NQS-4P28-PXXC/30AWG/26AWG

Features:

Supporting 100 Gbps to 4 x 25 Gbps

Support data rates: 25.78Gb/s (perchannel)

IEEE 802.3bj 100GEBASE-CR4 andP802.3by compliant

Compatible to SFP28 MSA and QSFP28MSA

Compatible to SFF-8402, SFF-8432 andSFF8665

Maximum aggregate data rate: 100 Gb/s(4 x 25Gb/s)

High-Density QSFP28 38-PIN and 4xSFP28 20-PIN Connector

Temperature Range: 0~ 70 °C

Copper link length up to 3m

Power Supply: +3.3V

Low crosstalk

I2C based two-wire serial interface forEEPROM signature which can be customized

Operating Temperature: 0~ 70 °C

ROHS Compliant

Applications:

100GE/25 Gigabit Ethernet

Switches, Routers, and HBAs

Data Centers

Description:

The 100GE QSFP28 to 4x25GE SFP28 Passive cable assemblies are high performance cost effective for SFP28 and QSFP28 equipment interconnects. The Hybrid cables are compliant with SFF-8402 and SFF-8665 specifications. It is offering a low power consumption short reach interconnect application.

The cable each lane is capable of transmitting data at rates up to 25Gb/s, providing an aggregated rate of 100Gb/s.

● Absolute Maximum Ratings

Parameter	Minimum	Maximum	Units
Supply voltage	-0.3	3.6	V
Data input voltage	-0.3	3.6	V
Control input voltage	-0.3	3.6	V

● Recommended Operating Environment

Parameter	Symbol	Min.	Typical	Max.	Unit
Case operating Temperature	T_C	0		+70	°C
Supply Voltage	$V_{CCT,R}$	+3.13	3.3	+3.47	V
Power Dissipation	PD			0.1	W
Operating relative humidity		5	---	85	%

● Electrical Specifications

Parameter	Minimum	Typical	Maximum	Units
Characteristic impedance	90	100	110	Ω
Time delay	---	---	4.5	ns/m
Time delay skew (in the same pair)	---	---	10	ps
Time delay skew (pair to pair)	---	---	50	ps

● High Speed Characteristics

Parameter	Symbol	Min	Typic	Max	Unit	Note
Differential Impedance	RIN,P-P	90	100	110	Ω	
Insertion loss	SDD21	8		22.48	dB	At 12.8906 GHz
Differential Return Loss	SDD11	12.45		See 1	dB	At 0.05 to 4.1 GHz
	SDD22	3.12		See 2	dB	At 4.1 to 19 GHz
Common-mode to common-mode output return loss	SCC11 SCC22	2			dB	At 0.2 to 19 GHz
Differential to common-mode return loss	SCD11SCD22	12		See 3	dB	At 0.01 to 12.89
		10.58		See 4		At 12.89 to 19 GHz
Differential to common Mode Conversion Loss	SCD21-IL	10			dB	At 0.01 to 12.89
				See 5		At 12.89 to 15.7
		6.3				At 15.7 to 19 GHz
Channel Operating Margin	COM	3			dB	

Notes:

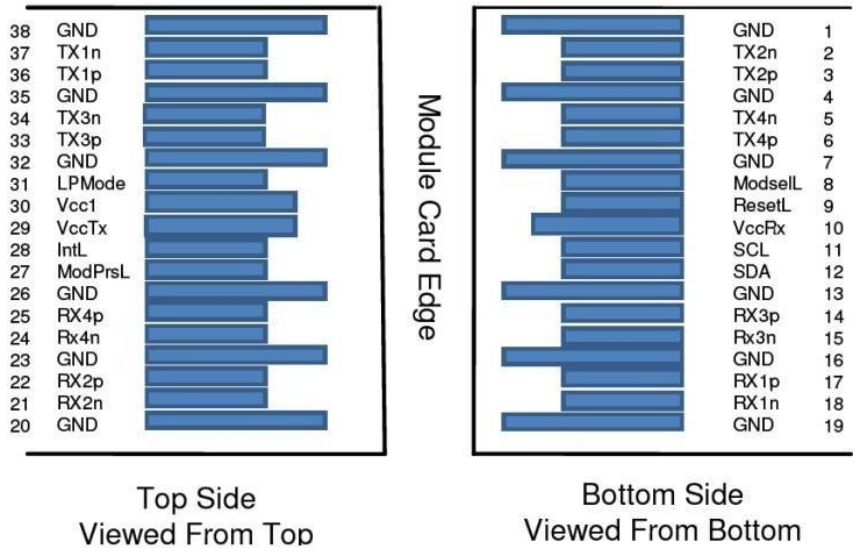
1. Reflection Coefficient given by equation SDD11(dB) < 16.5 - 2 × SQRT(f), with f inGHz
2. Reflection Coefficient given by equation SDD11(dB) < 10.66 - 14 × log10(f/5.5), with f inGHz
3. Reflection Coefficient given by equation SCD11(dB) < 22 - (20/25.78)*f, with f inGHz
4. Reflection Coefficient given by equation SCD11(dB) < 15 - (6/25.78)*f, with f inGHz
5. Reflection Coefficient given by equation SCD21(dB) < 27 - (29/22)*f, with f inGHz

● QSFP28 Module Pad Layout

Pin	Logic	Symbol	Name/Description	Notes
1		GND	Ground	1
2	CML-I	Tx2n	Transmitter Inverted Data	
3	CML-I	Tx2p	Transmitter Non-Inverted	
4		GND	Ground	1
5	CML-I	Tx4n	Transmitter Inverted Data	
6	CML-I	Tx4p	Transmitter Non-Inverted	
7		GND	Ground	1
8	LVTTL-I	ModSelL	Module Select	
9	LVTTL-I	ResetL	Module Reset	
10		Vcc Rx	+3.3V Power Supply	2
11	LVCMOSI/O	SCL	2-wire serial interface	
12	LVCMOSI/O	SDA	2-wire serial interface data	
13		GND	Ground	1
14	CML-O	Rx3p	Receiver Non-Inverted	
15	CML-O	Rx3n	Receiver Inverted Data	
16		GND	Ground	1
17	CML-O	Rx1p	Receiver Non-Inverted Data	
18	CML-O	Rx1n	Receiver Inverted Data	
19		GND	Ground	1
20		GND	Ground	1
21	CML-O	Rx2n	Receiver Inverted Data	
22	CML-O	Rx2p	Receiver Non-Inverted Data	
23		GND	Ground	1
24	CML-O	Rx4n	Receiver Inverted Data	
25	CML-O	Rx4p	Receiver Non-Inverted Data	
26		GND	Ground	1
27	LVTTL-O	ModPrsL	Module Present	
28	LVTTL-O	IntL	Interrupt	
29		Vcc Tx	+3.3V Power supply	2
30		Vcc1	+3.3V Power supply	2
31	LVTTL-I	LPMode	Low Power Mode	
32		GND	Ground	1
33	CML-I	Tx3p	Transmitter Non-Inverted	
34	CML-I	Tx3n	Transmitter Inverted Data	
35		GND	Ground	1
36	CML-I	Tx1p	Transmitter Non-Inverted	
37	CML-I	Tx1n	Transmitter Inverted Data	
38		GND	Ground	1

Note 1: GND is the symbol for signal and supply (power) common for the QSFP28 module. All are common within the QSFP28 module and all module voltages are referenced to this potential unless otherwise noted. Connect these directly to the host board signal-common ground plane.

Note2: VccRx,Vcc1andVccTxarethereceiverandtransmitterpowersuppliesandshallbeappliedconcurrent- ly. Requirements defined for the host side of the Host Edge Card Connector are listed in Table 6. Recommended hostboardpowersupplyfilteringisshowninFigure4.VccRxVcc1andVccTxmaybeinternallyconnected with- in the QSFP28 Module module in any combination. The connector pins are each rated for a maximum current of 500 mA.



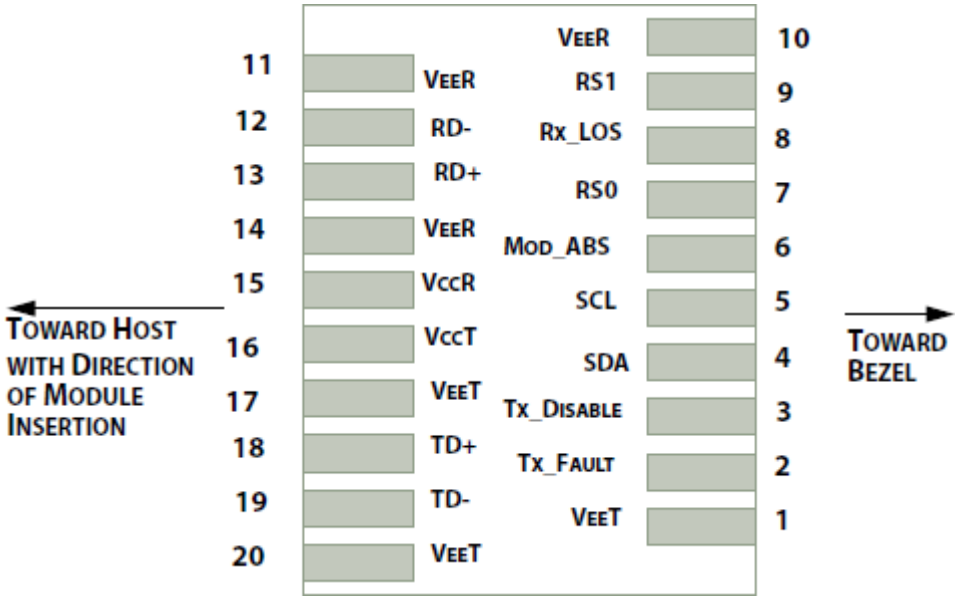
● SFP28 Pin Descriptions

Pin	Logic	Symbol	Name/Description	Notes
1		VeeT	Transmitter Ground	
2	LV-TTL-O	TX_Fault	N/A	1
3	LV-TTL-I	TX_DIS	Transmitter Disable	2
4	LV-TTL-I/O	SDA	Tow Wire Serial Data	
5	LV-TTL-I	SCL	Tow Wire Serial Clock	
6		MOD_DEF0	Module present, connect	
7	LV-TTL-I	RS0	N/A	1
8	LV-TTL-O	LOS	LOS of Signal	2
9	LV-TTL-I	RS1	N/A	1
10		VeeR	Reciever Ground	
11		VeeR	Reciever Ground	
12	CML-O	RD-	Reciever Data Inverted	
13	CML-O	RD+	Reciever Data	
14		VeeR	Reciever Ground	
15		VccR	Reciever Supply 3.3V	
16		VccT	Transmitter Supply 3.3V	
17		VeeT	Transmitter Ground	
18	CML-I	TD+	Transmitter Data	
19	CML_I	TD-	Transmitter Data	
20		VeeT	Transmitter Ground	

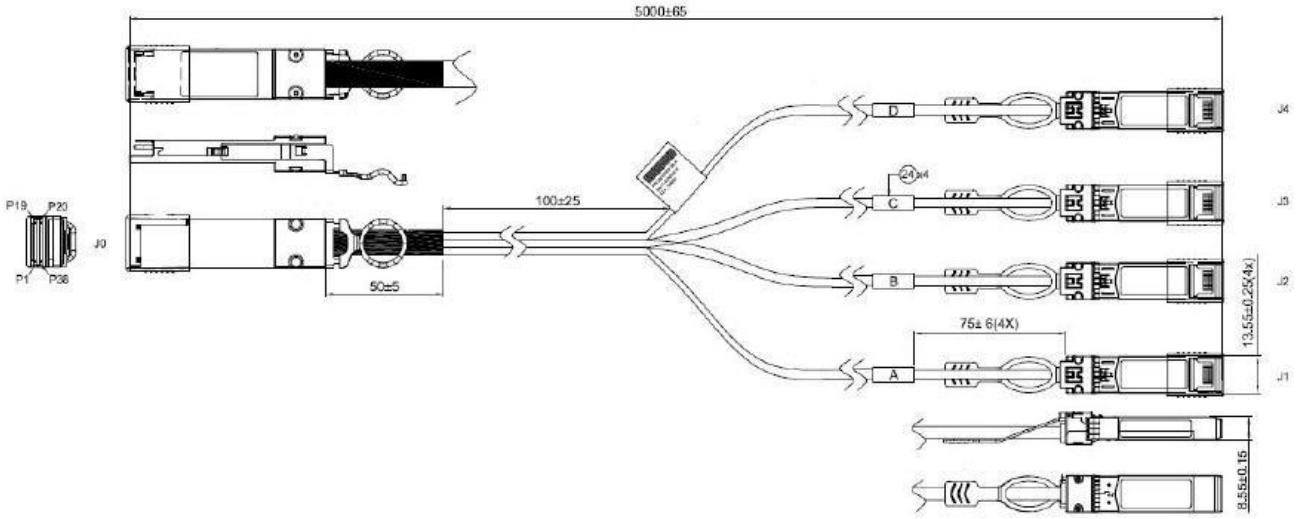
Notes：

1. Signals not supported in SFP28 Copper pulled-downto VeeT with 30K ohms resistor
2. Passive cable assemblies do not support LOS and TX_DIS

- **Host PCB SFP28 pad contact assignment**



- **Mechanical Dimensions**



Mechanical Drawing

- **Ordering information**

PN	AWG	Description
NQS-4P28-PXXC/30AWG	30	QSFP28 To 4X SFP28 Passive Cables, 1m, 0ºC ~ +70ºC
NQS-4P28-PXXC/26AWG	26	QSFP28 To 4X SFP28 Passive Cables, 3m, 0ºC ~ +70ºC

where "x" denotes cable length in meters. Examples of cable length offered are as follows:

x = 1 for 1m x = 5 for 5m