

ASNT5050-PQC is available on two evaluation boards: one with negative supply and one with positive supply. Application notes for these two evaluation boards are presented in order of:

- Negative supply on ASNT05_12
- Positive supply on ASNT05_11

By default, ADSANTEC will ship the positive supply evaluation board. Please send us a message through the DigiKey marketplace website if you would like to receive the negative supply version.

The datasheet for ASNT5050-PQC can be accessed through the following [LINK](#).

ASNT5050-PQC on ASNT05_12 Evaluation Board DC-32Gbps Broadband Digital 2:1 Multiplexer/Selector Application Note

Part Description

The ASNT5050-PQC 2 to 1 multiplexer accepts two parallel broadband data signals at its two differential input ports d0p/d0n and d1p/d1n and delivers a single serialized data stream at twice the data rate to its differential output port outp/outn. Multiplexing of the input data is accomplished by applying a half rate input clock signal to the differential input port cp/cn.

The part is mounted on an ASNT05_12 evaluation board with 50Ohm transmission lines to transfer signals to/from the chip to 8 high-speed edge-mount female connectors (Southwest or similar) as shown in Fig. 1. The board has a MOLEX connector for the power supply, as well as signal filters, supply filters, and decoupling networks. The board measures approximately 2.0x2.0 inches, without connectors.

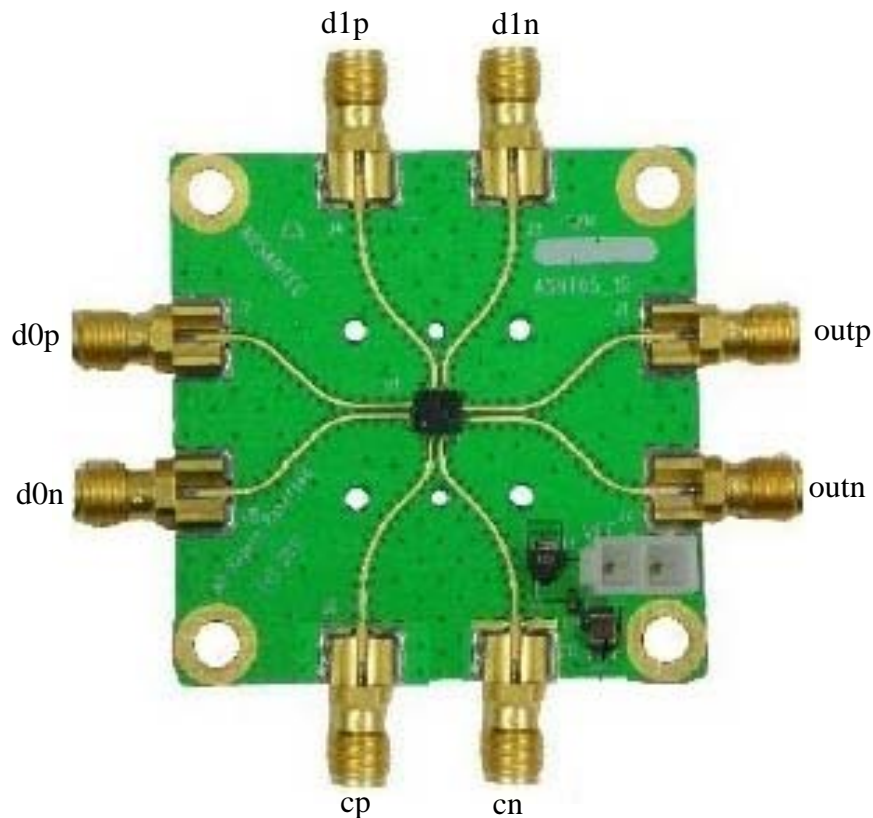


Fig. 1. Layout of ASNT05_12 PCB

The signal and power connectors are described in Table 1 and Table 2 below.

Table 1. Signal Connectors

Name on PCB	Name on Chip	Signal description	Signal polarity	I/O type
J7	d0p	Differential data inputs with internal SE 50Ohm termination to VCC	Direct	CML input
J8	d0n		Inverted	
J4	d1p	Differential data inputs with internal SE 50Ohm termination to VCC	Direct	CML input
J3	d1n		Inverted	
J1	outp	Differential outputs with internal SE 50Ohm termination to VCC; require external SE 50Ohm termination to VCC	Direct	CML output
J2	outn		Inverted	
J6	cp	Differential clock inputs with internal SE 50Ohm termination to VCC	Direct	CML input
J5	cn		Inverted	

Table 2. Power Supply Connectors

Name on PCB	Name on Chip	Supply type	Supply voltage, V
GND	vcc	External ground	0
VEE	vee	Main negative power supply	-3.3

Initial Setup and Basic Functionality

1. The part is static sensitive. [Please observe anti-static protection procedures!](#)
2. Measure the resistance of all connector pins to VCC, including the power supply, while making sure the board is grounded. All I/O ports should measure 50Ohms while on the power supply connector, VEE should be high impedance and GND should be a short. Fig. 2 shows the resistance values of the described I/O connectors.

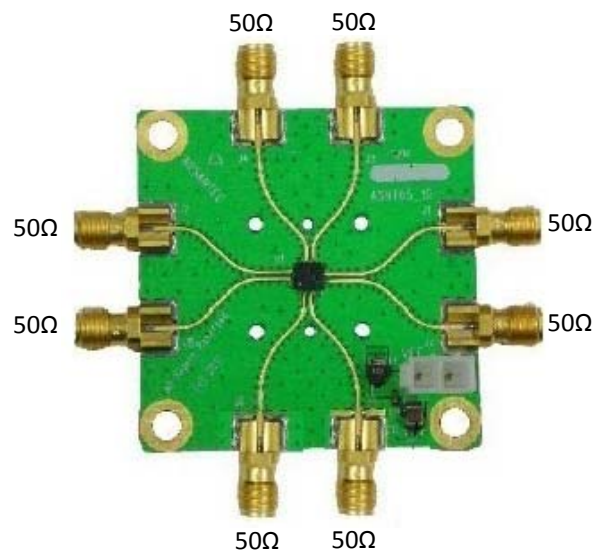


Fig. 2. Impedance of I/O Connectors



3. Switch on the first external power supply unit and set it to a negative supply voltage with a value of $-0.0V$ (positive output pin of the unit must be shorted to ground).
4. Connect the supply unit's output pin to the PCB's vertical SMA connector marked VEE.
5. Gradually increase the negative supply voltage to $-3.3V$.
6. Monitor the supply current in accordance with the part's specifications. Current should be approximately $135mA$.
7. Apply a differential or SE high-speed data signal to connectors J7/J8. DC blocks or the appropriate shift of voltage levels may be required!
8. Apply a second differential or SE high-speed data signal to connectors J4/J3. DC blocks or the appropriate shift of voltage levels may be required!
9. Apply a differential or SE high-speed half rate clock signal to connectors J6/J5. DC blocks or the appropriate shift of voltage levels may be required!
10. Observe a high-speed serial data stream at connectors J1/J2. Connect them to an oscilloscope or similar device with 50Ω termination to ground either directly or through DC blocks. Ensure proper alignment of the input signals to produce the correct serial data output.

Board Dimension

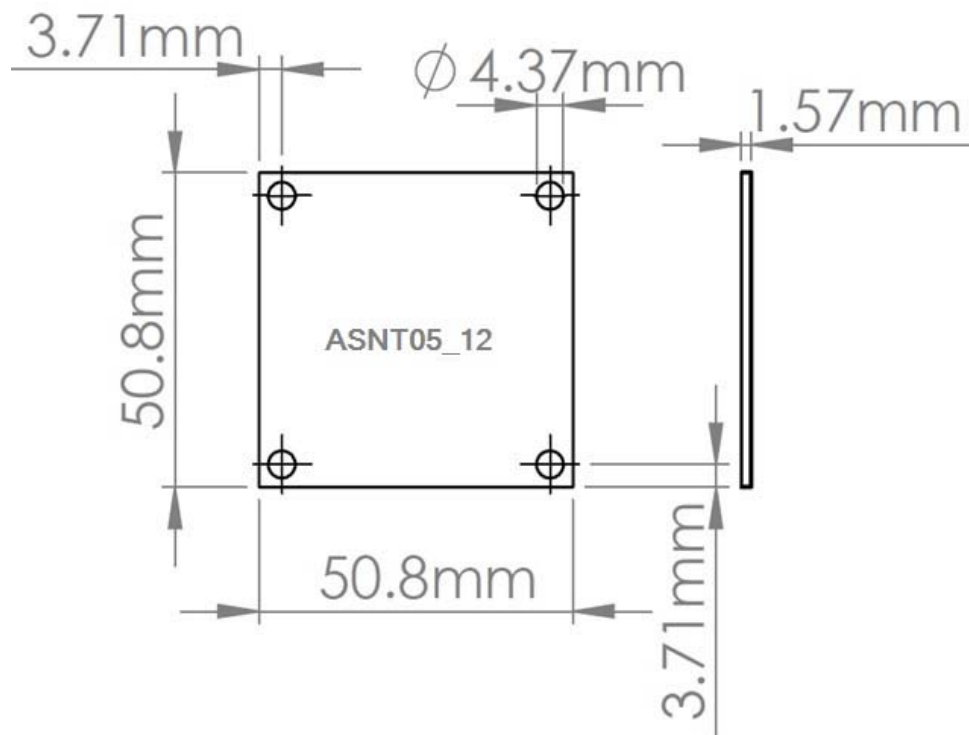


Fig. 3. ASNT05_12 Board Dimensions



ASNT5051-PQC on ASNT05_11 Evaluation Board DC-32Gbps High Isolation Selector/Switch 1 of 2 Application Note

Part Description

The ASNT5051-PQC high isolation selector accepts two parallel broadband data/clock signals at its two differential input ports d0p/d0n and d1p/d1n and delivers one of them to the output port outp/outn while effectively blocking the other one. Selection of the input data is accomplished by applying a DC or AC signal to the differential input port cp/cn.

The part is mounted on an ASNT05_11 evaluation board with 50Ohm transmission lines to transfer signals to/from the chip to 8 high-speed edge-mount female connectors (Southwest or similar) as shown in Fig. 4. The board has a MOLEX connector for the power supply, as well as signal filters, supply filters, and decoupling networks. The board measures approximately 2.0x2.0 inches, without connectors.

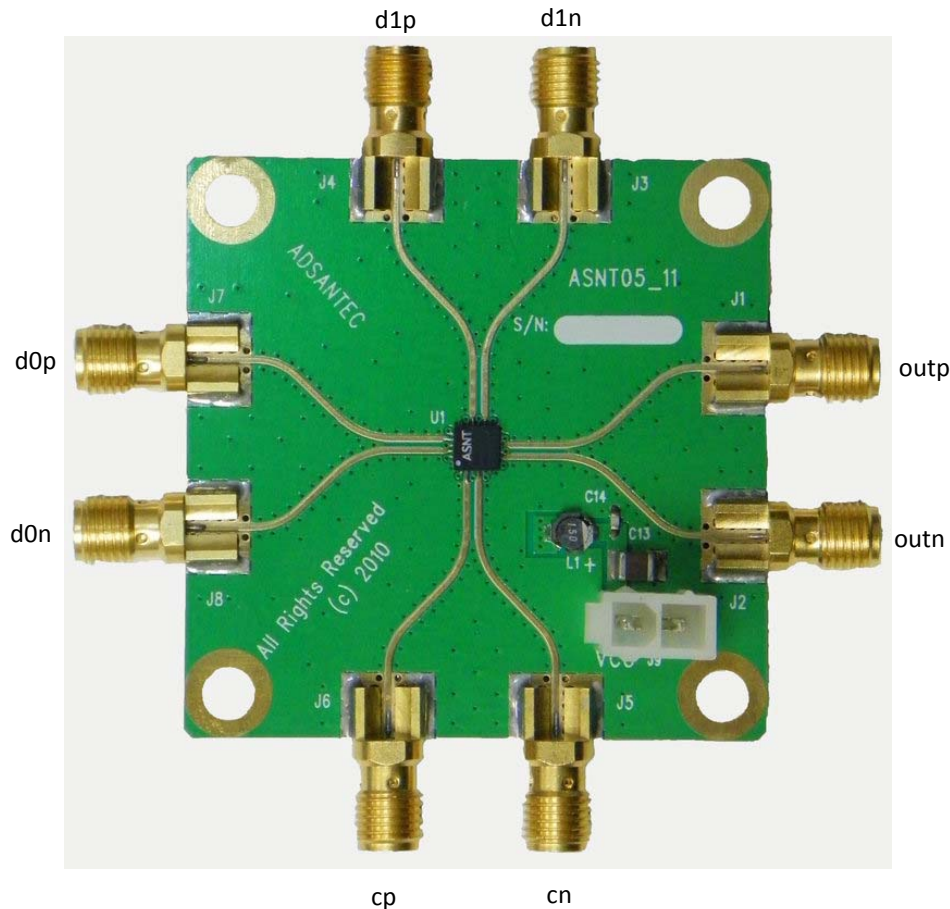


Fig. 4. Layout of ASNT05_11 PCB

The signal and power connectors are described in Table 1 and Table 2 below.

Table 3. Signal Connectors

Name on PCB	Name on Chip	Signal description	Signal polarity	I/O type
J7	d0p	Differential data/clock inputs with internal SE 50Ohm termination to VCC	Direct	CML input
J8	d0n		Inverted	
J4	d1p	Differential data/clock inputs with internal SE 50Ohm termination to VCC	Direct	CML input
J3	d1n		Inverted	
J1	outp	Differential outputs with internal SE 50Ohm termination to VCC; require external SE 50Ohm termination to VCC	Direct	CML output
J2	outn		Inverted	
J6	cp	Differential selection inputs with internal SE 50Ohm termination to VCC	Direct	CML input
J5	cn		Inverted	

Table 4. Power Supply Connectors

Name on PCB	Name on Chip	Supply type	Supply voltage, V
VCC	vcc	Main positive power supply	+3.3
GND	vee	External ground	0

Initial Setup and Basic Functionality

- The part is static sensitive. [Please observe anti-static protection procedures!](#)
- Measure the resistance of all connector pins to VCC, including the power supply, while making sure the board is grounded. All I/O ports should measure 50Ohms while on the power supply connector, VCC should be a short and GND should be high impedance. Fig. 5 shows the resistance values of the described I/O connectors.

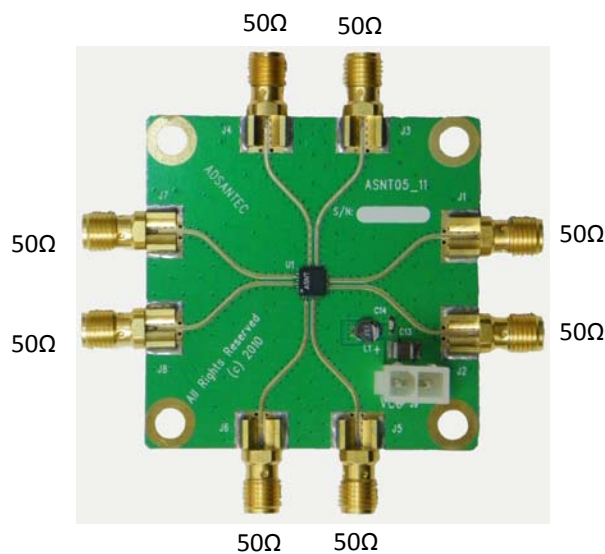


Fig. 5. Impedance of I/O Connectors



13. Switch on the first external power supply unit and set it to a positive supply voltage with a value of +0.0V (negative output pin of the unit must be shorted to ground).
14. Connect the supply unit's output pins to the PCB's Molex connector marked VCC GND so that the positive output pin is connected to the VCC connector pin.
15. Gradually increase the positive supply voltage to +3.3V.
16. Monitor the supply current in accordance with the part's specifications. Current should be approximately 87mA.
17. Apply a differential or SE high-speed data/clock signal to connectors J7/J8. DC blocks or the appropriate shift of voltage levels may be required!
18. Apply a second differential or SE high-speed data/clock signal to connectors J4/J3. DC blocks or the appropriate shift of voltage levels may be required!
19. Apply a differential or SE DC or AC selection signal to connectors J6/J5. DC blocks or the appropriate shift of voltage levels may be required!
20. Observe the selected input signal at connectors J1/J2. Connect them to an oscilloscope or similar device with 50 Ω termination to ground either directly or through DC blocks. If using an AC selection signal, ensure proper alignment of the three input signals to produce the correct data output.

Board Dimension

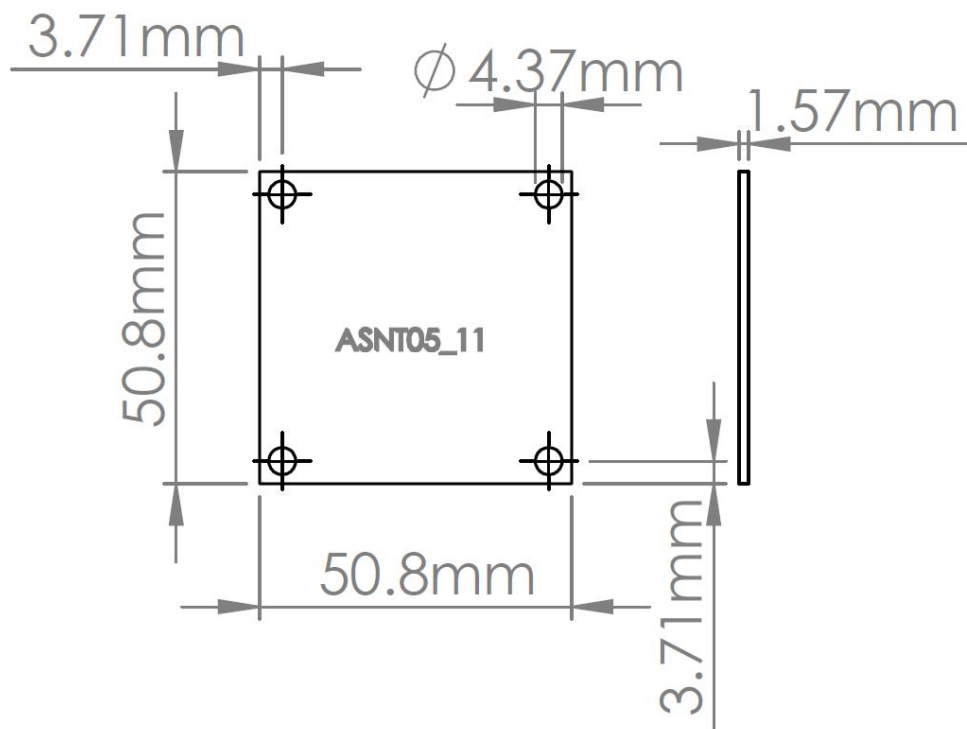


Fig. 6. ASNT05_11 Board Dimensions



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Revision History

Revision	Date	Changes
1.0.1	09-2020	Initial Release