

40G QSFP+ to 4 x10G SFP+ Passive Copper Breakout Direct Attach Cable

Features

- Compliant with SFF-8436, SFF-8431, SFF-8432 and SFF-8472
- Connector 1: QSFP+ 40GBASE Rated Connector
(SFF-8436 Compliant)
- Connector 2: 4 x SFP+ 10GBASE Rated Connector
(SFF-8431 Compliant)
- Up to 10.3125Gbps data rate per channel
- Up to 7m transmission
- Single 3.3V power supply
- RoHS compliant
- Commercial temperature range (COM): 0~ 70 °C
- Fully compliant to the latest SFP+ & QSFP MSA

Applications

- 10G/40 Gigabit Ethernet
- Switches, Routers, and HBA
- Rack-to-Rack, Shelf-to-Shelf
Interconnect
- Enterprise & Data Center Networking
& Storage

Description

QSFP+ to 4 x SFP+ passive copper cables are 40Gb/s to 10Gb/s cable assemblies. The cables are compliant with SFF-8431 and SFF-8436 specifications and provide connectivity between devices using QSFP+ port on one end and multiple SFP+ ports on the other end. Each QSFP+ to SFP+ cable features a single QSFP+ connector (SFF-8436) rated for 40-Gb/s on one end and 4 SFP+ connectors (SFF-8431), each rated for 10-Gb/s, on the other. The cables use state-of-the-art signal processing technology to fill the expanding need for cost effective data center inter connects.

General Product Characteristics

Q/4SFP+ DAC Specifications	
Number of Lanes	Tx & Rx
Channel Data Rate	10.3125Gbps
Operating Temperature	0 to + 70°C
Storage Temperature	-40 to + 85°C
Supply Voltage	3.3 V nominal
Electrical Interface	38 pins edge connector(QSFP+) 20 pins edge connector(SFP+)
Management Interface	Serial, I2C

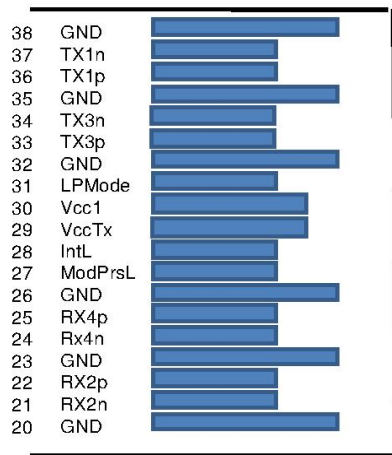
High Speed Characteristics

Table1-High Speed Characteristics						
Parameter	Symbol	Min.	Typical	Max.	Unit	Note
Differential Impedance	Zd	90	100	110	Ω	
Differential Input Return Loss	SDDXX	$< -12 + 2 * \text{SQRT}(f)$ with f in GHz			dB	0.01~4.1GHz
		$< -6.3 + 13 * \text{Log}10/(f/5.5)$ with f in GHz			dB	4.1~11.1GHz
Common Mode Output Return Loss	SCCXX	$< -7 + 1.6 * f$ with f in GHz			dB	0.01~2.5GHz
						-3
Difference Waveform Distortion Penalty	dWDPc			6.75	dB	
VMA Loss	L			4.4	dB	
VMA Loss to Crosstalk Ratio	VCR	32.5			dB	

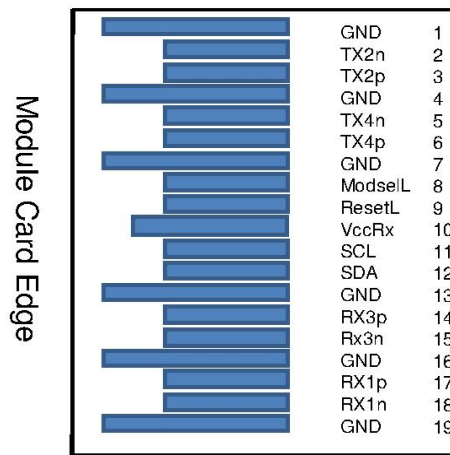
Pin Descriptions

Table2-QSFP+ 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	LVC MOS I/O	SCL	2-wire serial interface clock
12	LVC MOS 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

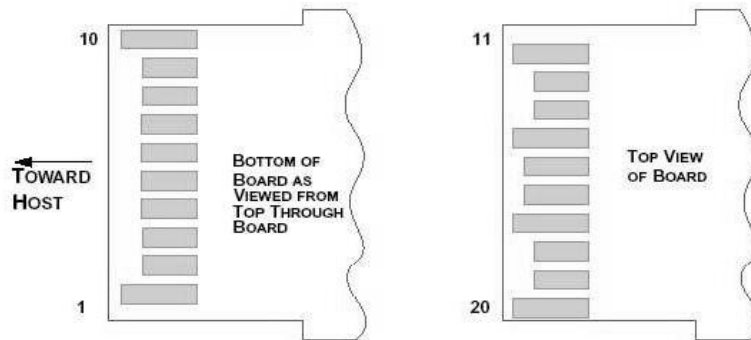


Bottom Side
Viewed From Bottom

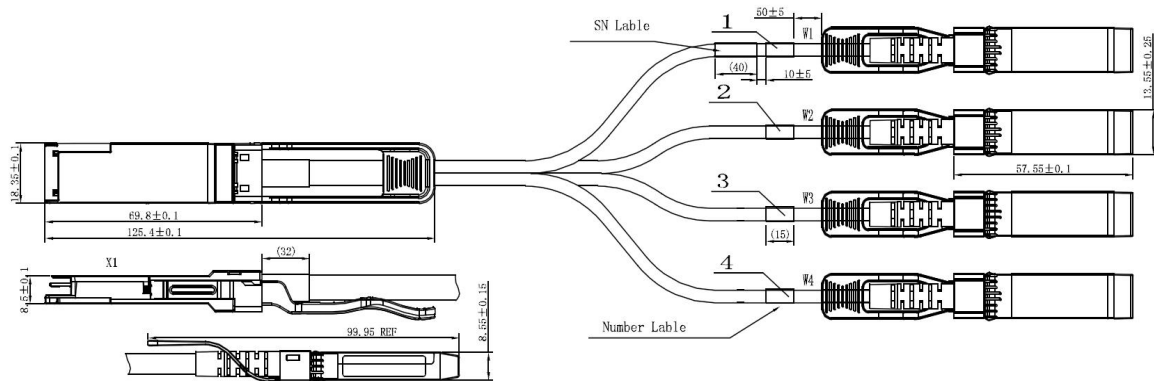
Table3-SFP+ Pin Function Definition

Pin	Logic	Symbol	Description
1		VeeT	Module Transmitter Ground
2	LVTTL-0	Tx_Fault	Module Transmitter Fault
3	LVTTL-I	Tx_Disable	Transmitter disable; Turns off transmitter laser output
4	LVTTL-I/O	SDA	2-wire Serial Interface Data Line (Same as MOD-DEF2 in INF-8074i)
5	LVTTL-I/O	SCL	2-wire Serial Interface Clock (Same as MOD-DEF1 in INF-8074i)
6		Mod_ABS	Module Absent, connected to VeeT or VeeR in the module
7	LVTTL-I	RS0	Rate Select 0, optionally controls SFP+ module receiver
8	LVTTL-0	Rx_LOS	Receiver Loss of Signal Indication (In FC designated as Rx_LOS and in Ethernet designated as Signal Detect)
9	LVTTL-I	RS1	Rate Select 1, optionally controls SFP+ module transmitter
10		VeeR	Module Receiver Ground
11		VeeR	Module Receiver Ground
12	CML-0	RD-	Receiver Inverted Data Output
13	CML-0	RD+	Receiver Non-Inverted Data Output

14		VeeR	Module Receiver Ground
15		VccR	Module Receiver 3.3 V Supply
16		VeeT	Module Transmitter 3.3 V Supply
17		VeeT	Module Transmitter Ground
18	CML-I	TD+	Transmitter Non-Inverted Data Input
19	CML-I	TD-	Transmitter Inverted Data Input
20		VeeT	Module 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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