

Product Specification

40Gb/s QSFP+ Passive Copper Cable Transceiver

PRODUCT FEATURES

- Compliant QSFP MSA specifications
- Fully compatible with IEEE802.3ba and Infiniband QDR specifications
40 Gb/s total bandwidth
- 4 independent duplex channels operating at 10Gbps,
also support for 2.5Gbps, 5Gbps data rates
- 100 ohm differential impedance system
- Single 3.3V power supply, low power consumption, <0.5W
- Low Near-End Crosstalk(NEXT)
- Operating case temperature: -40 to 85°C
- All-metal housing for superior EMI performance
- Precision process control for minimization of pair-to-pair skew
- AC coupling of PECL signals
- EEPROM for cable signature & system communications
- 30 AWG to 24 AWG cable sizes available
- RoHS compliant

APPLICATIONS

- Data
Servers, Networked storage systems, Routers, External storage systems
Data Center networking
- Communications
Switches, Routers
- Industry Standards
InfiniBand Trade Association (IBTA)
IEEE802.3ba
40Gigabit Ethernet (40G BASE – CR4)

General Description

The FIBERLAND QSFP+ (Quad Small Form-factor Pluggable Plus) copper direct-attach cables are suitable for very short distances and offer a highly cost-effective way to establish a 40-Gigabit link between QSFP+ ports of QSFP+ switches within racks and across adjacent racks. These cables are used for 40GbE and InfiniBand standards, to maximize performance. QSFP+ are designed to meet emerging data center and high performance computing application needs for a high density cabling interconnect system capable of delivering an aggregate data bandwidth of 40Gb/s. This interconnect system is fully compliant with existing industry standard specifications such as the QSFP MSA and IBTA (InfiniBand Trade Association). The QSFP+ cables support the bandwidth transmission requirements as defined by IEEE 802.3ba (40 Gb/s) and InfiniBand QDR (4x10 Gb/s per channel) specifications.

Recommended Operation Condition

Parameter	Symbol	Min	Max	Unit
Operating Case Temperature	Topc	-40	85	degC
Relative Humidity (non-condensation)	RS	-	85	%
Supply Voltage	VCC3	3.135	3.465	V
Power Supply Current	ICC3	70	-	mA
Total Power Consumption	Pd	-	0.5	W

Absolute Maximum Ratings

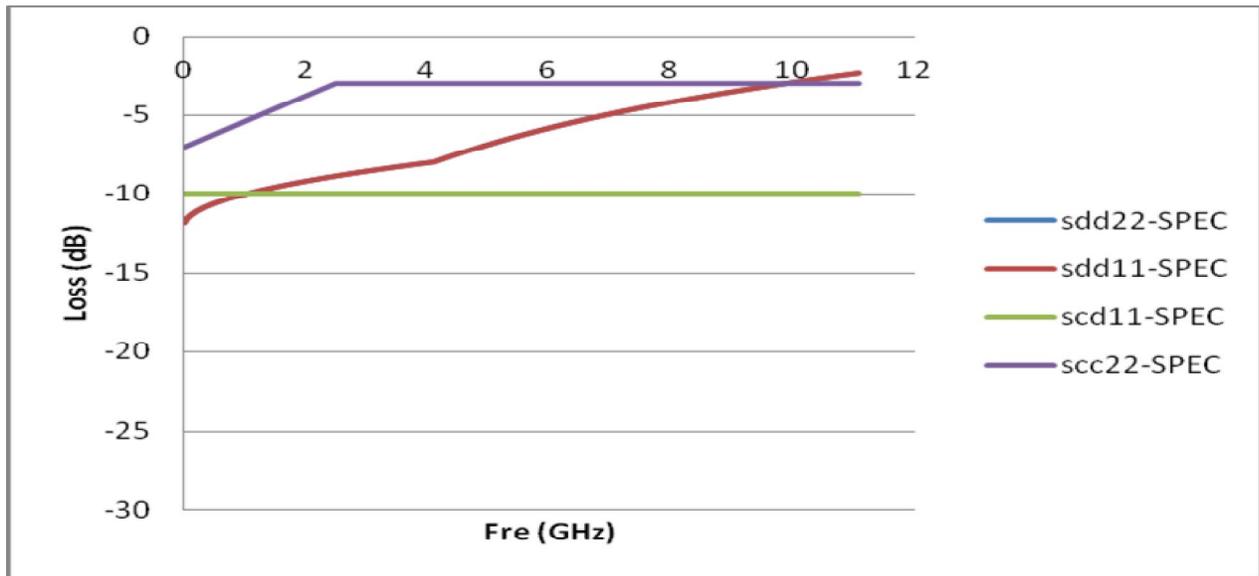
Parameter	Symbol	Min	Max	Unit	Note
Storage Temperature	Tst	-40	125	degC	
Relative Humidity (non-condensation)	RS	-	85	%	
Operating Case Temperature	Topc	-40	85	degC	1
Supply Voltage	VCC3	-0.3	3.6	V	
Voltage on LVTTTL Input	Vilvttl	-0.3	VCC3 +0.2	V	

Notes:

Stress or conditions exceed the above range may cause permanent damage to the device. This is a stress rating only and functional operation of the device at these or any other conditions above those listed in the operational sections of this specification is not applied. Exposure to absolute maximum rating conditions for extended periods may affect device reliability.

Frequency Domain

Item	Test Parameter	Specification (Proposal)
1	Receive Return Loss (SDD22)	-12+2*SQRT(f) @ 0.01 to 4.1GHz < -6.3 + 13 * log10(f/5.5), with f in GHz ; @4.1 to 11.1GHz
2	Transmit Return Loss (SDD11)	-12+2*SQRT(f) @ 0.01 to 4.1GHz < -6.3 + 13 * log10(f/5.5), with f in GHz ; @4.1 to 11.1GHz
3	Common Mode Reflection (SCC22)	< -7 + 1.6 × f, with f in GHz; @ 0.01 to 2.5GHz -3dB @ 2.5 to 11.1GHz
4	Common Mode Conversion (SCD11)	-10dB @ 0.01 to 11.1GHz



Time Domain

Item	Test Parameter	Specification (Proposal)
1	Intra-Skew*	30 ps Max
2	Impedance	100 +/- 10 Ohm
3	Insertion Loss* (SDD21)	a. 0.6GHz : -1.5 dB Max b. 1.25GHz : -2.15 dB Max c. 2.50GHz : -3.22 dB Max d. 3.25GHz : -3.95dB Max e. 5.0GHz : -5.52 dB Max

*The item 1 and 3, for different length requirements, different specification

Host board Connector Pin out

Figure 1 : MSA compliant Connector

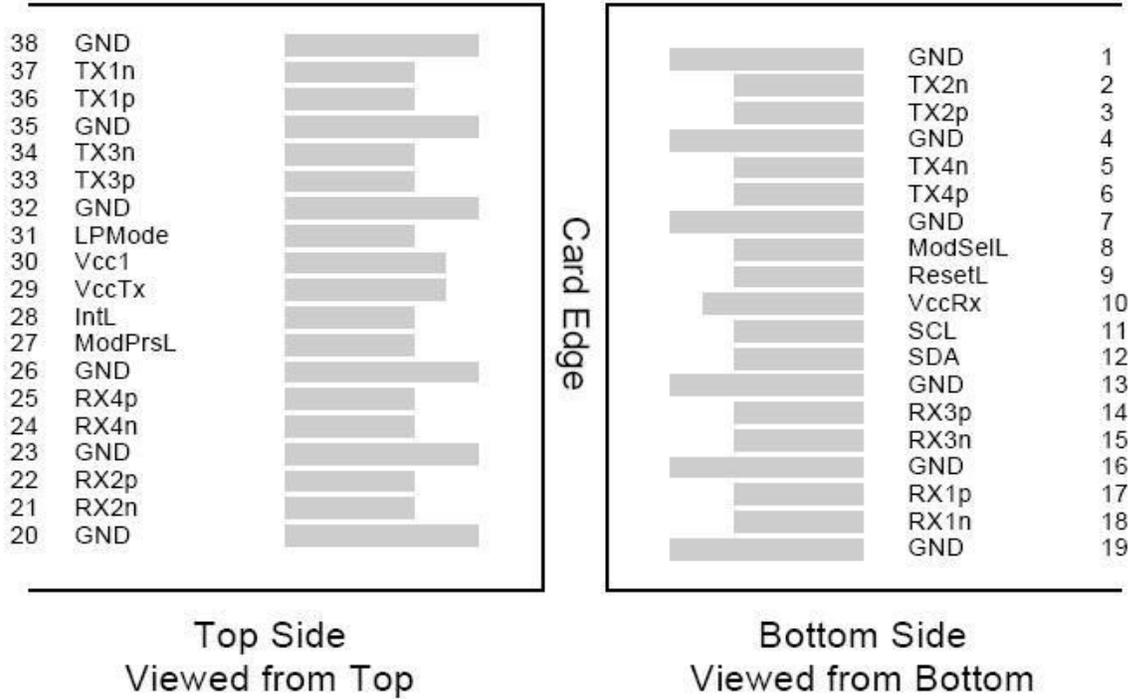


Figure 2: Pin Definitions.

Pin	Logic	Symbol	Name/Description	Note
1		GND	Ground	1
2	CML-I	Tx2n	Transmitter Inverted Data Input	
3	CML-I	Tx2p	Transmitter Non-Inverted Data output	
4		GND	Ground	1
5	CML-I	Tx4n	Transmitter Inverted Data Input	
6	CML-I	Tx4p	Transmitter Non-Inverted Data output	
7		GND	Ground	1
8	LVTLL-I	ModSelL	Module Select	
9	LVTLL-I	ResetL	Module Reset	
10		VccRx	+ 3.3V Power Supply Receiver	2
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	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	1
25	CML-O	Rx4p	Receiver Non-Inverted Data Output	
26		GND	Ground	1
27	LVTTTL-O	ModPrsL	Module Present	
28	LVTTTL-O	IntL	Interrupt	
29		VccTx	+3.3 V Power Supply transmitter	2
30		Vcc1	+3.3 V Power Supply	2
31	LVTTTL-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 Output	
35		GND	Ground	1
36	CML-I	Tx1p	Transmitter Non-Inverted Data Input	
37	CML-I	Tx1n	Transmitter Inverted Data Output	
38		GND	Ground	1

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

2. Vcc Rx, Vcc1 and Vcc Tx are the receiver and transmitter power suppliers and shall be applied concurrently. Recommended host board power supply filtering is shown below. Vcc Rx, Vcc1 and Vcc Tx may be internally connected within the QSFP transceiver module in any combination. The connector pins are each rated for a maximum current of 500mA.

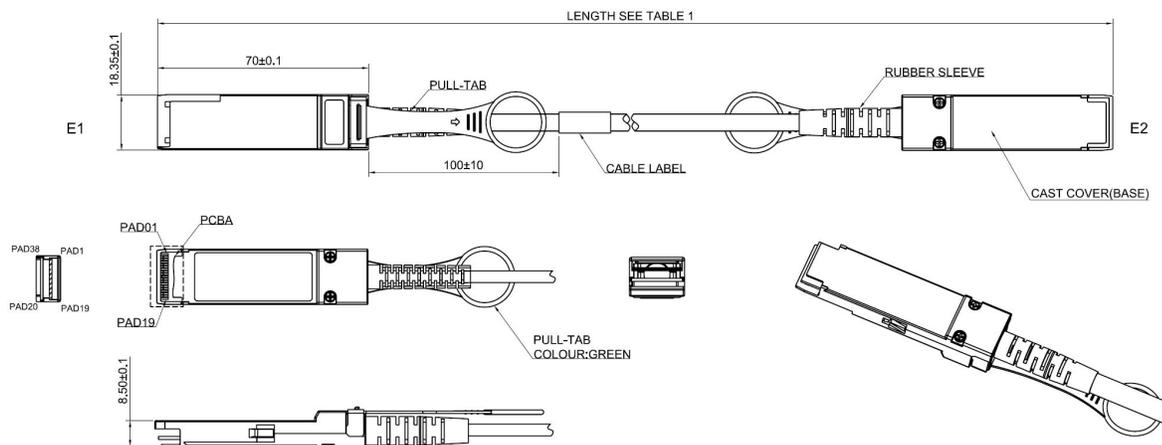
Memory Map

In addition to the electrical loopback function, this loopback module provides an MSA standard 2-wire serial communication interface to digital diagnostics and preloaded 256kB EEPROM memory maps; both standard and custom memory maps are available.

Mechanical Specifications

Mechanical				
Parameter	Minimum	Typical	Maximum	Unit
Cable Diameter (24 AWG)		0.385		Inches
Bend Radius (24 AWG)	1.89			Inches
Cable Diameter (26 AWG)		0.346		Inches
Bend Radius (26 AWG)	1.67			Inches
Cable Diameter (28 AWG)		0.295		Inches
Bend Radius (28AWG)	1.45			Inches
Cable Diameter (30 AWG)		0.259		Inches
Bend Radius (30 AWG)	1.27			Inches
Within Pair Skew			12	ps/10m
Cable Insertion Loss		10		dB/10m
Bulk Cable Crosstalk			1	%
Bulk Cable Time Delay			4.	ns/m
Cable Capacitance (intra-pair)			4	pF/m
Bulk Cable Impedance	95	100	10	Ohms

Mechanical Dimensions



FIBERLAND

Fiber Optic & Networking Products

Let's create a pure fiberland for human beings

Contact :

Address	6 th floor ,building 8,Zhongxing industrial zone,Nanshan district,Shenzhen,P.R.China
Zip	518000
Website	www.fiberlandtec.com
Email	sales@fiberlandtec.com