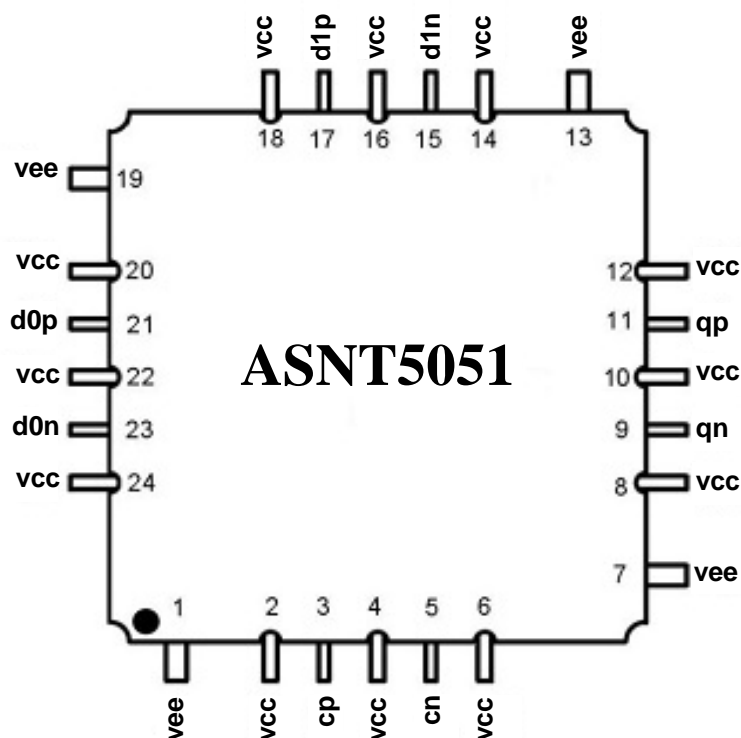




ASNT5051-KMC

DC-to-32Gbps High-Isolation Selector/Switch 1 of 2

- High-speed broadband switch with high isolation for selecting one of two inputs
- Exhibits low jitter and limited temperature variation over industrial temperature range
- DC to 1.0GHz analog bandwidth for control input
- Ideal for high speed proof-of-concept prototyping
- Fully differential CML input interface
- Fully differential CML output interface with 550mV single-ended swing
- Single +3.3V or -3.3V power supply
- Power consumption: 287mW
- Fabricated in SiGe for high performance, yield, and reliability
- Standard CQFP 24-pin package





DESCRIPTION

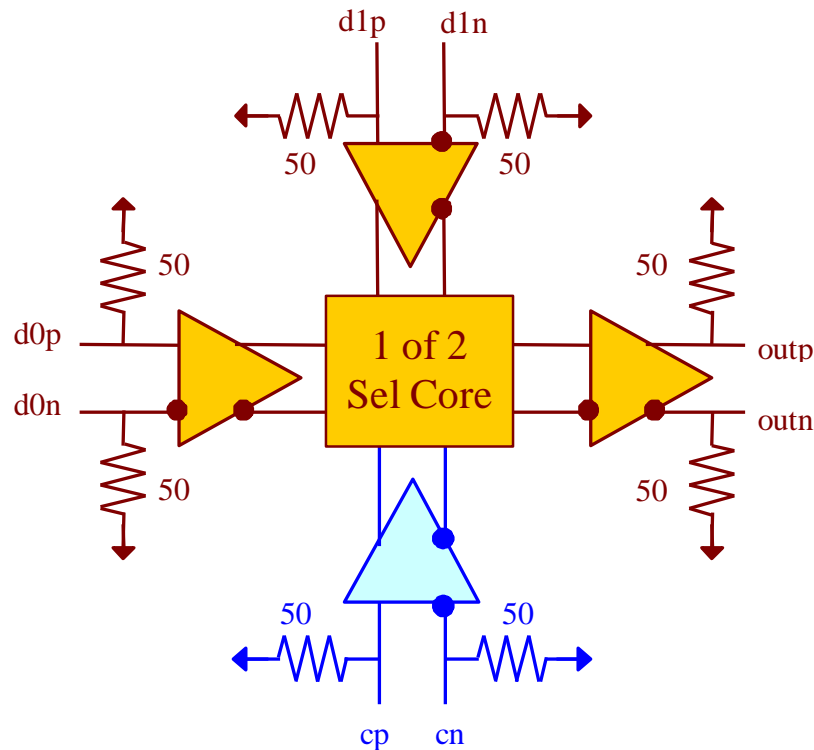


Fig. 1. Functional Block Diagram

The temperature stable and broadband ASNT5051-KMC SiGe IC can be utilized as a high isolation selector switch and is intended for use in high-speed measurement / test equipment. When The IC shown in Fig. 1 can route one of its differential data input signals (d0p/d0n or d1p/d1n) to its differential output (outp/outn) while effectively blocking the other data input with high isolation. Selection of a specific data input is achieved through appropriate external DC biasing of the selector signal inputs (cp/cn). It is also possible to apply an up to 1GHz AC signal to the selector signal inputs.

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 the 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 (assumed vcc).

Table 1. Absolute Maximum Ratings

Parameter	Min	Max	Units
Supply Voltage (vee)		-3.6	V
Power Consumption		0.31	W
RF Input Voltage Swing (SE)		1.0	V
Case Temperature		+90	°C
Storage Temperature	-40	+100	°C
Operational Humidity	10	98	%
Storage Humidity	10	98	%

TERMINAL FUNCTIONS

TERMINAL			DESCRIPTION
Name	No.	Type	
High-Speed I/Os			
d0p	21	CML input	Differential data input signals with internal SE 50Ohm termination to vcc
d0n	23		
d1p	17	CML input	Differential data input signals with internal SE 50Ohm termination to vcc
d1n	15		
cp	3	CML input	Differential select inputs with internal SE 50Ohm termination to vcc
cn	5		
outp	11	CML output	Differential data output signals with internal SE 50Ohm termination to vcc. Also require external SE 50Ohm termination to vcc
outn	9		
Supply And Termination Voltages			
Name	Description		Pin Number
vcc	Positive power supply (+3.3V or 0)		2, 4, 6, 8, 10, 12, 14, 16, 18, 20, 22, 24
vee	Negative power supply (0V or -3.3V)		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}		87		mA	
Power consumption		287		mW	
Junction temperature	-25	50	125	°C	
HS Input Data (d0p/d0n,d1p/d1n)					
Data rate/Frequency	DC		32/17	Gbps/GHz	
Swing	40		800	mV	Differential or SE, p-p
CM Voltage Level	vcc-0.8		vcc	V	Must match for both inputs
HS Input Clock (cp/cn)					
Frequency	DC		1	GHz	
Swing	40		800	V	Differential or SE, p-p
CM Voltage Level	vcc-0.8		vcc	V	Must match for both inputs
Duty cycle	40	50	56	%	
HS Output Data (outp/outn)					
Data rate/Frequency	DC		32/17	Gbps/GHz	
Logic "1" level		vcc		V	
Logic "0" level		vcc-0.55		V	With external 50Ω DC termination
Rise/Fall times	15		19	ps	20%-80%
Output Jitter			1	ps	Peak-to-peak

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 ASNT5051-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.

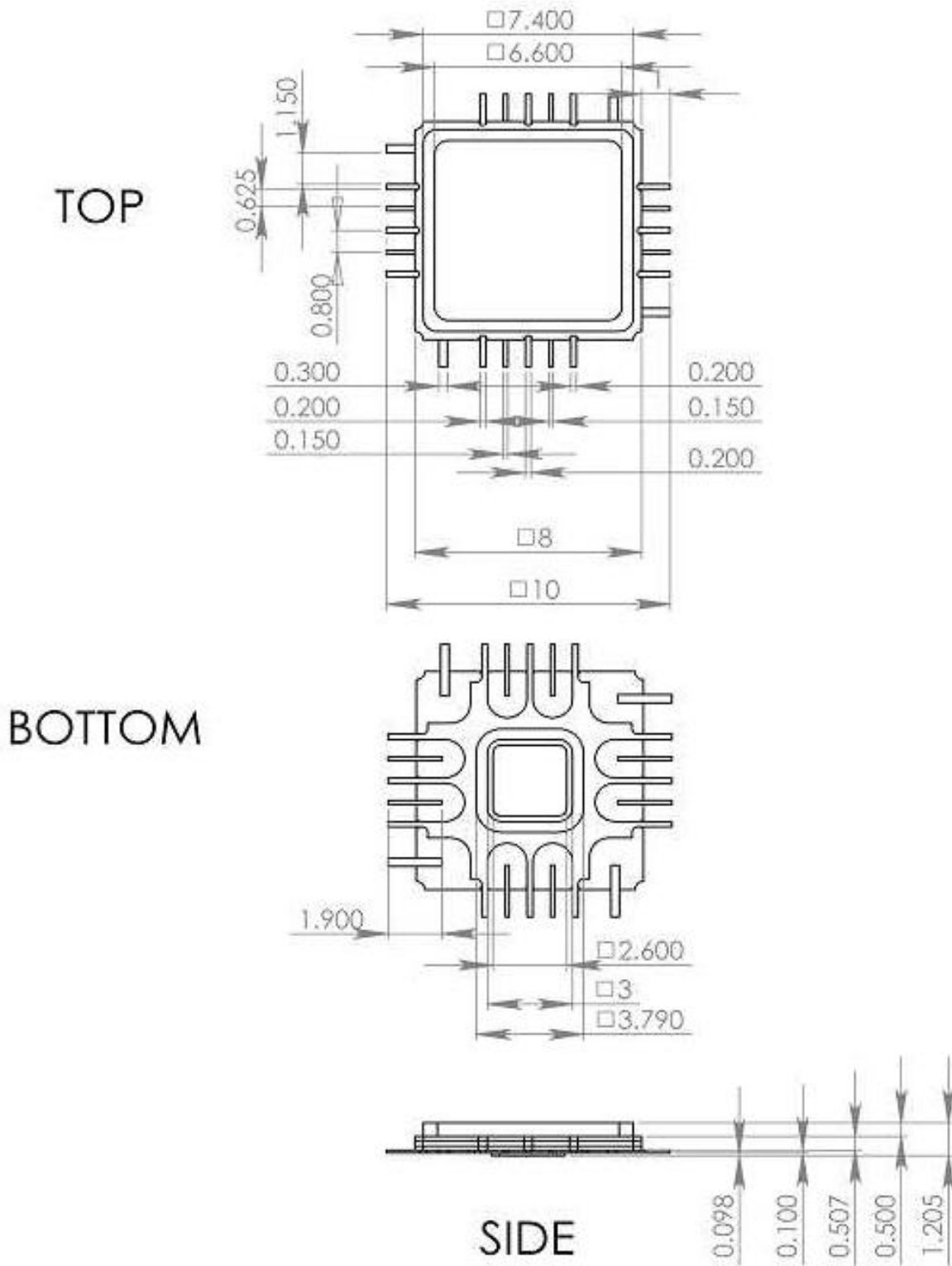


Fig. 2. CQFP 24-Pin Package Drawing (All Dimensions in mm)



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REVISION HISTORY

Revision	Date	Changes
1.1.2	05-2020	Updated Package Information
1.0.2	07-2019	Updated Letterhead
1.0.1	07-2015	Initial Release