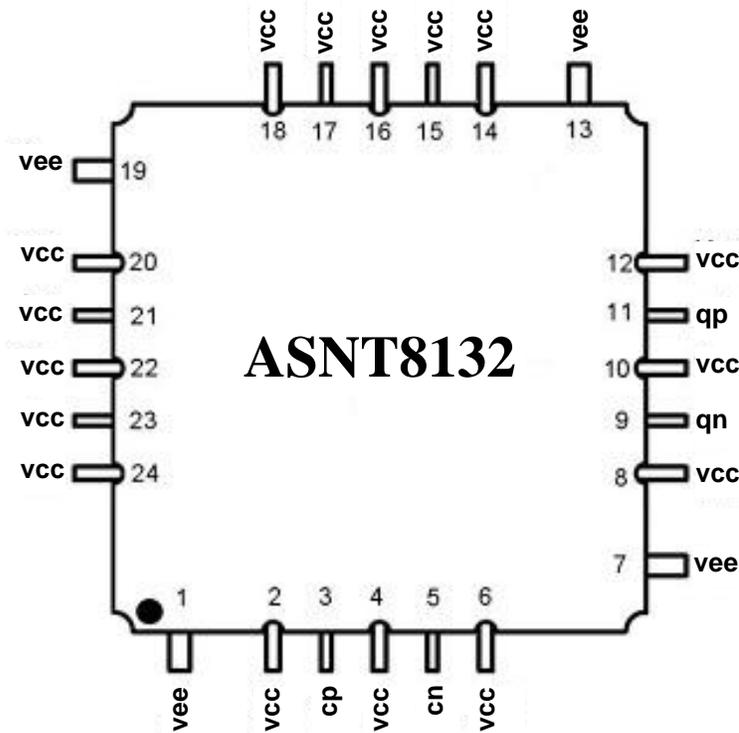# ASNT8132-KMC
DC-54GHz Broadband Clock Divider by 2

- High speed broadband clock divider by 2

- Exhibits low jitter and limited temperature variation over industrial temperature range

- Fully differential CML input interface

- Fully differential CML output interface with 400mV single-ended swing

- Single +3.3V or -3.3V power supply

- Power consumption: 630mW

- Fabricated in SiGe for high performance, yield, and reliability
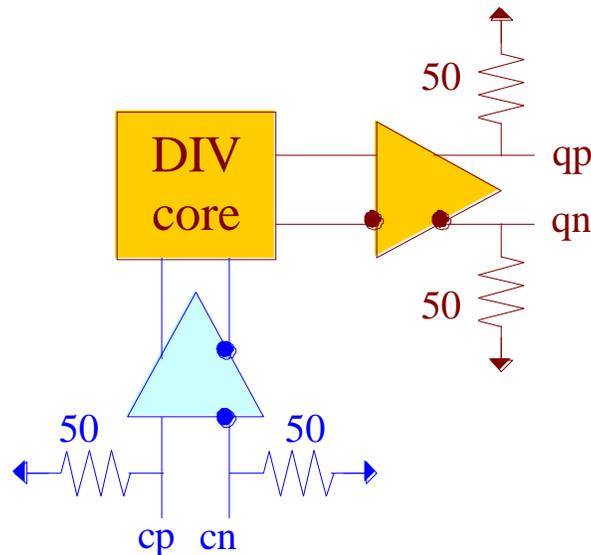
- Custom CQFP 24-pin package

DESCRIPTION

Fig. 1. Functional Block Diagram

The temperature stable ASNT8132-KMC SiGe IC provides broadband clock divide-by-2 functionality, and is intended for use in high-speed measurement / test equipment. The IC shown in Fig. 1 can process a high-speed clock input signal cp/cn and deliver a high-speed clock output signal qp/qn with 50% duty cycle.

The part's I/O's support the CML logic interface with on chip $50Ohm$ termination to vcc and may be used differentially, AC/DC coupled, single-ended, or in any combination (see also POWER SUPPLY CONFIGURATION). In the DC-coupling mode, the input signal's common mode voltage should comply with the specifications shown in ELECTRICAL CHARACTERISTICS. In the AC-coupling mode, the input termination provides the required common mode voltage automatically. The differential DC signaling mode is recommended for optimal performance.

POWER SUPPLY CONFIGURATION

The part can operate with either a negative supply (vcc = $0.0V$ = ground and vee = $-3.3V$), or a positive supply (vcc = $+3.3V$ and vee = $0.0V$ = ground). In case of a positive supply, all I/Os need AC termination when connected to any devices with $50Ohm$ termination to ground. Different PCB layouts will be needed for each different power supply combination.

All the characteristics detailed below assume vcc = 0.0V and vee = -3.3V.

ABSOLUTE MAXIMUM RATINGS

Caution: Exceeding the absolute maximum ratings shown in Table 1 may cause damage to this product and/or lead to reduced reliability. Functional performance is specified over the recommended operating conditions for power supply and temperature only. AC and DC device characteristics at or beyond the absolute maximum ratings are not assumed or implied. All min and max voltage limits are referenced to ground.

Table 1. Absolute Maximum Ratings

Parameter	Min	Max	Units
Supply Voltage (vee)		-3.6	*V*
Power Consumption		0.36	*W*
RF Input Voltage Swing (SE)		1.0	*V*
Case Temperature		+90	*ºC*
Storage Temperature	-40	+100	*ºC*
Operational Humidity	10	98	*%*
Storage Humidity	10	98	*%*

TERMINAL FUNCTIONS

TERMINAL			DESCRIPTION
Name	**No.**	**Type**	
High-Speed I/Os			
cp	3	CML input	Differential clock inputs with internal SE 50*Ohm* termination to vcc
cn	5		
qp	11	CML output	Differential clock outputs with internal SE 50*Ohm* termination to vcc. Require external SE 50*Ohm* termination to vcc
qn	9		
Supply and Termination Voltages			
Name	**Description**		**Pin Number**
vcc	Positive power supply (+3.3*V* or 0)		2, 4, 6, 8, 10, 12, 14, 15, 16, 17, 18, 20, 21, 22, 23, 24
vee	Negative power supply (0*V* or -3.3*V*)		1, 7, 13, 19

ELECTRICAL CHARACTERISTICS

PARAMETER	MIN	TYP	MAX	UNIT	COMMENTS
General Parameters					
vee	-3.1	-3.3	-3.5	*V*	±6%
vcc		0.0		*V*	External ground
*I*vee		190		*mA*	
Power consumption		630		*mW*	
Junction temperature	-40	25	125	*°C*	
HS Input Clock (cp/cn)					
Frequency	DC		54	*GHz*	
Swing	0.2		1.0	*V*	Differential or SE, p-p
CM Voltage Level	vcc-0.8		vcc	*V*	Must match for both inputs
HS Output Clock (qp/qn)					
Frequency	DC		27	*GHz*	
Logic "1" level		vcc		*V*	
Logic "0" level		vcc-0.4		*V*	With external 50*Ohm* DC termination
Rise/Fall times	4	5	7	*ps*	20%-80%
Output Jitter			1	*ps*	Peak-to-peak
Duty cycle	45	50	55	*%*	

PACKAGE INFORMATION

The chip die is housed in a custom 24-pin CQFP package shown in Fig. 2. The package provides a center heat slug located on its back side to be used for heat dissipation. ADSANTEC recommends for this section to be soldered to the vcc plain, which is ground for a negative supply, or power for a positive supply.

The part's identification label is ASNT8132-KMC. The first 8 characters of the name before the dash identify the bare die including general circuit family, fabrication technology, specific circuit type, and part version while the 3 characters after the dash represent the package's manufacturer, type, and pin out count.

This device complies with the Restriction of Hazardous Substances (RoHS) per 2011/65/EU for all ten substances.
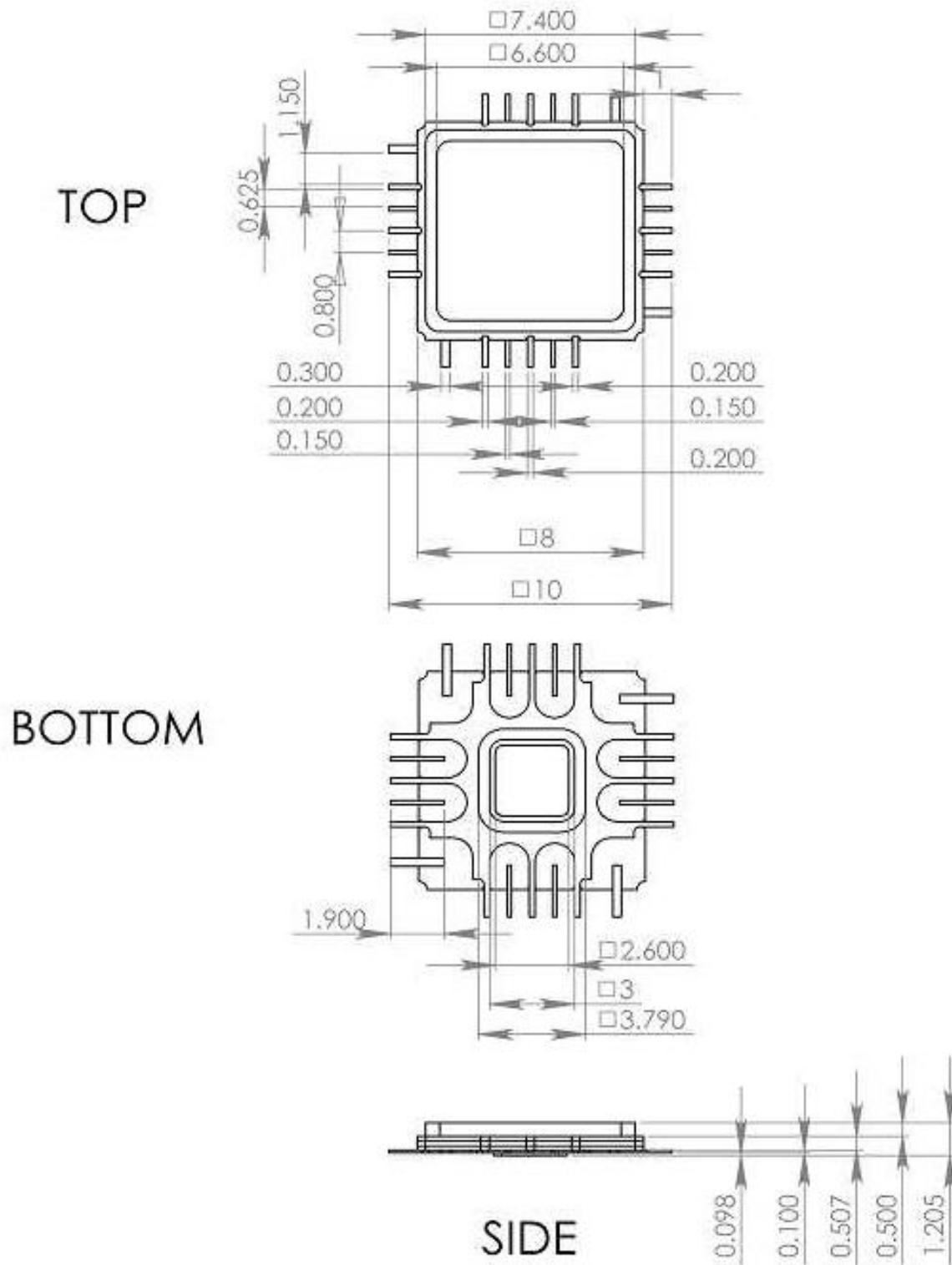
Fig. 2. CQFP 24-Pin Package Drawing (All Dimensions in mm)

REVISION HISTORY

Revision	Date	Changes
1.3.2	02-2020	Updated Package Information
1.2.2	07-2019	Updated Letterhead
1.2.1	10-2014	Corrected power consumption
1.1.1	03-2014	Corrected maximum speed
1.0.1	12-2013	First release