ProLabs

QSFP28-4XSFP28-DAC-3M
100G QSFP28 to 4x SFP28 Cable

Features

- Supporting 100 Gbps to 4 x 25 Gbps
- Support data rates: 25.78Gb/s (per channel)
- IEEE 802.3bj 100GEBASE-CR4 and P802.3 by compliant
- Compatible to SFP28 MSA and QSFP28 MSA
- Compatible to SFF-8402, SFF-8432 and SFF-8665
- Maximum aggregate data rate: 100 GB/s (4 x 25GB/s)
- High-Density QSFP28 38-PIN and 4x SFP28 20-PIN Connector
- Temperature Range: 0~ 70 °C
- Copper link length up to 3m
- Power Supply: +3.3V
- Low crosstalk
- I2C based 2-wire serial interface
- Operating Temperature: 0~ 70 °C
- ROHS Compliant

Applications
- 100GE/25 Gigabit Ethernet
- Switches, Routers, and HBAs
- Data Centers

Product Description

This is an MSA compliant 100GBase-CU QSFP28 to 4xSFP28 direct attach cable that operates over passive copper with a maximum reach of 3.0m (9.8ft). It has been programmed, uniquely serialized, and data-traffic and application tested to ensure it is 100% compliant and functional. It offers a low power consumption and short reach interconnect applications. Each cable lane is capable of transmitting data at rates up to 25GB/s, providing an aggregated rate of 100GB/s. This direct attach cable is TAA (Trade Agreements Act) compliant, and is built to comply with MSA (Multi-Source Agreement) standards. We stand behind the quality of our products and proudly offer a limited lifetime warranty.

ProLab's QSFP28 and SFP28 transceivers are RoHS compliant and lead-free.

TAA refers to the Trade Agreements Act (19 U.S.C. & 2501-2581), which is intended to foster fair and open international trade. TAA requires that the U.S. Government may acquire only "U.S. – made or designated country end products."

Recommended Operating Conditions

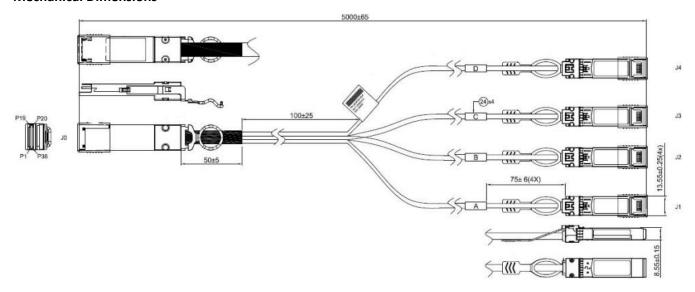| Parameter	Symbol	Min	Typical	Max	Unit
Storage Ambient Temperature		-40		+85	℃
Operating Case Temperature	TC	0		+70	℃
Power Supply Voltage	V_{cc3}	3.14	3.3	3.47	V

High Speed Characteristics

Parameter	Symbol	Min	Typical	Max	Unit	Note
Differential Impedance	*RIN, P-P*	90	100	110	Ώ	
Insertion Loss	*SDD21*	8		22.48	dB	At 12.8906 Ghz
Differential Return Loss	*SDD11* *SDD22*	12.45		See 1	dB	At 0.05 to 4.1 GHz
		3.12		See 2		
Common-mode to common-mode output return loss	*SCC11* *SCC22*	2			dB	At 0.2 to 19 GHz
Differential to Common Mode Return Loss	SCD11 SCD22	12		See 3	dB	At 0.01 to 12.89 GHz
		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 GHz
				See 5		At 12.89 to 15.7 GHz
		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 in GHz
2. Reflection Coefficient given by equation SDD11 (dB) < 10.66 – 14 × log10(f/5.5), with f in GHz
3. Reflection Coefficient given by equation SCD11 (dB) < 22 – (20/25.78)*f, with f in GHz
4. Reflection Coefficient given by equation SCD11 (dB) < 15 – (6/25.78)*f, with f in GHz
5. Reflection Coefficient given by equation SCD21 (dB) < 27 – (29/22)*f, with f in GHz

Mechanical Dimensions

QSFP28 Pin Descriptions

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

Notes:

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 lane.
2. Vcc Rx, Vcc1 and Vcc Tx are the receiver and transmitter power supplies and shall be applied concurrently. Requirements defined for the host side of the Host Edge Card Connector are listed in Table 6. Recommended host board power supply filtering is shown in Figure 4. Vcc Rx Vcc1 and Vcc Tx may be internally connected within the QSFP28 Module in any combination. The connection 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-/O	SDA	Tow Wire Serial Data	
5	LV-TTLV-I	SCL	Tow Wire Serial Clock	
6		MOD_DEF0	Module present, connect to VeeT	
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	Receiver Ground	
11		VeeR	Receiver Ground	
12	CML-O	RD-	Receiver Data Inverted	
13	CML-O	RD+	Receiver Data Non-Inverted	
14		VeeR	Receiver Ground	
15		VccR	Receiver Supply 3.3V	
16		VccT	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	

Notes:

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