Service request is on highest priority **Notes** 1. *For a CPU 01_H is the lowest priority as 00_H is never serviced. For a DMA 00_H triggers channel 0.* 2. *For DMA, SRPN must not be greater than the highest implemented DMA channel number.*
SRE	10	rw	**Service Request Enable** 0_B Service request is disabled 1_B Service request is enabled
TOS	13:11	rw	**Type of Service Control** The TOS bit field configuration maps a Service Request to an Interrupt Service Provider: 000_B CPU0 service is initiated 001_B DMA service is initiated **Others**, Reserved (no action)
ECC	20:16	rwh	**Error Correction Code** The ECC bit field will be updated by the SRN under the following conditions: • Write or Read-Modify-Write to SRC[31:0] • Write to SRC[15:0] (16-bit write) • Write to SRC[15:8] or write to SRC[7:0] (byte write)
SRR	24	rh	**Service Request Flag** The SRR bit shows the status of the Service Request. 0_B No service request is pending 1_B A service request is pending
CLRR	25	w	**Request Clear Bit** The CLRR bit is required to reset **SRR**. 0_B No action 1_B Clear SRR; bit value is not stored; read always returns 0; no action if SETR is set in parallel.
SETR	26	w	**Request Set Bit** The SETR bit is required to set **SRR**. 0_B No action 1_B Set SRR and SWS; SRR bit value is not stored; read always returns 0; no action if CLRR is set in parallel.

Field	Bits	Type	Description
IOV	27	rh	**Interrupt Trigger Overflow Bit** The IOV bit is set by HW if a new service request was triggered via interrupt trigger or **SETR** bit while the SRN has still an pending service request. 0_B No Interrupt Trigger Overflow detected 1_B Interrupt Overflow Detected.
IOVCLR	28	w	**Interrupt Trigger Overflow Clear Bit** IOVCLR is required to reset **IOV**. 0_B No action 1_B Clear IOV; bit value is not stored; read always returns 0.
SWS	29	rh	**SW Sticky Bit** The Software Sticky Bit is set when the **SRR** bit has been set via the **SETR** bit. This bit can be cleared by writing with 1 to **SWSCLR**. Writing to SWS has no effect. 0_B No interrupt was initiated via SETR 1_B Interrupt was initiated via SETR
SWSCLR	30	w	**SW Sticky Clear Bit** SWSCLR is required to reset **SWS**. 0_B No action 1_B Clear SWS; bit value is not stored; read always returns 0.
0	9:8, 15:14, 23:21, 31	r	**Reserved** Read as 0; should be written with 0.

SRC_QSPIxERR (x=0-3)
QSPIx Error Service Request **($000F8_H$+x*14_H)** **Application Reset Value: 0000 0000_H**
SRC_QSPIxPT (x=0-3)
QSPIx Phase Transition Service Request **($000FC_H$+x*14_H)** **Application Reset Value: 0000 0000_H**
SRC_QSPIxU (x=0-3)
QSPIx User Defined Service Request **(00100_H+x*14_H)** **Application Reset Value: 0000 0000_H**
SRC_QSPI2HC
QSPI2 High Speed Capture Service Request **(00178_H)** **Application Reset Value: 0000 0000_H**
SRC_QSPI3HC
QSPI3 High Speed Capture Service Request **($0017C_H$)** **Application Reset Value: 0000 0000_H**
SRC_SENTx (x=0-9)
SENT TRIGx Service Request **(00240_H+x*4)** **Application Reset Value: 0000 0000_H**
SRC_CCU6xSRy (x=0-1;y=0-3)
CCUx Service Request y **($002C0_H$+x*10_H+y*4)** **Application Reset Value: 0000 0000_H**
SRC_GPT120CIRQ
GPT120 CAPREL Service Request **($002E0_H$)** **Application Reset Value: 0000 0000_H**
SRC_GPT120T2
GPT120 Timer 2 Service Request **($002E4_H$)** **Application Reset Value: 0000 0000_H**
SRC_GPT120T3
GPT120 Timer 3 Service Request **($002E8_H$)** **Application Reset Value: 0000 0000_H**

31	30	29	28	27	26	25	24	23	22	21	20	19	18	17	16
0	**SWSCLR**	**SWS**	**IOVCLR**	**IOV**	**SETR**	**CLRR**	**SRR**	**0**			**ECC**				
r	w	rh	w	rh	w	w	rh	r			rwh				

15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
0		**TOS**			**SRE**	**0**		**SRPN**							
r		rw			rw	r		rw							

Field	Bits	Type	Description
SRPN	7:0	rw	**Service Request Priority Number** The SRPN bit field defines the priority of a service request with respect to service requests with to the same service provider (same SRC.TOS configuration): 00_H -> Service request is on lowest priority ... FF_H -> Service request is on highest priority **Notes** 1. *For a CPU 01_H is the lowest priority as 00_H is never serviced. For a DMA 00_H triggers channel 0.* 2. *For DMA, SRPN must not be greater than the highest implemented DMA channel number.*
SRE	10	rw	**Service Request Enable** 0_B Service request is disabled 1_B Service request is enabled

Field	Bits	Type	Description
TOS	13:11	rw	**Type of Service Control** The TOS bit field configuration maps a Service Request to an Interrupt Service Provider: 000_B CPU0 service is initiated 001_B DMA service is initiated **Others**, Reserved (no action)
ECC	20:16	rwh	**Error Correction Code** The ECC bit field will be updated by the SRN under the following conditions: • Write or Read-Modify-Write to SRC[31:0] • Write to SRC[15:0] (16-bit write) • Write to SRC[15:8] or write to SRC[7:0] (byte write)
SRR	24	rh	**Service Request Flag** The SRR bit shows the status of the Service Request. 0_B No service request is pending 1_B A service request is pending
CLRR	25	w	**Request Clear Bit** The CLRR bit is required to reset **SRR**. 0_B No action 1_B Clear SRR; bit value is not stored; read always returns 0; no action if SETR is set in parallel.
SETR	26	w	**Request Set Bit** The SETR bit is required to set **SRR**. 0_B No action 1_B Set SRR and SWS; SRR bit value is not stored; read always returns 0; no action if CLRR is set in parallel.
IOV	27	rh	**Interrupt Trigger Overflow Bit** The IOV bit is set by HW if a new service request was triggered via interrupt trigger or **SETR** bit while the SRN has still an pending service request. 0_B No Interrupt Trigger Overflow detected 1_B Interrupt Overflow Detected.
IOVCLR	28	w	**Interrupt Trigger Overflow Clear Bit** IOVCLR is required to reset **IOV**. 0_B No action 1_B Clear IOV; bit value is not stored; read always returns 0.
SWS	29	rh	**SW Sticky Bit** The Software Sticky Bit is set when the **SRR** bit has been set via the **SETR** bit. This bit can be cleared by writing with 1 to **SWSCLR**. Writing to SWS has no effect. 0_B No interrupt was initiated via SETR 1_B Interrupt was initiated via SETR

Field	Bits	Type	Description
SWSCLR	30	w	**SW Sticky Clear Bit** SWSCLR is required to reset **SWS**. 0_B No action 1_B Clear SWS; bit value is not stored; read always returns 0.
0	9:8, 15:14, 23:21, 31	r	**Reserved** Read as 0; should be written with 0.

SRC_GPT120T4
GPT120 Timer 4 Service Request **($002EC_H$)** **Application Reset Value: $0000\ 0000_H$**
SRC_GPT120T5
GPT120 Timer 5 Service Request **($002F0_H$)** **Application Reset Value: $0000\ 0000_H$**
SRC_GPT120T6
GPT120 Timer 6 Service Request **($002F4_H$)** **Application Reset Value: $0000\ 0000_H$**
SRC_STM0SRy (y=0-1)
System Timer 0 Service Request y **(00300_H+y*4)** **Application Reset Value: $0000\ 0000_H$**
SRC_FCE0
FCE0 Error Service Request **(00330_H)** **Application Reset Value: $0000\ 0000_H$**
SRC_DMAERRy (y=0-3)
DMA Error Service Request y **(00340_H+y*4)** **Application Reset Value: $0000\ 0000_H$**
SRC_DMACHy (y=0-63)
DMA Channel y Service Request **(00370_H+y*4)** **Application Reset Value: $0000\ 0000_H$**
SRC_CANxINTy (x=0-1;y=0-15)
CANx Service Request y **($005B0_H$+x*40_H+y*4)** **Application Reset Value: $0000\ 0000_H$**
SRC_VADCGxSRy (x=0-1;y=0-3)
EVADC Group x Service Request y **(00670_H+x*10_H+y*4)** **Application Reset Value: $0000\ 0000_H$**
SRC_VADCG8SRy (y=0-3)
EVADC Group 8 Service Request y **($006F0_H$+y*4)** **Application Reset Value: $0000\ 0000_H$**

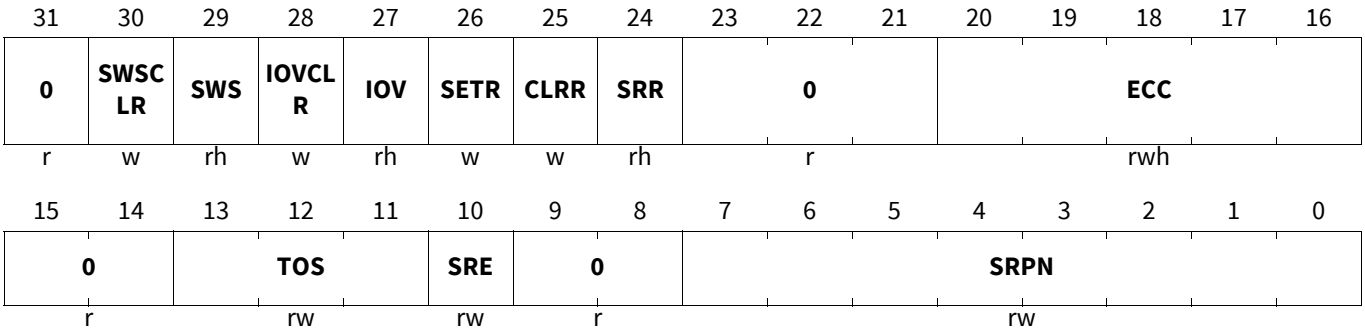
31	30	29	28	27	26	25	24	23	22	21	20	19	18	17	16
0	**SWSCLR**	**SWS**	**IOVCLR**	**IOV**	**SETR**	**CLRR**	**SRR**	**0**			**ECC**				
r	w	rh	w	rh	w	w	rh	r			rwh				

15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
0		**TOS**			**SRE**	**0**		**SRPN**							
r		rw			rw	r		rw							

Field	Bits	Type	Description
SRPN	7:0	rw	**Service Request Priority Number** The SRPN bit field defines the priority of a service request with respect to service requests with to the same service provider (same SRC.TOS configuration): 00_H -> Service request is on lowest priority ... FF_H -> Service request is on highest priority **Notes** 1. *For a CPU 01_H is the lowest priority as 00_H is never serviced. For a DMA 00_H triggers channel 0.* 2. *For DMA, SRPN must not be greater than the highest implemented DMA channel number.*
SRE	10	rw	**Service Request Enable** 0_B Service request is disabled 1_B Service request is enabled
TOS	13:11	rw	**Type of Service Control** The TOS bit field configuration maps a Service Request to an Interrupt Service Provider: 000_B CPU0 service is initiated 001_B DMA service is initiated **Others**, Reserved (no action)
ECC	20:16	rwh	**Error Correction Code** The ECC bit field will be updated by the SRN under the following conditions: • Write or Read-Modify-Write to SRC[31:0] • Write to SRC[15:0] (16-bit write) • Write to SRC[15:8] or write to SRC[7:0] (byte write)
SRR	24	rh	**Service Request Flag** The SRR bit shows the status of the Service Request. 0_B No service request is pending 1_B A service request is pending
CLRR	25	w	**Request Clear Bit** The CLRR bit is required to reset **SRR**. 0_B No action 1_B Clear SRR; bit value is not stored; read always returns 0; no action if SETR is set in parallel.
SETR	26	w	**Request Set Bit** The SETR bit is required to set **SRR**. 0_B No action 1_B Set SRR and SWS; SRR bit value is not stored; read always returns 0; no action if CLRR is set in parallel.

Field	Bits	Type	Description
IOV	27	rh	**Interrupt Trigger Overflow Bit** The IOV bit is set by HW if a new service request was triggered via interrupt trigger or **SETR** bit while the SRN has still an pending service request. 0_B No Interrupt Trigger Overflow detected 1_B Interrupt Overflow Detected.
IOVCLR	28	w	**Interrupt Trigger Overflow Clear Bit** IOVCLR is required to reset **IOV**. 0_B No action 1_B Clear IOV; bit value is not stored; read always returns 0.
SWS	29	rh	**SW Sticky Bit** The Software Sticky Bit is set when the **SRR** bit has been set via the **SETR** bit. This bit can be cleared by writing with 1 to **SWSCLR**. Writing to SWS has no effect. 0_B No interrupt was initiated via SETR 1_B Interrupt was initiated via SETR
SWSCLR	30	w	**SW Sticky Clear Bit** SWSCLR is required to reset **SWS**. 0_B No action 1_B Clear SWS; bit value is not stored; read always returns 0.
0	9:8, 15:14, 23:21, 31	r	**Reserved** Read as 0; should be written with 0.

SRC_VADCG9SRy (y=0-3)
EVADC Group 9 Service Request y (00700_H+y*4) Application Reset Value: 0000 0000$_H$
SRC_VADCCGxSRy (x=0-1;y=0-3)
EVADC Common Group x Service Request y(00750_H+x*10_H+y*4) Application Reset Value: 0000 0000$_H$
SRC_ERAY0INT0
E-RAY 0 Service Request 0 (00800_H) Application Reset Value: 0000 0000$_H$
SRC_ERAY0INT1
E-RAY 0 Service Request 1 (00804_H) Application Reset Value: 0000 0000$_H$
SRC_ERAY0TINT0
E-RAY 0 Timer Interrupt 0 Service Request (00808_H) Application Reset Value: 0000 0000$_H$
SRC_ERAY0TINT1
E-RAY 0 Timer Interrupt 1 Service Request ($0080C_H$) Application Reset Value: 0000 0000$_H$
SRC_ERAY0NDAT0
E-RAY 0 New Data 0 Service Request (00810_H) Application Reset Value: 0000 0000$_H$
SRC_ERAY0NDAT1
E-RAY 0 New Data 1 Service Request (00814_H) Application Reset Value: 0000 0000$_H$
SRC_ERAY0MBSC0
E-RAY 0 Message Buffer Status Changed 0 Service Request(00818_H) Application Reset Value: 0000 0000$_H$
SRC_ERAY0MBSC1
E-RAY 0 Message Buffer Status Changed 1 Service Request($0081C_H$) Application Reset Value: 0000 0000$_H$



Field	Bits	Type	Description
SRPN	7:0	rw	**Service Request Priority Number** The SRPN bit field defines the priority of a service request with respect to service requests with to the same service provider (same SRC.TOS configuration): 00_H -> Service request is on lowest priority ... FF_H -> Service request is on highest priority **Notes** 1. *For a CPU 01_H is the lowest priority as 00_H is never serviced. For a DMA 00_H triggers channel 0.* 2. *For DMA, SRPN must not be greater than the highest implemented DMA channel number.*
SRE	10	rw	**Service Request Enable** 0_B Service request is disabled 1_B Service request is enabled

Field	Bits	Type	Description
TOS	13:11	rw	**Type of Service Control** The TOS bit field configuration maps a Service Request to an Interrupt Service Provider: 000_B CPU0 service is initiated 001_B DMA service is initiated **Others**, Reserved (no action)
ECC	20:16	rwh	**Error Correction Code** The ECC bit field will be updated by the SRN under the following conditions: • Write or Read-Modify-Write to SRC[31:0] • Write to SRC[15:0] (16-bit write) • Write to SRC[15:8] or write to SRC[7:0] (byte write)
SRR	24	rh	**Service Request Flag** The SRR bit shows the status of the Service Request. 0_B No service request is pending 1_B A service request is pending
CLRR	25	w	**Request Clear Bit** The CLRR bit is required to reset **SRR**. 0_B No action 1_B Clear SRR; bit value is not stored; read always returns 0; no action if SETR is set in parallel.
SETR	26	w	**Request Set Bit** The SETR bit is required to set **SRR**. 0_B No action 1_B Set SRR and SWS; SRR bit value is not stored; read always returns 0; no action if CLRR is set in parallel.
IOV	27	rh	**Interrupt Trigger Overflow Bit** The IOV bit is set by HW if a new service request was triggered via interrupt trigger or **SETR** bit while the SRN has still an pending service request. 0_B No Interrupt Trigger Overflow detected 1_B Interrupt Overflow Detected.
IOVCLR	28	w	**Interrupt Trigger Overflow Clear Bit** IOVCLR is required to reset **IOV**. 0_B No action 1_B Clear IOV; bit value is not stored; read always returns 0.
SWS	29	rh	**SW Sticky Bit** The Software Sticky Bit is set when the **SRR** bit has been set via the **SETR** bit. This bit can be cleared by writing with 1 to **SWSCLR**. Writing to SWS has no effect. 0_B No interrupt was initiated via SETR 1_B Interrupt was initiated via SETR

Field	Bits	Type	Description
SWSCLR	30	w	**SW Sticky Clear Bit** SWSCLR is required to reset **SWS**. 0_B No action 1_B Clear SWS; bit value is not stored; read always returns 0.
0	9:8, 15:14, 23:21, 31	r	**Reserved** Read as 0; should be written with 0.

SRC_ERAY0OBUSY
E-RAY 0 Output Buffer Busy **(00820_H)** **Application Reset Value: $0000\ 0000_H$**
SRC_ERAY0IBUSY
E-RAY 0 Input Buffer Busy **(00824_H)** **Application Reset Value: $0000\ 0000_H$**
SRC_DMUHOST
DMU Host Service Request **(00860_H)** **Application Reset Value: $0000\ 0000_H$**
SRC_DMUFSI
DMU FSI Service Request **(00864_H)** **Application Reset Value: $0000\ 0000_H$**
SRC_HSMy (y=0-1)
HSM Service Request y **(00870_H+y*4)** **Application Reset Value: $0000\ 0000_H$**
SRC_SCUERUx (x=0-3)
SCU ERU Service Request x **(00880_H+x*4)** **Application Reset Value: $0000\ 0000_H$**
SRC_PMSDTS
PMS DTS Service Request **($008AC_H$)** **Application Reset Value: $0000\ 0000_H$**
SRC_PMSx (x=0-3)
Power Management System Service Request x **($008B0_H$+x*4)** **Application Reset Value: $0000\ 0000_H$**
SRC_SCR
Stand By Controller Service Request **($008C0_H$)** **Application Reset Value: $0000\ 0000_H$**
SRC_SMUy (y=0-2)
SMU Service Request y **($008D0_H$+y*4)** **Application Reset Value: $0000\ 0000_H$**

31	30	29	28	27	26	25	24	23	22	21	20	19	18	17	16
0	**SWSCLR**	**SWS**	**IOVCLR**	**IOV**	**SETR**	**CLRR**	**SRR**	**0**			**ECC**				
r	w	rh	w	rh	w	w	rh	r			rwh				

15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
0		**TOS**			**SRE**	**0**		**SRPN**							
r		rw			rw	r		rw							

Field	Bits	Type	Description
SRPN	7:0	rw	**Service Request Priority Number** The SRPN bit field defines the priority of a service request with respect to service requests with to the same service provider (same SRC.TOS configuration): 00_H -> Service request is on lowest priority ... FF_H -> Service request is on highest priority **Notes** 1. *For a CPU 01_H is the lowest priority as 00_H is never serviced. For a DMA 00_H triggers channel 0.* 2. *For DMA, SRPN must not be greater than the highest implemented DMA channel number.*
SRE	10	rw	**Service Request Enable** 0_B Service request is disabled 1_B Service request is enabled
TOS	13:11	rw	**Type of Service Control** The TOS bit field configuration maps a Service Request to an Interrupt Service Provider: 000_B CPU0 service is initiated 001_B DMA service is initiated **Others**, Reserved (no action)
ECC	20:16	rwh	**Error Correction Code** The ECC bit field will be updated by the SRN under the following conditions: • Write or Read-Modify-Write to SRC[31:0] • Write to SRC[15:0] (16-bit write) • Write to SRC[15:8] or write to SRC[7:0] (byte write)
SRR	24	rh	**Service Request Flag** The SRR bit shows the status of the Service Request. 0_B No service request is pending 1_B A service request is pending
CLRR	25	w	**Request Clear Bit** The CLRR bit is required to reset **SRR**. 0_B No action 1_B Clear SRR; bit value is not stored; read always returns 0; no action if SETR is set in parallel.
SETR	26	w	**Request Set Bit** The SETR bit is required to set **SRR**. 0_B No action 1_B Set SRR and SWS; SRR bit value is not stored; read always returns 0; no action if CLRR is set in parallel.

Field	Bits	Type	Description
IOV	27	rh	**Interrupt Trigger Overflow Bit** The IOV bit is set by HW if a new service request was triggered via interrupt trigger or **SETR** bit while the SRN has still an pending service request. 0_B No Interrupt Trigger Overflow detected 1_B Interrupt Overflow Detected.
IOVCLR	28	w	**Interrupt Trigger Overflow Clear Bit** IOVCLR is required to reset **IOV**. 0_B No action 1_B Clear IOV; bit value is not stored; read always returns 0.
SWS	29	rh	**SW Sticky Bit** The Software Sticky Bit is set when the **SRR** bit has been set via the **SETR** bit. This bit can be cleared by writing with 1 to **SWSCLR**. Writing to SWS has no effect. 0_B No interrupt was initiated via SETR 1_B Interrupt was initiated via SETR
SWSCLR	30	w	**SW Sticky Clear Bit** SWSCLR is required to reset **SWS**. 0_B No action 1_B Clear SWS; bit value is not stored; read always returns 0.
0	9:8, 15:14, 23:21, 31	r	**Reserved** Read as 0; should be written with 0.

SRC_GPSR0y (y=0-7)
General Purpose Group 0 Service Request y **(00990_H+y*4)** **Application Reset Value: 0000 0000$_H$**
SRC_GTMAEIIRQ
AEI Shared Service Request **($00A70_H$)** **Application Reset Value: 0000 0000$_H$**
SRC_GTMARUIRQw (w=0-2)
ARU Shared Service Request w **($00A74_H$+w*4)** **Application Reset Value: 0000 0000$_H$**
SRC_GTMBRCIRQ
BRC Shared Service Request **($00A80_H$)** **Application Reset Value: 0000 0000$_H$**
SRC_GTMCMPIRQ
CMP Shared Service Request **($00A84_H$)** **Application Reset Value: 0000 0000$_H$**
SRC_GTMSPEwIRQ (w=0-1)
SPEw Shared Service Request **($00A88_H$+w*4)** **Application Reset Value: 0000 0000$_H$**
SRC_GTMERR
Error Service Request **($00B70_H$)** **Application Reset Value: 0000 0000$_H$**
SRC_GTMTIMwx (w=0-1;x=0-7)
TIMw Shared Service Request x **($00B90_H$+w*20_H+x*4)** **Application Reset Value: 0000 0000$_H$**
SRC_GTMTOMwx (w=0-1;x=0-7)
TOMw Shared Service Request x **($00E10_H$+w*20_H+x*4)** **Application Reset Value: 0000 0000$_H$**
SRC_GTMATOM0x (x=0-3)
ATOM0 Shared Service Request x **($00EF0_H$+x*4)** **Application Reset Value: 0000 0000$_H$**

31	30	29	28	27	26	25	24	23	22	21	20	19	18	17	16
0	SWSCLR	SWS	IOVCLR	IOV	SETR	CLRR	SRR	0			ECC				
r	w	rh	w	rh	w	w	rh	r			rwh				

15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
0		TOS			SRE	0		SRPN							
r		rw			rw	r		rw							

Field	Bits	Type	Description
SRPN	7:0	rw	**Service Request Priority Number** The SRPN bit field defines the priority of a service request with respect to service requests with to the same service provider (same SRC.TOS configuration): 00_H -> Service request is on lowest priority ... FF_H -> Service request is on highest priority **Notes** 1. *For a CPU 01_H is the lowest priority as 00_H is never serviced. For a DMA 00_H triggers channel 0.* 2. *For DMA, SRPN must not be greater than the highest implemented DMA channel number.*
SRE	10	rw	**Service Request Enable** 0_B Service request is disabled 1_B Service request is enabled

Field	Bits	Type	Description
TOS	13:11	rw	**Type of Service Control** The TOS bit field configuration maps a Service Request to an Interrupt Service Provider: 000_B CPU0 service is initiated 001_B DMA service is initiated **Others**, Reserved (no action)
ECC	20:16	rwh	**Error Correction Code** The ECC bit field will be updated by the SRN under the following conditions: • Write or Read-Modify-Write to SRC[31:0] • Write to SRC[15:0] (16-bit write) • Write to SRC[15:8] or write to SRC[7:0] (byte write)
SRR	24	rh	**Service Request Flag** The SRR bit shows the status of the Service Request. 0_B No service request is pending 1_B A service request is pending
CLRR	25	w	**Request Clear Bit** The CLRR bit is required to reset **SRR**. 0_B No action 1_B Clear SRR; bit value is not stored; read always returns 0; no action if SETR is set in parallel.
SETR	26	w	**Request Set Bit** The SETR bit is required to set **SRR**. 0_B No action 1_B Set SRR and SWS; SRR bit value is not stored; read always returns 0; no action if CLRR is set in parallel.
IOV	27	rh	**Interrupt Trigger Overflow Bit** The IOV bit is set by HW if a new service request was triggered via interrupt trigger or **SETR** bit while the SRN has still an pending service request. 0_B No Interrupt Trigger Overflow detected 1_B Interrupt Overflow Detected.
IOVCLR	28	w	**Interrupt Trigger Overflow Clear Bit** IOVCLR is required to reset **IOV**. 0_B No action 1_B Clear IOV; bit value is not stored; read always returns 0.
SWS	29	rh	**SW Sticky Bit** The Software Sticky Bit is set when the **SRR** bit has been set via the **SETR** bit. This bit can be cleared by writing with 1 to **SWSCLR**. Writing to SWS has no effect. 0_B No interrupt was initiated via SETR 1_B Interrupt was initiated via SETR

Field	Bits	Type	Description
SWSCLR	30	w	**SW Sticky Clear Bit** SWSCLR is required to reset **SWS**. 0_B No action 1_B Clear SWS; bit value is not stored; read always returns 0.
0	9:8, 15:14, 23:21, 31	r	**Reserved** Read as 0; should be written with 0.

16.6 Revision History

Table 190 Revision History

Reference	Change to Previous Version	Comment
V1.2.6		
Page 10	Increased DMA channel SRC registers from 16 to 64	
V1.2.7		
Page 10	Changed SRC_VADCG8SR - SRC_VADCG9SR index name to ´y´.	
V1.2.8		
	Removed connection table.	
Page 10	Added GTM BRC, CMP, SPE0, SPE1	
Page 10	Removed wrong mentioned SRC_GTMMCSWx	
V1.2.9		
	No changes.	
V1.2.10		
Page 1, **Page 3**	Removed additional broadcast register, no functional change.	
V1.2.11		
Page 6	Updated bullet list item.	

17 Flexible CRC Engine (FCE)

For the general description of the module and the registers, please refer to the family spec.

17.1 TC33x/TC32x Specific IP Configuration

There are no device specific IP configurations.

17.2 TC33x/TC32x Specific Register Set

Table 191 Register Address Space - FCE

Module	Base Address	End Address	Note
FCE	$F0000000_H$	$F00001FF_H$	FPI slave interface

Table 192 Register Overview - FCE (ascending Offset Address)

Short Name	Long Name	Offset Address	Access Mode		Reset	Page Number
			Read	Write		
FCE_CLC	Clock Control Register	000_H	U,SV	E,SV,P	Application Reset	See Family Spec
FCE_ID	Module Identification Register	008_H	U,SV	BE	Application Reset	See Family Spec
FCE_CHSTS	Channels Status Register	020_H	U,SV	BE	Application Reset	See Family Spec
FCE_KRSTCLR	Kernel Reset Status Clear Register	$0EC_H$	U,SV	SV,E,P	Application Reset	See Family Spec
FCE_KRST1	Kernel Reset Register 1	$0F0_H$	U,SV	SV,E,P	Application Reset	See Family Spec
FCE_KRST0	Kernel Reset Register 0	$0F4_H$	U,SV	SV,E,P	Application Reset	See Family Spec
FCE_ACCEN1	Access Enable Register 1	$0F8_H$	U,SV	SV,SE	Application Reset	See Family Spec
FCE_ACCEN0	Access Enable Register 0	$0FC_H$	U,SV	SV,SE	Application Reset	See Family Spec
FCE_IRi (i=0-7)	Input Register i	100_H+i*20$_H$	U,SV	P,U,SV	Application Reset	See Family Spec
FCE_RESi (i=0-7)	CRC Result Register i	104_H+i*20$_H$	U,SV	BE	Application Reset	See Family Spec
FCE_CFGi (i=0-7)	CRC Configuration Register i	108_H+i*20$_H$	U,SV	P,E,SV	Application Reset	See Family Spec
FCE_STSi (i=0-7)	CRC Status Register i	$10C_H$+i*20$_H$	U,SV	P,U,SV	Application Reset	See Family Spec

Table 192 Register Overview - FCE (ascending Offset Address) (cont'd)

Short Name	Long Name	Offset Address	Access Mode		Reset	Page Number
			Read	Write		
FCE_LENGTHi (i=0-7)	CRC Length Register i	110_H+i*20$_H$	U,SV	P,U,SV	Application Reset	See Family Spec
FCE_CHECKi (i=0-7)	CRC Check Register i	114_H+i*20$_H$	U,SV	P,U,SV	Application Reset	See Family Spec
FCE_CRCi (i=0-7)	CRC Regsister i	118_H+i*20$_H$	U,SV	P,U,SV	Application Reset	See Family Spec
FCE_CTRi (i=0-7)	CRC Test Register i	$11C_H$+i*20$_H$	U,SV	P,U,SV	Application Reset	See Family Spec

17.3 TC33x/TC32x Specific Registers

No deviations from the Family Spec

17.4 Connectivity

Table 193 Connections of FCE

Interface Signals	connects		Description
FCE:SRC_FCE	to	INT:fce0.SRC_FCE	FCE Service Request

17.5 Revision History

Table 194 Revision History

Reference	Change to Previous Version	Comment
V4.2.9		
	Initial version of TC33X.	

18 Direct Memory Access (DMA)

This is the TC33x/TC32x specific information related to the DMA module of the AURIXTC3XX product family.

18.1 TC33x/TC32x Specific IP Configuration

The TC33x/TC32x DMA contains 64 DMA channels.

18.2 TC33x/TC32x Specific Register Set

Table 195 Register Address Space - DMA

Module	Base Address	End Address	Note
DMA	$F0010000_H$	$F0013FFF_H$	FPI slave interface

Table 196 Register Overview - DMA (ascending Offset Address)

Short Name	Long Name	Offset Address	Access Mode		Reset	Page Number
			Read	Write		
DMA_CLC	DMA Clock Control Register	0000_H	U,SV	SV,E,P00,P01	Application Reset	See Family Spec
DMA_ID	DMA Identification Register	0008_H	U,SV	BE	Application Reset	See Family Spec
DMA_ACCENr0 (r=0-3)	RP r Access Enable Register 0	0040_H+r*8	U,SV	SV,SE	Application Reset	See Family Spec
DMA_ACCENr1 (r=0-3)	RP r Access Enable Register 1	0044_H+r*8	U,SV	nBE	Application Reset	See Family Spec
DMA_EERm (m=0-1)	ME m Enable Error Register	0120_H+m*1000_H	U,SV	SV	Application Reset	See Family Spec
DMA_ERRSRm (m=0-1)	ME m Error Status Register	0124_H+m*1000_H	U,SV	BE	Application Reset	See Family Spec
DMA_CLREm (m=0-1)	ME m Clear Error Register	0128_H+m*1000_H	U,SV	SV	Application Reset	See Family Spec
DMA_MEmSR (m=0-1)	ME m Status Register	0130_H+m*1000_H	U,SV	BE	Application Reset	See Family Spec
DMA_MEm0R (m=0-1)	ME m Read Register 0	0140_H+m*1000_H	U,SV	BE	Application Reset	See Family Spec

Table 196 Register Overview - DMA (ascending Offset Address) (cont'd)

Short Name	Long Name	Offset Address	Access Mode		Reset	Page Number
			Read	Write		
DMA_MEm1R (m=0-1)	ME m Read Register 1	0144_H+m *1000_H	U,SV	BE	Application Reset	See Family Spec
DMA_MEm2R (m=0-1)	ME m Read Register 2	0148_H+m *1000_H	U,SV	BE	Application Reset	See Family Spec
DMA_MEm3R (m=0-1)	ME m Read Register 3	$014C_H$+ m*1000_H	U,SV	BE	Application Reset	See Family Spec
DMA_MEm4R (m=0-1)	ME m Read Register 4	0150_H+m *1000_H	U,SV	BE	Application Reset	See Family Spec
DMA_MEm5R (m=0-1)	ME m Read Register 5	0154_H+m *1000_H	U,SV	BE	Application Reset	See Family Spec
DMA_MEm6R (m=0-1)	ME m Read Register 6	0158_H+m *1000_H	U,SV	BE	Application Reset	See Family Spec
DMA_MEm7R (m=0-1)	ME m Read Register 7	$015C_H$+ m*1000_H	U,SV	BE	Application Reset	See Family Spec
DMA_MEmRDCRC (m=0-1)	ME m Channel Read Data CRC Register	0180_H+m *1000_H	U,SV	BE	Application Reset	See Family Spec
DMA_MEmSDCRC (m=0-1)	ME m Channel Source and Destination Address CRC Register	0184_H+m *1000_H	U,SV	BE	Application Reset	See Family Spec
DMA_MEmSADR (m=0-1)	ME m Channel Source Address Register	0188_H+m *1000_H	U,SV	BE	Application Reset	See Family Spec
DMA_MEmDADR (m=0-1)	ME m Channel Destination Address Register	$018C_H$+ m*1000_H	U,SV	BE	Application Reset	See Family Spec
DMA_MEmADICR (m=0-1)	ME m Channel Address and Interrupt Control Register	0190_H+m *1000_H	U,SV	BE	Application Reset	See Family Spec
DMA_MEmCHCR (m=0-1)	ME m Channel Control Register	0194_H+m *1000_H	U,SV	BE	Application Reset	See Family Spec
DMA_MEmSHADR (m=0-1)	ME m Channel Shadow Address Register	0198_H+m *1000_H	U,SV	BE	Application Reset	See Family Spec

Table 196 Register Overview - DMA (ascending Offset Address) (cont'd)

Short Name	Long Name	Offset Address	Access Mode		Reset	Page Number
			Read	Write		
DMA_MEmCHSR (m=0-1)	ME m Channel Status Register	$019C_H$+ m*1000_H	U,SV	BE	Application Reset	See Family Spec
DMA_OTSS	DMA OCDS Trigger Set Select	1200_H	U,SV	SV	See Family Spec	See Family Spec
DMA_PRR0	DMA Pattern Read Register 0	1208_H	U,SV	SV	Application Reset	See Family Spec
DMA_PRR1	DMA Pattern Read Register 1	$120C_H$	U,SV	SV	Application Reset	See Family Spec
DMA_TIME	DMA Time Register	1210_H	U,SV	BE	Application Reset	See Family Spec
DMA_MODEr (r=0-3)	RP r Mode Register	1300_H+r* 4	U,SV	SV,SE,P00, P01	Application Reset	See Family Spec
DMA_ERRINTRr (r=0-3)	RP r Error Interrupt Set Register	1320_H+r* 4	U,SV	SV,Pr	Application Reset	See Family Spec
DMA_HRRc (c=000-63)	DMA Channel c Resource Partition Register	1800_H+c *4	U,SV	SV,SE,P00, P01	Application Reset	See Family Spec
DMA_SUSENRc (c=000-63)	DMA Channel c Suspend Enable Register	$1A00_H$+c *4	U,SV	SV,E,Pr	See Family Spec	See Family Spec
DMA_SUSACRc (c=000-63)	DMA Channel c Suspend Acknowledge Register	$1C00_H$+c *4	U,SV	BE	See Family Spec	See Family Spec
DMA_TSRc (c=000-63)	DMA Channel c Transaction State Register	$1E00_H$+c *4	U,SV	SV,Pr	Application Reset	See Family Spec
DMA_RDCRCRc (c=000-63)	DMARAM Channel c Read Data CRC Register	2000_H+c *20_H	U,SV	SV,Pr	Application Reset	See Family Spec
DMA_SDCRCRc (c=000-63)	DMARAM Channel c Source and Destination Address CRC Register	2004_H+c *20_H	U,SV	SV,Pr	Application Reset	See Family Spec
DMA_SADRc (c=000-63)	DMARAM Channel c Source Address Register	2008_H+c *20_H	U,SV	SV,Pr	Application Reset	See Family Spec

Table 196 Register Overview - DMA (ascending Offset Address) (cont'd)

Short Name	Long Name	Offset Address	Access Mode		Reset	Page Number
			Read	Write		
DMA_DADRc (c=000-63)	DMARAM Channel c Destination Address Register	$200C_H$+c *20_H	U,SV	SV,Pr	Application Reset	See Family Spec
DMA_ADICRc (c=000-63)	DMARAM Channel c Address and Interrupt Control Register	2010_H+c *20_H	U,SV	SV,Pr	Application Reset	See Family Spec
DMA_CHCFGRc (c=000-63)	DMARAM Channel c Configuration Register	2014_H+c *20_H	U,SV	SV,Pr	Application Reset	See Family Spec
DMA_SHADRc (c=000-63)	DMARAM Channel c Shadow Address Register	2018_H+c *20_H	U,SV	SV,Pr	Application Reset	See Family Spec
DMA_CHCSRc (c=000-63)	DMARAM Channel c Control and Status Register	$201C_H$+c *20_H	U,SV	SV,Pr	Application Reset	See Family Spec

18.3 TC33x/TC32x Specific Registers

No deviations from the Family Spec

18.4 Connectivity

Table 197 Connections of DMA

Interface Signals	connects		Description
DMA:fpi0_sleep_n	from	SCU:scu_syst_sleep_n	Sleep Control
DMA:ERR_INT(3:0)	to	INT:dma.ERR_INT(3:0)	DMA Error Service Request
DMA:CH_INT(127:0)	to	INT:dma.CH_INT(127:0)	DMA Channel Service Request

18.5 Revision History

Table 198 Revision History

Reference	Change to Previous Version	Comment
V0.1.15		
–	Initial version for TC33x.	
V0.1.16		
Page 1	Updated number of DMA channels.	
V0.1.17		
–	No functional changes.	
V0.1.18		
–	No functional changes.	

19 Signal Processing Unit (SPU)

This device doesn’t contain a SPU module.

20 SPU Lockstep Comparator (SPULCKSTP)

This device doesn’t contain a SPULCKSTP module.

21 Extension Memory (EMEM)

This device doesn’t contain an EMEM module.

22 Radar Interface (RIF)

This device doesn’t contain a RIF module.

23 High Speed Pulse Density Modulation Module (HSPDM)

This device doesn’t contain a HSPDM module.

24 Camera and ADC Interface (CIF)

This device doesn’t contain a CIF module.

25 System Timer (STM)

This chapter describes the device specific details in TC33x/TC32x.

25.1 TC33x/TC32x Specific IP Configuration

See features in family spec

25.2 TC33x/TC32x Specific Register Set

Register Address Space Table

The address space for the module registers is defined below

Table 199 Register Address Space - STM

Module	Base Address	End Address	Note
STM0	$F0001000_H$	$F00010FF_H$	FPI slave interface

Register Overview Table

There are no product specific register for this module.

25.3 TC33x/TC32x Specific Registers

There are no product specific register for this module.

25.4 Connectivity

The tables below list all the connections of STM instances.

Table 200 Connections of STM0

Interface Signals	connects		Description
STM0:SR0_INT	to	CAN0:STM0.SR0_INT	System Timer Service Request 0
		CAN1:STM0.SR0_INT	
		INT:stm0.SR0_INT	
STM0:SR1_INT	to	CAN0:STM0.SR1_INT	System Timer Service Request 1
		CAN1:STM0.SR1_INT	
		INT:stm0.SR1_INT	

25.5 Revision History

Table 201 Revision History

Reference	Change to Previous Version	Comment
V9.2.3		
–	Initial version for TC33X.	
V9.2.4		
Page 1	Connection table updated (no functional changes).	

26 Generic Timer Module (GTM)

The following chapter describes the specific TC33x GTM configuration. For the GTM IP functionalities, please refer to the Family specification.

26.1 TC33x Specific IP Configuration

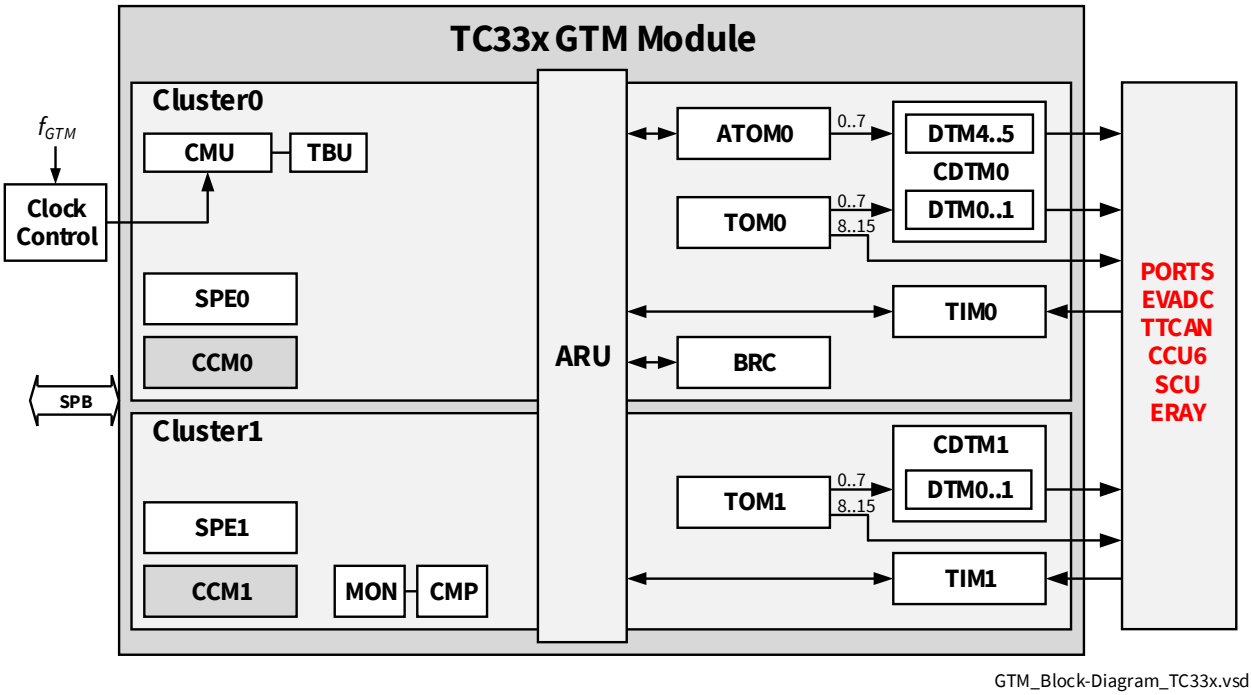


Figure 5 GTM IP Block Diagram (TC33x)

Table 202 GTM Configuration by AURIX TC33x Product

GTM Modules	TC33x
TIM	2x8 ch. (TIM0-1)
TOM	2x16 ch. (TOM0-1)
ATOM	1x8 ch. (ATOM0)
DTM/CDTM	1x4 ch., 1x2 ch./2xCDTM
MCS	0
SPE	2 (SPE0-1)
PSM	0
DPLL	0
TBU	3 (TBU0-2)
BRC	1
MON	1
CMP	1

Table 202 GTM Configuration by AURIX TC33x Product (cont'd)

GTM Modules	TC33x
GTM Clusters (max speed)	2 (CCM0-1) CCM0-1: 200 MHz max
ARU Latency (round robin)	41x10ns => 410ns @100MHz, (ARU_CADDR_END =40)

Table 203 CDTM Connections by AURIX TC33x Product

TC33x GTM (A)TOM Modules	CDTM
TOM0_CH0..CH3	CDTM0_DTM0
TOM0_CH4..CH7	CDTM0_DTM1
TOM1_CH0..CH3	CDTM1_DTM0
TOM1_CH4..CH7	CDTM1_DTM1
ATOM0_CH0..CH3	CDTM0_DTM4
ATOM0_CH4..CH7	CDTM0_DTM5
Total DTM Channels	6

Table 204 TC33x/TC32x specific configuration of GTM

Parameter	GTM
Number of MCS modules	0
Number of DPLL modules	0
Number of PSM modules	0
Number of TIM modules	2
Number of ATOM DTM modules	1
Number of TOM DTM modules	2
Number of DSADC channels	0
Number of primary EVADC groups	2
Number of secondary EVADC groups	2
Number of MOSEL controlled trigger outputs	4
Number of TOUT signals	131
Number of SCU trigger outputs	4
Number of CAN modules	2
Number of MCS SET signals	0
Number of Fast Compare Channels of EVADC	0
Number of MSC modules	0
Number of DSADCINSEL registers	0
Number of PSI5/PSI5S modules	0
Number of EDSADC modules	0
Channel 3 of TBU is not available.	1

Table 204 TC33x/TC32x specific configuration of GTM (cont'd)

Parameter	GTM
Number of CCM modules	2
Indicate cluster with high clock frequency	1,1
Number of ARU modules	1
Number of ATOM modules	1
Number of BRC modules	1
Number of TOM modules	2
Number of SPE modules	2
Number of CMP modules	1
Number of MON modules	1
Number of Address range protectors per CCM	10
Number of CDTM modules	2
List of DTM instances available within CDTM instance	(0 , 1 , 4 , 5) , (0 , 1)
Number of MAP modules	0
Number of MCS channel in MCS module instance	0
Number of MCFG modules	0
Number of Interrupt Groups for registers ICM_IRQG_CLS_k_MEI	1
CCM0_CFG Reset Value	131111
CCM1_CFG Reset Value	131203
Fast Clock in Cluster 0	1
Fast Clock in Cluster 1	1

26.2 TC33x/TC32x Registers Register Set

Table 205 Register Address Space - GTM

Module	Base Address	End Address	Note
GTM	$F0100000_H$	$F01FFFFF_H$	FPI slave interface

Register Overview Tables of GTM

Table 206 Register Overview - GTM (ascending Offset Address)

Short Name	Long Name	Offset Address	Access Mode		Reset	Page Number
			Read	Write		
GTM_REV	GTM Version Control Register	000000_H	U,SV,32		Application Reset	19
GTM_RST	GTM Global Reset Register	000004_H	U,SV,32	U,SV,32,P	Application Reset	See Family Spec
GTM_CTRL	GTM Global Control Register	000008_H	U,SV,32	U,SV,32,P	Application Reset	See Family Spec
GTM_AEI_ADDR_XPT	GTM AEI Timeout Exception Address Register	$00000C_H$	U,SV,32		Application Reset	See Family Spec
GTM_IRQ_NOTIFY	GTM Interrupt Notification Register	000010_H	U,SV,32	U,SV,32,P	Application Reset	See Family Spec
GTM_IRQ_EN	GTM Interrupt Enable Register	000014_H	U,SV,32	U,SV,32,P	Application Reset	See Family Spec
GTM_IRQ_FORCINT	GTM Software Interrupt Generation Register	000018_H	U,SV,32	U,SV,32,P	Application Reset	See Family Spec
GTM_IRQ_MODE	GTM Top Level Interrupts Mode Selection Register	$00001C_H$	U,SV,32	U,SV,32,P	Application Reset	See Family Spec
GTM_EIRQ_EN	GTM Error Interrupt Enable Register	000020_H	U,SV,32	U,SV,32,P	Application Reset	See Family Spec
GTM_HW_CONF	GTM Hardware Configuration Register	000024_H	U,SV,32		Application Reset	See Family Spec
GTM_CFG	GTM Configuration Register	000028_H	U,SV,32	U,SV,32,P	Application Reset	See Family Spec

Table 206 Register Overview - GTM (ascending Offset Address) (cont'd)

Short Name	Long Name	Offset Address	Access Mode		Reset	Page Number
			Read	Write		
GTM_AEI_STA_XPT	GTM AEI Non Zero Status Register	$00002C_H$	U,SV,32		Application Reset	See Family Spec
GTM_BRIDGE_MODE	GTM AEI Bridge Mode Register	000030_H	U,SV,32	U,SV,32,P	Application Reset	See Family Spec
GTM_BRIDGE_PTR1	GTM AEI Bridge Pointer 1 Register	000034_H	U,SV,32		Application Reset	See Family Spec
GTM_BRIDGE_PTR2	GTM AEI Bridge Pointer 2 Register	000038_H	U,SV,32		Application Reset	See Family Spec
GTM_TIMi_AUX_IN_SRC (i=0-1)	GTM TIM i Module AUX_IN Source Selection Register	000040_H +i*4	U,SV,32	U,SV,32,P	Application Reset	26
GTM_TOMi_OUT (i=0-1)	GTM TOM i Output Level	000080_H +i*4	U,SV,32		Application Reset	See Family Spec
GTM_ATOM0_OUT	GTM ATOM 0 Output Level	000098_H	U,SV,32		Application Reset	See Family Spec
GTM_CLS_CLK_CFG	GTM Cluster Clock Configuration	$0000B0_H$	U,SV,32	U,SV,32,P	Application Reset	19
GTM_TBU_CHEN	TBU Global Channel Enable	000100_H	U,SV,32	U,SV,32,P	Application Reset	See Family Spec
GTM_TBU_CH0_CTRL	TBU Channel 0 Control Register	000104_H	U,SV,32	U,SV,32,P	Application Reset	See Family Spec
GTM_TBU_CH0_BASE	TBU Channel 0 Base Register	000108_H	U,SV,32	U,SV,32,P	Application Reset	See Family Spec
GTM_TBU_CH1_CTRL	TBU Channel 1 Control Register	$00010C_H$	U,SV,32	U,SV,32,P	Application Reset	See Family Spec
GTM_TBU_CH1_BASE	TBU Channel 1 Base Register	000110_H	U,SV,32	U,SV,32,P	Application Reset	See Family Spec
GTM_TBU_CH2_CTRL	TBU Channel 2 Control Register	000114_H	U,SV,32	U,SV,32,P	Application Reset	See Family Spec

Table 206 Register Overview - GTM (ascending Offset Address) (cont'd)

Short Name	Long Name	Offset Address	Access Mode		Reset	Page Number
			Read	Write		
GTM_TBU_CH2_BASE	TBU Channel 2 Base Register	000118_H	U,SV,32	U,SV,32,P	Application Reset	See Family Spec
GTM_MON_STATUS	Monitor Status Register	000180_H	U,SV,32	U,SV,32,P	Application Reset	20
GTM_CMP_EN	CMP Comparator Enable Register	000200_H	U,SV,32	U,SV,32,P	Application Reset	31
GTM_CMP_IRQ_NOTIFY	CMP Event Notification Register	000204_H	U,SV,32	U,SV,32,P	Application Reset	32
GTM_CMP_IRQ_EN	CMP Interrupt Enable Register	000208_H	U,SV,32	U,SV,32,P	Application Reset	32
GTM_CMP_IRQ_FORCINT	CMP Interrupt Force Register	$00020C_H$	U,SV,32	U,SV,32,P	Application Reset	33
GTM_CMP_IRQ_MODE	CMP Interrupt Mode Configuration Register	000210_H	U,SV,32	U,SV,32,P	Application Reset	See Family Spec
GTM_CMP_EIRQ_EN	CMP error interrupt enable register	000214_H	U,SV,32	U,SV,32,P	Application Reset	34
GTM_ARU_ACCESS	ARU Access Register	000280_H	U,SV,32	U,SV,32,P	Application Reset	See Family Spec
GTM_ARU_DATA_H	ARU Access Register Upper Data Word	000284_H	U,SV,32	U,SV,32,P	Application Reset	See Family Spec
GTM_ARU_DATA_L	ARU Access Register Lower Data Word	000288_H	U,SV,32	U,SV,32,P	Application Reset	See Family Spec
GTM_ARU_DBG_ACCESS0	ARU Debug Access Channel 0	$00028C_H$	U,SV,32	U,SV,32,P	Application Reset	See Family Spec
GTM_ARU_DBG_DATA0_H	ARU Debug Access 0 Transfer Register Upper Data Word	000290_H	U,SV,32		Application Reset	See Family Spec
GTM_ARU_DBG_DATA0_L	ARU Debug Access 0 Transfer Register Lower Data Word	000294_H	U,SV,32		Application Reset	See Family Spec
GTM_ARU_DBG_ACCESS1	ARU Debug Access Channel 1	000298_H	U,SV,32	U,SV,32,P	Application Reset	See Family Spec
GTM_ARU_DBG_DATA1_H	ARU Debug Access 1 Transfer Register Upper Data Word	$00029C_H$	U,SV,32		Application Reset	See Family Spec

Table 206 Register Overview - GTM (ascending Offset Address) (cont'd)

Short Name	Long Name	Offset Address	Access Mode		Reset	Page Number
			Read	Write		
GTM_ARU_DBG_DATA1_L	ARU Debug Access 1 Transfer Register Lower Data Word	$0002A0_H$	U,SV,32		Application Reset	See Family Spec
GTM_ARU_IRQ_NOTIFY	ARU Interrupt Notification Register	$0002A4_H$	U,SV,32	U,SV,32,P	Application Reset	See Family Spec
GTM_ARU_IRQ_EN	ARU Interrupt Enable Register	$0002A8_H$	U,SV,32	U,SV,32,P	Application Reset	See Family Spec
GTM_ARU_IRQ_FORCINT	ARU Force Interrupt Register	$0002AC_H$	U,SV,32	U,SV,32,P	Application Reset	See Family Spec
GTM_ARU_IRQ_MODE	ARU Interrupt Mode Register	$0002B0_H$	U,SV,32	U,SV,32,P	Application Reset	See Family Spec
GTM_ARU_CADDR_END	ARU caddr Counter End Value Register	$0002B4_H$	U,SV,32	U,SV,32,P	Application Reset	22
GTM_ARU_CTRL	ARU Enable Dynamic Routing Register	$0002BC_H$	U,SV,32	U,SV,32,P	Application Reset	See Family Spec
GTM_ARU_z_DYN_CTRL (z=0-1)	ARU z Dynamic Routing Control Register	$0002C0_H$ +z*4	U,SV,32	U,SV,32,P	Application Reset	See Family Spec
GTM_ARU_z_DYN_ROUTE_LOW (z=0-1)	ARU z Lower Bits of DYN_ROUTE Register	$0002C8_H$ +z*4	U,SV,32	U,SV,32,P	Application Reset	See Family Spec
GTM_ARU_z_DYN_ROUTE_HIGH (z=0-1)	ARU z Higher Bits of DYN_ROUTE Register	$0002D0_H$ +z*4	U,SV,32	U,SV,32,P	Application Reset	See Family Spec
GTM_ARU_z_DYN_ROUTE_SR_LOW (z=0-1)	ARU z Shadow Register for ARU_z_DYN_ROUTE_LOW	$0002D8_H$ +z*4	U,SV,32	U,SV,32,P	Application Reset	See Family Spec
GTM_ARU_z_DYN_ROUTE_SR_HIGH (z=0-1)	ARU z Shadow Register for ARU_z_DYN_ROUTE_HIGH	$0002E0_H$ +z*4	U,SV,32	U,SV,32,P	Application Reset	See Family Spec
GTM_ARU_z_DYN_RDADDR (z=0-1)	ARU z Read ID for Dynamic Routing	$0002E8_H$ +z*4	U,SV,32	U,SV,32,P	Application Reset	See Family Spec
GTM_ARU_CADDR	ARU caddr Counter Value	$0002FC_H$	U,SV,32		Application Reset	See Family Spec

Table 206 Register Overview - GTM (ascending Offset Address) (cont'd)

Short Name	Long Name	Offset Address	Access Mode		Reset	Page Number
			Read	Write		
GTM_CMU_CLK_EN	CMU Clock Enable Register	000300_H	U,SV,32	U,SV,32,P	Application Reset	See Family Spec
GTM_CMU_GCLK_NUM	CMU Global Clock Control Numerator	000304_H	U,SV,32	U,SV,32,P	Application Reset	See Family Spec
GTM_CMU_GCLK_DEN	CMU Global Clock Control Denominator	000308_H	U,SV,32	U,SV,32,P	Application Reset	See Family Spec
GTM_CMU_CLK_z_CTRL (z=0-7)	CMU Control for Clock Source z	$00030C_H$ +z*4	U,SV,32	U,SV,32,P	Application Reset	25
GTM_CMU_ECLK_z_NUM (z=0-2)	CMU External Clock z Control Numerator	$00032C_H$ +z*8	U,SV,32	U,SV,32,P	Application Reset	See Family Spec
GTM_CMU_ECLK_z_DEN (z=0-2)	CMU External Clock z Control Denominator	000330_H +z*8	U,SV,32	U,SV,32,P	Application Reset	See Family Spec
GTM_CMU_FXCLK_CTRL	CMU Control FXCLK Sub-Unit Input Clock	000344_H	U,SV,32	U,SV,32,P	Application Reset	See Family Spec
GTM_CMU_GLB_CTRL	CMU Synchronizing ARU and Clock Source	000348_H	U,SV,32	U,SV,32,P	Application Reset	See Family Spec
GTM_CMU_CLK_CTRL	CMU Control for Clock Source Selection	$00034C_H$	U,SV,32	U,SV,32,P	Application Reset	See Family Spec
GTM_BRC_SRC_z_ADDR (z=0-11)	BRC Read Address for Input Channel z	000400_H +z*8	U,SV,32	U,SV,32,P	Application Reset	See Family Spec
GTM_BRC_SRC_z_DEST (z=0-11)	BRC Destination Channels for Input Channel z	000404_H +z*8	U,SV,32	U,SV,32,P	Application Reset	See Family Spec
GTM_BRC_IRQ_NOTIFY	BRC Interrupt Notification Register	000460_H	U,SV,32	U,SV,32,P	Application Reset	See Family Spec
GTM_BRC_IRQ_EN	BRC Interrupt Enable Register	000464_H	U,SV,32	U,SV,32,P	Application Reset	See Family Spec
GTM_BRC_IRQ_FORCINT	BRC Force Interrupt Register	000468_H	U,SV,32	U,SV,32,P	Application Reset	See Family Spec

Table 206 Register Overview - GTM (ascending Offset Address) (cont'd)

Short Name	Long Name	Offset Address	Access Mode		Reset	Page Number
			Read	Write		
GTM_BRC_IRQ_MODE	BRC Interrupt Mode Configuration Register	$00046C_H$	U,SV,32	U,SV,32,P	Application Reset	See Family Spec
GTM_BRC_RST	BRC Software Reset Register	000470_H	U,SV,32	U,SV,32,P	Application Reset	See Family Spec
GTM_BRC_EIRQ_EN	BRC Error Interrupt Enable Register	000474_H	U,SV,32	U,SV,32,P	Application Reset	See Family Spec
GTM_ICM_IRQG_0	ICM Interrupt Group Register Covering Infrastructural and Safety Components ARU, BRC, AEI, PSM0, PSM1, MAP, CMP, SPE	000600_H	U,SV,32		Application Reset	29
GTM_ICM_IRQG_2	ICM Interrupt Group Register Covering TIM0, TIM1, TIM2, TIM3	000608_H	U,SV,32		Application Reset	See Family Spec
GTM_ICM_IRQG_6	ICM Interrupt Group Register Covering GTM Output Sub-Modules TOM0 to TOM1	000618_H	U,SV,32		Application Reset	See Family Spec
GTM_ICM_IRQG_9	ICM Interrupt Group Register Covering GTM Output Sub-Modules ATOM0, ATOM1, ATOM2 and ATOM3	000624_H	U,SV,32		Application Reset	See Family Spec
GTM_ICM_IRQG_MEI	ICM Interrupt Group Register for Module Error Interrupt Information	000630_H	U,SV,32		Application Reset	See Family Spec
GTM_ICM_IRQG_CEI1	ICM Interrupt Group Register 1 for Channel Error Interrupt Information	000638_H	U,SV,32		Application Reset	See Family Spec
GTM_ICM_IRQG_SPE_CEI	ICM Interrupt Group SPE for Module Error Interrupt Information	$0006B4_H$	U,SV,32		Application Reset	See Family Spec
GTM_ICM_IRQG_CLS_k_MEI (k=0)	ICM Interrupt Group k for Module Error Interrupt Information for each TIMm, MCSm, SPEm, FIFOm	000710_H	U,SV,32		Application Reset	28
GTM_ICM_IRQG_SPE_CI	ICM Interrupt Group SPE for Module Interrupt Information	000770_H	U,SV,32		Application Reset	See Family Spec

Table 206 Register Overview - GTM (ascending Offset Address) (cont'd)

Short Name	Long Name	Offset Address	Access Mode		Reset	Page Number
			Read	Write		
GTM_ICM_IRQG_ATOM_k_CI (k=0)	ICM Interrupt Group ATOM k for Channel Interrupt Information of ATOMm	000790_H	U,SV,32		Application Reset	29
GTM_ICM_IRQG_TOM_k_CI (k=0)	ICM Interrupt Group TOM k for Channel Interrupt Information of TOMm	$0007A0_H$	U,SV,32		Application Reset	See Family Spec
GTM_SPEi_CTRL_STAT (i=0-1)	SPEi Control Status Register	000800_H +i*80_H	U,SV,32	U,SV,32,P	Application Reset	See Family Spec
GTM_SPEi_PAT (i=0-1)	SPEi Input Pattern Definition Register	000804_H +i*80_H	U,SV,32	U,SV,32,P	Application Reset	See Family Spec
GTM_SPEi_OUT_PATz (i=0-1;z=0-7)	SPEi Output Definition Register z	000808_H +i*80_H+z*4	U,SV,32	U,SV,32,P	Application Reset	See Family Spec
GTM_SPEi_OUT_CTRL (i=0-1)	SPEi Output Control Register	000828_H +i*80_H	U,SV,32	U,SV,32,P	Application Reset	See Family Spec
GTM_SPEi_IRQ_NOTIFY (i=0-1)	SPEi Interrupt Notification Register	$00082C_H$ +i*80_H	U,SV,32	U,SV,32,P	Application Reset	See Family Spec
GTM_SPEi_IRQ_EN (i=0-1)	SPEi Interrupt Enable Register	000830_H +i*80_H	U,SV,32	U,SV,32,P	Application Reset	See Family Spec
GTM_SPEi_IRQ_FORCINT (i=0-1)	SPEi Interrupt Generation by Software	000834_H +i*80_H	U,SV,32	U,SV,32,P	Application Reset	See Family Spec
GTM_SPEi_IRQ_MODE (i=0-1)	SPEi Interrupt Mode Configuration Register	000838_H +i*80_H	U,SV,32	U,SV,32,P	Application Reset	See Family Spec
GTM_SPEi_EIRQ_EN (i=0-1)	SPEi Error Interrupt Enable Register	$00083C_H$ +i*80_H	U,SV,32	U,SV,32,P	Application Reset	See Family Spec
GTM_SPEi_REV_CNT (i=0-1)	SPEi Input Revolution Counter	000840_H +i*80_H	U,SV,32	U,SV,32,P	Application Reset	See Family Spec
GTM_SPEi_REV_CMP (i=0-1)	SPEi Revolution Counter Compare Value	000844_H +i*80_H	U,SV,32	U,SV,32,P	Application Reset	See Family Spec
GTM_SPEi_CTRL_STAT2 (i=0-1)	SPEi Control Status Register 2	000848_H +i*80_H	U,SV,32	U,SV,32,P	Application Reset	See Family Spec

Table 206 Register Overview - GTM (ascending Offset Address) (cont'd)

Short Name	Long Name	Offset Address	Access Mode		Reset	Page Number
			Read	Write		
GTM_SPEi_CMD (i=0-1)	SPEi Command register	$00084C_H$ +i*80_H	U,SV,32	U,SV,32,P	Application Reset	See Family Spec
GTM_TIMi_CHx_GPR0 (i=0-1;x=0-7)	TIMi Channel x General Purpose 0 Register	001000_H +i*800_H+ x*80_H	U,SV,32	U,SV,32,P	Application Reset	See Family Spec
GTM_TIMi_CHx_GPR1 (i=0-1;x=0-7)	TIMi Channel x General Purpose 1 Register	001004_H +i*800_H+ x*80_H	U,SV,32	U,SV,32,P	Application Reset	See Family Spec
GTM_TIMi_CHx_CNT (i=0-1;x=0-7)	TIMi Channel x SMU Counter Register	001008_H +i*800_H+ x*80_H	U,SV,32		Application Reset	See Family Spec
GTM_TIMi_CHx_ECNT (i=0-1;x=0-7)	TIMi Channel x SMU Edge Counter Register	$00100C_H$ +i*800_H+ x*80_H	U,SV,32		Application Reset	See Family Spec
GTM_TIMi_CHx_CNTS (i=0-1;x=0-7)	TIMi Channel x SMU Shadow Counter Register	001010_H +i*800_H+ x*80_H	U,SV,32	U,SV,32,P	Application Reset	See Family Spec
GTM_TIMi_CHx_TDUC (i=0-1;x=0-7)	TIMi Channel x TDU Counter Register	001014_H +i*800_H+ x*80_H	U,SV,32	U,SV,32,P	Application Reset	See Family Spec
GTM_TIMi_CHx_TDUV (i=0-1;x=0-7)	TIMi Channel x TDU Control Register	001018_H +i*800_H+ x*80_H	U,SV,32	U,SV,32,P	Application Reset	See Family Spec
GTM_TIMi_CHx_FLT_RE (i=0-1;x=0-7)	TIMi Channel x Filter Parameter 0 Register	$00101C_H$ +i*800_H+ x*80_H	U,SV,32	U,SV,32,P	Application Reset	See Family Spec
GTM_TIMi_CHx_FLT_FE (i=0-1;x=0-7)	TIMi Channel x Filter Parameter 1 Register	001020_H +i*800_H+ x*80_H	U,SV,32	U,SV,32,P	Application Reset	See Family Spec
GTM_TIMi_CHx_CTRL (i=0;x=0-7) (i=1;x=0-7)	TIMi Channel x Control Register	001024_H +i*800_H+ x*80_H	U,SV,32	U,SV,32,P	Application Reset	44 and Family Spec
GTM_TIMi_CHx_ECTRL (i=0-1;x=0-7)	TIMi Channel x Extended Control Register	001028_H +i*800_H+ x*80_H	U,SV,32	U,SV,32,P	Application Reset	See Family Spec
GTM_TIMi_CHx_IRQ_NOTIFY (i=0-1;x=0-7)	TIMi Channel x Interrupt Notification Register	$00102C_H$ +i*800_H+ x*80_H	U,SV,32	U,SV,32,P	Application Reset	See Family Spec
GTM_TIMi_CHx_IRQ_EN (i=0-1;x=0-7)	TIMi Channel x Interrupt Enable Register	001030_H +i*800_H+ x*80_H	U,SV,32	U,SV,32,P	Application Reset	See Family Spec

Table 206 Register Overview - GTM (ascending Offset Address) (cont'd)

Short Name	Long Name	Offset Address	Access Mode		Reset	Page Number
			Read	Write		
GTM_TIMi_CHx_IRQ_FORCINT (i=0-1;x=0-7)	TIMi Channel x Force Interrupt Register	001034_H +i*800_H+ x*80_H	U,SV,32	U,SV,32,P	Application Reset	See Family Spec
GTM_TIMi_CHx_IRQ_MODE (i=0-1;x=0-7)	TIMi Channel x Interrupt Mode Configuration Register	001038_H +i*800_H+ x*80_H	U,SV,32	U,SV,32,P	Application Reset	See Family Spec
GTM_TIMi_CHx_EIRQ_EN (i=0-1;x=0-7)	TIMi Channel x Error Interrupt Enable Register	$00103C_H$ +i*800_H+ x*80_H	U,SV,32	U,SV,32,P	Application Reset	See Family Spec
GTM_TIMi_INP_VAL (i=0-1)	TIMi Input Value Observation Register	001074_H +i*800_H	U,SV,32		Application Reset	See Family Spec
GTM_TIMi_IN_SRC (i=0-1)	TIMi AUX IN Source Selection Register	001078_H +i*800_H	U,SV,32	U,SV,32,P	Application Reset	See Family Spec
GTM_TIMi_RST (i=0-1)	TIMi Global Software Reset Register	$00107C_H$ +i*800_H	U,SV,32	U,SV,32,P	Application Reset	See Family Spec
GTM_TOMi_CHx_CTRL (i=0-1;x=0-15)	TOMi Channel x Control Register	008000_H +i*800_H+ x*40_H	U,SV,32	U,SV,32,P	Application Reset	See Family Spec
GTM_TOMi_CHx_SR0 (i=0-1;x=0-15)	TOMi Channel x CCU0 Compare Shadow Register	008004_H +i*800_H+ x*40_H	U,SV,32	U,SV,32,P	Application Reset	See Family Spec
GTM_TOMi_CHx_SR1 (i=0-1;x=0-15)	TOMi Channel x CCU1 Compare Shadow Register	008008_H +i*800_H+ x*40_H	U,SV,32	U,SV,32,P	Application Reset	See Family Spec
GTM_TOMi_CHx_CM0 (i=0-1;x=0-15)	TOMi Channel x CCU0 Compare Register	$00800C_H$ +i*800_H+ x*40_H	U,SV,32	U,SV,32,P	Application Reset	See Family Spec
GTM_TOMi_CHx_CM1 (i=0-1;x=0-15)	TOMi Channel x CCU1 Compare Register	008010_H +i*800_H+ x*40_H	U,SV,32	U,SV,32,P	Application Reset	See Family Spec
GTM_TOMi_CHx_CN0 (i=0-1;x=0-15)	TOMi Channel x CCU0 Counter Register	008014_H +i*800_H+ x*40_H	U,SV,32	U,SV,32,P	Application Reset	See Family Spec
GTM_TOMi_CHx_STAT (i=0-1;x=0-15)	TOMi Channel x Status Register	008018_H +i*800_H+ x*40_H	U,SV,32		Application Reset	See Family Spec
GTM_TOMi_CHx_IRQ_NOTIFY (i=0-1;x=0-15)	TOMi Channel x Interrupt Notification Register	$00801C_H$ +i*800_H+ x*40_H	U,SV,32	U,SV,32,P	Application Reset	See Family Spec

Table 206 Register Overview - GTM (ascending Offset Address) (cont'd)

Short Name	Long Name	Offset Address	Access Mode		Reset	Page Number
			Read	Write		
GTM_TOMi_CHx_IRQ_EN (i=0-1;x=0-15)	TOMi Channel x Interrupt Enable Register	008020_H +i*800_H+ x*40_H	U,SV,32	U,SV,32,P	Application Reset	See Family Spec
GTM_TOMi_CHx_IRQ_FORCINT (i=0-1;x=0-15)	TOMi Channel x Force Interrupt Register	008024_H +i*800_H+ x*40_H	U,SV,32	U,SV,32,P	Application Reset	See Family Spec
GTM_TOMi_CHx_IRQ_MODE (i=0-1;x=0-15)	TOMi Channel x Interrupt Mode Register	008028_H +i*800_H+ x*40_H	U,SV,32	U,SV,32,P	Application Reset	See Family Spec
GTM_TOMi_TGC0_GLB_CTRL (i=0-1)	TOMi TGC0 Global Control Register	008030_H +i*800_H	U,SV,32	U,SV,32,P	Application Reset	See Family Spec
GTM_TOMi_TGC0_ACT_TB (i=0-1)	TOMi TGC0 Action Time Base Register	008034_H +i*800_H	U,SV,32	U,SV,32,P	Application Reset	See Family Spec
GTM_TOMi_TGC0_FUPD_CTRL (i=0-1)	TOMi TGC0 Force Update Control Register	008038_H +i*800_H	U,SV,32	U,SV,32,P	Application Reset	See Family Spec
GTM_TOMi_TGC0_INT_TRIG (i=0-1)	TOMi TGC0 Internal Trigger Control Register	$00803C_H$ +i*800_H	U,SV,32	U,SV,32,P	Application Reset	See Family Spec
GTM_TOMi_TGC0_ENDIS_CTRL (i=0-1)	TOMi TGC0 Enable/Disable Control Register	008070_H +i*800_H	U,SV,32	U,SV,32,P	Application Reset	See Family Spec
GTM_TOMi_TGC0_ENDIS_STAT (i=0-1)	TOMi TGC0 Enable/Disable Status Register	008074_H +i*800_H	U,SV,32	U,SV,32,P	Application Reset	See Family Spec
GTM_TOMi_TGC0_OUTEN_CTRL (i=0-1)	TOMi TGC0 Output Enable Control Register	008078_H +i*800_H	U,SV,32	U,SV,32,P	Application Reset	See Family Spec
GTM_TOMi_TGC0_OUTEN_STAT (i=0-1)	TOMi TGC0 Output Enable Status Register	$00807C_H$ +i*800_H	U,SV,32	U,SV,32,P	Application Reset	See Family Spec
GTM_TOMi_TGC1_GLB_CTRL (i=0-1)	TOMi TGC1 Global Control Register	008230_H +i*800_H	U,SV,32	U,SV,32,P	Application Reset	See Family Spec
GTM_TOMi_TGC1_ACT_TB (i=0-1)	TOMi TGC1 Action Time Base Register	008234_H +i*800_H	U,SV,32	U,SV,32,P	Application Reset	See Family Spec
GTM_TOMi_TGC1_FUPD_CTRL (i=0-1)	TOMi TGC1 Force Update Control Register	008238_H +i*800_H	U,SV,32	U,SV,32,P	Application Reset	See Family Spec

Table 206 Register Overview - GTM (ascending Offset Address) (cont'd)

Short Name	Long Name	Offset Address	Access Mode		Reset	Page Number
			Read	Write		
GTM_TOMi_TGC1_INT_TRIG (i=0-1)	TOMi TGC1 Internal Trigger Control Register	$00823C_H$ +i*800_H	U,SV,32	U,SV,32,P	Application Reset	See Family Spec
GTM_TOMi_TGC1_ENDIS_CTRL (i=0-1)	TOMi TGC1 Enable/Disable Control Register	008270_H +i*800_H	U,SV,32	U,SV,32,P	Application Reset	See Family Spec
GTM_TOMi_TGC1_ENDIS_STAT (i=0-1)	TOMi TGC1 Enable/Disable Status Register	008274_H +i*800_H	U,SV,32	U,SV,32,P	Application Reset	See Family Spec
GTM_TOMi_TGC1_OUTEN_CTRL (i=0-1)	TOMi TGC1 Output Enable Control Register	008278_H +i*800_H	U,SV,32	U,SV,32,P	Application Reset	See Family Spec
GTM_TOMi_TGC1_OUTEN_STAT (i=0-1)	TOMi TGC1 Output Enable Status Register	$00827C_H$ +i*800_H	U,SV,32	U,SV,32,P	Application Reset	See Family Spec
GTM_CLC	Clock Control Register	$09FD00_H$	U,SV	SV,E,P	Application Reset	See Family Spec
GTM_RESET_CLR	Kernel Reset Status Clear Register	$09FD04_H$	U,SV	SV,E,P	Application Reset	See Family Spec
GTM_RESET1	Kernel Reset Register 0	$09FD08_H$	U,SV	SV,E,P	Application Reset	See Family Spec
GTM_RESET2	Kernel Reset Register 1	$09FD0C_H$	U,SV	SV,E,P	Application Reset	See Family Spec
GTM_ACCEN0	Access Enable Register 0	$09FD10_H$	U,SV	SV,SE	Application Reset	See Family Spec
GTM_ACCEN1	Access Enable Register 1	$09FD14_H$	U,SV	SV,SE	Application Reset	See Family Spec
GTM_OTBU0T	OCDS TBU0 Trigger Register	$09FD18_H$	U,SV	SV,P	Debug Reset	See Family Spec
GTM_OTBU1T	OCDS TBU1 Trigger Register	$09FD1C_H$	U,SV	SV,P	Debug Reset	See Family Spec
GTM_OTBU2T	OCDS TBU2 Trigger Register	$09FD20_H$	U,SV	SV,P	Debug Reset	See Family Spec

Table 206 Register Overview - GTM (ascending Offset Address) (cont'd)

Short Name	Long Name	Offset Address	Access Mode		Reset	Page Number
			Read	Write		
GTM_OTSS	OCDS Trigger Set Select Register	$09FD28_H$	U,SV	SV,P	Debug Reset	135
GTM_OTSC0	OCDS Trigger Set Control 0 Register	$09FD2C_H$	U,SV	SV,P	Debug Reset	See Family Spec
GTM_ODA	OCDS Debug Access Register	$09FD34_H$	U,SV	SV,P	Debug Reset	See Family Spec
GTM_OCS	OCDS Control and Status	$09FD38_H$	U,SV	SV,P,OEN	Debug Reset	See Family Spec
GTM_TIMnINSEL (n=0-1)	TIMn Input Select Register	$09FD40_H$ +n*4	U,SV	U,SV,P	Application Reset	35
GTM_TOUTSELn (n=0-16)	Timer Output Select Register	$09FD60_H$ +n*4	U,SV	U,SV,P	Application Reset	49
GTM_ADCTRIGiOUT0 (i=0-4)	ADC Trigger i Output Select 0 Register	$09FE40_H$ +i*8	U,SV	U,SV,P	Application Reset	119
GTM_ADCTRIGiOUT1 (i=0-4)	ADC Trigger i Output Select 1 Register	$09FE44_H$ +i*8	U,SV	U,SV,P	Application Reset	126
GTM_LCDCDCOUTSEL	LCDCDC Output Select Register	$09FFD4_H$	U,SV	U,SV,P	Application Reset	134
GTM_DTMAUXINSEL	DTM_AUX Input Selection Register	$09FFD8_H$	U,SV	U,SV,P	Application Reset	115
GTM_CANOUTSEL0	CAN0/CAN1 Output Select Register	$09FFDC_H$	U,SV	U,SV,P	Application Reset	131
GTM_CCMi_HW_CONF (i=0-1)	CCMi Hardware Configuration Register	$0E21DC_H$ +i*200_H	U,SV,32		Application Reset	See Family Spec
GTM_CCMi_TIM_AUX_IN_SRC (i=0-1)	CCMi TIM Module AUX_IN Source Selection Register	$0E21E0_H$ +i*200_H	U,SV,32	U,SV,32,P	Application Reset	See Family Spec
GTM_CCMi_TOM_OUT (i=0-1)	CCMi TOM Output Level Register	$0E21E8_H$ +i*200_H	U,SV,32		Application Reset	26
GTM_CCMi_ATOM_OUT (i=0)	CCMi ATOM Output Level Register	$0E21EC_H$	U,SV,32		Application Reset	See Family Spec
GTM_CCMi_CMU_CLK_CFG (i=0-1)	CCMi CMU Clock Configuration Register	$0E21F0_H$ +i*200_H	U,SV,32	U,SV,32,P	Application Reset	See Family Spec

Table 206 Register Overview - GTM (ascending Offset Address) (cont'd)

Short Name	Long Name	Offset Address	Access Mode		Reset	Page Number
			Read	Write		
GTM_CCMi_CMU_FXCLK_CFG (i=0-1)	CCMi CMU Fixed Clock Configuration Register	$0E21F4_H$ +i*200_H	U,SV,32	U,SV,32,P	Application Reset	See Family Spec
GTM_CCMi_CFG (i=0-1)	CCMi Configuration Register	$0E21F8_H$ +i*200_H	U,SV,32	U,SV,32,P	Application Reset	22
GTM_CCMi_PROT (i=0-1)	CCMi Protection Register	$0E21FC_H$ +i*200_H	U,SV,32	U,SV,32,P	Application Reset	See Family Spec
GTM_CDTMi_DTMj_CTRL (i=0;j=0-1,4-5) (i=1;j=0-1)	CDTMi DTMj Global Configuration and Control Register	$0E4000_H$ +j*40_H	U,SV,32	U,SV,32,P	Application Reset	See Family Spec
GTM_CDTMi_DTMj_CH_CTRL1 (i=0;j=0-1,4-5) (i=1;j=0-1)	CDTMi DTMj Channel Control Register 1	$0E4004_H$ +j*40_H	U,SV,32	U,SV,32,P	Application Reset	See Family Spec
GTM_CDTMi_DTMj_CH_CTRL2 (i=0;j=0-1,4-5) (i=1;j=0-1)	CDTMi DTMj Channel Control Register 2	$0E4008_H$ +j*40_H	U,SV,32	U,SV,32,P	Application Reset	See Family Spec
GTM_CDTMi_DTMj_CH_CTRL2_SR (i=0;j=0-1,4-5) (i=1;j=0-1)	CDTMi DTMj Channel Control Register 2 Shadow	$0E400C_H$ +j*40_H	U,SV,32	U,SV,32,P	Application Reset	See Family Spec
GTM_CDTMi_DTMj_PS_CTRL (i=0;j=0-1,4-5) (i=1;j=0-1)	CDTMi DTMj Phase Shift Unit Configuration and Control Register	$0E4010_H$ +j*40_H	U,SV,32	U,SV,32,P	Application Reset	See Family Spec
GTM_CDTMi_DTMj_CHz_DTV (i=0;j=0-1,4-5;z=0-3) (i=1;j=0-1;z=0-3)	CDTMi DTMj Channel z Dead Time Reload Values	$0E4014_H$ +j*40_H+z*4	U,SV,32	U,SV,32,P	Application Reset	See Family Spec
GTM_CDTMi_DTMj_CH_SR (i=0;j=0-1,4-5) (i=1;j=0-1)	CDTMi DTMj Channel Shadow Register	$0E4024_H$ +j*40_H	U,SV,32	U,SV,32,P	Application Reset	See Family Spec
GTM_CDTMi_DTMj_CH_CTRL3 (i=0;j=0-1,4-5) (i=1;j=0-1)	CDTMi DTMj Channel Control Register 3	$0E4028_H$ +j*40_H	U,SV,32	U,SV,32,P	Application Reset	See Family Spec

Table 206 Register Overview - GTM (ascending Offset Address) (cont'd)

Short Name	Long Name	Offset Address	Access Mode		Reset	Page Number
			Read	Write		
GTM_ATOMi_CHx_RDADDR (i=0;x=0-7)	ATOMi Channel x ARU read address Register	$0E8000_H$ +x*80_H	U,SV,32	U,SV,32,P	Application Reset	See Family Spec
GTM_ATOMi_CHx_CTRL (i=0;x=0-7)	ATOMi Channel x Control Register	$0E8004_H$ +x*80_H	U,SV,32	U,SV,32,P	Application Reset	See Family Spec
GTM_ATOMi_CHx_SOMB (i=0;x=0-7)	ATOMi Channel x Control Register in SOMB Mode	$0E8004_H$ +x*80_H	U,SV,32	U,SV,32,P	Application Reset	See Family Spec
GTM_ATOMi_CHx_SOMC (i=0;x=0-7)	ATOMi Channel x Control Register in SOMC Mode	$0E8004_H$ +x*80_H	U,SV,32	U,SV,32,P	Application Reset	See Family Spec
GTM_ATOMi_CHx_SOMI (i=0;x=0-7)	ATOMi Channel x Control Register in SOMI Mode	$0E8004_H$ +x*80_H	U,SV,32	U,SV,32,P	Application Reset	See Family Spec
GTM_ATOMi_CHx_SOMP (i=0;x=0-7)	ATOMi Channel x Control Register in SOMP Mode	$0E8004_H$ +x*80_H	U,SV,32	U,SV,32,P	Application Reset	See Family Spec
GTM_ATOMi_CHx_SOMS (i=0;x=0-7)	ATOMi Channel x Control Register in SOMS Mode	$0E8004_H$ +x*80_H	U,SV,32	U,SV,32,P	Application Reset	See Family Spec
GTM_ATOMi_CHx_SR0 (i=0;x=0-7)	ATOMi Channel x CCU0 Compare Shadow Register	$0E8008_H$ +x*80_H	U,SV,32	U,SV,32,P	Application Reset	See Family Spec
GTM_ATOMi_CHx_SR1 (i=0;x=0-7)	ATOMi Channel x CCU1 Compare Shadow Register	$0E800C_H$ +x*80_H	U,SV,32	U,SV,32,P	Application Reset	See Family Spec
GTM_ATOMi_CHx_CM0 (i=0;x=0-7)	ATOMi Channel x CCU0 Compare Register	$0E8010_H$ +x*80_H	U,SV,32	U,SV,32,P	Application Reset	See Family Spec
GTM_ATOMi_CHx_CM1 (i=0;x=0-7)	ATOMi Channel x CCU1 Compare Register	$0E8014_H$ +x*80_H	U,SV,32	U,SV,32,P	Application Reset	See Family Spec
GTM_ATOMi_CHx_CN0 (i=0;x=0-7)	ATOMi Channel x CCU0 Counter Register	$0E8018_H$ +x*80_H	U,SV,32	U,SV,32,P	Application Reset	See Family Spec
GTM_ATOMi_CHx_STAT (i=0;x=0-7)	ATOMi Channel x Status Register	$0E801C_H$ +x*80_H	U,SV,32	U,SV,32,P	Application Reset	See Family Spec
GTM_ATOMi_CHx_IRQ_NOTIFY (i=0;x=0-7)	ATOMi Channel x Interrupt Notification Register	$0E8020_H$ +x*80_H	U,SV,32	U,SV,32,P	Application Reset	See Family Spec

Table 206 Register Overview - GTM (ascending Offset Address) (cont'd)

Short Name	Long Name	Offset Address	Access Mode		Reset	Page Number
			Read	Write		
GTM_ATOMi_CHx_IRQ_EN (i=0;x=0-7)	ATOMi Channel x Interrupt Enable Register	$0E8024_H$ +x*80_H	U,SV,32	U,SV,32,P	Application Reset	See Family Spec
GTM_ATOMi_CHx_IRQ_FORCINT (i=0;x=0-7)	ATOMi Channel x Software Interrupt Generation Register	$0E8028_H$ +x*80_H	U,SV,32	U,SV,32,P	Application Reset	See Family Spec
GTM_ATOMi_CHx_IRQ_MODE (i=0;x=0-7)	ATOMi Channel x Interrupt Mode Configuration Register	$0E802C_H$ +x*80_H	U,SV,32	U,SV,32,P	Application Reset	See Family Spec
GTM_ATOMi_AGC_GLB_CTRL (i=0)	ATOMi AGC Global Control Register	$0E8040_H$	U,SV,32	U,SV,32,P	Application Reset	See Family Spec
GTM_ATOMi_AGC_ENDIS_CTRL (i=0)	ATOMi AGC Enable/Disable Control Register	$0E8044_H$	U,SV,32	U,SV,32,P	Application Reset	See Family Spec
GTM_ATOMi_AGC_ENDIS_STAT (i=0)	ATOMi AGC Enable/Disable Status Register	$0E8048_H$	U,SV,32	U,SV,32,P	Application Reset	See Family Spec
GTM_ATOMi_AGC_ACT_TB (i=0)	ATOMi AGC Action Time Base Register	$0E804C_H$	U,SV,32	U,SV,32,P	Application Reset	See Family Spec
GTM_ATOMi_AGC_OUTEN_CTRL (i=0)	ATOMi AGC Output Enable Control Register	$0E8050_H$	U,SV,32	U,SV,32,P	Application Reset	See Family Spec
GTM_ATOMi_AGC_OUTEN_STAT (i=0)	ATOMi AGC Output Enable Status Register	$0E8054_H$	U,SV,32	U,SV,32,P	Application Reset	See Family Spec
GTM_ATOMi_AGC_FUPD_CTRL (i=0)	ATOMi AGC Force Update Control Register	$0E8058_H$	U,SV,32	U,SV,32,P	Application Reset	See Family Spec
GTM_ATOMi_AGC_INT_TRIG (i=0)	ATOMi AGC Internal Trigger Control Register	$0E805C_H$	U,SV,32	U,SV,32,P	Application Reset	See Family Spec

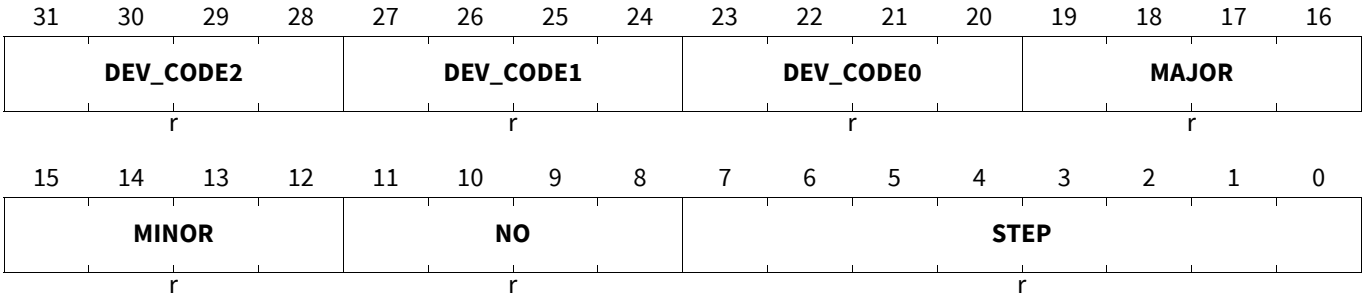
26.3 TC33x Specific Registers

26.3.1 GTM IP Registers Specific Settings

GTM Version Control Register

Note: The numbers are encoded in BCD. Values "A" - "F" are characters.

GTM_REV
GTM Version Control Register **(000000_H)** **Application Reset Value: $3103\ 15BB_H$**



Field	Bits	Type	Description
STEP	7:0	r	**Release step** GTM Release step
NO	11:8	r	**Delivery number** Define delivery number of GTM specification.
MINOR	15:12	r	**Minor version number** Define minor version number of GTM specification.
MAJOR	19:16	r	**Major version number** Define major version number of GTM specification.
DEV_CODE0	23:20	r	**Device encoding digit 0** Device encoding digit 0.
DEV_CODE1	27:24	r	**Device encoding digit 1** Device encoding digit 1.
DEV_CODE2	31:28	r	**Device encoding digit 2** Device encoding digit 2.

GTM Cluster Clock Configuration

Note: For clusters greater than 4 (only MAX 100 MHz capable), the allowed setting for the CLS_CLK_DIV are 00_B and 10_B (clock divider 2). For clusters < 5, 200 MHz is available. In case a device has a single 100 MHz cluster, the ARU will run with 100 MHz.

Note: Writing a value to a bit field CLS[c]_CLK_DIV that is not available in the device, an AEI status 10_B is returned.

Note: The availability of configuration bits is indicated by value of bit CFG_CLOCK_RATE in register CCM[c]_HW_CFG. If CFG_CLOCK_RATE=0, only the values 00_B and 01_B are valid for bit fields CLS[c]_CLK_DIV.

GTM_CLS_CLK_CFG

GTM Cluster Clock Configuration **(0000B0$_H$)** **Application Reset Value: 0000 000A$_H$**

31	30	29	28	27	26	25	24	23	22	21	20	19	18	17	16
0								0		0		0		0	
r								r		r		r		r	

15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
0		0		0		0		0		0		CLS1_CLK_DIV		CLS0_CLK_DIV	
r		r		r		r		r		r		rw		rw	

Field	Bits	Type	Description
CLSc_CLK_DIV (c=0-1)	2*c+1:2*c	rw	**Cluster c Clock Divider** This bit is only writable if bit field **RF_PROT** of register **GTM_CTRL** is cleared. 00_B Cluster c is disabled 01_B Cluster c is enabled without clock divider 10_B Cluster c is enabled with clock divider 11_B Reserved, do not use.
0	23:22, 21:20, 19:18, 17:16, 15:14, 13:12, 11:10, 9:8, 7:6, 5:4, 31:24	r	**Reserved** Read as zero, shall be written as zero.

Monitor Status Register

The MCS can be programmed to generate an error, when the comparison of signal values (duty time, cycle time) fails or also when the cycle time of the ARU (checking of the TBU_TS0 between two periodic accesses) is out of the expected range.

GTM_MON_STATUS

Monitor Status Register **(000180$_H$)** **Application Reset Value: 0000 4000$_H$**

31	30	29	28	27	26	25	24	23	22	21	20	19	18	17	16
0		0	0	0	0	0	0	0	0	0	0	0			CMP_ERR
r		r	r	r	r	r	r	r	r	r	r	r			r

15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
0	ACT_CMU8	0	ACT_CMUFX4	ACT_CMUFX3	ACT_CMUFX2	ACT_CMUFX1	ACT_CMUFX0	ACT_CMU7	ACT_CMU6	ACT_CMU5	ACT_CMU4	ACT_CMU3	ACT_CMU2	ACT_CMU1	ACT_CMU0
r	rw	r	rw	rw	rw	rw	rw	rw	rw	rw	rw	rw	rw	rw	rw

Field	Bits	Type	Description
ACT_CMUx (x=0-7)	x	rw	**CMU_CLKx activity** This bit will be cleared on a CPU write access of value 1. A read access leaves the bit unchanged. Bits is set, when a rising edge is detected at the considered clock.
ACT_CMUFXx (x=0-4)	x+8	rw	**CMU_CLKFXx activity** This bit will be cleared on a CPU write access of value 1. A read access leaves the bit unchanged. Bits is set, when a rising edge is detected at the considered clock.
ACT_CMU8	14	rw	**CMU_CLK8 activity** This bit will be cleared on a CPU write access of value 1. A read access leaves the bit unchanged. Bit is set, when a rising edge is detected at the considered clock.
CMP_ERR	16	r	**Error detected at CMP** This bit will be readable only. Bits is set, when the corresponding unit reports an error.
0	13, 15, 19:17, 29, 28, 27, 26, 25, 24, 23, 22, 21, 20, 31:30	r	**Reserved** Read as zero, shall be written as zero.

ARU caddr Counter End Value Register

GTM_ARU_CADDR_END

ARU caddr Counter End Value Register **($0002B4_H$)** **Application Reset Value: $0000\ 0028_H$**

31	30	29	28	27	26	25	24	23	22	21	20	19	18	17	16
0															
r															

15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
0									CADDR_END						
r									rw						

Field	Bits	Type	Description
CADDR_END	6:0	rw	**Set end value of ARU caddr counter** The ARU roundtrip counter aru_caddr runs from zero to caddr_end value. Shorten the ARU roundtrip cycle by setting a smaller number than the defined reset value will cause that not all ARU-connected modules will be served. Making the roundtrip cycle longer than the reset value would cause longer ARU roundtrip time and as a result some ARU-connected modules will not be served as fast as possible for this device. This bit is write protected by bit RF_PROT of register GTM_CTRL
0	31:7	r	**Reserved** Read as zero, shall be written as zero.

CCMi Configuration Register

NOTE: The module specific clock enable registers (bit field **EN_***) are only implemented if the corresponding module is available in the i-th cluster.

NOTE: For the Clusters greater than 4, (only 100MHz capable), the only allowed settings for the CLS_CLK_DIV are 00 and 10 (clock divider 2).

GTM_CCMi_CFG (i=0)

CCMi Configuration Register **($0E21F8_H$+i*200_H)** **Application Reset Value: $0002\ 0027_H$**

31	30	29	28	27	26	25	24	23	22	21	20	19	18	17	16
TBU_DIR2	TBU_DIR1	0												CLS_CLK_DIV	
r	r	r												r	

15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
0								0	0	EN_BRC	0	0	EN_ATOM_ADTM	EN_TOM_SPE_TDTM	EN_TIM
r								r	r	rw	r	r	rw	rw	rw

Field	Bits	Type	Description
EN_TIM	0	rw	**Enable TIM** This bit is only writable if bit field **CLS_PROT** of register **CCM[i]_PROT** is cleared. 0_B Disable clock signal for sub module TIM 1_B Enable clock signal for sub module TIM
EN_TOM_SPE_TDTM	1	rw	**Enable TOM, SPE and TDTM** This bit is only writable if bit field **CLS_PROT** of register **CCM[i]_PROT** is cleared. 0_B Disable clock signal for modules TOM, SPE, and their related DTM modules 1_B Enable clock signal for modules TOM, SPE, and their related DTM modules.
EN_ATOM_ADTM	2	rw	**Enable ATOM and ADTM** This bit is only writable if bit field **CLS_PROT** of register **CCM[i]_PROT** is cleared. 0_B Disable clock signal for modules ATOM and their related DTM modules. 1_B Enable clock signal for modules ATOM and their related DTM modules.
EN_BRC	5	rw	**Enable BRC** This bit is only writable if bit field **CLS_PROT** of register **CCM[i]_PROT** is cleared. 0_B Disable clock signal for module BRC 1_B Enable clock signal for module BRC
CLS_CLK_DIV	17:16	r	**Cluster Clock Divider** The value of this bit field mirrors the bit field **CLS[i]_CLK_DIV** of register **GTM_CLS_CLK_CFG**, whereas i equals the cluster index. 00_B Cluster is disabled 01_B Cluster is enabled without clock divider 10_B Cluster is enabled with clock divider 2 11_B Reserved, do not use.
TBU_DIR1	30	r	**DIR1 input signal of module TBU** 0_B Indicating forward direction 1_B Indicating backward direction
TBU_DIR2	31	r	**DIR2 input signal of module TBU** 0_B Indicating forward direction 1_B Indicating backward direction
0	3, 4, 6, 7, 15:8, 29:18	r	**Reserved** Read as zero, shall be written as zero.

GTM_CCMi_CFG (i=1)
CCMi Configuration Register **($0E21F8_H$+i*200_H)** **Application Reset Value: $0002\ 0083_H$**

31	30	29	28	27	26	25	24	23	22	21	20	19	18	17	16
TBU_DIR2	TBU_DIR1	0												CLS_CLK_DIV	
r	r	r												r	

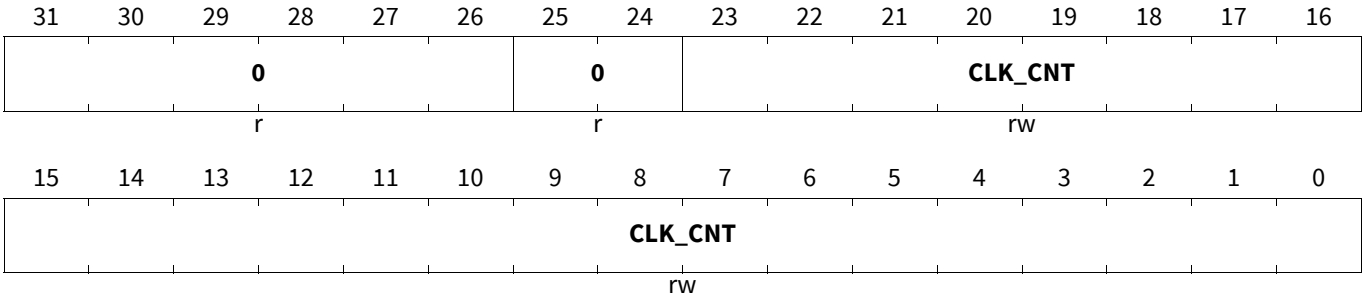
15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
0								EN_CMP_MON	0	0	0	0	0	EN_TOM_SPE_TDTM	EN_TIM
r								rw	r	r	r	r	r	rw	rw

Field	Bits	Type	Description
EN_TIM	0	rw	**Enable TIM** This bit is only writable if bit field **CLS_PROT** of register **CCM[i]_PROT** is cleared. 0_B Disable clock signal for sub module TIM 1_B Enable clock signal for sub module TIM
EN_TOM_SPE_TDTM	1	rw	**Enable TOM, SPE and TDTM** This bit is only writable if bit field **CLS_PROT** of register **CCM[i]_PROT** is cleared. 0_B Disable clock signal for modules TOM, SPE, and their related DTM modules 1_B Enable clock signal for modules TOM, SPE, and their related DTM modules.
EN_CMP_MON	7	rw	**Enable CMP and MON** This bit is only writable if bit field **CLS_PROT** of register **CCM[i]_PROT** is cleared. 0_B Disable clock signal for modules CMP and MON 1_B Enable clock signal for modules CMP and MON
CLS_CLK_DIV	17:16	r	**Cluster Clock Divider** The value of this bit field mirrors the bit field **CLS[i]_CLK_DIV** of register **GTM_CLS_CLK_CFG**, whereas i equals the cluster index. 00_B Cluster is disabled 01_B Cluster is enabled without clock divider 10_B Cluster is enabled with clock divider 2 11_B Reserved, do not use.
TBU_DIR1	30	r	**DIR1 input signal of module TBU** 0_B Indicating forward direction 1_B Indicating backward direction
TBU_DIR2	31	r	**DIR2 input signal of module TBU** 0_B Indicating forward direction 1_B Indicating backward direction

Field	Bits	Type	Description
0	2, 3, 4, 5, 6, 15:8, 29:18	r	**Reserved** Read as zero, shall be written as zero.

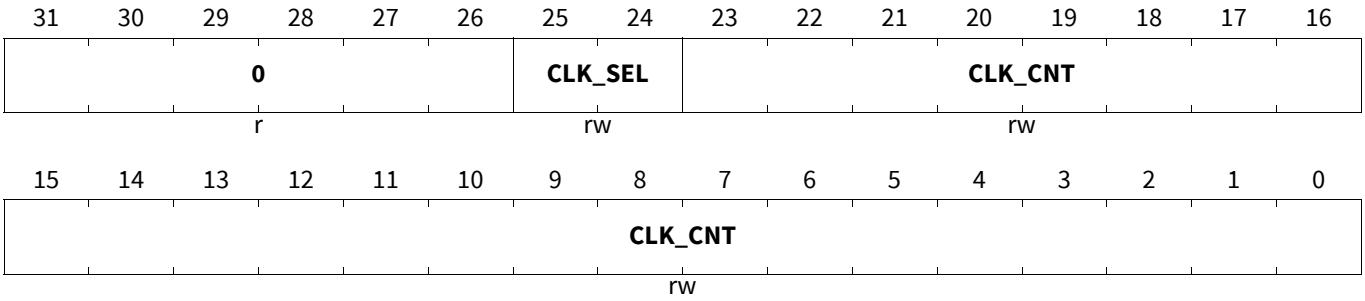
CMU Control for Clock Source z

GTM_CMU_CLK_z_CTRL (z=0-5)
CMU Control for Clock Source z **(00030C$_H$+z*4)** **Application Reset Value: 0000 0000$_H$**



Field	Bits	Type	Description
CLK_CNT	23:0	rw	**Clock count** Defines count value for the clock divider. Value can only be modified when clock enable **EN_CLKz** and **EN_ECLK1** are disabled.
0	25:24, 31:26	r	**Reserved** Read as zero, shall be written as zero.

GTM_CMU_CLK_z_CTRL (z=6)
CMU Control for Clock Source z **(00030C$_H$+z*4)** **Application Reset Value: 0000 0000$_H$**



Field	Bits	Type	Description
CLK_CNT	23:0	rw	**Clock count** Defines count value for the clock divider. Value can only be modified when clock enable **EN_CLKz** and **EN_ECLK1** are disabled.

Field	Bits	Type	Description
CLK_SEL	25:24	rw	**Clock source selection for CMU_CLKz** Value can only be modified when clock enable **EN_CLKz** and **EN_ECLK1** are disabled. *Note: The existence and interpretation of this bit field depends on z. z>5* 00_B Use Clock Source 6 Divider 01_B Use signal SUB_INC2 of module DPLL / If no DPLL: Reserved, do not use. 10_B Use signal SUB_INC1c of module DPLL / If no DPLL: Reserved, do not use 11_B Use signal CCM0_CMU_CLK6 of sub-module CCM0
0	31:26	r	**Reserved** Read as zero, shall be written as zero.

CCMi TOM Output Level Register

GTM_CCMi_TOM_OUT (i=0-1)
CCMi TOM Output Level Register **($0E21E8_H$+i*200_H)** **Application Reset Value: 0000 0000_H**

31	30	29	28	27	26	25	24	23	22	21	20	19	18	17	16
TOM_OUT_N															
r															

15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
TOM_OUT															
r															

Field	Bits	Type	Description
TOM_OUT	15:0	r	**Output level snapshot of TOM[i]_OUT all channels**
TOM_OUT_N	31:16	r	**Output level snapshot of TOM[i]_OUT_N all channels**

GTM TIM i Module AUX_IN Source Selection Register

GTM_TIMi_AUX_IN_SRC (i=0-1)
GTM TIM i Module AUX_IN Source Selection Register(000040_H+i*4) **Application Reset Value: 0000 0000_H**

31	30	29	28	27	26	25	24	23	22	21	20	19	18	17	16
0								SEL_OUT_N_CH7	SEL_OUT_N_CH6	SEL_OUT_N_CH5	SEL_OUT_N_CH4	SEL_OUT_N_CH3	SEL_OUT_N_CH2	SEL_OUT_N_CH1	SEL_OUT_N_CH0
r								rw	rw	rw	rw	rw	rw	rw	rw

15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
0								SRC_CH7	SRC_CH6	SRC_CH5	SRC_CH4	SRC_CH3	SRC_CH2	SRC_CH1	SRC_CH0
r								rw	rw	rw	rw	rw	rw	rw	rw

Field	Bits	Type	Description
SRC_CH0	0	rw	**Defines AUX_IN source of TIM[i] channel 0** SEL_OUT_N_CH0 / SEL_OUT_N_CH0 = 1: 0_B CDTM[i].DTM0 output DTM_OUT0 selected / CDTM[i].DTM0 output DTM_OUT1_N selected 1_B CDTM[i].DTM4 output DTM_OUT0 selected / CDTM[i].DTM4 output DTM_OUT1_N selected
SRC_CH1	1	rw	**Defines AUX_IN source of TIM[i] channel 1** SEL_OUT_N_CH1 = 0 / SEL_OUT_N_CH1 = 1: 0_B CDTM[i].DTM0 output DTM_OUT1 selected / CDTM[i].DTM0 output DTM_OUT2_N selected 1_B CDTM[i].DTM4 output DTM_OUT1 selected / CDTM[i].DTM4 output DTM_OUT2_N selected
SRC_CH2	2	rw	**Defines AUX_IN source of TIM[i] channel 2** SEL_OUT_N_CH2 = 0 / SEL_OUT_N_CH2 = 1: 0_B CDTM[i].DTM0 output DTM_OUT2 selected / CDTM[i].DTM0 output DTM_OUT3_N selected 1_B CDTM[i].DTM4 output DTM_OUT2 selected / CDTM[i].DTM4 output DTM_OUT3_N selected
SRC_CH3	3	rw	**Defines AUX_IN source of TIM[i] channel 3** SEL_OUT_N_CH3 = 0 / SEL_OUT_N_CH3 = 1: 0_B CDTM[i].DTM0 output DTM_OUT3 selected / CDTM[i].DTM1 output DTM_OUT0_N selected 1_B CDTM[i].DTM4 output DTM_OUT3 selected / CDTM[i].DTM5 output DTM_OUT0_N selected
SRC_CH4	4	rw	**Defines AUX_IN source of TIM[i] channel 4** SEL_OUT_N_CH4 = 0 / SEL_OUT_N_CH4 = 1: 0_B CDTM[i].DTM1 output DTM_OUT0 selected / CDTM[i].DTM1 output DTM_OUT1_N selected 1_B CDTM[i].DTM5 output DTM_OUT0 selected / CDTM[i].DTM5 output DTM_OUT1_N selected
SRC_CH5	5	rw	**Defines AUX_IN source of TIM[i] channel 5** SEL_OUT_N_CH5 = 0 / SEL_OUT_N_CH5 = 1: 0_B CDTM[i].DTM1 output DTM_OUT1 selected / CDTM[i].DTM1 output DTM_OUT2_N selected 1_B CDTM[i].DTM5 output DTM_OUT1 selected / CDTM[i].DTM5 output DTM_OUT2_N selected
SRC_CH6	6	rw	**Defines AUX_IN source of TIM[i] channel 6** SEL_OUT_N_CH6 = 0 / SEL_OUT_N_CH6 = 1: 0_B CDTM[i].DTM1 output DTM_OUT2 selected / CDTM[i].DTM1 output DTM_OUT3_N selected 1_B CDTM[i].DTM5 output DTM_OUT2 selected / CDTM[i].DTM5 output DTM_OUT3_N selected

Field	Bits	Type	Description
SRC_CH7	7	rw	**Defines AUX_IN source of TIM[i] channel 7** SEL_OUT_N_CH7 = 0 / SEL_OUT_N_CH7 = 1: 0_B CDTM[i].DTM1 output DTM_OUT3 selected / CDTM[i].DTM0 output DTM_OUT0_N selected 1_B CDTM[i].DTM5 output DTM_OUT3 selected / CDTM[i].DTM4 output DTM_OUT0_N selected
SEL_OUT_N_CH0	16	rw	**Use DTM_OUT or DTM_OUT_N signals as AUX_IN source of TIM[i] channel 0** 0_B Use DTM_OUT signal as AUX_IN source of TIM[i] 1_B Use DTM_OUT_N signal as AUX_IN source of TIM[i]
SEL_OUT_N_CH1	17	rw	**Use DTM_OUT or DTM_OUT_N signals as AUX_IN source of TIM[i] channel 1**
SEL_OUT_N_CH2	18	rw	**Use DTM_OUT or DTM_OUT_N signals as AUX_IN source of TIM[i] channel 2**
SEL_OUT_N_CH3	19	rw	**Use DTM_OUT or DTM_OUT_N signals as AUX_IN source of TIM[i] channel 3**
SEL_OUT_N_CH4	20	rw	**Use DTM_OUT or DTM_OUT_N signals as AUX_IN source of TIM[i] channel 4**
SEL_OUT_N_CH5	21	rw	**Use DTM_OUT or DTM_OUT_N signals as AUX_IN source of TIM[i] channel 5**
SEL_OUT_N_CH6	22	rw	**Use DTM_OUT or DTM_OUT_N signals as AUX_IN source of TIM[i] channel 6**
SEL_OUT_N_CH7	23	rw	**Use DTM_OUT or DTM_OUT_N signals as AUX_IN source of TIM[i] channel 7**
0	15:8, 31:24	r	**Reserved** Read as zero, shall be written as zero.

ICM Interrupt Group k for Module Error Interrupt Information for each TIMm, MCSm, SPEm, FIFOm

GTM_ICM_IRQG_CLS_k_MEI (k=0)

ICM Interrupt Group k for Module Error Interrupt Information for each TIMm, MCSm, SPEm, FIFOm (000710_H) **Application Reset Value: $0000\ 0000_H$**

31	30	29	28	27	26	25	24	23	22	21	20	19	18	17	16
0				0	0	0	0	0				0	0	0	0
r				r	r	r	r	r				r	r	r	r

15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
0				0	SPE_M1_EIRQ	0	TIM_M1_EIRQ	0				0	SPE_M0_EIRQ	0	TIM_M0_EIRQ
r				r	r	r	r	r				r	r	r	r

Field	Bits	Type	Description
TIM_Mj_EIRQ (j=0-1)	8*j	r	**Error interrupt TIMm_EIRQ (m=4*0+j)** This bit is only set when the error interrupt is enabled in the error interrupt enable register of the corresponding sub-module. 0_B No error interrupt occurred 1_B Error interrupt was raised by the corresponding sub-module
SPE_Mj_EIRQ (j=0-1)	8*j+2	r	**Error interrupt SPEm_EIRQ (m=4*0+j)** Coding see bit 0.
0	24, 16, 25, 17, 9, 1, 26, 18, 27, 19, 11, 3, 31:28, 23:20, 15:12, 7:4	r	**Reserved** Read as zero, shall be written as zero.

ICM Interrupt Group ATOM k for Channel Interrupt Information of ATOMm

GTM_ICM_IRQG_ATOM_k_CI (k=0)
ICM Interrupt Group ATOM k for Channel Interrupt Information of ATOMm(000790_H) Application Reset
Value: $0000\ 0000_H$

31	30	29	28	27	26	25	24	23	22	21	20	19	18	17	16
0								0							
r								r							

15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
0								ATOM_M0_CH7_IRQ	ATOM_M0_CH6_IRQ	ATOM_M0_CH5_IRQ	ATOM_M0_CH4_IRQ	ATOM_M0_CH3_IRQ	ATOM_M0_CH2_IRQ	ATOM_M0_CH1_IRQ	ATOM_M0_CH0_IRQ
r								r	r	r	r	r	r	r	r

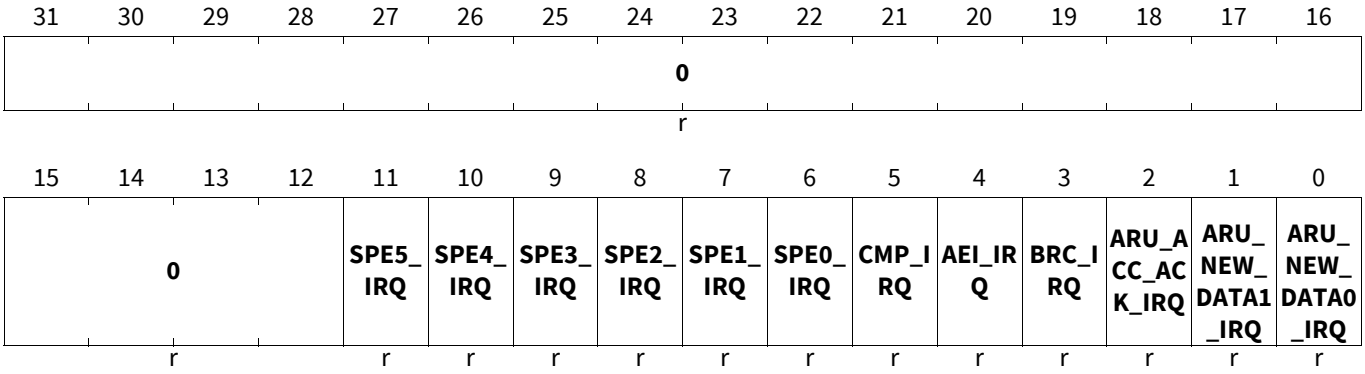
Field	Bits	Type	Description
ATOM_M0_CHx_IRQ (x=0-7)	x	r	**ATOMm channel x interrupt (m=0)** This bit is only set, when the interrupt is enabled in the interrupt enable register of the corresponding sub-module. Set this bit represents an OR function of the two interrupt sources *CCU0TCx_IRQ* or *CCU1TCx_IRQ* of ATOM instance 0 channel x. 0_B No interrupt occurred 1_B Interrupt was raised by the corresponding sub-module
0	15:8, 23:16, 31:24	r	**Reserved** Read as zero, shall be written as zero.

ICM Interrupt Group Register Covering Infrastructural and Safety Components ARU, BRC, AEI, PSM0, PSM1,

MAP, CMP, SPE

GTM_ICM_IRQG_0

ICM Interrupt Group Register Covering Infrastructural and Safety Components ARU, BRC, AEI, PSM0, PSM1, MAP, CMP, SPE (000600_H) Application Reset Value: $0000\ 0000_H$



Field	Bits	Type	Description
ARU_NEW_DATA0_IRQ	0	r	**ARU_NEW_DATA0 interrupt** This bit is only set when the interrupt is enabled in the interrupt enable register of the corresponding sub-module. 0_B No interrupt occurred 1_B Interrupt was raised by the corresponding sub-module
ARU_NEW_DATA1_IRQ	1	r	**ARU_NEW_DATA1 interrupt** Bit coding see bit 0.
ARU_ACC_ACK_IRQ	2	r	**ARU_ACC_ACK interrupt** Bit coding see bit 0.
BRC_IRQ	3	r	**BRC shared sub-module interrupt** Bit coding see bit 0.
AEI_IRQ	4	r	**AEI_IRQ interrupt** Bit coding see bit 0. Set this bit represents an OR function of the seven interrupt sources *AEI_TO_XPT*, *AEI_USP_ADDR*, *AEI_IM_ADDR*, *AEI_USP_BE*, *AEIM_USP_ADDR*, *AEIM_IM_ADDR* or *AEIM_USP_BE*.
CMP_IRQ	5	r	**CMP shared sub-module interrupt** Bit coding see bit 0.
SPE0_IRQ	6	r	**SPE0 shared sub-module interrupt** Bit coding see bit 0. Set this bit represents an OR function of the five interrupt sources *SPE_NIPD*, *SPE_DCHG*, *SPE_PERR*, *SPE_BIS* or *SPE_RCMP* of SPE instance 0.
SPE1_IRQ	7	r	**SPE1 shared sub-module interrupt** See bit 0 and bit 6.
SPE2_IRQ	8	r	**SPE2 shared sub-module interrupt** See bit 0 and bit 6.
SPE3_IRQ	9	r	**SPE3 shared sub-module interrupt** See bit 0 and bit 6.

Field	Bits	Type	Description
SPE4_IRQ	10	r	**SPE4 shared sub-module interrupt** See bit 0 and bit 6.
SPE5_IRQ	11	r	**SPE5 shared sub-module interrupt** See bit 0 and bit 6.
0	15:12, 31:16	r	**Reserved** Read as zero, shall be written as zero.

26.3.2 GTM submodule CMP and MON registers

Specific to the TC33x the CMP and MON registers are changed against the family specification as only one ATOM exists, resulting in a reduced set of bits.

CMP Comparator Enable Register

GTM_CMP_EN
CMP Comparator Enable Register **(000200_H)** **Application Reset Value: $0000\ 0000_H$**

31	30	29	28	27	26	25	24	23	22	21	20	19	18	17	16
0								TBWC 11_EN	TBWC 10_EN	TBWC 9_EN	TBWC 8_EN	TBWC 7_EN	TBWC 6_EN	TBWC 5_EN	TBWC 4_EN
r								rw	rw	rw	rw	rw	rw	rw	rw

15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
TBWC 3_EN	TBWC 2_EN	TBWC 1_EN	TBWC 0_EN	0	0	0	0	0	0	0	0	ABWC 3_EN	ABWC 2_EN	ABWC 1_EN	ABWC 0_EN
rw	rw	rw	rw	r	r	r	r	r	r	r	r	rw	rw	rw	rw

Field	Bits	Type	Description
ABWCx_EN (x=0-3)	x	rw	**Enable comparator x in ABWC** 0_B ABWC Comparator x is disabled 1_B ABWC Comparator x is enabled
TBWCx_EN (x=0-11)	x+12	rw	**Enable comparator x in TBWC** 0_B TBWC comparator x is disabled 1_B TBWC comparator x is enabled
0	11, 10, 9, 8, 7, 6, 5, 4, 31:24	r	**Reserved** Read as zero, shall be written as zero.

CMP Event Notification Register

GTM_CMP_IRQ_NOTIFY
CMP Event Notification Register **(000204_H)** **Application Reset Value: $0000\ 0000_H$**

31	30	29	28	27	26	25	24	23	22	21	20	19	18	17	16
0								TBWC 11	TBWC 10	TBWC 9	TBWC 8	TBWC 7	TBWC 6	TBWC 5	TBWC 4
r								rw	rw	rw	rw	rw	rw	rw	rw

15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
TBWC 3	TBWC 2	TBWC 1	TBWC 0	0	0	0	0	0	0	0	0	ABWC 3	ABWC 2	ABWC 1	ABWC 0
rw	rw	rw	rw	r	r	r	r	r	r	r	r	rw	rw	rw	rw

Field	Bits	Type	Description
ABWCx (x=0-3)	x	rw	**Error indication for ABWCx** This bit will be cleared on a CPU write access of value '1'. (As the bit is rw, otherwise no clear.) A read access leaves the bit unchanged. 0_B No error recognized on DTMA sub-modules bits 0 and 1 1_B An error was recognized on corresponding DTMA sub-modules bits
TBWCx (x=0-11)	x+12	rw	**TOM sub-modules outputs bitwise comparator x error indication** This bit will be cleared on a CPU write access of value '1'. A read access leaves the bit unchanged. 0_B No error recognized on TOM sub-modules bits 0 and 1 1_B An error was recognized on corresponding TOM sub-modules bits
0	11, 10, 9, 8, 7, 6, 5, 4, 31:24	r	**Reserved** Read as zero, shall be written as zero.

CMP Interrupt Enable Register

GTM_CMP_IRQ_EN
CMP Interrupt Enable Register **(000208_H)** **Application Reset Value: $0000\ 0000_H$**

31	30	29	28	27	26	25	24	23	22	21	20	19	18	17	16
0								TBWC 11_EN_IRQ	TBWC 10_EN_IRQ	TBWC 9_EN_IRQ	TBWC 8_EN_IRQ	TBWC 7_EN_IRQ	TBWC 6_EN_IRQ	TBWC 5_EN_IRQ	TBWC 4_EN_IRQ
r								rw	rw	rw	rw	rw	rw	rw	rw

15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
TBWC 3_EN_IRQ	TBWC 2_EN_IRQ	TBWC 1_EN_IRQ	TBWC 0_EN_IRQ	0	0	0	0	0	0	0	0	ABWC 3_EN_IRQ	ABWC 2_EN_IRQ	ABWC 1_EN_IRQ	ABWC 0_EN_IRQ
rw	rw	rw	rw	r	r	r	r	r	r	r	r	rw	rw	rw	rw

Field	Bits	Type	Description
ABWCx_EN_IRQ (x=0-3)	x	rw	**Enable ABWCx interrupt source for CMP_IRQ line** 0_B Interrupt source ABWCx is disabled 1_B Interrupt source ABWCx is enabled
TBWCx_EN_IRQ (x=0-11)	x+12	rw	**Enable TBWCx interrupt source for CMP_IRQ line** 0_B Interrupt source TBWCx is disabled 1_B Interrupt source TBWCx is enabled
0	11, 10, 9, 8, 7, 6, 5, 4, 31:24	r	**Reserved** Read as zero, shall be written as zero.

CMP Interrupt Force Register

GTM_CMP_IRQ_FORCINT
CMP Interrupt Force Register **($00020C_H$)** **Application Reset Value: $0000\ 0000_H$**

31	30	29	28	27	26	25	24	23	22	21	20	19	18	17	16
0								TRG_TBWC11	TRG_TBWC10	TRG_TBWC9	TRG_TBWC8	TRG_TBWC7	TRG_TBWC6	TRG_TBWC5	TRG_TBWC4
r								rw	rw	rw	rw	rw	rw	rw	rw

15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
TRG_TBWC3	TRG_TBWC2	TRG_TBWC1	TRG_TBWC0	0	0	0	0	0	0	0	0	TRG_ABWC3	TRG_ABWC2	TRG_ABWC1	TRG_ABWC0
rw	rw	rw	rw	r	r	r	r	r	r	r	r	rw	rw	rw	rw

Field	Bits	Type	Description
TRG_ABWCx (x=0-3)	x	rw	**Trigger ABWCx bit in CMP_IRQ_NOTIFY register by software** This bit is cleared automatically after write. This bit is write protected by bit RF_PROT of register GTM_CTRL. 0_B No event triggering 1_B Assert corresponding field in CMP_IRQ_NOTIFY register
TRG_TBWCx (x=0-11)	x+12	rw	**Trigger TBWCx bit in CMP_IRQ_NOTIFY register by software** This bit is cleared automatically after write. 0_B No event triggering 1_B Assert corresponding field in CMP_IRQ_NOTIFY register
0	11, 10, 9, 8, 7, 6, 5, 4, 31:24	r	**Reserved** Read as zero, shall be written as zero.

CMP error interrupt enable register

GTM_CMP_EIRQ_EN

CMP error interrupt enable register (000214$_H$) Application Reset Value: 0000 0000$_H$

31	30	29	28	27	26	25	24	23	22	21	20	19	18	17	16
0								TBWC 11_EN _EIRQ	TBWC 10_EN _EIRQ	TBWC 9_EN_ EIRQ	TBWC 8_EN_ EIRQ	TBWC 7_EN_ EIRQ	TBWC 6_EN_ EIRQ	TBWC 5_EN_ EIRQ	TBWC 4_EN_ EIRQ
r								rw	rw	rw	rw	rw	rw	rw	rw

15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
TBWC 3_EN_ EIRQ	TBWC 2_EN_ EIRQ	TBWC 1_EN_ EIRQ	TBWC 0_EN_ EIRQ	0	0	0	0	0	0	0	0	ABWC 3_EN_ EIRQ	ABWC 2_EN_ EIRQ	ABWC 1_EN_ EIRQ	ABWC 0_EN_ EIRQ
rw	rw	rw	rw	r	r	r	r	r	r	r	r	rw	rw	rw	rw

Field	Bits	Type	Description
ABWCx_EN_EIRQ (x=0-3)	x	rw	**Enable ABWCx interrupt source for CMP_EIRQ line** 0_B Interrupt source ABWCx is disabled 1_B Interrupt source ABWCx is enabled
TBWCx_EN_EIRQ (x=0-11)	x+12	rw	**Enable TBWCx interrupt source for CMP_EIRQ line** 0_B Interrupt source TBWCx is disabled 1_B Interrupt source TBWCx is enabled
0	11, 10, 9, 8, 7, 6, 5, 4, 31:24	r	**Reserved** Read as zero, shall be written as zero.

26.3.3 Port to GTM TIM Connections

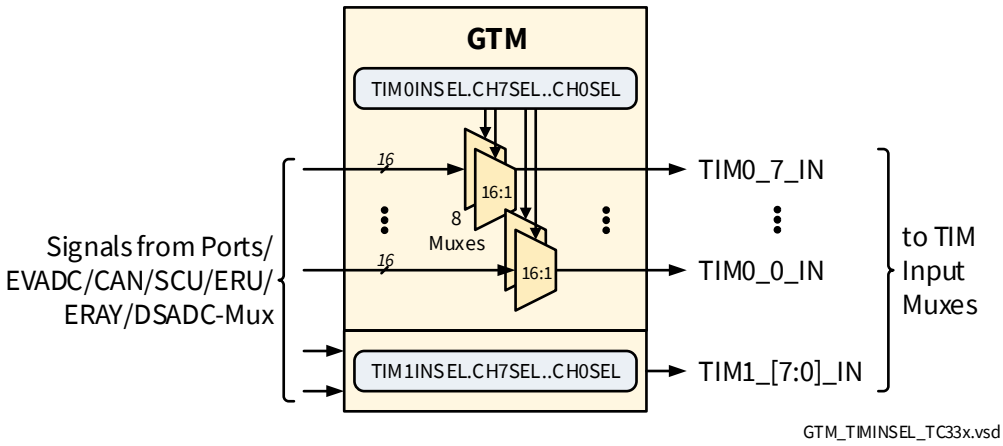


Figure 6 Port to GTM TIM Connections Overview

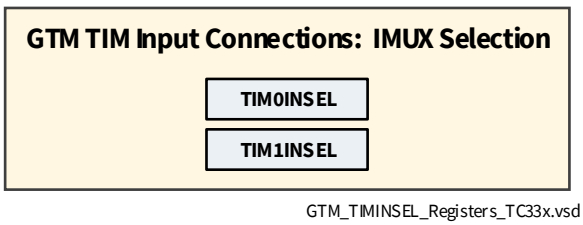


Figure 7 Port to GTM TIM Connections Registers Overview

Table 207 Port to GTM TIM Connections Registers Overview

Register	Long Name	Selection Bitfields	Page
TIM0INSEL	TIM0 Input Select Register (n=0)	CH0SEL..CH7SEL	Page 35
TIM1INSEL	TIM1 Input Select Register (n=1)	CH0SEL..CH7SEL	Page 40
TIMi_CHx_CTRL	TIMi Channel x Control Register (i=1-2;x=0-7)		Page 44

TIMn Input Select Register

GTM_TIMnINSEL (n=0)
TIMn Input Select Register **($09FD40_H$+n*4)** **Application Reset Value: $0000\ 0000_H$**

31	30	29	28	27	26	25	24	23	22	21	20	19	18	17	16
CH7SEL				CH6SEL				CH5SEL				CH4SEL			
rw				rw				rw				rw			

15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
CH3SEL				CH2SEL				CH1SEL				CH0SEL			
rw				rw				rw				rw			

Field	Bits	Type	Description
CHxSEL (x=0)	4*x+3:4*x	rw	**TIM Channel x Input Selection** This bit defines which input is connected for TIMn channel x of the GTM. The input is either derived from a port pad or from an on-chip module. 0_H Reserved, do not use 1_H **P00.9**, Port pad input (no LQFP100) 2_H **P02.0**, Port pad input 3_H **P10.7**, Port pad input (LFBGA292 only) 4_H **P14.5**, Port pad input 5_H **P14.7**, Port pad input (LFBGA292 only) 6_H **P15.6**, Port pad input (no LQFP100) 7_H **P21.2**, Port pad input 8_H **P22.1**, Port pad input (no LQFP100) 9_H **P33.10**, Port pad input A_H **P33.4**, Port pad input (no LQFP100) B_H Reserved, do not use C_H **PDOUT0**, SCU/ERU pattern detection output 0 D_H Reserved, do not use E_H Reserved, do not use F_H **C0SR0**, EVADC service request 0 of common block 0
CHxSEL (x=1)	4*x+3:4*x	rw	**TIM Channel x Input Selection** This bit defines which input is connected for TIMn channel x of the GTM. The input is either derived from a port pad or from an on-chip module. 0_H Reserved, do not use 1_H Reserved, do not use 2_H **P02.1**, Port pad input 3_H **P10.1**, Port pad input (no LQFP100) 4_H **P14.6**, Port pad input (no LQFP100) 5_H **P15.7**, Port pad input (no LQFP100) 6_H **P21.3**, Port pad input 7_H **P22.0**, Port pad input (no LQFP100) 8_H **P33.5**, Port pad input 9_H **P33.9**, Port pad input A_H Reserved, do not use B_H Reserved, do not use C_H **PDOUT1**, SCU/ERU pattern detection output 1 D_H **INT_O12**, CAN interrupt output INT_O12 E_H Reserved, do not use F_H **C1SR0**, EVADC service request 0 of common block 1

Field	Bits	Type	Description
CHxSEL (x=2)	4*x+3:4*x	rw	**TIM Channel x Input Selection** This bit defines which input is connected for TIMn channel x of the GTM. The input is either derived from a port pad or from an on-chip module. 0_H Reserved, do not use 1_H Reserved, do not use 2_H **P02.2**, Port pad input 3_H **P10.2**, Port pad input (no LQFP100) 4_H **P10.5**, Port pad input 5_H **P15.8**, Port pad input (no LQFP100) 6_H **P21.4**, Port pad input 7_H **P23.5**, Port pad input (LFBGA292 only) 8_H **P33.11**, Port pad input (no LQFP100) 9_H **P33.6**, Port pad input A_H Reserved, do not use B_H Reserved, do not use C_H **PDOUT2**, SCU/ERU pattern detection output 2 D_H **INT_O13**, CAN interrupt output INT_O13 E_H Reserved, do not use F_H **C0SR1**, EVADC service request 1 of common block 0
CHxSEL (x=3)	4*x+3:4*x	rw	**TIM Channel x Input Selection** This bit defines which input is connected for TIMn channel x of the GTM. The input is either derived from a port pad or from an on-chip module. 0_H Reserved, do not use 1_H **P00.12**, Port pad input (no LQFP100) 2_H **P02.3**, Port pad input 3_H **P10.3**, Port pad input (no LQFP100) 4_H **P10.6**, Port pad input 5_H **P14.0**, Port pad input 6_H **P21.5**, Port pad input (no LQFP100) 7_H **P22.2**, Port pad input (no LQFP100) 8_H Reserved, do not use 9_H **P33.7**, Port pad input A_H Reserved, do not use B_H Reserved, do not use C_H **PDOUT3**, SCU/ERU pattern detection output 3 D_H **INT_O14**, CAN interrupt output INT_O14 E_H Reserved, do not use F_H **C1SR1**, EVADC service request 1 of common block 1

Field	Bits	Type	Description
CHxSEL (x=4)	4*x+3:4*x	rw	**TIM Channel x Input Selection** This bit defines which input is connected for TIMn channel x of the GTM. The input is either derived from a port pad or from an on-chip module. 0_H Reserved, do not use 1_H **P02.4**, Port pad input 2_H **P10.0**, Port pad input (LFBGA292 only) 3_H **P14.1**, Port pad input 4_H **P22.3**, Port pad input (no LQFP100) 5_H Reserved, do not use 6_H **P33.0**, Port pad input (no LQFP100) 7_H **P33.8**, Port pad input 8_H **P21.6**, Port pad input 9_H Reserved, do not use A_H **T6OFL**, T6OFL GPT12 B_H Reserved, do not use C_H **PDOUT4**, SCU/ERU pattern detection output 4 D_H **INT_O15**, CAN interrupt output INT_O15 E_H Reserved, do not use F_H **C0SR2**, EVADC service request 2 of common block 0
CHxSEL (x=5)	4*x+3:4*x	rw	**TIM Channel x Input Selection** This bit defines which input is connected for TIMn channel x of the GTM. The input is either derived from a port pad or from an on-chip module. 0_H Reserved, do not use 1_H **P02.5**, Port pad input 2_H **P10.8**, Port pad input (LFBGA292 only) 3_H **P14.2**, Port pad input (no LQFP100) 4_H Reserved, do not use 5_H **P32.4**, Port pad input (BGA only) 6_H **P33.1**, Port pad input (no LQFP100) 7_H **P21.7**, Port pad input 8_H Reserved, do not use 9_H Reserved, do not use A_H **T6OFL**, T6OFL GPT12 B_H Reserved, do not use C_H **PDOUT5**, SCU/ERU pattern detection output 5 D_H Reserved, do not use E_H Reserved, do not use F_H **C1SR2**, EVADC service request 2 of common block 1

Field	Bits	Type	Description
CHxSEL (x=6)	4*x+3:4*x	rw	**TIM Channel x Input Selection** This bit defines which input is connected for TIMn channel x of the GTM. The input is either derived from a port pad or from an on-chip module. 0_H Reserved, do not use 1_H **P02.6**, Port pad input 2_H **P10.4**, Port pad input (LFBGA292 only) 3_H **P14.3**, Port pad input 4_H **P23.1**, Port pad input 5_H Reserved, do not use 6_H **P33.2**, Port pad input (no LQFP100) 7_H **P20.0**, Port pad input (no LQFP100) 8_H Reserved, do not use … B_H Reserved, do not use C_H **PDOUT6**, SCU/ERU pattern detection output 6 D_H Reserved, do not use E_H Reserved, do not use F_H **C0SR3**, EVADC service request 3 of common block 0
CHxSEL (x=7)	4*x+3:4*x	rw	**TIM Channel x Input Selection** This bit defines which input is connected for TIMn channel x of the GTM. The input is either derived from a port pad or from an on-chip module. 0_H Reserved, do not use 1_H **P02.7**, Port pad input 2_H **P14.4**, Port pad input (no LQFP100) 3_H **P20.8**, Port pad input 4_H Reserved, do not use 5_H Reserved, do not use 6_H **P33.3**, Port pad input (no LQFP100) 7_H Reserved, do not use 8_H **P11.15**, Port pad input (LFBGA292_adas only) 9_H **WUTUFLOW**, PMS: Underflow output to support WUT calibration A_H Reserved, do not use B_H Reserved, do not use C_H **PDOUT7**, SCU/ERU pattern detection output 7 D_H **MT0**, ERAY0 macrotick clock from CC E_H Reserved, do not use F_H **C1SR3**, EVADC service request 3 of common block 1

GTM_TIMnINSEL (n=1)
TIMn Input Select Register **(09FD40$_H$+n*4)** **Application Reset Value: 0000 0000$_H$**

31	30	29	28	27	26	25	24	23	22	21	20	19	18	17	16
CH7SEL				CH6SEL				CH5SEL				CH4SEL			
rw				rw				rw				rw			

15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
CH3SEL				CH2SEL				CH1SEL				CH0SEL			
rw				rw				rw				rw			

Field	Bits	Type	Description
CHxSEL (x=0)	4*x+3:4*x	rw	**TIM Channel x Input Selection** This bit defines which input is connected for TIMn channel x of the GTM. The input is either derived from a port pad or from an on-chip module. 0_H Reserved, do not use 1_H **P00.9**, Port pad input (no LQFP100) 2_H **P02.0**, Port pad input 3_H **P10.7**, Port pad input (LFBGA292 only) 4_H **P14.5**, Port pad input 5_H **P14.7**, Port pad input (LFBGA292 only) 6_H **P15.6**, Port pad input (no LQFP100) 7_H **P21.2**, Port pad input 8_H **P22.1**, Port pad input (no LQFP100) 9_H **P33.10**, Port pad input A_H **P33.4**, Port pad input (no LQFP100) B_H Reserved, do not use C_H **C0SR2**, EVADC service request 2 of common block 0 D_H Reserved, do not use … F_H Reserved, do not use

Field	Bits	Type	Description
CHxSEL (x=1)	4*x+3:4*x	rw	**TIM Channel x Input Selection** This bit defines which input is connected for TIMn channel x of the GTM. The input is either derived from a port pad or from an on-chip module. 0_H Reserved, do not use 1_H Reserved, do not use 2_H **P02.1**, Port pad input 3_H **P10.1**, Port pad input (no LQFP100) 4_H **P14.6**, Port pad input (no LQFP100) 5_H **P15.7**, Port pad input (no LQFP100) 6_H **P21.3**, Port pad input 7_H **P22.0**, Port pad input (no LQFP100) 8_H **P33.5**, Port pad input 9_H **P33.9**, Port pad input A_H Reserved, do not use B_H Reserved, do not use C_H **C1SR2**, EVADC service request 2 of common block 1 D_H **INT_O12**, CAN interrupt output INT_O12 E_H Reserved, do not use F_H Reserved, do not use
CHxSEL (x=2)	4*x+3:4*x	rw	**TIM Channel x Input Selection** This bit defines which input is connected for TIMn channel x of the GTM. The input is either derived from a port pad or from an on-chip module. 0_H Reserved, do not use 1_H Reserved, do not use 2_H **P02.2**, Port pad input 3_H **P10.2**, Port pad input (no LQFP100) 4_H **P10.5**, Port pad input 5_H **P15.8**, Port pad input (no LQFP100) 6_H **P21.4**, Port pad input 7_H **P23.5**, Port pad input (LFBGA292 only) 8_H **P33.11**, Port pad input (no LQFP100) 9_H **P33.6**, Port pad input A_H **P23.6**, Reserved, do not use B_H Reserved, do not use C_H **C0SR3**, EVADC service request 3 of common block 0 D_H **INT_O13**, CAN interrupt output INT_O13 E_H Reserved, do not use F_H Reserved, do not use

Field	Bits	Type	Description
CHxSEL (x=3)	4*x+3:4*x	rw	**TIM Channel x Input Selection** This bit defines which input is connected for TIMn channel x of the GTM. The input is either derived from a port pad or from an on-chip module. 0_H Reserved, do not use 1_H **P00.12**, Port pad input (no LQFP100) 2_H **P02.3**, Port pad input 3_H **P10.3**, Port pad input (no LQFP100) 4_H **P10.6**, Port pad input 5_H **P14.0**, Port pad input 6_H **P21.5**, Port pad input (no LQFP100) 7_H **P22.2**, Port pad input (no LQFP100) 8_H Reserved, do not use 9_H **P33.7**, Port pad input A_H Reserved, do not use … C_H Reserved, do not use D_H **INT_O14**, CAN interrupt output INT_O14 E_H Reserved, do not use F_H **C1SR3**, EVADC service request 3 of common block 1
CHxSEL (x=4)	4*x+3:4*x	rw	**TIM Channel x Input Selection** This bit defines which input is connected for TIMn channel x of the GTM. The input is either derived from a port pad or from an on-chip module. 0_H Reserved, do not use 1_H **P02.4**, Port pad input 2_H **P10.0**, Port pad input (LFBGA292 only) 3_H **P14.1**, Port pad input 4_H **P22.3**, Port pad input (no LQFP100) 5_H Reserved, do not use 6_H **P33.0**, Port pad input (no LQFP100) 7_H **P33.8**, Port pad input 8_H **P21.6**, Port pad input 9_H **P20.0**, Port pad input (no LQFP100) A_H **C0SR0**, EVADC service request 0 of common block 0 B_H Reserved, do not use C_H Reserved, do not use D_H **INT_O15**, CAN interrupt output INT_O15 E_H Reserved, do not use F_H Reserved, do not use

Field	Bits	Type	Description
CHxSEL (x=5)	4*x+3:4*x	rw	**TIM Channel x Input Selection** This bit defines which input is connected for TIMn channel x of the GTM. The input is either derived from a port pad or from an on-chip module. 0_H Reserved, do not use 1_H **P02.5**, Port pad input 2_H **P10.8**, Port pad input (LFBGA292 only) 3_H **P14.2**, Port pad input (no LQFP100) 4_H Reserved, do not use 5_H **P32.4**, Port pad input (BGA only) 6_H **P33.1**, Port pad input (no LQFP100) 7_H **P21.7**, Port pad input 8_H **P20.7**, Port pad input (no LQFP100) 9_H Reserved, do not use A_H **C1SR0**, EVADC service request 0 of common block 1 B_H Reserved, do not use … F_H Reserved, do not use
CHxSEL (x=6)	4*x+3:4*x	rw	**TIM Channel x Input Selection** This bit defines which input is connected for TIMn channel x of the GTM. The input is either derived from a port pad or from an on-chip module. 0_H Reserved, do not use 1_H **P02.6**, Port pad input 2_H **P10.4**, Port pad input (LFBGA292 only) 3_H **P14.3**, Port pad input 4_H **P23.1**, Port pad input 5_H Reserved, do not use 6_H **P33.2**, Port pad input (no LQFP100) 7_H **P20.0**, Port pad input (no LQFP100) 8_H Reserved, do not use 9_H Reserved, do not use A_H **C0SR1**, EVADC service request 1 of common block 0 B_H Reserved, do not use … F_H Reserved, do not use

Field	Bits	Type	Description
CHxSEL (x=7)	4*x+3:4*x	rw	**TIM Channel x Input Selection** This bit defines which input is connected for TIMn channel x of the GTM. The input is either derived from a port pad or from an on-chip module. 0_H Reserved, do not use 1_H **P02.7**, Port pad input 2_H **P14.4**, Port pad input (no LQFP100) 3_H **P20.8**, Port pad input 4_H Reserved, do not use 5_H Reserved, do not use 6_H **P33.3**, Port pad input (no LQFP100) 7_H Reserved, do not use … 9_H Reserved, do not use A_H **C1SR1**, EVADC service request 1 of common block 1 B_H Reserved, do not use C_H Reserved, do not use D_H **MT0**, ERAY0 macrotick clock from CC E_H Reserved, do not use F_H Reserved, do not use

TIMi Channel x Control Register

GTM_TIMi_CHx_CTRL (i=1;x=0-7)

TIMi Channel x Control Register **(001024_H+i*800_H+x*80_H)** **Application Reset Value: 0000 0000_H**

31	30	29	28	27	26	25	24	23	22	21	20	19	18	17	16
TOCTRL		EGPR1_SEL	EGPR0_SEL	FR_ECNT_OFL		CLK_SEL		FLT_CTR_FE	FLT_MODE_FE	FLT_CTR_RE	FLT_MODE_RE	EXT_CAP_EN	FLT_CNT_FRQ		FLT_EN
rw		rw	rw	rw		rw		rw	rw	rw	rw	rw	rw		rw

15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
ECNT_RESET	ISL	DSL	CNTS_SEL	GPR1_SEL		GPR0_SEL		0	CICTRL	ARU_EN	OSM	TIM_MODE			TIM_EN
rw	rw	rw	rw	rw		rw		r	rw	rw	rw	rw			rw

Field	Bits	Type	Description
TIM_EN	0	rw	**TIM channel x enable** Enabling of the channel resets the registers **ECNT, TIM[i]_CH[x]_CNT, TIM[i]_CH[x]_GPR0,** and **TIM[i]_CH[x]_GPR1** to their reset values. After finishing the action in one-shot mode the **TIM_EN** bit is cleared automatically. Otherwise, the bit must be cleared manually. 0_B Channel disabled 1_B Channel enabled

Field	Bits	Type	Description
TIM_MODE	3:1	rw	**TIM channel x mode** If an undefined value is written to the TIM_MODE register, the hardware switches automatically to TIM_MODE = 0b000 (TPWM mode). The TIM_MODE register should not be changed while the TIM channel is enabled. If the TIM channel is enabled and operating in TPWM or TPIM mode after the first valid edge defined by DSL has occurred, a reconfiguration of DSL,ISL,TIM_MODE will not change the channel behavior. Reading these bit fields after reconfiguration will show the newly configured settings but the initial channel behavior will not change. Only a disabling of the TIM channel by setting TIM_EN= 0 and reenabling with TIM_EN= 1 will change the channel operation mode. 000_B PWM Measurement Mode (TPWM) 001_B Pulse Integration Mode (TPIM) 010_B Input Event Mode (TIEM) 011_B Input Prescaler Mode (TIPM) 100_B Bit Compression Mode (TBCM) 101_B Gated Periodic Sampling Mode (TGPS) 110_B Serial Shift Mode (TSSM)
OSM	4	rw	**One-shot mode** After finishing the action in one-shot mode the **TIM_EN** bit is cleared automatically. 0_B Continuous operation mode 1_B One-shot mode
ARU_EN	5	rw	**GPR0 and GPR1 register values routed to ARU** 0_B Registers content not routed 1_B Registers content routed
CICTRL	6	rw	**Channel Input Control** 0_B Use signal TIM_IN(x) as input for channel x 1_B Use signal TIM_IN(x-1) as input for channel x (or TIM_IN(m-1) if x is 0)
GPR0_SEL	9:8	rw	**Selection for GPR0 register** If EGPR0_SEL =0 / EGPR0_SEL =1 : If a reserved value is written to the EGPR0_SEL, GPR0_SEL bit fields, the hardware will use TBU_TS0 input. 00_B Use TBU_TS0 as input / use ECNT as input 01_B Use TBU_TS1 as input / use TIM_INP_VAL as input 10_B Use TBU_TS2 as input / reserved 11_B Use CNTS as input; if TGPS mode in channel = 0 is selected, use TIM Filter F_OUT as input / reserved

Field	Bits	Type	Description
GPR1_SEL	11:10	rw	**Selection for GPR1 register** If EGPR1_SEL =0 / EGPR1_SEL =1: If a reserved value is written to the EGPR1_SEL, GPR1_SEL bit fields, the hardware will use TBU_TS0 input. Note: In TBCM mode: EGPR1_SEL=1, GPR1_SEL=01 selects TIM_INP_VAL as input; in all other cases, TIM Filter F_OUT is used. 00_B Use TBU_TS0 as input / use ECNT as input 01_B Use TBU_TS1 as input / use TIM_INP_VAL as input 10_B Use TBU_TS2 as input / reserved 11_B Use CNT as input / reserved
CNTS_SEL	12	rw	**Selection for CNTS register** The functionality of the **CNTS_SEL** is disabled in the modes TIPM,TGPS and TBCM. **CNTS_SEL** in TSSM mode selects the source signal for registered or latched shift out operation. 0_B use F_OUTx 1_B use TIM_INx 0_B Use CNT register as input 1_B Use TBU_TS0 as input
DSL	13	rw	**Signal level control** In TIM_MODE=0b110 (TSSM), the bit field DSL defines the shift direction. 0_B Shift left 1_B Shift right 0_B Measurement starts with falling edge (low level measurement) 1_B Measurement starts with rising edge (high level measurement)
ISL	14	rw	**Ignore signal level** This bit is mode dependent and will have different meanings (see details in the TIM Channel mode description). 0_B Use DSL bit for selecting active signal level (TIEM) 1_B Ignore DSL and treat both edges as active edge (TIEM)
ECNT_RESET	15	rw	**Enables resetting of counter in certain modes** If TIM_MODE=0b101 (TGPS) / TIM_MODE=0b000 (TPWM) else ECNT counter operating in wrap around mode; In TIM_MODE=0b110 (TSSM), the bit field ECNT_RESET defines the initial polarity for the shift register. 0_B ECNT counter operating in wrap around mode / ECNT counter operating in wrap around mode, CNT is reset on active input edge defined by DSL 1_B ECNT counter is reset with periodic sampling / ECNT counter operating in wrap around mode, CNT is reset on active and inactive input edge
FLT_EN	16	rw	**Filter enable for channel x** If the filter is disabled, all filter related units (including CSU) are bypassed, which means that the signal *F_IN* is directly routed to signal *F_OUT*. 0_B Filter disabled and internal states are reset 1_B Filter enabled

Field	Bits	Type	Description
FLT_CNT_FRQ	18:17	rw	**Filter counter frequency select** 00_B FLT_CNT counts with CMU_CLK0 01_B FLT_CNT counts with CMU_CLK1 10_B FLT_CNT counts with CMU_CLK6 11_B FLT_CNT counts with CMU_CLK7
EXT_CAP_EN	19	rw	**Enables external capture mode** The selected TIM mode is only sensitive to external capture pulses the input event changes are ignored. 0_B External capture disabled 1_B External capture enabled
FLT_MODE_RE	20	rw	**Filter mode for rising edge** Coding see Family Spec.
FLT_CTR_RE	21	rw	**Filter counter mode for rising edge** Coding see Family Spec.
FLT_MODE_FE	22	rw	**Filter mode for falling edge** Coding see Family Spec.
FLT_CTR_FE	23	rw	**Filter counter mode for falling edge** Coding see Family Spec.
CLK_SEL	26:24	rw	**CMU clock source select for channel** If ECLK_SEL =0 / ECLK_SEL =1: 000_B CMU_CLK0 selected / tdu_sample_evt of TDU selected 001_B CMU_CLK1 selected / reserved 010_B CMU_CLK2 selected / reserved 011_B CMU_CLK3 selected / reserved 100_B CMU_CLK4 selected / reserved 101_B CMU_CLK5 selected / reserved 110_B CMU_CLK6 selected / reserved 111_B CMU_CLK7 selected / reserved
FR_ECNT_OFL	27	rw	**Extended Edge counter overflow behavior** 0_B Overflow will be signaled on ECNT bit width = 8 1_B Overflow will be signaled on EECNT bit width (full range)
EGPR0_SEL	28	rw	**Extension of GPR0_SEL bit field** Details described in GPR0_SEL bit field.
EGPR1_SEL	29	rw	**Extension of GPR1_SEL bit field** Details described in GPR1_SEL bit field.
TOCTRL	31:30	rw	**Timeout control** It has to be mentioned that writing of TOCTRL= 0 will every time stop the TDU, independent of the previous state of TOCTRL. 00_B Timeout feature disabled 01_B Timeout feature enabled for rising edge only 10_B Timeout feature enabled for falling edge only 11_B Timeout feature enabled for both edges
0	7	r	**Reserved** Read as zero, shall be written as zero.

26.3.4 GTM to Port Connections

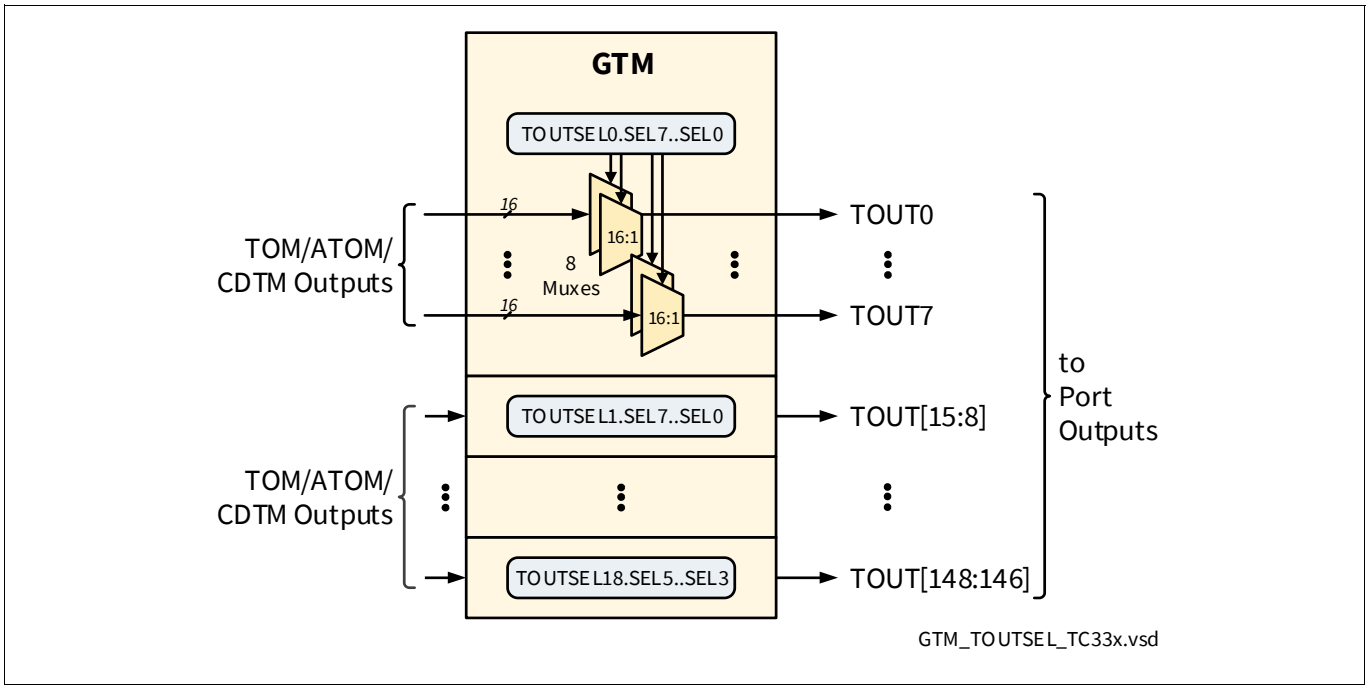


Figure 8 GTM to Port Connections Overview

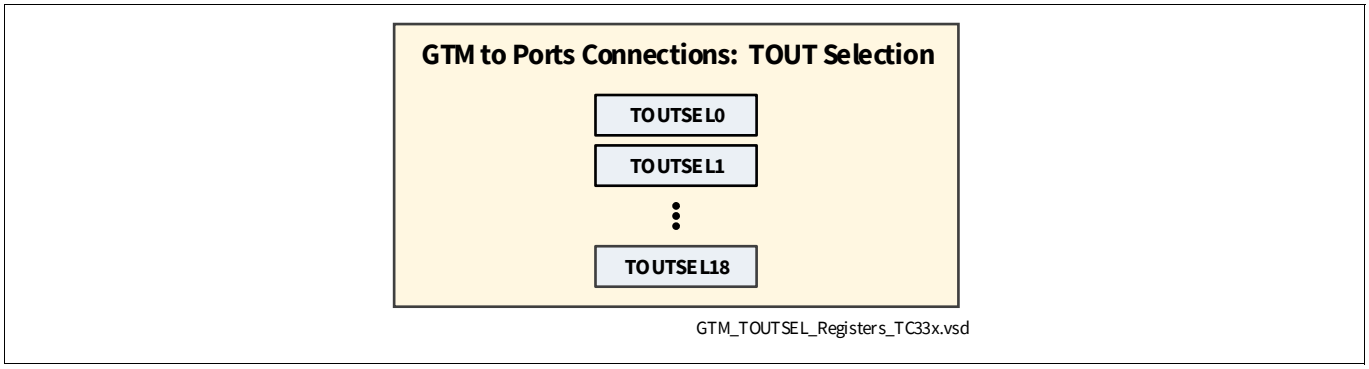


Figure 9 GTM to Port Connections Registers Overview

Table 208 Assignment of TOUTSEL Registers to TOUTy Outputs

Register	SEL7	SEL6	SEL5	SEL4	SEL3	SEL2	SEL1	SEL0
TOUTSEL0, **Page 49**	TOUT7	TOUT6	TOUT5	TOUT4	TOUT3	TOUT2	TOUT1	TOUT0
TOUTSEL1, **Page 54**	TOUT15[1]	TOUT14[1]	TOUT13[1]	TOUT12[1]	TOUT11[1]	TOUT10[1]	TOUT9	TOUT8
TOUTSEL2, **Page 58**	TOUT23[1]	TOUT22[1]	TOUT21[1]	TOUT20[3]	TOUT19[3]	TOUT18[1]	TOUT17[1]	TOUT16[1]
TOUTSEL3, **Page 62**	TOUT31	TOUT30	TOUT29	TOUT28	TOUT27	TOUT26[2]	TOUT25[1]	TOUT24[1]
TOUTSEL4, **Page 67**	-	-	-	-	-	TOUT34[1]	TOUT33[1]	TOUT32
TOUTSEL5, **Page 71**	TOUT47[1]	TOUT46[3]	-	-	-	TOUT42	-	TOUT40[3]
TOUTSEL6, **Page 75**	TOUT55[4]	TOUT54[4]	TOUT53[4]	TOUT52[3]	TOUT51[5]	TOUT50[1]	TOUT49[1]	TOUT48[1]
TOUTSEL7, **Page 79**	TOUT63[1]	TOUT62[1]	TOUT61[1]	TOUT60[3]	TOUT59[1]	TOUT58	TOUT57	TOUT56[1]
TOUTSEL8, **Page 83**	TOUT71	TOUT70	TOUT69	TOUT68	TOUT67	TOUT66[4]	TOUT65	TOUT64

Table 208 Assignment of TOUTSEL Registers to TOUTy Outputs (cont'd)

Register	SEL7	SEL6	SEL5	SEL4	SEL3	SEL2	SEL1	SEL0
TOUTSEL9, **Page 87**	TOUT79[1)]	TOUT78[1)]	TOUT77[1)]	TOUT76[4)]	TOUT75[1)]	TOUT74	TOUT73	TOUT72
TOUTSEL10, **Page 91**	TOUT87[3)]	TOUT86[1)]	TOUT85	TOUT84[1)]	TOUT83	TOUT82[1)]	TOUT81	TOUT80
TOUTSEL11, **Page 95**	TOUT95	TOUT94[4)]	TOUT93[4)]	TOUT92[4)]	TOUT91[1)]	TOUT90[3)]	TOUT89[3)]	TOUT88[3)]
TOUTSEL12, **Page 99**	TOUT103 1)	TOUT102 3)	TOUT101	TOUT100	TOUT99	TOUT98	TOUT97	TOUT96
TOUTSEL13, **Page 103**	-	TOUT110 3)	TOUT109 3)	TOUT108	TOUT107	TOUT106 5)	TOUT105 1)	TOUT104 1)
TOUTSEL14, **Page 105**	-	-	-	-	-	-	-	-
TOUTSEL15, **Page 109**	-	-	-	TOUT124 4)	-	-	-	-
TOUTSEL16, **Page 112**	-	-	-	-	-	TOUT130 3)	-	-

1) Not available in TQFP100/TQFP80 packages
2) Not available in TQFP100 package
3) Only available in BGA292 packages
4) Not available in TQFP80 package
5) Only available in BGA packages, no TQFP package available.

Timer Output Select Register

GTM_TOUTSELn (n=0)
Timer Output Select Register **($09FD60_H$+n*4)** **Application Reset Value: $0000\ 0000_H$**

31	30	29	28	27	26	25	24	23	22	21	20	19	18	17	16
SEL7				SEL6				SEL5				SEL4			
rw				rw				rw				rw			

15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
SEL3				SEL2				SEL1				SEL0			
rw				rw				rw				rw			

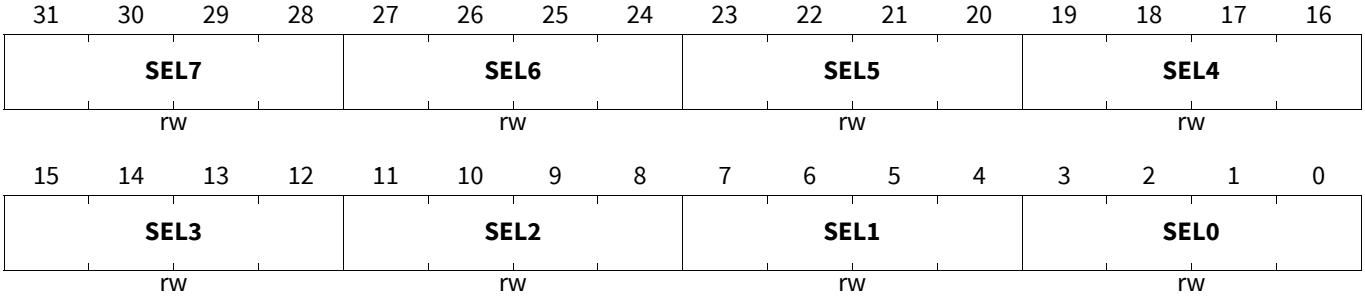
Field	Bits	Type	Description
SELx (x=0)	4*x+3:4*x	rw	**TOUT(n*8 + x) Output Selection** This bit field defines which timer output is connected as TOUT(n*8+x). *Note: SELx values not explicitly defined here are equivalent to the last defined SELx setting.* 0_H **TOM0_8**, Output of TOM0, channel 8 1_H **TOM1_8**, Output of TOM1, channel 8 2_H **CDTM0_DTM4_0, ATOM0_0**, Dead-time output of ATOM0, channel 0 3_H Reserved, do not use 4_H **CDTM0_DTM0_0, TOM0_0**, Dead-time output of TOM0, channel 0 5_H **CDTM1_DTM0_0, TOM1_0**, Dead-time output of TOM1, channel 0 6_H **CDTM0_DTM1_0, TOM0_4**, Dead-time output of TOM0, channel 4 7_H **CDTM1_DTM1_0, TOM1_4**, Dead-time output of TOM1, channel 4 8_H **CDTM0_DTM5_1_N, ATOM0_5_N**, Inverted dead-time output of ATOM0, channel 5 9_H Reserved, do not use … B_H Reserved, do not use
SELx (x=1)	4*x+3:4*x	rw	**TOUT(n*8 + x) Output Selection** This bit field defines which timer output is connected as TOUT(n*8+x). *Note: SELx values not explicitly defined here are equivalent to the last defined SELx setting.* 0_H **TOM0_9**, Output of TOM0, channel 9 1_H **TOM1_9**, Output of TOM1, channel 9 2_H **CDTM0_DTM4_1, ATOM0_1**, Dead-time output of ATOM0, channel 1 3_H Reserved, do not use 4_H **CDTM0_DTM0_1, TOM0_1**, Dead-time output of TOM0, channel 1 5_H **CDTM1_DTM0_1, TOM1_1**, Dead-time output of TOM1, channel 1 6_H **CDTM0_DTM1_0_N, TOM0_4_N**, Inverted dead-time output of TOM0, channel 4 7_H **CDTM1_DTM1_0_N, TOM1_4_N**, Inverted dead-time output of TOM1, channel 4 8_H **CDTM0_DTM5_2_N, ATOM0_6_N**, Inverted dead-time output of ATOM0, channel 6 9_H Reserved, do not use … B_H Reserved, do not use

Field	Bits	Type	Description
SELx (x=2)	4*x+3:4*x	rw	**TOUT(n*8 + x) Output Selection** This bit field defines which timer output is connected as TOUT(n*8+x). *Note: SELx values not explicitly defined here are equivalent to the last defined SELx setting.* 0_H **TOM0_10**, Output of TOM0, channel 10 1_H **TOM1_10**, Output of TOM1, channel 10 2_H **CDTM0_DTM4_2, ATOM0_2**, Dead-time output of ATOM0, channel 2 3_H Reserved, do not use 4_H **CDTM0_DTM0_2, TOM0_2**, Dead-time output of TOM0, channel 2 5_H **CDTM1_DTM0_2, TOM1_2**, Dead-time output of TOM1, channel 2 6_H **CDTM0_DTM1_1, TOM0_5**, Dead-time output of TOM0, channel 5 7_H **CDTM1_DTM1_1, TOM1_5**, Dead-time output of TOM1, channel 5 8_H **CDTM0_DTM5_3_N, ATOM0_7_N**, Inverted dead-time output of ATOM0, channel 7 9_H Reserved, do not use … B_H Reserved, do not use
SELx (x=3)	4*x+3:4*x	rw	**TOUT(n*8 + x) Output Selection** This bit field defines which timer output is connected as TOUT(n*8+x). *Note: SELx values not explicitly defined here are equivalent to the last defined SELx setting.* 0_H **TOM0_11**, Output of TOM0, channel 11 1_H **TOM1_11**, Output of TOM1, channel 11 2_H **CDTM0_DTM4_3, ATOM0_3**, Dead-time output of ATOM0, channel 3 3_H Reserved, do not use 4_H **CDTM0_DTM0_3, TOM0_3**, Dead-time output of TOM0, channel 3 5_H **CDTM1_DTM0_3, TOM1_3**, Dead-time output of TOM1, channel 3 6_H **CDTM0_DTM1_1_N, TOM0_5_N**, Inverted dead-time output of TOM0, channel 5 7_H **CDTM1_DTM1_1_N, TOM1_5_N**, Inverted dead-time output of TOM1, channel 5 8_H **CDTM0_DTM5_0_N, ATOM0_4_N**, Inverted dead-time output of ATOM0, channel 4 9_H Reserved, do not use … B_H Reserved, do not use

Field	Bits	Type	Description
SELx (x=4)	4*x+3:4*x	rw	**TOUT(n*8 + x) Output Selection** This bit field defines which timer output is connected as TOUT(n*8+x). *Note: SELx values not explicitly defined here are equivalent to the last defined SELx setting.* 0_H **TOM0_12**, Output of TOM0, channel 12 1_H **TOM1_12**, Output of TOM1, channel 12 2_H **CDTM0_DTM5_0, ATOM0_4**, Dead-time output of ATOM0, channel 4 3_H Reserved, do not use 4_H **CDTM0_DTM0_1_N, TOM0_1_N**, Inverted dead-time output of TOM0, channel 1 5_H **CDTM1_DTM0_1_N, TOM1_1_N**, Inverted dead-time output of TOM1, channel 1 6_H **CDTM0_DTM1_2, TOM0_6**, Dead-time output of TOM0, channel 6 7_H **CDTM1_DTM1_2, TOM1_6**, Dead-time output of TOM1, channel 6 8_H **CDTM0_DTM4_1_N, ATOM0_1_N**, Inverted dead-time output of ATOM0, channel 1 9_H Reserved, do not use … B_H Reserved, do not use
SELx (x=5)	4*x+3:4*x	rw	**TOUT(n*8 + x) Output Selection** This bit field defines which timer output is connected as TOUT(n*8+x). *Note: SELx values not explicitly defined here are equivalent to the last defined SELx setting.* 0_H **TOM0_13**, Output of TOM0, channel 13 1_H **TOM1_13**, Output of TOM1, channel 13 2_H **CDTM0_DTM5_1, ATOM0_5**, Dead-time output of ATOM0, channel 5 3_H Reserved, do not use 4_H **CDTM0_DTM0_2_N, TOM0_2_N**, Inverted dead-time output of TOM0, channel 2 5_H **CDTM1_DTM0_2_N, TOM1_2_N**, Inverted dead-time output of TOM1, channel 2 6_H **CDTM0_DTM1_2_N, TOM0_6_N**, Inverted dead-time output of TOM0, channel 6 7_H **CDTM1_DTM1_2_N, TOM1_6_N**, Inverted dead-time output of TOM1, channel 6 8_H **CDTM0_DTM4_2_N, ATOM0_2_N**, Inverted dead-time output of ATOM0, channel 2 9_H Reserved, do not use … B_H Reserved, do not use

Field	Bits	Type	Description
SELx (x=6)	4*x+3:4*x	rw	**TOUT(n*8 + x) Output Selection** This bit field defines which timer output is connected as TOUT(n*8+x). *Note: SELx values not explicitly defined here are equivalent to the last defined SELx setting.* 0_H **TOM0_14**, Output of TOM0, channel 14 1_H **TOM1_14**, Output of TOM1, channel 14 2_H **CDTM0_DTM5_2, ATOM0_6**, Dead-time output of ATOM0, channel 6 3_H Reserved, do not use 4_H **CDTM0_DTM0_3_N, TOM0_3_N**, Inverted dead-time output of TOM0, channel 3 5_H **CDTM1_DTM0_3_N, TOM1_3_N**, Inverted dead-time output of TOM1, channel 3 6_H **CDTM0_DTM1_3, TOM0_7**, Dead-time output of TOM0, channel 7 7_H **CDTM1_DTM1_3, TOM1_7**, Dead-time output of TOM1, channel 7 8_H **CDTM0_DTM4_3_N, ATOM0_3_N**, Inverted dead-time output of ATOM0, channel 3 9_H Reserved, do not use … B_H Reserved, do not use
SELx (x=7)	4*x+3:4*x	rw	**TOUT(n*8 + x) Output Selection** This bit field defines which timer output is connected as TOUT(n*8+x). *Note: SELx values not explicitly defined here are equivalent to the last defined SELx setting.* 0_H **TOM0_15**, Output of TOM0, channel 15 1_H **TOM1_15**, Output of TOM1, channel 15 2_H **CDTM0_DTM5_3, ATOM0_7**, Dead-time output of ATOM0, channel 7 3_H Reserved, do not use 4_H **CDTM0_DTM0_0_N, TOM0_0_N**, Inverted dead-time output of TOM0, channel 0 5_H **CDTM1_DTM0_0_N, TOM1_0_N**, Inverted dead-time output of TOM1, channel 0 6_H **CDTM0_DTM1_3_N, TOM0_7_N**, Inverted dead-time output of TOM0, channel 7 7_H **CDTM1_DTM1_3_N, TOM1_7_N**, Inverted dead-time output of TOM1, channel 7 8_H **CDTM0_DTM4_0_N, ATOM0_0_N**, Inverted dead-time output of ATOM0, channel 0 9_H Reserved, do not use … B_H Reserved, do not use

GTM_TOUTSELn (n=1)
Timer Output Select Register **($09FD60_H$+n*4)** **Application Reset Value: $0000\ 0000_H$**



Field	Bits	Type	Description
SELx (x=0)	4*x+3:4*x	rw	**TOUT(n*8 + x) Output Selection** This bit field defines which timer output is connected as TOUT(n*8+x). *Note: SELx values not explicitly defined here are equivalent to the last defined SELx setting.* 0_H **TOM0_8**, Output of TOM0, channel 8 1_H **CDTM1_DTM0_0, TOM1_0**, Dead-time output of TOM1, channel 0 2_H **CDTM0_DTM4_0, ATOM0_0**, Dead-time output of ATOM0, channel 0 3_H Reserved, do not use … 5_H Reserved, do not use 6_H **CDTM0_DTM1_0_N, TOM0_4_N**, Inverted dead-time output of TOM0, channel 4 7_H **CDTM1_DTM1_0_N, TOM1_4_N**, Inverted dead-time output of TOM1, channel 4 8_H **CDTM0_DTM5_1_N, ATOM0_5_N**, Inverted dead-time output of ATOM0, channel 5 9_H Reserved, do not use … B_H Reserved, do not use

Field	Bits	Type	Description
SELx (x=1)	4*x+3:4*x	rw	**TOUT(n*8 + x) Output Selection** This bit field defines which timer output is connected as TOUT(n*8+x). *Note: SELx values not explicitly defined here are equivalent to the last defined SELx setting.* 0_H **TOM0_8**, Output of TOM0, channel 8 1_H **CDTM1_DTM0_0, TOM1_0**, Dead-time output of TOM1, channel 0 2_H **CDTM0_DTM4_0, ATOM0_0**, Dead-time output of ATOM0, channel 0 3_H Reserved, do not use 4_H **CDTM0_DTM0_0_N, TOM0_0_N**, Inverted dead-time output of TOM0, channel 0 5_H **CDTM1_DTM1_1_N, TOM1_5_N**, Inverted dead-time output of TOM1, channel 5 6_H **CDTM0_DTM1_0, TOM0_4**, Dead-time output of TOM0, channel 4 7_H **CDTM1_DTM1_0, TOM1_4**, Dead-time output of TOM1, channel 4 8_H **CDTM0_DTM5_1_N, ATOM0_5_N**, Inverted dead-time output of ATOM0, channel 5 9_H Reserved, do not use … B_H Reserved, do not use
SELx (x=2)	4*x+3:4*x	rw	**TOUT(n*8 + x) Output Selection** This bit field defines which timer output is connected as TOUT(n*8+x). *Note: SELx values not explicitly defined here are equivalent to the last defined SELx setting.* 0_H **TOM0_9**, Output of TOM0, channel 9 1_H **CDTM1_DTM0_1, TOM1_1**, Dead-time output of TOM1, channel 1 2_H **CDTM0_DTM4_1, ATOM0_1**, Dead-time output of ATOM0, channel 1 3_H Reserved, do not use 4_H **CDTM0_DTM0_1_N, TOM0_1_N**, Inverted dead-time output of TOM0, channel 1 5_H **CDTM1_DTM1_2_N, TOM1_6_N**, Inverted dead-time output of TOM1, channel 6 6_H **CDTM0_DTM1_0_N, TOM0_4_N**, Inverted dead-time output of TOM0, channel 4 7_H **CDTM1_DTM1_0_N, TOM1_4_N**, Inverted dead-time output of TOM1, channel 4 8_H **CDTM0_DTM5_2_N, ATOM0_6_N**, Inverted dead-time output of ATOM0, channel 6 9_H Reserved, do not use … B_H Reserved, do not use

Field	Bits	Type	Description
SELx (x=3)	4*x+3:4*x	rw	**TOUT(n*8 + x) Output Selection** This bit field defines which timer output is connected as TOUT(n*8+x). *Note: SELx values not explicitly defined here are equivalent to the last defined SELx setting.* 0_H **TOM0_9**, Output of TOM0, channel 9 1_H **CDTM1_DTM0_1, TOM1_1**, Dead-time output of TOM1, channel 1 2_H **CDTM0_DTM4_1, ATOM0_1**, Dead-time output of ATOM0, channel 1 3_H Reserved, do not use 4_H **CDTM0_DTM0_2_N, TOM0_2_N**, Inverted dead-time output of TOM0, channel 2 5_H **CDTM1_DTM1_2_N, TOM1_6_N**, Inverted dead-time output of TOM1, channel 6 6_H **CDTM0_DTM1_1, TOM0_5**, Dead-time output of TOM0, channel 5 7_H **CDTM1_DTM1_1, TOM1_5**, Dead-time output of TOM1, channel 5 8_H **CDTM0_DTM5_2_N, ATOM0_6_N**, Inverted dead-time output of ATOM0, channel 6 9_H Reserved, do not use … B_H Reserved, do not use
SELx (x=4)	4*x+3:4*x	rw	**TOUT(n*8 + x) Output Selection** This bit field defines which timer output is connected as TOUT(n*8+x). *Note: SELx values not explicitly defined here are equivalent to the last defined SELx setting.* 0_H **TOM0_10**, Output of TOM0, channel 10 1_H **CDTM1_DTM0_2, TOM1_2**, Dead-time output of TOM1, channel 2 2_H **CDTM0_DTM4_2, ATOM0_2**, Dead-time output of ATOM0, channel 2 3_H Reserved, do not use 4_H **CDTM0_DTM0_3_N, TOM0_3_N**, Inverted dead-time output of TOM0, channel 3 5_H **CDTM1_DTM1_3_N, TOM1_7_N**, Inverted dead-time output of TOM1, channel 7 6_H **CDTM0_DTM1_1_N, TOM0_5_N**, Inverted dead-time output of TOM0, channel 5 7_H **CDTM1_DTM1_1_N, TOM1_5_N**, Inverted dead-time output of TOM1, channel 5 8_H **CDTM0_DTM5_3_N, ATOM0_7_N**, Inverted dead-time output of ATOM0, channel 7 9_H Reserved, do not use … B_H Reserved, do not use

Field	Bits	Type	Description
SELx (x=5)	4*x+3:4*x	rw	**TOUT(n*8 + x) Output Selection** This bit field defines which timer output is connected as TOUT(n*8+x). *Note: SELx values not explicitly defined here are equivalent to the last defined SELx setting.* 0_H **TOM0_11**, Output of TOM0, channel 11 1_H **CDTM1_DTM0_3, TOM1_3**, Dead-time output of TOM1, channel 3 2_H **CDTM0_DTM4_3, ATOM0_3**, Dead-time output of ATOM0, channel 3 3_H Reserved, do not use 4_H Reserved, do not use 5_H **CDTM1_DTM1_0_N, TOM1_4_N**, Inverted dead-time output of TOM1, channel 4 6_H **CDTM0_DTM1_2, TOM0_6**, Dead-time output of TOM0, channel 6 7_H **CDTM1_DTM1_2, TOM1_6**, Dead-time output of TOM1, channel 6 8_H **CDTM0_DTM5_0_N, ATOM0_4_N**, Inverted dead-time output of ATOM0, channel 4 9_H Reserved, do not use … B_H Reserved, do not use
SELx (x=6)	4*x+3:4*x	rw	**TOUT(n*8 + x) Output Selection** This bit field defines which timer output is connected as TOUT(n*8+x). *Note: SELx values not explicitly defined here are equivalent to the last defined SELx setting.* 0_H **TOM0_12**, Output of TOM0, channel 12 1_H **CDTM1_DTM1_0, TOM1_4**, Dead-time output of TOM1, channel 4 2_H **CDTM0_DTM5_0, ATOM0_4**, Dead-time output of ATOM0, channel 4 3_H Reserved, do not use 4_H **CDTM0_DTM0_1_N, TOM0_1_N**, Inverted dead-time output of TOM0, channel 1 5_H **CDTM1_DTM0_1_N, TOM1_1_N**, Inverted dead-time output of TOM1, channel 1 6_H **CDTM0_DTM1_2_N, TOM0_6_N**, Inverted dead-time output of TOM0, channel 6 7_H **CDTM1_DTM1_2_N, TOM1_6_N**, Inverted dead-time output of TOM1, channel 6 8_H **CDTM0_DTM4_1_N, ATOM0_1_N**, Inverted dead-time output of ATOM0, channel 1 9_H Reserved, do not use … B_H Reserved, do not use

Field	Bits	Type	Description
SELx (x=7)	4*x+3:4*x	rw	**TOUT(n*8 + x) Output Selection** This bit field defines which timer output is connected as TOUT(n*8+x). *Note: SELx values not explicitly defined here are equivalent to the last defined SELx setting.* 0_H **TOM0_13**, Output of TOM0, channel 13 1_H **CDTM1_DTM1_1, TOM1_5**, Dead-time output of TOM1, channel 5 2_H **CDTM0_DTM5_1, ATOM0_5**, Dead-time output of ATOM0, channel 5 3_H Reserved, do not use 4_H **CDTM0_DTM0_2_N, TOM0_2_N**, Inverted dead-time output of TOM0, channel 2 5_H **CDTM1_DTM0_2_N, TOM1_2_N**, Inverted dead-time output of TOM1, channel 2 6_H **CDTM0_DTM1_3, TOM0_7**, Dead-time output of TOM0, channel 7 7_H **CDTM1_DTM1_3, TOM1_7**, Dead-time output of TOM1, channel 7 8_H **CDTM0_DTM4_2_N, ATOM0_2_N**, Inverted dead-time output of ATOM0, channel 2 9_H Reserved, do not use … B_H Reserved, do not use

GTM_TOUTSELn (n=2)
Timer Output Select Register **($09FD60_H$+n*4)** **Application Reset Value: $0000\ 0000_H$**

31	30	29	28	27	26	25	24	23	22	21	20	19	18	17	16
SEL7				SEL6				SEL5				SEL4			
rw				rw				rw				rw			

15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
SEL3				SEL2				SEL1				SEL0			
rw				rw				rw				rw			

Field	Bits	Type	Description
SELx (x=0)	4*x+3:4*x	rw	**TOUT(n*8 + x) Output Selection** This bit field defines which timer output is connected as TOUT(n*8+x). *Note: SELx values not explicitly defined here are equivalent to the last defined SELx setting.* 0_H **TOM0_14**, Output of TOM0, channel 14 1_H **CDTM1_DTM1_2, TOM1_6**, Dead-time output of TOM1, channel 6 2_H **CDTM0_DTM5_2, ATOM0_6**, Dead-time output of ATOM0, channel 6 3_H Reserved, do not use 4_H **CDTM0_DTM0_3_N, TOM0_3_N**, Inverted dead-time output of TOM0, channel 3 5_H **CDTM1_DTM0_3_N, TOM1_3_N**, Inverted dead-time output of TOM1, channel 3 6_H **CDTM0_DTM1_3_N, TOM0_7_N**, Inverted dead-time output of TOM0, channel 7 7_H **CDTM1_DTM1_3_N, TOM1_7_N**, Inverted dead-time output of TOM1, channel 7 8_H **CDTM0_DTM4_3_N, ATOM0_3_N**, Inverted dead-time output of ATOM0, channel 3 9_H Reserved, do not use … B_H Reserved, do not use
SELx (x=1)	4*x+3:4*x	rw	**TOUT(n*8 + x) Output Selection** This bit field defines which timer output is connected as TOUT(n*8+x). *Note: SELx values not explicitly defined here are equivalent to the last defined SELx setting.* 0_H **TOM0_15**, Output of TOM0, channel 15 1_H **CDTM1_DTM1_3, TOM1_7**, Dead-time output of TOM1, channel 7 2_H **CDTM0_DTM5_3, ATOM0_7**, Dead-time output of ATOM0, channel 7 3_H Reserved, do not use 4_H **CDTM0_DTM0_0_N, TOM0_0_N**, Inverted dead-time output of TOM0, channel 0 5_H **CDTM1_DTM0_0_N, TOM1_0_N**, Inverted dead-time output of TOM1, channel 0 6_H Reserved, do not use 7_H Reserved, do not use 8_H **CDTM0_DTM4_0_N, ATOM0_0_N**, Inverted dead-time output of ATOM0, channel 0 9_H Reserved, do not use … B_H Reserved, do not use

Field	Bits	Type	Description
SELx (x=2)	4*x+3:4*x	rw	**TOUT(n*8 + x) Output Selection** This bit field defines which timer output is connected as TOUT(n*8+x). *Note: SELx values not explicitly defined here are equivalent to the last defined SELx setting.* 0_H **CDTM0_DTM0_0, TOM0_0**, Dead-time output of TOM0, channel 0 1_H **CDTM1_DTM0_0, TOM1_0**, Dead-time output of TOM1, channel 0 2_H Reserved, do not use … 4_H Reserved, do not use 5_H **CDTM1_DTM1_1_N, TOM1_5_N**, Inverted dead-time output of TOM1, channel 5 6_H Reserved, do not use … B_H Reserved, do not use
SELx (x=3)	4*x+3:4*x	rw	**TOUT(n*8 + x) Output Selection** This bit field defines which timer output is connected as TOUT(n*8+x). *Note: SELx values not explicitly defined here are equivalent to the last defined SELx setting.* 0_H **CDTM0_DTM0_1, TOM0_1**, Dead-time output of TOM0, channel 1 1_H **CDTM1_DTM0_1, TOM1_1**, Dead-time output of TOM1, channel 1 2_H Reserved, do not use … 4_H Reserved, do not use 5_H **CDTM1_DTM1_2_N, TOM1_6_N**, Inverted dead-time output of TOM1, channel 6 6_H Reserved, do not use … B_H Reserved, do not use
SELx (x=4)	4*x+3:4*x	rw	**TOUT(n*8 + x) Output Selection** This bit field defines which timer output is connected as TOUT(n*8+x). *Note: SELx values not explicitly defined here are equivalent to the last defined SELx setting.* 0_H **CDTM0_DTM0_2, TOM0_2**, Dead-time output of TOM0, channel 2 1_H **CDTM1_DTM0_2, TOM1_2**, Dead-time output of TOM1, channel 2 2_H Reserved, do not use … 4_H Reserved, do not use 5_H **CDTM1_DTM1_3_N, TOM1_7_N**, Inverted dead-time output of TOM1, channel 7 6_H Reserved, do not use … B_H Reserved, do not use

Field	Bits	Type	Description
SELx (x=5)	4*x+3:4*x	rw	**TOUT(n*8 + x) Output Selection** This bit field defines which timer output is connected as TOUT(n*8+x). *Note: SELx values not explicitly defined here are equivalent to the last defined SELx setting.* 0_H **CDTM0_DTM0_3, TOM0_3**, Dead-time output of TOM0, channel 3 1_H **CDTM1_DTM0_3, TOM1_3**, Dead-time output of TOM1, channel 3 2_H Reserved, do not use … 4_H Reserved, do not use 5_H **CDTM1_DTM1_0_N, TOM1_4_N**, Inverted dead-time output of TOM1, channel 4 6_H Reserved, do not use … B_H Reserved, do not use
SELx (x=6)	4*x+3:4*x	rw	**TOUT(n*8 + x) Output Selection** This bit field defines which timer output is connected as TOUT(n*8+x). *Note: SELx values not explicitly defined here are equivalent to the last defined SELx setting.* 0_H **CDTM0_DTM1_0, TOM0_4**, Dead-time output of TOM0, channel 4 1_H **CDTM1_DTM1_0, TOM1_4**, Dead-time output of TOM1, channel 4 2_H Reserved, do not use 3_H Reserved, do not use 4_H **CDTM0_DTM0_1_N, TOM0_1_N**, Inverted dead-time output of TOM0, channel 1 5_H **CDTM1_DTM0_1_N, TOM1_1_N**, Inverted dead-time output of TOM1, channel 1 6_H Reserved, do not use … B_H Reserved, do not use

Field	Bits	Type	Description
SELx (x=7)	4*x+3:4*x	rw	**TOUT(n*8 + x) Output Selection** This bit field defines which timer output is connected as TOUT(n*8+x). *Note: SELx values not explicitly defined here are equivalent to the last defined SELx setting.* 0_H **CDTM0_DTM1_1, TOM0_5**, Dead-time output of TOM0, channel 5 1_H **CDTM1_DTM1_1, TOM1_5**, Dead-time output of TOM1, channel 5 2_H **CDTM0_DTM5_1, ATOM0_5**, Dead-time output of ATOM0, channel 5 3_H Reserved, do not use 4_H **CDTM0_DTM0_2_N, TOM0_2_N**, Inverted dead-time output of TOM0, channel 2 5_H **CDTM1_DTM0_2_N, TOM1_2_N**, Inverted dead-time output of TOM1, channel 2 6_H Reserved, do not use … 9_H Reserved, do not use A_H **CDTM0_DTM4_2_N, ATOM0_2_N**, Inverted dead-time output of ATOM0, channel 2 B_H Reserved, do not use

GTM_TOUTSELn (n=3)

Timer Output Select Register **($09FD60_H$+n*4)** **Application Reset Value: $0000\ 0000_H$**

31	30	29	28	27	26	25	24	23	22	21	20	19	18	17	16
SEL7				SEL6				SEL5				SEL4			
rw				rw				rw				rw			

15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
SEL3				SEL2				SEL1				SEL0			
rw				rw				rw				rw			

Field	Bits	Type	Description
SELx (x=0)	4*x+3:4*x	rw	**TOUT(n*8 + x) Output Selection** This bit field defines which timer output is connected as TOUT(n*8+x). *Note: SELx values not explicitly defined here are equivalent to the last defined SELx setting.* 0_H **CDTM0_DTM1_2, TOM0_6**, Dead-time output of TOM0, channel 6 1_H **CDTM1_DTM1_2, TOM1_6**, Dead-time output of TOM1, channel 6 2_H **CDTM0_DTM5_2, ATOM0_6**, Dead-time output of ATOM0, channel 6 3_H Reserved, do not use 4_H **CDTM0_DTM0_3_N, TOM0_3_N**, Inverted dead-time output of TOM0, channel 3 5_H **CDTM1_DTM0_3_N, TOM1_3_N**, Inverted dead-time output of TOM1, channel 3 6_H Reserved, do not use … 9_H Reserved, do not use A_H **CDTM0_DTM4_3_N, ATOM0_3_N**, Inverted dead-time output of ATOM0, channel 3 B_H Reserved, do not use
SELx (x=1)	4*x+3:4*x	rw	**TOUT(n*8 + x) Output Selection** This bit field defines which timer output is connected as TOUT(n*8+x). *Note: SELx values not explicitly defined here are equivalent to the last defined SELx setting.* 0_H **CDTM0_DTM1_3, TOM0_7**, Dead-time output of TOM0, channel 7 1_H **CDTM1_DTM1_3, TOM1_7**, Dead-time output of TOM1, channel 7 2_H **CDTM0_DTM5_3, ATOM0_7**, Dead-time output of ATOM0, channel 7 3_H Reserved, do not use 4_H **CDTM0_DTM0_0_N, TOM0_0_N**, Inverted dead-time output of TOM0, channel 0 5_H **CDTM1_DTM0_0_N, TOM1_0_N**, Inverted dead-time output of TOM1, channel 0 6_H Reserved, do not use … B_H Reserved, do not use

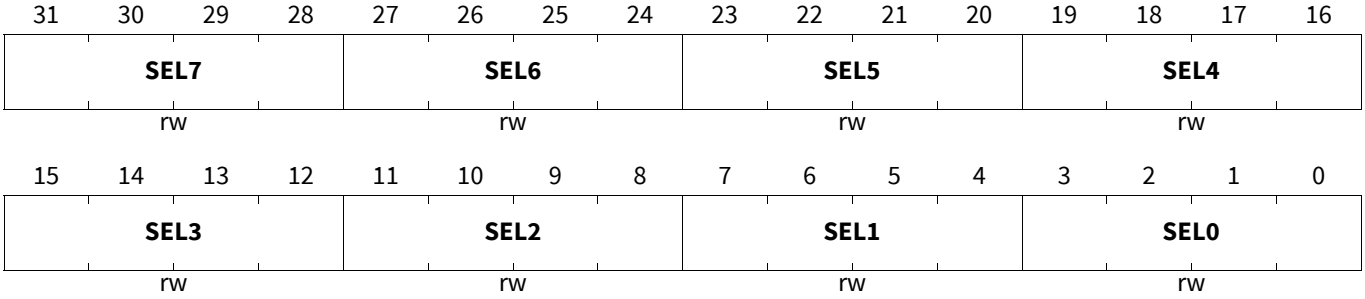
Field	Bits	Type	Description
SELx (x=2)	4*x+3:4*x	rw	**TOUT(n*8 + x) Output Selection** This bit field defines which timer output is connected as TOUT(n*8+x). *Note: SELx values not explicitly defined here are equivalent to the last defined SELx setting.* 0_H **CDTM0_DTM0_0, TOM0_0**, Dead-time output of TOM0, channel 0 1_H **CDTM1_DTM0_0, TOM1_0**, Dead-time output of TOM1, channel 0 2_H Reserved, do not use 3_H Reserved, do not use 4_H **CDTM0_DTM1_1_N, TOM0_5_N**, Inverted dead-time output of TOM0, channel 5 5_H **CDTM1_DTM1_1_N, TOM1_5_N**, Inverted dead-time output of TOM1, channel 5 6_H Reserved, do not use … 9_H Reserved, do not use A_H **CDTM0_DTM5_1_N, ATOM0_5_N**, Inverted dead-time output of ATOM0, channel 5 B_H Reserved, do not use
SELx (x=3)	4*x+3:4*x	rw	**TOUT(n*8 + x) Output Selection** This bit field defines which timer output is connected as TOUT(n*8+x). *Note: SELx values not explicitly defined here are equivalent to the last defined SELx setting.* 0_H **CDTM0_DTM0_1, TOM0_1**, Dead-time output of TOM0, channel 1 1_H **CDTM1_DTM0_1, TOM1_1**, Dead-time output of TOM1, channel 1 2_H Reserved, do not use 3_H Reserved, do not use 4_H **CDTM0_DTM1_2_N, TOM0_6_N**, Inverted dead-time output of TOM0, channel 6 5_H **CDTM1_DTM1_2_N, TOM1_6_N**, Inverted dead-time output of TOM1, channel 6 6_H **CDTM0_DTM1_1, TOM0_5**, Dead-time output of TOM0, channel 5 7_H **CDTM1_DTM1_1, TOM1_5**, Dead-time output of TOM1, channel 5 8_H Reserved, do not use 9_H Reserved, do not use A_H **CDTM0_DTM5_2_N, ATOM0_6_N**, Inverted dead-time output of ATOM0, channel 6 B_H Reserved, do not use

Field	Bits	Type	Description
SELx (x=4)	4*x+3:4*x	rw	**TOUT(n*8 + x) Output Selection** This bit field defines which timer output is connected as TOUT(n*8+x). *Note: SELx values not explicitly defined here are equivalent to the last defined SELx setting.* 0_H **CDTM0_DTM0_2, TOM0_2**, Dead-time output of TOM0, channel 2 1_H **CDTM1_DTM0_2, TOM1_2**, Dead-time output of TOM1, channel 2 2_H Reserved, do not use 3_H Reserved, do not use 4_H **CDTM0_DTM1_3_N, TOM0_7_N**, Inverted dead-time output of TOM0, channel 7 5_H **CDTM1_DTM1_3_N, TOM1_7_N**, Inverted dead-time output of TOM1, channel 7 6_H **CDTM0_DTM1_1_N, TOM0_5_N**, Inverted dead-time output of TOM0, channel 5 7_H **CDTM1_DTM1_1_N, TOM1_5_N**, Inverted dead-time output of TOM1, channel 5 8_H Reserved, do not use 9_H Reserved, do not use A_H **CDTM0_DTM5_3_N, ATOM0_7_N**, Inverted dead-time output of ATOM0, channel 7 B_H Reserved, do not use
SELx (x=5)	4*x+3:4*x	rw	**TOUT(n*8 + x) Output Selection** This bit field defines which timer output is connected as TOUT(n*8+x). *Note: SELx values not explicitly defined here are equivalent to the last defined SELx setting.* 0_H **CDTM0_DTM0_3, TOM0_3**, Dead-time output of TOM0, channel 3 1_H **CDTM1_DTM0_3, TOM1_3**, Dead-time output of TOM1, channel 3 2_H Reserved, do not use 3_H Reserved, do not use 4_H **CDTM0_DTM1_0_N, TOM0_4_N**, Inverted dead-time output of TOM0, channel 4 5_H **CDTM1_DTM1_0_N, TOM1_4_N**, Inverted dead-time output of TOM1, channel 4 6_H **CDTM0_DTM1_2, TOM0_6**, Dead-time output of TOM0, channel 6 7_H **CDTM1_DTM1_2, TOM1_6**, Dead-time output of TOM1, channel 6 8_H Reserved, do not use 9_H Reserved, do not use A_H **CDTM0_DTM5_0, ATOM0_4**, Dead-time output of ATOM0, channel 4 B_H Reserved, do not use

Field	Bits	Type	Description
SELx (x=6)	4*x+3:4*x	rw	**TOUT(n*8 + x) Output Selection** This bit field defines which timer output is connected as TOUT(n*8+x). *Note: SELx values not explicitly defined here are equivalent to the last defined SELx setting.* 0_H **CDTM0_DTM1_0, TOM0_4**, Dead-time output of TOM0, channel 4 1_H **CDTM1_DTM1_0, TOM1_4**, Dead-time output of TOM1, channel 4 2_H Reserved, do not use 3_H Reserved, do not use 4_H **CDTM0_DTM0_1_N, TOM0_1_N**, Inverted dead-time output of TOM0, channel 1 5_H **CDTM1_DTM0_1_N, TOM1_1_N**, Inverted dead-time output of TOM1, channel 1 6_H **CDTM0_DTM1_2_N, TOM0_6_N**, Inverted dead-time output of TOM0, channel 6 7_H **CDTM1_DTM1_2_N, TOM1_6_N**, Inverted dead-time output of TOM1, channel 6 8_H Reserved, do not use … B_H Reserved, do not use
SELx (x=7)	4*x+3:4*x	rw	**TOUT(n*8 + x) Output Selection** This bit field defines which timer output is connected as TOUT(n*8+x). *Note: SELx values not explicitly defined here are equivalent to the last defined SELx setting.* 0_H **CDTM0_DTM0_1, TOM0_1**, Dead-time output of TOM0, channel 1 1_H **CDTM1_DTM0_1, TOM1_1**, Dead-time output of TOM1, channel 1 2_H **CDTM0_DTM4_1, ATOM0_1**, Dead-time output of ATOM0, channel 1 3_H Reserved, do not use 4_H **CDTM0_DTM1_2_N, TOM0_6_N**, Inverted dead-time output of TOM0, channel 6 5_H **CDTM1_DTM1_2_N, TOM1_6_N**, Inverted dead-time output of TOM1, channel 6 6_H **CDTM0_DTM1_3, TOM0_7**, Dead-time output of TOM0, channel 7 7_H **CDTM1_DTM1_3, TOM1_7**, Dead-time output of TOM1, channel 7 8_H Reserved, do not use … B_H Reserved, do not use

GTM_TOUTSELn (n=4)

Timer Output Select Register **($09FD60_H$+n*4)** **Application Reset Value: 0000 0000_H**



Field	Bits	Type	Description
SELx (x=0)	4*x+3:4*x	rw	**TOUT(n*8 + x) Output Selection** This bit field defines which timer output is connected as TOUT(n*8+x). *Note: SELx values not explicitly defined here are equivalent to the last defined SELx setting.* 0_H **CDTM0_DTM0_0, TOM0_0**, Dead-time output of TOM0, channel 0 1_H **CDTM1_DTM0_0, TOM1_0**, Dead-time output of TOM1, channel 0 2_H Reserved, do not use 3_H Reserved, do not use 4_H **CDTM0_DTM1_1_N, TOM0_5_N**, Inverted dead-time output of TOM0, channel 5 5_H **CDTM1_DTM1_1_N, TOM1_5_N**, Inverted dead-time output of TOM1, channel 5 6_H **CDTM0_DTM1_3_N, TOM0_7_N**, Inverted dead-time output of TOM0, channel 7 7_H **CDTM1_DTM1_3_N, TOM1_7_N**, Inverted dead-time output of TOM1, channel 7 8_H Reserved, do not use … B_H Reserved, do not use

Field	Bits	Type	Description
SELx (x=1)	4*x+3:4*x	rw	**TOUT(n*8 + x) Output Selection** This bit field defines which timer output is connected as TOUT(n*8+x). *Note: SELx values not explicitly defined here are equivalent to the last defined SELx setting.* 0_H **CDTM0_DTM0_2, TOM0_2**, Dead-time output of TOM0, channel 2 1_H **CDTM1_DTM0_2, TOM1_2**, Dead-time output of TOM1, channel 2 2_H **CDTM0_DTM4_2, ATOM0_2**, Dead-time output of ATOM0, channel 2 3_H Reserved, do not use 4_H **CDTM0_DTM1_3_N, TOM0_7_N**, Inverted dead-time output of TOM0, channel 7 5_H **CDTM1_DTM1_3_N, TOM1_7_N**, Inverted dead-time output of TOM1, channel 7 6_H Reserved, do not use … B_H Reserved, do not use
SELx (x=2)	4*x+3:4*x	rw	**TOUT(n*8 + x) Output Selection** This bit field defines which timer output is connected as TOUT(n*8+x). *Note: SELx values not explicitly defined here are equivalent to the last defined SELx setting.* 0_H **TOM1_12**, Output of TOM1, channel 12 1_H Reserved, do not use … 3_H Reserved, do not use 4_H **CDTM0_DTM0_0_N, TOM0_0_N**, Inverted dead-time output of TOM0, channel 0 5_H **CDTM1_DTM0_0_N, TOM1_0_N**, Inverted dead-time output of TOM1, channel 0 6_H Reserved, do not use … B_H Reserved, do not use

Field	Bits	Type	Description
SELx (x=3)	4*x+3:4*x	rw	**TOUT(n*8 + x) Output Selection** This bit field defines which timer output is connected as TOUT(n*8+x). *Note: SELx values not explicitly defined here are equivalent to the last defined SELx setting.* 0_H **TOM1_13**, Output of TOM1, channel 13 1_H Reserved, do not use … 3_H Reserved, do not use 4_H **CDTM0_DTM0_1_N, TOM0_1_N**, Inverted dead-time output of TOM0, channel 1 5_H **CDTM1_DTM0_1_N, TOM1_1_N**, Inverted dead-time output of TOM1, channel 1 6_H Reserved, do not use … B_H Reserved, do not use
SELx (x=4)	4*x+3:4*x	rw	**TOUT(n*8 + x) Output Selection** This bit field defines which timer output is connected as TOUT(n*8+x). *Note: SELx values not explicitly defined here are equivalent to the last defined SELx setting.* 0_H **TOM1_14**, Output of TOM1, channel 14 1_H Reserved, do not use … 3_H Reserved, do not use 4_H **CDTM0_DTM1_0_N, TOM0_4_N**, Inverted dead-time output of TOM0, channel 4 5_H **CDTM1_DTM1_0_N, TOM1_4_N**, Inverted dead-time output of TOM1, channel 4 6_H Reserved, do not use … B_H Reserved, do not use

Field	Bits	Type	Description
SELx (x=5)	4*x+3:4*x	rw	**TOUT(n*8 + x) Output Selection** This bit field defines which timer output is connected as TOUT(n*8+x). *Note: SELx values not explicitly defined here are equivalent to the last defined SELx setting.* 0_H **TOM1_15**, Output of TOM1, channel 15 1_H Reserved, do not use … 3_H Reserved, do not use 4_H **CDTM0_DTM1_0, TOM0_4**, Dead-time output of TOM0, channel 4 5_H **CDTM1_DTM1_0, TOM1_4**, Dead-time output of TOM1, channel 4 6_H **CDTM0_DTM1_1_N, TOM0_5_N**, Inverted dead-time output of TOM0, channel 5 7_H **CDTM1_DTM1_1_N, TOM1_5_N**, Inverted dead-time output of TOM1, channel 5 8_H Reserved, do not use … B_H Reserved, do not use
SELx (x=6)	4*x+3:4*x	rw	**TOUT(n*8 + x) Output Selection** This bit field defines which timer output is connected as TOUT(n*8+x). *Note: SELx values not explicitly defined here are equivalent to the last defined SELx setting.* 0_H **CDTM0_DTM0_3, TOM0_3**, Dead-time output of TOM0, channel 3 1_H **CDTM1_DTM0_3, TOM1_3**, Dead-time output of TOM1, channel 3 2_H **CDTM0_DTM4_3, ATOM0_3**, Dead-time output of ATOM0, channel 3 3_H Reserved, do not use 4_H **CDTM0_DTM1_2_N, TOM0_6_N**, Inverted dead-time output of TOM0, channel 6 5_H **CDTM1_DTM1_2_N, TOM1_6_N**, Inverted dead-time output of TOM1, channel 6 6_H Reserved, do not use … B_H Reserved, do not use

Field	Bits	Type	Description
SELx (x=7)	4*x+3:4*x	rw	**TOUT(n*8 + x) Output Selection** This bit field defines which timer output is connected as TOUT(n*8+x). *Note: SELx values not explicitly defined here are equivalent to the last defined SELx setting.* 0_H **CDTM0_DTM1_0, TOM0_4**, Dead-time output of TOM0, channel 4 1_H **CDTM1_DTM1_0, TOM1_4**, Dead-time output of TOM1, channel 4 2_H **CDTM0_DTM5_0, ATOM0_4**, Dead-time output of ATOM0, channel 4 3_H Reserved, do not use 4_H **CDTM0_DTM1_3_N, TOM0_7_N**, Inverted dead-time output of TOM0, channel 7 5_H **CDTM1_DTM1_3_N, TOM1_7_N**, Inverted dead-time output of TOM1, channel 7 6_H **CDTM0_DTM0_1_N, TOM0_1_N**, Inverted dead-time output of TOM0, channel 1 7_H **CDTM1_DTM0_1_N, TOM1_1_N**, Inverted dead-time output of TOM1, channel 1 8_H Reserved, do not use 9_H **CDTM0_DTM4_1_N, ATOM0_1_N**, Inverted dead-time output of ATOM0, channel 1 A_H Reserved, do not use B_H Reserved, do not use

GTM_TOUTSELn (n=5)

Timer Output Select Register **($09FD60_H$+n*4)** **Application Reset Value: $0000\ 0000_H$**

31	30	29	28	27	26	25	24	23	22	21	20	19	18	17	16
SEL7				**SEL6**				**SEL5**				**SEL4**			
rw				rw				rw				rw			

15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
SEL3				**SEL2**				**SEL1**				**SEL0**			
rw				rw				rw				rw			

Field	Bits	Type	Description
SELx (x=0)	4*x+3:4*x	rw	**TOUT(n*8 + x) Output Selection** This bit field defines which timer output is connected as TOUT(n*8+x). *Note: SELx values not explicitly defined here are equivalent to the last defined SELx setting.* 0_H **CDTM0_DTM1_1, TOM0_5**, Dead-time output of TOM0, channel 5 1_H **CDTM1_DTM1_1, TOM1_5**, Dead-time output of TOM1, channel 5 2_H **CDTM0_DTM5_1, ATOM0_5**, Dead-time output of ATOM0, channel 5 3_H Reserved, do not use 4_H **CDTM0_DTM1_2_N, TOM0_6_N**, Inverted dead-time output of TOM0, channel 6 5_H **CDTM1_DTM1_2_N, TOM1_6_N**, Inverted dead-time output of TOM1, channel 6 6_H **CDTM0_DTM0_2_N, TOM0_2_N**, Inverted dead-time output of TOM0, channel 2 7_H **CDTM1_DTM0_2_N, TOM1_2_N**, Inverted dead-time output of TOM1, channel 2 8_H Reserved, do not use 9_H **CDTM0_DTM4_2_N, ATOM0_2_N**, Inverted dead-time output of ATOM0, channel 2 A_H Reserved, do not use B_H Reserved, do not use
SELx (x=1)	4*x+3:4*x	rw	**TOUT(n*8 + x) Output Selection** This bit field defines which timer output is connected as TOUT(n*8+x). *Note: SELx values not explicitly defined here are equivalent to the last defined SELx setting.* 0_H **TOM0_10, TOM0_10**, Output of TOM0, channel 10 1_H **CDTM1_DTM1_1, TOM1_5**, Dead-time output of TOM1, channel 5 2_H **CDTM0_DTM5_1, ATOM0_5**, Dead-time output of ATOM0, channel 5 3_H Reserved, do not use 4_H Reserved, do not use 5_H **CDTM1_DTM0_2_N, TOM1_2_N**, Inverted dead-time output of TOM1, channel 2 6_H Reserved, do not use 7_H Reserved, do not use 8_H **CDTM0_DTM4_1_N, ATOM0_1_N**, Inverted dead-time output of ATOM0, channel 1 9_H Reserved, do not use A_H **CDTM0_DTM4_2_N, ATOM0_2_N**, Inverted dead-time output of ATOM0, channel 2 B_H Reserved, do not use

Field	Bits	Type	Description
SELx (x=2)	4*x+3:4*x	rw	**TOUT(n*8 + x) Output Selection** This bit field defines which timer output is connected as TOUT(n*8+x). *Note: SELx values not explicitly defined here are equivalent to the last defined SELx setting.* 0_H **CDTM0_DTM1_2, TOM0_6**, Dead-time output of TOM0, channel 6 1_H **TOM0_15**, Output of TOM0, channel 15 2_H **CDTM0_DTM5_2, ATOM0_6**, Dead-time output of ATOM0, channel 6 3_H Reserved, do not use 4_H **CDTM0_DTM1_3_N, TOM0_7_N**, Inverted dead-time output of TOM0, channel 7 5_H **CDTM1_DTM1_3_N, TOM1_7_N**, Inverted dead-time output of TOM1, channel 7 6_H **CDTM0_DTM0_3_N, TOM0_3_N**, Inverted dead-time output of TOM0, channel 3 7_H Reserved, do not use 8_H **CDTM0_DTM4_2, ATOM0_2**, Dead-time output of ATOM0, channel 2 9_H Reserved, do not use A_H **CDTM0_DTM4_3_N, ATOM0_3_N**, Inverted dead-time output of ATOM0, channel 3 B_H Reserved, do not use
SELx (x=3)	4*x+3:4*x	rw	**TOUT(n*8 + x) Output Selection** This bit field defines which timer output is connected as TOUT(n*8+x). *Note: SELx values not explicitly defined here are equivalent to the last defined SELx setting.* 0_H **TOM0_11**, Output of TOM0, channel 11 1_H **CDTM1_DTM1_2, TOM1_6**, Dead-time output of TOM1, channel 6 2_H Reserved, do not use … 5_H Reserved, do not use 6_H **CDTM1_DTM0_3_N, TOM1_3_N**, Inverted dead-time output of TOM1, channel 3 7_H Reserved, do not use 8_H **CDTM0_DTM4_0_N, ATOM0_0_N**, Inverted dead-time output of ATOM0, channel 0 9_H Reserved, do not use … B_H Reserved, do not use

Field	Bits	Type	Description
SELx (x=4)	4*x+3:4*x	rw	**TOUT(n*8 + x) Output Selection** This bit field defines which timer output is connected as TOUT(n*8+x). *Note: SELx values not explicitly defined here are equivalent to the last defined SELx setting.* 0_H **TOM0_12**, Output of TOM0, channel 12 1_H **CDTM1_DTM1_3, TOM1_7**, Dead-time output of TOM1, channel 7 2_H Reserved, do not use … 7_H Reserved, do not use 8_H **CDTM0_DTM4_2_N, ATOM0_2_N**, Inverted dead-time output of ATOM0, channel 2 9_H Reserved, do not use … B_H Reserved, do not use
SELx (x=5)	4*x+3:4*x	rw	**TOUT(n*8 + x) Output Selection** This bit field defines which timer output is connected as TOUT(n*8+x). *Note: SELx values not explicitly defined here are equivalent to the last defined SELx setting.* 0_H **CDTM0_DTM1_3, TOM0_7**, Dead-time output of TOM0, channel 7 1_H **CDTM1_DTM1_3, TOM1_7**, Dead-time output of TOM1, channel 7 2_H **CDTM0_DTM5_3, ATOM0_7**, Dead-time output of ATOM0, channel 7 3_H Reserved, do not use … 7_H Reserved, do not use 8_H **CDTM0_DTM4_3_N, ATOM0_3_N**, Inverted dead-time output of ATOM0, channel 3 9_H Reserved, do not use … B_H Reserved, do not use
SELx (x=6)	4*x+3:4*x	rw	**TOUT(n*8 + x) Output Selection** This bit field defines which timer output is connected as TOUT(n*8+x). *Note: SELx values not explicitly defined here are equivalent to the last defined SELx setting.* 0_H **TOM0_10**, Output of TOM0, channel 10 1_H Reserved, do not use 2_H **CDTM0_DTM4_2, ATOM0_2**, Dead-time output of ATOM0, channel 2 3_H Reserved, do not use … B_H Reserved, do not use

Field	Bits	Type	Description
SELx (x=7)	4*x+3:4*x	rw	**TOUT(n*8 + x) Output Selection** This bit field defines which timer output is connected as TOUT(n*8+x). *Note: SELx values not explicitly defined here are equivalent to the last defined SELx setting.* 0_H **TOM0_9**, Output of TOM0, channel 9 1_H Reserved, do not use 2_H **CDTM0_DTM4_1, ATOM0_1**, Dead-time output of ATOM0, channel 1 3_H Reserved, do not use … B_H Reserved, do not use

GTM_TOUTSELn (n=6)
Timer Output Select Register **(09FD60$_H$+n*4)** **Application Reset Value: 0000 0000$_H$**

31	30	29	28	27	26	25	24	23	22	21	20	19	18	17	16
SEL7				**SEL6**				**SEL5**				**SEL4**			
rw				rw				rw				rw			

15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
SEL3				**SEL2**				**SEL1**				**SEL0**			
rw				rw				rw				rw			

Field	Bits	Type	Description
SELx (x=0)	4*x+3:4*x	rw	**TOUT(n*8 + x) Output Selection** This bit field defines which timer output is connected as TOUT(n*8+x). *Note: SELx values not explicitly defined here are equivalent to the last defined SELx setting.* 0_H **TOM0_8**, Output of TOM0, channel 8 1_H Reserved, do not use 2_H **CDTM0_DTM4_0, ATOM0_0**, Dead-time output of ATOM0, channel 0 3_H Reserved, do not use … 5_H Reserved, do not use 6_H **CDTM0_DTM1_2, TOM0_6**, Dead-time output of TOM0, channel 6 7_H **CDTM1_DTM1_2, TOM1_6**, Dead-time output of TOM1, channel 6 8_H Reserved, do not use … B_H Reserved, do not use

Field	Bits	Type	Description
SELx (x=1)	4*x+3:4*x	rw	**TOUT(n*8 + x) Output Selection** This bit field defines which timer output is connected as TOUT(n*8+x). *Note: SELx values not explicitly defined here are equivalent to the last defined SELx setting.* 0_H **TOM0_11**, Output of TOM0, channel 11 1_H Reserved, do not use 2_H **CDTM0_DTM4_3, ATOM0_3**, Dead-time output of ATOM0, channel 3 3_H Reserved, do not use … 5_H Reserved, do not use 6_H **CDTM0_DTM1_2_N, TOM0_6_N**, Inverted dead-time output of TOM0, channel 6 7_H **CDTM1_DTM1_2_N, TOM1_6_N**, Inverted dead-time output of TOM1, channel 6 8_H Reserved, do not use … B_H Reserved, do not use
SELx (x=2)	4*x+3:4*x	rw	**TOUT(n*8 + x) Output Selection** This bit field defines which timer output is connected as TOUT(n*8+x). *Note: SELx values not explicitly defined here are equivalent to the last defined SELx setting.* 0_H **TOM0_12**, Output of TOM0, channel 12 1_H Reserved, do not use 2_H **CDTM0_DTM5_0, ATOM0_4**, Dead-time output of ATOM0, channel 4 3_H Reserved, do not use … 5_H Reserved, do not use 6_H **CDTM0_DTM1_3, TOM0_7**, Dead-time output of TOM0, channel 7 7_H **CDTM1_DTM1_3, TOM1_7**, Dead-time output of TOM1, channel 7 8_H Reserved, do not use 9_H Reserved, do not use A_H **CDTM0_DTM4_1_N, ATOM0_1_N**, Inverted dead-time output of ATOM0, channel 1 B_H Reserved, do not use

Field	Bits	Type	Description
SELx (x=3)	4*x+3:4*x	rw	**TOUT(n*8 + x) Output Selection** This bit field defines which timer output is connected as TOUT(n*8+x). *Note: SELx values not explicitly defined here are equivalent to the last defined SELx setting.* 0_H **TOM0_8**, Output of TOM0, channel 8 1_H Reserved, do not use … 4_H Reserved, do not use 5_H **CDTM0_DTM0_0_N, TOM0_0_N**, Inverted dead-time output of TOM0, channel 0 6_H Reserved, do not use … B_H Reserved, do not use
SELx (x=4)	4*x+3:4*x	rw	**TOUT(n*8 + x) Output Selection** This bit field defines which timer output is connected as TOUT(n*8+x). *Note: SELx values not explicitly defined here are equivalent to the last defined SELx setting.* 0_H **TOM0_9**, Output of TOM0, channel 9 1_H Reserved, do not use … 4_H Reserved, do not use 5_H **CDTM0_DTM0_1_N, TOM0_1_N**, Inverted dead-time output of TOM0, channel 1 6_H Reserved, do not use … B_H Reserved, do not use

Field	Bits	Type	Description
SELx (x=5)	4*x+3:4*x	rw	**TOUT(n*8 + x) Output Selection** This bit field defines which timer output is connected as TOUT(n*8+x). *Note: SELx values not explicitly defined here are equivalent to the last defined SELx setting.* 0_H **CDTM0_DTM0_0, TOM0_0**, Dead-time output of TOM0, channel 0 1_H Reserved, do not use 2_H **CDTM0_DTM4_0, ATOM0_0**, Dead-time output of ATOM0, channel 0 3_H Reserved, do not use 4_H **CDTM0_DTM1_1_N, TOM0_5_N**, Inverted dead-time output of TOM0, channel 5 5_H Reserved, do not use 6_H **CDTM0_DTM1_0, TOM0_4**, Dead-time output of TOM0, channel 4 7_H **CDTM1_DTM1_0, TOM1_4**, Dead-time output of TOM1, channel 4 8_H **CDTM0_DTM4_1_N, ATOM0_1_N**, Inverted dead-time output of ATOM0, channel 1 9_H Reserved, do not use … B_H Reserved, do not use
SELx (x=6)	4*x+3:4*x	rw	**TOUT(n*8 + x) Output Selection** This bit field defines which timer output is connected as TOUT(n*8+x). *Note: SELx values not explicitly defined here are equivalent to the last defined SELx setting.* 0_H **CDTM0_DTM0_1, TOM0_1**, Dead-time output of TOM0, channel 1 1_H Reserved, do not use 2_H **CDTM0_DTM4_1, ATOM0_1**, Dead-time output of ATOM0, channel 1 3_H Reserved, do not use 4_H **CDTM0_DTM1_2_N, TOM0_6_N**, Inverted dead-time output of TOM0, channel 6 5_H Reserved, do not use 6_H **CDTM0_DTM1_0_N, TOM0_4_N**, Inverted dead-time output of TOM0, channel 4 7_H **CDTM1_DTM1_0_N, TOM1_4_N**, Inverted dead-time output of TOM1, channel 4 8_H **CDTM0_DTM4_0_N, ATOM0_0_N**, Inverted dead-time output of ATOM0, channel 0 9_H Reserved, do not use … B_H Reserved, do not use

Field	Bits	Type	Description
SELx (x=7)	4*x+3:4*x	rw	**TOUT(n*8 + x) Output Selection** This bit field defines which timer output is connected as TOUT(n*8+x). *Note: SELx values not explicitly defined here are equivalent to the last defined SELx setting.* 0_H **CDTM0_DTM0_2, TOM0_2**, Dead-time output of TOM0, channel 2 1_H Reserved, do not use 2_H **CDTM0_DTM4_2, ATOM0_2**, Dead-time output of ATOM0, channel 2 3_H Reserved, do not use 4_H **CDTM0_DTM1_3_N, TOM0_7_N**, Inverted dead-time output of TOM0, channel 7 5_H Reserved, do not use 6_H **CDTM0_DTM1_1, TOM0_5**, Dead-time output of TOM0, channel 5 7_H **CDTM1_DTM1_1, TOM1_5**, Dead-time output of TOM1, channel 5 8_H **CDTM0_DTM4_1_N, ATOM0_1_N**, Inverted dead-time output of ATOM0, channel 1 9_H Reserved, do not use … B_H Reserved, do not use

GTM_TOUTSELn (n=7)

Timer Output Select Register **(09FD60$_H$+n*4)** **Application Reset Value: 0000 0000$_H$**

31	30	29	28	27	26	25	24	23	22	21	20	19	18	17	16
SEL7				**SEL6**				**SEL5**				**SEL4**			
rw				rw				rw				rw			

15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
SEL3				**SEL2**				**SEL1**				**SEL0**			
rw				rw				rw				rw			

Field	Bits	Type	Description
SELx (x=0)	4*x+3:4*x	rw	**TOUT(n*8 + x) Output Selection** This bit field defines which timer output is connected as TOUT(n*8+x). *Note: SELx values not explicitly defined here are equivalent to the last defined SELx setting.* 0_H **CDTM0_DTM0_3, TOM0_3**, Dead-time output of TOM0, channel 3 1_H Reserved, do not use 2_H **CDTM0_DTM4_3, ATOM0_3**, Dead-time output of ATOM0, channel 3 3_H Reserved, do not use 4_H **CDTM0_DTM1_0_N, TOM0_4_N**, Inverted dead-time output of TOM0, channel 4 5_H Reserved, do not use 6_H **CDTM0_DTM1_1_N, TOM0_5_N**, Inverted dead-time output of TOM0, channel 5 7_H **CDTM1_DTM1_1_N, TOM1_5_N**, Inverted dead-time output of TOM1, channel 5 8_H **CDTM0_DTM4_2_N, ATOM0_2_N**, Inverted dead-time output of ATOM0, channel 2 9_H Reserved, do not use … B_H Reserved, do not use
SELx (x=1)	4*x+3:4*x	rw	**TOUT(n*8 + x) Output Selection** This bit field defines which timer output is connected as TOUT(n*8+x). *Note: SELx values not explicitly defined here are equivalent to the last defined SELx setting.* 0_H **CDTM0_DTM1_0, TOM0_4**, Dead-time output of TOM0, channel 4 1_H Reserved, do not use 2_H **CDTM0_DTM5_0, ATOM0_4**, Dead-time output of ATOM0, channel 4 3_H Reserved, do not use 4_H **CDTM0_DTM0_1_N, TOM0_1_N**, Inverted dead-time output of TOM0, channel 1 5_H Reserved, do not use … 9_H Reserved, do not use A_H **CDTM0_DTM4_1_N, ATOM0_1_N**, Inverted dead-time output of ATOM0, channel 1 B_H Reserved, do not use

Field	Bits	Type	Description
SELx (x=2)	4*x+3:4*x	rw	**TOUT(n*8 + x) Output Selection** This bit field defines which timer output is connected as TOUT(n*8+x). *Note: SELx values not explicitly defined here are equivalent to the last defined SELx setting.* 0_H **CDTM0_DTM1_1, TOM0_5**, Dead-time output of TOM0, channel 5 1_H Reserved, do not use 2_H **CDTM0_DTM5_1, ATOM0_5**, Dead-time output of ATOM0, channel 5 3_H Reserved, do not use 4_H **CDTM0_DTM0_2_N, TOM0_2_N**, Inverted dead-time output of TOM0, channel 2 5_H Reserved, do not use … 7_H Reserved, do not use 8_H **CDTM0_DTM4_2_N, ATOM0_2_N**, Inverted dead-time output of ATOM0, channel 2 9_H Reserved, do not use … B_H Reserved, do not use
SELx (x=3)	4*x+3:4*x	rw	**TOUT(n*8 + x) Output Selection** This bit field defines which timer output is connected as TOUT(n*8+x). *Note: SELx values not explicitly defined here are equivalent to the last defined SELx setting.* 0_H **CDTM0_DTM1_2, TOM0_6**, Dead-time output of TOM0, channel 6 1_H Reserved, do not use 2_H **CDTM0_DTM5_2, ATOM0_6**, Dead-time output of ATOM0, channel 6 3_H Reserved, do not use 4_H **CDTM0_DTM0_3_N, TOM0_3_N**, Inverted dead-time output of TOM0, channel 3 5_H Reserved, do not use … 9_H Reserved, do not use A_H **CDTM0_DTM4_3_N, ATOM0_3_N**, Inverted dead-time output of ATOM0, channel 3 B_H Reserved, do not use

Field	Bits	Type	Description
SELx (x=4)	4*x+3:4*x	rw	**TOUT(n*8 + x) Output Selection** This bit field defines which timer output is connected as TOUT(n*8+x). *Note: SELx values not explicitly defined here are equivalent to the last defined SELx setting.* 0_H **TOM1_11**, Output of TOM1, channel 11 1_H Reserved, do not use 2_H **CDTM0_DTM4_3, ATOM0_3**, Dead-time output of ATOM0, channel 3 3_H Reserved, do not use 4_H **CDTM0_DTM0_3_N, TOM0_3_N**, Inverted dead-time output of TOM0, channel 3 5_H Reserved, do not use … B_H Reserved, do not use
SELx (x=5)	4*x+3:4*x	rw	**TOUT(n*8 + x) Output Selection** This bit field defines which timer output is connected as TOUT(n*8+x). *Note: SELx values not explicitly defined here are equivalent to the last defined SELx setting.* 0_H **TOM1_12**, Output of TOM1, channel 12 1_H Reserved, do not use 2_H **CDTM0_DTM5_0, ATOM0_4**, Dead-time output of ATOM0, channel 4 3_H Reserved, do not use 4_H Reserved, do not use 5_H **CDTM0_DTM0_0_N, TOM0_0_N**, Inverted dead-time output of TOM0, channel 0 6_H Reserved, do not use … 9_H Reserved, do not use A_H **CDTM0_DTM4_1_N, ATOM0_1_N**, Inverted dead-time output of ATOM0, channel 1 B_H Reserved, do not use
SELx (x=6)	4*x+3:4*x	rw	**TOUT(n*8 + x) Output Selection** This bit field defines which timer output is connected as TOUT(n*8+x). *Note: SELx values not explicitly defined here are equivalent to the last defined SELx setting.* 0_H **TOM1_10**, Output of TOM1, channel 10 1_H Reserved, do not use … B_H Reserved, do not use

Field	Bits	Type	Description
SELx (x=7)	4*x+3:4*x	rw	**TOUT(n*8 + x) Output Selection** This bit field defines which timer output is connected as TOUT(n*8+x). *Note: SELx values not explicitly defined here are equivalent to the last defined SELx setting.* 0_H **TOM1_11, TOM1_11**, Output of TOM1, channel 11 1_H Reserved, do not use … B_H Reserved, do not use

GTM_TOUTSELn (n=8)
Timer Output Select Register **($09FD60_H$+n*4)** **Application Reset Value: $0000\ 0000_H$**

31	30	29	28	27	26	25	24	23	22	21	20	19	18	17	16
SEL7				SEL6				SEL5				SEL4			
rw				rw				rw				rw			

15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
SEL3				SEL2				SEL1				SEL0			
rw				rw				rw				rw			

Field	Bits	Type	Description
SELx (x=0)	4*x+3:4*x	rw	**TOUT(n*8 + x) Output Selection** This bit field defines which timer output is connected as TOUT(n*8+x). *Note: SELx values not explicitly defined here are equivalent to the last defined SELx setting.* 0_H **CDTM1_DTM1_3, TOM1_7**, Dead-time output of TOM1, channel 7 1_H Reserved, do not use 2_H **CDTM0_DTM5_3, ATOM0_7**, Dead-time output of ATOM0, channel 7 3_H Reserved, do not use 4_H Reserved, do not use 5_H **CDTM0_DTM1_0, TOM0_4**, Dead-time output of TOM0, channel 4 6_H **CDTM1_DTM1_0, TOM1_4**, Dead-time output of TOM1, channel 4 7_H Reserved, do not use … B_H Reserved, do not use

Field	Bits	Type	Description
SELx (x=1)	4*x+3:4*x	rw	**TOUT(n*8 + x) Output Selection** This bit field defines which timer output is connected as TOUT(n*8+x). *Note: SELx values not explicitly defined here are equivalent to the last defined SELx setting.* 0_H **TOM1_13**, Output of TOM1, channel 13 1_H Reserved, do not use … 4_H Reserved, do not use 5_H **CDTM0_DTM1_0_N, TOM0_4_N**, Inverted dead-time output of TOM0, channel 4 6_H **CDTM1_DTM1_0_N, TOM1_4_N**, Inverted dead-time output of TOM1, channel 4 7_H Reserved, do not use … 9_H Reserved, do not use A_H **CDTM0_DTM4_2_N, ATOM0_2_N**, Inverted dead-time output of ATOM0, channel 2 B_H Reserved, do not use
SELx (x=2)	4*x+3:4*x	rw	**TOUT(n*8 + x) Output Selection** This bit field defines which timer output is connected as TOUT(n*8+x). *Note: SELx values not explicitly defined here are equivalent to the last defined SELx setting.* 0_H **TOM1_14**, Output of TOM1, channel 14 1_H Reserved, do not use … 4_H Reserved, do not use 5_H **CDTM0_DTM1_1, TOM0_5**, Dead-time output of TOM0, channel 5 6_H **CDTM1_DTM1_1, TOM1_5**, Dead-time output of TOM1, channel 5 7_H Reserved, do not use … 9_H Reserved, do not use A_H **CDTM0_DTM4_3_N, ATOM0_3_N**, Inverted dead-time output of ATOM0, channel 3 B_H Reserved, do not use

Field	Bits	Type	Description
SELx (x=3)	4*x+3:4*x	rw	**TOUT(n*8 + x) Output Selection** This bit field defines which timer output is connected as TOUT(n*8+x). *Note: SELx values not explicitly defined here are equivalent to the last defined SELx setting.* 0_H **TOM1_15**, Output of TOM1, channel 15 1_H Reserved, do not use … 4_H Reserved, do not use 5_H **CDTM0_DTM1_1_N, TOM0_5_N**, Inverted dead-time output of TOM0, channel 5 6_H **CDTM1_DTM1_1_N, TOM1_5_N**, Inverted dead-time output of TOM1, channel 5 7_H Reserved, do not use … B_H Reserved, do not use
SELx (x=4)	4*x+3:4*x	rw	**TOUT(n*8 + x) Output Selection** This bit field defines which timer output is connected as TOUT(n*8+x). *Note: SELx values not explicitly defined here are equivalent to the last defined SELx setting.* 0_H **CDTM1_DTM0_0, TOM1_0**, Dead-time output of TOM1, channel 0 1_H Reserved, do not use … 4_H Reserved, do not use 5_H **CDTM0_DTM1_2, TOM0_6**, Dead-time output of TOM0, channel 6 6_H **CDTM1_DTM1_2, TOM1_6**, Dead-time output of TOM1, channel 6 7_H Reserved, do not use … B_H Reserved, do not use

Field	Bits	Type	Description
SELx (x=5)	4*x+3:4*x	rw	**TOUT(n*8 + x) Output Selection** This bit field defines which timer output is connected as TOUT(n*8+x). *Note: SELx values not explicitly defined here are equivalent to the last defined SELx setting.* 0_H **CDTM1_DTM0_1, TOM1_1**, Dead-time output of TOM1, channel 1 1_H Reserved, do not use … 4_H Reserved, do not use 5_H **CDTM0_DTM1_2_N, TOM0_6_N**, Inverted dead-time output of TOM0, channel 6 6_H **CDTM1_DTM1_2_N, TOM1_6_N**, Inverted dead-time output of TOM1, channel 6 7_H Reserved, do not use … B_H Reserved, do not use
SELx (x=6)	4*x+3:4*x	rw	**TOUT(n*8 + x) Output Selection** This bit field defines which timer output is connected as TOUT(n*8+x). *Note: SELx values not explicitly defined here are equivalent to the last defined SELx setting.* 0_H **CDTM1_DTM0_2, TOM1_2**, Dead-time output of TOM1, channel 2 1_H Reserved, do not use … 4_H Reserved, do not use 5_H **CDTM0_DTM1_3, TOM0_7**, Dead-time output of TOM0, channel 7 6_H **CDTM1_DTM1_3, TOM1_7**, Dead-time output of TOM1, channel 7 7_H Reserved, do not use … B_H Reserved, do not use

Field	Bits	Type	Description
SELx (x=7)	4*x+3:4*x	rw	**TOUT(n*8 + x) Output Selection** This bit field defines which timer output is connected as TOUT(n*8+x). *Note: SELx values not explicitly defined here are equivalent to the last defined SELx setting.* 0_H **CDTM1_DTM0_3, TOM1_3**, Dead-time output of TOM1, channel 3 1_H Reserved, do not use … 3_H Reserved, do not use 4_H **CDTM0_DTM0_3, TOM0_3**, Dead-time output of TOM0, channel 3 5_H **CDTM1_DTM1_0_N, TOM1_4_N**, Inverted dead-time output of TOM1, channel 4 6_H **CDTM0_DTM1_3_N, TOM0_7_N**, Inverted dead-time output of TOM0, channel 7 7_H **CDTM1_DTM1_3_N, TOM1_7_N**, Inverted dead-time output of TOM1, channel 7 8_H Reserved, do not use … B_H Reserved, do not use

GTM_TOUTSELn (n=9)
Timer Output Select Register **($09FD60_H$+n*4)** **Application Reset Value: $0000\ 0000_H$**

31	30	29	28	27	26	25	24	23	22	21	20	19	18	17	16
SEL7				**SEL6**				**SEL5**				**SEL4**			
rw				rw				rw				rw			

15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
SEL3				**SEL2**				**SEL1**				**SEL0**			
rw				rw				rw				rw			

Field	Bits	Type	Description
SELx (x=0)	4*x+3:4*x	rw	**TOUT(n*8 + x) Output Selection** This bit field defines which timer output is connected as TOUT(n*8+x). *Note: SELx values not explicitly defined here are equivalent to the last defined SELx setting.* 0_H **CDTM1_DTM1_0, TOM1_4**, Dead-time output of TOM1, channel 4 1_H Reserved, do not use … 3_H Reserved, do not use 4_H **CDTM0_DTM0_0_N, TOM0_0_N**, Inverted dead-time output of TOM0, channel 0 5_H **CDTM1_DTM0_1_N, TOM1_1_N**, Inverted dead-time output of TOM1, channel 1 6_H **CDTM0_DTM1_0, TOM0_4**, Dead-time output of TOM0, channel 4 7_H **CDTM1_DTM1_0, TOM1_4**, Dead-time output of TOM1, channel 4 8_H Reserved, do not use … B_H Reserved, do not use
SELx (x=1)	4*x+3:4*x	rw	**TOUT(n*8 + x) Output Selection** This bit field defines which timer output is connected as TOUT(n*8+x). *Note: SELx values not explicitly defined here are equivalent to the last defined SELx setting.* 0_H **CDTM1_DTM1_1, TOM1_5**, Dead-time output of TOM1, channel 5 1_H Reserved, do not use … 3_H Reserved, do not use 4_H **CDTM0_DTM0_1_N, TOM0_1_N**, Inverted dead-time output of TOM0, channel 1 5_H **CDTM1_DTM0_2_N, TOM1_2_N**, Inverted dead-time output of TOM1, channel 2 6_H **CDTM0_DTM1_0_N, TOM0_4_N**, Inverted dead-time output of TOM0, channel 4 7_H **CDTM1_DTM1_0_N, TOM1_4_N**, Inverted dead-time output of TOM1, channel 4 8_H Reserved, do not use … B_H Reserved, do not use

Field	Bits	Type	Description
SELx (x=2)	4*x+3:4*x	rw	**TOUT(n*8 + x) Output Selection** This bit field defines which timer output is connected as TOUT(n*8+x). *Note: SELx values not explicitly defined here are equivalent to the last defined SELx setting.* 0_H **CDTM1_DTM1_2, TOM1_6**, Dead-time output of TOM1, channel 6 1_H Reserved, do not use … 3_H Reserved, do not use 4_H **CDTM0_DTM0_2_N, TOM0_2_N**, Inverted dead-time output of TOM0, channel 2 5_H **CDTM1_DTM0_3_N, TOM1_3_N**, Inverted dead-time output of TOM1, channel 3 6_H **CDTM0_DTM1_1, TOM0_5**, Dead-time output of TOM0, channel 5 7_H **CDTM1_DTM1_1, TOM1_5**, Dead-time output of TOM1, channel 5 8_H Reserved, do not use … B_H Reserved, do not use
SELx (x=3)	4*x+3:4*x	rw	**TOUT(n*8 + x) Output Selection** This bit field defines which timer output is connected as TOUT(n*8+x). *Note: SELx values not explicitly defined here are equivalent to the last defined SELx setting.* 0_H **CDTM1_DTM1_3, TOM1_7**, Dead-time output of TOM1, channel 7 1_H Reserved, do not use … 3_H Reserved, do not use 4_H **CDTM0_DTM0_3_N, TOM0_3_N**, Inverted dead-time output of TOM0, channel 3 5_H **CDTM1_DTM0_0_N, TOM1_0_N**, Inverted dead-time output of TOM1, channel 0 6_H Reserved, do not use … B_H Reserved, do not use

Field	Bits	Type	Description
SELx (x=4)	4*x+3:4*x	rw	**TOUT(n*8 + x) Output Selection** This bit field defines which timer output is connected as TOUT(n*8+x). *Note: SELx values not explicitly defined here are equivalent to the last defined SELx setting.* 0_H **CDTM0_DTM0_0, TOM0_0**, Dead-time output of TOM0, channel 0 1_H **CDTM1_DTM0_0, TOM1_0**, Dead-time output of TOM1, channel 0 2_H Reserved, do not use … 5_H Reserved, do not use 6_H **CDTM0_DTM1_1_N, TOM0_5_N**, Inverted dead-time output of TOM0, channel 5 7_H **CDTM1_DTM1_1_N, TOM1_5_N**, Inverted dead-time output of TOM1, channel 5 8_H Reserved, do not use … B_H Reserved, do not use
SELx (x=5)	4*x+3:4*x	rw	**TOUT(n*8 + x) Output Selection** This bit field defines which timer output is connected as TOUT(n*8+x). *Note: SELx values not explicitly defined here are equivalent to the last defined SELx setting.* 0_H **CDTM0_DTM0_0, TOM0_0**, Dead-time output of TOM0, channel 0 1_H **CDTM1_DTM0_0, TOM1_0**, Dead-time output of TOM1, channel 0 2_H Reserved, do not use … 4_H Reserved, do not use 5_H **CDTM0_DTM1_1_N, TOM0_5_N**, Inverted dead-time output of TOM0, channel 5 6_H **CDTM1_DTM1_1_N, TOM1_5_N**, Inverted dead-time output of TOM1, channel 5 7_H Reserved, do not use … B_H Reserved, do not use

Field	Bits	Type	Description
SELx (x=6)	4*x+3:4*x	rw	**TOUT(n*8 + x) Output Selection** This bit field defines which timer output is connected as TOUT(n*8+x). *Note: SELx values not explicitly defined here are equivalent to the last defined SELx setting.* 0_H **CDTM0_DTM0_1, TOM0_1**, Dead-time output of TOM0, channel 1 1_H **CDTM1_DTM0_1, TOM1_1**, Dead-time output of TOM1, channel 1 2_H Reserved, do not use … 4_H Reserved, do not use 5_H **CDTM0_DTM1_2_N, TOM0_6_N**, Inverted dead-time output of TOM0, channel 6 6_H **CDTM1_DTM1_2_N, TOM1_6_N**, Inverted dead-time output of TOM1, channel 6 7_H Reserved, do not use … B_H Reserved, do not use
SELx (x=7)	4*x+3:4*x	rw	**TOUT(n*8 + x) Output Selection** This bit field defines which timer output is connected as TOUT(n*8+x). *Note: SELx values not explicitly defined here are equivalent to the last defined SELx setting.* 0_H **CDTM0_DTM0_2, TOM0_2**, Dead-time output of TOM0, channel 2 1_H **CDTM1_DTM0_2, TOM1_2**, Dead-time output of TOM1, channel 2 2_H Reserved, do not use … 4_H Reserved, do not use 5_H **CDTM0_DTM1_3_N, TOM0_7_N**, Inverted dead-time output of TOM0, channel 7 6_H **CDTM1_DTM1_3_N, TOM1_7_N**, Inverted dead-time output of TOM1, channel 7 7_H Reserved, do not use … B_H Reserved, do not use

GTM_TOUTSELn (n=10)

Timer Output Select Register **($09FD60_H$+n*4)** **Application Reset Value: $0000\ 0000_H$**

31	30	29	28	27	26	25	24	23	22	21	20	19	18	17	16
SEL7				**SEL6**				**SEL5**				**SEL4**			
rw				rw				rw				rw			

15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
SEL3				**SEL2**				**SEL1**				**SEL0**			
rw				rw				rw				rw			

Field	Bits	Type	Description
SELx (x=0)	4*x+3:4*x	rw	**TOUT(n*8 + x) Output Selection** This bit field defines which timer output is connected as TOUT(n*8+x). *Note: SELx values not explicitly defined here are equivalent to the last defined SELx setting.* 0_H **CDTM0_DTM0_3, TOM0_3**, Dead-time output of TOM0, channel 3 1_H **CDTM1_DTM0_3, TOM1_3**, Dead-time output of TOM1, channel 3 2_H Reserved, do not use 3_H Reserved, do not use 4_H **CDTM0_DTM1_2, TOM0_6**, Dead-time output of TOM0, channel 6 5_H **CDTM1_DTM1_2, TOM1_6**, Dead-time output of TOM1, channel 6 6_H Reserved, do not use … B_H Reserved, do not use
SELx (x=1)	4*x+3:4*x	rw	**TOUT(n*8 + x) Output Selection** This bit field defines which timer output is connected as TOUT(n*8+x). *Note: SELx values not explicitly defined here are equivalent to the last defined SELx setting.* 0_H **CDTM0_DTM1_0, TOM0_4**, Dead-time output of TOM0, channel 4 1_H **CDTM1_DTM1_0, TOM1_4**, Dead-time output of TOM1, channel 4 2_H **CDTM0_DTM5_0, ATOM0_4**, Dead-time output of ATOM0, channel 4 3_H Reserved, do not use 4_H **CDTM0_DTM1_3, TOM0_7**, Dead-time output of TOM0, channel 7 5_H **CDTM1_DTM1_3, TOM1_7**, Dead-time output of TOM1, channel 7 6_H Reserved, do not use … B_H Reserved, do not use

Field	Bits	Type	Description
SELx (x=2)	4*x+3:4*x	rw	**TOUT(n*8 + x) Output Selection** This bit field defines which timer output is connected as TOUT(n*8+x). *Note: SELx values not explicitly defined here are equivalent to the last defined SELx setting.* 0_H **CDTM0_DTM1_1, TOM0_5**, Dead-time output of TOM0, channel 5 1_H **CDTM1_DTM1_1, TOM1_5**, Dead-time output of TOM1, channel 5 2_H **CDTM0_DTM4_3, ATOM0_3**, Dead-time output of ATOM0, channel 3 3_H Reserved, do not use 4_H **CDTM0_DTM1_2_N, TOM0_6_N**, Inverted dead-time output of TOM0, channel 6 5_H **CDTM1_DTM1_2_N, TOM1_6_N**, Inverted dead-time output of TOM1, channel 6 6_H Reserved, do not use … B_H Reserved, do not use
SELx (x=3)	4*x+3:4*x	rw	**TOUT(n*8 + x) Output Selection** This bit field defines which timer output is connected as TOUT(n*8+x). *Note: SELx values not explicitly defined here are equivalent to the last defined SELx setting.* 0_H **CDTM0_DTM1_2, TOM0_6**, Dead-time output of TOM0, channel 6 1_H **CDTM1_DTM1_2, TOM1_6**, Dead-time output of TOM1, channel 6 2_H **CDTM0_DTM4_2, ATOM0_2**, Dead-time output of ATOM0, channel 2 3_H Reserved, do not use … B_H Reserved, do not use

Field	Bits	Type	Description
SELx (x=4)	4*x+3:4*x	rw	**TOUT(n*8 + x) Output Selection** This bit field defines which timer output is connected as TOUT(n*8+x). *Note: SELx values not explicitly defined here are equivalent to the last defined SELx setting.* 0_H **CDTM0_DTM1_3, TOM0_7**, Dead-time output of TOM0, channel 7 1_H **CDTM1_DTM1_3, TOM1_7**, Dead-time output of TOM1, channel 7 2_H **CDTM0_DTM4_1, ATOM0_1**, Dead-time output of ATOM0, channel 1 3_H Reserved, do not use 4_H **CDTM0_DTM1_3_N, TOM0_7_N**, Inverted dead-time output of TOM0, channel 7 5_H **CDTM1_DTM1_3_N, TOM1_7_N**, Inverted dead-time output of TOM1, channel 7 6_H Reserved, do not use … B_H Reserved, do not use
SELx (x=5)	4*x+3:4*x	rw	**TOUT(n*8 + x) Output Selection** This bit field defines which timer output is connected as TOUT(n*8+x). *Note: SELx values not explicitly defined here are equivalent to the last defined SELx setting.* 0_H **CDTM0_DTM0_0, TOM0_0**, Dead-time output of TOM0, channel 0 1_H **CDTM1_DTM0_0, TOM1_0**, Dead-time output of TOM1, channel 0 2_H **CDTM0_DTM4_0, ATOM0_0**, Dead-time output of ATOM0, channel 0 3_H Reserved, do not use … B_H Reserved, do not use
SELx (x=6)	4*x+3:4*x	rw	**TOUT(n*8 + x) Output Selection** This bit field defines which timer output is connected as TOUT(n*8+x). *Note: SELx values not explicitly defined here are equivalent to the last defined SELx setting.* 0_H **CDTM0_DTM0_1, TOM0_1**, Dead-time output of TOM0, channel 1 1_H **CDTM1_DTM0_1, TOM1_1**, Dead-time output of TOM1, channel 1 2_H Reserved, do not use 3_H Reserved, do not use 4_H **CDTM0_DTM1_2_N, TOM0_6_N**, Inverted dead-time output of TOM0, channel 6 5_H Reserved, do not use … B_H Reserved, do not use

Field	Bits	Type	Description
SELx (x=7)	4*x+3:4*x	rw	**TOUT(n*8 + x) Output Selection** This bit field defines which timer output is connected as TOUT(n*8+x). *Note: SELx values not explicitly defined here are equivalent to the last defined SELx setting.* 0_H **CDTM0_DTM0_0, TOM0_0**, Dead-time output of TOM0, channel 0 1_H Reserved, do not use … 3_H Reserved, do not use 4_H **CDTM0_DTM1_1_N, TOM0_5_N**, Inverted dead-time output of TOM0, channel 5 5_H Reserved, do not use … B_H Reserved, do not use

GTM_TOUTSELn (n=11)

Timer Output Select Register **($09FD60_H$+n*4)** **Application Reset Value: $0000\ 0000_H$**

31	30	29	28	27	26	25	24	23	22	21	20	19	18	17	16
SEL7				**SEL6**				**SEL5**				**SEL4**			
rw				rw				rw				rw			

15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
SEL3				**SEL2**				**SEL1**				**SEL0**			
rw				rw				rw				rw			

Field	Bits	Type	Description
SELx (x=0)	4*x+3:4*x	rw	**TOUT(n*8 + x) Output Selection** This bit field defines which timer output is connected as TOUT(n*8+x). *Note: SELx values not explicitly defined here are equivalent to the last defined SELx setting.* 0_H **CDTM0_DTM0_2, TOM0_2**, Dead-time output of TOM0, channel 2 1_H Reserved, do not use … 3_H Reserved, do not use 4_H **CDTM0_DTM1_3_N, TOM0_7_N**, Inverted dead-time output of TOM0, channel 7 5_H Reserved, do not use … B_H Reserved, do not use

Field	Bits	Type	Description
SELx (x=1)	4*x+3:4*x	rw	**TOUT(n*8 + x) Output Selection** This bit field defines which timer output is connected as TOUT(n*8+x). *Note: SELx values not explicitly defined here are equivalent to the last defined SELx setting.* 0_H **CDTM0_DTM0_3, TOM0_3**, Dead-time output of TOM0, channel 3 1_H Reserved, do not use … 3_H Reserved, do not use 4_H **CDTM0_DTM1_0_N, TOM0_4_N**, Inverted dead-time output of TOM0, channel 4 5_H Reserved, do not use … B_H Reserved, do not use
SELx (x=2)	4*x+3:4*x	rw	**TOUT(n*8 + x) Output Selection** This bit field defines which timer output is connected as TOUT(n*8+x). *Note: SELx values not explicitly defined here are equivalent to the last defined SELx setting.* 0_H **CDTM0_DTM1_0, TOM0_4**, Dead-time output of TOM0, channel 4 1_H Reserved, do not use … 3_H Reserved, do not use 4_H **CDTM0_DTM0_1_N, TOM0_1_N**, Inverted dead-time output of TOM0, channel 1 5_H Reserved, do not use … B_H Reserved, do not use

Field	Bits	Type	Description
SELx (x=3)	4*x+3:4*x	rw	**TOUT(n*8 + x) Output Selection** This bit field defines which timer output is connected as TOUT(n*8+x). *Note: SELx values not explicitly defined here are equivalent to the last defined SELx setting.* 0_H **CDTM0_DTM1_1, TOM0_5**, Dead-time output of TOM0, channel 5 1_H Reserved, do not use … 3_H Reserved, do not use 4_H **CDTM0_DTM0_0_N, TOM0_0_N**, Inverted dead-time output of TOM0, channel 0 5_H Reserved, do not use 6_H **CDTM0_DTM1_2_N, TOM0_6_N**, Inverted dead-time output of TOM0, channel 6 7_H **CDTM1_DTM1_2_N, TOM1_6_N**, Inverted dead-time output of TOM1, channel 6 8_H Reserved, do not use … B_H Reserved, do not use
SELx (x=4)	4*x+3:4*x	rw	**TOUT(n*8 + x) Output Selection** This bit field defines which timer output is connected as TOUT(n*8+x). *Note: SELx values not explicitly defined here are equivalent to the last defined SELx setting.* 0_H **CDTM0_DTM1_2, TOM0_6**, Dead-time output of TOM0, channel 6 1_H Reserved, do not use … 3_H Reserved, do not use 4_H **CDTM0_DTM0_1_N, TOM0_1_N**, Inverted dead-time output of TOM0, channel 1 5_H Reserved, do not use 6_H **CDTM0_DTM1_3, TOM0_7**, Dead-time output of TOM0, channel 7 7_H **CDTM1_DTM1_3, TOM1_7**, Dead-time output of TOM1, channel 7 8_H Reserved, do not use … B_H Reserved, do not use

Field	Bits	Type	Description
SELx (x=5)	4*x+3:4*x	rw	**TOUT(n*8 + x) Output Selection** This bit field defines which timer output is connected as TOUT(n*8+x). *Note: SELx values not explicitly defined here are equivalent to the last defined SELx setting.* 0_H **CDTM0_DTM1_3, TOM0_7**, Dead-time output of TOM0, channel 7 1_H Reserved, do not use … 3_H Reserved, do not use 4_H **CDTM0_DTM0_2_N, TOM0_2_N**, Inverted dead-time output of TOM0, channel 2 5_H Reserved, do not use 6_H **CDTM0_DTM1_3_N, TOM0_7_N**, Inverted dead-time output of TOM0, channel 7 7_H **CDTM1_DTM1_3_N, TOM1_7_N**, Inverted dead-time output of TOM1, channel 7 8_H Reserved, do not use … B_H Reserved, do not use
SELx (x=6)	4*x+3:4*x	rw	**TOUT(n*8 + x) Output Selection** This bit field defines which timer output is connected as TOUT(n*8+x). *Note: SELx values not explicitly defined here are equivalent to the last defined SELx setting.* 0_H **TOM0_8**, Output of TOM0, channel 8 1_H Reserved, do not use … 3_H Reserved, do not use 4_H **CDTM0_DTM0_3_N, TOM0_3_N**, Inverted dead-time output of TOM0, channel 3 5_H Reserved, do not use 6_H **CDTM0_DTM1_0, TOM0_4**, Dead-time output of TOM0, channel 4 7_H **CDTM1_DTM1_0, TOM1_4**, Dead-time output of TOM1, channel 4 8_H Reserved, do not use … B_H Reserved, do not use

Field	Bits	Type	Description
SELx (x=7)	4*x+3:4*x	rw	**TOUT(n*8 + x) Output Selection** This bit field defines which timer output is connected as TOUT(n*8+x). *Note: SELx values not explicitly defined here are equivalent to the last defined SELx setting.* 0_H **TOM0_8**, Output of TOM0, channel 8 1_H Reserved, do not use … 4_H Reserved, do not use 5_H **CDTM0_DTM1_0_N, TOM0_4_N**, Inverted dead-time output of TOM0, channel 4 6_H Reserved, do not use 7_H **CDTM1_DTM1_0_N, TOM1_4_N**, Inverted dead-time output of TOM1, channel 4 8_H Reserved, do not use … B_H Reserved, do not use

GTM_TOUTSELn (n=12)

Timer Output Select Register **($09FD60_H$+n*4)** **Application Reset Value: $0000\ 0000_H$**

31	30	29	28	27	26	25	24	23	22	21	20	19	18	17	16
SEL7				**SEL6**				**SEL5**				**SEL4**			
rw				rw				rw				rw			

15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
SEL3				**SEL2**				**SEL1**				**SEL0**			
rw				rw				rw				rw			

Field	Bits	Type	Description
SELx (x=0)	4*x+3:4*x	rw	**TOUT(n*8 + x) Output Selection** This bit field defines which timer output is connected as TOUT(n*8+x). *Note: SELx values not explicitly defined here are equivalent to the last defined SELx setting.* 0_H **TOM0_10**, Output of TOM0, channel 10 1_H Reserved, do not use … 4_H Reserved, do not use 5_H **CDTM0_DTM1_1, TOM0_5**, Dead-time output of TOM0, channel 5 6_H **CDTM0_DTM1_0_N, TOM0_4_N**, Inverted dead-time output of TOM0, channel 4 7_H **CDTM1_DTM1_1, TOM1_5**, Dead-time output of TOM1, channel 5 8_H Reserved, do not use … B_H Reserved, do not use
SELx (x=1)	4*x+3:4*x	rw	**TOUT(n*8 + x) Output Selection** This bit field defines which timer output is connected as TOUT(n*8+x). *Note: SELx values not explicitly defined here are equivalent to the last defined SELx setting.* 0_H **TOM0_11**, Output of TOM0, channel 11 1_H Reserved, do not use … 4_H Reserved, do not use 5_H **CDTM0_DTM1_1_N, TOM0_5_N**, Inverted dead-time output of TOM0, channel 5 6_H **CDTM0_DTM1_2_N, TOM0_6_N**, Inverted dead-time output of TOM0, channel 6 7_H **CDTM1_DTM1_1_N, TOM1_5_N**, Inverted dead-time output of TOM1, channel 5 8_H Reserved, do not use … B_H Reserved, do not use

Field	Bits	Type	Description
SELx (x=2)	4*x+3:4*x	rw	**TOUT(n*8 + x) Output Selection** This bit field defines which timer output is connected as TOUT(n*8+x). *Note: SELx values not explicitly defined here are equivalent to the last defined SELx setting.* 0_H **TOM0_12**, Output of TOM0, channel 12 1_H Reserved, do not use … 4_H Reserved, do not use 5_H **CDTM0_DTM1_2, TOM0_6**, Dead-time output of TOM0, channel 6 6_H Reserved, do not use 7_H **CDTM1_DTM1_2, TOM1_6**, Dead-time output of TOM1, channel 6 8_H Reserved, do not use … B_H Reserved, do not use
SELx (x=3)	4*x+3:4*x	rw	**TOUT(n*8 + x) Output Selection** This bit field defines which timer output is connected as TOUT(n*8+x). *Note: SELx values not explicitly defined here are equivalent to the last defined SELx setting.* 0_H **TOM0_13**, Output of TOM0, channel 13 1_H Reserved, do not use … 4_H Reserved, do not use 5_H **CDTM0_DTM1_2_N, TOM0_6_N**, Inverted dead-time output of TOM0, channel 6 6_H Reserved, do not use 7_H **CDTM1_DTM1_2_N, TOM1_6_N**, Inverted dead-time output of TOM1, channel 6 8_H Reserved, do not use … B_H Reserved, do not use

Field	Bits	Type	Description
SELx (x=4)	4*x+3:4*x	rw	**TOUT(n*8 + x) Output Selection** This bit field defines which timer output is connected as TOUT(n*8+x). *Note: SELx values not explicitly defined here are equivalent to the last defined SELx setting.* 0_H **TOM0_14**, Output of TOM0, channel 14 1_H Reserved, do not use … 4_H Reserved, do not use 5_H **CDTM0_DTM1_3_N, TOM0_7_N**, Inverted dead-time output of TOM0, channel 7 6_H Reserved, do not use 7_H **CDTM1_DTM1_3_N, TOM1_7_N**, Inverted dead-time output of TOM1, channel 7 8_H Reserved, do not use … B_H Reserved, do not use
SELx (x=5)	4*x+3:4*x	rw	**TOUT(n*8 + x) Output Selection** This bit field defines which timer output is connected as TOUT(n*8+x). *Note: SELx values not explicitly defined here are equivalent to the last defined SELx setting.* 0_H **TOM0_15**, Output of TOM0, channel 15 1_H Reserved, do not use … 4_H Reserved, do not use 5_H **CDTM0_DTM1_3, TOM0_7**, Dead-time output of TOM0, channel 7 6_H Reserved, do not use 7_H **CDTM1_DTM1_3, TOM1_7**, Dead-time output of TOM1, channel 7 8_H Reserved, do not use … B_H Reserved, do not use
SELx (x=6)	4*x+3:4*x	rw	**TOUT(n*8 + x) Output Selection** This bit field defines which timer output is connected as TOUT(n*8+x). *Note: SELx values not explicitly defined here are equivalent to the last defined SELx setting.* 0_H **CDTM0_DTM1_0, TOM0_4**, Dead-time output of TOM0, channel 4 1_H Reserved, do not use … B_H Reserved, do not use

Field	Bits	Type	Description
SELx (x=7)	4*x+3:4*x	rw	**TOUT(n*8 + x) Output Selection** This bit field defines which timer output is connected as TOUT(n*8+x). *Note: SELx values not explicitly defined here are equivalent to the last defined SELx setting.* 0_H **CDTM0_DTM0_1, TOM0_1**, Dead-time output of TOM0, channel 1 1_H Reserved, do not use … B_H Reserved, do not use

GTM_TOUTSELn (n=13)
Timer Output Select Register **(09FD60$_H$+n*4)** **Application Reset Value: 0000 0000$_H$**

31	30	29	28	27	26	25	24	23	22	21	20	19	18	17	16
SEL7				**SEL6**				**SEL5**				**SEL4**			
rw				rw				rw				rw			

15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
SEL3				**SEL2**				**SEL1**				**SEL0**			
rw				rw				rw				rw			

Field	Bits	Type	Description
SELx (x=0)	4*x+3:4*x	rw	**TOUT(n*8 + x) Output Selection** This bit field defines which timer output is connected as TOUT(n*8+x). *Note: SELx values not explicitly defined here are equivalent to the last defined SELx setting.* 0_H **CDTM0_DTM0_2, TOM0_2**, Dead-time output of TOM0, channel 2 1_H Reserved, do not use … B_H Reserved, do not use
SELx (x=1)	4*x+3:4*x	rw	**TOUT(n*8 + x) Output Selection** This bit field defines which timer output is connected as TOUT(n*8+x). *Note: SELx values not explicitly defined here are equivalent to the last defined SELx setting.* 0_H **CDTM0_DTM0_3, TOM0_3**, Dead-time output of TOM0, channel 3 1_H Reserved, do not use … B_H Reserved, do not use

Field	Bits	Type	Description
SELx (x=2)	4*x+3:4*x	rw	**TOUT(n*8 + x) Output Selection** This bit field defines which timer output is connected as TOUT(n*8+x). *Note: SELx values not explicitly defined here are equivalent to the last defined SELx setting.* 0_H **CDTM0_DTM1_2, TOM0_6**, Dead-time output of TOM0, channel 6 1_H Reserved, do not use 2_H **CDTM0_DTM5_2, ATOM0_6**, Dead-time output of ATOM0, channel 6 3_H Reserved, do not use 4_H **CDTM0_DTM0_0_N, TOM0_0_N**, Inverted dead-time output of TOM0, channel 0 5_H Reserved, do not use … B_H Reserved, do not use
SELx (x=3)	4*x+3:4*x	rw	**TOUT(n*8 + x) Output Selection** This bit field defines which timer output is connected as TOUT(n*8+x). *Note: SELx values not explicitly defined here are equivalent to the last defined SELx setting.* 0_H **CDTM0_DTM0_2, TOM0_2**, Dead-time output of TOM0, channel 2 1_H Reserved, do not use … 3_H Reserved, do not use 4_H **CDTM0_DTM0_1_N, TOM0_1_N**, Inverted dead-time output of TOM0, channel 1 5_H Reserved, do not use … B_H Reserved, do not use
SELx (x=4)	4*x+3:4*x	rw	**TOUT(n*8 + x) Output Selection** This bit field defines which timer output is connected as TOUT(n*8+x). *Note: SELx values not explicitly defined here are equivalent to the last defined SELx setting.* 0_H **CDTM0_DTM0_3, TOM0_3**, Dead-time output of TOM0, channel 3 1_H Reserved, do not use … 3_H Reserved, do not use 4_H **CDTM0_DTM0_2_N, TOM0_2_N**, Inverted dead-time output of TOM0, channel 2 5_H Reserved, do not use … B_H Reserved, do not use

Field	Bits	Type	Description
SELx (x=5)	4*x+3:4*x	rw	**TOUT(n*8 + x) Output Selection** This bit field defines which timer output is connected as TOUT(n*8+x). *Note: SELx values not explicitly defined here are equivalent to the last defined SELx setting.* 0_H **CDTM0_DTM0_0, TOM0_0**, Dead-time output of TOM0, channel 0 1_H Reserved, do not use … 3_H Reserved, do not use 4_H **CDTM0_DTM0_3_N, TOM0_3_N**, Inverted dead-time output of TOM0, channel 3 5_H Reserved, do not use … B_H Reserved, do not use
SELx (x=6)	4*x+3:4*x	rw	**TOUT(n*8 + x) Output Selection** This bit field defines which timer output is connected as TOUT(n*8+x). *Note: SELx values not explicitly defined here are equivalent to the last defined SELx setting.* 0_H **CDTM0_DTM1_1, TOM0_5**, Dead-time output of TOM0, channel 5 1_H Reserved, do not use … B_H Reserved, do not use
SELx (x=7)	4*x+3:4*x	rw	**TOUT(n*8 + x) Output Selection** This bit field defines which timer output is connected as TOUT(n*8+x). *Note: SELx values not explicitly defined here are equivalent to the last defined SELx setting.* 0_H Reserved, do not use … B_H Reserved, do not use

GTM_TOUTSELn (n=14)
Timer Output Select Register **($09FD60_H$+n*4)** **Application Reset Value: $0000\ 0000_H$**

31	30	29	28	27	26	25	24	23	22	21	20	19	18	17	16
SEL7				SEL6				SEL5				SEL4			
rw				rw				rw				rw			

15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
SEL3				SEL2				SEL1				SEL0			
rw				rw				rw				rw			

Field	Bits	Type	Description
SELx (x=0)	4*x+3:4*x	rw	**TOUT(n*8 + x) Output Selection** This bit field defines which timer output is connected as TOUT(n*8+x). *Note: SELx values not explicitly defined here are equivalent to the last defined SELx setting.* 0_H Reserved, do not use … 7_H Reserved, do not use 8_H **CDTM0_DTM4_0_N, ATOM0_0_N**, Inverted dead-time output of ATOM0, channel 0 9_H Reserved, do not use … B_H Reserved, do not use
SELx (x=1)	4*x+3:4*x	rw	**TOUT(n*8 + x) Output Selection** This bit field defines which timer output is connected as TOUT(n*8+x). *Note: SELx values not explicitly defined here are equivalent to the last defined SELx setting.* 0_H Reserved, do not use … 7_H Reserved, do not use 8_H **CDTM0_DTM4_1_N, ATOM0_1_N**, Inverted dead-time output of ATOM0, channel 1 9_H Reserved, do not use … B_H Reserved, do not use
SELx (x=2)	4*x+3:4*x	rw	**TOUT(n*8 + x) Output Selection** This bit field defines which timer output is connected as TOUT(n*8+x). *Note: SELx values not explicitly defined here are equivalent to the last defined SELx setting.* 0_H Reserved, do not use … 7_H Reserved, do not use 8_H **CDTM0_DTM4_2_N, ATOM0_2_N**, Inverted dead-time output of ATOM0, channel 2 9_H Reserved, do not use … B_H Reserved, do not use

Field	Bits	Type	Description
SELx (x=3)	4*x+3:4*x	rw	**TOUT(n*8 + x) Output Selection** This bit field defines which timer output is connected as TOUT(n*8+x). *Note: SELx values not explicitly defined here are equivalent to the last defined SELx setting.* 0_H Reserved, do not use … 7_H Reserved, do not use 8_H **CDTM0_DTM4_3_N, ATOM0_3_N**, Inverted dead-time output of ATOM0, channel 3 9_H Reserved, do not use … B_H Reserved, do not use
SELx (x=4)	4*x+3:4*x	rw	**TOUT(n*8 + x) Output Selection** This bit field defines which timer output is connected as TOUT(n*8+x). *Note: SELx values not explicitly defined here are equivalent to the last defined SELx setting.* 0_H Reserved, do not use … 3_H Reserved, do not use 4_H **CDTM1_DTM0_1, TOM1_1**, Dead-time output of TOM1, channel 1 5_H Reserved, do not use 6_H **CDTM0_DTM0_1, TOM0_1**, Dead-time output of TOM0, channel 1 7_H Reserved, do not use 8_H **CDTM0_DTM5_2_N, ATOM0_6_N**, Inverted dead-time output of ATOM0, channel 6 9_H Reserved, do not use A_H **CDTM0_DTM4_1, ATOM0_1**, Dead-time output of ATOM0, channel 1 B_H Reserved, do not use

Field	Bits	Type	Description
SELx (x=5)	4*x+3:4*x	rw	**TOUT(n*8 + x) Output Selection** This bit field defines which timer output is connected as TOUT(n*8+x). *Note: SELx values not explicitly defined here are equivalent to the last defined SELx setting.* 0_H Reserved, do not use … 3_H Reserved, do not use 4_H **CDTM1_DTM0_2, TOM1_2**, Dead-time output of TOM1, channel 2 5_H Reserved, do not use 6_H **CDTM0_DTM0_2, TOM0_2**, Dead-time output of TOM0, channel 2 7_H Reserved, do not use 8_H **CDTM0_DTM5_3_N, ATOM0_7_N**, Inverted dead-time output of ATOM0, channel 7 9_H Reserved, do not use A_H **CDTM0_DTM4_2, ATOM0_2**, Dead-time output of ATOM0, channel 2 B_H Reserved, do not use
SELx (x=6)	4*x+3:4*x	rw	**TOUT(n*8 + x) Output Selection** This bit field defines which timer output is connected as TOUT(n*8+x). *Note: SELx values not explicitly defined here are equivalent to the last defined SELx setting.* 0_H Reserved, do not use … 3_H Reserved, do not use 4_H **CDTM1_DTM0_3, TOM1_3**, Dead-time output of TOM1, channel 3 5_H Reserved, do not use 6_H **CDTM0_DTM0_3, TOM0_3**, Dead-time output of TOM0, channel 3 7_H Reserved, do not use 8_H **CDTM0_DTM5_0_N, ATOM0_4_N**, Inverted dead-time output of ATOM0, channel 4 9_H Reserved, do not use A_H **CDTM0_DTM4_3, ATOM0_3**, Dead-time output of ATOM0, channel 3 B_H Reserved, do not use

Field	Bits	Type	Description
SELx (x=7)	4*x+3:4*x	rw	**TOUT(n*8 + x) Output Selection** This bit field defines which timer output is connected as TOUT(n*8+x). *Note: SELx values not explicitly defined here are equivalent to the last defined SELx setting.* 0_H Reserved, do not use … 5_H Reserved, do not use 6_H **CDTM0_DTM1_3, TOM0_7**, Dead-time output of TOM0, channel 7 7_H Reserved, do not use … B_H Reserved, do not use

GTM_TOUTSELn (n=15)
Timer Output Select Register **($09FD60_H$+n*4)** **Application Reset Value: $0000\ 0000_H$**

31	30	29	28	27	26	25	24	23	22	21	20	19	18	17	16
SEL7				**SEL6**				**SEL5**				**SEL4**			
rw				rw				rw				rw			

15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
SEL3				**SEL2**				**SEL1**				**SEL0**			
rw				rw				rw				rw			

Field	Bits	Type	Description
SELx (x=0)	4*x+3:4*x	rw	**TOUT(n*8 + x) Output Selection** This bit field defines which timer output is connected as TOUT(n*8+x). *Note: SELx values not explicitly defined here are equivalent to the last defined SELx setting.* 0_H Reserved, do not use … 6_H Reserved, do not use 7_H **,**, Reserved, do not use 8_H Reserved, do not use … B_H Reserved, do not use

Field	Bits	Type	Description
SELx (x=1)	4*x+3:4*x	rw	**TOUT(n*8 + x) Output Selection** This bit field defines which timer output is connected as TOUT(n*8+x). *Note: SELx values not explicitly defined here are equivalent to the last defined SELx setting.* 0_H Reserved, do not use … 5_H Reserved, do not use 6_H **CDTM0_DTM1_1_N, TOM0_5_N**, Inverted dead-time output of TOM0, channel 5 7_H Reserved, do not use … B_H Reserved, do not use
SELx (x=2)	4*x+3:4*x	rw	**TOUT(n*8 + x) Output Selection** This bit field defines which timer output is connected as TOUT(n*8+x). *Note: SELx values not explicitly defined here are equivalent to the last defined SELx setting.* 0_H Reserved, do not use … B_H Reserved, do not use
SELx (x=3)	4*x+3:4*x	rw	**TOUT(n*8 + x) Output Selection** This bit field defines which timer output is connected as TOUT(n*8+x). *Note: SELx values not explicitly defined here are equivalent to the last defined SELx setting.* 0_H Reserved, do not use … 5_H Reserved, do not use 6_H **CDTM0_DTM1_3_N, TOM0_7_N**, Inverted dead-time output of TOM0, channel 7 7_H Reserved, do not use … B_H Reserved, do not use

Field	Bits	Type	Description
SELx (x=4)	4*x+3:4*x	rw	**TOUT(n*8 + x) Output Selection** This bit field defines which timer output is connected as TOUT(n*8+x). *Note: SELx values not explicitly defined here are equivalent to the last defined SELx setting.* 0_H Reserved, do not use … 4_H Reserved, do not use 5_H **CDTM0_DTM1_0, TOM0_4**, Dead-time output of TOM0, channel 4 6_H Reserved, do not use 7_H **CDTM1_DTM1_0, TOM1_4**, Dead-time output of TOM1, channel 4 8_H Reserved, do not use … B_H Reserved, do not use
SELx (x=5)	4*x+3:4*x	rw	**TOUT(n*8 + x) Output Selection** This bit field defines which timer output is connected as TOUT(n*8+x). *Note: SELx values not explicitly defined here are equivalent to the last defined SELx setting.* 0_H Reserved, do not use … B_H Reserved, do not use
SELx (x=6)	4*x+3:4*x	rw	**TOUT(n*8 + x) Output Selection** This bit field defines which timer output is connected as TOUT(n*8+x). *Note: SELx values not explicitly defined here are equivalent to the last defined SELx setting.* 0_H Reserved, do not use … B_H Reserved, do not use
SELx (x=7)	4*x+3:4*x	rw	**TOUT(n*8 + x) Output Selection** This bit field defines which timer output is connected as TOUT(n*8+x). *Note: SELx values not explicitly defined here are equivalent to the last defined SELx setting.* 0_H Reserved, do not use … B_H Reserved, do not use

GTM_TOUTSELn (n=16)
Timer Output Select Register **($09FD60_H$+n*4)** **Application Reset Value: 0000 0000_H**

31	30	29	28	27	26	25	24	23	22	21	20	19	18	17	16
SEL7				SEL6				SEL5				SEL4			
rw				rw				rw				rw			

15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
SEL3				SEL2				SEL1				SEL0			
rw				rw				rw				rw			

Field	Bits	Type	Description
SELx (x=0)	4*x+3:4*x	rw	**TOUT(n*8 + x) Output Selection** This bit field defines which timer output is connected as TOUT(n*8+x). *Note: SELx values not explicitly defined here are equivalent to the last defined SELx setting.* 0_H **TOM1_8**, Output of TOM1, channel 8 1_H Reserved, do not use … 5_H Reserved, do not use 6_H **CDTM0_DTM1_1, TOM0_5**, Dead-time output of TOM0, channel 5 7_H Reserved, do not use … B_H Reserved, do not use
SELx (x=1)	4*x+3:4*x	rw	**TOUT(n*8 + x) Output Selection** This bit field defines which timer output is connected as TOUT(n*8+x). *Note: SELx values not explicitly defined here are equivalent to the last defined SELx setting.* 0_H **TOM1_9**, Output of TOM1, channel 9 1_H Reserved, do not use … 5_H Reserved, do not use 6_H **CDTM0_DTM1_2, TOM0_6**, Dead-time output of TOM0, channel 6 7_H Reserved, do not use … B_H Reserved, do not use

Field	Bits	Type	Description
SELx (x=2)	4*x+3:4*x	rw	**TOUT(n*8 + x) Output Selection** This bit field defines which timer output is connected as TOUT(n*8+x). *Note: SELx values not explicitly defined here are equivalent to the last defined SELx setting.* 0_H Reserved, do not use … 5_H Reserved, do not use 6_H **CDTM0_DTM1_3_N, TOM0_7_N**, Inverted dead-time output of TOM0, channel 7 7_H **CDTM1_DTM1_3_N, TOM1_7_N**, Inverted dead-time output of TOM1, channel 7 8_H Reserved, do not use … B_H Reserved, do not use
SELx (x=3)	4*x+3:4*x	rw	**TOUT(n*8 + x) Output Selection** This bit field defines which timer output is connected as TOUT(n*8+x). *Note: SELx values not explicitly defined here are equivalent to the last defined SELx setting.* 0_H Reserved, do not use … B_H Reserved, do not use
SELx (x=4)	4*x+3:4*x	rw	**TOUT(n*8 + x) Output Selection** This bit field defines which timer output is connected as TOUT(n*8+x). *Note: SELx values not explicitly defined here are equivalent to the last defined SELx setting.* 0_H Reserved, do not use … B_H Reserved, do not use
SELx (x=5)	4*x+3:4*x	rw	**TOUT(n*8 + x) Output Selection** This bit field defines which timer output is connected as TOUT(n*8+x). *Note: SELx values not explicitly defined here are equivalent to the last defined SELx setting.* 0_H Reserved, do not use … B_H Reserved, do not use

Field	Bits	Type	Description
SELx (x=6)	4*x+3:4*x	rw	**TOUT(n*8 + x) Output Selection** This bit field defines which timer output is connected as TOUT(n*8+x). *Note: SELx values not explicitly defined here are equivalent to the last defined SELx setting.* 0_H Reserved, do not use … B_H Reserved, do not use
SELx (x=7)	4*x+3:4*x	rw	**TOUT(n*8 + x) Output Selection** This bit field defines which timer output is connected as TOUT(n*8+x). *Note: SELx values not explicitly defined here are equivalent to the last defined SELx setting.* 0_H Reserved, do not use … 7_H Reserved, do not use 8_H **CDTM0_DTM5_0_N, ATOM0_4_N**, Inverted dead-time output of ATOM0, channel 4 9_H Reserved, do not use … B_H Reserved, do not use

26.3.5 GTM DTMAUXINSEL Connections

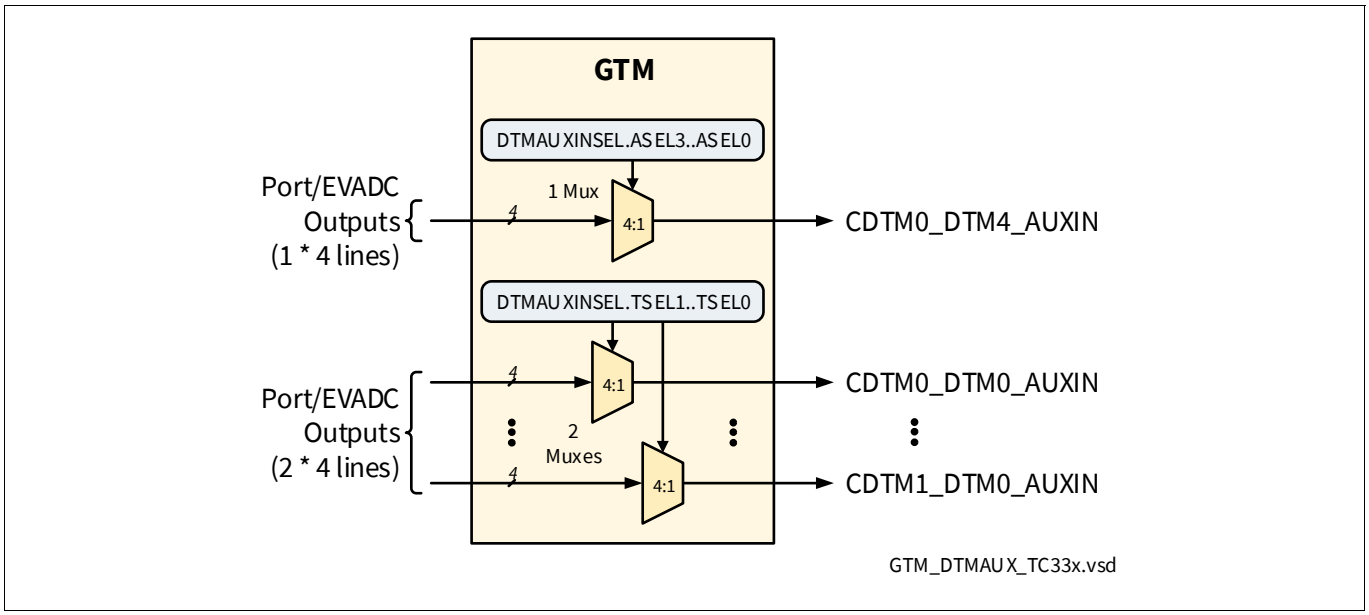


Figure 10 DTM_AUXIN Connections Overview

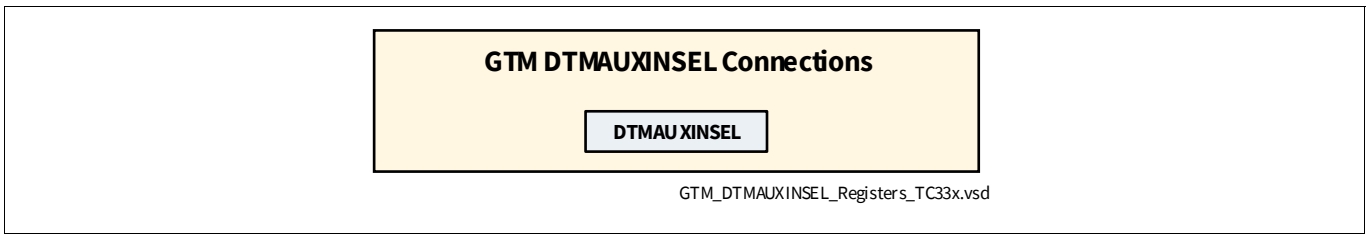


Figure 11 DTM_AUXIN Connections Registers Overview

DTM_AUX Input Selection Register

GTM_DTMAUXINSEL

DTM_AUX Input Selection Register (09FFD8$_H$) Application Reset Value: 0000 0000$_H$

31	30	29	28	27	26	25	24	23	22	21	20	19	18	17	16
0												TSEL1		TSEL0	
r												rw		rw	

15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
0														ASEL0	
r														rw	

Field	Bits	Type	Description
ASELx (x=0)	2*x+1:2*x	rw	**CDTMx_DTM4_AUX Input Selection (ATOMx_CH0...3)** This bit field defines which GPIO/DSADC/EVADC signal is connected to the CDTMx_DTM4_AUX input. 00_B **P02.0**, Port pad input 01_B **P02.8**, Port pad input 10_B Reserved, do not use 11_B **CBFLOUT0**, Reserved, do not use
TSELx (x=0)	2*x+17:2*x +16	rw	**CDTMx_DTM0_AUX Input Selection (TOMx_CH0...3)** This bit field defines which GPIO/DSADC/EVADC signal is connected to the CDTMx_DTM0_AUX input. 00_B **P14.4**, Port pad input (no LQFP100) 01_B **P10.1**, Port pad input (FC1BFLOUT, no LQFP100) 10_B **P00.7**, Port pad input (FC2BFLOUT, no LQFP100) 11_B **CBFLOUT0**, Reserved, do not use
TSELx (x=1)	2*x+17:2*x +16	rw	**CDTMx_DTM0_AUX Input Selection (TOMx_CH0...3)** This bit field defines which GPIO/DSADC/EVADC signal is connected to the CDTMx_DTM0_AUX input. 00_B **P34.0**, Reserved, do not use 01_B **P00.5**, Port pad input (FC0BFLOUT, no LQFP100) 10_B **P33.0**, Port pad input (FC2BFLOUT, no LQFP100) 11_B **CBFLOUT1**, Reserved, do not use
0	15:2, 31:20	r	**Reserved** Read as 0, shall be written with 0.

26.3.6 GTM to EVADC Connections

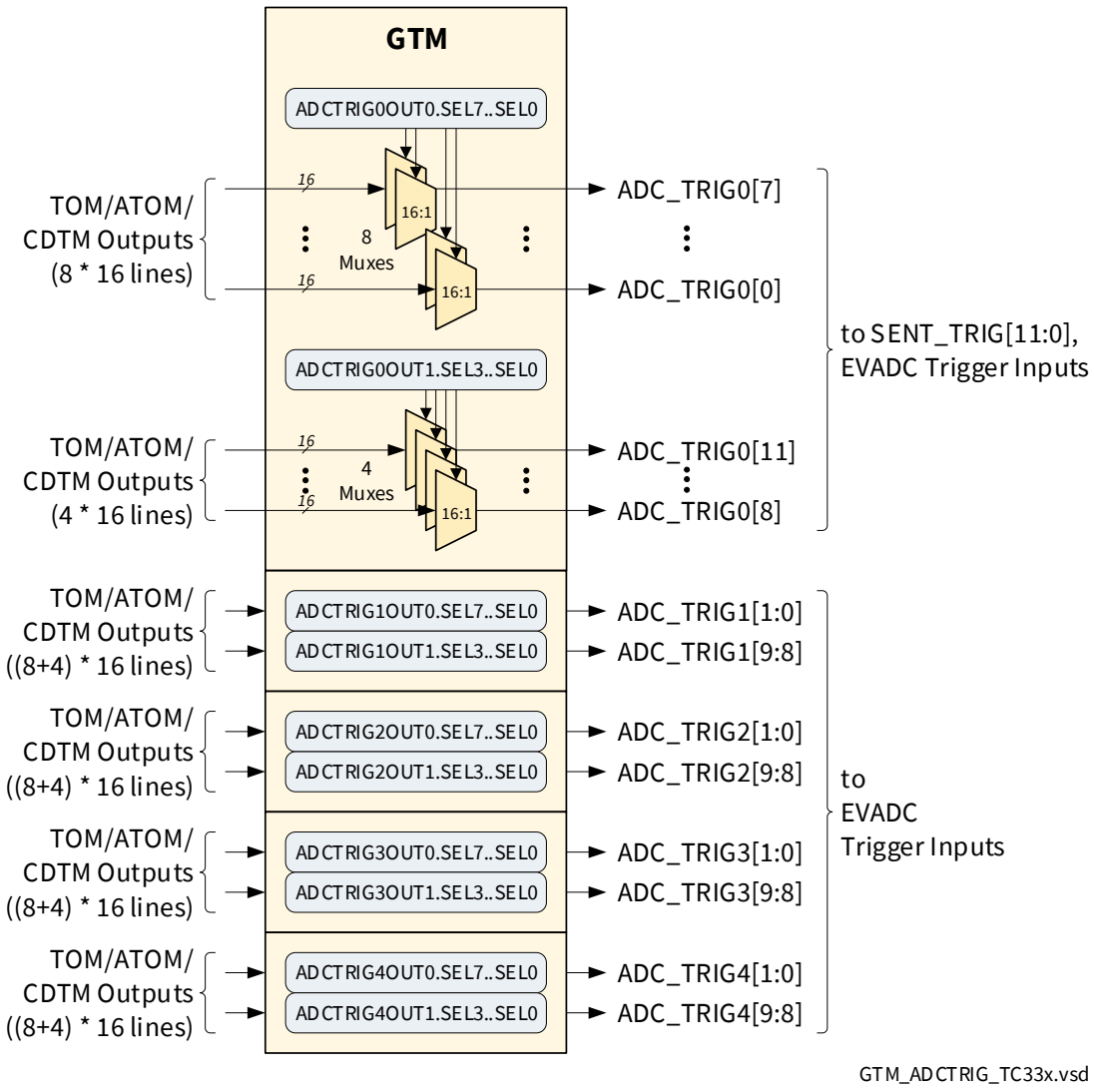


Figure 12 GTM to EVADC Connections Overview

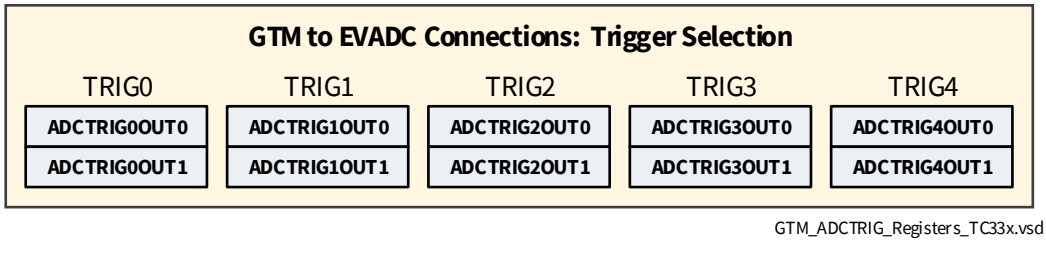


Figure 13 GTM to EVADC Connections Registers Overview

Table 209 GTM to EVADC Connections Registers Overview

Register	Long Name	Selection Bitfields	Page
ADCTRIG0OUT0	ADC Trigger 0 Output Select 0 Register (i=0)	SEL0..SEL7	Page 119
ADCTRIG0OUT1	ADC Trigger 0 Output Select 1 Register (i=0)	SEL0..SEL3	Page 121
ADCTRIG1OUT0	ADC Trigger 1 Output Select 0 Register (i=1)	SEL0..SEL7	Page 122
ADCTRIG1OUT1	ADC Trigger 1 Output Select 1 Register (i=1)	SEL0..SEL3	Page 124
ADCTRIG2OUT0	ADC Trigger 2 Output Select 0 Register (i=2)	SEL0..SEL7	Page 125
ADCTRIG2OUT1	ADC Trigger 2 Output Select 1 Register (i=2)	SEL0..SEL3	Page 126
ADCTRIG3OUT0	ADC Trigger 3 Output Select 0 Register (i=3)	SEL0..SEL7	Page 127
ADCTRIG3OUT1	ADC Trigger 3 Output Select 1 Register (i=3)	SEL0..SEL3	Page 128
ADCTRIG4OUT0	ADC Trigger 4 Output Select 0 Register (i=4)	SEL0..SEL7	Page 129
ADCTRIG4OUT1	ADC Trigger 4 Output Select 1 Register (i=4)	SEL0..SEL3	Page 130

Table 210 Connections of ADC_TRIGx Signals to ADC/SENT Modules

GTM Trigger Signal	EVADC		SENT
ADC_TRIG0			
ADC_TRIG0_[1:0]	G[1:0]REQGTA	G[1:0]REQTRI	TRIG[1:0]
ADC_TRIG0_[3:2]	-	-	TRIG[3:2]
ADC_TRIG0_[7:4]	-	-	TRIG[7:4]
ADC_TRIG0_[9:8]	G[9:8]REQGTA	G[9:8]REQTRI	TRIG[9:8]
ADC_TRIG0_[11:10]	-	-	TRIG[11:10]
ADC_TRIG1			
ADC_TRIG1_[1:0]	G[1:0]REQGTB	G[1:0]REQTRJ	-
ADC_TRIG1_[3:2]	-	-	-
ADC_TRIG1_[7:4]	-	-	-
ADC_TRIG1_[9:8]	G[9:8]REQGTB	G[9:8]REQTRJ	-
ADC_TRIG1_[11:10]	-	-	-
ADC_TRIG2			
ADC_TRIG2_[1:0]	G[1:0]REQGTK	G[1:0]REQTRK	-
ADC_TRIG2_[3:2]	-	-	-
ADC_TRIG2_[7:4]	-	-	-
ADC_TRIG2_[9:8]	G[9:8]REQGTK	G[9:8]REQTRK	-
ADC_TRIG2_[11:10]	-	-	-
ADC_TRIG3			
ADC_TRIG3_[1:0]	G[1:0]REQGTL	G[1:0]REQTRL	-
ADC_TRIG3_[3:2]	-	-	-
ADC_TRIG3_[7:4]	-	-	-
ADC_TRIG3_[9:8]	G[9:8]REQGTL	G[9:8]REQTRL	-
ADC_TRIG3_[11:10]	-	-	-

Table 210 Connections of ADC_TRIGx Signals to ADC/SENT Modules (cont'd)

GTM Trigger Signal	EVADC		SENT
ADC_TRIG4			
ADC_TRIG4_[1:0]	G[1:0]REQGTL	G[1:0]REQTRL	-
ADC_TRIG4_[3:2]	-	-	-
ADC_TRIG4_[7:4]	-	-	-
ADC_TRIG4_[9:8]	G[9:8]REQGTL	G[9:8]REQTRL	-
ADC_TRIG4_[11:10]	-	-	-

ADC Trigger i Output Select 0 Register

GTM_ADCTRIGiOUT0 (i=0)
ADC Trigger i Output Select 0 Register (09FE40$_H$+i*8) Application Reset Value: 0000 0000$_H$

31	30	29	28	27	26	25	24	23	22	21	20	19	18	17	16
SEL7				**SEL6**				**SEL5**				**SEL4**			
rw				rw				rw				rw			

15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
SEL3				**SEL2**				**SEL1**				**SEL0**			
rw				rw				rw				rw			

Field	Bits	Type	Description
SELx (x=0-2)	4*x+3:4*x	rw	**Output Selection for GTM to ADCx connection** This bit field defines which TOM/ATOM channel output is used as ADCx trigger i. 0_H No trigger 1_H **CDTM0_DTM1_2, TOM0_6**, Dead-time output of TOM0, channel 6 2_H **CDTM0_DTM1_3, TOM0_7**, Dead-time output of TOM0, channel 7 3_H **TOM0_13**, Output of TOM0, channel 13 4_H **TOM0_14**, Output of TOM0, channel 14 5_H **CDTM0_DTM5_0, ATOM0_4**, Dead-time output of ATOM0, channel 4 6_H **CDTM0_DTM5_1, ATOM0_5**, Dead-time output of ATOM0, channel 5 7_H **CDTM0_DTM5_2, ATOM0_6**, Dead-time output of ATOM0, channel 6 8_H **CDTM0_DTM5_3, ATOM0_7**, Dead-time output of ATOM0, channel 7 9_H Reserved, do not use … F_H Reserved, do not use

Field	Bits	Type	Description
SELx (x=3-4)	4*x+3:4*x	rw	**Output Selection for GTM to ADCx connection** This bit field defines which TOM/ATOM channel output is used as ADCx trigger i. 0_H No trigger 1_H **CDTM0_DTM1_2, TOM0_6**, Dead-time output of TOM0, channel 6 2_H **CDTM0_DTM1_3, TOM0_7**, Dead-time output of TOM0, channel 7 3_H **TOM0_13**, Output of TOM0, channel 13 4_H **TOM0_14**, Output of TOM0, channel 14 5_H **CDTM0_DTM5_0, ATOM0_4**, Dead-time output of ATOM0, channel 4 6_H **CDTM0_DTM5_1, ATOM0_5**, Dead-time output of ATOM0, channel 5 7_H **CDTM0_DTM5_2, ATOM0_6**, Dead-time output of ATOM0, channel 6 8_H **CDTM0_DTM5_3, ATOM0_7**, Dead-time output of ATOM0, channel 7 9_H **CDTM1_DTM1_2, TOM1_6**, Dead-time output of TOM1, channel 6 A_H **CDTM1_DTM1_3, TOM1_7**, Dead-time output of TOM1, channel 7 B_H Reserved, do not use … F_H Reserved, do not use
SELx (x=5-7)	4*x+3:4*x	rw	**Output Selection for GTM to ADCx connection** This bit field defines which TOM/ATOM channel output is used as ADCx trigger i. 0_H No trigger 1_H Reserved, do not use 2_H Reserved, do not use 3_H **TOM0_13**, Output of TOM0, channel 13 4_H **TOM0_14**, Output of TOM0, channel 14 5_H Reserved, do not use … 8_H Reserved, do not use 9_H **CDTM0_DTM1_2, TOM0_6**, Dead-time output of TOM0, channel 6 A_H **CDTM0_DTM1_3, TOM0_7**, Dead-time output of TOM0, channel 7 B_H **CDTM0_DTM5_0, ATOM0_4**, Dead-time output of ATOM0, channel 4 C_H **CDTM0_DTM5_1, ATOM0_5**, Dead-time output of ATOM0, channel 5 D_H **CDTM0_DTM5_2, ATOM0_6**, Dead-time output of ATOM0, channel 6 E_H **CDTM0_DTM5_3, ATOM0_7**, Dead-time output of ATOM0, channel 7 F_H Reserved, do not use

GTM_ADCTRIGiOUT0 (i=1)

ADC Trigger i Output Select 0 Register **(09FE40$_H$+i*8)** **Application Reset Value: 0000 0000$_H$**

31	30	29	28	27	26	25	24	23	22	21	20	19	18	17	16
SEL7				SEL6				SEL5				SEL4			
rw				rw				rw				rw			

15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
SEL3				SEL2				SEL1				SEL0			
rw				rw				rw				rw			

Field	Bits	Type	Description
SELx (x=0-2)	4*x+3:4*x	rw	**Output Selection for GTM to ADCx connection** This bit field defines which TOM/ATOM channel output is used as ADCx trigger i. 0_H No trigger 1_H **CDTM1_DTM1_2, TOM1_6**, Dead-time output of TOM1, channel 6 2_H **CDTM1_DTM1_3, TOM1_7**, Dead-time output of TOM1, channel 7 3_H **TOM1_13**, Output of TOM1, channel 13 4_H **TOM1_14**, Output of TOM1, channel 14 5_H Reserved, do not use … 8_H Reserved, do not use 9_H **TOM0_14**, Output of TOM0, channel 14 A_H **TOM0_15**, Output of TOM0, channel 15 B_H **CDTM0_DTM5_0, ATOM0_4**, Dead-time output of ATOM0, channel 4 C_H **CDTM0_DTM5_1, ATOM0_5**, Dead-time output of ATOM0, channel 5 D_H **CDTM0_DTM5_2, ATOM0_6**, Dead-time output of ATOM0, channel 6 E_H **CDTM0_DTM5_3, ATOM0_7**, Dead-time output of ATOM0, channel 7 F_H Reserved, do not use

Field	Bits	Type	Description
SELx (x=3-4)	4*x+3:4*x	rw	**Output Selection for GTM to ADCx connection** This bit field defines which TOM/ATOM channel output is used as ADCx trigger i. 0_H No trigger 1_H **CDTM1_DTM1_2, TOM1_6**, Dead-time output of TOM1, channel 6 2_H **CDTM1_DTM1_3, TOM1_7**, Dead-time output of TOM1, channel 7 3_H **TOM1_13**, Output of TOM1, channel 13 4_H **TOM1_14**, Output of TOM1, channel 14 5_H Reserved, do not use … 8_H Reserved, do not use 9_H **TOM1_14**, Output of TOM1, channel 14 A_H **TOM1_15**, Output of TOM1, channel 15 B_H Reserved, do not use … F_H Reserved, do not use
SELx (x=5-7)	4*x+3:4*x	rw	**Output Selection for GTM to ADCx connection** This bit field defines which TOM/ATOM channel output is used as ADCx trigger i. 0_H No trigger 1_H Reserved, do not use 2_H Reserved, do not use 3_H **TOM1_13**, Output of TOM1, channel 13 4_H **TOM1_14**, Output of TOM1, channel 14 5_H Reserved, do not use … 8_H Reserved, do not use 9_H **CDTM1_DTM1_2, TOM1_6**, Dead-time output of TOM1, channel 6 A_H **CDTM1_DTM1_3, TOM1_7**, Dead-time output of TOM1, channel 7 B_H Reserved, do not use … F_H Reserved, do not use

GTM_ADCTRIGiOUT0 (i=2)

ADC Trigger i Output Select 0 Register **($09FE40_H$+i*8)** **Application Reset Value: $0000\ 0000_H$**

31	30	29	28	27	26	25	24	23	22	21	20	19	18	17	16
SEL7				**SEL6**				**SEL5**				**SEL4**			
rw				rw				rw				rw			

15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
SEL3				**SEL2**				**SEL1**				**SEL0**			
rw				rw				rw				rw			

Field	Bits	Type	Description
SELx (x=0-2)	4*x+3:4*x	rw	**Output Selection for GTM to ADCx connection** This bit field defines which TOM/ATOM channel output is used as ADCx trigger i. 0_H No trigger 1_H **CDTM0_DTM0_3, TOM0_3**, Dead-time output of TOM0, channel 3 2_H **CDTM0_DTM1_0, TOM0_4**, Dead-time output of TOM0, channel 4 3_H **CDTM0_DTM1_1(_N), TOM0_5_N**, Inverted dead-time output of TOM0, channel 5 4_H **CDTM0_DTM1_2(_N), TOM0_6_N**, Inverted dead-time output of TOM0, channel 6 5_H **CDTM0_DTM1_3, TOM0_7**, Dead-time output of TOM0, channel 7 6_H **TOM0_11**, Output of TOM0, channel 11 7_H **TOM0_15**, Output of TOM0, channel 15 8_H **CDTM1_DTM0_3, TOM1_3**, Dead-time output of TOM1, channel 3 9_H **CDTM1_DTM1_0, TOM1_4**, Dead-time output of TOM1, channel 4 A_H **CDTM1_DTM1_1(_N), TOM1_5_N**, Inverted dead-time output of TOM1, channel 5 B_H **CDTM1_DTM1_2(_N), TOM1_6_N**, Inverted dead-time output of TOM1, channel 6 C_H **CDTM1_DTM1_3, TOM1_7**, Dead-time output of TOM1, channel 7 D_H **TOM1_11**, Output of TOM1, channel 11 E_H **TOM1_15**, Output of TOM1, channel 15 F_H Reserved, do not use
SELx (x=3-4)	4*x+3:4*x	rw	**Output Selection for GTM to ADCx connection** This bit field defines which TOM/ATOM channel output is used as ADCx trigger i. 0_H No trigger 1_H **CDTM0_DTM0_3, TOM0_3**, Dead-time output of TOM0, channel 3 2_H **CDTM0_DTM1_0, TOM0_4**, Dead-time output of TOM0, channel 4 3_H **CDTM0_DTM1_1(_N), TOM0_5_N**, Inverted dead-time output of TOM0, channel 5 4_H **CDTM0_DTM1_2(_N), TOM0_6_N**, Inverted dead-time output of TOM0, channel 6 5_H **CDTM0_DTM1_3, TOM0_7**, Dead-time output of TOM0, channel 7 6_H **TOM0_11**, Output of TOM0, channel 11 7_H **TOM0_15**, Output of TOM0, channel 15 8_H **CDTM1_DTM0_3, TOM1_3**, Dead-time output of TOM1, channel 3 9_H **CDTM1_DTM1_0, TOM1_4**, Dead-time output of TOM1, channel 4 A_H **CDTM1_DTM1_1(_N), TOM1_5_N**, Inverted dead-time output of TOM1, channel 5 B_H **CDTM1_DTM1_2(_N), TOM1_6_N**, Inverted dead-time output of TOM1, channel 6 C_H **CDTM1_DTM1_3, TOM1_7**, Dead-time output of TOM1, channel 7 D_H **TOM1_11**, Output of TOM1, channel 11 E_H **TOM1_15**, Output of TOM1, channel 15 F_H Reserved, do not use

Field	Bits	Type	Description
SELx (x=5-7)	4*x+3:4*x	rw	**Output Selection for GTM to ADCx connection** This bit field defines which TOM/ATOM channel output is used as ADCx trigger i. 0_H No trigger 1_H **CDTM0_DTM0_3, TOM0_3**, Dead-time output of TOM0, channel 3 2_H **CDTM0_DTM1_0, TOM0_4**, Dead-time output of TOM0, channel 4 3_H **CDTM0_DTM1_1(_N), TOM0_5_N**, Inverted dead-time output of TOM0, channel 5 4_H **CDTM1_DTM0_3, TOM1_3**, Dead-time output of TOM1, channel 3 5_H **CDTM1_DTM1_0, TOM1_4**, Dead-time output of TOM1, channel 4 6_H **CDTM1_DTM1_1(_N), TOM1_5_N**, Inverted dead-time output of TOM1, channel 5 7_H Reserved, do not use … F_H Reserved, do not use

GTM_ADCTRIGiOUT0 (i=3)

ADC Trigger i Output Select 0 Register (09FE40$_H$+i*8) Application Reset Value: 0000 0000$_H$

31	30	29	28	27	26	25	24	23	22	21	20	19	18	17	16
SEL7				**SEL6**				**SEL5**				**SEL4**			
rw				rw				rw				rw			

15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
SEL3				**SEL2**				**SEL1**				**SEL0**			
rw				rw				rw				rw			

Field	Bits	Type	Description
SELx (x=0-2)	4*x+3:4*x	rw	**Output Selection for GTM to ADCx connection** This bit field defines which TOM/ATOM channel output is used as ADCx trigger i. 0_H No trigger 1_H **CDTM0_DTM4_3, ATOM0_3**, Dead-time output of ATOM0, channel 3 2_H **CDTM0_DTM5_1(_N), ATOM0_5_N**, Inverted dead-time output of ATOM0, channel 5 3_H Reserved, do not use … F_H Reserved, do not use

Field	Bits	Type	Description
SELx (x=3-4)	4*x+3:4*x	rw	**Output Selection for GTM to ADCx connection** This bit field defines which TOM/ATOM channel output is used as ADCx trigger i. 0_H No trigger 1_H **CDTM0_DTM4_3, ATOM0_3**, Dead-time output of ATOM0, channel 3 2_H **CDTM0_DTM5_1(_N), ATOM0_5_N**, Inverted dead-time output of ATOM0, channel 5 3_H Reserved, do not use … F_H Reserved, do not use
SELx (x=5-7)	4*x+3:4*x	rw	**Output Selection for GTM to ADCx connection** This bit field defines which TOM/ATOM channel output is used as ADCx trigger i. 0_H No trigger 1_H **CDTM0_DTM4_3, ATOM0_3**, Dead-time output of ATOM0, channel 3 2_H **CDTM0_DTM5_1(_N), ATOM0_5_N**, Inverted dead-time output of ATOM0, channel 5 3_H Reserved, do not use … F_H Reserved, do not use

GTM_ADCTRIGiOUT0 (i=4)

ADC Trigger i Output Select 0 Register (09FE40$_H$+i*8) Application Reset Value: 0000 0000$_H$

31	30	29	28	27	26	25	24	23	22	21	20	19	18	17	16
SEL7				**SEL6**				**SEL5**				**SEL4**			
rw				rw				rw				rw			

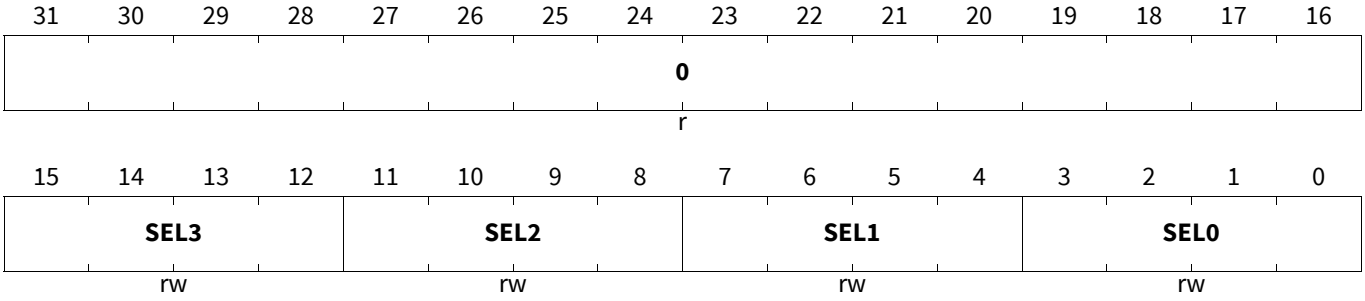
15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
SEL3				**SEL2**				**SEL1**				**SEL0**			
rw				rw				rw				rw			

Field	Bits	Type	Description
SELx (x=0-2)	4*x+3:4*x	rw	**Output Selection for GTM to ADCx connection** This bit field defines which TOM/ATOM channel output is used as ADCx trigger i. 0_H No trigger 1_H Reserved, do not use … F_H Reserved, do not use

Field	Bits	Type	Description
SELx (x=3-4)	4*x+3:4*x	rw	**Output Selection for GTM to ADCx connection** This bit field defines which TOM/ATOM channel output is used as ADCx trigger i. 0_H No trigger 1_H Reserved, do not use … F_H Reserved, do not use
SELx (x=5-7)	4*x+3:4*x	rw	**Output Selection for GTM to ADCx connection** This bit field defines which TOM/ATOM channel output is used as ADCx trigger i. 0_H No trigger 1_H Reserved, do not use … F_H Reserved, do not use

ADC Trigger i Output Select 1 Register

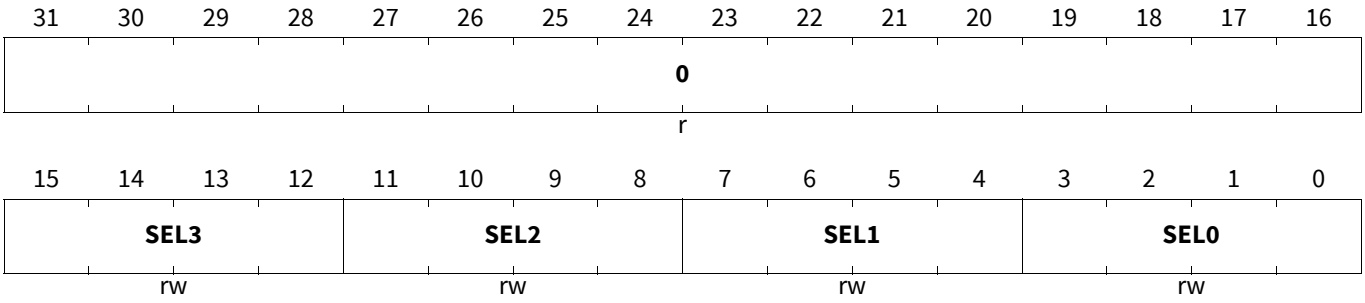
GTM_ADCTRIGiOUT1 (i=0)
ADC Trigger i Output Select 1 Register **($09FE44_H$+i*8)** **Application Reset Value: $0000\ 0000_H$**



Field	Bits	Type	Description
SELx (x=0-3)	4*x+3:4*x	rw	**Output Selection for GTM to ADCx connection** This bit field defines which TOM/ATOM channel output is used as ADCx+8 trigger i. 0_H No trigger 1_H **CDTM0_DTM1_2, TOM0_6**, Dead-time output of TOM0, channel 6 2_H **CDTM0_DTM1_3, TOM0_7**, Dead-time output of TOM0, channel 7 3_H **TOM0_13**, Output of TOM0, channel 13 4_H **TOM0_14**, Output of TOM0, channel 14 5_H **CDTM0_DTM5_0, ATOM0_4**, Dead-time output of ATOM0, channel 4 6_H **CDTM0_DTM5_1, ATOM0_5**, Dead-time output of ATOM0, channel 5 7_H **CDTM0_DTM5_2, ATOM0_6**, Dead-time output of ATOM0, channel 6 8_H **CDTM0_DTM5_3, ATOM0_7**, Dead-time output of ATOM0, channel 7 9_H **CDTM0_DTM1_2, TOM0_6**, Dead-time output of TOM0, channel 6 A_H **CDTM0_DTM1_3, TOM0_7**, Dead-time output of TOM0, channel 7 B_H Reserved, do not use … E_H Reserved, do not use F_H **TOM0_15**, Output of TOM0, channel 15
0	31:16	r	**Reserved** Read as 0, shall be written with 0.

GTM_ADCTRIGiOUT1 (i=1)

ADC Trigger i Output Select 1 Register (09FE44$_H$+i*8) Application Reset Value: 0000 0000$_H$



Field	Bits	Type	Description
SELx (x=0-3)	4*x+3:4*x	rw	**Output Selection for GTM to ADCx connection** This bit field defines which TOM/ATOM channel output is used as ADCx+8 trigger i. 0_H No trigger 1_H **CDTM1_DTM1_2, TOM1_6**, Dead-time output of TOM1, channel 6 2_H **CDTM1_DTM1_3, TOM1_7**, Dead-time output of TOM1, channel 7 3_H **TOM1_13**, Output of TOM1, channel 13 4_H **TOM1_14**, Output of TOM1, channel 14 5_H Reserved, do not use … 8_H Reserved, do not use 9_H **TOM0_14**, Output of TOM0, channel 14 A_H **TOM0_15**, Output of TOM0, channel 15 B_H Reserved, do not use … F_H Reserved, do not use
0	31:16	r	**Reserved** Read as 0, shall be written with 0.

GTM_ADCTRIGiOUT1 (i=2)

ADC Trigger i Output Select 1 Register (09FE44$_H$+i*8) Application Reset Value: 0000 0000$_H$

31	30	29	28	27	26	25	24	23	22	21	20	19	18	17	16
0															
r															

15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
SEL3				**SEL2**				**SEL1**				**SEL0**			
rw				rw				rw				rw			

Field	Bits	Type	Description
SELx (x=0-3)	4*x+3:4*x	rw	**Output Selection for GTM to ADCx connection** This bit field defines which TOM/ATOM channel output is used as ADCx+8 trigger i. 0_H No trigger 1_H **CDTM0_DTM0_3, TOM0_3**, Dead-time output of TOM0, channel 3 2_H **CDTM0_DTM1_0, TOM0_4**, Dead-time output of TOM0, channel 4 3_H **CDTM0_DTM1_1(_N), TOM0_5_N**, Inverted dead-time output of TOM0, channel 5 4_H **CDTM1_DTM0_3, TOM1_3**, Dead-time output of TOM1, channel 3 5_H **CDTM1_DTM1_0, TOM1_4**, Dead-time output of TOM1, channel 4 6_H **CDTM1_DTM1_1(_N), TOM1_5_N**, Inverted dead-time output of TOM1, channel 5 7_H Reserved, do not use … F_H Reserved, do not use
0	31:16	r	**Reserved** Read as 0, shall be written with 0.

GTM_ADCTRIGiOUT1 (i=3)

ADC Trigger i Output Select 1 Register (09FE44$_H$+i*8) Application Reset Value: 0000 0000$_H$

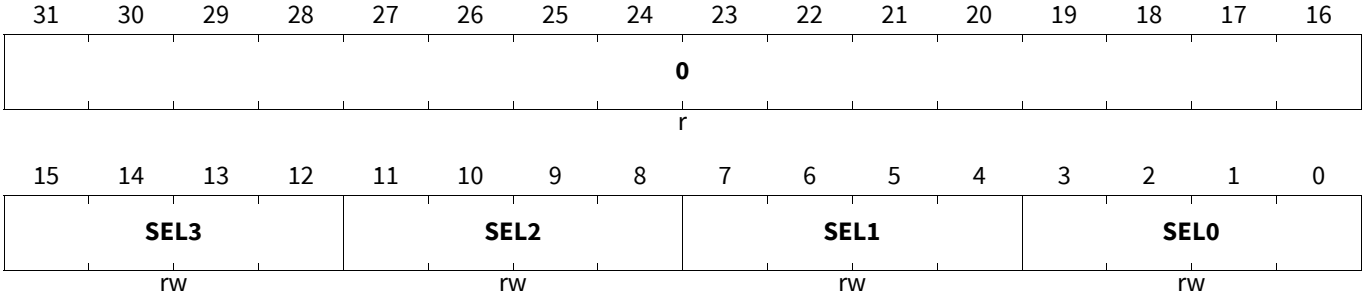
31	30	29	28	27	26	25	24	23	22	21	20	19	18	17	16
0															
r															

15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
SEL3				SEL2				SEL1				SEL0			
rw				rw				rw				rw			

Field	Bits	Type	Description
SELx (x=0-3)	4*x+3:4*x	rw	**Output Selection for GTM to ADCx connection** This bit field defines which TOM/ATOM channel output is used as ADCx+8 trigger i. 0_H No trigger 1_H **CDTM0_DTM4_3, ATOM0_3**, Dead-time output of ATOM0, channel 3 2_H **CDTM0_DTM5_1(_N), ATOM0_5_N**, Inverted dead-time output of ATOM0, channel 5 3_H Reserved, do not use … F_H Reserved, do not use
0	31:16	r	**Reserved** Read as 0, shall be written with 0.

GTM_ADCTRIGiOUT1 (i=4)

ADC Trigger i Output Select 1 Register (09FE44$_H$+i*8) Application Reset Value: 0000 0000$_H$



Field	Bits	Type	Description
SELx (x=0-3)	4*x+3:4*x	rw	**Output Selection for GTM to ADCx connection** This bit field defines which TOM/ATOM channel output is used as ADCx+8 trigger i. 0_H No trigger 1_H Reserved, do not use … F_H Reserved, do not use
0	31:16	r	**Reserved** Read as 0, shall be written with 0.

26.3.7 SENT Connections

Note that the upper four lines [15:12] of the GTM to SENT connections (see Family Spec) are reserved in the TC33x. Since no EDSADC is implemented in the TC33x, the respective GTM trigger signals are not available for these SENT connections. The SENT connections are as following:

- SENT_TRIG[11:0]: ADC_TRIG0[11:0]
- SENT_TRIG[15:12]: reserved

26.3.8 GTM to CAN/TTCAN Connections

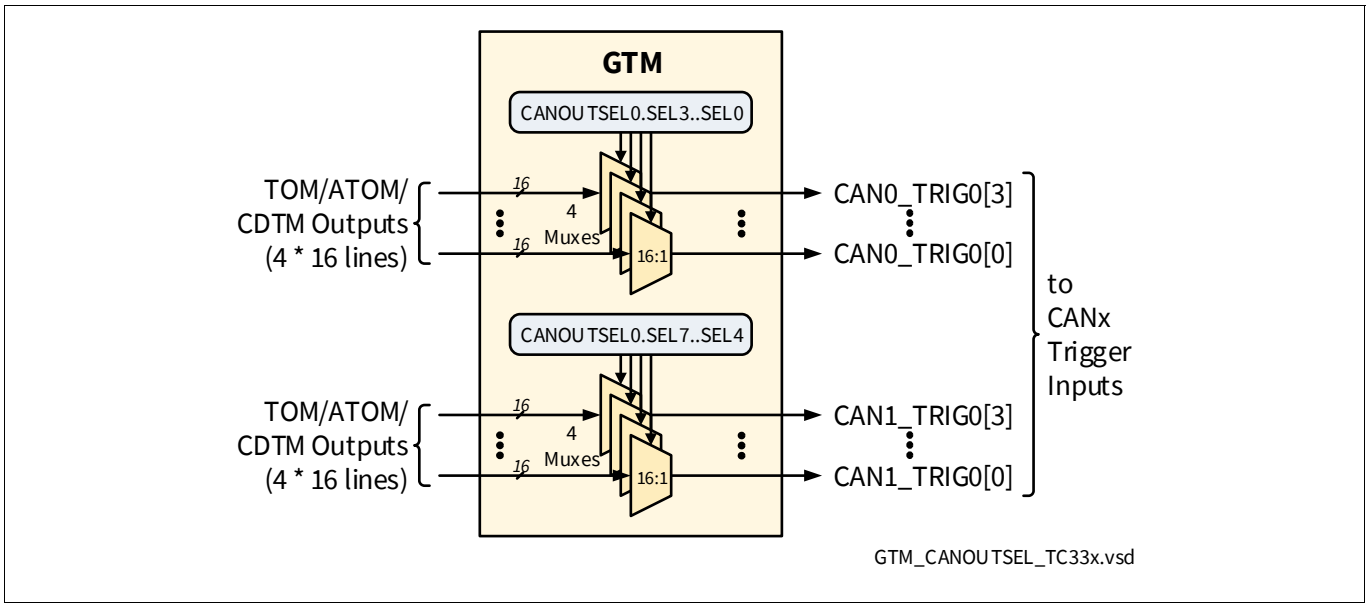


Figure 14 GTM to CAN/TTCAN Connections Overview

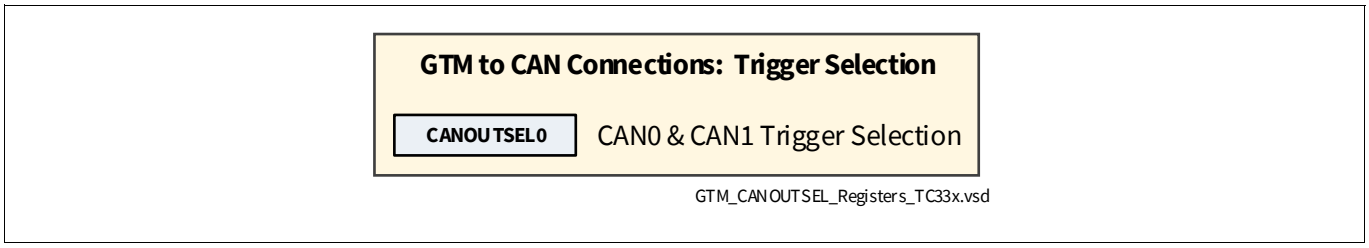


Figure 15 GTM to CAN/TTCAN Connections Registers Overview

CAN0/CAN1 Output Select Register

This register holds the selection for the trigger outputs to the CAN0/CAN1 modules. Bit fields SEL0..3 define the selection for triggers 0..3 for CAN0, while bit fields SEL4..7 define the selection for triggers 0..3 for CAN1.

GTM_CANOUTSEL0

CAN0/CAN1 Output Select Register (09FFDC$_H$) Application Reset Value: 0000 0000$_H$

31	30	29	28	27	26	25	24	23	22	21	20	19	18	17	16
SEL7				SEL6				SEL5				SEL4			
rw				rw				rw				rw			

15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
SEL3				SEL2				SEL1				SEL0			
rw				rw				rw				rw			

Field	Bits	Type	Description
SELx (x=0)	4*x+3:4*x	rw	**Output Selection for GTM to CAN connection x** This bit field defines which TOM/ATOM channel output is used as CAN0/CAN1 node trigger x. 0_H **CDTM1_DTM1_0, TOM1_4**, Dead-time output of TOM1, channel 4 1_H **CDTM1_DTM1_1, TOM1_5**, Dead-time output of TOM1, channel 5 2_H **TOM1_11**, Output of TOM1, channel 11 3_H **TOM1_12**, Output of TOM1, channel 12 4_H Reserved, do not use … 7_H Reserved, do not use 8_H **CDTM0_DTM1_2, TOM0_6**, Dead-time output of TOM0, channel 6 9_H **CDTM0_DTM1_3, TOM0_7**, Dead-time output of TOM0, channel 7 A_H **TOM0_13**, Output of TOM0, channel 13 B_H **TOM0_14**, Output of TOM0, channel 14 C_H **CDTM0_DTM5_0, ATOM0_4**, Dead-time output of ATOM0, channel 4 D_H **CDTM0_DTM5_1, ATOM0_5**, Dead-time output of ATOM0, channel 5 E_H **CDTM0_DTM5_2, ATOM0_6**, Dead-time output of ATOM0, channel 6 F_H **CDTM0_DTM5_3, ATOM0_7**, Dead-time output of ATOM0, channel 7
SELx (x=1)	4*x+3:4*x	rw	**Output Selection for GTM to CAN connection x** This bit field defines which TOM/ATOM channel output is used as CAN0/CAN1 node trigger x. 0_H **CDTM1_DTM1_0, TOM1_4**, Dead-time output of TOM1, channel 4 1_H **CDTM1_DTM1_1, TOM1_5**, Dead-time output of TOM1, channel 5 2_H **TOM1_11**, Output of TOM1, channel 11 3_H **TOM1_12**, Output of TOM1, channel 12 4_H Reserved, do not use … 7_H Reserved, do not use 8_H **CDTM1_DTM1_2, TOM1_6**, Dead-time output of TOM1, channel 6 9_H **CDTM1_DTM1_3, TOM1_7**, Dead-time output of TOM1, channel 7 A_H **TOM1_13**, Output of TOM1, channel 13 B_H **TOM1_14**, Output of TOM1, channel 14 C_H Reserved, do not use … F_H Reserved, do not use

Field	Bits	Type	Description
SELx (x=2-3)	4*x+3:4*x	rw	**Output Selection for GTM to CAN connection x** This bit field defines which TOM/ATOM channel output is used as CAN0/CAN1 node trigger x. 0_H **CDTM1_DTM1_0, TOM1_4**, Dead-time output of TOM1, channel 4 1_H **CDTM1_DTM1_1, TOM1_5**, Dead-time output of TOM1, channel 5 2_H **TOM1_11**, Output of TOM1, channel 11 3_H **TOM1_12**, Output of TOM1, channel 12 4_H Reserved, do not use … F_H Reserved, do not use
SELx (x=4-5)	4*x+3:4*x	rw	**Output Selection for GTM to CAN connection x** This bit field defines which TOM/ATOM channel output is used as CAN0/CAN1 node trigger x. 0_H **CDTM1_DTM1_0, TOM1_4**, Dead-time output of TOM1, channel 4 1_H **CDTM1_DTM1_1, TOM1_5**, Dead-time output of TOM1, channel 5 2_H **TOM1_11**, Output of TOM1, channel 11 3_H **TOM1_12**, Output of TOM1, channel 12 4_H Reserved, do not use … F_H Reserved, do not use
SELx (x=6-7)	4*x+3:4*x	rw	**Output Selection for GTM to CAN connection x** This bit field defines which TOM/ATOM channel output is used as CAN0/CAN1 node trigger x. 0_H **CDTM1_DTM1_0, TOM1_4**, Dead-time output of TOM1, channel 4 1_H **CDTM1_DTM1_1, TOM1_5**, Dead-time output of TOM1, channel 5 2_H **TOM1_11**, Output of TOM1, channel 11 3_H **TOM1_12**, Output of TOM1, channel 12 4_H Reserved, do not use … F_H Reserved, do not use

26.3.9 GTM to LCDCDC Connection

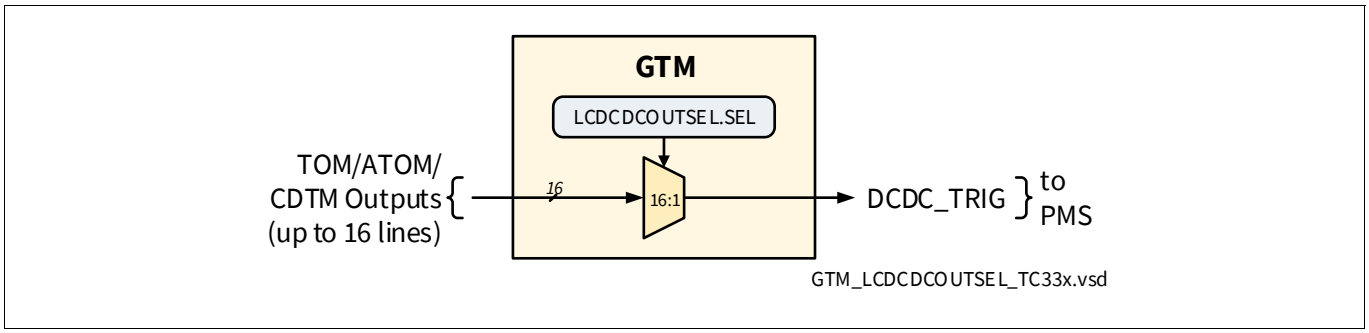


Figure 16 GTM to LCDCDC Connections Overview

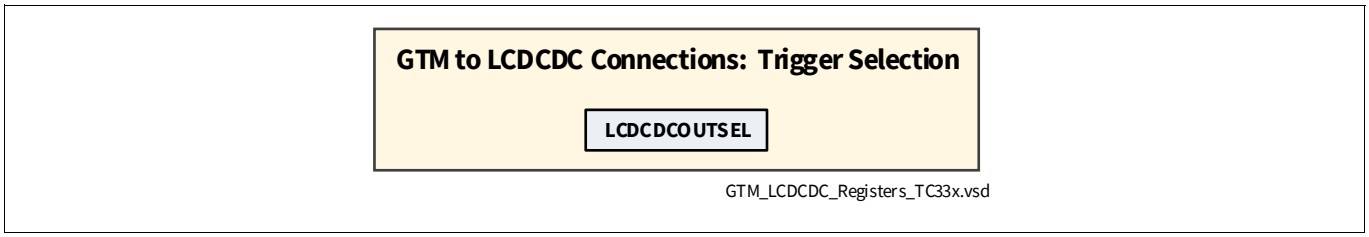


Figure 17 GTM to LCDCDC Connections Registers Overview

LCDCDC Output Select Register

GTM_LCDCDCOUTSEL
LCDCDC Output Select Register (09FFD4$_H$) Application Reset Value: 0000 0000$_H$

31	30	29	28	27	26	25	24	23	22	21	20	19	18	17	16
0															
r															

15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
0												SEL			
r												rw			

Field	Bits	Type	Description
SEL	3:0	rw	**Output Selection for GTM to LCDCDC connection** This bit field defines which TOM/ATOM channel output is used as LCDCDC signal. 0_H No trigger 1_H **CDTM0_DTM4_1, ATOM0_1**, Dead-time output of ATOM0, channel 1 2_H Reserved, do not use … 5_H Reserved, do not use 6_H **CDTM0_DTM0_1, TOM0_1**, Dead-time output of TOM0, channel 1 7_H **CDTM1_DTM0_1, TOM1_1**, Dead-time output of TOM1, channel 1 8_H Reserved, do not use … F_H Reserved, do not use
0	31:4	r	**Reserved** Read as 0, shall be written with 0.

26.3.10 Special to TC33x

OCDS Trigger Set Select Register

Note: OCS.SUSSTA is set to 1 (module is suspended) up to 2 gtm_clk cycles earlier before GTM changes into soft suspend mode.

GTM_OTSS
OCDS Trigger Set Select Register **($09FD28_H$)** **Debug Reset Value: $0000\ 0000_H$**

31	30	29	28	27	26	25	24	23	22	21	20	19	18	17	16
0				**OTGBM1**				**0**				**OTGBM0**			
r				rw				r				rw			

15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
0				**OTGB1**				**0**				**OTGB0**			
r				rw				r				rw			

Field	Bits	Type	Description
OTGB0	3:0	rw	**Trigger Set for OTGB0** 0_H No Trigger Set selected 1_H Trigger Set TS16_IOS **others**, reserved
OTGB1	11:8	rw	**Trigger Set for OTGB1** 0_H No Trigger Set selected 1_H Trigger Set TS16_IOS **others**, reserved

Field	Bits	Type	Description
OTGBM0	19:16	rw	**Trigger Set for OTGBM0** 0_H No Trigger Set selected 5_H Trigger Set TS32_ARU 6_H Trigger Set TS32_TTB0 7_H Trigger Set TS32_TTB1 8_H Trigger Set TS32_TTB2 **others**, Reserved
OTGBM1	27:24	rw	**Trigger Set for OTGBM1** 0_H No Trigger Set selected No Trigger Set selected 5_H Trigger Set TS32_ARU **others**, Reserved
0	7:4, 15:12, 23:20, 31:28	r	**Reserved** Read as 0, shall be written with 0.

26.4 ARU Write Address Overview

The ARU write address map for the TC33x is specified in the following table.

Table 211 ARU Write Addresses

GTM Data Source	ARU Address
ARU_ACCESS	0x000
TIM0_WRADDR[0..7]	0x001..0x008
TIM1_WRADDR[0..7]	0x009..0x010
unused	0x011..0x060
BRC_WRADDR[0..21]	0x061..0x076
unused	0x077..0x11E
ATOM0_WRADDR[0..7]	0x11F..0x126
unused	0x127..0x1FD
ARU_EMPTY_ADDR	0x1FE
ARU_FULL_ADDR	0x1FF

26.5 ARU Port Partitioning

All GTM sub-modules which are reading from ARU can be connected to one of two ARU read ports. Therefore, it can be read from two different ARU addresses in parallel.

Table 212 GTM ARU Partitioning

Modules	ARU-0 port	ARU-1 port
ATOM0	X	
BRC	X	

26.6 ARU Read ID

Each ARU connected data destination is defined by a combination of ARU port (ARU0 or ARU1) and an ARU read ID. The two ARU counter are addressing two ARU read IDs in parallel. Depending on the ARU mode, both counter may have different values at different point in time (i.e. in dynamic routing mode). The maximum ARU round-trip time is determined by the value of the last ARU read ID. The following table describes the detailed addressing of GTM sub-modules by ARU read IDs.

The following table shows the ARU read IDs for TC33x silicon. The unused IDs are marked with “-”.

Table 213 GTM Read IDs for TC33x

ARU read ID (dec)	ARU0	ARU1		GTM read ID (dec)	ARU0	ARU1
0	reserved	reserved		64	-	-
1	**ARU0**	**ARU1**		65	-	-
2	**BRC** channel 0	-		66	-	-

Table 213 GTM Read IDs for TC33x (cont'd)

ARU read ID (dec)	ARU0	ARU1		GTM read ID (dec)	ARU0	ARU1
3	-	-		67	-	-
4	BRC channel 1	-		68	-	-
5	-	-		69	-	-
6	BRC channel 2	-		70	-	-
7	-	-		71	-	-
8	BRC channel 3	-		72	-	-
9	-	-		73	-	-
10	BRC channel 4	-		74	-	-
11	-	-		75	-	-
12	BRC channel 5	-		76	-	-
13	-	-		77	-	-
14	BRC channel 6	-		78	-	-
15	-	-		79	-	-
16	BRC channel 7	-		80	-	-
17	-	-		81	-	-
18	BRC channel 8	-		82	-	-
19	-	-		83	-	-
20	BRC channel 9	-		84	-	-
21	-	-		85	-	-
22	BRC channel 10	-		86	-	-
23	-	-		87	-	-
24	BRC channel 11	-		88	-	-
25	-	-		89	-	-
26	**ATOM0** channel 0	-		90	-	-
27	-	-		91	-	-
28	ATOM0 channel 1	-		92	-	-
29	-	-		93	-	-
30	ATOM0 channel 2	-		94	-	-
31	-	-		95	-	-
32	ATOM0 channel 3	-		96	-	-
33	-	-		97	-	-
34	ATOM0 channel 4	-		98	-	-
35	-	-		99	-	-
36	ATOM0 channel 5	-		100	-	-
37	-	-		101	-	-
38	ATOM0 channel 6	-		102	-	-
39	-	-		103	-	-

Table 213 GTM Read IDs for TC33x (cont'd)

ARU read ID (dec)	ARU0	ARU1		GTM read ID (dec)	ARU0	ARU1
40	ATOM0 channel 7	-		104	-	-
41	-	-		105	-	-
42	-	-		106	-	-
43	-	-		107	-	-
44	-	-		108	-	-
45	-	-		109	-	-
46	-	-		110	-	-
47	-	-		111	-	-
48	-	-		112	-	-
49	-	-		113	-	-
50	-	-		114	-	-
51	-	-		115	-	-
52	-	-		116	-	-
53	-	-		117	-	-
54	-	-		118	-	-
55	-	-		119	-	-
56	-	-		120	-	-
57	-	-		121	-	-
58	-	-		122	-	-
59	-	-		123	-	-
60	-	-		124	-	-
61	-	-		125	-	-
62	-	-		126	-	-
63	-	-		127	-	-

26.7 Revision History

Table 214 Revision History

Reference	Change to Previous Version	Comment
V2.2.10		
	Initial release	
V2.2.11		
Page 28, Page 29	Added missing registers GTM_ICM_IRQG_CLS_k_MEI, GTM_ICM_IRQG_ATOM_k_CI	
Table 208	Added package information to TOUTy table	
V2.2.12		
	Changes as device has no MCS, no DPLL and only limited CMM settings.	
V2.2.13		
	Changed setup 1:1 Clocking feasible, but 100MHz is full speed. Changed interface to reduce access time.	
	Changed T6OFL mapping within TIMINSEL register.	
V2.2.15		
	Remarks inside OCDS Registers, concerning status, if TBU channel 3, DPLL or MCS do not exist on a device.	
	CCMi_HW_CONF gets proper bit decriptions, as constants have been all 0x0.	
V2.2.18		
	IRQ_NOTIFY registers: Remark, that due to bit property rw, these registers have to be written to reset.	
	DTMAUXINSEL: Corrected. Non existing sideband signals and pins are out of this list.	
	CANOUTSEL corrected to be matching with design.	
V2.2.19		
	CCMi_CFG registers completely listed	
	CMU_CLK_z_CTRL registers completely listed	
V2.2.20		
	Changes have no impact on this document.	
V2.2.21		
	Changes have no impact on this document.	
V2.2.22		
	Changes have no impact on this document.	
V2.2.23		
	EVADC connections corrected, as only 0, 1, 8 and 9 exist on EVADC side	
	The overview inside appendix shows slow speed clusters only. Correction 200MHz clusters are allowed and configurable.	
V2.2.24		

Table 214 Revision History (cont'd)

Reference	Change to Previous Version	Comment
	TOUT package options corrected.	
	EVADC connections differently written, to avoid confusion.	

27 Capture/Compare Unit 6 (CCU6)

This chapter describes the specific properties of the product TC33x/TC32x, which is a member of the product family TC3XX.

The functionality of the CCU6 is described in the TC3XX family documentation. The complete product description consists of the family documentation and this product-specific appendix.

27.1 TC33x/TC32x Specific Register Set

Table 215 Register Address Space - CCU6

Module	Base Address	End Address	Note
CCU60	$F0002A00_H$	$F0002AFF_H$	FPI slave interface
CCU61	$F0002B00_H$	$F0002BFF_H$	FPI slave interface

Note: Register MOSEL controls the trigger signals from both CCU6 kernels (CCU60 and CCU61) of the CCU6 module, and is only available in the address space of kernel CCU60.

Register Overview Tables of CCU6

Table 216 Register Overview - CCU60 (ascending Offset Address)

Short Name	Long Name	Offset Address	Access Mode		Reset	Page Number
			Read	Write		
CCU60_CLC	Clock Control Register	0000_H	U,SV	SV,E,P	Application Reset	See Family Spec
CCU60_MCFG	Module Configuration Register	0004_H	U,SV	U,SV,P	See Family Spec	See Family Spec
CCU60_ID	Module Identification Register	0008_H	U,SV	BE	See Family Spec	See Family Spec
CCU60_MOSEL	CCU60 Module Output Select Register	$000C_H$	U,SV	U,SV,P	Application Reset	See Family Spec
CCU60_PISEL0	Port Input Select Register 0	0010_H	U,SV	U,SV,P	Application Reset	See Family Spec
CCU60_PISEL2	Port Input Select Register 2	0014_H	U,SV	U,SV,P	Application Reset	See Family Spec
CCU60_KSCSR	Kernel State Control Sensitivity Register	$001C_H$	U,SV	U,SV,P,OEN	See Family Spec	See Family Spec
CCU60_T12	Timer T12 Counter Register	0020_H	U,SV	U,SV,P	Application Reset	See Family Spec

Table 216 Register Overview - CCU60 (ascending Offset Address) (cont'd)

Short Name	Long Name	Offset Address	Access Mode		Reset	Page Number
			Read	Write		
CCU60_T12PR	Timer 12 Period Register	0024_H	U,SV	U,SV,P	Application Reset	See Family Spec
CCU60_T12DTC	Dead-Time Control Register for Timer12	0028_H	U,SV	U,SV,P	Application Reset	See Family Spec
CCU60_CC6xR (x=0-2)	Capture/Compare Register for Channel CC6x	0030_H+x *4	U,SV	U,SV,P	Application Reset	See Family Spec
CCU60_CC6xSR (x=0-2)	Capture/Compare Shadow Reg. for Channel CC6x	0040_H+x *4	U,SV	U,SV,P	Application Reset	See Family Spec
CCU60_T13	Timer T13 Counter Register	0050_H	U,SV	U,SV,P	Application Reset	See Family Spec
CCU60_T13PR	Timer 13 Period Register	0054_H	U,SV	U,SV,P	Application Reset	See Family Spec
CCU60_CC63R	Compare Register for T13	0058_H	U,SV	U,SV,P	Application Reset	See Family Spec
CCU60_CC63SR	Compare Shadow Register for T13	$005C_H$	U,SV	U,SV,P	Application Reset	See Family Spec
CCU60_CMPSTAT	Compare State Register	0060_H	U,SV	U,SV,P	Application Reset	See Family Spec
CCU60_CMPMODIF	Compare State Modification Register	0064_H	U,SV	U,SV,P	Application Reset	See Family Spec
CCU60_T12MSEL	T12 Mode Select Register	0068_H	U,SV	U,SV,P	Application Reset	See Family Spec
CCU60_TCTR0	Timer Control Register 0	0070_H	U,SV	U,SV,P	Application Reset	See Family Spec
CCU60_TCTR2	Timer Control Register 2	0074_H	U,SV	U,SV,P	Application Reset	See Family Spec
CCU60_TCTR4	Timer Control Register 4	0078_H	U,SV	U,SV,P	Application Reset	See Family Spec

Table 216 Register Overview - CCU60 (ascending Offset Address) (cont'd)

Short Name	Long Name	Offset Address	Access Mode		Reset	Page Number
			Read	Write		
CCU60_MODCTR	Modulation Control Register	0080_H	U,SV	U,SV,P	Application Reset	See Family Spec
CCU60_TRPCTR	Trap Control Register	0084_H	U,SV	U,SV,P	Application Reset	See Family Spec
CCU60_PSLR	Passive State Level Register	0088_H	U,SV	U,SV,P	Application Reset	See Family Spec
CCU60_MCMOUTS	Multi-Channel Mode Output Shadow Register	$008C_H$	U,SV	U,SV,P	Application Reset	See Family Spec
CCU60_MCMOUT	Multi-Channel Mode Output Register	0090_H	U,SV	U,SV,P	Application Reset	See Family Spec
CCU60_MCMCTR	Multi-Channel Mode Control Register	0094_H	U,SV	U,SV,P	Application Reset	See Family Spec
CCU60_IMON	Input Monitoring Register	0098_H	U,SV	U,SV,P	Application Reset	See Family Spec
CCU60_LI	Lost Indicator Register	$009C_H$	U,SV	U,SV,P	Application Reset	See Family Spec
CCU60_IS	Interrupt Status Register	$00A0_H$	U,SV	U,SV,P	Application Reset	See Family Spec
CCU60_ISS	Interrupt Status Set Register	$00A4_H$	U,SV	U,SV,P	Application Reset	See Family Spec
CCU60_ISR	Interrupt Status Reset Register	$00A8_H$	U,SV	U,SV,P	Application Reset	See Family Spec
CCU60_INP	Interrupt Node Pointer Register	$00AC_H$	U,SV	U,SV,P	Application Reset	See Family Spec
CCU60_IEN	Interrupt Enable Register	$00B0_H$	U,SV	U,SV,P	Application Reset	See Family Spec
CCU60_OCS	OCDS Control and Status Register	$00E8_H$	U,SV	SV,P,OEN	See Family Spec	See Family Spec

Table 216 Register Overview - CCU60 (ascending Offset Address) (cont'd)

Short Name	Long Name	Offset Address	Access Mode		Reset	Page Number
			Read	Write		
CCU60_KRSTCLR	Kernel Reset Status Clear Register	$00EC_H$	U,SV	SV,E,P	Application Reset	See Family Spec
CCU60_KRST1	Kernel Reset Register 1	$00F0_H$	U,SV	SV,E,P	Application Reset	See Family Spec
CCU60_KRST0	Kernel Reset Register 0	$00F4_H$	U,SV	SV,E,P	Application Reset	See Family Spec
CCU60_ACCEN0	Access Enable Register 0	$00FC_H$	U,SV	SV,SE	Application Reset	See Family Spec

Table 217 Register Overview - CCU61 (ascending Offset Address)

Short Name	Long Name	Offset Address	Access Mode		Reset	Page Number
			Read	Write		
CCU61_CLC	Clock Control Register	0000_H	U,SV	SV,E,P	Application Reset	See Family Spec
CCU61_MCFG	Module Configuration Register	0004_H	U,SV	U,SV,P	See Family Spec	See Family Spec
CCU61_ID	Module Identification Register	0008_H	U,SV	BE	See Family Spec	See Family Spec
CCU61_PISEL0	Port Input Select Register 0	0010_H	U,SV	U,SV,P	Application Reset	See Family Spec
CCU61_PISEL2	Port Input Select Register 2	0014_H	U,SV	U,SV,P	Application Reset	See Family Spec
CCU61_KSCSR	Kernel State Control Sensitivity Register	$001C_H$	U,SV	U,SV,P,OEN	See Family Spec	See Family Spec
CCU61_T12	Timer T12 Counter Register	0020_H	U,SV	U,SV,P	Application Reset	See Family Spec
CCU61_T12PR	Timer 12 Period Register	0024_H	U,SV	U,SV,P	Application Reset	See Family Spec

Table 217 Register Overview - CCU61 (ascending Offset Address) (cont'd)

Short Name	Long Name	Offset Address	Access Mode		Reset	Page Number
			Read	Write		
CCU61_T12DTC	Dead-Time Control Register for Timer12	0028_H	U,SV	U,SV,P	Application Reset	See Family Spec
CCU61_CC6xR (x=0-2)	Capture/Compare Register for Channel CC6x	0030_H+x *4	U,SV	U,SV,P	Application Reset	See Family Spec
CCU61_CC6xSR (x=0-2)	Capture/Compare Shadow Reg. for Channel CC6x	0040_H+x *4	U,SV	U,SV,P	Application Reset	See Family Spec
CCU61_T13	Timer T13 Counter Register	0050_H	U,SV	U,SV,P	Application Reset	See Family Spec
CCU61_T13PR	Timer 13 Period Register	0054_H	U,SV	U,SV,P	Application Reset	See Family Spec
CCU61_CC63R	Compare Register for T13	0058_H	U,SV	U,SV,P	Application Reset	See Family Spec
CCU61_CC63SR	Compare Shadow Register for T13	$005C_H$	U,SV	U,SV,P	Application Reset	See Family Spec
CCU61_CMPSTAT	Compare State Register	0060_H	U,SV	U,SV,P	Application Reset	See Family Spec
CCU61_CMPMODIF	Compare State Modification Register	0064_H	U,SV	U,SV,P	Application Reset	See Family Spec
CCU61_T12MSEL	T12 Mode Select Register	0068_H	U,SV	U,SV,P	Application Reset	See Family Spec
CCU61_TCTR0	Timer Control Register 0	0070_H	U,SV	U,SV,P	Application Reset	See Family Spec
CCU61_TCTR2	Timer Control Register 2	0074_H	U,SV	U,SV,P	Application Reset	See Family Spec
CCU61_TCTR4	Timer Control Register 4	0078_H	U,SV	U,SV,P	Application Reset	See Family Spec
CCU61_MODCTR	Modulation Control Register	0080_H	U,SV	U,SV,P	Application Reset	See Family Spec

Table 217 Register Overview - CCU61 (ascending Offset Address) (cont'd)

Short Name	Long Name	Offset Address	Access Mode		Reset	Page Number
			Read	Write		
CCU61_TRPCTR	Trap Control Register	0084_H	U,SV	U,SV,P	Application Reset	See Family Spec
CCU61_PSLR	Passive State Level Register	0088_H	U,SV	U,SV,P	Application Reset	See Family Spec
CCU61_MCMOUTS	Multi-Channel Mode Output Shadow Register	$008C_H$	U,SV	U,SV,P	Application Reset	See Family Spec
CCU61_MCMOUT	Multi-Channel Mode Output Register	0090_H	U,SV	U,SV,P	Application Reset	See Family Spec
CCU61_MCMCTR	Multi-Channel Mode Control Register	0094_H	U,SV	U,SV,P	Application Reset	See Family Spec
CCU61_IMON	Input Monitoring Register	0098_H	U,SV	U,SV,P	Application Reset	See Family Spec
CCU61_LI	Lost Indicator Register	$009C_H$	U,SV	U,SV,P	Application Reset	See Family Spec
CCU61_IS	Interrupt Status Register	$00A0_H$	U,SV	U,SV,P	Application Reset	See Family Spec
CCU61_ISS	Interrupt Status Set Register	$00A4_H$	U,SV	U,SV,P	Application Reset	See Family Spec
CCU61_ISR	Interrupt Status Reset Register	$00A8_H$	U,SV	U,SV,P	Application Reset	See Family Spec
CCU61_INP	Interrupt Node Pointer Register	$00AC_H$	U,SV	U,SV,P	Application Reset	See Family Spec
CCU61_IEN	Interrupt Enable Register	$00B0_H$	U,SV	U,SV,P	Application Reset	See Family Spec
CCU61_OCS	OCDS Control and Status Register	$00E8_H$	U,SV	SV,P,OEN	See Family Spec	See Family Spec
CCU61_KRSTCLR	Kernel Reset Status Clear Register	$00EC_H$	U,SV	SV,E,P	Application Reset	See Family Spec

Table 217 Register Overview - CCU61 (ascending Offset Address) (cont'd)

Short Name	Long Name	Offset Address	Access Mode		Reset	Page Number
			Read	Write		
CCU61_KRST1	Kernel Reset Register 1	$00F0_H$	U,SV	SV,E,P	Application Reset	See Family Spec
CCU61_KRST0	Kernel Reset Register 0	$00F4_H$	U,SV	SV,E,P	Application Reset	See Family Spec
CCU61_ACCEN0	Access Enable Register 0	$00FC_H$	U,SV	SV,SE	Application Reset	See Family Spec

27.2 TC33x/TC32x Specific Registers

No deviations from the Family Spec

27.3 Connectivity

Table 218 Connections of CCU60

Interface Signals	connects		Description
CCU60:CC60	to	IOM:MON1(2)	T12 PWM channel 60
		IOM:REF1(6)	
		P02.0:ALT(7)	
		P02.6:ALT(7)	
		P11.12:ALT(7)	
		P15.6:ALT(7)	
		P34.2:ALT(7)	
CCU60:CC61	to	IOM:MON1(1)	T12 PWM channel 61
		IOM:REF1(5)	
		P02.2:ALT(7)	
		P02.7:ALT(7)	
		P11.11:ALT(7)	
		P15.5:ALT(7)	
CCU60:CC62	to	IOM:MON1(0)	T12 PWM channel 62
		IOM:REF1(4)	
		P02.4:ALT(7)	
		P02.8:ALT(7)	
		P11.10:ALT(7)	
		P15.4:ALT(7)	
CCU60:CC60INA	from	P02.0:IN	T12 capture input 60
CCU60:CC61INA	from	P02.2:IN	T12 capture input 61
CCU60:CC62INA	from	P02.4:IN	T12 capture input 62

Table 218 Connections of CCU60 (cont'd)

Interface Signals	connects		Description
CCU60:CC60INB	from	P00.1:IN	T12 capture input 60
CCU60:CC61INB	from	P00.3:IN	T12 capture input 61
CCU60:CC62INB	from	P00.5:IN	T12 capture input 62
CCU60:CC60INC	from	P02.6:IN	T12 capture input 60
CCU60:CC61INC	from	P02.7:IN	T12 capture input 61
CCU60:CC62INC	from	P02.8:IN	T12 capture input 62
CCU60:CC60IND	from	PMS:pms_wut_underflow	T12 capture input 60
CCU60:CC62IND	from	SCU:E_PDOUT(4)	T12 capture input 62
CCU60:CCPOS0A	from	P02.6:IN	Hall capture input 0
CCU60:CCPOS1A	from	P02.7:IN	Hall capture input 1
CCU60:CCPOS2A	from	P02.8:IN	Hall capture input 2
CCU60:CCPOS0B	from	CCU61:SR(2)	Hall capture input 0
CCU60:CCPOS0C	from	P10.4:IN	Hall capture input 0
CCU60:CCPOS1C	from	P10.7:IN	Hall capture input 1
CCU60:CCPOS2C	from	P10.8:IN	Hall capture input 2
CCU60:CCPOS2D	from	P40.4:IN	Hall capture input 2
CCU60:COUT60	to	SCU:E_REQ0(1)	T12 PWM channel 60
		P02.1:ALT(7)	
		P11.9:ALT(7)	
		P15.7:ALT(7)	
		P34.3:ALT(7)	
		IOM:MON1(3)	
		IOM:REF1(3)	
CCU60:COUT61	to	IOM:MON1(4)	T12 PWM channel 61
		IOM:REF1(2)	
		P02.3:ALT(7)	
		P11.6:ALT(7)	
		P15.8:ALT(7)	
CCU60:COUT62	to	IOM:MON1(5)	T12 PWM channel 62
		IOM:REF1(1)	
		P02.5:ALT(7)	
		P11.3:ALT(7)	
		P14.0:ALT(7)	

Table 218 Connections of CCU60 (cont'd)

Interface Signals	connects		Description
CCU60:COUT63	to	IOM:MON1(6)	T13 PWM channel 63
		IOM:REF1(0)	
		P00.0:ALT(7)	
		P11.2:ALT(7)	
		P14.1:ALT(7)	
		P32.4:ALT(7)	
		P34.1:ALT(7)	
		PMS:dcdc_sync_ccu6	
CCU60:CTRAPA	from	P00.11:IN	Trap input capture
CCU60:CTRAPB	from	CCU60:WHE_N	Trap input capture
CCU60:CTRAPD	from	SCU:E_PDOUT(0)	Trap input capture
CCU60:SR(0)	to	HSM:EXT_INT(10)	Service request
CCU60:SR(1)	to	CCU60:T13HRH	Service request
CCU60:SR(2)	to	CCU61:CCPOS0B	Service request
		CCU61:T12HRG	
		CCU61:T13HRG	
CCU60:SR(3)	to	EVADC:G0REQTRA	Service request
		EVADC:G1REQTRA	
		EVADC:G8REQTRA	
		EVADC:G9REQTRA	
CCU60:T12HRA	from	SCU:scu_cctrig0	External timer start 12
CCU60:T13HRA	from	SCU:scu_cctrig0	External timer start 13
CCU60:T12HRB	from	P00.7:IN	External timer start 12
CCU60:T13HRB	from	P00.8:IN	External timer start 13
CCU60:T12HRC	from	P00.9:IN	External timer start 12
CCU60:T13HRC	from	P00.9:IN	External timer start 13
CCU60:T12HRD	from	GTM:CCU6_TRIG(0)	External timer start 12
CCU60:T13HRD	from	GTM:CCU6_TRIG(1)	External timer start 13
CCU60:T12HRE	from	P00.0:IN	External timer start 12
CCU60:T12HRF	from	GPT120:T6OFL	External timer start 12
CCU60:T13HRF	from	GPT120:T6OFL	External timer start 13
CCU60:T12HRG	from	CCU61:SR(2)	External timer start 12
CCU60:T13HRG	from	CCU61:SR(2)	External timer start 13
CCU60:T12HRH	from	SCU:E_PDOUT(0)	External timer start 12
CCU60:T13HRH	from	CCU60:SR(1)	External timer start 13

Table 218 Connections of CCU60 (cont'd)

Interface Signals	connects		Description
CCU60:TRIG(0)	to	EVADC:G0REQGTC	Output select trigger
		EVADC:G1REQGTC	
		EVADC:G8REQGTC	
		EVADC:G9REQGTC	
CCU60:TRIG(1)	to	EVADC:G0REQGTD	Output select trigger
		EVADC:G1REQGTD	
		EVADC:G8REQGTD	
		EVADC:G9REQGTD	
CCU60:TRIG(2)	to	EVADC:G0REQGTE	Output select trigger
		EVADC:G1REQGTE	
		EVADC:G8REQGTE	
		EVADC:G9REQGTE	
CCU60:WHE_N	to	CCU60:CTRAPB	Set wrong hall event negative

Table 219 Connections of CCU61

Interface Signals	connects		Description
CCU61:CC60	to	IOM:MON1(8)	T12 PWM channel 60
		IOM:REF1(13)	
		P00.1:ALT(7)	
		P00.7:ALT(7)	
		P20.8:ALT(7)	
CCU61:CC61	to	IOM:MON1(9)	T12 PWM channel 61
		IOM:REF1(12)	
		P00.3:ALT(7)	
		P00.8:ALT(7)	
		P20.9:ALT(7)	
		P33.11:ALT(7)	
CCU61:CC62	to	IOM:MON1(10)	T12 PWM channel 62
		IOM:REF1(11)	
		P00.5:ALT(7)	
		P00.9:ALT(7)	
		P20.10:ALT(7)	
		P33.9:ALT(7)	
CCU61:CC60INA	from	P00.1:IN	T12 capture input 60
CCU61:CC61INA	from	P00.3:IN	T12 capture input 61
CCU61:CC62INA	from	P00.5:IN	T12 capture input 62
CCU61:CC60INB	from	P02.0:IN	T12 capture input 60
CCU61:CC61INB	from	P02.2:IN	T12 capture input 61

Table 219 Connections of CCU61 (cont'd)

Interface Signals	connects		Description
CCU61:CC62INB	from	P02.4:IN	T12 capture input 62
CCU61:CC60INC	from	P00.7:IN	T12 capture input 60
CCU61:CC61INC	from	P00.8:IN	T12 capture input 61
CCU61:CC62INC	from	P00.9:IN	T12 capture input 62
CCU61:CC60IND	from	PMS:pms_wut_underflow	T12 capture input 60
CCU61:CC61IND	from	CAN0:INT(12)	T12 capture input 61
CCU61:CC62IND	from	SCU:E_PDOUT(5)	T12 capture input 62
CCU61:CCPOS0A	from	P00.7:IN	Hall capture input 0
CCU61:CCPOS1A	from	P00.8:IN	Hall capture input 1
CCU61:CCPOS2A	from	P00.9:IN	Hall capture input 2
CCU61:CCPOS0B	from	CCU60:SR(2)	Hall capture input 0
CCU61:CCPOS1B	from	P40.6:IN	Hall capture input 1
CCU61:CCPOS2B	from	P40.8:IN	Hall capture input 2
CCU61:CCPOS0C	from	P33.7:IN	Hall capture input 0
CCU61:CCPOS1C	from	P33.6:IN	Hall capture input 1
CCU61:CCPOS2C	from	P33.5:IN	Hall capture input 2
CCU61:CCPOS0D	from	P40.5:IN	Hall capture input 0
CCU61:CCPOS1D	from	P40.7:IN	Hall capture input 1
CCU61:CCPOS2D	from	P40.9:IN	Hall capture input 2
CCU61:COUT60	to	SCU:E_REQ1(1)	T12 PWM channel 60
		IOM:MON1(11)	
		IOM:REF1(10)	
		P00.2:ALT(7)	
		P20.11:ALT(7)	
		P33.12:ALT(7)	
CCU61:COUT61	to	IOM:MON1(12)	T12 PWM channel 61
		IOM:REF1(9)	
		P00.4:ALT(7)	
		P20.12:ALT(7)	
		P33.10:ALT(7)	
CCU61:COUT62	to	IOM:MON1(13)	T12 PWM channel 62
		IOM:REF1(8)	
		P00.6:ALT(7)	
		P20.13:ALT(7)	
		P33.8:ALT(7)	

Table 219 Connections of CCU61 (cont'd)

Interface Signals	connects		Description
CCU61:COUT63	to	IOM:MON1(7)	T13 PWM channel 63
		IOM:REF1(7)	
		P00.10:ALT(7)	
		P00.12:ALT(7)	
		P20.7:ALT(7)	
CCU61:CTRAPA	from	P00.0:IN	Trap input capture
CCU61:CTRAPB	from	CCU61:WHE_N	Trap input capture
CCU61:CTRAPC	from	P33.4:IN	Trap input capture
CCU61:CTRAPD	from	SCU:E_PDOUT(1)	Trap input capture
CCU61:SR(0)	to	HSM:EXT_INT(11)	Service request
CCU61:SR(1)	to	CCU61:T13HRH	Service request
CCU61:SR(2)	to	CCU60:CCPOS0B	Service request
		CCU60:T12HRG	
		CCU60:T13HRG	
CCU61:SR(3)	to	EVADC:G0REQTRB	Service request
		EVADC:G1REQTRB	
		EVADC:G8REQTRB	
		EVADC:G9REQTRB	
CCU61:T12HRA	from	SCU:scu_cctrig0	External timer start 12
CCU61:T13HRA	from	SCU:scu_cctrig0	External timer start 13
CCU61:T12HRB	from	P02.6:IN	External timer start 12
CCU61:T13HRB	from	P02.7:IN	External timer start 13
CCU61:T12HRC	from	P02.8:IN	External timer start 12
CCU61:T13HRC	from	P02.8:IN	External timer start 13
CCU61:T12HRD	from	GTM:CCU6_TRIG(2)	External timer start 12
CCU61:T13HRD	from	GTM:CCU6_TRIG(3)	External timer start 13
CCU61:T12HRE	from	P00.11:IN	External timer start 12
CCU61:T13HRE	from	CAN0:INT(15)	External timer start 13
CCU61:T12HRF	from	GPT120:T6OFL	External timer start 12
CCU61:T13HRF	from	GPT120:T6OFL	External timer start 13
CCU61:T12HRG	from	CCU60:SR(2)	External timer start 12
CCU61:T13HRG	from	CCU60:SR(2)	External timer start 13
CCU61:T12HRH	from	SCU:E_PDOUT(1)	External timer start 12
CCU61:T13HRH	from	CCU61:SR(1)	External timer start 13
CCU61:WHE_N	to	CCU61:CTRAPB	Set wrong hall event negative

27.4 Revision History

Table 220 Revision History

Reference	Change to Previous Version	Comment
V3.0.0		
	Initial release.	

28 General Purpose Timer Unit (GPT12)

This chapter describes the specific properties of the product TC33x/TC32x,
which is a member of the product family TC3XX.

The functionality of the GPT12 is described in the TC3XX family documentation. The complete product description consists of the family documentation and this product-specific appendix.

28.1 TC33x/TC32x Specific Register Set

Table 221 Register Address Space - GPT12

Module	Base Address	End Address	Note
GPT120	$F0001800_H$	$F00018FF_H$	FPI slave interface

Register Overview Table

See corresponding AURIX™ TC3xx Platform family specification.

28.2 TC33x/TC32x Specific Registers

No deviations from the Family Spec

28.3 Connectivity

Table 222 Connections of GPT120

Interface Signals	connects		Description
GPT120:CAPINA	from	P13.2:IN	Trigger input to capture value of timer T5 into CAPREL register
GPT120:CAPINB	from	SCU:E_PDOUT(6)	Trigger input to capture value of timer T5 into CAPREL register
GPT120:T2EUDA	from	P00.8:IN	Count direction control input of timer T2
GPT120:T3EUDA	from	P02.7:IN	Count direction control input of core timer T3
GPT120:T4EUDA	from	P00.9:IN	Count direction control input of timer T4
GPT120:T5EUDA	from	P21.6:IN	Count direction control input of timer T5
GPT120:T6EUDA	from	P20.0:IN	Count direction control input of core timer T6
GPT120:T2EUDB	from	P33.6:IN	Count direction control input of timer T2
GPT120:T3EUDB	from	P10.7:IN	Count direction control input of core timer T3
GPT120:T4EUDB	from	P33.5:IN	Count direction control input of timer T4
GPT120:T5EUDB	from	P10.1:IN	Count direction control input of timer T5
GPT120:T6EUDB	from	P10.0:IN	Count direction control input of core timer T6
GPT120:T2INA	from	P00.7:IN	Trigger/gate input of timer T2
GPT120:T3INA	from	P02.6:IN	Trigger/gate input of core timer T3
GPT120:T4INA	from	P02.8:IN	Trigger/gate input of timer T4
GPT120:T5INA	from	P21.7:IN	Trigger/gate input of timer T5
GPT120:T6INA	from	P20.3:IN	Trigger/gate input of core timer T6
GPT120:T2INB	from	P33.7:IN	Trigger/gate input of timer T2
GPT120:T3INB	from	P10.4:IN	Trigger/gate input of core timer T3
GPT120:T4INB	from	P10.8:IN	Trigger/gate input of timer T4
GPT120:T5INB	from	P10.3:IN	Trigger/gate input of timer T5
GPT120:T6INB	from	P10.2:IN	Trigger/gate input of core timer T6
GPT120:T3INC	from	SCU:E_PDOUT(4)	Trigger/gate input of core timer T3
GPT120:T3IND	from	GPT120:T6OFL	Trigger/gate input of core timer T3
GPT120:T4IND	from	GPT120:T6OFL	Trigger/gate input of timer T4
GPT120:T6OFL	to	CCU60:T12HRF	Overflow/underflow signal of timer T6
		CCU60:T13HRF	
		CCU61:T12HRF	
		CCU61:T13HRF	
		GPT120:T4IND	
		GPT120:T3IND	
		GTM:TIM0_IN4(10)	
		GTM:TIM0_IN5(10)	

Table 222 Connections of GPT120 (cont'd)

Interface Signals	connects		Description
GPT120:T3OUT	to	SCU:E_REQ4(2)	External output for overflow/underflow detection of core timer T3
		P10.6:ALT(4)	
		P21.6:ALT(7)	
GPT120:T6OUT	to	SCU:E_REQ5(2)	External output for overflow/underflow detection of core timer T6
		P10.5:ALT(5)	
		P21.7:ALT(7)	
GPT120:CIRQ_INT	to	INT:gpt120.CIRQ_INT	GPT120 CAPREL Service Request
GPT120:T2_INT	to	INT:gpt120.T2_INT	GPT120 T2 Overflow/Underflow Service Request
GPT120:T3_INT	to	INT:gpt120.T3_INT	GPT120 T3 Overflow/Underflow Service Request
GPT120:T4_INT	to	INT:gpt120.T4_INT	GPT120 T4 Overflow/Underflow Service Request
GPT120:T5_INT	to	INT:gpt120.T5_INT	GPT120 T5 Overflow/Underflow Service Request
GPT120:T6_INT	to	INT:gpt120.T6_INT	GPT120 T6 Overflow/Underflow Service Request

28.4 Revision History

Table 223 Revision History

Reference	Change to Previous Version	Comment
V3.0.0		
–	Initial version.	
V3.0.1		
–	No functional changes.	–
V3.0.2		
	No functional changes.	

29 Converter Control Block (CONVCTRL)

This chapter describes the specific properties of the product TC33x/TC32x,
which is a member of the product family TC3xx.

The functionality of the CONVCTRL is described in the TC3xx family documentation. The complete product description consists of the family documentation and this product-specific appendix.

29.1 TC33x/TC32x-Specific IP Configuration

The functional description describes the features and operating modes of the converter control block in a general way. This section summarizes the configuration that is available in a specific product.

Table 224 TC33x/TC32x specific configuration of CONVERTER

Parameter	CONVCTRL
FPI base address	$F0025000_H$
FPI address range	100_H
Application Reset and Kernel Reset	Application Reset
Name of the config sector value	CFS Value
CFS value for register VRCFG	$000000C3_H$

29.2 TC33x/TC32x Specific Register Set

Table 225 Register Address Space - CONVERTER

Module	Base Address	End Address	Note
CONVCTRL	$F0025000_H$	$F00250FF_H$	FPI slave interface

Register Overview Table

See main family chapter.

29.3 TC33x/TC32x Specific Registers

No deviations from the Family Spec

29.4 Connectivity

The CONVCTRL is connected to its environment through a number of input and output signals.

Table 226 Digital Connections for Product TC33x/TC32x

Signal	Dir.	Source/Destin.	Description
General			
PHSYNC	O	EVADC	Synchronization signal for analog clocks
CC_ALARM	O	SMU	Alarm signal from safety logic

Table 227 List of CONVERTER Interface Signals

Interface Signals	I/O	Description
PHSYNC	out	**Phase synchronization signal**
CC_ALARM	out	**Safety Alarm Signal**

29.5 Revision History

Table 228 Revision History for the Appendix

Reference	Change to Previous Version	Comment
V3.0.0		
	Initial version of TC33X.	
V3.0.1		
Page 2	EDSADC removed from digital connections table because TC33x/TC32x has no EDSADC.	

30 Enhanced Versatile Analog-to-Digital Converter (EVADC)

This chapter describes the specific properties of the product TC33x/TC32x,
which is a member of the product family TC3XX.

The functionality of the EVADC is described in the TC3XX family documentation. The complete product description consists of the family documentation and this product-specific appendix.

30.1 TC33x/TC32x-Specific IP Configuration

The functional description describes the features and operating modes of the A/D Converters in a general way. This section summarizes the configuration that is available in a specific product.

Each converter group is equipped with a separate analog converter module and a dedicated analog input multiplexer.

Table 229 General Converter Configuration TC33x/TC32x

Converter Group	Input Channels	Converter Cluster	Common Service Req. Group	Associated Standard Reference Pins
Primary Groups				
G0	CH0 … CH7	Primary	C0	V_{AREF1}, V_{AGND1}
G1	CH0 … CH7	Primary	C1	V_{AREF1}, V_{AGND1}
Secondary Groups				
G8	CH0 … CH15	Secondary	C0	V_{AREF1}, V_{AGND1}
G9	CH0 … CH15	Secondary	C1	V_{AREF1}, V_{AGND1}

Synchronization Groups

Both converter kernels can be connected to synchronization groups to achieve parallel conversion of several input channels.

Not all channels can be synchronized to each other, but certain groups can be formed.

Table 230 summarizes which kernels can be synchronized for parallel conversions.

Table 230 Synchronization Groups

ADC Kernel	Synchr. Group	Master selected by control input CIx[1]			
		CI0[2]	CI1	CI2	CI3
G0 (Prim.)	A	G0	G1	G8	G9
G1 (Prim.)	A	G1	G0	G8	G9
G8 (Sec.)	A	G8	G9	G0	G1
G9 (Sec.)	A	G9	G8	G0	G1

1) The control input is selected by bitfield STSEL in register GxSYNCTR.
Select the corresponding ready inputs accordingly by bits EVALRx.

2) Control input CI0 always selects the own control signals of the corresponding ADC kernel. This selection is meant for the synchronization master or for stand-alone operation.

Table 231 TC33x/TC32x specific configuration of EVADC

Parameter	EVADC
Number of available primary groups	2
Number of available secondary groups	2
Number of available Fast Compare channels	0
FPI base address	$F0020000_H$
FPI address range	4000_H

30.2 TC33x/TC32x Specific Register Set

Table 232 Register Address Space - EVADC

Module	Base Address	End Address	Note
EVADC	$F0020000_H$	$F0023FFF_H$	FPI slave interface

Register Overview Table

See main family chapter.

30.3 Connectivity

The EVADC is connected to its environment through a number of analog input signals and also digital input and output signals. These connections establish communication with other peripherals, with the system blocks, and with external components. The following tables list:

- **Analog Module Connections**
- **Digital Module Connections**

30.3.1 Analog Module Connections

The EVADC module accepts a number of analog input signals. The analog input multiplexers select the input channels to be converted from the signals available in this product.

Note: If an analog input channel is connected to an I/O port pin, make sure the output driver and/or pull devices and/or the digital input path are disabled during normal operation (Px_PDISC.PDISy = 1). For diagnostic functions (MD, PDD) ports must be configured differently (see family description).

The exact number of analog input channels and the available connection to port pins depend on the employed product type and package (refer to **Table 229** and to the corresponding Data Sheets).

A summary of channels can be found in the table below.

Special Markings

- Input channels marked “PDD” provide a pull-down device for pull-down diagnostics.
- Input channels marked “MD” can activate the pullup and pulldown devices for multiplexer diagnostics.
- Input channels marked “AL” cannot select the input thresholds (via the Port Driver mode Registers) and, therefore, the strength of pullup and pulldown devices. These inputs are fixed to automotive levels.
- Input channels marked “AltRef” can be selected as an alternate reference voltage for conversions on channels of the same group.
- Input channels marked “FixRef” cannot select an alternate reference voltage, but only the corresponding standard reference voltage.

Table 233 Analog Input Connections for Product TC33x/TC32x

Signal	Source	Overlay	Description
Reference Inputs			
V_{AREF}	VAREF1	-	positive analog reference
V_{AGND}	VAGND1	-	negative analog reference
Analog Inputs for Group 0 (Primary)			
G0CH0 (AltRef)	AN0	-	analog input channel 0 of group 0
G0CH1 (MD)	AN1	-	analog input channel 1 of group 0
G0CH2 (MD)	AN2	-	analog input channel 2 of group 0
G0CH3	AN3	-	analog input channel 3 of group 0
G0CH4 (FixRef)	AN4	G8CH8	analog input channel 4 of group 0
G0CH5 (FixRef)	AN5	G8CH9	analog input channel 5 of group 0
G0CH6 (FixRef)	AN6	G8CH10	analog input channel 6 of group 0
G0CH7 (PDD, FixRef)	AN7	G8CH11	analog input channel 7 of group 0
Analog Inputs for Group 1 (Primary)			

Table 233 Analog Input Connections for Product TC33x/TC32x (cont'd)

Signal	Source	Overlay	Description
G1CH0 (AltRef)	AN8	G8CH12	analog input channel 0 of group 1
G1CH1 (MD)	AN9	G8CH13	analog input channel 1 of group 1
G1CH2 (MD)	AN10	G8CH14	analog input channel 2 of group 1
G1CH3 (PDD)	AN11	G8CH15	analog input channel 3 of group 1
G1CH4	AN12	-	analog input channel 4 of group 1
G1CH5	AN13	-	analog input channel 5 of group 1
G1CH6	AN14	-	analog input channel 6 of group 1
G1CH7	AN15	-	analog input channel 7 of group 1
Analog Inputs for Group 8 (Secondary)			
G8CH0 (AltRef)	AN32	-	analog input channel 0 of group 8
G8CH1 (MD)	AN33	-	analog input channel 1 of group 8
G8CH2 (MD, AL)	AN34	-	analog input channel 2 of group 8
G8CH3 (PDD)	AN35	-	analog input channel 3 of group 8
G8CH4	AN36	-	analog input channel 4 of group 8
G8CH5	AN37	-	analog input channel 5 of group 8
G8CH6	AN38	-	analog input channel 6 of group 8
G8CH7	AN39	-	analog input channel 7 of group 8
G8CH8	AN40	G0CH4	analog input channel 8 of group 8
G8CH9	AN41	G0CH5	analog input channel 9 of group 8
G8CH10	AN42	G0CH6	analog input channel 10 of group 8
G8CH11	AN43	G0CH7	analog input channel 11 of group 8
G8CH12	AN44	G1CH0	analog input channel 12 of group 8
G8CH13	AN45	G1CH1	analog input channel 13 of group 8
G8CH14	AN46	G1CH2	analog input channel 14 of group 8
G8CH15	AN47	G1CH3	analog input channel 15 of group 8
Analog Inputs for Group 9 (Secondary)			
G9CH0 (AltRef)	P00.12	-	analog input channel 0 of group 9
G9CH1 (MD)	P00.11	-	analog input channel 1 of group 9
G9CH2 (MD)	P00.10	-	analog input channel 2 of group 9
G9CH3	P00.9	-	analog input channel 3 of group 9
G9CH4	P00.8	-	analog input channel 4 of group 9
G9CH5	P00.7	-	analog input channel 5 of group 9
G9CH6	P00.6	-	analog input channel 6 of group 9
G9CH7	P00.5	-	analog input channel 7 of group 9
G9CH8	P00.4	-	analog input channel 8 of group 9
G9CH9	P00.3	-	analog input channel 9 of group 9
G9CH10	P00.2	-	analog input channel 10 of group 9
G9CH11	P00.1	-	analog input channel 11 of group 9

Table 233 Analog Input Connections for Product TC33x/TC32x (cont'd)

Signal	Source	Overlay	Description
G9CH12	-	-	analog input channel 12 of group 9
G9CH13	-	-	analog input channel 13 of group 9
G9CH14	-	-	analog input channel 14 of group 9
G9CH15	-	-	analog input channel 15 of group 9
Common Input Signals (x = 0-1)			
GxCH28	$V_{ANACOMM}$	-	common reference signal, available to all converters, used for production testing, can be fed to the converters through pin AN11
GxCH29	V_{MTS}	-	module test signal, comparator supply voltage V_{DDK}
GxCH30	V_{AGND}	-	negative reference voltage
GxCH31	V_{AREF}	-	positive reference voltage

30.3.2 Digital Module Connections

The EVADC module accepts a number of digital input signals and generates a number of output signals. This section summarizes the connection of these signals to other on-chip modules or to external resources via port pins.

Table 234 Digital Connections for Product TC33x/TC32x

Signal	Dir.	Source/Destin.	Description
Gate Inputs for Primary/Secondary Groups (x = 0-1, 8-9, input line selected via bitfield GTSEL = [yyyy$_B$])			
GxREQGTA	I	GTM_adcx_trig0	[0000$_B$] GTM ADC trigger 0
GxREQGTB	I	GTM_adcx_trig1	[0001$_B$] GTM ADC trigger 1
GxREQGTC	I	CCU6061 TRIG0	[0010$_B$] CCU6061 trigger output 0
GxREQGTD	I	CCU6061 TRIG1	[0011$_B$] CCU6061 trigger output 1
GxREQGTE	I	CCU6061 TRIG2	[0100$_B$] CCU6061 trigger output 2
GxREQGTF	I	-	[0101$_B$] Gating input F, group x
GxREQGTG	I	GTM_adcx_trig4	[0110$_B$] GTM ADC trigger 4
GxREQGTH	I	-	[0111$_B$] Gating input H, group x
GxREQGTI	I	-	[1000$_B$] Gating input I, group x
GxREQGTJ	I	-	[1001$_B$] Gating input J, group x
GxREQGTK	I	GTM_adcx_trig2	[1010$_B$] GTM ADC trigger 2
GxREQGTL	I	GTM_adcx_trig3	[1011$_B$] GTM ADC trigger 3
GxREQGTM	I	eru_pdout_x	[1100$_B$] ERU pattern detection output x
GxREQGTN	I	-	[1101$_B$] Gating input N, group x
GxREQGTO	I	-	[1110$_B$] Gating input O, group x
GxREQGTP	I	[internal]	[1111$_B$] Extend inputs to the selected internal trigger source (see GxTRCTR)
GxREQGTySEL	O	GxREQTRyP[1)]	Selected gating signal of the respective source
Trigger Inputs for Primary/Secondary Groups (x = 0-1, 8-9, input line selected via bitfield XTSEL = [yyyy$_B$])			
GxREQTRA	I	CCU60_SR3	[0000$_B$] CCU60 service request output 3
GxREQTRB	I	CCU61_SR3	[0001$_B$] CCU61 service request output 3
GxREQTRC	I	-	[0010$_B$] Trigger input C, group x
GxREQTRD	I	-	[0011$_B$] Trigger input D, group x
GxREQTRE	I	-	[0100$_B$] Trigger input E, group x
GxREQTRF	I	-	[0101$_B$] Trigger input F, group x
GxREQTRG	I	GTM_adcx_trig4	[0110$_B$] GTM ADC trigger 4
GxREQTRH	I	eru_iout_x	[0111$_B$] ERU interrupt output x
GxREQTRI	I	GTM_adcx_trig0	[1000$_B$] GTM ADC trigger 0
GxREQTRJ	I	GTM_adcx_trig1	[1001$_B$] GTM ADC trigger 1
GxREQTRK	I	GTM_adcx_trig2	[1010$_B$] GTM ADC trigger 2
GxREQTRL	I	GTM_adcx_trig3	[1011$_B$] GTM ADC trigger 3
GxREQTRM	I	vadc_gxsr1	[1100$_B$] Service request 1, group x
GxREQTRN	I	vadc_c0sr1	[1101$_B$] Service request 1, common group 0

Table 234 Digital Connections for Product TC33x/TC32x (cont'd)

Signal	Dir.	Source/Destin.	Description
GxREQTRO	I	vadc_c1sr1	[1110_B] Service request 1, common group 1
GxREQTRyP	I	GxREQGTySEL[1)]	[1111_B] Extend triggers to selected gating input of the respective source
GxREQTRySEL	O	-	Selected trigger signal of the respective source
Global Signals and Service Request Lines For Primary/Secondary Groups: x = 0-1, 8-9			
GxDATA[20:0]	O	GTM	Result values written to RES15
GxWR	O	GTM	Write signal for GxDATA
EMUX00	O	P02.6, P33.3	Control of external analog multiplexer interface 0
EMUX01	O	P02.7, P33.2	
EMUX02	O	P02.8, P33.1	
EMUX10	O	P00.6, P33.6	Control of external analog multiplexer interface 1
EMUX11	O	P00.7, P33.5	
EMUX12	O	P00.8, P33.4	
GxSR0	O	ICU	Service request 0 of group x
GxSR1	O	ICU	Service request 1of group x
GxSR2	O	ICU	Service request 2 of group x
GxSR3	O	ICU	Service request 3 of group x
C0SR0	O	ICU, GTM_TIM0_CH0, GTM_TIM1_CH4	Service request 0 of common block 0
C0SR1	O	ICU, GTM_TIM0_CH2, GTM_TIM1_CH6	Service request 1 of common block 0
C0SR2	O	ICU, GTM_TIM0_CH4, GTM_TIM1_CH0	Service request 2 of common block 0
C0SR3	O	ICU, GTM_TIM0_CH6, GTM_TIM1_CH2	Service request 3 of common block 0
C1SR0	O	ICU, GTM_TIM0_CH1, GTM_TIM1_CH5	Service request 0 of common block 1
C1SR1	O	ICU, GTM_TIM0_CH3, GTM_TIM1_CH7	Service request 1 of common block 1
C1SR2	O	ICU, GTM_TIM0_CH5, GTM_TIM1_CH1	Service request 2 of common block 1
C1SR3	O	ICU, GTM_TIM0_CH7, GTM_TIM1_CH3	Service request 3 of common block 1
System-Internal Connections (x = 0-1, 8-9)			
PHSYNC	I	Phase synchronizer	Synchronization signal for analog clocks
otgb0[15:0]	O	OTGM	Alternate trigger buses for additional trace signals indicating the input signal sample phase (see OCS)
otgb1[15:0]	O	OTGM	

1) Internal signal connection.

30.4 Revision History

This is a summary of the modifications that have been applied to this chapter.

Table 235 Revision History

Reference	Change to Previous Version	Comment
V3.0.0		
–	Initial version.	–
V3.0.1		
Page 1	V_{AREF1} / V_{AGND1} corrected to $_{AREF0}$ / V_{AGND0} in table **General Converter Configuration TC33x/TC32x**.	
Page 3	VAREF2 / VAGND2 corrected to VAREF0 / VAGND0 in table **Analog Input Connections for Product TC33x/TC32x**.	
Page 1	In table **Synchronization Groups** the synchronization group “C” changed to “A”.	
Page 3	In table **Analog Input Connections for Product TC33x/TC32x** analog inputs “G8CH8” to “G8CH15” at source “AN40” to “AN47“ moved to overlay “AN04” to “AN11”.	
Page 3	In section **Special Markings** explanation for “AL” added.	
V3.0.2		
Page 1	V_{AREF1} / V_{AGND1} fixed in table **General Converter Configuration TC33x/TC32x**.	
Page 3	VAREF1 / VAGND1 fixed in table **Analog Input Connections for Product TC33x/TC32x**.	
Page 6	Wrongly mentioned destination GTM_TIM2_* removed in table **Digital Connections for Product TC33x/TC32x**.	
Page 3	Removed comment regarding overlay connections.	
Page 3	In table **Analog Input Connections for Product TC33x/TC32x** from G8CH8/G0CH4 to G8CH15/G1CH3 connection overlay updated.	
V3.0.3		
Page 1	Added values.	
V3.0.4		
	No functional changes.	
V3.0.5		
Page 6	Statement “for Primary Groups” changed to “for Primary/Secondary Groups” (2 times).	

31 Enhanced Delta-Sigma Analog-to-Digital Converter (EDSADC)

This device doesn’t contain an EDSADC.

32 Inter-Integrated Circuit (I2C)

This device doesn’t contain an I2C.

33 High Speed Serial Link (HSSL)

This device doesn’t contain a HSSL.

34 Asynchronous Serial Interface (ASCLIN)

Text with reference to family spec.

34.1 TC33x/TC32x Specific IP Configuration

No product specific configuration for ASCLIN

34.2 TC33x/TC32x Specific Register Set

Register Address Space Table

Table 236 Register Address Space - ASCLIN

Module	Base Address	End Address	Note
ASCLIN0	$F0000600_H$	$F00006FF_H$	FPI slave interface
ASCLIN1	$F0000700_H$	$F00007FF_H$	FPI slave interface
ASCLIN2	$F0000800_H$	$F00008FF_H$	FPI slave interface
ASCLIN3	$F0000900_H$	$F00009FF_H$	FPI slave interface
ASCLIN4	$F0000A00_H$	$F0000AFF_H$	FPI slave interface
ASCLIN5	$F0000B00_H$	$F0000BFF_H$	FPI slave interface
ASCLIN6	$F0000C00_H$	$F0000CFF_H$	FPI slave interface
ASCLIN7	$F0000D00_H$	$F0000DFF_H$	FPI slave interface
ASCLIN8	$F0000E00_H$	$F0000EFF_H$	FPI slave interface
ASCLIN9	$F0000F00_H$	$F0000FFF_H$	FPI slave interface
ASCLIN10	$F02C0A00_H$	$F02C0AFF_H$	FPI slave interface
ASCLIN11	$F02C0B00_H$	$F02C0BFF_H$	FPI slave interface

Register Overview Table

Table 237 Register Overview - ASCLIN (ascending Offset Address)

Short Name	Long Name	Offset Address	Page Number
ASCLIN0_CLC	Clock Control Register	000_H	See Family Spec
ASCLIN1_CLC	Clock Control Register	000_H	See Family Spec
ASCLIN2_CLC	Clock Control Register	000_H	See Family Spec
ASCLIN3_CLC	Clock Control Register	000_H	See Family Spec
ASCLIN4_CLC	Clock Control Register	000_H	See Family Spec
ASCLIN5_CLC	Clock Control Register	000_H	See Family Spec

Table 237 Register Overview - ASCLIN (ascending Offset Address) (cont'd)

Short Name	Long Name	Offset Address	Page Number
ASCLIN6_CLC	Clock Control Register	000_H	See Family Spec
ASCLIN7_CLC	Clock Control Register	000_H	See Family Spec
ASCLIN8_CLC	Clock Control Register	000_H	See Family Spec
ASCLIN9_CLC	Clock Control Register	000_H	See Family Spec
ASCLIN10_CLC	Clock Control Register	000_H	See Family Spec
ASCLIN11_CLC	Clock Control Register	000_H	See Family Spec
ASCLIN0_IOCR	Input and Output Control Register	004_H	See Family Spec
ASCLIN1_IOCR	Input and Output Control Register	004_H	See Family Spec
ASCLIN2_IOCR	Input and Output Control Register	004_H	See Family Spec
ASCLIN3_IOCR	Input and Output Control Register	004_H	See Family Spec
ASCLIN4_IOCR	Input and Output Control Register	004_H	See Family Spec
ASCLIN5_IOCR	Input and Output Control Register	004_H	See Family Spec
ASCLIN6_IOCR	Input and Output Control Register	004_H	See Family Spec
ASCLIN7_IOCR	Input and Output Control Register	004_H	See Family Spec

Table 237 Register Overview - ASCLIN (ascending Offset Address) (cont'd)

Short Name	Long Name	Offset Address	Page Number
ASCLIN8_IOCR	Input and Output Control Register	004_H	See Family Spec
ASCLIN9_IOCR	Input and Output Control Register	004_H	See Family Spec
ASCLIN10_IOCR	Input and Output Control Register	004_H	See Family Spec
ASCLIN11_IOCR	Input and Output Control Register	004_H	See Family Spec
ASCLIN0_ID	Module Identification Register	008_H	See Family Spec
ASCLIN1_ID	Module Identification Register	008_H	See Family Spec
ASCLIN2_ID	Module Identification Register	008_H	See Family Spec
ASCLIN3_ID	Module Identification Register	008_H	See Family Spec
ASCLIN4_ID	Module Identification Register	008_H	See Family Spec
ASCLIN5_ID	Module Identification Register	008_H	See Family Spec
ASCLIN6_ID	Module Identification Register	008_H	See Family Spec
ASCLIN7_ID	Module Identification Register	008_H	See Family Spec
ASCLIN8_ID	Module Identification Register	008_H	See Family Spec
ASCLIN9_ID	Module Identification Register	008_H	See Family Spec

Table 237 Register Overview - ASCLIN (ascending Offset Address) (cont'd)

Short Name	Long Name	Offset Address	Page Number
ASCLIN10_ID	Module Identification Register	008_H	See Family Spec
ASCLIN11_ID	Module Identification Register	008_H	See Family Spec
ASCLIN0_TXFIFOCON	TX FIFO Configuration Register	$00C_H$	See Family Spec
ASCLIN1_TXFIFOCON	TX FIFO Configuration Register	$00C_H$	See Family Spec
ASCLIN2_TXFIFOCON	TX FIFO Configuration Register	$00C_H$	See Family Spec
ASCLIN3_TXFIFOCON	TX FIFO Configuration Register	$00C_H$	See Family Spec
ASCLIN4_TXFIFOCON	TX FIFO Configuration Register	$00C_H$	See Family Spec
ASCLIN5_TXFIFOCON	TX FIFO Configuration Register	$00C_H$	See Family Spec
ASCLIN6_TXFIFOCON	TX FIFO Configuration Register	$00C_H$	See Family Spec
ASCLIN7_TXFIFOCON	TX FIFO Configuration Register	$00C_H$	See Family Spec
ASCLIN8_TXFIFOCON	TX FIFO Configuration Register	$00C_H$	See Family Spec
ASCLIN9_TXFIFOCON	TX FIFO Configuration Register	$00C_H$	See Family Spec
ASCLIN10_TXFIFOCON	TX FIFO Configuration Register	$00C_H$	See Family Spec
ASCLIN11_TXFIFOCON	TX FIFO Configuration Register	$00C_H$	See Family Spec

Table 237 Register Overview - ASCLIN (ascending Offset Address) (cont'd)

Short Name	Long Name	Offset Address	Page Number
ASCLIN0_RXFIFOCON	RX FIFO Configuration Register	010_H	See Family Spec
ASCLIN1_RXFIFOCON	RX FIFO Configuration Register	010_H	See Family Spec
ASCLIN2_RXFIFOCON	RX FIFO Configuration Register	010_H	See Family Spec
ASCLIN3_RXFIFOCON	RX FIFO Configuration Register	010_H	See Family Spec
ASCLIN4_RXFIFOCON	RX FIFO Configuration Register	010_H	See Family Spec
ASCLIN5_RXFIFOCON	RX FIFO Configuration Register	010_H	See Family Spec
ASCLIN6_RXFIFOCON	RX FIFO Configuration Register	010_H	See Family Spec
ASCLIN7_RXFIFOCON	RX FIFO Configuration Register	010_H	See Family Spec
ASCLIN8_RXFIFOCON	RX FIFO Configuration Register	010_H	See Family Spec
ASCLIN9_RXFIFOCON	RX FIFO Configuration Register	010_H	See Family Spec
ASCLIN10_RXFIFOCON	RX FIFO Configuration Register	010_H	See Family Spec
ASCLIN11_RXFIFOCON	RX FIFO Configuration Register	010_H	See Family Spec
ASCLIN0_BITCON	Bit Configuration Register	014_H	See Family Spec
ASCLIN1_BITCON	Bit Configuration Register	014_H	See Family Spec

Table 237 Register Overview - ASCLIN (ascending Offset Address) (cont'd)

Short Name	Long Name	Offset Address	Page Number
ASCLIN2_BITCON	Bit Configuration Register	014_H	See Family Spec
ASCLIN3_BITCON	Bit Configuration Register	014_H	See Family Spec
ASCLIN4_BITCON	Bit Configuration Register	014_H	See Family Spec
ASCLIN5_BITCON	Bit Configuration Register	014_H	See Family Spec
ASCLIN6_BITCON	Bit Configuration Register	014_H	See Family Spec
ASCLIN7_BITCON	Bit Configuration Register	014_H	See Family Spec
ASCLIN8_BITCON	Bit Configuration Register	014_H	See Family Spec
ASCLIN9_BITCON	Bit Configuration Register	014_H	See Family Spec
ASCLIN10_BITCON	Bit Configuration Register	014_H	See Family Spec
ASCLIN11_BITCON	Bit Configuration Register	014_H	See Family Spec
ASCLIN0_FRAMECON	Frame Control Register	018_H	See Family Spec
ASCLIN1_FRAMECON	Frame Control Register	018_H	See Family Spec
ASCLIN2_FRAMECON	Frame Control Register	018_H	See Family Spec
ASCLIN3_FRAMECON	Frame Control Register	018_H	See Family Spec

Table 237 Register Overview - ASCLIN (ascending Offset Address) (cont'd)

Short Name	Long Name	Offset Address	Page Number
ASCLIN4_FRAMECON	Frame Control Register	018_H	See Family Spec
ASCLIN5_FRAMECON	Frame Control Register	018_H	See Family Spec
ASCLIN6_FRAMECON	Frame Control Register	018_H	See Family Spec
ASCLIN7_FRAMECON	Frame Control Register	018_H	See Family Spec
ASCLIN8_FRAMECON	Frame Control Register	018_H	See Family Spec
ASCLIN9_FRAMECON	Frame Control Register	018_H	See Family Spec
ASCLIN10_FRAMECON	Frame Control Register	018_H	See Family Spec
ASCLIN11_FRAMECON	Frame Control Register	018_H	See Family Spec
ASCLIN0_DATCON	Data Configuration Register	$01C_H$	See Family Spec
ASCLIN1_DATCON	Data Configuration Register	$01C_H$	See Family Spec
ASCLIN2_DATCON	Data Configuration Register	$01C_H$	See Family Spec
ASCLIN3_DATCON	Data Configuration Register	$01C_H$	See Family Spec
ASCLIN4_DATCON	Data Configuration Register	$01C_H$	See Family Spec
ASCLIN5_DATCON	Data Configuration Register	$01C_H$	See Family Spec

Table 237 Register Overview - ASCLIN (ascending Offset Address) (cont'd)

Short Name	Long Name	Offset Address	Page Number
ASCLIN6_DATCON	Data Configuration Register	$01C_H$	See Family Spec
ASCLIN7_DATCON	Data Configuration Register	$01C_H$	See Family Spec
ASCLIN8_DATCON	Data Configuration Register	$01C_H$	See Family Spec
ASCLIN9_DATCON	Data Configuration Register	$01C_H$	See Family Spec
ASCLIN10_DATCON	Data Configuration Register	$01C_H$	See Family Spec
ASCLIN11_DATCON	Data Configuration Register	$01C_H$	See Family Spec
ASCLIN0_BRG	Baud Rate Generation Register	020_H	See Family Spec
ASCLIN1_BRG	Baud Rate Generation Register	020_H	See Family Spec
ASCLIN2_BRG	Baud Rate Generation Register	020_H	See Family Spec
ASCLIN3_BRG	Baud Rate Generation Register	020_H	See Family Spec
ASCLIN4_BRG	Baud Rate Generation Register	020_H	See Family Spec
ASCLIN5_BRG	Baud Rate Generation Register	020_H	See Family Spec
ASCLIN6_BRG	Baud Rate Generation Register	020_H	See Family Spec
ASCLIN7_BRG	Baud Rate Generation Register	020_H	See Family Spec

Table 237 Register Overview - ASCLIN (ascending Offset Address) (cont'd)

Short Name	Long Name	Offset Address	Page Number
ASCLIN8_BRG	Baud Rate Generation Register	020_H	See Family Spec
ASCLIN9_BRG	Baud Rate Generation Register	020_H	See Family Spec
ASCLIN10_BRG	Baud Rate Generation Register	020_H	See Family Spec
ASCLIN11_BRG	Baud Rate Generation Register	020_H	See Family Spec
ASCLIN0_BRD	Baud Rate Detection Register	024_H	See Family Spec
ASCLIN1_BRD	Baud Rate Detection Register	024_H	See Family Spec
ASCLIN2_BRD	Baud Rate Detection Register	024_H	See Family Spec
ASCLIN3_BRD	Baud Rate Detection Register	024_H	See Family Spec
ASCLIN4_BRD	Baud Rate Detection Register	024_H	See Family Spec
ASCLIN5_BRD	Baud Rate Detection Register	024_H	See Family Spec
ASCLIN6_BRD	Baud Rate Detection Register	024_H	See Family Spec
ASCLIN7_BRD	Baud Rate Detection Register	024_H	See Family Spec
ASCLIN8_BRD	Baud Rate Detection Register	024_H	See Family Spec
ASCLIN9_BRD	Baud Rate Detection Register	024_H	See Family Spec

Table 237 Register Overview - ASCLIN (ascending Offset Address) (cont'd)

Short Name	Long Name	Offset Address	Page Number
ASCLIN10_BRD	Baud Rate Detection Register	024_H	See Family Spec
ASCLIN11_BRD	Baud Rate Detection Register	024_H	See Family Spec
ASCLIN0_LINCON	LIN Control Register	028_H	See Family Spec
ASCLIN1_LINCON	LIN Control Register	028_H	See Family Spec
ASCLIN2_LINCON	LIN Control Register	028_H	See Family Spec
ASCLIN3_LINCON	LIN Control Register	028_H	See Family Spec
ASCLIN4_LINCON	LIN Control Register	028_H	See Family Spec
ASCLIN5_LINCON	LIN Control Register	028_H	See Family Spec
ASCLIN6_LINCON	LIN Control Register	028_H	See Family Spec
ASCLIN7_LINCON	LIN Control Register	028_H	See Family Spec
ASCLIN8_LINCON	LIN Control Register	028_H	See Family Spec
ASCLIN9_LINCON	LIN Control Register	028_H	See Family Spec
ASCLIN10_LINCON	LIN Control Register	028_H	See Family Spec
ASCLIN11_LINCON	LIN Control Register	028_H	See Family Spec

Table 237 Register Overview - ASCLIN (ascending Offset Address) (cont'd)

Short Name	Long Name	Offset Address	Page Number
ASCLIN0_LINBTIMER	LIN Break Timer Register	$02C_H$	See Family Spec
ASCLIN1_LINBTIMER	LIN Break Timer Register	$02C_H$	See Family Spec
ASCLIN2_LINBTIMER	LIN Break Timer Register	$02C_H$	See Family Spec
ASCLIN3_LINBTIMER	LIN Break Timer Register	$02C_H$	See Family Spec
ASCLIN4_LINBTIMER	LIN Break Timer Register	$02C_H$	See Family Spec
ASCLIN5_LINBTIMER	LIN Break Timer Register	$02C_H$	See Family Spec
ASCLIN6_LINBTIMER	LIN Break Timer Register	$02C_H$	See Family Spec
ASCLIN7_LINBTIMER	LIN Break Timer Register	$02C_H$	See Family Spec
ASCLIN8_LINBTIMER	LIN Break Timer Register	$02C_H$	See Family Spec
ASCLIN9_LINBTIMER	LIN Break Timer Register	$02C_H$	See Family Spec
ASCLIN10_LINBTIMER	LIN Break Timer Register	$02C_H$	See Family Spec
ASCLIN11_LINBTIMER	LIN Break Timer Register	$02C_H$	See Family Spec
ASCLIN0_LINHTIMER	LIN Header Timer Register	030_H	See Family Spec
ASCLIN1_LINHTIMER	LIN Header Timer Register	030_H	See Family Spec

Table 237 Register Overview - ASCLIN (ascending Offset Address) (cont'd)

Short Name	Long Name	Offset Address	Page Number
ASCLIN2_LINHTIMER	LIN Header Timer Register	030_H	See Family Spec
ASCLIN3_LINHTIMER	LIN Header Timer Register	030_H	See Family Spec
ASCLIN4_LINHTIMER	LIN Header Timer Register	030_H	See Family Spec
ASCLIN5_LINHTIMER	LIN Header Timer Register	030_H	See Family Spec
ASCLIN6_LINHTIMER	LIN Header Timer Register	030_H	See Family Spec
ASCLIN7_LINHTIMER	LIN Header Timer Register	030_H	See Family Spec
ASCLIN8_LINHTIMER	LIN Header Timer Register	030_H	See Family Spec
ASCLIN9_LINHTIMER	LIN Header Timer Register	030_H	See Family Spec
ASCLIN10_LINHTIMER	LIN Header Timer Register	030_H	See Family Spec
ASCLIN11_LINHTIMER	LIN Header Timer Register	030_H	See Family Spec
ASCLIN0_FLAGS	Flags Register	034_H	See Family Spec
ASCLIN1_FLAGS	Flags Register	034_H	See Family Spec
ASCLIN2_FLAGS	Flags Register	034_H	See Family Spec
ASCLIN3_FLAGS	Flags Register	034_H	See Family Spec

Table 237 Register Overview - ASCLIN (ascending Offset Address) (cont'd)

Short Name	Long Name	Offset Address	Page Number
ASCLIN4_FLAGS	Flags Register	034_H	See Family Spec
ASCLIN5_FLAGS	Flags Register	034_H	See Family Spec
ASCLIN6_FLAGS	Flags Register	034_H	See Family Spec
ASCLIN7_FLAGS	Flags Register	034_H	See Family Spec
ASCLIN8_FLAGS	Flags Register	034_H	See Family Spec
ASCLIN9_FLAGS	Flags Register	034_H	See Family Spec
ASCLIN10_FLAGS	Flags Register	034_H	See Family Spec
ASCLIN11_FLAGS	Flags Register	034_H	See Family Spec
ASCLIN0_FLAGSSET	Flags Set Register	038_H	See Family Spec
ASCLIN1_FLAGSSET	Flags Set Register	038_H	See Family Spec
ASCLIN2_FLAGSSET	Flags Set Register	038_H	See Family Spec
ASCLIN3_FLAGSSET	Flags Set Register	038_H	See Family Spec
ASCLIN4_FLAGSSET	Flags Set Register	038_H	See Family Spec
ASCLIN5_FLAGSSET	Flags Set Register	038_H	See Family Spec

Table 237 Register Overview - ASCLIN (ascending Offset Address) (cont'd)

Short Name	Long Name	Offset Address	Page Number
ASCLIN6_FLAGSSET	Flags Set Register	038_H	See Family Spec
ASCLIN7_FLAGSSET	Flags Set Register	038_H	See Family Spec
ASCLIN8_FLAGSSET	Flags Set Register	038_H	See Family Spec
ASCLIN9_FLAGSSET	Flags Set Register	038_H	See Family Spec
ASCLIN10_FLAGSSET	Flags Set Register	038_H	See Family Spec
ASCLIN11_FLAGSSET	Flags Set Register	038_H	See Family Spec
ASCLIN0_FLAGSCLEAR	Flags Clear Register	$03C_H$	See Family Spec
ASCLIN1_FLAGSCLEAR	Flags Clear Register	$03C_H$	See Family Spec
ASCLIN2_FLAGSCLEAR	Flags Clear Register	$03C_H$	See Family Spec
ASCLIN3_FLAGSCLEAR	Flags Clear Register	$03C_H$	See Family Spec
ASCLIN4_FLAGSCLEAR	Flags Clear Register	$03C_H$	See Family Spec
ASCLIN5_FLAGSCLEAR	Flags Clear Register	$03C_H$	See Family Spec
ASCLIN6_FLAGSCLEAR	Flags Clear Register	$03C_H$	See Family Spec
ASCLIN7_FLAGSCLEAR	Flags Clear Register	$03C_H$	See Family Spec

Table 237 Register Overview - ASCLIN (ascending Offset Address) (cont'd)

Short Name	Long Name	Offset Address	Page Number
ASCLIN8_FLAGSCLEAR	Flags Clear Register	$03C_H$	See Family Spec
ASCLIN9_FLAGSCLEAR	Flags Clear Register	$03C_H$	See Family Spec
ASCLIN10_FLAGSCLEAR	Flags Clear Register	$03C_H$	See Family Spec
ASCLIN11_FLAGSCLEAR	Flags Clear Register	$03C_H$	See Family Spec
ASCLIN0_FLAGSENABLE	Flags Enable Register	040_H	See Family Spec
ASCLIN1_FLAGSENABLE	Flags Enable Register	040_H	See Family Spec
ASCLIN2_FLAGSENABLE	Flags Enable Register	040_H	See Family Spec
ASCLIN3_FLAGSENABLE	Flags Enable Register	040_H	See Family Spec
ASCLIN4_FLAGSENABLE	Flags Enable Register	040_H	See Family Spec
ASCLIN5_FLAGSENABLE	Flags Enable Register	040_H	See Family Spec
ASCLIN6_FLAGSENABLE	Flags Enable Register	040_H	See Family Spec
ASCLIN7_FLAGSENABLE	Flags Enable Register	040_H	See Family Spec
ASCLIN8_FLAGSENABLE	Flags Enable Register	040_H	See Family Spec
ASCLIN9_FLAGSENABLE	Flags Enable Register	040_H	See Family Spec

Table 237 Register Overview - ASCLIN (ascending Offset Address) (cont'd)

Short Name	Long Name	Offset Address	Page Number
ASCLIN10_FLAGSENABLE	Flags Enable Register	040_H	See Family Spec
ASCLIN11_FLAGSENABLE	Flags Enable Register	040_H	See Family Spec
ASCLIN0_TXDATA	Transmit Data Register	044_H	See Family Spec
ASCLIN1_TXDATA	Transmit Data Register	044_H	See Family Spec
ASCLIN2_TXDATA	Transmit Data Register	044_H	See Family Spec
ASCLIN3_TXDATA	Transmit Data Register	044_H	See Family Spec
ASCLIN4_TXDATA	Transmit Data Register	044_H	See Family Spec
ASCLIN5_TXDATA	Transmit Data Register	044_H	See Family Spec
ASCLIN6_TXDATA	Transmit Data Register	044_H	See Family Spec
ASCLIN7_TXDATA	Transmit Data Register	044_H	See Family Spec
ASCLIN8_TXDATA	Transmit Data Register	044_H	See Family Spec
ASCLIN9_TXDATA	Transmit Data Register	044_H	See Family Spec
ASCLIN10_TXDATA	Transmit Data Register	044_H	See Family Spec
ASCLIN11_TXDATA	Transmit Data Register	044_H	See Family Spec

Table 237 Register Overview - ASCLIN (ascending Offset Address) (cont'd)

Short Name	Long Name	Offset Address	Page Number
ASCLIN0_RXDATA	Receive Data Register	048_H	See Family Spec
ASCLIN1_RXDATA	Receive Data Register	048_H	See Family Spec
ASCLIN2_RXDATA	Receive Data Register	048_H	See Family Spec
ASCLIN3_RXDATA	Receive Data Register	048_H	See Family Spec
ASCLIN4_RXDATA	Receive Data Register	048_H	See Family Spec
ASCLIN5_RXDATA	Receive Data Register	048_H	See Family Spec
ASCLIN6_RXDATA	Receive Data Register	048_H	See Family Spec
ASCLIN7_RXDATA	Receive Data Register	048_H	See Family Spec
ASCLIN8_RXDATA	Receive Data Register	048_H	See Family Spec
ASCLIN9_RXDATA	Receive Data Register	048_H	See Family Spec
ASCLIN10_RXDATA	Receive Data Register	048_H	See Family Spec
ASCLIN11_RXDATA	Receive Data Register	048_H	See Family Spec
ASCLIN0_CSR	Clock Selection Register	$04C_H$	See Family Spec
ASCLIN1_CSR	Clock Selection Register	$04C_H$	See Family Spec

Table 237 Register Overview - ASCLIN (ascending Offset Address) (cont'd)

Short Name	Long Name	Offset Address	Page Number
ASCLIN2_CSR	Clock Selection Register	$04C_H$	See Family Spec
ASCLIN3_CSR	Clock Selection Register	$04C_H$	See Family Spec
ASCLIN4_CSR	Clock Selection Register	$04C_H$	See Family Spec
ASCLIN5_CSR	Clock Selection Register	$04C_H$	See Family Spec
ASCLIN6_CSR	Clock Selection Register	$04C_H$	See Family Spec
ASCLIN7_CSR	Clock Selection Register	$04C_H$	See Family Spec
ASCLIN8_CSR	Clock Selection Register	$04C_H$	See Family Spec
ASCLIN9_CSR	Clock Selection Register	$04C_H$	See Family Spec
ASCLIN10_CSR	Clock Selection Register	$04C_H$	See Family Spec
ASCLIN11_CSR	Clock Selection Register	$04C_H$	See Family Spec
ASCLIN0_RXDATAD	Receive Data Debug Register	050_H	See Family Spec
ASCLIN1_RXDATAD	Receive Data Debug Register	050_H	See Family Spec
ASCLIN2_RXDATAD	Receive Data Debug Register	050_H	See Family Spec
ASCLIN3_RXDATAD	Receive Data Debug Register	050_H	See Family Spec

Table 237 Register Overview - ASCLIN (ascending Offset Address) (cont'd)

Short Name	Long Name	Offset Address	Page Number
ASCLIN4_RXDATAD	Receive Data Debug Register	050_H	See Family Spec
ASCLIN5_RXDATAD	Receive Data Debug Register	050_H	See Family Spec
ASCLIN6_RXDATAD	Receive Data Debug Register	050_H	See Family Spec
ASCLIN7_RXDATAD	Receive Data Debug Register	050_H	See Family Spec
ASCLIN8_RXDATAD	Receive Data Debug Register	050_H	See Family Spec
ASCLIN9_RXDATAD	Receive Data Debug Register	050_H	See Family Spec
ASCLIN10_RXDATAD	Receive Data Debug Register	050_H	See Family Spec
ASCLIN11_RXDATAD	Receive Data Debug Register	050_H	See Family Spec
ASCLIN0_OCS	OCDS Control and Status	$0E8_H$	See Family Spec
ASCLIN1_OCS	OCDS Control and Status	$0E8_H$	See Family Spec
ASCLIN2_OCS	OCDS Control and Status	$0E8_H$	See Family Spec
ASCLIN3_OCS	OCDS Control and Status	$0E8_H$	See Family Spec
ASCLIN4_OCS	OCDS Control and Status	$0E8_H$	See Family Spec
ASCLIN5_OCS	OCDS Control and Status	$0E8_H$	See Family Spec

Table 237 Register Overview - ASCLIN (ascending Offset Address) (cont'd)

Short Name	Long Name	Offset Address	Page Number
ASCLIN6_OCS	OCDS Control and Status	$0E8_H$	See Family Spec
ASCLIN7_OCS	OCDS Control and Status	$0E8_H$	See Family Spec
ASCLIN8_OCS	OCDS Control and Status	$0E8_H$	See Family Spec
ASCLIN9_OCS	OCDS Control and Status	$0E8_H$	See Family Spec
ASCLIN10_OCS	OCDS Control and Status	$0E8_H$	See Family Spec
ASCLIN11_OCS	OCDS Control and Status	$0E8_H$	See Family Spec
ASCLIN0_KRSTCLR	Kernel Reset Status Clear Register	$0EC_H$	See Family Spec
ASCLIN1_KRSTCLR	Kernel Reset Status Clear Register	$0EC_H$	See Family Spec
ASCLIN2_KRSTCLR	Kernel Reset Status Clear Register	$0EC_H$	See Family Spec
ASCLIN3_KRSTCLR	Kernel Reset Status Clear Register	$0EC_H$	See Family Spec
ASCLIN4_KRSTCLR	Kernel Reset Status Clear Register	$0EC_H$	See Family Spec
ASCLIN5_KRSTCLR	Kernel Reset Status Clear Register	$0EC_H$	See Family Spec
ASCLIN6_KRSTCLR	Kernel Reset Status Clear Register	$0EC_H$	See Family Spec
ASCLIN7_KRSTCLR	Kernel Reset Status Clear Register	$0EC_H$	See Family Spec

Table 237 Register Overview - ASCLIN (ascending Offset Address) (cont'd)

Short Name	Long Name	Offset Address	Page Number
ASCLIN8_KRSTCLR	Kernel Reset Status Clear Register	$0EC_H$	See Family Spec
ASCLIN9_KRSTCLR	Kernel Reset Status Clear Register	$0EC_H$	See Family Spec
ASCLIN10_KRSTCLR	Kernel Reset Status Clear Register	$0EC_H$	See Family Spec
ASCLIN11_KRSTCLR	Kernel Reset Status Clear Register	$0EC_H$	See Family Spec
ASCLIN0_KRST1	Kernel Reset Register 1	$0F0_H$	See Family Spec
ASCLIN1_KRST1	Kernel Reset Register 1	$0F0_H$	See Family Spec
ASCLIN2_KRST1	Kernel Reset Register 1	$0F0_H$	See Family Spec
ASCLIN3_KRST1	Kernel Reset Register 1	$0F0_H$	See Family Spec
ASCLIN4_KRST1	Kernel Reset Register 1	$0F0_H$	See Family Spec
ASCLIN5_KRST1	Kernel Reset Register 1	$0F0_H$	See Family Spec
ASCLIN6_KRST1	Kernel Reset Register 1	$0F0_H$	See Family Spec
ASCLIN7_KRST1	Kernel Reset Register 1	$0F0_H$	See Family Spec
ASCLIN8_KRST1	Kernel Reset Register 1	$0F0_H$	See Family Spec
ASCLIN9_KRST1	Kernel Reset Register 1	$0F0_H$	See Family Spec

Table 237 Register Overview - ASCLIN (ascending Offset Address) (cont'd)

Short Name	Long Name	Offset Address	Page Number
ASCLIN10_KRST1	Kernel Reset Register 1	$0F0_H$	See Family Spec
ASCLIN11_KRST1	Kernel Reset Register 1	$0F0_H$	See Family Spec
ASCLIN0_KRST0	Kernel Reset Register 0	$0F4_H$	See Family Spec
ASCLIN1_KRST0	Kernel Reset Register 0	$0F4_H$	See Family Spec
ASCLIN2_KRST0	Kernel Reset Register 0	$0F4_H$	See Family Spec
ASCLIN3_KRST0	Kernel Reset Register 0	$0F4_H$	See Family Spec
ASCLIN4_KRST0	Kernel Reset Register 0	$0F4_H$	See Family Spec
ASCLIN5_KRST0	Kernel Reset Register 0	$0F4_H$	See Family Spec
ASCLIN6_KRST0	Kernel Reset Register 0	$0F4_H$	See Family Spec
ASCLIN7_KRST0	Kernel Reset Register 0	$0F4_H$	See Family Spec
ASCLIN8_KRST0	Kernel Reset Register 0	$0F4_H$	See Family Spec
ASCLIN9_KRST0	Kernel Reset Register 0	$0F4_H$	See Family Spec
ASCLIN10_KRST0	Kernel Reset Register 0	$0F4_H$	See Family Spec
ASCLIN11_KRST0	Kernel Reset Register 0	$0F4_H$	See Family Spec

Table 237 Register Overview - ASCLIN (ascending Offset Address) (cont'd)

Short Name	Long Name	Offset Address	Page Number
ASCLIN0_ACCEN1	Access Enable Register 1	$0F8_H$	See Family Spec
ASCLIN1_ACCEN1	Access Enable Register 1	$0F8_H$	See Family Spec
ASCLIN2_ACCEN1	Access Enable Register 1	$0F8_H$	See Family Spec
ASCLIN3_ACCEN1	Access Enable Register 1	$0F8_H$	See Family Spec
ASCLIN4_ACCEN1	Access Enable Register 1	$0F8_H$	See Family Spec
ASCLIN5_ACCEN1	Access Enable Register 1	$0F8_H$	See Family Spec
ASCLIN6_ACCEN1	Access Enable Register 1	$0F8_H$	See Family Spec
ASCLIN7_ACCEN1	Access Enable Register 1	$0F8_H$	See Family Spec
ASCLIN8_ACCEN1	Access Enable Register 1	$0F8_H$	See Family Spec
ASCLIN9_ACCEN1	Access Enable Register 1	$0F8_H$	See Family Spec
ASCLIN10_ACCEN1	Access Enable Register 1	$0F8_H$	See Family Spec
ASCLIN11_ACCEN1	Access Enable Register 1	$0F8_H$	See Family Spec
ASCLIN0_ACCEN0	Access Enable Register 0	$0FC_H$	See Family Spec
ASCLIN1_ACCEN0	Access Enable Register 0	$0FC_H$	See Family Spec

Table 237 Register Overview - ASCLIN (ascending Offset Address) (cont'd)

Short Name	Long Name	Offset Address	Page Number
ASCLIN2_ACCEN0	Access Enable Register 0	$0FC_H$	See Family Spec
ASCLIN3_ACCEN0	Access Enable Register 0	$0FC_H$	See Family Spec
ASCLIN4_ACCEN0	Access Enable Register 0	$0FC_H$	See Family Spec
ASCLIN5_ACCEN0	Access Enable Register 0	$0FC_H$	See Family Spec
ASCLIN6_ACCEN0	Access Enable Register 0	$0FC_H$	See Family Spec
ASCLIN7_ACCEN0	Access Enable Register 0	$0FC_H$	See Family Spec
ASCLIN8_ACCEN0	Access Enable Register 0	$0FC_H$	See Family Spec
ASCLIN9_ACCEN0	Access Enable Register 0	$0FC_H$	See Family Spec
ASCLIN10_ACCEN0	Access Enable Register 0	$0FC_H$	See Family Spec
ASCLIN11_ACCEN0	Access Enable Register 0	$0FC_H$	See Family Spec

34.3 TC33x/TC32x Specific Registers

No deviations from the Family Spec

34.4 Connectivity

Table 238 Connections of ASCLIN0

Interface Signals	connects		Description
ASCLIN0:ACTSA	from	P14.9:IN	Clear to send input
ASCLIN0:ACTSD	from	ASCLIN0:ARTS	Clear to send input

Table 238 Connections of ASCLIN0 (cont'd)

Interface Signals	connects		Description
ASCLIN0:ARTS	to	P14.7:ALT(2)	Ready to send output
		ASCLIN0:ACTSD	
ASCLIN0:ARXA	from	P14.1:IN	Receive input
ASCLIN0:ARXB	from	P15.3:IN	Receive input
ASCLIN0:ARXD	from	P33.10:IN	Receive input
ASCLIN0:ASCLK	to	P14.0:ALT(6)	Shift clock output
		P15.2:ALT(6)	
ASCLIN0:ATX	to	IOM:MON2(12)	Transmit output
		IOM:REF2(12)	
		P14.0:ALT(2)	
		P14.1:ALT(2)	
		P15.2:ALT(2)	
		P15.3:ALT(2)	
		P33.9:ALT(6)	
ASCLIN0:sleep_n	from	SCU:scu_syst_sleep_n	Negative turn-off request
ASCLIN0:TX_INT	to	INT:asclin0.TX_INT	ASCLIN Transmit Service Request
ASCLIN0:RX_INT	to	INT:asclin0.RX_INT	ASCLIN Receive Service Request
ASCLIN0:ERR_INT	to	INT:asclin0.ERR_INT	ASCLIN Error Service Request

Table 239 Connections of ASCLIN1

Interface Signals	connects		Description
ASCLIN1:ACTSA	from	P20.7:IN	Clear to send input
ASCLIN1:ACTSB	from	P32.4:IN	Clear to send input
ASCLIN1:ACTSD	from	ASCLIN1:ARTS	Clear to send input
ASCLIN1:ARTS	to	P20.6:ALT(2)	Ready to send output
		P23.1:ALT(2)	
		ASCLIN1:ACTSD	
ASCLIN1:ARXA	from	P15.1:IN	Receive input
ASCLIN1:ARXB	from	P15.5:IN	Receive input
ASCLIN1:ARXC	from	P20.9:IN	Receive input
ASCLIN1:ARXD	from	P14.8:IN	Receive input
ASCLIN1:ARXE	from	P11.10:IN	Receive input
ASCLIN1:ARXG	from	P02.3:IN	Receive input
ASCLIN1:ASCLK	to	P15.0:ALT(6)	Shift clock output
		P20.10:ALT(6)	
		P33.11:ALT(2)	
		P33.12:ALT(4)	

Table 239 Connections of ASCLIN1 (cont'd)

Interface Signals	connects		Description
ASCLIN1:ASLSO	to	P14.3:ALT(4)	Slave select signal output
		P20.8:ALT(2)	
		P33.10:ALT(4)	
ASCLIN1:ATX	to	IOM:MON2(13)	Transmit output
		IOM:REF2(13)	
		P02.2:ALT(2)	
		P11.12:ALT(2)	
		P14.10:ALT(4)	
		P15.0:ALT(2)	
		P15.1:ALT(2)	
		P15.4:ALT(2)	
		P15.5:ALT(2)	
		P20.10:ALT(2)	
		P33.12:ALT(2)	
ASCLIN1:sleep_n	from	SCU:scu_syst_sleep_n	Negative turn-off request
ASCLIN1:TX_INT	to	INT:asclin1.TX_INT	ASCLIN Transmit Service Request
ASCLIN1:RX_INT	to	INT:asclin1.RX_INT	ASCLIN Receive Service Request
ASCLIN1:ERR_INT	to	INT:asclin1.ERR_INT	ASCLIN Error Service Request

Table 240 Connections of ASCLIN2

Interface Signals	connects		Description
ASCLIN2:ACTSA	from	P10.7:IN	Clear to send input
ASCLIN2:ACTSB	from	P33.5:IN	Clear to send input
ASCLIN2:ACTSD	from	ASCLIN2:ARTS	Clear to send input
ASCLIN2:ARTS	to	P10.8:ALT(2)	Ready to send output
		P33.4:ALT(2)	
		ASCLIN2:ACTSD	
ASCLIN2:ARXA	from	P14.3:IN	Receive input
ASCLIN2:ARXB	from	P02.1:IN	Receive input
ASCLIN2:ARXD	from	P10.6:IN	Receive input
ASCLIN2:ARXE	from	P33.8:IN	Receive input
ASCLIN2:ARXG	from	P02.0:IN	Receive input
ASCLIN2:ASCLK	to	P02.4:ALT(2)	Shift clock output
		P10.6:ALT(2)	
		P14.2:ALT(6)	
		P33.7:ALT(2)	
		P33.9:ALT(4)	

Table 240 Connections of ASCLIN2 (cont'd)

Interface Signals	connects		Description
ASCLIN2:ASLSO	to	P02.3:ALT(2)	Slave select signal output
		P10.5:ALT(6)	
		P33.6:ALT(2)	
ASCLIN2:ATX	to	IOM:MON2(14)	Transmit output
		IOM:REF2(14)	
		P02.0:ALT(2)	
		P10.5:ALT(2)	
		P14.2:ALT(2)	
		P14.3:ALT(2)	
		P33.8:ALT(2)	
		P33.9:ALT(2)	
ASCLIN2:sleep_n	from	SCU:scu_syst_sleep_n	Negative turn-off request
ASCLIN2:TX_INT	to	INT:asclin2.TX_INT	ASCLIN Transmit Service Request
ASCLIN2:RX_INT	to	INT:asclin2.RX_INT	ASCLIN Receive Service Request
ASCLIN2:ERR_INT	to	INT:asclin2.ERR_INT	ASCLIN Error Service Request

Table 241 Connections of ASCLIN3

Interface Signals	connects		Description
ASCLIN3:ACTSA	from	P00.12:IN	Clear to send input
ASCLIN3:ACTSD	from	ASCLIN3:ARTS	Clear to send input
ASCLIN3:ARTS	to	P00.9:ALT(3)	Ready to send output
		ASCLIN3:ACTSD	
ASCLIN3:ARXA	from	P15.7:IN	Receive input
ASCLIN3:ARXC	from	P20.3:IN	Receive input
ASCLIN3:ARXE	from	P00.1:IN	Receive input
ASCLIN3:ARXF	from	P21.6:IN	Receive input
ASCLIN3:ASCLK	to	P00.0:ALT(2)	Shift clock output
		P00.2:ALT(2)	
		P15.6:ALT(6)	
		P15.8:ALT(6)	
		P20.0:ALT(3)	
		P21.5:ALT(2)	
		P21.7:ALT(3)	
		P33.2:ALT(2)	

Table 241 Connections of ASCLIN3 (cont'd)

Interface Signals	connects		Description
ASCLIN3:ASLSO	to	P00.3:ALT(2)	Slave select signal output
		P14.3:ALT(5)	
		P21.2:ALT(2)	
		P21.6:ALT(2)	
		P33.1:ALT(2)	
ASCLIN3:ATX	to	IOM:MON2(15)	Transmit output
		IOM:REF2(15)	
		P00.0:ALT(3)	
		P00.1:ALT(2)	
		P15.6:ALT(2)	
		P15.7:ALT(2)	
		P20.0:ALT(2)	
		P20.3:ALT(2)	
		P21.7:ALT(2)	
ASCLIN3:sleep_n	from	SCU:scu_syst_sleep_n	Negative turn-off request
ASCLIN3:TX_INT	to	INT:asclin3.TX_INT	ASCLIN Transmit Service Request
ASCLIN3:RX_INT	to	INT:asclin3.RX_INT	ASCLIN Receive Service Request
ASCLIN3:ERR_INT	to	INT:asclin3.ERR_INT	ASCLIN Error Service Request

Table 242 Connections of ASCLIN4

Interface Signals	connects		Description
ASCLIN4:ACTSD	from	ASCLIN4:ARTS	Clear to send input
ASCLIN4:ARTS	to	ASCLIN4:ACTSD	Ready to send output
ASCLIN4:ARXA	from	P00.12:IN	Receive input
ASCLIN4:ARXB	from	P34.2:IN	Receive input
ASCLIN4:ASCLK	to	P00.10:ALT(2)	Shift clock output
		P34.3:ALT(2)	
ASCLIN4:ASLSO	to	P00.11:ALT(2)	Slave select signal output
		P22.4:ALT(2)	
ASCLIN4:ATX	to	P00.9:ALT(5)	Transmit output
		P34.1:ALT(2)	
ASCLIN4:sleep_n	from	SCU:scu_syst_sleep_n	Negative turn-off request
ASCLIN4:TX_INT	to	INT:asclin4.TX_INT	ASCLIN Transmit Service Request
ASCLIN4:RX_INT	to	INT:asclin4.RX_INT	ASCLIN Receive Service Request
ASCLIN4:ERR_INT	to	INT:asclin4.ERR_INT	ASCLIN Error Service Request

Table 243 Connections of ASCLIN5

Interface Signals	connects		Description
ASCLIN5:ACTSD	from	ASCLIN5:ARTS	Clear to send input
ASCLIN5:ARTS	to	ASCLIN5:ACTSD	Ready to send output
ASCLIN5:ARXA	from	P00.6:IN	Receive input
ASCLIN5:ARXB	from	P33.4:IN	Receive input
ASCLIN5:ARXC	from	P22.3:IN	Receive input
ASCLIN5:ASCLK	to	P33.3:ALT(2)	Shift clock output
ASCLIN5:ASLSO	to	P14.8:ALT(2)	Slave select signal output
		P33.5:ALT(7)	
ASCLIN5:ATX	to	P00.7:ALT(2)	Transmit output
		P22.2:ALT(2)	
		P33.0:ALT(2)	
ASCLIN5:sleep_n	from	SCU:scu_syst_sleep_n	Negative turn-off request
ASCLIN5:TX_INT	to	INT:asclin5.TX_INT	ASCLIN Transmit Service Request
ASCLIN5:RX_INT	to	INT:asclin5.RX_INT	ASCLIN Receive Service Request
ASCLIN5:ERR_INT	to	INT:asclin5.ERR_INT	ASCLIN Error Service Request

Table 244 Connections of ASCLIN6

Interface Signals	connects		Description
ASCLIN6:ACTSD	from	ASCLIN6:ARTS	Clear to send input
ASCLIN6:ARTS	to	ASCLIN6:ACTSD	Ready to send output
ASCLIN6:ARXE	from	P22.0:IN	Receive input
ASCLIN6:ARXF	from	P23.1:IN	Receive input
ASCLIN6:ASCLK	to	P23.1:ALT(7)	Shift clock output
ASCLIN6:ATX	to	P22.0:ALT(7)	Transmit output
		P23.5:ALT(2)	
ASCLIN6:sleep_n	from	SCU:scu_syst_sleep_n	Negative turn-off request
ASCLIN6:TX_INT	to	INT:asclin6.TX_INT	ASCLIN Transmit Service Request
ASCLIN6:RX_INT	to	INT:asclin6.RX_INT	ASCLIN Receive Service Request
ASCLIN6:ERR_INT	to	INT:asclin6.ERR_INT	ASCLIN Error Service Request

Table 245 Connections of ASCLIN7

Interface Signals	connects		Description
ASCLIN7:ACTSD	from	ASCLIN7:ARTS	Clear to send input
ASCLIN7:ARTS	to	ASCLIN7:ACTSD	Ready to send output
ASCLIN7:ARXE	from	P22.1:IN	Receive input
ASCLIN7:ARXF	from	P22.4:IN	Receive input
ASCLIN7:ASLSO	to	P14.8:ALT(3)	Slave select signal output

Table 245 Connections of ASCLIN7 (cont'd)

Interface Signals	connects		Description
ASCLIN7:ATX	to	P22.1:ALT(7)	Transmit output
ASCLIN7:sleep_n	from	SCU:scu_syst_sleep_n	Negative turn-off request
ASCLIN7:TX_INT	to	INT:asclin7.TX_INT	ASCLIN Transmit Service Request
ASCLIN7:RX_INT	to	INT:asclin7.RX_INT	ASCLIN Receive Service Request
ASCLIN7:ERR_INT	to	INT:asclin7.ERR_INT	ASCLIN Error Service Request

Table 246 Connections of ASCLIN8

Interface Signals	connects		Description
ASCLIN8:ACTSD	from	ASCLIN8:ARTS	Clear to send input
ASCLIN8:ARTS	to	ASCLIN8:ACTSD	Ready to send output
ASCLIN8:ARXC	from	P33.1:IN	Receive input
ASCLIN8:ARXD	from	P33.6:IN	Receive input
ASCLIN8:ASCLK	to	P02.8:ALT(3)	Shift clock output
ASCLIN8:ATX	to	P33.7:ALT(4)	Transmit output
ASCLIN8:sleep_n	from	SCU:scu_syst_sleep_n	Negative turn-off request
ASCLIN8:TX_INT	to	INT:asclin8.TX_INT	ASCLIN Transmit Service Request
ASCLIN8:RX_INT	to	INT:asclin8.RX_INT	ASCLIN Receive Service Request
ASCLIN8:ERR_INT	to	INT:asclin8.ERR_INT	ASCLIN Error Service Request

Table 247 Connections of ASCLIN9

Interface Signals	connects		Description
ASCLIN9:ACTSD	from	ASCLIN9:ARTS	Clear to send input
ASCLIN9:ARTS	to	ASCLIN9:ACTSD	Ready to send output
ASCLIN9:ARXC	from	P14.7:IN	Receive input
ASCLIN9:ARXD	from	P14.9:IN	Receive input
ASCLIN9:ARXE	from	P20.6:IN	Receive input
ASCLIN9:ARXF	from	P20.7:IN	Receive input
ASCLIN9:ATX	to	P14.7:ALT(4)	Transmit output
		P20.7:ALT(2)	
ASCLIN9:sleep_n	from	SCU:scu_syst_sleep_n	Negative turn-off request
ASCLIN9:TX_INT	to	INT:asclin9.TX_INT	ASCLIN Transmit Service Request
ASCLIN9:RX_INT	to	INT:asclin9.RX_INT	ASCLIN Receive Service Request
ASCLIN9:ERR_INT	to	INT:asclin9.ERR_INT	ASCLIN Error Service Request

Table 248 Connections of ASCLIN10

Interface Signals	connects		Description
ASCLIN10:ACTSD	from	ASCLIN10:ARTS	Clear to send input
ASCLIN10:ARTS	to	ASCLIN10:ACTSD	Ready to send output

Table 248 Connections of ASCLIN10 (cont'd)

Interface Signals	connects		Description
ASCLIN10:ARXA	from	P00.4:IN	Receive input
ASCLIN10:ARXB	from	P00.8:IN	Receive input
ASCLIN10:ARXC	from	P13.0:IN	Receive input
ASCLIN10:ARXD	from	P13.1:IN	Receive input
ASCLIN10:ASCLK	to	P13.2:ALT(2)	Shift clock output
ASCLIN10:ASLSO	to	P13.3:ALT(2)	Slave select signal output
ASCLIN10:ATX	to	P00.8:ALT(3)	Transmit output
		P13.0:ALT(2)	
ASCLIN10:sleep_n	from	SCU:scu_syst_sleep_n	Negative turn-off request
ASCLIN10:TX_INT	to	INT:asclin10.TX_INT	ASCLIN Transmit Service Request
ASCLIN10:RX_INT	to	INT:asclin10.RX_INT	ASCLIN Receive Service Request
ASCLIN10:ERR_INT	to	INT:asclin10.ERR_INT	ASCLIN Error Service Request

Table 249 Connections of ASCLIN11

Interface Signals	connects		Description
ASCLIN11:ACTSD	from	ASCLIN11:ARTS	Clear to send input
ASCLIN11:ARTS	to	ASCLIN11:ACTSD	Ready to send output
ASCLIN11:ARXA	from	P10.0:IN	Receive input
ASCLIN11:ARXB	from	P10.4:IN	Receive input
ASCLIN11:ARXC	from	P21.0:IN	Receive input
ASCLIN11:ARXD	from	P21.1:IN	Receive input
ASCLIN11:ARXE	from	P21.2:IN	Receive input
ASCLIN11:ARXF	from	P21.5:IN	Receive input
ASCLIN11:ASCLK	to	P21.3:ALT(2)	Shift clock output
ASCLIN11:ASLSO	to	P21.4:ALT(2)	Slave select signal output
ASCLIN11:ATX	to	P10.0:ALT(2)	Transmit output
		P21.0:ALT(2)	
		P21.5:ALT(3)	
ASCLIN11:sleep_n	from	SCU:scu_syst_sleep_n	Negative turn-off request
ASCLIN11:TX_INT	to	INT:asclin11.TX_INT	ASCLIN Transmit Service Request
ASCLIN11:RX_INT	to	INT:asclin11.RX_INT	ASCLIN Receive Service Request
ASCLIN11:ERR_INT	to	INT:asclin11.ERR_INT	ASCLIN Error Service Request

34.5 Revision History

Table 250 Revision History

Reference	Change to Previous Version	Comment
V3.2.6		
–	Initial version for TC33x.	
V3.2.7		
–	No functional changes.	
V3.2.8		
–	No functional changes.	

35 Queued Synchronous Peripheral Interface (QSPI)

35.1 TC33x/TC32x Specific IP Configuration

Table 251 TC33x/TC32x specific configuration of QSPI

Parameter	QSPI0	QSPI1	QSPI2	QSPI3
QSPI module has HSIC			x	x

35.2 TC33x/TC32xSpecific Register Set

Register Address Space Table

Table 252 Register Address Space - QSPI

Module	Base Address	End Address	Note
QSPI0	$F0001C00_H$	$F0001CFF_H$	Register block QSPI0
QSPI1	$F0001D00_H$	$F0001DFF_H$	Register block QSPI1
QSPI2	$F0001E00_H$	$F0001EFF_H$	Register block QSPI2
QSPI3	$F0001F00_H$	$F0001FFF_H$	Register block QSPI3

Register Overview Tables of QSPI

Table 253 Register Overview - QSPI0 (ascending Offset Address)

Short Name	Long Name	Offset Address	Access Mode		Reset	Page Number
			Read	Write		
QSPI0_CLC	Clock Control Register	000_H	U,SV	SV,E,P	Application Reset	See Family Spec
QSPI0_PISEL	Port Input Select Register	004_H	U,SV	SV,P	Application Reset	10
QSPI0_ID	Module Identification Register	008_H	U,SV	BE	Application Reset	See Family Spec
QSPI0_GLOBALCON	Global Configuration Register	010_H	U,SV	SV,P	Application Reset	See Family Spec
QSPI0_GLOBALCON1	Global Configuration Register 1	014_H	U,SV	SV,P	Application Reset	See Family Spec
QSPI0_BACON	Basic Configuration Register	018_H	U,SV	BE	Application Reset	See Family Spec
QSPI0_ECONz (z=0-7)	Configuration Extension z	020_H+z*4	U,SV	SV,P	Application Reset	See Family Spec
QSPI0_STATUS	Status Register	040_H	U,SV	U,SV,P	Application Reset	See Family Spec
QSPI0_STATUS1	Status Register 1	044_H	U,SV	U,SV,P	Application Reset	See Family Spec

Table 253 Register Overview - QSPI0 (ascending Offset Address) (cont'd)

Short Name	Long Name	Offset Address	Access Mode		Reset	Page Number
			Read	Write		
QSPI0_SSOC	Slave Select Output Control Register	048_H	U,SV	SV,P	Application Reset	See Family Spec
QSPI0_FLAGSCLEAR	Flags Clear Register	054_H	U,SV	U,SV,P	Application Reset	See Family Spec
QSPI0_XXLCON	Extra Large Data Configuration Register	058_H	U,SV	U,SV,P	Application Reset	See Family Spec
QSPI0_MIXENTRY	MIX_ENTRY Register	$05C_H$	U,SV	U,SV,P	Application Reset	See Family Spec
QSPI0_BACONENTRY	BACON_ENTRY Register	060_H	U,SV	U,SV,P	Application Reset	See Family Spec
QSPI0_DATAENTRYx (x=0-7)	DATA_ENTRY Register x	064_H+x* 4	U,SV	U,SV,P	Application Reset	See Family Spec
QSPI0_RXEXIT	RX_EXIT Register	090_H	U,SV	BE	Application Reset	See Family Spec
QSPI0_RXEXITD	RX_EXIT Debug Register	094_H	U,SV	BE	Application Reset	See Family Spec
QSPI0_MC	Move Counter Register	$0A4_H$	U,SV	U,SV,P	Application Reset	See Family Spec
QSPI0_MCCON	Move Counter control Register	$0A8_H$	U,SV	U,SV,P	Application Reset	See Family Spec
QSPI0_OCS	OCDS Control and Status	$0E8_H$	U,SV	SV,P	Debug Reset	See Family Spec
QSPI0_KRSTCLR	Kernel Reset Status Clear Register	$0EC_H$	U,SV	SV,E,P	Application Reset	See Family Spec
QSPI0_KRST1	Kernel Reset Register 1	$0F0_H$	U,SV	SV,E,P	Application Reset	See Family Spec
QSPI0_KRST0	Kernel Reset Register 0	$0F4_H$	U,SV	SV,E,P	Application Reset	See Family Spec

Table 253 Register Overview - QSPI0 (ascending Offset Address) (cont'd)

Short Name	Long Name	Offset Address	Access Mode		Reset	Page Number
			Read	Write		
QSPI0_ACCEN1	Access Enable Register 1	$0F8_H$	U,SV	SV,SE	Application Reset	See Family Spec
QSPI0_ACCEN0	Access Enable Register 0	$0FC_H$	U,SV	SV,SE	Application Reset	See Family Spec

Table 254 Register Overview - QSPI1 (ascending Offset Address)

Short Name	Long Name	Offset Address	Access Mode		Reset	Page Number
			Read	Write		
QSPI1_CLC	Clock Control Register	000_H	U,SV	SV,E,P	Application Reset	See Family Spec
QSPI1_PISEL	Port Input Select Register	004_H	U,SV	SV,P	Application Reset	11
QSPI1_ID	Module Identification Register	008_H	U,SV	BE	Application Reset	See Family Spec
QSPI1_GLOBALCON	Global Configuration Register	010_H	U,SV	SV,P	Application Reset	See Family Spec
QSPI1_GLOBALCON1	Global Configuration Register 1	014_H	U,SV	SV,P	Application Reset	See Family Spec
QSPI1_BACON	Basic Configuration Register	018_H	U,SV	BE	Application Reset	See Family Spec
QSPI1_ECONz (z=0-7)	Configuration Extension z	020_H+z*4	U,SV	SV,P	Application Reset	See Family Spec
QSPI1_STATUS	Status Register	040_H	U,SV	U,SV,P	Application Reset	See Family Spec
QSPI1_STATUS1	Status Register 1	044_H	U,SV	U,SV,P	Application Reset	See Family Spec
QSPI1_SSOC	Slave Select Output Control Register	048_H	U,SV	SV,P	Application Reset	See Family Spec
QSPI1_FLAGSCLEAR	Flags Clear Register	054_H	U,SV	U,SV,P	Application Reset	See Family Spec

Table 254 Register Overview - QSPI1 (ascending Offset Address) (cont'd)

Short Name	Long Name	Offset Address	Access Mode		Reset	Page Number
			Read	Write		
QSPI1_XXLCON	Extra Large Data Configuration Register	058_H	U,SV	U,SV,P	Application Reset	See Family Spec
QSPI1_MIXENTRY	MIX_ENTRY Register	$05C_H$	U,SV	U,SV,P	Application Reset	See Family Spec
QSPI1_BACONENTRY	BACON_ENTRY Register	060_H	U,SV	U,SV,P	Application Reset	See Family Spec
QSPI1_DATAENTRYx (x=0-7)	DATA_ENTRY Register x	064_H+x* 4	U,SV	U,SV,P	Application Reset	See Family Spec
QSPI1_RXEXIT	RX_EXIT Register	090_H	U,SV	BE	Application Reset	See Family Spec
QSPI1_RXEXITD	RX_EXIT Debug Register	094_H	U,SV	BE	Application Reset	See Family Spec
QSPI1_MC	Move Counter Register	$0A4_H$	U,SV	U,SV,P	Application Reset	See Family Spec
QSPI1_MCCON	Move Counter control Register	$0A8_H$	U,SV	U,SV,P	Application Reset	See Family Spec
QSPI1_OCS	OCDS Control and Status	$0E8_H$	U,SV	SV,P	Debug Reset	See Family Spec
QSPI1_KRSTCLR	Kernel Reset Status Clear Register	$0EC_H$	U,SV	SV,E,P	Application Reset	See Family Spec
QSPI1_KRST1	Kernel Reset Register 1	$0F0_H$	U,SV	SV,E,P	Application Reset	See Family Spec
QSPI1_KRST0	Kernel Reset Register 0	$0F4_H$	U,SV	SV,E,P	Application Reset	See Family Spec
QSPI1_ACCEN1	Access Enable Register 1	$0F8_H$	U,SV	SV,SE	Application Reset	See Family Spec
QSPI1_ACCEN0	Access Enable Register 0	$0FC_H$	U,SV	SV,SE	Application Reset	See Family Spec

Table 255 Register Overview - QSPI2 (ascending Offset Address)

Short Name	Long Name	Offset Address	Access Mode		Reset	Page Number
			Read	Write		
QSPI2_CLC	Clock Control Register	000_H	U,SV	SV,E,P	Application Reset	See Family Spec
QSPI2_PISEL	Port Input Select Register	004_H	U,SV	SV,P	Application Reset	12
QSPI2_ID	Module Identification Register	008_H	U,SV	BE	Application Reset	See Family Spec
QSPI2_GLOBALCON	Global Configuration Register	010_H	U,SV	SV,P	Application Reset	See Family Spec
QSPI2_GLOBALCON1	Global Configuration Register 1	014_H	U,SV	SV,P	Application Reset	See Family Spec
QSPI2_BACON	Basic Configuration Register	018_H	U,SV	BE	Application Reset	See Family Spec
QSPI2_ECONz (z=0-7)	Configuration Extension z	020_H+z*4	U,SV	SV,P	Application Reset	See Family Spec
QSPI2_STATUS	Status Register	040_H	U,SV	U,SV,P	Application Reset	See Family Spec
QSPI2_STATUS1	Status Register 1	044_H	U,SV	U,SV,P	Application Reset	See Family Spec
QSPI2_SSOC	Slave Select Output Control Register	048_H	U,SV	SV,P	Application Reset	See Family Spec
QSPI2_FLAGSCLEAR	Flags Clear Register	054_H	U,SV	U,SV,P	Application Reset	See Family Spec
QSPI2_XXLCON	Extra Large Data Configuration Register	058_H	U,SV	U,SV,P	Application Reset	See Family Spec
QSPI2_MIXENTRY	MIX_ENTRY Register	$05C_H$	U,SV	U,SV,P	Application Reset	See Family Spec
QSPI2_BACONENTRY	BACON_ENTRY Register	060_H	U,SV	U,SV,P	Application Reset	See Family Spec

Table 255 Register Overview - QSPI2 (ascending Offset Address) (cont'd)

Short Name	Long Name	Offset Address	Access Mode		Reset	Page Number
			Read	Write		
QSPI2_DATAENTRYx (x=0-7)	DATA_ENTRY Register x	064_H+x* 4	U,SV	U,SV,P	Application Reset	See Family Spec
QSPI2_RXEXIT	RX_EXIT Register	090_H	U,SV	BE	Application Reset	See Family Spec
QSPI2_RXEXITD	RX_EXIT Debug Register	094_H	U,SV	BE	Application Reset	See Family Spec
QSPI2_CAPCON	Capture Control Register	$0A0_H$	U,SV	U,SV,P	Application Reset	See Family Spec
QSPI2_MC	Move Counter Register	$0A4_H$	U,SV	U,SV,P	Application Reset	See Family Spec
QSPI2_MCCON	Move Counter control Register	$0A8_H$	U,SV	U,SV,P	Application Reset	See Family Spec
QSPI2_OCS	OCDS Control and Status	$0E8_H$	U,SV	SV,P	Debug Reset	See Family Spec
QSPI2_KRSTCLR	Kernel Reset Status Clear Register	$0EC_H$	U,SV	SV,E,P	Application Reset	See Family Spec
QSPI2_KRST1	Kernel Reset Register 1	$0F0_H$	U,SV	SV,E,P	Application Reset	See Family Spec
QSPI2_KRST0	Kernel Reset Register 0	$0F4_H$	U,SV	SV,E,P	Application Reset	See Family Spec
QSPI2_ACCEN1	Access Enable Register 1	$0F8_H$	U,SV	SV,SE	Application Reset	See Family Spec
QSPI2_ACCEN0	Access Enable Register 0	$0FC_H$	U,SV	SV,SE	Application Reset	See Family Spec

Table 256 Register Overview - QSPI3 (ascending Offset Address)

Short Name	Long Name	Offset Address	Access Mode		Reset	Page Number
			Read	Write		
QSPI3_CLC	Clock Control Register	000_H	U,SV	SV,E,P	Application Reset	See Family Spec
QSPI3_PISEL	Port Input Select Register	004_H	U,SV	SV,P	Application Reset	13
QSPI3_ID	Module Identification Register	008_H	U,SV	BE	Application Reset	See Family Spec
QSPI3_GLOBALCON	Global Configuration Register	010_H	U,SV	SV,P	Application Reset	See Family Spec
QSPI3_GLOBALCON1	Global Configuration Register 1	014_H	U,SV	SV,P	Application Reset	See Family Spec
QSPI3_BACON	Basic Configuration Register	018_H	U,SV	BE	Application Reset	See Family Spec
QSPI3_ECONz (z=0-7)	Configuration Extension z	020_H+z*4	U,SV	SV,P	Application Reset	See Family Spec
QSPI3_STATUS	Status Register	040_H	U,SV	U,SV,P	Application Reset	See Family Spec
QSPI3_STATUS1	Status Register 1	044_H	U,SV	U,SV,P	Application Reset	See Family Spec
QSPI3_SSOC	Slave Select Output Control Register	048_H	U,SV	SV,P	Application Reset	See Family Spec
QSPI3_FLAGSCLEAR	Flags Clear Register	054_H	U,SV	U,SV,P	Application Reset	See Family Spec
QSPI3_XXLCON	Extra Large Data Configuration Register	058_H	U,SV	U,SV,P	Application Reset	See Family Spec
QSPI3_MIXENTRY	MIX_ENTRY Register	$05C_H$	U,SV	U,SV,P	Application Reset	See Family Spec
QSPI3_BACONENTRY	BACON_ENTRY Register	060_H	U,SV	U,SV,P	Application Reset	See Family Spec

Table 256 Register Overview - QSPI3 (ascending Offset Address) (cont'd)

Short Name	Long Name	Offset Address	Access Mode		Reset	Page Number
			Read	Write		
QSPI3_DATAENTRYx (x=0-7)	DATA_ENTRY Register x	064_H+x* 4	U,SV	U,SV,P	Application Reset	See Family Spec
QSPI3_RXEXIT	RX_EXIT Register	090_H	U,SV	BE	Application Reset	See Family Spec
QSPI3_RXEXITD	RX_EXIT Debug Register	094_H	U,SV	BE	Application Reset	See Family Spec
QSPI3_CAPCON	Capture Control Register	$0A0_H$	U,SV	U,SV,P	Application Reset	See Family Spec
QSPI3_MC	Move Counter Register	$0A4_H$	U,SV	U,SV,P	Application Reset	See Family Spec
QSPI3_MCCON	Move Counter control Register	$0A8_H$	U,SV	U,SV,P	Application Reset	See Family Spec
QSPI3_OCS	OCDS Control and Status	$0E8_H$	U,SV	SV,P	Debug Reset	See Family Spec
QSPI3_KRSTCLR	Kernel Reset Status Clear Register	$0EC_H$	U,SV	SV,E,P	Application Reset	See Family Spec
QSPI3_KRST1	Kernel Reset Register 1	$0F0_H$	U,SV	SV,E,P	Application Reset	See Family Spec
QSPI3_KRST0	Kernel Reset Register 0	$0F4_H$	U,SV	SV,E,P	Application Reset	See Family Spec
QSPI3_ACCEN1	Access Enable Register 1	$0F8_H$	U,SV	SV,SE	Application Reset	See Family Spec
QSPI3_ACCEN0	Access Enable Register 0	$0FC_H$	U,SV	SV,SE	Application Reset	See Family Spec

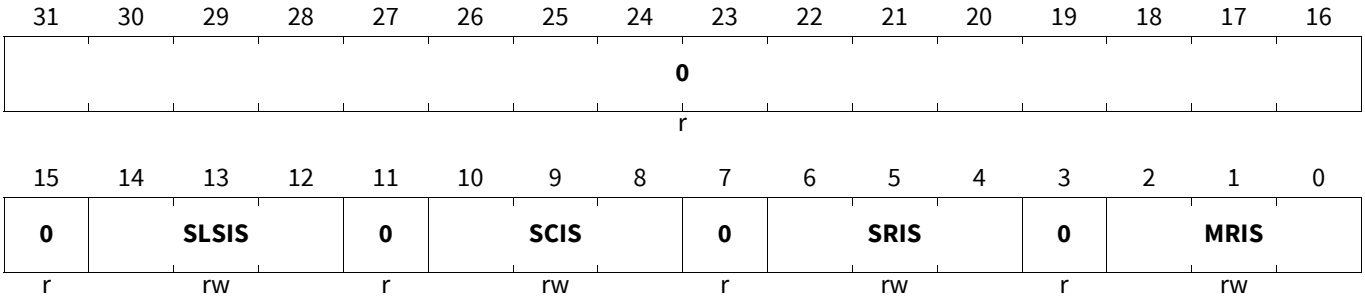
35.3 TC33x/TC32x Specific Registers

35.3.1 Register block QSPI

Port Input Select Register

The PISEL register controls the input signal selection of the SSC module.

QSPI0_PISEL
Port Input Select Register **(004_H)** **Application Reset Value: 0000 0000$_H$**



Field	Bits	Type	Description
MRIS	2:0	rw	**Master Mode Receive Input Select** MRIS selects one out of eight MRST receive input lines, used in Master Mode. Note that not all inputs are used in every device of the family. Selecting an unused input returns a continuous low value. The following signal sources are available in this product (if supported by the package!) 000_B **P20.12_IN**,
SRIS	6:4	rw	**Slave Mode Receive Input Select** SRIS selects one out of eight MTSR receive input lines, used in Slave Mode. Note that not all inputs are used in every device of the family. Selecting an unused input returns a continuous low value. The following signal sources are available in this product (if supported by the package!) 000_B **P20.14_IN**,
SCIS	10:8	rw	**Slave Mode Clock Input Select** SCIS selects one out of eight module kernel SCLK input lines that is used as clock input line in slave mode. Note that not all inputs are used in every device of the family. Selecting an unused input returns a continuous low value. The following signal sources are available in this product (if supported by the package!) 000_B **P20.11_IN**,

Field	Bits	Type	Description
SLSIS	14:12	rw	**Slave Mode Slave Select Input Selection** The SLSIS must be programmed properly before the slave mode is set with GLOBALCON.MODE and the module is set to RUN mode. The following signal sources are available in this product (if supported by the package!) 000_B no input 001_B **P20.13_IN**, 010_B **P20.9_IN**,
0	3, 7, 11, 31:15	r	**Reserved** Read as 0; should be written with 0.

QSPI1_PISEL

Port Input Select Register **(004_H)** **Application Reset Value: $0000\ 0000_H$**

31	30	29	28	27	26	25	24	23	22	21	20	19	18	17	16
0															
r															

15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
0	**SLSIS**			**0**	**SCIS**			**0**	**SRIS**			**0**	**MRIS**		
r	rw			r	rw			r	rw			r	rw		

Field	Bits	Type	Description
MRIS	2:0	rw	**Master Mode Receive Input Select** MRIS selects one out of eight MRST receive input lines, used in Master Mode. Note that not all inputs are used in every device of the family. Selecting an unused input returns a continuous low value. The following signal sources are available in this product (if supported by the package!) 000_B **P10.1_IN**, 001_B **P11.3_IN**,
SRIS	6:4	rw	**Slave Mode Receive Input Select** SRIS selects one out of eight MTSR receive input lines, used in Slave Mode. Note that not all inputs are used in every device of the family. Selecting an unused input returns a continuous low value. The following signal sources are available in this product (if supported by the package!) 000_B **P10.3_IN**, 001_B **P11.9_IN**, 010_B **P10.4_IN**,

Field	Bits	Type	Description
SCIS	10:8	rw	**Slave Mode Clock Input Select** SCIS selects one out of eight module kernel SCLK input lines that is used as clock input line in slave mode. Note that not all inputs are used in every device of the family. Selecting an unused input returns a continuous low value. The following signal sources are available in this product (if supported by the package!) 000_B **P10.2_IN**, 001_B **P11.6_IN**,
SLSIS	14:12	rw	**Slave Mode Slave Select Input Selection** The SLSIS must be programmed properly before the slave mode is set with GLOBALCON.MODE and the module is set to RUN mode. The following signal sources are available in this product (if supported by the package!) 000_B no input 001_B **P11.10_IN**,
0	3, 7, 11, 31:15	r	**Reserved** Read as 0; should be written with 0.

QSPI2_PISEL

Port Input Select Register **(004_H)** **Application Reset Value: $0000\ 0000_H$**

31	30	29	28	27	26	25	24	23	22	21	20	19	18	17	16
0															
r															

15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
0	**SLSIS**			**0**	**SCIS**			**0**	**SRIS**			**0**	**MRIS**		
r	rw			r	rw			r	rw			r	rw		

Field	Bits	Type	Description
MRIS	2:0	rw	**Master Mode Receive Input Select** MRIS selects one out of eight MRST receive input lines, used in Master Mode. Note that not all inputs are used in every device of the family. Selecting an unused input returns a continuous low value. The following signal sources are available in this product (if supported by the package!) 000_B **P15.4_IN**, 001_B **P15.7_IN**, 100_B **P15.2_IN**,

Field	Bits	Type	Description
SRIS	6:4	rw	**Slave Mode Receive Input Select** SRIS selects one out of eight MTSR receive input lines, used in Slave Mode. Note that not all inputs are used in every device of the family. Selecting an unused input returns a continuous low value. The following signal sources are available in this product (if supported by the package!) 000_B **P15.5_IN**, 001_B **P15.6_IN**,
SCIS	10:8	rw	**Slave Mode Clock Input Select** SCIS selects one out of eight module kernel SCLK input lines that is used as clock input line in slave mode. Note that not all inputs are used in every device of the family. Selecting an unused input returns a continuous low value. The following signal sources are available in this product (if supported by the package!) 000_B **P15.3_IN**, 001_B **P15.8_IN**,
SLSIS	14:12	rw	**Slave Mode Slave Select Input Selection** The SLSIS must be programmed properly before the slave mode is set with GLOBALCON.MODE and the module is set to RUN mode. The following signal sources are available in this product (if supported by the package!) 000_B no input 001_B **P15.2_IN**, 010_B **P15.1_IN**,
0	3, 7, 11, 31:15	r	**Reserved** Read as 0; should be written with 0.

QSPI3_PISEL

Port Input Select Register **(004_H)** **Application Reset Value: $0000\ 0000_H$**

31	30	29	28	27	26	25	24	23	22	21	20	19	18	17	16
0															
r															

15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
0	**SLSIS**			**0**	**SCIS**			**0**	**SRIS**			**0**	**MRIS**		
r	rw			r	rw			r	rw			r	rw		

Field	Bits	Type	Description
MRIS	2:0	rw	**Master Mode Receive Input Select** MRIS selects one out of eight MRST receive input lines, used in Master Mode. Note that not all inputs are used in every device of the family. Selecting an unused input returns a continuous low value. The following signal sources are available in this product (if supported by the package!) 000_B **P02.5_IN**, 001_B **P10.7_IN**, 011_B **P22.1_IN**,
SRIS	6:4	rw	**Slave Mode Receive Input Select** SRIS selects one out of eight MTSR receive input lines, used in Slave Mode. Note that not all inputs are used in every device of the family. Selecting an unused input returns a continuous low value. The following signal sources are available in this product (if supported by the package!) 000_B **P02.6_IN**, 001_B **P10.6_IN**, 011_B **P22.0_IN**,
SCIS	10:8	rw	**Slave Mode Clock Input Select** SCIS selects one out of eight module kernel SCLK input lines that is used as clock input line in slave mode. Note that not all inputs are used in every device of the family. Selecting an unused input returns a continuous low value. The following signal sources are available in this product (if supported by the package!) 000_B **P02.7_IN**, 001_B **P10.8_IN**, 011_B **P22.3_IN**,
SLSIS	14:12	rw	**Slave Mode Slave Select Input Selection** The SLSIS must be programmed properly before the slave mode is set with GLOBALCON.MODE and the module is set to RUN mode. The following signal sources are available in this product (if supported by the package!) 000_B no input 001_B **P02.4_IN**,
0	3, 7, 11, 31:15	r	**Reserved** Read as 0; should be written with 0.

35.4 Connectivity

The tables below list all the connections of QSPI instances.

Table 257 Connections of QSPI0

Interface Signals	connects		Description
QSPI0:MRST	to	IOM:MON2(0)	Slave SPI data output
		IOM:REF2(0)	
		P20.12:ALT(3)	
QSPI0:MRSTA	from	P20.12:IN	Master SPI data input
QSPI0:MTSR	to	P20.12:ALT(4)	Master SPI data output
		P20.14:ALT(3)	
QSPI0:MTSRA	from	P20.14:IN	Slave SPI data input
QSPI0:SCLK	to	P20.11:ALT(3)	Master SPI clock output
		P20.13:ALT(5)	
QSPI0:SCLKA	from	P20.11:IN	Slave SPI clock inputs
QSPI0:SLSIA	from	P20.13:IN	Slave select input
QSPI0:SLSIB	from	P20.9:IN	Slave select input
QSPI0:SLSO(0)	to	P20.8:ALT(3)	Master slave select output
QSPI0:SLSO(1)	to	P20.9:ALT(3)	Master slave select output
QSPI0:SLSO(2)	to	P20.13:ALT(3)	Master slave select output
QSPI0:SLSO(3)	to	P11.10:ALT(3)	Master slave select output
QSPI0:SLSO(4)	to	P11.11:ALT(3)	Master slave select output
QSPI0:SLSO(5)	to	P11.2:ALT(3)	Master slave select output
QSPI0:SLSO(6)	to	P20.10:ALT(3)	Master slave select output
QSPI0:SLSO(7)	to	P33.5:ALT(2)	Master slave select output
QSPI0:SLSO(8)	to	P20.6:ALT(3)	Master slave select output
QSPI0:SLSO(9)	to	P20.3:ALT(3)	Master slave select output
QSPI0:SLSO(12)	to	P22.4:ALT(4)	Master slave select output
QSPI0:SLSO(13)	to	P15.0:ALT(3)	Master slave select output
QSPI0:TX_INT	to	INT:qspi0.TX_INT	QSPI Transmit Service Request
QSPI0:RX_INT	to	INT:qspi0.RX_INT	QSPI Receive Service Request
QSPI0:ERR_INT	to	INT:qspi0.ERR_INT	QSPI Error Service Request
QSPI0:PT_INT	to	INT:qspi0.PT_INT	QSPI Phase Transition Service Request
QSPI0:U_INT	to	INT:qspi0.U_INT	QSPI User Defined Service Request
QSPI0:HC_INT	to	INT:qspi0.HC_INT	QSPI High Speed Capture Service Request

Table 258 Connections of QSPI1

Interface Signals	connects		Description
QSPI1:MRST	to	IOM:MON2(1)	Slave SPI data output
		IOM:REF2(1)	
		P10.1:ALT(3)	
		P10.6:ALT(6)	
		P11.3:ALT(3)	
QSPI1:MRSTA	from	P10.1:IN	Master SPI data input
QSPI1:MRSTB	from	P11.3:IN	Master SPI data input
QSPI1:MTSR	to	P10.1:ALT(2)	Master SPI data output
		P10.3:ALT(3)	
		P10.4:ALT(4)	
		P11.9:ALT(3)	
QSPI1:MTSRA	from	P10.3:IN	Slave SPI data input
QSPI1:MTSRB	from	P11.9:IN	Slave SPI data input
QSPI1:MTSRC	from	P10.4:IN	Slave SPI data input
QSPI1:SCLK	to	P10.2:ALT(3)	Master SPI clock output
		P11.6:ALT(3)	
QSPI1:SCLKA	from	P10.2:IN	Slave SPI clock inputs
QSPI1:SCLKB	from	P11.6:IN	Slave SPI clock inputs
QSPI1:SLSIA	from	P11.10:IN	Slave select input
QSPI1:SLSO(0)	to	P20.8:ALT(4)	Master slave select output
QSPI1:SLSO(1)	to	P20.9:ALT(4)	Master slave select output
QSPI1:SLSO(2)	to	P20.13:ALT(4)	Master slave select output
QSPI1:SLSO(3)	to	P11.10:ALT(4)	Master slave select output
QSPI1:SLSO(4)	to	P11.11:ALT(4)	Master slave select output
QSPI1:SLSO(5)	to	P11.2:ALT(4)	Master slave select output
QSPI1:SLSO(6)	to	P33.10:ALT(2)	Master slave select output
QSPI1:SLSO(7)	to	P33.5:ALT(3)	Master slave select output
QSPI1:SLSO(8)	to	P10.4:ALT(3)	Master slave select output
QSPI1:SLSO(9)	to	P10.5:ALT(4)	Master slave select output
QSPI1:SLSO(10)	to	P10.0:ALT(3)	Master slave select output
QSPI1:TX_INT	to	INT:qspi1.TX_INT	QSPI Transmit Service Request
QSPI1:RX_INT	to	INT:qspi1.RX_INT	QSPI Receive Service Request
QSPI1:ERR_INT	to	INT:qspi1.ERR_INT	QSPI Error Service Request
QSPI1:PT_INT	to	INT:qspi1.PT_INT	QSPI Phase Transition Service Request
QSPI1:U_INT	to	INT:qspi1.U_INT	QSPI User Defined Service Request
QSPI1:HC_INT	to	INT:qspi1.HC_INT	QSPI High Speed Capture Service Request

Table 259 Connections of QSPI2

Interface Signals	connects		Description
QSPI2:HSICINA	from	P15.2:IN	Highspeed capture channel
QSPI2:HSICINB	from	P15.3:IN	Highspeed capture channel
QSPI2:MRST	to	IOM:MON2(2)	Slave SPI data output
		IOM:REF2(2)	
		P15.4:ALT(3)	
		P15.7:ALT(3)	
QSPI2:MRSTA	from	P15.4:IN	Master SPI data input
QSPI2:MRSTB	from	P15.7:IN	Master SPI data input
QSPI2:MRSTE	from	P15.2:IN	Master SPI data input
QSPI2:MTSR	to	P15.5:ALT(3)	Master SPI data output
		P15.6:ALT(3)	
QSPI2:MTSRA	from	P15.5:IN	Slave SPI data input
QSPI2:MTSRB	from	P15.6:IN	Slave SPI data input
QSPI2:SCLK	to	P15.3:ALT(3)	Master SPI clock output
		P15.6:ALT(5)	
		P15.8:ALT(3)	
		P33.1:ALT(3)	
QSPI2:SCLKA	from	P15.3:IN	Slave SPI clock inputs
QSPI2:SCLKB	from	P15.8:IN	Slave SPI clock inputs
QSPI2:SLSIA	from	P15.2:IN	Slave select input
QSPI2:SLSIB	from	P15.1:IN	Slave select input
QSPI2:SLSO(0)	to	P15.2:ALT(3)	Master slave select output
QSPI2:SLSO(1)	to	P14.2:ALT(3)	Master slave select output
QSPI2:SLSO(2)	to	P14.6:ALT(3)	Master slave select output
QSPI2:SLSO(3)	to	P14.3:ALT(3)	Master slave select output
QSPI2:SLSO(4)	to	P14.7:ALT(3)	Master slave select output
QSPI2:SLSO(5)	to	P15.1:ALT(3)	Master slave select output
QSPI2:SLSO(7)	to	P20.10:ALT(4)	Master slave select output
QSPI2:SLSO(8)	to	P20.6:ALT(4)	Master slave select output
QSPI2:SLSO(9)	to	P20.3:ALT(4)	Master slave select output
QSPI2:SLSO(10)	to	P33.2:ALT(3)	Master slave select output
		P34.3:ALT(4)	
QSPI2:SLSO(11)	to	P33.6:ALT(3)	Master slave select output
QSPI2:SLSO(12)	to	P33.4:ALT(3)	Master slave select output
QSPI2:TX_INT	to	INT:qspi2.TX_INT	QSPI Transmit Service Request
QSPI2:RX_INT	to	INT:qspi2.RX_INT	QSPI Receive Service Request
QSPI2:ERR_INT	to	INT:qspi2.ERR_INT	QSPI Error Service Request

Table 259 Connections of QSPI2 (cont'd)

Interface Signals	connects		Description
QSPI2:PT_INT	to	INT:qspi2.PT_INT	QSPI Phase Transition Service Request
QSPI2:U_INT	to	INT:qspi2.U_INT	QSPI User Defined Service Request
QSPI2:HC_INT	to	INT:qspi2.HC_INT	QSPI High Speed Capture Service Request

Table 260 Connections of QSPI3

Interface Signals	connects		Description
QSPI3:HSICINA	from	P33.9:IN	Highspeed capture channel
QSPI3:HSICINB	from	P33.10:IN	Highspeed capture channel
QSPI3:MRST	to	IOM:MON2(3)	Slave SPI data output
		IOM:REF2(3)	
		P02.5:ALT(3)	
		P10.7:ALT(3)	
		P22.1:ALT(3)	
QSPI3:MRSTA	from	P02.5:IN	Master SPI data input
QSPI3:MRSTB	from	P10.7:IN	Master SPI data input
QSPI3:MRSTD	from	P22.1:IN	Master SPI data input
QSPI3:MTSR	to	P02.6:ALT(3)	Master SPI data output
		P10.6:ALT(3)	
		P22.0:ALT(3)	
QSPI3:MTSRA	from	P02.6:IN	Slave SPI data input
QSPI3:MTSRB	from	P10.6:IN	Slave SPI data input
QSPI3:MTSRD	from	P22.0:IN	Slave SPI data input
QSPI3:SCLK	to	P02.7:ALT(3)	Master SPI clock output
		P10.8:ALT(3)	
		P22.3:ALT(3)	
QSPI3:SCLKA	from	P02.7:IN	Slave SPI clock inputs
QSPI3:SCLKB	from	P10.8:IN	Slave SPI clock inputs
QSPI3:SCLKD	from	P22.3:IN	Slave SPI clock inputs
QSPI3:SLSIA	from	P02.4:IN	Slave select input
QSPI3:SLSO(0)	to	P02.4:ALT(3)	Master slave select output
QSPI3:SLSO(1)	to	P02.0:ALT(3)	Master slave select output
QSPI3:SLSO(2)	to	P02.1:ALT(3)	Master slave select output
QSPI3:SLSO(3)	to	P00.5:ALT(3)	Master slave select output
		P02.2:ALT(3)	
QSPI3:SLSO(4)	to	P00.2:ALT(6)	Master slave select output
		P02.3:ALT(3)	
QSPI3:SLSO(5)	to	P02.8:ALT(2)	Master slave select output
QSPI3:SLSO(6)	to	P00.8:ALT(2)	Master slave select output

Table 260 Connections of QSPI3 (cont'd)

Interface Signals	connects		Description
QSPI3:SLSO(7)	to	P00.9:ALT(2)	Master slave select output
QSPI3:SLSO(8)	to	P10.5:ALT(3)	Master slave select output
QSPI3:SLSO(12)	to	P22.2:ALT(3)	Master slave select output
QSPI3:TX_INT	to	INT:qspi3.TX_INT	QSPI Transmit Service Request
QSPI3:RX_INT	to	INT:qspi3.RX_INT	QSPI Receive Service Request
QSPI3:ERR_INT	to	INT:qspi3.ERR_INT	QSPI Error Service Request
QSPI3:PT_INT	to	INT:qspi3.PT_INT	QSPI Phase Transition Service Request
QSPI3:U_INT	to	INT:qspi3.U_INT	QSPI User Defined Service Request
QSPI3:HC_INT	to	INT:qspi3.HC_INT	QSPI High Speed Capture Service Request

35.5 Revision History

Table 261 Revision History

Reference	Change to Previous Version	Comment
V3.0.20		
	Initial version TC33x	

36 Micro Second Channel (MSC)

This device doesn’t contain a MSC.

37 Single Edge Nibble Transmission (SENT)

This document describes the SENT Interface specific appendix for the product TC33x/TC32x.

37.1 TC33x/TC32x Specific IP Configuration

See features in family spec.

Table 262 TC33x/TC32x specific configuration of SENT

Parameter	SENT
Number of SENT channels for this device	6

37.2 TC33x/TC32x Specific Register Set

Register Address Space Table

The address space for the module registers is defined in **Register Address Space Table**.

Table 263 Register Address Space - SENT

Module	Base Address	End Address	Note
SENT	$F0003000_H$	$F0003AFF_H$	FPI slave interface

Register Overview Table

There are no product specific register for this module.

37.3 TC33x/TC32x Specific Registers

There are no product specific register for this module.

37.4 Connectivity

This section describes the connectivity of the SENT module.

37.4.1 Interrupt and DMA Controller Service Requests

The trigger outputs of the SENT module are connected via the Interrupt router. The request lines are connected as shown in **Connections of SENT**.

37.4.2 Trigger Inputs

The module has 8 Sent Channels and the same number of trigger inputs but not more than n+1 = 16. They can be randomly chosen by programming IOCRx.ETS. The trigger inputs (TRIG[n:0]) of the SENT module are connected to the GTM as shown in **Connections of SENT**.

37.4.3 Connections of SENT

The tables below list all the connections of SENT instances.

Table 264 Connections of SENT

Interface Signals	connects		Description
SENT:SENT0A	from	P40.6:IN	Receive input channel 0
SENT:SENT1A	from	P40.7:IN	Receive input channel 1
SENT:SENT2A	from	P40.8:IN	Receive input channel 2
SENT:SENT3A	from	P40.9:IN	Receive input channel 3
SENT:SENT4A	from	P40.4:IN	Receive input channel 4
SENT:SENT5A	from	P40.5:IN	Receive input channel 5
SENT:SENT0B	from	P00.1:IN	Receive input channel 0
SENT:SENT1B	from	P00.2:IN	Receive input channel 1
SENT:SENT2B	from	P00.3:IN	Receive input channel 2
SENT:SENT3B	from	P00.4:IN	Receive input channel 3

Table 264 Connections of SENT (cont'd)

Interface Signals	connects		Description
SENT:SENT4B	from	P00.5:IN	Receive input channel 4
SENT:SENT5B	from	P00.6:IN	Receive input channel 5
SENT:SENT0C	from	P02.8:IN	Receive input channel 0
SENT:SENT1C	from	P02.7:IN	Receive input channel 1
SENT:SENT2C	from	P02.6:IN	Receive input channel 2
SENT:SENT3C	from	P02.5:IN	Receive input channel 3
SENT:SENT4C	from	P33.6:IN	Receive input channel 4
SENT:SENT5C	from	P33.5:IN	Receive input channel 5
SENT:SPC(0)	to	P00.1:ALT(6)	Transmit output
SENT:SPC(1)	to	P02.7:ALT(6)	Transmit output
SENT:SPC(2)	to	P00.3:ALT(6)	Transmit output
SENT:SPC(3)	to	P00.4:ALT(6)	Transmit output
SENT:SPC(4)	to	P00.5:ALT(6)	Transmit output
SENT:SPC(5)	to	P00.6:ALT(6)	Transmit output
SENT:TRIG(15:0)	from	GTM:SENT.TRIG(15:0)	GTM timer output vector
SENT:TRIGO(9:0)	to	INT:sent.TRIGO(9:0)	SENT TRIGO=m Service Request

37.5 Revision History

Table 265 Revision History

Reference	Change to Previous Version	Comment
V2.1.9		
	Initial version for TC33X.	
V2.1.10		
Page 1	Second sentence changed to internal audience only due to customer confusion. No functional change.	
Page 2	Minor notation update in connection table, no functional change.	

38 CAN Interface (MCMCAN)

This section describes the MCMCAN Interface specific appendix for the product TC33x/TC32x.

38.1 TC33x/TC32x Specific IP Configuration

Table 266 TC33x/TC32x specific configuration of CAN

Parameter	CAN0	CAN1
Node size in byte	1024	1024
Number of CAN Nodes	4	4
RAM size in byte	32768	16384
Maximum Number of Standard ID Filter Messages per node	128	128
Maximum Number of Extended ID Filter Messages per node	64	64
Maximum Number of RxFIFO structures per node	2	2
Maximum Number of Messages in a Rx buffer per node	64	64
Maximum Number of Tx Event Messages per node	32	32
Maximum Number of Tx Messages in a Tx Buffer per node	32	32

38.2 TC33x/TC32x Specific Register Set

Register Address Space Table

Table 267 Register Address Space - CAN

Module	Base Address	End Address	Note
CAN0	$F0200000_H$	$F0208FFF_H$	Bus Interface
CAN1	$F0210000_H$	$F0218FFF_H$	Bus Interface

Register Overview Table

Table 268 Register Overview - CAN (ascending Offset Address)

Short Name	Long Name	Offset Address	Page Number
CAN0_RAM	Embedded SRAM for messages (008000_H Byte)	000000_H	
CAN1_RAM	Embedded SRAM for messages (004000_H Byte)	000000_H	
CAN0_CLC	CAN Clock Control Register	008000_H	See Family Spec
CAN1_CLC	CAN Clock Control Register	008000_H	See Family Spec
CAN0_ID	Module Identification Register	008008_H	See Family Spec
CAN1_ID	Module Identification Register	008008_H	See Family Spec
CAN0_MCR	Module Control Register	008030_H	See Family Spec
CAN1_MCR	Module Control Register	008030_H	12
CAN0_BUFADR	Buffer receive address and transmit address	008034_H	See Family Spec
CAN0_MECR	Measure Control Register	008040_H	See Family Spec
CAN0_MESTAT	Measure Status Register	008044_H	See Family Spec

Table 268 Register Overview - CAN (ascending Offset Address) (cont'd)

Short Name	Long Name	Offset Address	Page Number
CAN0_ACCENCTR0	Access Enable Register Control 0	$0080DC_H$	See Family Spec
CAN1_ACCENCTR0	Access Enable Register Control 0	$0080DC_H$	See Family Spec
CAN0_OCS	OCDS Control and Status	$0080E8_H$	See Family Spec
CAN1_OCS	OCDS Control and Status	$0080E8_H$	See Family Spec
CAN0_KRSTCLR	Kernel Reset Status Clear Register	$0080EC_H$	See Family Spec
CAN1_KRSTCLR	Kernel Reset Status Clear Register	$0080EC_H$	See Family Spec
CAN0_KRST1	Kernel Reset Register 1	$0080F0_H$	See Family Spec
CAN1_KRST1	Kernel Reset Register 1	$0080F0_H$	See Family Spec
CAN0_KRST0	Kernel Reset Register 0	$0080F4_H$	See Family Spec
CAN1_KRST0	Kernel Reset Register 0	$0080F4_H$	See Family Spec
CAN0_ACCEN0	Access Enable Register 0	$0080FC_H$	See Family Spec
CAN1_ACCEN0	Access Enable Register 0	$0080FC_H$	See Family Spec
CAN0_ACCENNODEi0 (i=0-3)	Access Enable Register CAN Node i 0	008100_H+i*400 H	See Family Spec
CAN1_ACCENNODEi0 (i=0-3)	Access Enable Register CAN Node i 0	008100_H+i*400 H	See Family Spec

Table 268 Register Overview - CAN (ascending Offset Address) (cont'd)

Short Name	Long Name	Offset Address	Page Number
CAN0_STARTADRi (i=0-3)	Start Address Node i	008108_H+i*400 H	See Family Spec
CAN1_STARTADRi (i=0-3)	Start Address Node i	008108_H+i*400 H	See Family Spec
CAN0_ENDADRi (i=0-3)	End Address Node i	$00810C_H$+i*40 0_H	See Family Spec
CAN1_ENDADRi (i=0-3)	End Address Node i	$00810C_H$+i*40 0_H	See Family Spec
CAN0_ISREGi (i=0-3)	Interrupt Signalling Register i	008110_H+i*400 H	See Family Spec
CAN1_ISREGi (i=0-3)	Interrupt Signalling Register i	008110_H+i*400 H	See Family Spec
CAN0_GRINT1i (i=0-3)	Interrupt routing for Groups 1 i	008114_H+i*400 H	See Family Spec
CAN1_GRINT1i (i=0-3)	Interrupt routing for Groups 1 i	008114_H+i*400 H	See Family Spec
CAN0_GRINT2i (i=0-3)	Interrupt routing for Groups 2 i	008118_H+i*400 H	See Family Spec
CAN1_GRINT2i (i=0-3)	Interrupt routing for Groups 2 i	008118_H+i*400 H	See Family Spec
CAN0_NTCCRi (i=0-3)	Node i Timer Clock Control Register	008120_H+i*400 H	See Family Spec
CAN1_NTCCRi (i=0-3)	Node i Timer Clock Control Register	008120_H+i*400 H	See Family Spec
CAN0_NTATTRi (i=0-3)	Node i Timer A Transmit Trigger Register	008124_H+i*400 H	See Family Spec
CAN1_NTATTRi (i=0-3)	Node i Timer A Transmit Trigger Register	008124_H+i*400 H	See Family Spec

Table 268 Register Overview - CAN (ascending Offset Address) (cont'd)

Short Name	Long Name	Offset Address	Page Number
CAN0_NTBTTRi (i=0-3)	Node i Timer B Transmit Trigger Register	008128_H+i*400 H	See Family Spec
CAN1_NTBTTRi (i=0-3)	Node i Timer B Transmit Trigger Register	008128_H+i*400 H	See Family Spec
CAN0_NTCTTRi (i=0-3)	Node i Timer C Transmit Trigger Register	$00812C_H$+i*40 0_H	See Family Spec
CAN1_NTCTTRi (i=0-3)	Node i Timer C Transmit Trigger Register	$00812C_H$+i*40 0_H	See Family Spec
CAN0_NTRTRi (i=0-3)	Node i Timer Receive Timeout Register	008130_H+i*400 H	See Family Spec
CAN1_NTRTRi (i=0-3)	Node i Timer Receive Timeout Register	008130_H+i*400 H	See Family Spec
CAN0_NPCRi (i=0-3)	Node i Port Control Register	008140_H+i*400 H	See Family Spec
CAN1_NPCRi (i=0-3)	Node i Port Control Register	008140_H+i*400 H	See Family Spec
CAN0_CRELi (i=0-3)	Core Release Register i	008200_H+i*400 H	See Family Spec
CAN1_CRELi (i=0-3)	Core Release Register i	008200_H+i*400 H	See Family Spec
CAN0_ENDNi (i=0-3)	Endian Register i	008204_H+i*400 H	See Family Spec
CAN1_ENDNi (i=0-3)	Endian Register i	008204_H+i*400 H	See Family Spec
CAN0_DBTPi (i=0-3)	Data Bit Timing & Prescaler Register i	$00820C_H$+i*40 0_H	See Family Spec
CAN1_DBTPi (i=0-3)	Data Bit Timing & Prescaler Register i	$00820C_H$+i*40 0_H	See Family Spec

Table 268 Register Overview - CAN (ascending Offset Address) (cont'd)

Short Name	Long Name	Offset Address	Page Number
CAN0_TESTi (i=0-3)	Test Register i	008210_H+i*400 H	See Family Spec
CAN1_TESTi (i=0-3)	Test Register i	008210_H+i*400 H	See Family Spec
CAN0_RWDi (i=0-3)	RAM Watchdog i	008214_H+i*400 H	See Family Spec
CAN1_RWDi (i=0-3)	RAM Watchdog i	008214_H+i*400 H	See Family Spec
CAN0_CCCRi (i=0-3)	CC Control Register i	008218_H+i*400 H	See Family Spec
CAN1_CCCRi (i=0-3)	CC Control Register i	008218_H+i*400 H	See Family Spec
CAN0_NBTPi (i=0-3)	Nominal Bit Timing & Prescaler Register i	$00821C_H$+i*40 0_H	See Family Spec
CAN1_NBTPi (i=0-3)	Nominal Bit Timing & Prescaler Register i	$00821C_H$+i*40 0_H	See Family Spec
CAN0_TSCCi (i=0-3)	Timestamp Counter Configuration i	008220_H+i*400 H	See Family Spec
CAN1_TSCCi (i=0-3)	Timestamp Counter Configuration i	008220_H+i*400 H	See Family Spec
CAN0_TSCVi (i=0-3)	Timestamp Counter Value i	008224_H+i*400 H	See Family Spec
CAN1_TSCVi (i=0-3)	Timestamp Counter Value i	008224_H+i*400 H	See Family Spec
CAN0_TOCCi (i=0-3)	Timeout Counter Configuration i	008228_H+i*400 H	See Family Spec
CAN1_TOCCi (i=0-3)	Timeout Counter Configuration i	008228_H+i*400 H	See Family Spec

Table 268 Register Overview - CAN (ascending Offset Address) (cont'd)

Short Name	Long Name	Offset Address	Page Number
CAN0_TOCVi (i=0-3)	Timeout Counter Value i	$00822C_H$+i*40 0_H	See Family Spec
CAN1_TOCVi (i=0-3)	Timeout Counter Value i	$00822C_H$+i*40 0_H	See Family Spec
CAN0_ECRi (i=0-3)	Error Counter Register i	008240_H+i*400 H	See Family Spec
CAN1_ECRi (i=0-3)	Error Counter Register i	008240_H+i*400 H	See Family Spec
CAN0_PSRi (i=0-3)	Protocol Status Register i	008244_H+i*400 H	See Family Spec
CAN1_PSRi (i=0-3)	Protocol Status Register i	008244_H+i*400 H	See Family Spec
CAN0_TDCRi (i=0-3)	Transmitter Delay Compensation Register i	008248_H+i*400 H	See Family Spec
CAN1_TDCRi (i=0-3)	Transmitter Delay Compensation Register i	008248_H+i*400 H	See Family Spec
CAN0_IRi (i=0-3)	Interrupt Register i	008250_H+i*400 H	See Family Spec
CAN1_IRi (i=0-3)	Interrupt Register i	008250_H+i*400 H	See Family Spec
CAN0_IEi (i=0-3)	Interrupt Enable i	008254_H+i*400 H	See Family Spec
CAN1_IEi (i=0-3)	Interrupt Enable i	008254_H+i*400 H	See Family Spec
CAN0_GFCi (i=0-3)	Global Filter Configuration i	008280_H+i*400 H	See Family Spec
CAN1_GFCi (i=0-3)	Global Filter Configuration i	008280_H+i*400 H	See Family Spec

Table 268 Register Overview - CAN (ascending Offset Address) (cont'd)

Short Name	Long Name	Offset Address	Page Number
CAN0_SIDFCi (i=0-3)	Standard ID Filter Configuration i	008284_H+i*400 H	See Family Spec
CAN1_SIDFCi (i=0-3)	Standard ID Filter Configuration i	008284_H+i*400 H	See Family Spec
CAN0_XIDFCi (i=0-3)	Extended ID Filter Configuration i	008288_H+i*400 H	See Family Spec
CAN1_XIDFCi (i=0-3)	Extended ID Filter Configuration i	008288_H+i*400 H	See Family Spec
CAN0_XIDAMi (i=0-3)	Extended ID AND Mask i	008290_H+i*400 H	See Family Spec
CAN1_XIDAMi (i=0-3)	Extended ID AND Mask i	008290_H+i*400 H	See Family Spec
CAN0_HPMSi (i=0-3)	High Priority Message Status i	008294_H+i*400 H	See Family Spec
CAN1_HPMSi (i=0-3)	High Priority Message Status i	008294_H+i*400 H	See Family Spec
CAN0_NDAT1i (i=0-3)	New Data 1 i	008298_H+i*400 H	See Family Spec
CAN1_NDAT1i (i=0-3)	New Data 1 i	008298_H+i*400 H	See Family Spec
CAN0_NDAT2i (i=0-3)	New Data 2 i	$00829C_H$+i*40 0_H	See Family Spec
CAN1_NDAT2i (i=0-3)	New Data 2 i	$00829C_H$+i*40 0_H	See Family Spec
CAN0_RXF0Ci (i=0-3)	Rx FIFO 0 Configuration i	$0082A0_H$+i*40 0_H	See Family Spec
CAN1_RXF0Ci (i=0-3)	Rx FIFO 0 Configuration i	$0082A0_H$+i*40 0_H	See Family Spec

Table 268 Register Overview - CAN (ascending Offset Address) (cont'd)

Short Name	Long Name	Offset Address	Page Number
CAN0_RXF0Si (i=0-3)	Rx FIFO 0 Status i	$0082A4_H$+i*40 0_H	See Family Spec
CAN1_RXF0Si (i=0-3)	Rx FIFO 0 Status i	$0082A4_H$+i*40 0_H	See Family Spec
CAN0_RXF0Ai (i=0-3)	Rx FIFO 0 Acknowledge i	$0082A8_H$+i*40 0_H	See Family Spec
CAN1_RXF0Ai (i=0-3)	Rx FIFO 0 Acknowledge i	$0082A8_H$+i*40 0_H	See Family Spec
CAN0_RXBCi (i=0-3)	Rx Buffer Configuration i	$0082AC_H$+i*40 0_H	See Family Spec
CAN1_RXBCi (i=0-3)	Rx Buffer Configuration i	$0082AC_H$+i*40 0_H	See Family Spec
CAN0_RXF1Ci (i=0-3)	Rx FIFO 1 Configuration i	$0082B0_H$+i*40 0_H	See Family Spec
CAN1_RXF1Ci (i=0-3)	Rx FIFO 1 Configuration i	$0082B0_H$+i*40 0_H	See Family Spec
CAN0_RXF1Si (i=0-3)	Rx FIFO 1 Status i	$0082B4_H$+i*40 0_H	See Family Spec
CAN1_RXF1Si (i=0-3)	Rx FIFO 1 Status i	$0082B4_H$+i*40 0_H	See Family Spec
CAN0_RXF1Ai (i=0-3)	Rx FIFO 1 Acknowledge i	$0082B8_H$+i*40 0_H	See Family Spec
CAN1_RXF1Ai (i=0-3)	Rx FIFO 1 Acknowledge i	$0082B8_H$+i*40 0_H	See Family Spec
CAN0_RXESCi (i=0-3)	Rx Buffer/FIFO Element Size Configuration i	$0082BC_H$+i*40 0_H	See Family Spec
CAN1_RXESCi (i=0-3)	Rx Buffer/FIFO Element Size Configuration i	$0082BC_H$+i*40 0_H	See Family Spec

Table 268 Register Overview - CAN (ascending Offset Address) (cont'd)

Short Name	Long Name	Offset Address	Page Number
CAN0_TXBCi (i=0-3)	Tx Buffer Configuration i	$0082C0_H$+i*40 0_H	See Family Spec
CAN1_TXBCi (i=0-3)	Tx Buffer Configuration i	$0082C0_H$+i*40 0_H	See Family Spec
CAN0_TXFQSi (i=0-3)	Tx FIFO/Queue Status i	$0082C4_H$+i*40 0_H	See Family Spec
CAN1_TXFQSi (i=0-3)	Tx FIFO/Queue Status i	$0082C4_H$+i*40 0_H	See Family Spec
CAN0_TXESCi (i=0-3)	Tx Buffer Element Size Configuration i	$0082C8_H$+i*40 0_H	See Family Spec
CAN1_TXESCi (i=0-3)	Tx Buffer Element Size Configuration i	$0082C8_H$+i*40 0_H	See Family Spec
CAN0_TXBRPi (i=0-3)	Tx Buffer Request Pending i	$0082CC_H$+i*40 0_H	See Family Spec
CAN1_TXBRPi (i=0-3)	Tx Buffer Request Pending i	$0082CC_H$+i*40 0_H	See Family Spec
CAN0_TXBARi (i=0-3)	Tx Buffer Add Request i	$0082D0_H$+i*40 0_H	See Family Spec
CAN1_TXBARi (i=0-3)	Tx Buffer Add Request i	$0082D0_H$+i*40 0_H	See Family Spec
CAN0_TXBCRi (i=0-3)	Tx Buffer Cancellation Request i	$0082D4_H$+i*40 0_H	See Family Spec
CAN1_TXBCRi (i=0-3)	Tx Buffer Cancellation Request i	$0082D4_H$+i*40 0_H	See Family Spec
CAN0_TXBTOi (i=0-3)	Tx Buffer Transmission Occurred i	$0082D8_H$+i*40 0_H	See Family Spec
CAN1_TXBTOi (i=0-3)	Tx Buffer Transmission Occurred i	$0082D8_H$+i*40 0_H	See Family Spec

Table 268 Register Overview - CAN (ascending Offset Address) (cont'd)

Short Name	Long Name	Offset Address	Page Number
CAN0_TXBCFi (i=0-3)	Tx Buffer Cancellation Finished i	$0082DC_H$+i*40 0_H	See Family Spec
CAN1_TXBCFi (i=0-3)	Tx Buffer Cancellation Finished i	$0082DC_H$+i*40 0_H	See Family Spec
CAN0_TXBTIEi (i=0-3)	Tx Buffer Transmission Interrupt Enable i	$0082E0_H$+i*40 0_H	See Family Spec
CAN1_TXBTIEi (i=0-3)	Tx Buffer Transmission Interrupt Enable i	$0082E0_H$+i*40 0_H	See Family Spec
CAN0_TXBCIEi (i=0-3)	Tx Buffer Cancellation Finished Interrupt Enable i	$0082E4_H$+i*40 0_H	See Family Spec
CAN1_TXBCIEi (i=0-3)	Tx Buffer Cancellation Finished Interrupt Enable i	$0082E4_H$+i*40 0_H	See Family Spec
CAN0_TXEFCi (i=0-3)	Tx Event FIFO Configuration i	$0082F0_H$+i*400 H	See Family Spec
CAN1_TXEFCi (i=0-3)	Tx Event FIFO Configuration i	$0082F0_H$+i*400 H	See Family Spec
CAN0_TXEFSi (i=0-3)	Tx Event FIFO Status i	$0082F4_H$+i*400 H	See Family Spec
CAN1_TXEFSi (i=0-3)	Tx Event FIFO Status i	$0082F4_H$+i*400 H	See Family Spec
CAN0_TXEFAi (i=0-3)	Tx Event FIFO Acknowledge i	$0082F8_H$+i*400 H	See Family Spec
CAN1_TXEFAi (i=0-3)	Tx Event FIFO Acknowledge i	$0082F8_H$+i*400 H	See Family Spec

38.3 TC33x/TC32x Specific Registers

38.3.1 Bus Interface

Module Control Register

The Module Control Register MCR contains basic settings that determine the operation of the MCMCAN module.

The write access to the lowest byte of the MCR register becomes only valid, if and only if, MCR.CCCE and MCR.CI are already set during write access. To switch the clocks on or off, the bits of MCR.CCCE and MCR.CI have to be reset afterwards. Before this sequence hasn't taken place, no write access to the corresponding nodes, can be done.

Note: If the baud rate logic is supplied from an unstable clock source, or no clock at all, the CAN functionality is not guaranteed.

To be able to change the clock settings the following programming sequence needs to be met:

uwTemp = CANn_MCR.U;

uwTemp |= (0xC0000000 | CLKSELx);

CANn_MCR.U = uwTemp;

uwTemp &= ~0xC0000000;

CANn_MCR.U = uwTemp;

The clock settings for CAN nodes becomes active.

To be able to start the RAM initialization, the following programming sequence need to be met:

CANn_MCR |= 0xC0000000;

Wait until CANn_MCR.RBUSY is 0b

Set CANn_MCR.RINIT to 0b

Set CANn_MCR.RINIT to 1b

Dummy read CANn_MCR

Wait until CANn_MCR.RBUSY is 0b

Set CANn_MCR.RINIT to 0b

CANn_MCR &= ~0xC0000000;

RAM initialization is finished

CAN1_MCR

Module Control Register **(008030_H)** **Application Reset Value: $0000\ 0000_H$**

31	30	29	28	27	26	25	24	23	22	21	20	19	18	17	16
CCCE	**CI**	**RINIT**	**RBUSY**	**0**				**0**							
rw	rw	rw	rh	r				r							

15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
0								**CLKSEL3**		**CLKSEL2**		**CLKSEL1**		**CLKSEL0**	
r								rw		rw		rw		rw	

Field	Bits	Type	Description
CLKSEL0	1:0	rw	**Clock Select 0** This bitfield is MCR.CI and MCR.CCCE protected. 00_B No clock supplied 01_B The asynchronous clock source is switched on 10_B The synchronous clock source is switched on 11_B Both clock sources are switched on
CLKSEL1	3:2	rw	**Clock Select 1** This bitfield is MCR.CI and MCR.CCCE protected. 00_B No clock supplied 01_B The asynchronous clock source is switched on 10_B The synchronous clock source is switched on 11_B Both clock sources are switched on
CLKSEL2	5:4	rw	**Clock Select 2** This bitfield is MCR.CI and MCR.CCCE protected. 00_B No clock supplied 01_B The asynchronous clock source is switched on 10_B The synchronous clock source is switched on 11_B Both clock sources are switched on
CLKSEL3	7:6	rw	**Clock Select 3** This bitfield is MCR.CI and MCR.CCCE protected. 00_B No clock supplied 01_B The asynchronous clock source is switched on 10_B The synchronous clock source is switched on 11_B Both clock sources are switched on
RBUSY	28	rh	**RAM BUSY** This bit shows that the RAM Initialization is running. This bit is set back to 0b by hardware when the RAM intialization is completed.
RINIT	29	rw	**RAM Init** This bit is MCR.CI and MCR.CCCE protected. This bit starts the initialization of the RAM block to all 0x0. The RAM initialization is started only when this bit is changed from 0b to 1b and also RBUSY is 0b.
CI	30	rw	**Change Init** Needs to be set to enable and disable clocks. 0_B Change Init disabled 1_B Change Init enabled (takes effect with CCCE:=1)
CCCE	31	rw	**Clock and RAM Change Enable** Needs to be set to enable and disable the clocks. 0_B Clock and RAM Change disabled 1_B Clock and RAM Change enabled (takes effect with CI:=1)
0	23:8, 27:24	r	**Reserved** Shall read 0; shall be written with 0.

38.4 Connectivity

Table 269 Connections of CAN0

Interface Signals	connects		Description
CAN0:DSTDBG	from	DMU:SCU_ENTERED_DEST_DBG	Destructive Debug entered
CAN0:DXSCLK	to	TCU:dxs_clk	DXS Clock, DAP module clock
CAN0:INT(5:0)	to	HSM:EXT_INT(18:13)	CAN interrupt request
CAN0:INT(12)	to	CCU61:CC61IND	CAN interrupt request
		GTM:TIM0_IN1(13)	
		GTM:TIM1_IN1(13)	
CAN0:INT(13)	to	GTM:TIM0_IN2(13)	CAN interrupt request
		GTM:TIM1_IN2(13)	
CAN0:INT(14)	to	GTM:TIM0_IN3(13)	CAN interrupt request
		GTM:TIM1_IN3(13)	
CAN0:INT(15)	to	CCU61:T13HRE	CAN interrupt request
		GTM:TIM0_IN4(13)	
		GTM:TIM1_IN4(13)	
CAN0:STM0_SR0_INT	from	STM0:SR0_INT	System Timer Service Request 0
CAN0:STM0_SR1_INT	from	STM0:SR1_INT	System Timer Service Request 1
CAN0:TRIG(3:0)	from	GTM:CAN0.TRIG(3:0)	GTM timer output vector
CAN0:INT(15:0)	to	INT:mcmcan0.INT(15:0)	CAN Service Request

Table 270 Connections of CAN00

Interface Signals	connects		Description
CAN00:RXDA	from	P02.1:IN	CAN receive input node 0
CAN00:RXDB	from	P20.7:IN	CAN receive input node 0
CAN00:RXDD	from	P33.12:IN	CAN receive input node 0
CAN00:RXDE	from	P33.7:IN	CAN receive input node 0
CAN00:RXDG	from	P34.2:IN	CAN receive input node 0
CAN00:TXD	to	IOM:MON2(5)	CAN transmit output node 0
		IOM:REF2(5)	
		P02.0:ALT(5)	
		P20.8:ALT(5)	
		P33.8:ALT(5)	
		P34.1:ALT(4)	

Table 271 Connections of CAN01

Interface Signals	connects		Description
CAN01:RXDA	from	P15.3:IN	CAN receive input node 1
CAN01:RXDB	from	P14.1:IN	CAN receive input node 1

Table 271 Connections of CAN01 (cont'd)

Interface Signals	connects		Description
CAN01:RXDD	from	P33.10:IN	CAN receive input node 1
CAN01:TXD	to	IOM:MON2(6)	CAN transmit output node 1
		IOM:REF2(6)	
		P14.0:ALT(5)	
		P15.2:ALT(5)	
		P33.9:ALT(5)	

Table 272 Connections of CAN1

Interface Signals	connects		Description
CAN1:DSTDBG	from	DMU:SCU_ENTERED_DEST_DBG	Destructive Debug entered
CAN1:STM0_SR0_INT	from	STM0:SR0_INT	System Timer Service Request 0
CAN1:STM0_SR1_INT	from	STM0:SR1_INT	System Timer Service Request 1
CAN1:TRIG(3:0)	from	GTM:CAN1.TRIG(3:0)	GTM timer output vector
CAN1:INT(15:0)	to	INT:mcmcan1.INT(15:0)	CAN Service Request

Table 273 Connections of CAN02

Interface Signals	connects		Description
CAN02:RXDA	from	P15.1:IN	CAN receive input node 2
CAN02:RXDB	from	P02.3:IN	CAN receive input node 2
CAN02:RXDD	from	P14.8:IN	CAN receive input node 2
CAN02:RXDE	from	P10.2:IN	CAN receive input node 2
CAN02:TXD	to	IOM:MON2(7)	CAN transmit output node 2
		IOM:REF2(7)	
		P02.2:ALT(5)	
		P10.3:ALT(6)	
		P14.10:ALT(5)	
		P15.0:ALT(5)	

Table 274 Connections of CAN03

Interface Signals	connects		Description
CAN03:RXDA	from	P00.3:IN	CAN receive input node 3
CAN03:RXDC	from	P20.0:IN	CAN receive input node 3
CAN03:RXDD	from	P11.10:IN	CAN receive input node 3
CAN03:RXDE	from	P20.9:IN	CAN receive input node 3

Table 274 Connections of CAN03 (cont'd)

Interface Signals	connects		Description
CAN03:TXD	to	IOM:MON2(8)	CAN transmit output node 3
		IOM:REF2(8)	
		P00.2:ALT(5)	
		P11.12:ALT(5)	
		P20.3:ALT(5)	
		P20.10:ALT(5)	

Table 275 Connections of CAN10

Interface Signals	connects		Description
CAN10:RXDA	from	P00.1:IN	CAN receive input node 0
CAN10:RXDB	from	P14.7:IN	CAN receive input node 0
CAN10:RXDD	from	P13.1:IN	CAN receive input node 0
CAN10:TXD	to	P00.0:ALT(5)	CAN transmit output node 0
		P13.0:ALT(7)	
		P14.9:ALT(4)	
		P23.1:ALT(5)	

Table 276 Connections of CAN11

Interface Signals	connects		Description
CAN11:RXDA	from	P02.4:IN	CAN receive input node 1
CAN11:RXDB	from	P00.5:IN	CAN receive input node 1
CAN11:TXD	to	P00.4:ALT(3)	CAN transmit output node 1
		P02.5:ALT(2)	

Table 277 Connections of CAN12

Interface Signals	connects		Description
CAN12:RXDA	from	P20.6:IN	CAN receive input node 2
CAN12:RXDB	from	P10.8:IN	CAN receive input node 2
CAN12:RXDD	from	P11.8:IN	CAN receive input node 2
CAN12:TXD	to	P10.7:ALT(6)	CAN transmit output node 2
		P20.7:ALT(5)	

Table 278 Connections of CAN13

Interface Signals	connects		Description
CAN13:RXDA	from	P14.7:IN	CAN receive input node 3
CAN13:RXDB	from	P33.5:IN	CAN receive input node 3

Table 278 Connections of CAN13 (cont'd)

Interface Signals	connects		Description
CAN13:TXD	to	P14.6:ALT(4)	CAN transmit output node 3
		P22.4:ALT(6)	
		P33.4:ALT(7)	

Note: For the connectivity of the MCMCAN module to the STM module, please refer to the User Manual, chapter MCMCAN User Interface under CAN Transmit Trigger Inputs section.

38.5 Revision History

Table 279 Revision History

Reference	Change to Previous Version	Comment
V1.19.8		
-	First version for TC33x/TC32x Appendix	
V1.19.9		
-	No changes.	
V1.19.10		
Page 17	Added note at the end of connections tables.	
V1.19.11		
–	No functional changes.	
V1.19.12		
Page 1	Update of "specific configuration of CAN" table.	
V1.19.13		
Page 12	Updated information on bit implementation in A-step.	

39 FlexRay™ Protocol Controller (E-Ray)

Text with reference to family spec.

39.1 TC33x/TC32x Specific IP Configuration

No product specific configuration for ERAY

39.2 TC33x/TC32x Specific Register Set

Register Address Space Table

Table 280 Register Address Space - ERAY

Module	Base Address	End Address	Note
ERAY0	$F001C000_H$	$F001CFFF_H$	FPI slave interface

Register Overview Table

Table 281 Register Overview - ERAY (ascending Offset Address)

Short Name	Long Name	Offset Address	Page Number
ERAY0_CLC	Clock Control Register	0000_H	See Family Spec
ERAY0_CUST1	Busy and Input Buffer Control Register	0004_H	See Family Spec
ERAY0_ID	Module Identification Register	0008_H	See Family Spec
ERAY0_CUST3	Customer Interface Timeout Counter Register	$000C_H$	See Family Spec
ERAY0_TEST1	Test Register 1	0010_H	See Family Spec
ERAY0_TEST2	Test Register 2	0014_H	See Family Spec
ERAY0_LCK	Lock Register	$001C_H$	See Family Spec
ERAY0_EIR	Error Service Request Select Register	0020_H	See Family Spec
ERAY0_SIR	Status Service Request Register	0024_H	See Family Spec
ERAY0_EILS	Error Service Request Line Select	0028_H	See Family Spec

Table 281 Register Overview - ERAY (ascending Offset Address) (cont'd)

Short Name	Long Name	Offset Address	Page Number
ERAY0_SILS	Status Service Request Line Select	$002C_H$	See Family Spec
ERAY0_EIES	Error Service Request Enable Set	0030_H	See Family Spec
ERAY0_EIER	Error Service Request Enable Reset	0034_H	See Family Spec
ERAY0_SIES	Status Service Request Enable Set	0038_H	See Family Spec
ERAY0_SIER	Status Service Request Enable Reset	$003C_H$	See Family Spec
ERAY0_ILE	Service Request Line Enable	0040_H	See Family Spec
ERAY0_T0C	Timer 0 Configuration	0044_H	See Family Spec
ERAY0_T1C	Timer 1 Configuration	0048_H	See Family Spec
ERAY0_STPW1	Stop Watch Register 1	$004C_H$	See Family Spec
ERAY0_STPW2	Stop Watch Register 2	0050_H	See Family Spec
ERAY0_SUCC1	SUC Configuration Register 1	0080_H	See Family Spec
ERAY0_SUCC2	SUC Configuration Register 2	0084_H	See Family Spec
ERAY0_SUCC3	SUC Configuration Register 3	0088_H	See Family Spec
ERAY0_NEMC	NEM Configuration Register	$008C_H$	See Family Spec

Table 281 Register Overview - ERAY (ascending Offset Address) (cont'd)

Short Name	Long Name	Offset Address	Page Number
ERAY0_PRTC1	PRT Configuration Register 1	0090_H	See Family Spec
ERAY0_PRTC2	PRT Configuration Register 2	0094_H	See Family Spec
ERAY0_MHDC	MHD Configuration Register	0098_H	See Family Spec
ERAY0_GTUC01	GTU Configuration Register 1	$00A0_H$	See Family Spec
ERAY0_GTUC02	GTU Configuration Register 2	$00A4_H$	See Family Spec
ERAY0_GTUC03	GTU Configuration Register 3	$00A8_H$	See Family Spec
ERAY0_GTUC04	GTU Configuration Register 4	$00AC_H$	See Family Spec
ERAY0_GTUC05	GTU Configuration Register 5	$00B0_H$	See Family Spec
ERAY0_GTUC06	GTU Configuration Register 6	$00B4_H$	See Family Spec
ERAY0_GTUC07	GTU Configuration Register 7	$00B8_H$	See Family Spec
ERAY0_GTUC08	GTU Configuration Register 8	$00BC_H$	See Family Spec
ERAY0_GTUC09	GTU Configuration Register 9	$00C0_H$	See Family Spec
ERAY0_GTUC10	GTU Configuration Register 10	$00C4_H$	See Family Spec
ERAY0_GTUC11	GTU Configuration Register 11	$00C8_H$	See Family Spec

Table 281 Register Overview - ERAY (ascending Offset Address) (cont'd)

Short Name	Long Name	Offset Address	Page Number
ERAY0_CCSV	Communication Controller Status Vector	0100_H	See Family Spec
ERAY0_CCEV	Communication Controller Error Vector	0104_H	See Family Spec
ERAY0_SCV	Slot Counter Value	0110_H	See Family Spec
ERAY0_MTCCV	Macrotick and Cycle Counter Value	0114_H	See Family Spec
ERAY0_RCV	Rate Correction Value	0118_H	See Family Spec
ERAY0_OCV	Offset Correction Value	$011C_H$	See Family Spec
ERAY0_SFS	SYNC Frame Status	0120_H	See Family Spec
ERAY0_SWNIT	Symbol Window and Network Idle Time Status	0124_H	See Family Spec
ERAY0_ACS	Aggregated Channel Status	0128_H	See Family Spec
ERAY0_ESIDn (n=01-15)	Even Sync ID Symbol Window n	0130_H+(n-1)*4	See Family Spec
ERAY0_OSIDn (n=01-15)	Odd Sync ID Symbol Window n	0170_H+(n-1)*4	See Family Spec
ERAY0_NMVx (x=1-3)	Network Management Vector x	$01B0_H$+(x-1)*4	See Family Spec
ERAY0_MRC	Message RAM Configuration	0300_H	See Family Spec
ERAY0_FRF	FIFO Rejection Filter	0304_H	See Family Spec

Table 281 Register Overview - ERAY (ascending Offset Address) (cont'd)

Short Name	Long Name	Offset Address	Page Number
ERAY0_FRFM	FIFO Rejection Filter Mask	0308_H	See Family Spec
ERAY0_FCL	FIFO Critical Level	$030C_H$	See Family Spec
ERAY0_MHDS	Message Handler Status	0310_H	See Family Spec
ERAY0_LDTS	Last Dynamic Transmit Slot	0314_H	See Family Spec
ERAY0_FSR	FIFO Status Register	0318_H	See Family Spec
ERAY0_MHDF	Message Handler Constraints Flags	$031C_H$	See Family Spec
ERAY0_TXRQ1	Transmission Request Register 1	0320_H	See Family Spec
ERAY0_TXRQ2	Transmission Request Register 2	0324_H	See Family Spec
ERAY0_TXRQ3	Transmission Request Register 3	0328_H	See Family Spec
ERAY0_TXRQ4	Transmission Request Register 4	$032C_H$	See Family Spec
ERAY0_NDAT1	New Data Register 1	0330_H	See Family Spec
ERAY0_NDAT2	New Data Register 2	0334_H	See Family Spec
ERAY0_NDAT3	New Data Register 3	0338_H	See Family Spec
ERAY0_NDAT4	New Data Register 4	$033C_H$	See Family Spec

Table 281 Register Overview - ERAY (ascending Offset Address) (cont'd)

Short Name	Long Name	Offset Address	Page Number
ERAY0_MBSC1	Message Buffer Status Changed 1	0340_H	See Family Spec
ERAY0_MBSC2	Message Buffer Status Changed 2	0344_H	See Family Spec
ERAY0_MBSC3	Message Buffer Status Changed 3	0348_H	See Family Spec
ERAY0_MBSC4	Message Buffer Status Changed 4	$034C_H$	See Family Spec
ERAY0_NDIC1	New Data Interrupt Control 1	$03A8_H$	See Family Spec
ERAY0_NDIC2	New Data Interrupt Control 2	$03AC_H$	See Family Spec
ERAY0_NDIC3	New Data Interrupt Control 3	$03B0_H$	See Family Spec
ERAY0_NDIC4	New Data Interrupt Control 4	$03B4_H$	See Family Spec
ERAY0_MSIC1	Message Buffer Status Changed Interrupt Control 1	$03B8_H$	See Family Spec
ERAY0_MSIC2	Message Buffer Status Changed Interrupt Control 2	$03BC_H$	See Family Spec
ERAY0_MSIC3	Message Buffer Status Changed Interrupt Control 3	$03C0_H$	See Family Spec
ERAY0_MSIC4	Message Buffer Status Changed Interrupt Control 4	$03C4_H$	See Family Spec
ERAY0_CREL	Core Release Register	$03F0_H$	See Family Spec
ERAY0_ENDN	Endian Register	$03F4_H$	See Family Spec

Table 281 Register Overview - ERAY (ascending Offset Address) (cont'd)

Short Name	Long Name	Offset Address	Page Number
ERAY0_WRDSn (n=01-64)	Write Data Section n	0400_H+(n-1)*4	See Family Spec
ERAY0_WRHS1	Write Header Section 1	0500_H	See Family Spec
ERAY0_WRHS2	Write Header Section 2	0504_H	See Family Spec
ERAY0_WRHS3	Write Header Section 3	0508_H	See Family Spec
ERAY0_IBCM	Input Buffer Command Mask	0510_H	See Family Spec
ERAY0_IBCR	Input Buffer Command Request	0514_H	See Family Spec
ERAY0_RDDSn (n=01-64)	Read Data Section n	0600_H+(n-1)*4	See Family Spec
ERAY0_RDHS1	Read Header Section 1	0700_H	See Family Spec
ERAY0_RDHS2	Read Header Section 2	0704_H	See Family Spec
ERAY0_RDHS3	Read Header Section 3	0708_H	See Family Spec
ERAY0_MBS	Message Buffer Status	$070C_H$	See Family Spec
ERAY0_OBCM	Output Buffer Command Mask	0710_H	See Family Spec
ERAY0_OBCR	Output Buffer Command Request	0714_H	See Family Spec
ERAY0_OTSS	OCDS Trigger Set Select	0870_H	See Family Spec

Table 281 Register Overview - ERAY (ascending Offset Address) (cont'd)

Short Name	Long Name	Offset Address	Page Number
ERAY0_OCS	OCDS Control and Status	$08E8_H$	See Family Spec
ERAY0_KRSTCLR	Kernel Reset Status Clear Register	$08EC_H$	See Family Spec
ERAY0_KRST1	Kernel Reset Register 1	$08F0_H$	See Family Spec
ERAY0_KRST0	Kernel Reset Register 0	$08F4_H$	See Family Spec
ERAY0_ACCEN0	Access Enable Register 0	$08FC_H$	See Family Spec

39.3 TC33x/TC32x Specific Registers

No deviations from the Family Spec

39.4 Connectivity

Table 282 Connections of ERAY0

Interface Signals	connects		Description
ERAY0:MT	to	CCU:eray_mt	Macrotick-clock from CC (synchronous to fpi clock)
		SCU:E_REQ2(3)	
		GTM:TIM1_IN7(13)	
		GTM:TIM0_IN7(13)	
ERAY0:RXDA0	from	P14.8:IN	Receive Channel A0
ERAY0:RXDA1	from	P11.9:IN	Receive Channel A1
ERAY0:RXDA2	from	P02.1:IN	Receive Channel A2
ERAY0:RXDA3	from	P14.1:IN	Receive Channel A3
ERAY0:RXDB0	from	P14.7:IN	Receive Channel B0
ERAY0:RXDB1	from	P11.10:IN	Receive Channel B1
ERAY0:RXDB2	from	P02.3:IN	Receive Channel B2
ERAY0:RXDB3	from	P14.1:IN	Receive Channel B3
ERAY0:STPWT(3:0)	from	SCU:E_PDOUT(3:0)	StoP Watch Trigger signal
ERAY0:TINT0	to	CAN0:ttc_ectt(5)	Timer Interrupt 0 (high-active)
ERAY0:TINT1	to	CAN0:ttc_ectt(6)	Timer Interrupt 1 (high-active)

Table 282 Connections of ERAY0 (cont'd)

Interface Signals	connects		Description
ERAY0:TXDA	to	P02.0:ALT(6)	Transmit Channel A
		P11.3:ALT(4)	
		P14.0:ALT(3)	
		P14.10:ALT(6)	
ERAY0:TXDB	to	P02.2:ALT(6)	Transmit Channel B
		P11.12:ALT(4)	
		P14.0:ALT(4)	
		P14.5:ALT(6)	
ERAY0:TXENA	to	P02.4:ALT(6)	Transmit Enable Channel A
		P11.6:ALT(4)	
		P14.9:ALT(6)	
ERAY0:TXENB	to	P02.5:ALT(6)	Transmit Enable Channel B
		P11.6:ALT(2)	
		P11.11:ALT(6)	
		P14.6:ALT(6)	
		P14.9:ALT(5)	
ERAY0:sleep_n	from	SCU:scu_syst_sleep_n	turn-off request from processor
ERAY0:INT0_INT	to	INT:eray0.INT0_INT	E-RAY Service Request 0
ERAY0:INT1_INT	to	INT:eray0.INT1_INT	E-RAY Service Request 1
ERAY0:TINT0_INT	to	INT:eray0.TINT0_INT	E-RAY Timer Interrupt 0 Service Request
ERAY0:TINT1_INT	to	INT:eray0.TINT1_INT	E-RAY Timer Interrupt 1 Service Request
ERAY0:NDAT0_INT	to	INT:eray0.NDAT0_INT	E-RAY New Data 0 Service Request
ERAY0:NDAT1_INT	to	INT:eray0.NDAT1_INT	E-RAY New Data 1 Service Request
ERAY0:MBSC0_INT	to	INT:eray0.MBSC0_INT	E-RAY Message Buffer Status Changed 0 Service Request
ERAY0:MBSC1_INT	to	INT:eray0.MBSC1_INT	E-RAY Message Buffer Status Changed 1 Service Request
ERAY0:OBUSY	to	INT:eray0.OBUSY	E-RAY Output Buffer Busy Service Request
ERAY0:IBUSY_INT	to	INT:eray0.IBUSY_INT	E-RAY Input Buffer Busy Service Request

39.5 Revision History

Table 283 Revision History

Reference	Change to Previous Version	Comment
V3.2.9		
	Initial version for TC33X	
V3.2.10		
–	No functional change.	

Table 283 Revision History (cont'd)

Reference	Change to Previous Version	Comment
V3.2.11		
–	No functional change.	

40 Peripheral Sensor Interface (PSI5)

This device doesn’t contain a PSI5.

41 Peripheral Sensor Interface with Serial PHY Connection (PSI5-S)

This device doesn’t contain a PSI5.

42 Gigabit Ethernet MAC (GETH)

This device doesn’t contain a GETH module.

43 External Bus Unit (EBU)

This device doesn’t contain an EBU module.

44 SD- and eMMC Interface (SDMMC)

This device doesn’t contain an SDMMC module.

45 Hardware Security Module (HSM)

The HSM is a separate processor subsystem dedicated for security tasks. It is connected as master and slave to the SPB bus.

For security reasons this module is described in a separate documentation. Please contact your Infineon representative for further information.

46 Input Output Monitor (IOM)

This document describes the IOM specific appendix for the product TC33x/TC32x.

46.1 TC33x/TC32x Specific IP Configuration

Table 284 TC33x/TC32x specific configuration of IOM

Parameter	IOM
Number of FPC channels	16
Number of GTM inputs	8
Number of LAM	16
Number of ECM	1

46.2 TC33x/TC32x Specific Register Set

Register Address Space Table

Table 285 Register Address Space - IOM

Module	Base Address	End Address	Note
IOM	$F0035000_H$	$F00351FF_H$	FPI slave interface

Register Overview Table

There are no product specific register for this module.

46.3 TC33x/TC32x Specific Registers

There are no product specific register for this module.

46.4 Connectivity

This section describes the connectivity of the IOMmodule.

Table 286 Connections of IOM

Interface Signals	connects		Description
IOM:GTM(7:0)	from	GTM:TOUT(29:22)	GTM-provided inputs to EXOR combiner
IOM:MON1(0)	from	CCU60:CC62	Monitor input 1
IOM:MON1(1)	from	CCU60:CC61	Monitor input 1
IOM:MON1(2)	from	CCU60:CC60	Monitor input 1
IOM:MON0(12:0)	from	GTM:TOUT(34:22)	Monitor input 0
IOM:MON1(3)	from	CCU60:COUT60	Monitor input 1
IOM:MON1(4)	from	CCU60:COUT61	Monitor input 1
IOM:MON1(5)	from	CCU60:COUT62	Monitor input 1
IOM:MON0(15:13)	from	GTM:TOUT(70:68)	Monitor input 0

Table 286 Connections of IOM (cont'd)

Interface Signals	connects		Description
IOM:MON1(6)	from	CCU60:COUT63	Monitor input 1
IOM:MON1(7)	from	CCU61:COUT63	Monitor input 1
IOM:MON1(8)	from	CCU61:CC60	Monitor input 1
IOM:MON1(9)	from	CCU61:CC61	Monitor input 1
IOM:MON2(0)	from	QSPI0:MRST	Monitor input 2
IOM:MON2(1)	from	QSPI1:MRST	Monitor input 2
IOM:MON2(2)	from	QSPI2:MRST	Monitor input 2
IOM:MON2(3)	from	QSPI3:MRST	Monitor input 2
IOM:MON2(5)	from	CAN00:TXD	Monitor input 2
IOM:MON2(6)	from	CAN01:TXD	Monitor input 2
IOM:MON2(7)	from	CAN02:TXD	Monitor input 2
IOM:MON2(8)	from	CAN03:TXD	Monitor input 2
IOM:MON1(10)	from	CCU61:CC62	Monitor input 1
IOM:MON1(11)	from	CCU61:COUT60	Monitor input 1
IOM:MON1(12)	from	CCU61:COUT61	Monitor input 1
IOM:MON1(13)	from	CCU61:COUT62	Monitor input 1
IOM:MON2(11:9)	from	GTM:TOUT(106:104)	Monitor input 2
IOM:MON2(12)	from	ASCLIN0:ATX ASCLIN0:ATXP	Monitor input 2
IOM:MON2(13)	from	ASCLIN1:ATX ASCLIN1:ATXP	Monitor input 2
IOM:MON2(14)	from	ASCLIN2:ATX ASCLIN2:ATXP	Monitor input 2
IOM:MON2(15)	from	ASCLIN3:ATX ASCLIN3:ATXP	Monitor input 2
IOM:PIN(0)	from	P33.0:IN	GPIO pad input to FPC
IOM:PIN(1)	from	P33.1:IN	GPIO pad input to FPC
IOM:PIN(2)	from	P33.2:IN	GPIO pad input to FPC
IOM:PIN(3)	from	P33.3:IN	GPIO pad input to FPC
IOM:PIN(4)	from	P33.4:IN	GPIO pad input to FPC
IOM:PIN(5)	from	P33.5:IN	GPIO pad input to FPC
IOM:PIN(6)	from	P33.6:IN	GPIO pad input to FPC
IOM:PIN(7)	from	P33.7:IN	GPIO pad input to FPC
IOM:PIN(8)	from	P33.8:IN	GPIO pad input to FPC
IOM:PIN(9)	from	P33.9:IN	GPIO pad input to FPC
IOM:PIN(10)	from	P33.10:IN	GPIO pad input to FPC
IOM:PIN(11)	from	P33.11:IN	GPIO pad input to FPC
IOM:PIN(12)	from	P33.12:IN	GPIO pad input to FPC
IOM:PIN(13)	from	P20.12:IN	GPIO pad input to FPC

Table 286 Connections of IOM (cont'd)

Interface Signals	connects		Description
IOM:PIN(14)	from	P20.13:IN	GPIO pad input to FPC
IOM:PIN(15)	from	P20.14:IN	GPIO pad input to FPC
IOM:REF1(0)	from	CCU60:COUT63	Reference input 1
IOM:REF1(1)	from	CCU60:COUT62	Reference input 1
IOM:REF1(2)	from	CCU60:COUT61	Reference input 1
IOM:REF1(3)	from	CCU60:COUT60	Reference input 1
IOM:REF1(4)	from	CCU60:CC62	Reference input 1
IOM:REF1(5)	from	CCU60:CC61	Reference input 1
IOM:REF0(15:0)	from	GTM:TOUT(15:0)	Reference input 0
IOM:REF1(6)	from	CCU60:CC60	Reference input 1
IOM:REF1(7)	from	CCU61:COUT63	Reference input 1
IOM:REF1(8)	from	CCU61:COUT62	Reference input 1
IOM:REF1(9)	from	CCU61:COUT61	Reference input 1
IOM:REF2(0)	from	QSPI0:MRST	Reference input 2
IOM:REF2(1)	from	QSPI1:MRST	Reference input 2
IOM:REF2(2)	from	QSPI2:MRST	Reference input 2
IOM:REF2(3)	from	QSPI3:MRST	Reference input 2
IOM:REF2(5)	from	CAN00:TXD	Reference input 2
IOM:REF2(6)	from	CAN01:TXD	Reference input 2
IOM:REF2(7)	from	CAN02:TXD	Reference input 2
IOM:REF2(8)	from	CAN03:TXD	Reference input 2
IOM:REF1(10)	from	CCU61:COUT60	Reference input 1
IOM:REF1(11)	from	CCU61:CC62	Reference input 1
IOM:REF1(12)	from	CCU61:CC61	Reference input 1
IOM:REF1(13)	from	CCU61:CC60	Reference input 1
IOM:REF2(11:9)	from	GTM:TOUT(109:107)	Reference input 2
IOM:REF2(12)	from	ASCLIN0:ATX ASCLIN0:ATXP	Reference input 2
IOM:REF2(13)	from	ASCLIN1:ATX ASCLIN1:ATXP	Reference input 2
IOM:REF2(14)	from	ASCLIN2:ATX ASCLIN2:ATXP	Reference input 2
IOM:REF2(15)	from	ASCLIN3:ATX ASCLIN3:ATXP	Reference input 2

46.5 Revision History

Table 287 Revision History

Reference	Change to Previous Version	Comment
V2.1.15		
–	Initial version for TC33X.	

47 8-Bit Standby Controller (SCR)

The description of the SCR for all devices is covered by the family specification.

Revision history

Document version	Date of release	Description of changes
V2.0.0	2021-02	• Version comparison table updated. • For further changes see respective revision history of each chapter. The version comparison table below gives an overview.
V1.6.0	2020-08	• Version comparison table updated. • For further changes see respective revision history of each chapter. The version comparison table below gives an overview. • Removed device TC3Ax from set of documentation.
V1.5.0	2020-04	• Version comparison table updated. • For further changes see respective revision history of each chapter. The version comparison table below gives an overview.
V1.4.0	2019-12	• Added TC3Ax appendix as target specification. • Version comparison table updated. • For further changes see respective revision history of each chapter. The version comparison table below gives an overview.
V1.3.0	2019-09	• Added additional device TC3Ax to AURIX™ TC3xx set of documentation. • Version comparison table updated. • For further changes see respective revision history of each chapter. The version comparison table below gives an overview.
V1.2.0	2019-04	• Added additional device TC3Ex to AURIX™ TC3xx set of documentation. • Version comparison table updated. • For further changes see respective revision history of each chapter. The version comparison table below gives an overview.
V1.1.0	2019-01	• Power Management System for Low-End (PMSLE) added. • TC33x and TC33xED added. • Changes in connectivity tables. • Version comparison table new. • Detailed Revision History contained in each chapter.
V1.0.0	2018-08	• First revision of the User's Manual. • Detailed OCDS information not contained. Available under NDA. • Detailed Revision History contained in each chapter.

Version comparison table for AURIX™ TC33x/TC32x appendix

Chapter name	UM V1.6.0 chapter version	UM V2.0.0 chapter version	Content changes
Introduction	V1.0.0	V1.0.0	No
MEMMAP	V0.1.20	V0.1.21	**Yes, see chapter revision history**
FW	V1.1.0.1.17	V1.1.0.1.18	No functional changes
SRI Fabric	V1.1.16	V1.1.17	No functional changes

Chapter name	UM V1.6.0 chapter version	UM V2.0.0 chapter version	Content changes
• SBCU, EBCU	V1.2.8	V1.2.9	No functional changes
CPU	V1.1.20	V1.1.21	**No functional changes**
NVM Subsystem	V2.0.7	V2.0.7	No
• DMU	V2.0.11	V2.0.12	**No functional changes**
• NVM	V2.0.6	V2.0.6	No
LMU	n/a	n/a	–
DAM	n/a	n/a	–
SCU	V2.1.26	V2.1.27	No functional changes
CCU	see SCU	see SCU	–
PMS	n/a	n/a	–
PMSLE	V1.0.6	V1.0.7	No functional changes
MTU	V7.4.12	V7.4.13	**Yes, see chapter revision history**
PORTS	V1.8.21	V1.8.21	No
SMU	V4.0.22	V4.0.23	**Yes, see chapter revision history**
INT	V1.2.11	V1.2.11	No
FCE	V4.2.9	V4.2.9	No
DMA	V0.1.18	V0.1.18	No
SPU	n/a	n/a	–
SPU2	n/a	n/a	–
BITMGR	n/a	n/a	–
SPULCKSTP	n/a	n/a	–
EMEM	n/a	n/a	–
RIF	n/a	n/a	–
HSPDM	n/a	n/a	–
CIF	n/a	n/a	–
STM	V9.2.4	V9.2.4	No
GTM	V2.2.23	V2.2.24	**Yes, see chapter revision history**
CCU6	V3.0.0	V3.0.0	No
GPT12	V3.0.2	V3.0.2	No
CONVCTRL	V3.0.1	V3.0.1	No
EVADC	V3.0.4	V3.0.5	**Yes, see chapter revision history**
EDSADC	n/a	n/a	–
I2C	n/a	n/a	–
HSSL	n/a	n/a	–
ASCLIN	V3.2.8	V3.2.8	No
QSPI	V3.0.20	V3.0.20	No
MSC	n/a	n/a	–
SENT	V2.1.10	V2.1.10	No

Chapter name	UM V1.6.0 chapter version	UM V2.0.0 chapter version	Content changes
MCMCAN	V1.19.13	V1.19.13	No
E-Ray	V3.2.10	V3.2.11	No functional changes
PSI5	n/a	n/a	–
PSI5-S	n/a	n/a	–
GETH	n/a	n/a	–
EBU	n/a	n/a	–
SDMMC	n/a	n/a	–
HSM	n/a	n/a	–
IOM	V2.1.15	V2.1.15	No
SCR	n/a	n/a	–

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