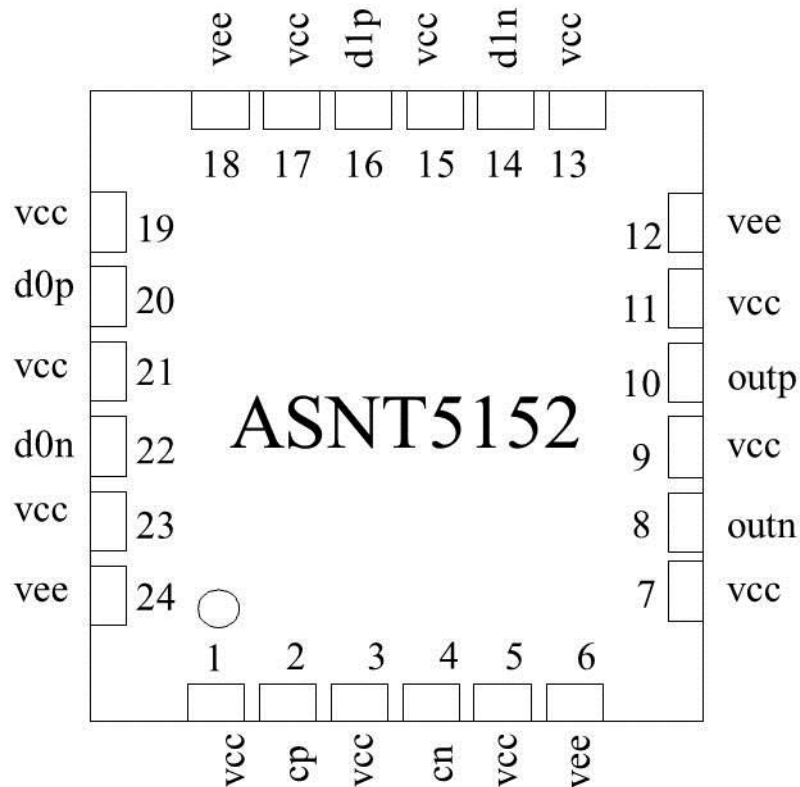




## ASNT5152-PQC

### DC-32Gbps/17GHz Broadband 1 of 2 High-Isolation Selector/Switch

- 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 400mV single-ended swing
- Single +3.3V or -3.3V power supply
- Power consumption: 315mW
- Fabricated in SiGe for high performance, yield, and reliability
- Standard MLF/QFN 24-pin package



## DESCRIPTION

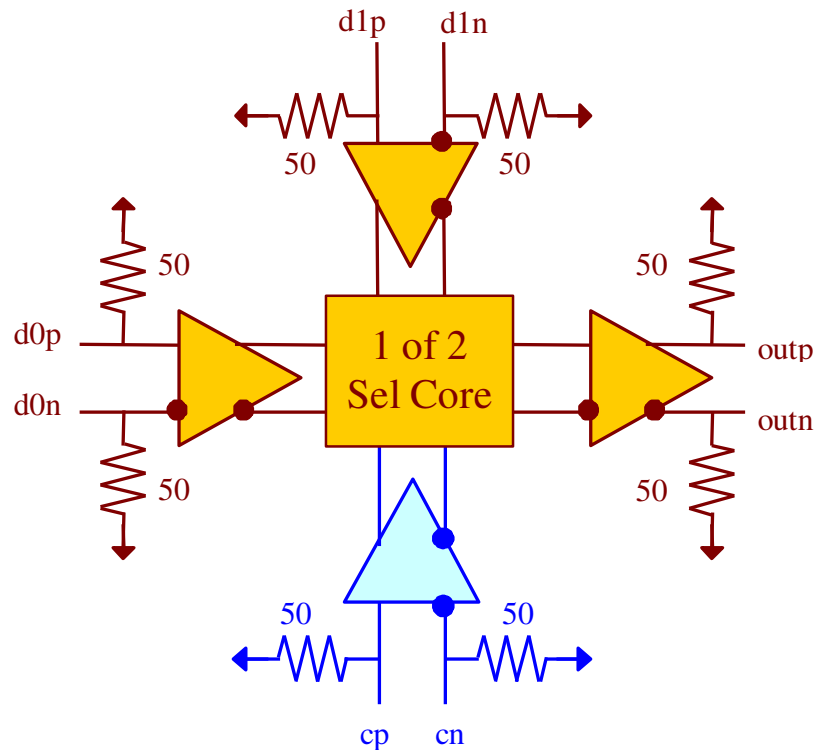


Fig. 1. Functional Block Diagram

The temperature stable and broadband ASNT5152-PQC SiGe IC can be utilized as a high isolation selector switch and is intended for use in high-speed measurement / test equipment. 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 select signal inputs cp/cn. It is also possible to apply an up to 1GHz AC signal to the select 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 (also see 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 (assumed vcc).

Table 1. Absolute Maximum Ratings

Parameter	Min	Max	Units
Supply Voltage (vee)		-3.6	V
Power Consumption		0.35	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	
<b>High-Speed I/Os</b>			
d0p	20	CML input	Differential data inputs with internal SE 50Ohm termination to vcc
d0n	22		
d1p	16	CML input	Differential data inputs with internal SE 50Ohm termination to vcc
d1n	14		
cp	2	CML input	Differential select inputs with internal SE 50Ohm termination to vcc
cn	4		
outp	10	CML output	Differential data outputs with internal SE 50Ohm termination to vcc. Also require external SE 50Ohm termination to vcc
outn	8		
<b>Supply And Termination Voltages</b>			
Name	Description		Pin Number
vcc	Positive power supply (+3.3V or 0)		1, 3, 5, 7, 9, 11, 13, 15, 17, 19, 21, 23
vee	Negative power supply (0V or -3.3V)		6, 12, 18, 24



## ELECTRICAL CHARACTERISTICS

PARAMETER	MIN	TYP	MAX	UNIT	COMMENTS	
<b>General Parameters</b>						
vee	-3.1	-3.3	-3.5	V	±6%	
vcc		0.0		V	External ground	
I <sub>vee</sub>		95		mA		
Power consumption		315		mW		
Junction temperature	-25	50	125	°C		
<b>HS Input Data (d0p/d0n, d1p/d1n)</b>						
Data rate	DC		32	Gbps		
Frequency	DC		17	GHz		
Swing	50		800	mV	Differential or SE, p-p	
CM Voltage Level	vcc-0.8		vcc	V	Must match for both inputs	
<b>Input Select Signals (cp/cn)</b>						
Frequency	DC		1	GHz		
Swing	50		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	%		
<b>HS Output Data (outp/outn)</b>						
Data rate	DC		32	Gbps		
Frequency	DC		17	GHz		
Logic "1" level		vcc		V		
Logic "0" level		vcc-0.4		V	With external 50Ω DC termination	
Attenuation of a disabled input signal of the shown speed		-54		dB	5GHz	Measured with the input amplitude that keeps the output just below saturation
		-50		dB	10GHz	
		-47		dB	15GHz	
Rise/Fall times	15		19	ps	20%-80%	
Output Jitter			1	ps	Peak-to-peak	

## PACKAGE INFORMATION

The chip die is housed in a standard 24-pin QFN package shown in Fig. 2. It is recommended that the center heat slug located on the back side of the package is soldered to the vee plain that is ground for the positive supply or power for the negative supply.

The part's identification label is ASNT5152-PQC. 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.

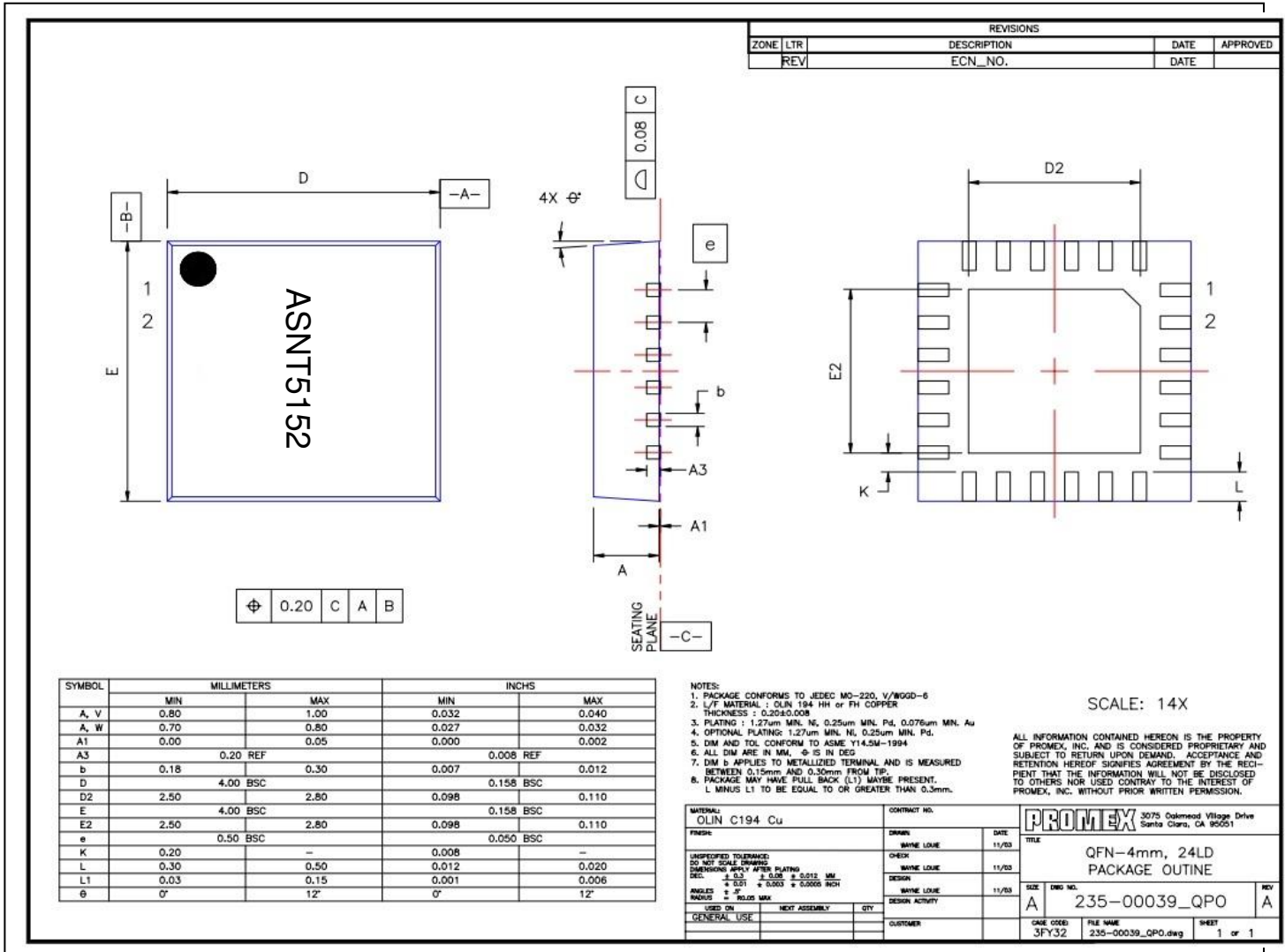


Fig. 2. QFN 24-Pin Package Drawing (All Dimensions in mm)



## REVISION HISTORY

Revision	Date	Changes
3.3.2	01-2020	Updated Package Information
3.2.2	07-2019	Updated Letterhead
3.2.1	01-2018	Added attenuation specifications
3.1.1	01-2014	Corrected title Corrected electrical characteristics table
3.0.1	05-2013	Corrected title Corrected description Updated pin out diagram and block diagram Added power supply configurations section Added absolute maximum ratings section Updated terminal functions table Updated package information Added package mechanical drawing
2.0	03-2010	Updated electrical characteristics
1.0	09-2009	Initial release