U_FPGA-MGT
FPGA-MGT.SchDoc

U_FPGA-MISC
FPGA-MISC.SchDoc

U_FPGA-PWR
FPGA-PWR.SchDoc

U_FPGA-B44
FPGA-B44.SchDoc

U_FPGA-B45
FPGA-B45.SchDoc

U_FPGA-B46
FPGA-B46.SchDoc

U_FPGA-B47
FPGA-B47.SchDoc

U_FPGA-B64
FPGA-B64.SchDoc

U_FPGA-B65
FPGA-B65.SchDoc

U_FPGA-B66
FPGA-B66.SchDoc

U_FPGA-B67
FPGA-B67.SchDoc

U_FPGA-B68
FPGA-B68.SchDoc

U_DDR4-RAM
DDR4-RAM.SchDoc

U_DDR4-RAM_2
DDR4-RAM_2.SchDoc

U_B2B-Connectors
B2B-Connectors.SchDoc

U_CPLD
CPLD.SchDoc

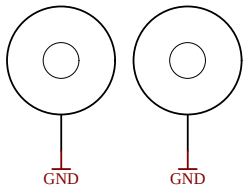
U_Clock
Clock.SchDoc

U_PWR1
PWR1.SchDoc

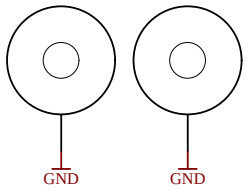
U_PWR2
PWR2.SchDoc

U_POWER_2
POWER_2.SchDoc

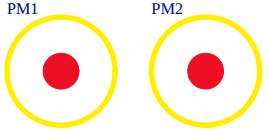
Mount.Hole 3.2mm
Mount.Hole 3.2mm



Mount.Hole 3.2mm
Mount.Hole 3.2mm

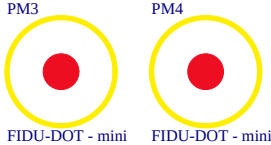


PM1
PM2



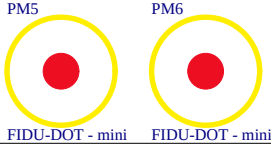
FIDU-DOT - mini
FIDU-DOT - mini

PM3
PM4

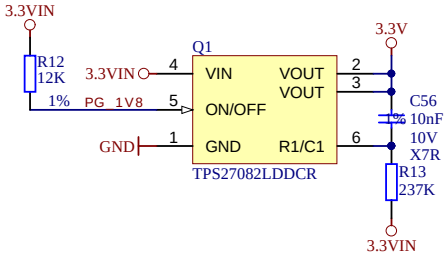


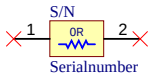
FIDU-DOT - mini
FIDU-DOT - mini

PM5
PM6



FIDU-DOT - mini
FIDU-DOT - mini





Serialnumber

Serial
Serial
Serialnumber 6,3 x 6.3mm

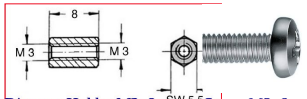
Top of Board

Screw M3x4

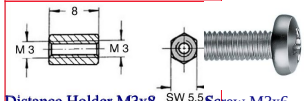
Screw M3x4

Screw M3x4

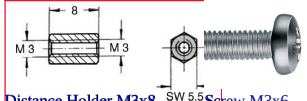
Screw M3x4



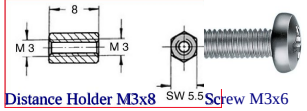
Distance Holder M3x8 Screw M3x6



Distance Holder M3x8 Screw M3x6



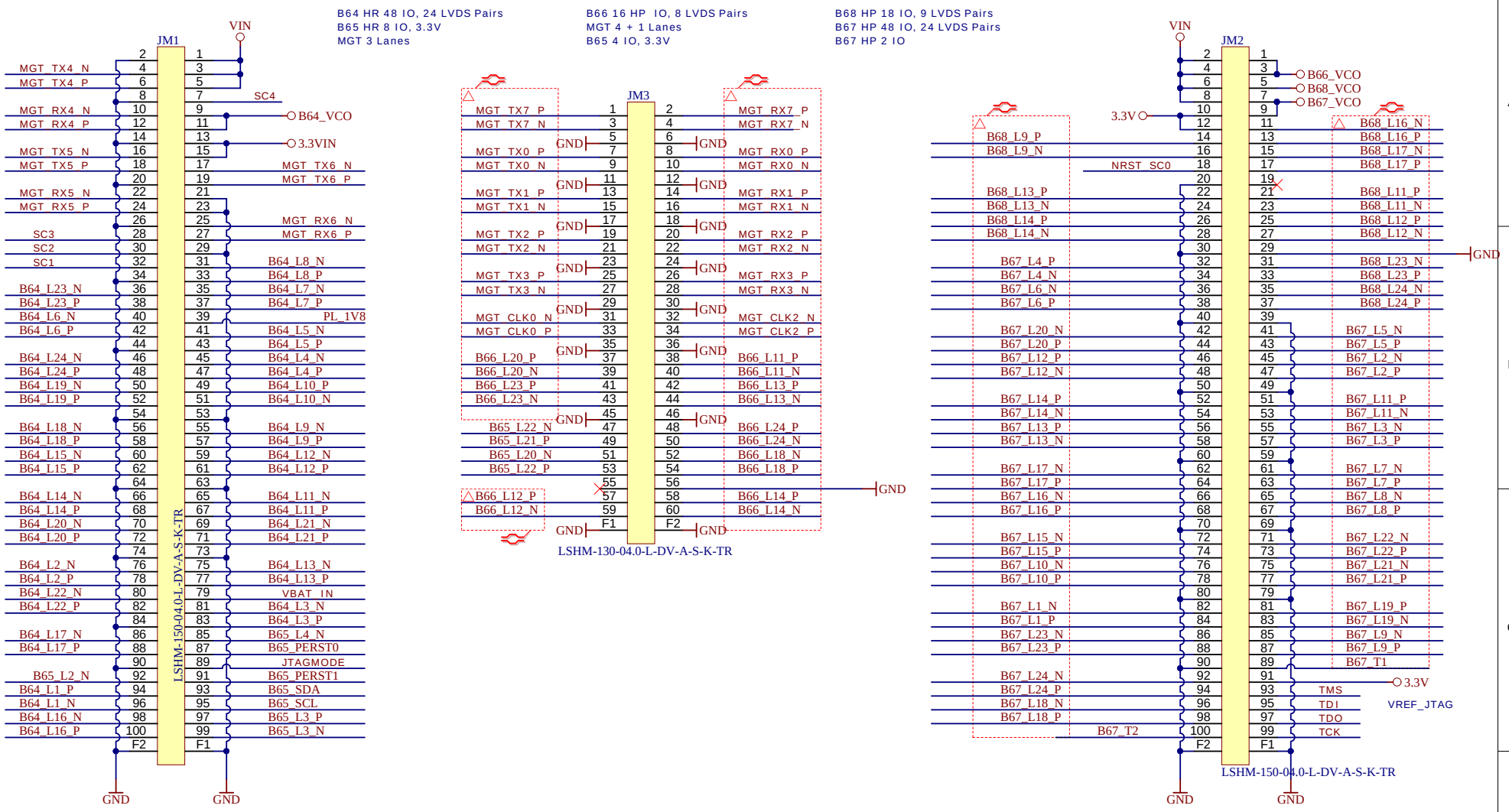
Distance Holder M3x8 Screw M3x6



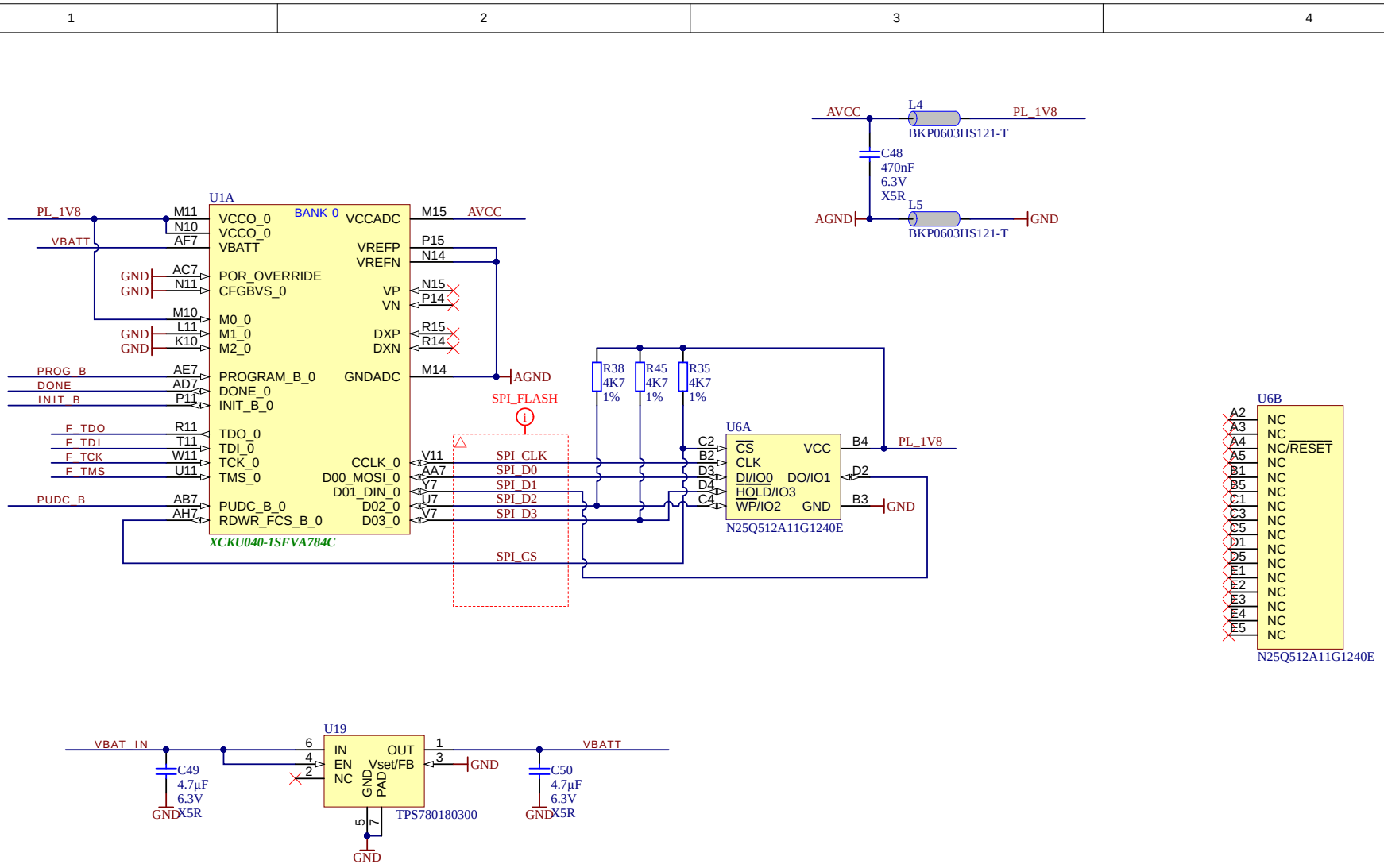
Distance Holder M3x8 Screw M3x6

trenz electronic

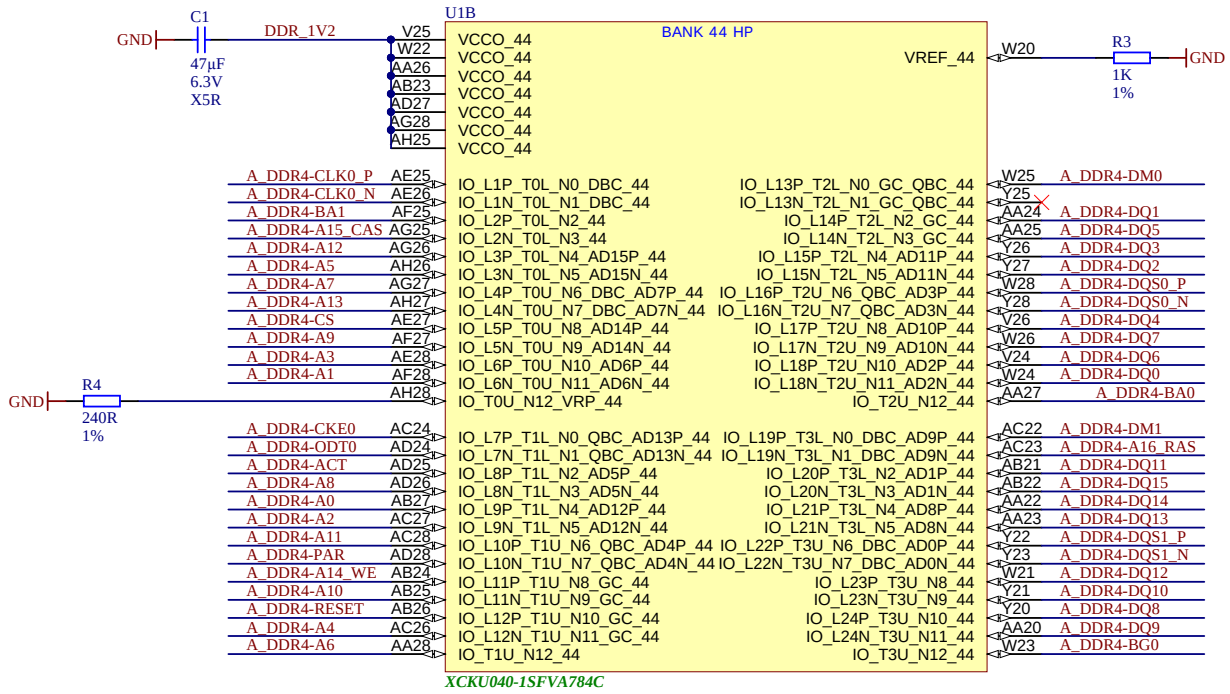
Title: TE0841		
A4	Number: TE0841 040-1C	Rev. 02
Date: 2018-03-14	Copyright: Trenz Electronic GmbH / TT	Page1 of 21
Filename: TE0841.SchDoc		



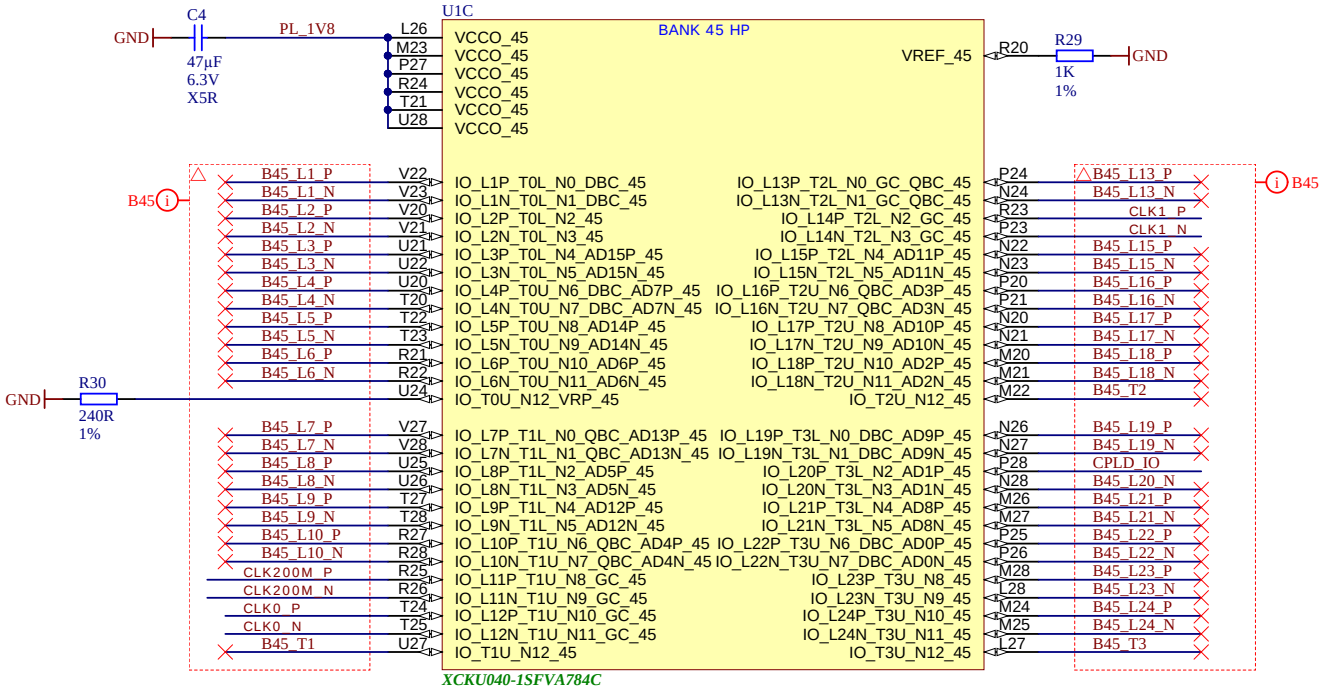
Title: TE0841			
A4	Number: TE0841 040-1C		Rev. 02
Date: 2018-03-14	Copyright: Trenz Electronic GmbH / TT		Page2 of 21
Filename: B2B-Connectors.SchDoc			



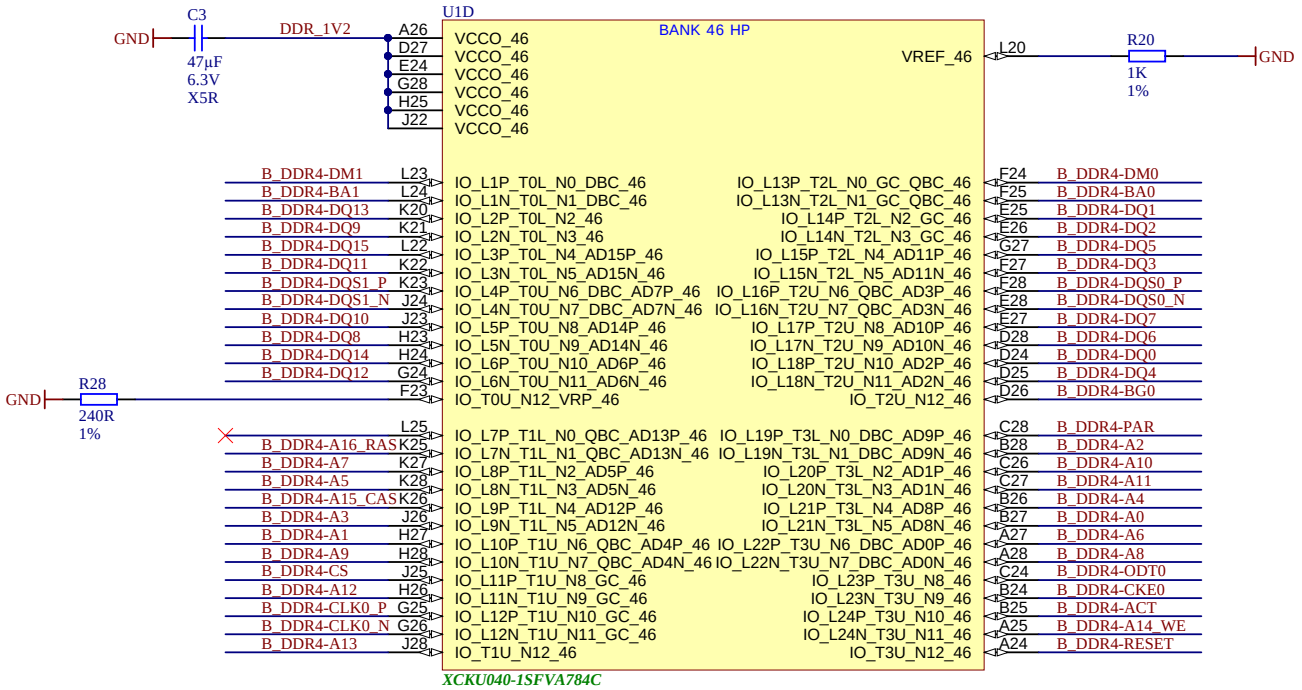
Title: TE0841			
A4	Number: TE0841 040-1C		Rev. 02
Date: 2018-03-14	Copyright: Trenz Electronic GmbH / TT		Page3 of 21
Filename: FPGA-MISC.SchDoc			



trenz electronic	Title: TE0841		
A4	Number: TE0841 040-1C		Rev. 02
Date: 2018-03-14	Copyright: Trenz Electronic GmbH / TT		Page4 of 21
Filename: FPGA-B44.SchDoc			

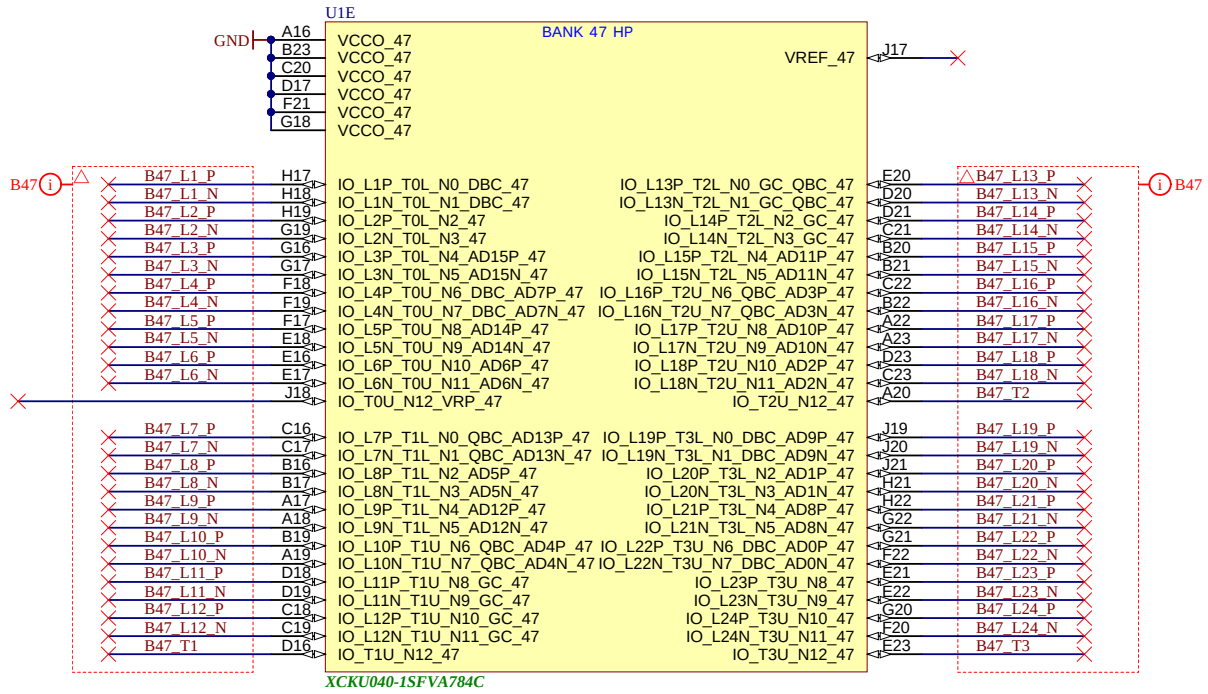


trenz electronic	Title: TE0841		
	A4	Number: TE0841 040-1C	Rev. 02
	Date: 2018-03-14	Copyright: Trenz Electronic GmbH / TT	Page5 of 21
	Filename: FPGA-B45.SchDoc		

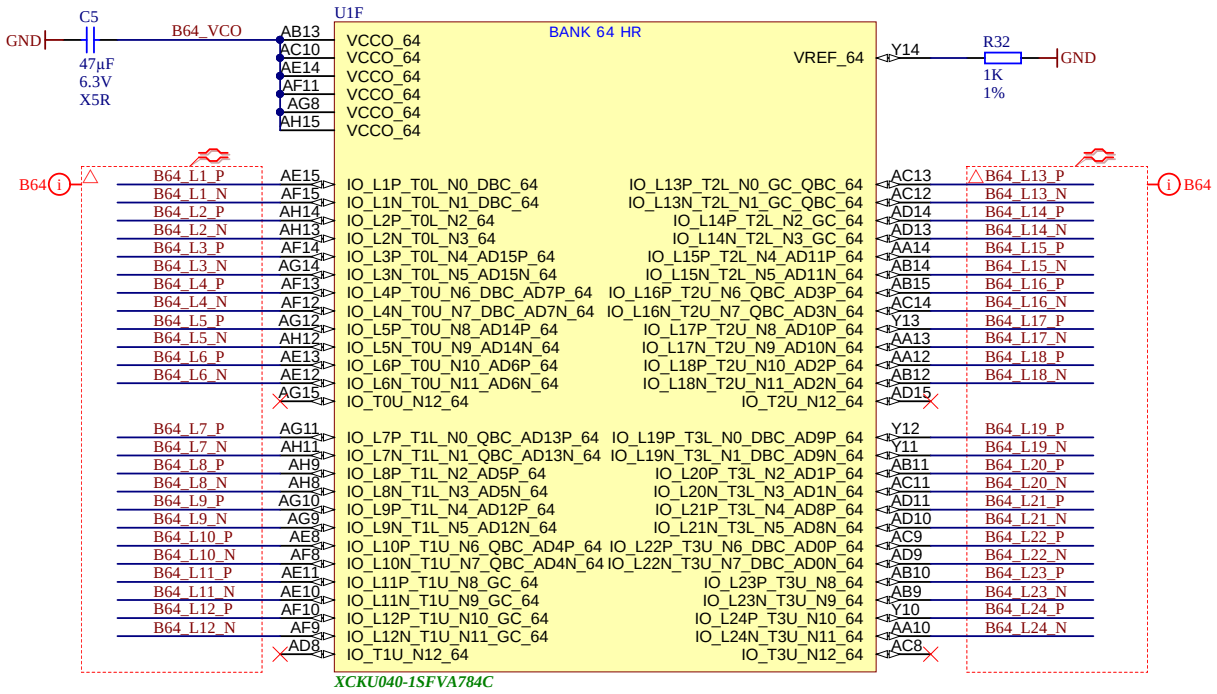


trenz electronic

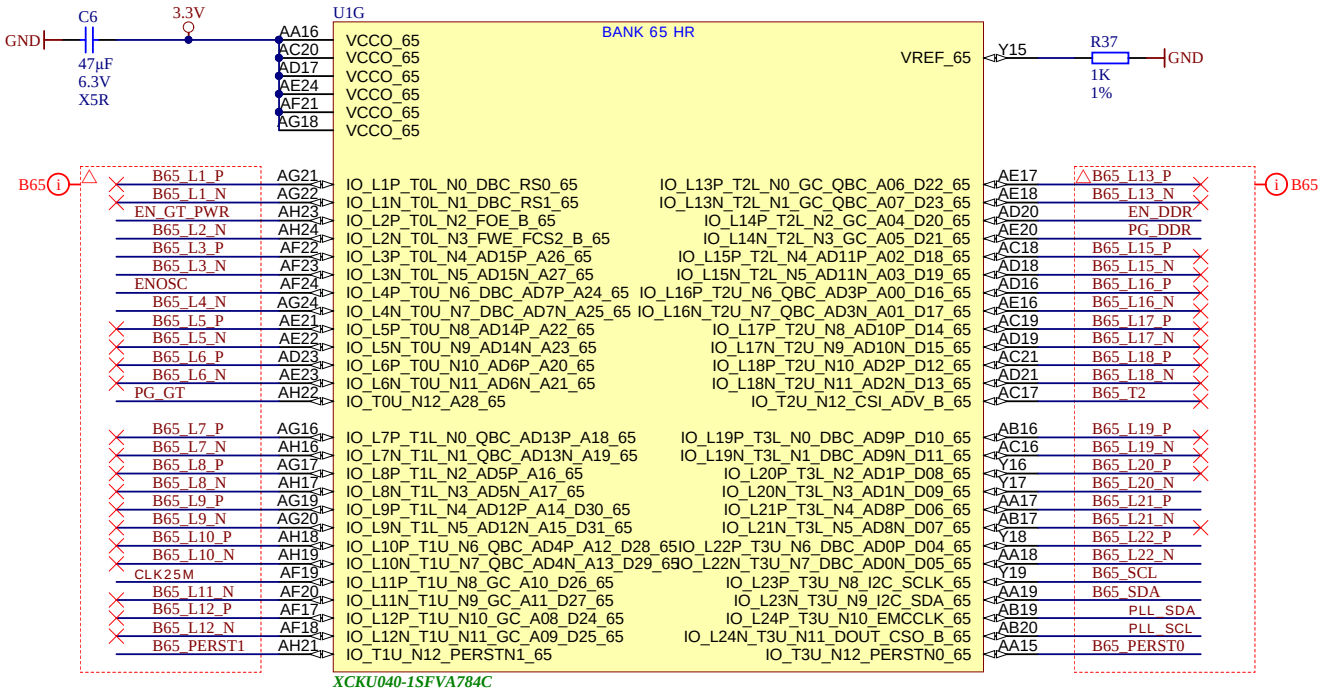
Title: TE0841			
A4	Number: TE0841 040-1C		Rev. 02
Date: 2018-03-14	Copyright: Trenz Electronic GmbH / TT		Page6 of 21
Filename: FPGA-B46.SchDoc			



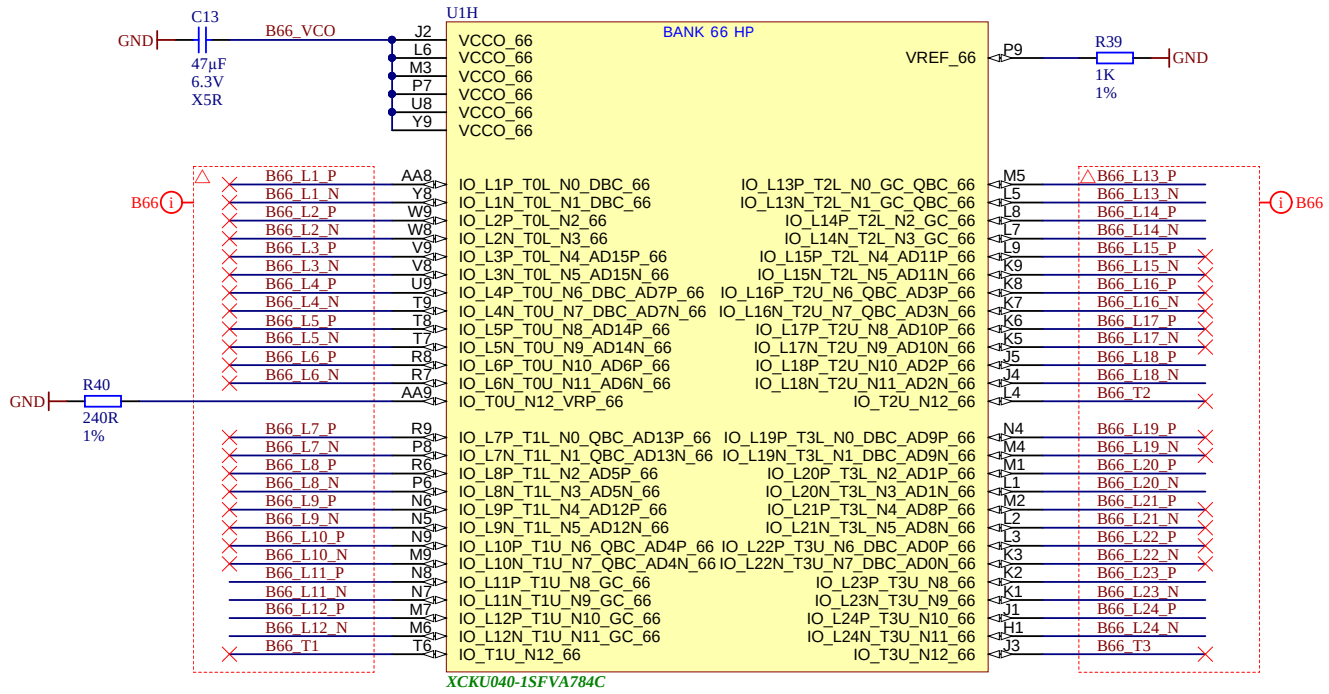
trenz electronic	Title: TE0841		
A4	Number: TE0841 040-1C		Rev. 02
Date: 2018-03-14	Copyright: Trenz Electronic GmbH / TT		Page7 of 21
Filename: FPGA-B47.SchDoc			



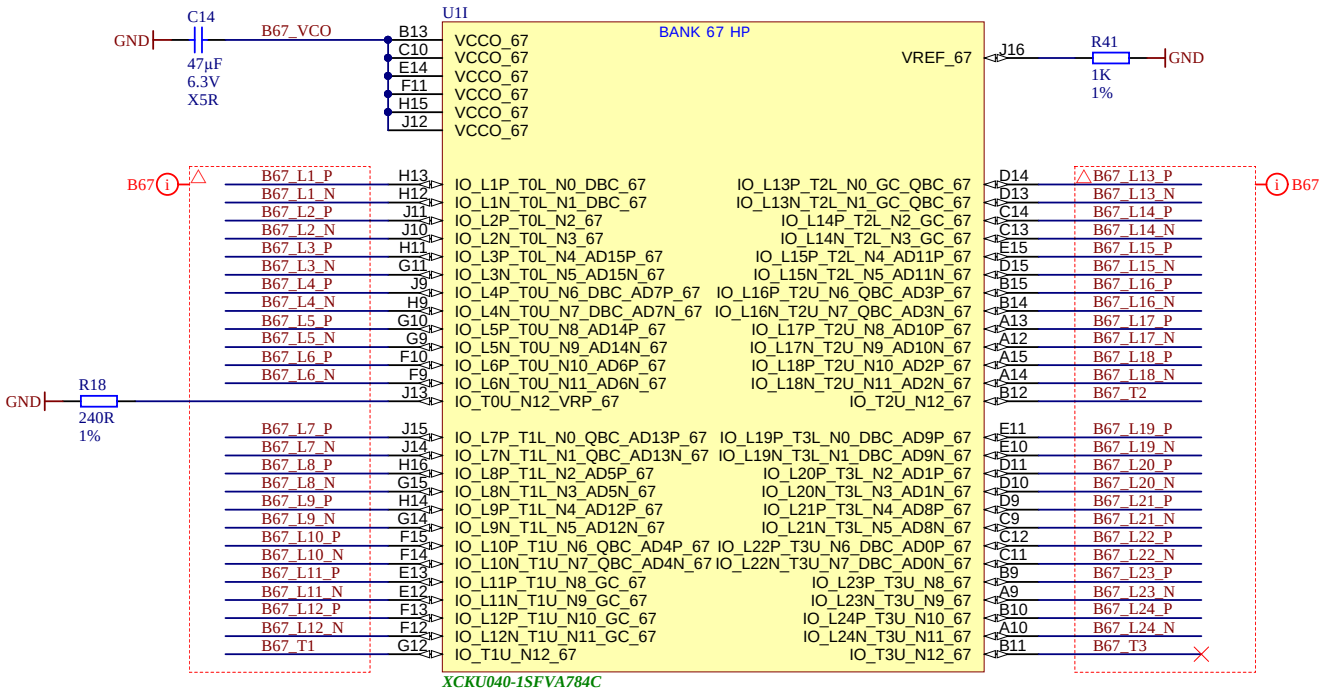
Title: TE0841		
A4	Number: TE0841 040-1C	Rev. 02
Date: 2018-03-14	Copyright: Trenz Electronic GmbH / TT	Page8 of 21
Filename: FPGA-B64.SchDoc		



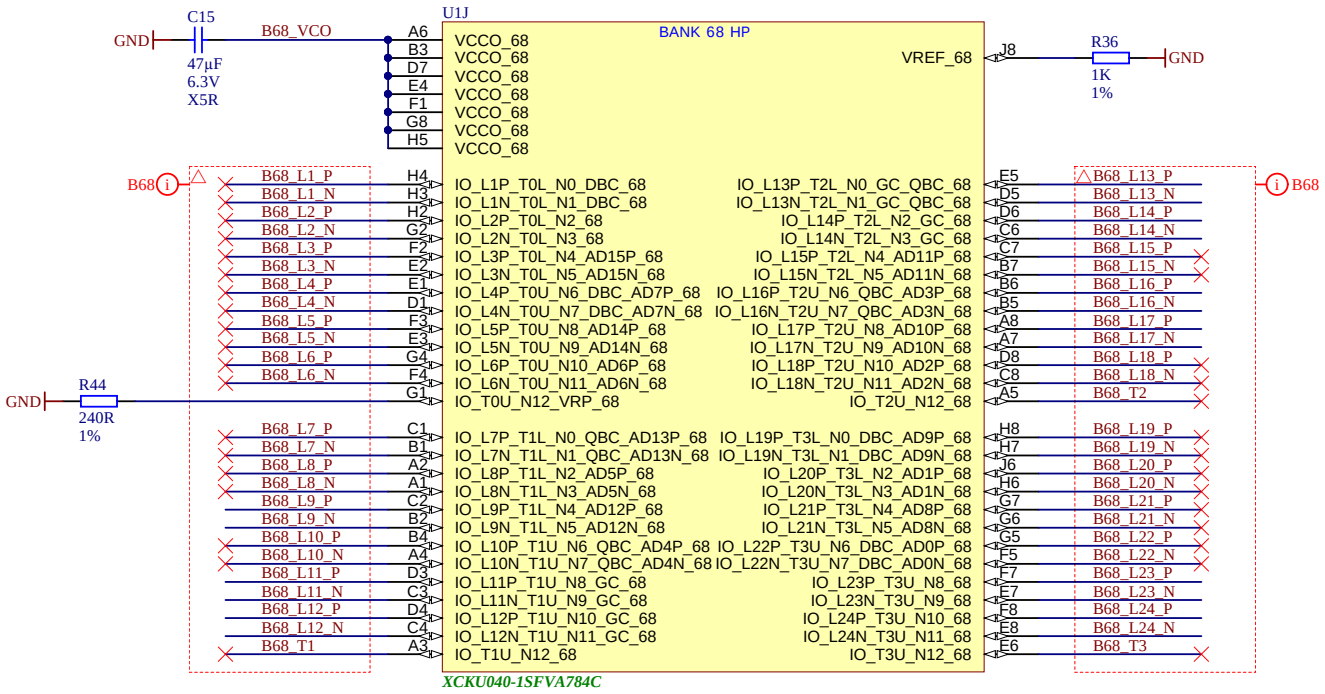
trenz electronic	Title: TE0841		
	A4	Number: TE0841 040-1C	Rev. 02
	Date: 2018-03-14	Copyright: Trenz Electronic GmbH / TT	Page9 of 21
	Filename: FPGA-B65.SchDoc		



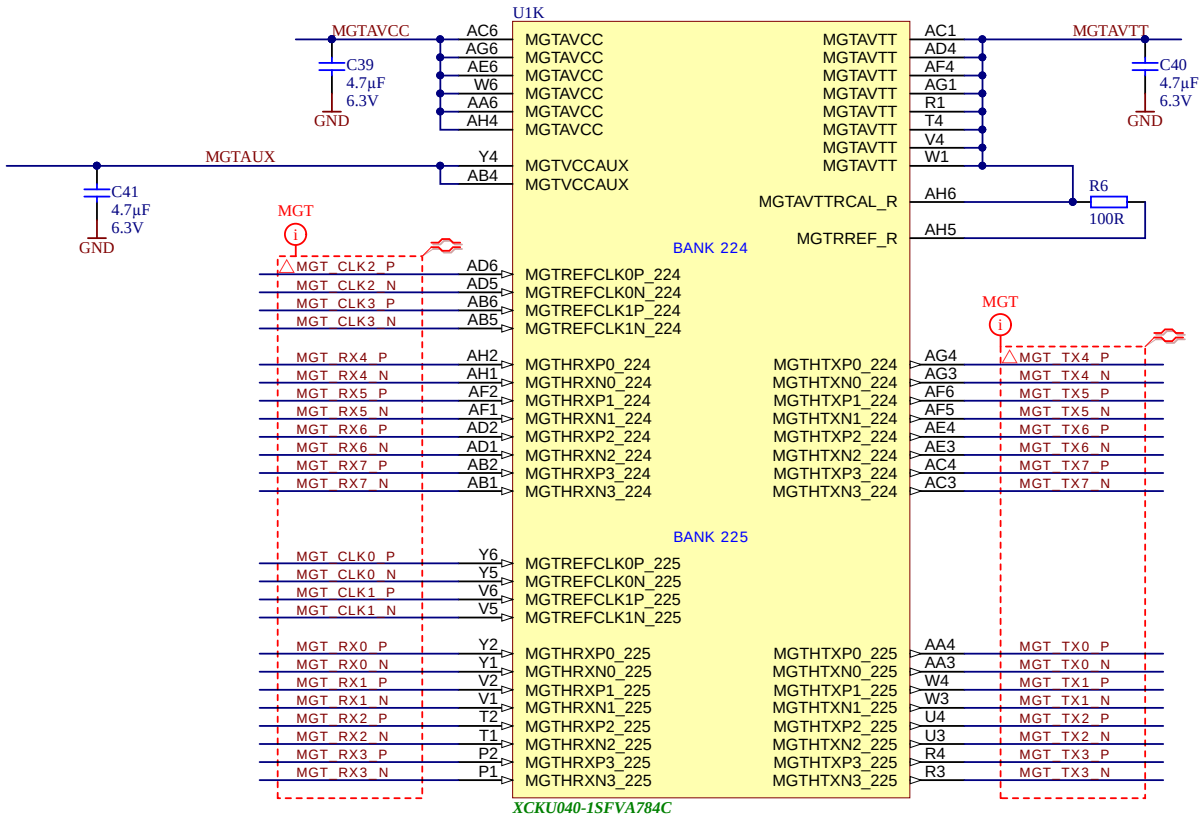
Title: TE0841		
A4	Number: TE0841 040-1C	Rev. 02
Date: 2018-03-14	Copyright: Trenz Electronic GmbH / TT	Page10 of 21
Filename: FPGA-B66.SchDoc		



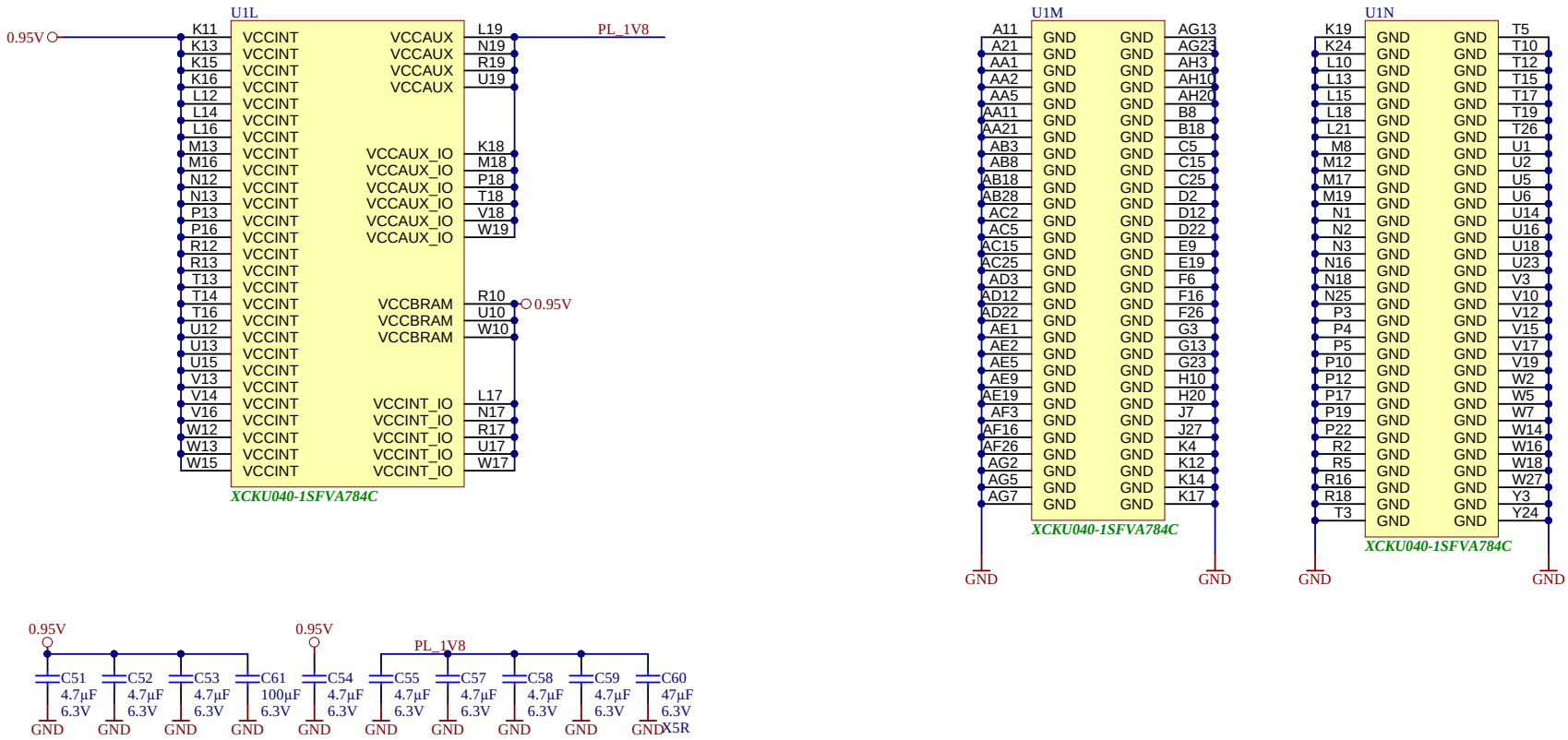
trenz electronic	Title: TE0841		
	A4	Number: TE0841 040-1C	Rev. 02
	Date: 2018-03-14	Copyright: Trenz Electronic GmbH / TT	Page11 of 21
	Filename: FPGA-B67.SchDoc		



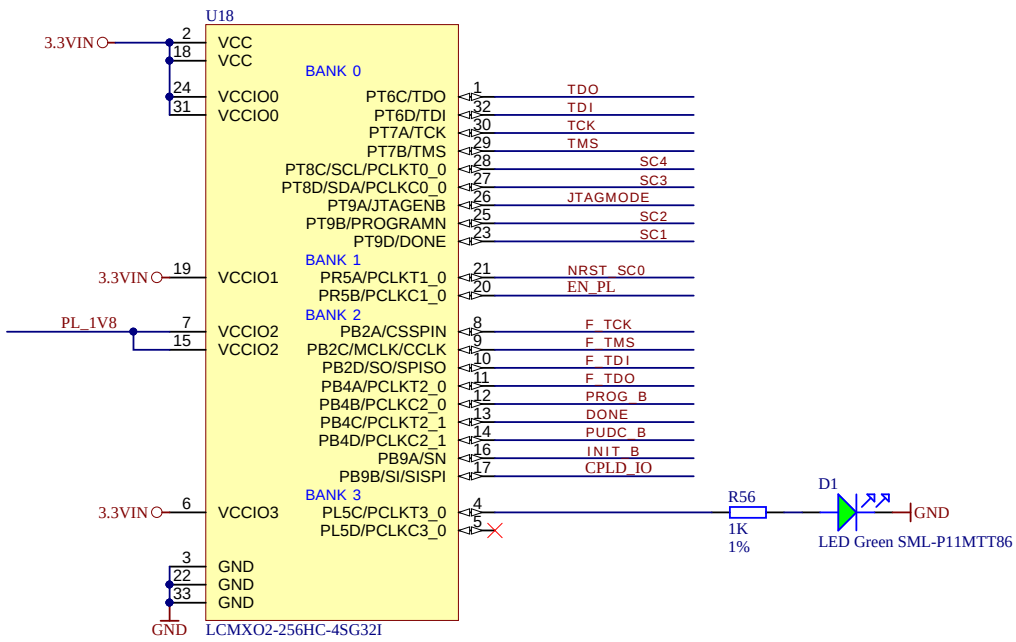
trenz electronic	Title: TE0841		
	A4	Number: TE0841 040-1C	Rev. 02
	Date: 2018-03-14	Copyright: Trenz Electronic GmbH / TT	Page12 of 21
	Filename: FPGA-B68.SchDoc		



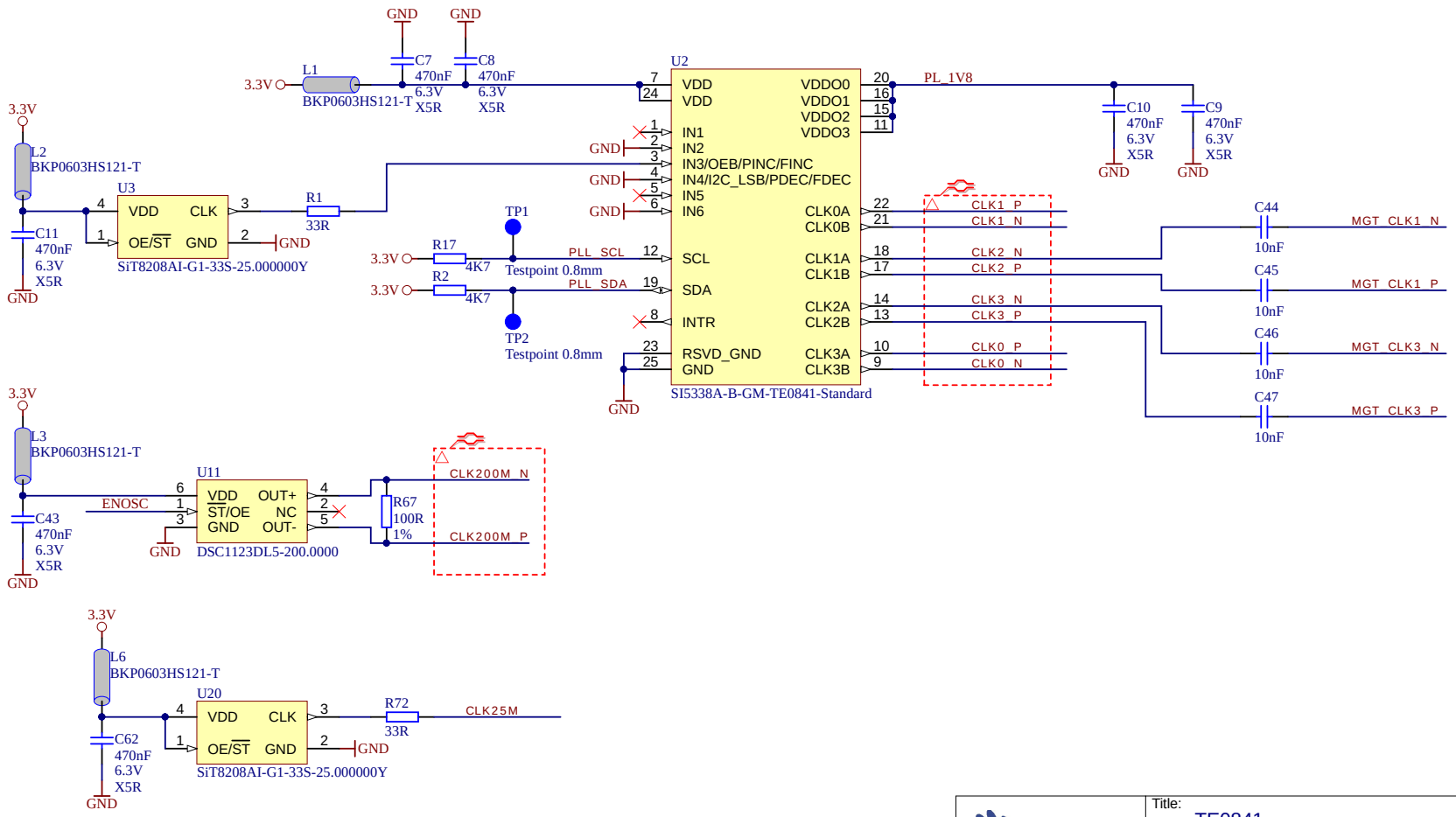
trenz electronic	Title: TE0841		
	A4	Number: TE0841 040-1C	Rev. 02
	Date: 2018-03-14	Copyright: Trenz Electronic GmbH / TT	Page13 of 21
	Filename: FPGA-MGT.SchDoc		



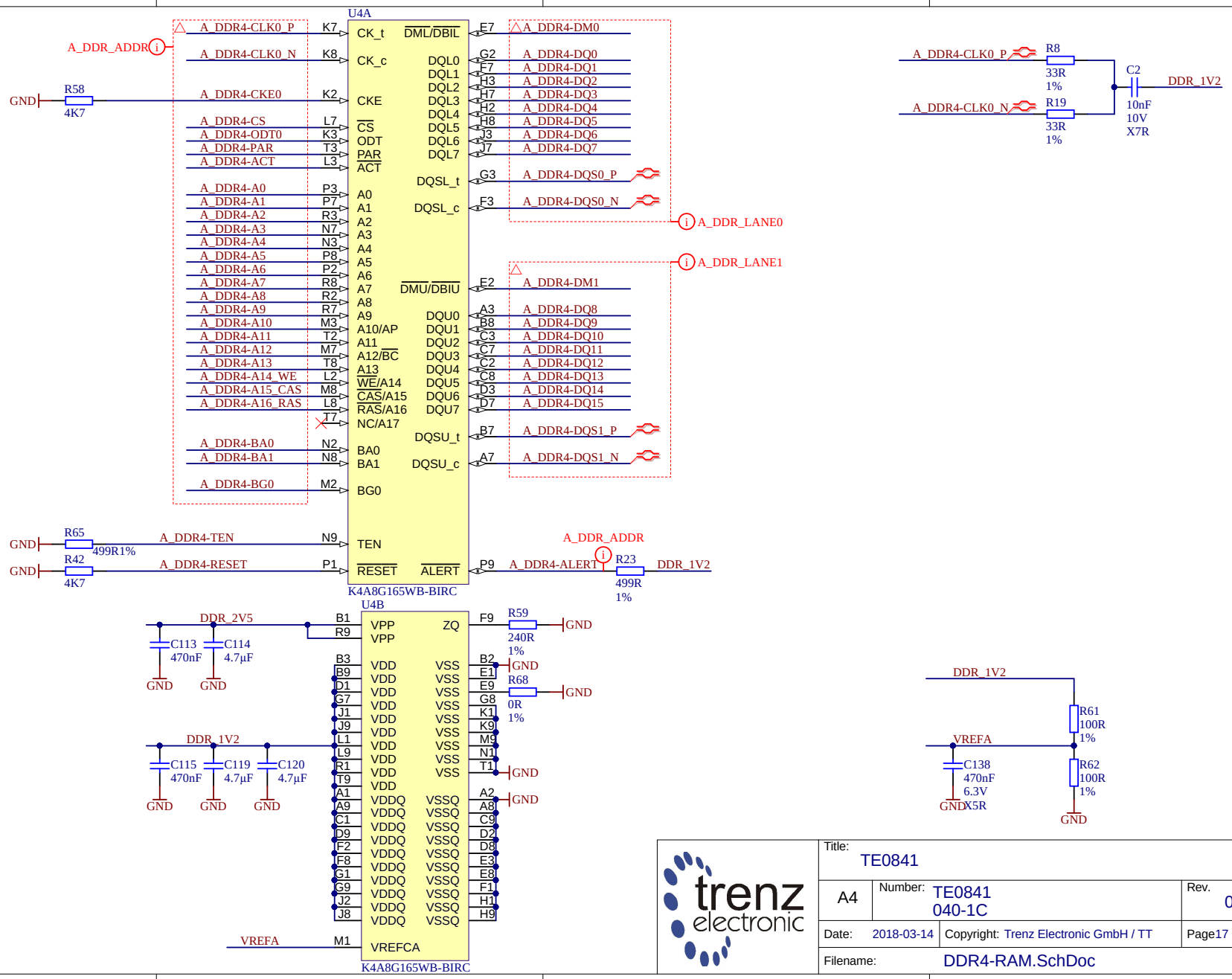
trenz electronic	Title: TE0841		
	A4	Number: TE0841 040-1C	Rev. 02
	Date: 2018-03-14	Copyright: Trenz Electronic GmbH / TT	Page 14 of 21
	Filename: FPGA-PWR.SchDoc		

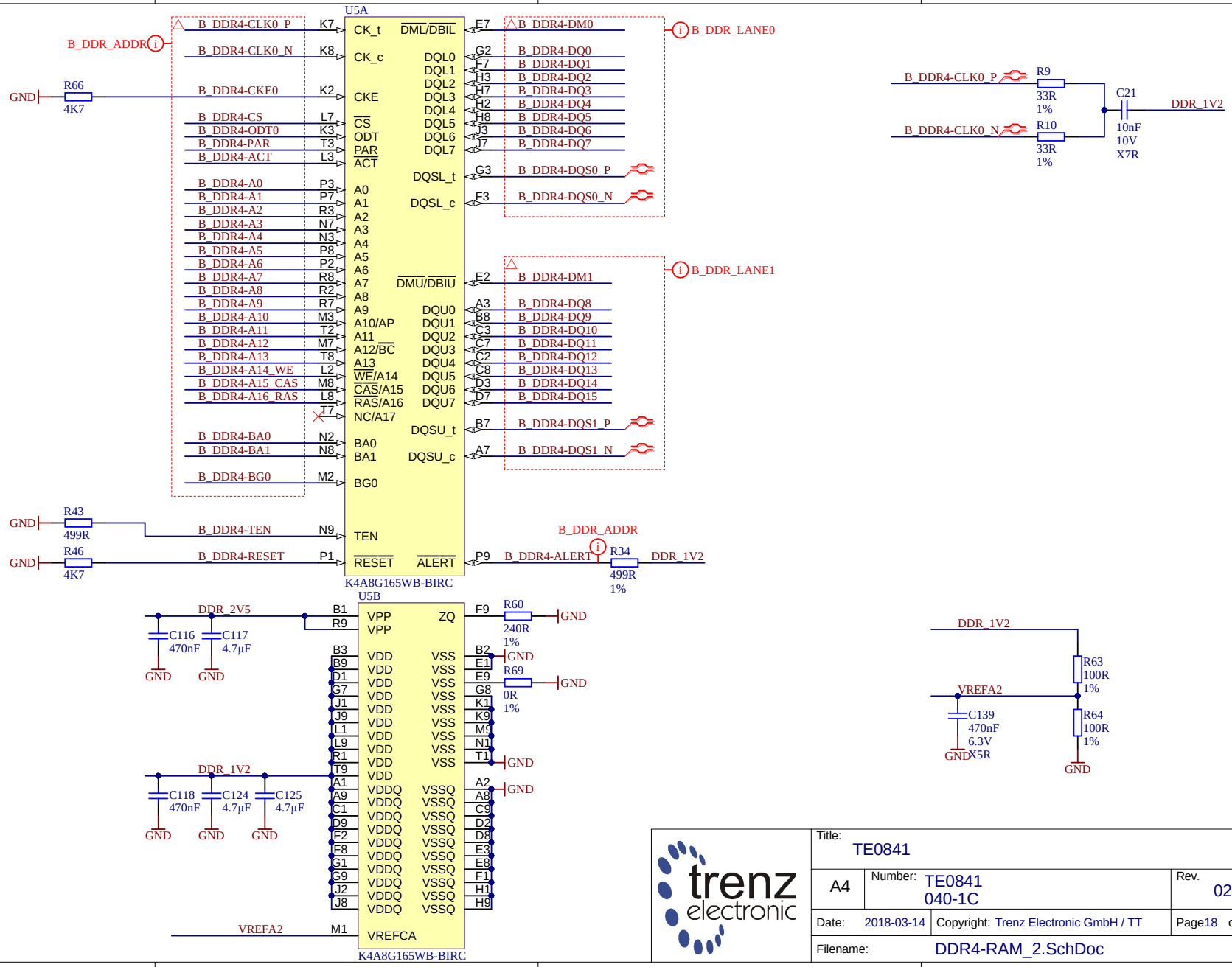


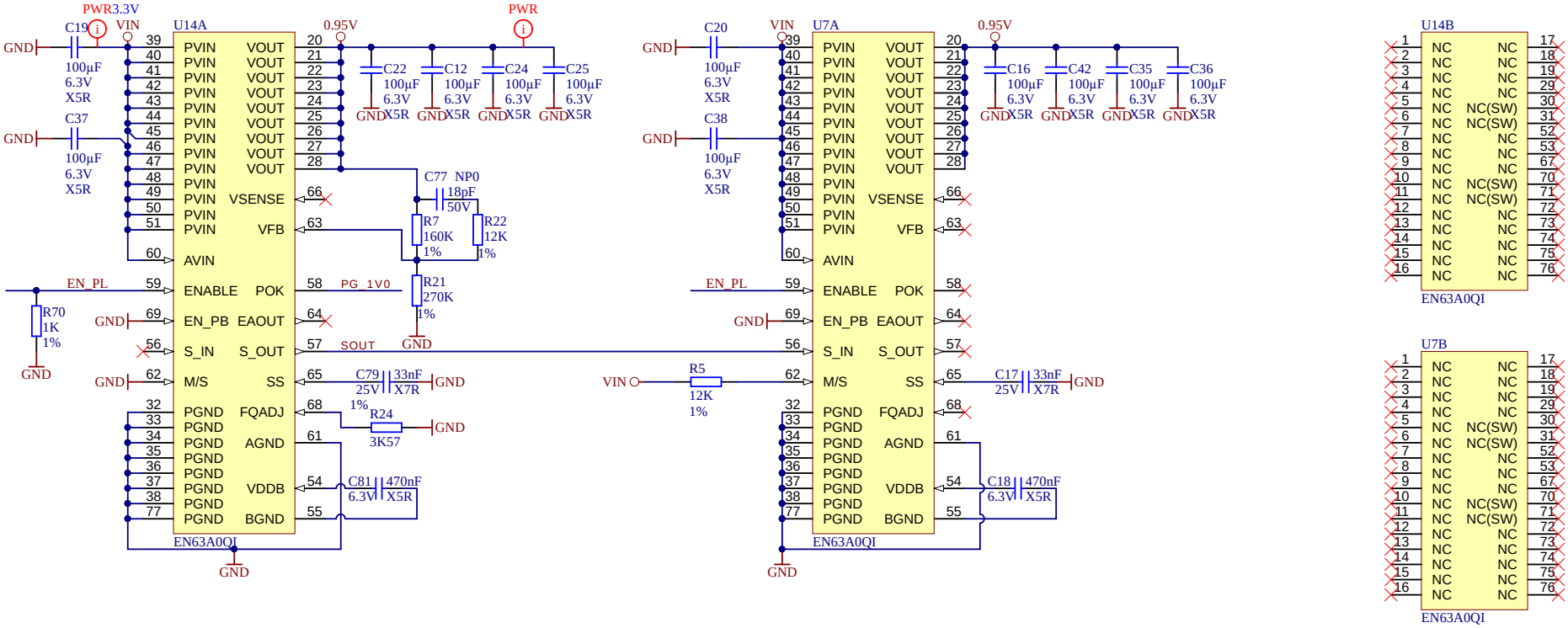
trenz electronic	Title: TE0841		
	A4	Number: TE0841 040-1C	Rev. 02
	Date: 2018-03-14	Copyright: Trenz Electronic GmbH / TT	Page15 of 21
	Filename: CPLD.SchDoc		



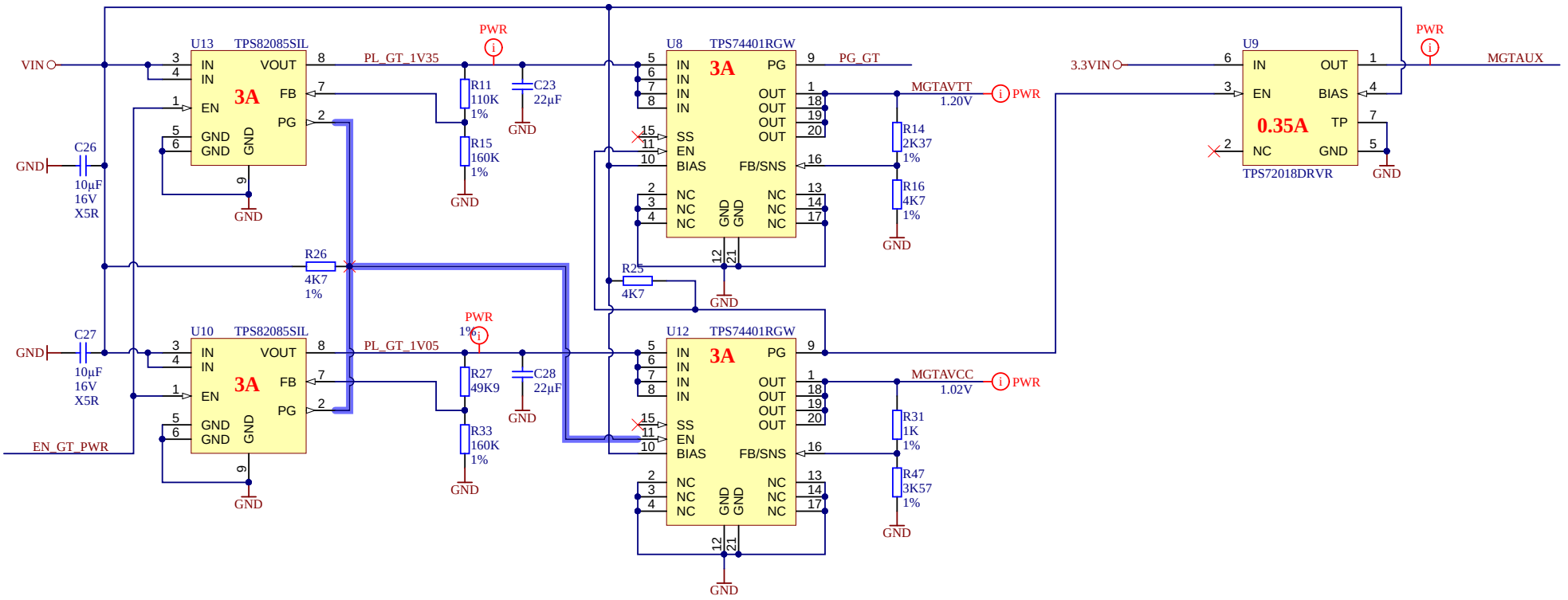
trenz electronic	Title: TE0841		
	A4	Number: TE0841 040-1C	Rev. 02
	Date: 2018-03-14	Copyright: Trenz Electronic GmbH / TT	Page16 of 21
	Filename: Clock.SchDoc		


U4A
A_DDR_ADDR
A_DDR4-CLK0_P
A_DDR4-CLK0_N
A_DDR4-CKE0
A_DDR4-CS
A_DDR4-ODT0
A_DDR4-PAR
A_DDR4-ACT
A_DDR4-A0
A_DDR4-A1
A_DDR4-A2
A_DDR4-A3
A_DDR4-A4
A_DDR4-A5
A_DDR4-A6
A_DDR4-A7
A_DDR4-A8
A_DDR4-A9
A_DDR4-A10
A_DDR4-A11
A_DDR4-A12
A_DDR4-A13
A_DDR4-A14_WE
A_DDR4-A15_CAS
A_DDR4-A16_RAS
A_DDR4-BA0
A_DDR4-BA1
A_DDR4-BG0
CK_t
CK_c
CKE
CS
ODT
PAR
ACT
A0
A1
A2
A3
A4
A5
A6
A7
A8
A9
A10/AP
A11
A12/BC
A13
WE/A14
CAS/A15
RAS/A16
NC/A17
BA0
BA1
BG0
TEN
RESET
DML/DBIL
DQL0
DQL1
DQL2
DQL3
DQL4
DQL5
DQL6
DQL7
DQSL_t
DQSL_c
DMU/DBIU
DQU0
DQU1
DQU2
DQU3
DQU4
DQU5
DQU6
DQU7
DQSU_t
DQSU_c
ALERT
A_DDR4-DM0
A_DDR4-DQ0
A_DDR4-DQ1
A_DDR4-DQ2
A_DDR4-DQ3
A_DDR4-DQ4
A_DDR4-DQ5
A_DDR4-DQ6
A_DDR4-DQ7
A_DDR4-DQS0_P
A_DDR4-DQS0_N
A_DDR_LANE0
A_DDR_LANE1
A_DDR4-DM1
A_DDR4-DQ8
A_DDR4-DQ9
A_DDR4-DQ10
A_DDR4-DQ11
A_DDR4-DQ12
A_DDR4-DQ13
A_DDR4-DQ14
A_DDR4-DQ15
A_DDR4-DQS1_P
A_DDR4-DQS1_N
A_DDR4-ALERT
R58
4K7
R65
499R1%
R42
4K7
R23
499R
1%
GND
DDR_1V2
K4A8G165WB-BIRC
U4B
VPP
VDD
VDDQ
VSS
VSSQ
ZQ
VREFCA
VREFA
R59
240R
1%
R68
0R
1%
DDR_2V5
C113
470nF
C114
4.7µF
C115
470nF
C119
4.7µF
C120
4.7µF
R8
33R
1%
R19
33R
1%
C2
10nF
10V
X7R
R61
100R
1%
R62
100R
1%
C138
470nF
6.3V
X5R
Title:
TE0841
A4
Number:
TE0841
040-1C
Rev.
02
Date:
2018-03-14
Copyright:
Trenz Electronic GmbH / TT
Page17 of 21
Filename:
DDR4-RAM.SchDoc
trenz
electronic

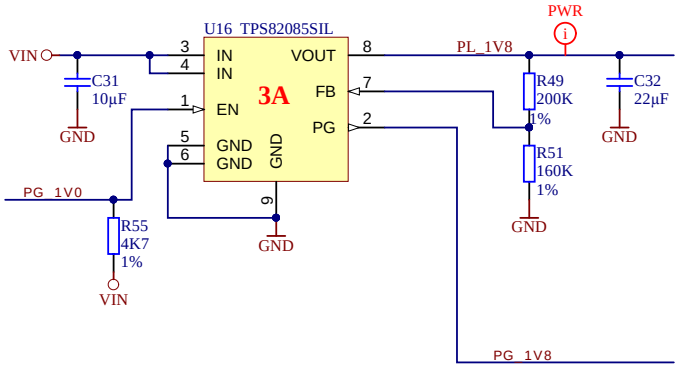

U5A
B_DDR4-CLK0_P
B_DDR4-CLK0_N
B_DDR_ADDR
GND
R66
4K7
B_DDR4-CKE0
B_DDR4-CS
B_DDR4-ODT0
B_DDR4-PAR
B_DDR4-ACT
B_DDR4-A0
B_DDR4-A1
B_DDR4-A2
B_DDR4-A3
B_DDR4-A4
B_DDR4-A5
B_DDR4-A6
B_DDR4-A7
B_DDR4-A8
B_DDR4-A9
B_DDR4-A10
B_DDR4-A11
B_DDR4-A12
B_DDR4-A13
B_DDR4-A14_WE
B_DDR4-A15_CAS
B_DDR4-A16_RAS
B_DDR4-BA0
B_DDR4-BA1
B_DDR4-BG0
R43
499R
B_DDR4-TEN
R46
4K7
B_DDR4-RESET
CK_t
CK_c
CKE
CS
ODT
PAR
ACT
A0
A1
A2
A3
A4
A5
A6
A7
A8
A9
A10/AP
A11
A12/BC
A13
WE/A14
CAS/A15
RAS/A16
NC/A17
BA0
BA1
BG0
TEN
RESET
DML/DBIL
DQL0
DQL1
DQL2
DQL3
DQL4
DQL5
DQL6
DQL7
DQSL_t
DQSL_c
DMU/DBIU
DQU0
DQU1
DQU2
DQU3
DQU4
DQU5
DQU6
DQU7
DQSU_t
DQSU_c
ALERT
B_DDR4-DM0
B_DDR4-DQ0
B_DDR4-DQ1
B_DDR4-DQ2
B_DDR4-DQ3
B_DDR4-DQ4
B_DDR4-DQ5
B_DDR4-DQ6
B_DDR4-DQ7
B_DDR4-DQS0_P
B_DDR4-DQS0_N
B_DDR_LANE0
B_DDR4-DM1
B_DDR4-DQ8
B_DDR4-DQ9
B_DDR4-DQ10
B_DDR4-DQ11
B_DDR4-DQ12
B_DDR4-DQ13
B_DDR4-DQ14
B_DDR4-DQ15
B_DDR4-DQS1_P
B_DDR4-DQS1_N
B_DDR_LANE1
B_DDR_ADDR
B_DDR4-ALERT
R34
499R
1%
DDR_1V2
K4A8G165WB-BIRC
U5B
DDR_2V5
C116
470nF
C117
4.7µF
VPP
VDD
VDDQ
VSS
VSSQ
ZQ
R60
240R
1%
R69
0R
1%
DDR_1V2
C118
470nF
C124
4.7µF
C125
4.7µF
VREFA2
VREFCA
K4A8G165WB-BIRC
B_DDR4-CLK0_P
B_DDR4-CLK0_N
R9
33R
1%
R10
33R
1%
C21
10nF
10V
X7R
DDR_1V2
R63
100R
1%
R64
100R
1%
VREFA2
C139
470nF
6.3V
X5R
GND
trenz electronic
Title: TE0841
A4
Number: TE0841 040-1C
Rev. 02
Date: 2018-03-14
Copyright: Trenz Electronic GmbH / TT
Page18 of 21
Filename: DDR4-RAM_2.SchDoc

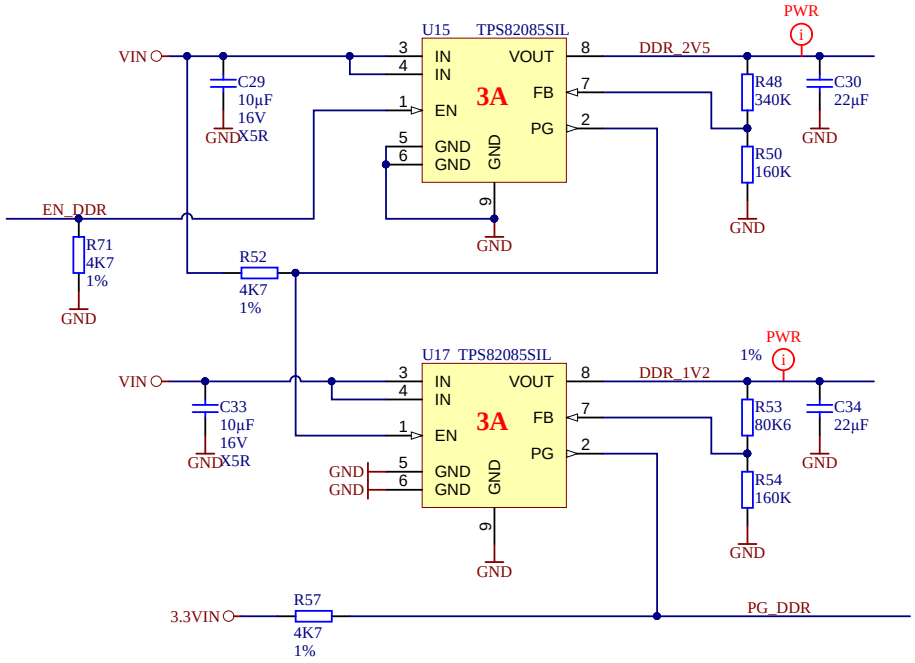


Title: TE0841			
A4	Number: TE0841 040-1C		Rev. 02
Date: 2018-03-14	Copyright: Trenz Electronic GmbH / TT		Page19 of 21
Filename: PWR1.SchDoc			



Title: TE0841			
A4	Number: TE0841 040-1C		Rev. 02
Date: 2018-03-14	Copyright: Trenz Electronic GmbH / TT		Page20 of 21
Filename: PWR2.SchDoc			





trenz electronic	Title: TE0841		
A4	Number: TE0841 040-1C		Rev. 02
Date: 2018-03-14	Copyright: Trenz Electronic GmbH / TT		Page21 of 21
Filename: POWER_2.SchDoc			

CHANGES REV01 TO REV01A (08.16.2017):

1) U1: changed schematic symbol. Next pins swapped to mach same polarity order:
-- AE13 (IO_L6P_T0U_N10_AD6P_64)/AE12 (IO_L6N_T0U_N11_AD6N_64)
-- J5 (IO_L18P_T2U_N10_AD2P_66)/J4 (IO_L18N_T2U_N11_AD2N_66)

2) Net names changed (no electrical changes):
JM1: swapped signals B64_L6:
-- B64_L6_N - pin 40 (was pin 42)
-- B64_L6_P - pin 42 (was pin 40)
JM3: swapped signals B64_L6:
-- B66_L18_N - pin 52 (was pin 54)
-- B66_L18_P - pin 54 (was pin 52)

CHANGES REV01A TO REV02 (03.2018):

1) U4 / U5: changed DDR4 chip: NT5AD256M16B2-GN -> K4A4G165WE-BCRC (K4A8G165WB-BIRC)
2) Fixed sense connection on DCDC
3) U6: changed SPI flash chip: N25Q256A11E1240E-> N25Q512A11G1240E
4) Full update LIB
5) Added additional resistors for support 16GBit DDR chips
6) Added strong pull-down to EN_PL
7) Added additional testpoints for I2C bus
8) Added additional MEMS oscillator (25MHz)
9) Changed pull-up power supply VIN -> 3.3VIN on the PG_DDR net
10) Added pull-down on the EN_DDR

trenz electronic

Title: TE0841 - Changes list		
A4	Number: TE0841 040-1C	Rev. 02
Date: 2018-03-14	Copyright: Trenz Electronic GmbH	Page22 of 22
Filename: Revision_Changes.SchDoc		