100G QSFP28 to 4xSFP28 Passive Copper Breakout Direct Attach Cable

Features

- Supporting 100Gbps to 4x25Gbps
- 25.78Gb/s per channel
- High-Density QSFP28 38-PIN and 4xSFP28 20-PIN Connector
- Maximum aggregate data rate: 100Gb/s(4x25Gb/s)
- Power Supply:+3.3V
- Low Crosstalk
- I^2C based two-wire series interface for EEPROM signature which can be customized
- 0 to 70°C case temperature operating range
- Copper link length to 5m
- RoHS-6 compliant (lead-free)
- Metal enclosure for low EMI

Applications

- 100/25G Ethernet
- Datacom/Telecom Switch & Router connections
- High speed multi-channel parallel data connections
- High performance computing, server and data storage

Compliance

- Compatible to SFP28 MSA and QSFP28 MSA
- Compatible to SFF-8402 and SFF-8665
- IEEE 802.3bj 100GBASE-CR4 and P802.3by compliant

Description

The Q4SFP-100G-DAC 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 offer a low power consumption，short reach inter connect applications.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

Table1-Absolute Maximum Ratings

Parameter	Symbol	Min.	Typical	Max.	Unit	Note
Storage Temperature	TSTG	-40	-	+85	°C	
Operating Temperature	Top	0		70	°C	
3.3V Supply Voltage	VCC	-0.5	-	+3.6	V	
Relative Humidity	RH	0		85	%	
Power Dissipation	PD			0.1	W	

Electrical Characteristics

Table2- Electrical Characteristics

Parameter	Symbol	Min.	Max.	Unit
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

Table3-High Speed Characteristics

Parameter	Symbol	Min.	Typical	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	SDD1	12.45		See 1	dB	At 0.05 to 4.1 GHz
	SDD22	3.12		See 2	dB	At4.1 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	SCD11	12		See 3	dB	At 0.01 to 12.89

return loss	SCD22	10.58		See 4		At 12.89 to 19 GHz
Differential to common Mode Conversion Loss	SCD21-IL	10		See5	dB	At 0.01 to 12.89
						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

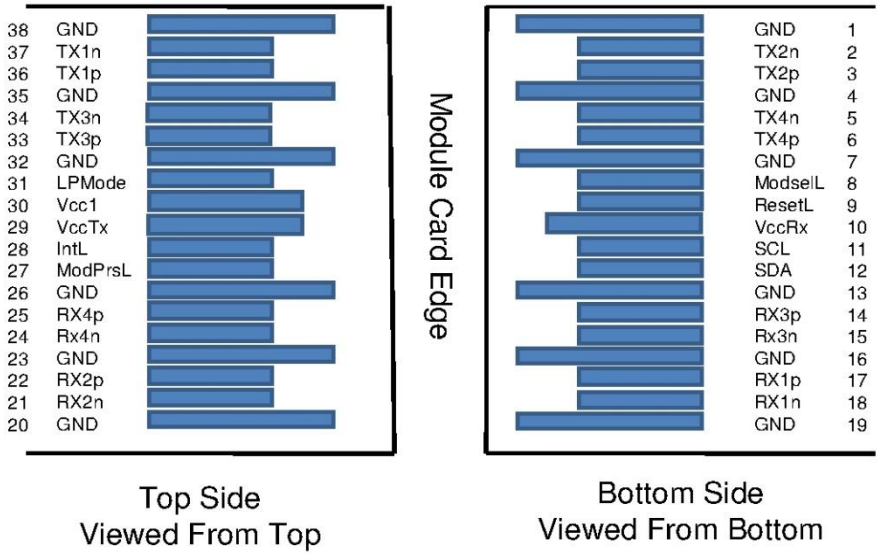
[5] Reflection Coefficient given by equation SCD21(dB) ← 27 - (29/22)*f, with f inGHz

Pin Descriptions

Table4-QSFP28 Pin Function Definition

Pin	Logic	Symbol	Description
1		GND	Ground
2	CML-I	Tx2n	Transmitter Inverted Data Input
3	CML-I	Tx2p	Transmitter Non-Inverted Data Input
4		GND	Ground
5	CML-I	Tx4n	Transmitter Inverted Data Input
6	CML-I	Tx4p	Transmitter Non-Inverted Data Input
7		GND	Ground
8	LVTTL-I	ModSelL	Module Select
9	LVTTL-I	ResetL	Module Reset
10		Vcc Rx	+3.3V Power Supply Receiver
11	LVCMOS I/O	SCL	2-wire serial interface clock
12	LVCMOS I/O	SDA	2-wire serial interface data
13		GND	Ground
14	CML-O	Rx3p	Receiver Non-Inverted Data Output
15	CML-O	Rx3n	Receiver Inverted Data Output
16		GND	Ground
17	CML-O	Rx1p	Receiver Non-Inverted Data Output
18	CML-O	Rx1n	Receiver Inverted Data Output

19		GND	Ground
20		GND	Ground
21	CML-O	Rx2n	Receiver Inverted Data Output
22	CML-O	Rx2p	Receiver Non-Inverted Data Output
23		GND	Ground
24	CML-O	Rx4n	Receiver Inverted Data Output
25	CML-O	Rx4p	Receiver Non-Inverted Data Output
26		GND	Ground
27	LVTTL-O	ModPrsL	Module Present
28	LVTTL-O	IntL	Interrupt
29		Vcc Tx	+3.3V Power supply transmitter
30		Vcc1	+3.3V Power supply
31	LVTTL-I	LPMode	Low Power Mode
32		GND	Ground
33	CML-I	Tx3p	Transmitter Non-Inverted Data Input
34	CML-I	Tx3n	Transmitter Inverted Data Input
35		GND	Ground
36	CML-I	Tx1p	Transmitter Non-Inverted Data Input
37	CML-I	Tx1n	Transmitter Inverted Data Input
38		GND	Ground

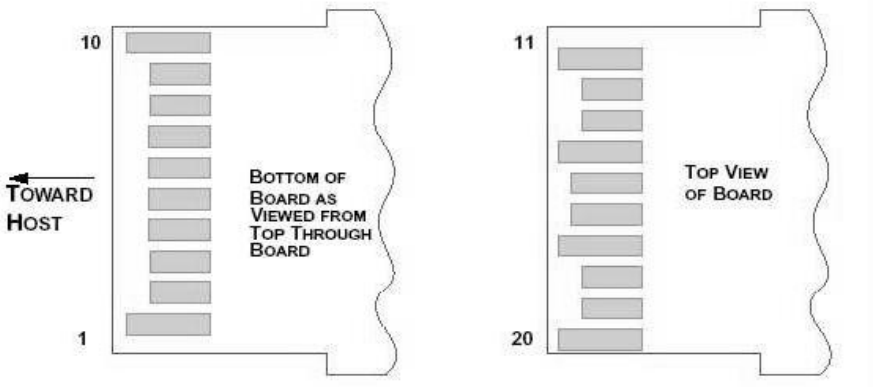


Top Side
Viewed From Top

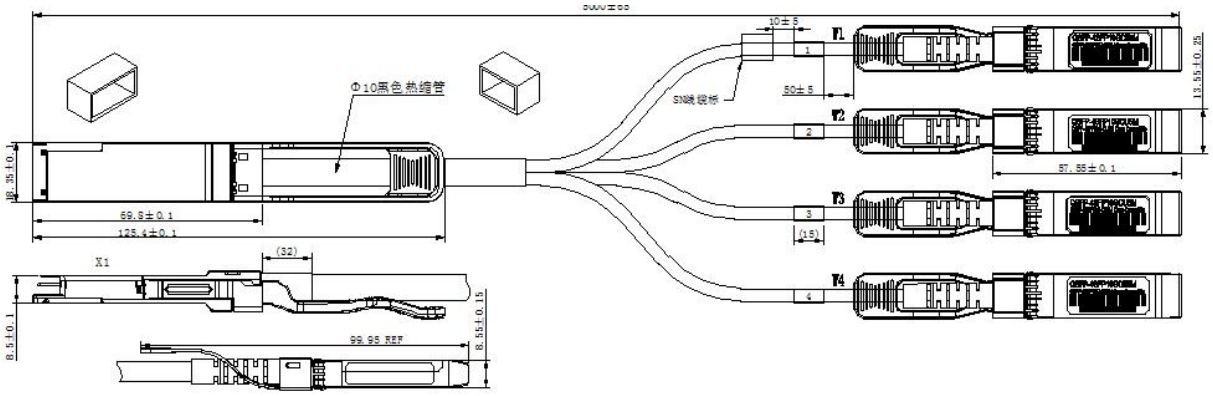
Bottom Side
Viewed From Bottom

Table5-SFP28 Pin Function Definition

Pin	Logic	Symbol	Description	Notes
1		VeeT	Transmitter Ground	
2	LVTTL-O	Tx_Fault	N/A	1
3	LVTTL-I	Tx_Disable	Transmitter Disable	2
4	LVTTLI/O	SDA	Tow Wire Serial Data	
5	LVTTLI/O	SCL	Tow Wire Serial Clock	
6		Mod_ABS	Module present, connect to VeeT	
7	LVTTL-I	RS0	N/A	1
8	LVTTL-O	Rx_LOS	LOS of Signal	2
9	LVTTL-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 Non-Inverted	
14		VeeR	Reciever Ground	
15		VccR	Reciever Supply 3.3V	
16		VeeT	Transmitter Supply 3.3V	
17		VeeT	Transmitter Ground	
18	CML-I	TD+	Transmitter Data Non-Inverted	
19	CML-I	TD-	Transmitter Data Inverted	
20		VeeT	Transmitter Ground	



Mechanical Specifications



Length (m)	Cable AWG
1	30
3	30
5	26
7	26

Regulatory Compliance

Feature	Test Method	Performance
Electrostatic Discharge (ESD) to the Electrical Pins	MIL-STD-883C Method 3015.7	Class 1(→2000 Volts)
Electromagnetic Interference(EMI)	FCC Class B	Compliant with Standards
	CENELEC EN55022 Class B	
	CISPR22 ITE Class B	
RF Immunity(RFI)	IEC61000-4-3	Typically Show no Measurable Effect from a 10V/m Field Swept from 80 to 1000MHz
RoHS Compliance	RoHS Directive 2011/65/EU and it's Amendment Directives 6/6	RoHS 6/6 compliant

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Disclaimer

1. We are committed to continuous product improvement and feature upgrades, and the contents contained in this manual are subject to change without notice.

2. Nothing herein should be construed as constituting an additional warranty.

3. NADDOD assumes no responsibility for the use or reliability of equipment or software not provided by NADDOD.

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