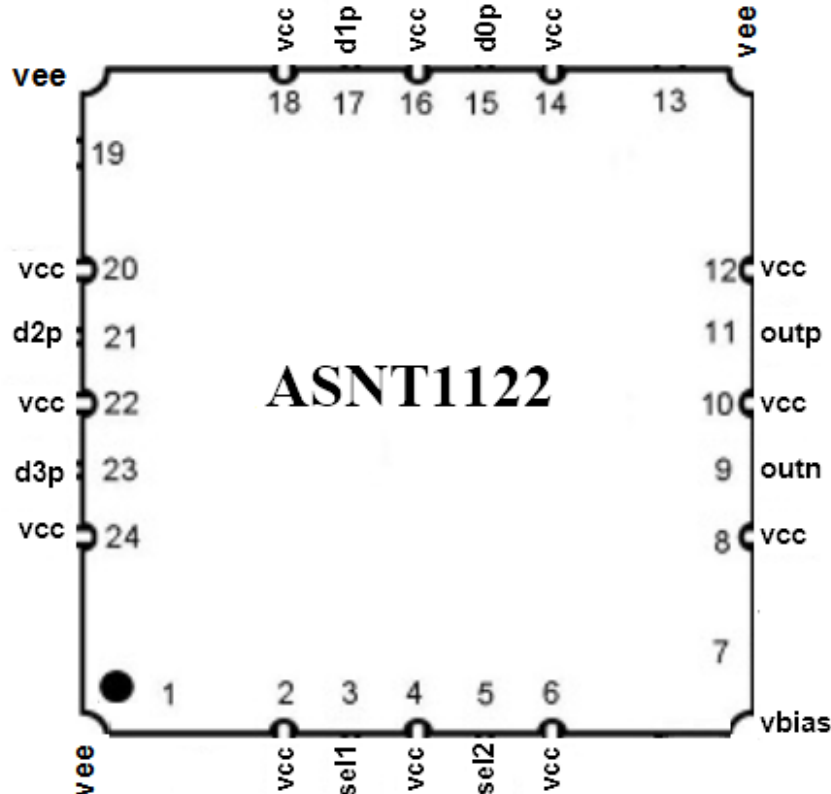




ASNT1122-KHC DC-32Gbps Broadband 1 of 4 Selector/Switch

- High speed broadband switch connecting one of four inputs to a single output
- Exhibits low jitter and limited temperature variation over industrial temperature range
- Ideal for high speed proof-of-concept prototyping
- CML compliant single ended input data interfaces
- Fully differential CML output data interface
- Digital control signals
- Adjustable output signal's duty cycle
- Single +3.3V or -3.3V power supply
- Power consumption: 300mW
- Fabricated in SiGe for high performance, yield, and reliability
- Custom CQFN 24-pin package





DESCRIPTION

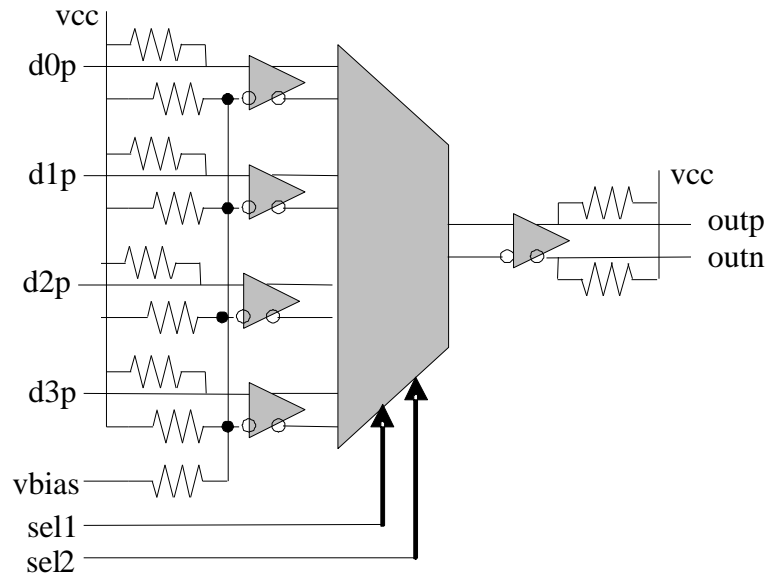


Fig. 1. Functional Block Diagram

The temperature stable and broadband ASNT1122-KHC SiGe IC is a high isolation selector switch that is intended for use in high-speed measurement/test equipment. The IC shown in Fig. 1 routes one of 4 single-ended CML inputs (d0p, d1p, d2p, d3p) to its differential CML output **outp/outn** while effectively blocking the other data inputs with high isolation. Selection of a specific data input is controlled by two digital control signals **sel1** and **sel2** in accordance with Table 1. The duty cycle of the output signal is controlled by an external analog voltage **vbias**.

Table 1. Switch Controls

sel1	sel2	outp	outn
0	0	d0p direct	d0p inverted
0	1	d2p direct	d2p inverted
1	0	d1p direct	d1p inverted
1	1	d3p direct	d3p inverted

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

POWER SUPPLY CONFIGURATION

The part can operate with either negative supply (**vcc** = 0.0V = ground and **vee** = -3.3V), or 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 50 Ω 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 2 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 2. Absolute Maximum Ratings

Parameter	Min	Max	Units
Supply Voltage (vee)		-3.6	V
Power Consumption		0.33	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	15	CML input	Single-ended data inputs with internal 50 Ω termination to vcc
d1p	17		
d2p	21		
d3p	23		
outp	11	CML output	Differential data outputs with internal 50 Ω termination to vcc. Require external SE 50 Ω termination to vcc
outn	9		
Controls			
sel1	3	CMOS input	Digital control signals
sel2	5		
vbias	7	Input	Analog control voltage
Supply and Termination Voltages			
Name	Description		Pin Number
vcc	Positive power supply (+3.3V or 0V)		2, 4, 6, 8, 10, 12, 14, 16, 18, 20, 22, 24
vee	Negative power supply (0V or -3.3V)		1, 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}		90		mA	
Power consumption		300		mW	
Junction temperature	-40	25	125	°C	
HS Input Data (d0p, d1p, d2p, d3p)					
Data Rate	0		32	Gbps	
Frequency	0		16	GHz	
SE Swing	50	300	600	mV	Peak-to-peak
CM Voltage Level		vcc-330		mV	At vbias = vee
Input Select (sel1, sel2)					
Frequency	0		1	MHz	
Logic "0" level	vcc-2.5		vcc-2.3	V	
Logic "1" level	vcc-0.2		vcc	V	
Input Bias (vbias)					
Voltage range	vee		vcc	V	
HS Output Data (outp/outn)					
Data Rate	0		32	Gbps	
Frequency	0		16	GHz	
Logic "1" level		vcc		V	
Logic "0" level		vcc-0.4		V	With external 50Ohm DC termination
Rise/Fall Times	14	15	16	ps	20%-80%
Additive Jitter			2	ps	Peak-to-peak

PACKAGE INFORMATION

The chip die is housed in a custom 24-pin CQFN 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.

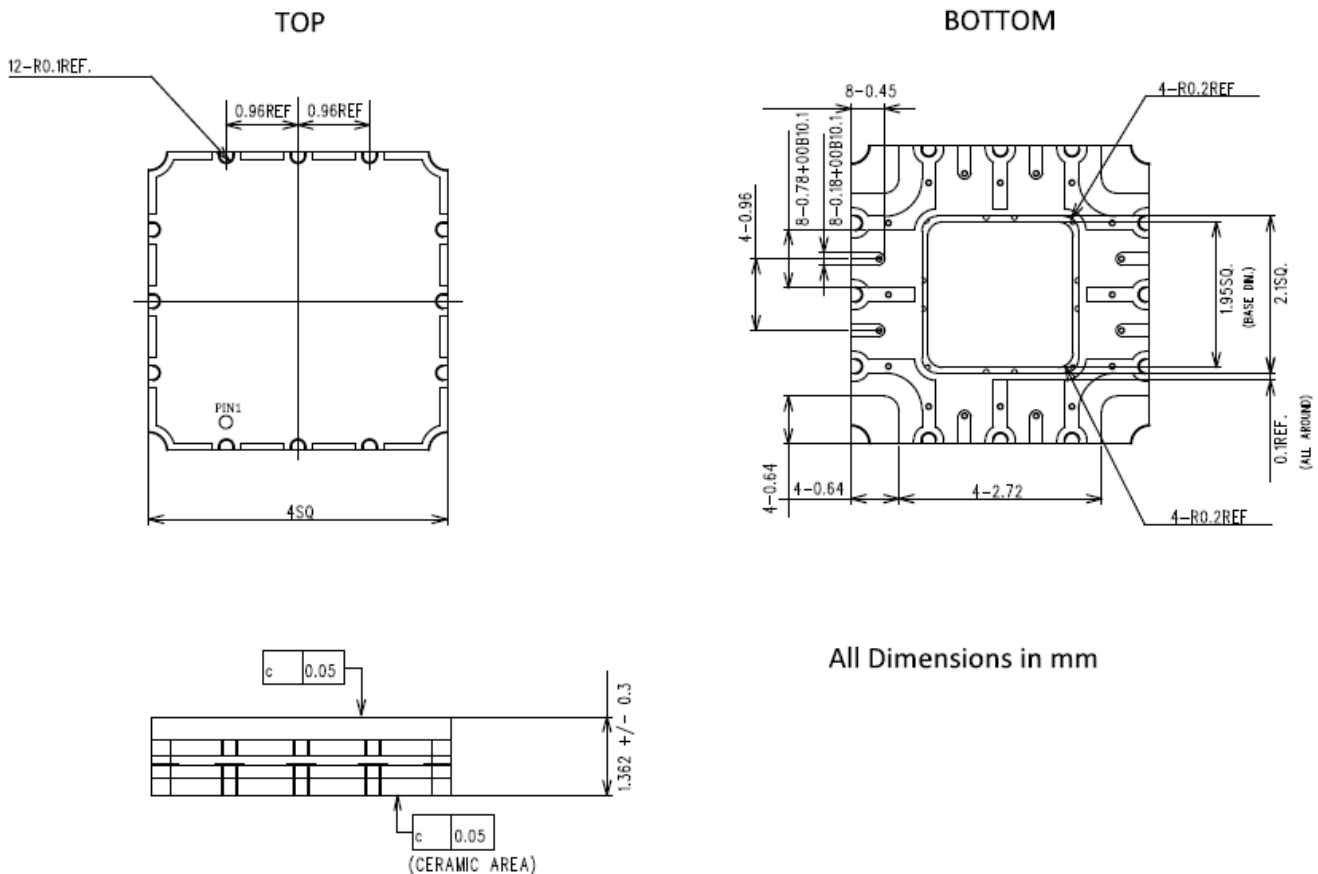


Fig. 2. CQFN 24-Pin Package Drawing (All Dimensions in mm)

The part's identification label is ASNT1122-KHC. 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 digits after the underscore represent the package's manufacturer, type, and pin out count.

This device complies with Commission Delegated Directive (EU) 2015/863 of 4 June 2015 amending Annex II to Directive 2011/65/EU of the European Parliament and of the Council as regards the list of restricted substances (Text with EEA relevance) on the restriction of the use of certain hazardous substances in electrical and electronics equipment (RoHS Directive) in accordance with the definitions set forth in the directives for all ten substances.



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REVISION HISTORY

Revision	Date	Changes
1.0.3	04-2023	Updated Package Drawing
1.0.2	04-2021	First release