QSFPP-4X10GE-LR-OPC

Juniper Networks® QSFPP-4X10GE-LR Compatible TAA 40GBase-PLR4 QSFP+ Transceiver (SMF, 1310nm, 10km, MPO, DOM)

Features

- SFF-8436 Compliance
- MPO Connector
- Single-mode Fiber
- Commercial Temperature 0 to 70 Celsius
- Hot Pluggable
- Metal with Lower EMI
- Excellent ESD Protection
- RoHS Compliant and Lead Free

Applications:

- 40GBase Ethernet
- Access and Enterprise

Product Description

This Juniper Networks® QSFPP-4X10GE-LR compatible QSFP+ transceiver provides 40GBase-PLR4 throughput up to 10km over single-mode fiber (SMF) using a wavelength of 1310nm via an MPO connector. It can operate at temperatures between 0 and 70C. Our transceiver is built to meet or exceed OEM specifications and is guaranteed to be 100% compatible with Juniper Networks®. It has been programmed, uniquely serialized, and tested for data-traffic and application to ensure that it will initialize and perform identically. All of our transceivers comply with Multi-Source Agreement (MSA) standards to provide seamless network integration. Additional product features include Digital Optical Monitoring (DOM) support which allows access to real-time operating parameters. This transceiver is Trade Agreements Act (TAA) compliant. We stand behind the quality of our products and proudly offer a limited lifetime warranty.

Absolute Maximum Ratings

Parameter	Symbol	Min.	Typ.	Max.	Unit
Supply Voltage	Vcc	-0.5		4.0	V
Storage Temperature	Ts	-40		85	°C
Operating Case Temperature	Tc	0	25	70	°C
Relative Humidity	RH	5		95	%
Data Rate Per Channel			10.3125	11.2	Gb/s

Electrical Characteristics

Parameter		Symbol	Min.	Typ.	Max.	Unit	Notes
Supply Voltage		V_{CC}	3.135	3.3	3.465	V	
Module Supply Current		Icc			1100	mA	
Power Dissipation		P_D			3500	mW	
Transmitter							
Input Differential Impedance		Z_{IN}		100			
Differential Data Input Swing		$V_{IN, P-P}$	180		900	mV_{P-P}	
TX_FAULT	**Transmitter Fault**	VOH	2.0		V_{CCHOST}	V	
	Normal Operation	VOL	0		0.8	V	
TX_DISABLE	**Transmitter Disable**	VIH	2.0		V_{CCHOST}	V	
	Transmitter Enable	VIL	0		0.8	V	
Receiver							
Output Differential Impedance		Z_O		100			
Differential Data Output Swing		$V_{OUT, P-P}$	300		850	mV_{P-P}	1
Data Output Rise Time, Fall Time		t_r, t_f	28			ps	2
RX_LOS	**Loss of signal (LOS)**	VOH	2.0		V_{CCHOST}	V	3
	Normal Operation	VOL	0		0.8	V	3

Notes:

1. Internally AC coupled, but requires an external 100 differential load termination.
2. 20 – 80 %.
3. LOS is an open collector output. Should be pulled up with 4.7k on the host board.

Optical Characteristics

Parameter	Symbol	Min.	Typ.	Max.	Unit	Notes
Transmitter						
Launch Optical Power per lane	Po	-8.2		+0.5	dBm	1
Side Mode Suppression Ratio	SMSR	30			dB	
Center Wavelength Range	Λ0	1260	1310	1355	nm	
Extinction Ratio	EX	3.5			dB	2
Optical Return Loss Tolerance	ORLT			12	dB	
Pout @TX-Disable Asserted	P_{off}			-30	dBm	1
Receiver						
Center Wavelength	λc	1260		1355	nm	
Receiver Sensitivity (OMA)	S			-12.6	dBm	3
Damage Threshold	P_{OL}	1.5			dBm	3
LOS De-Assert	LOS_D			-15	dBm	
LOS Assert	LOS_A	-30			dBm	
LOS Hysteresis		0.5			dB	

Note:

1. The optical power is launched into SMF.
2. Measured with a PRBS 2^{31}-1 test pattern @10.3125Gbps.
3. Measured with PRBS 2^{31}-1 test pattern, 10.3125Gb/s, BER<10^{-12}.

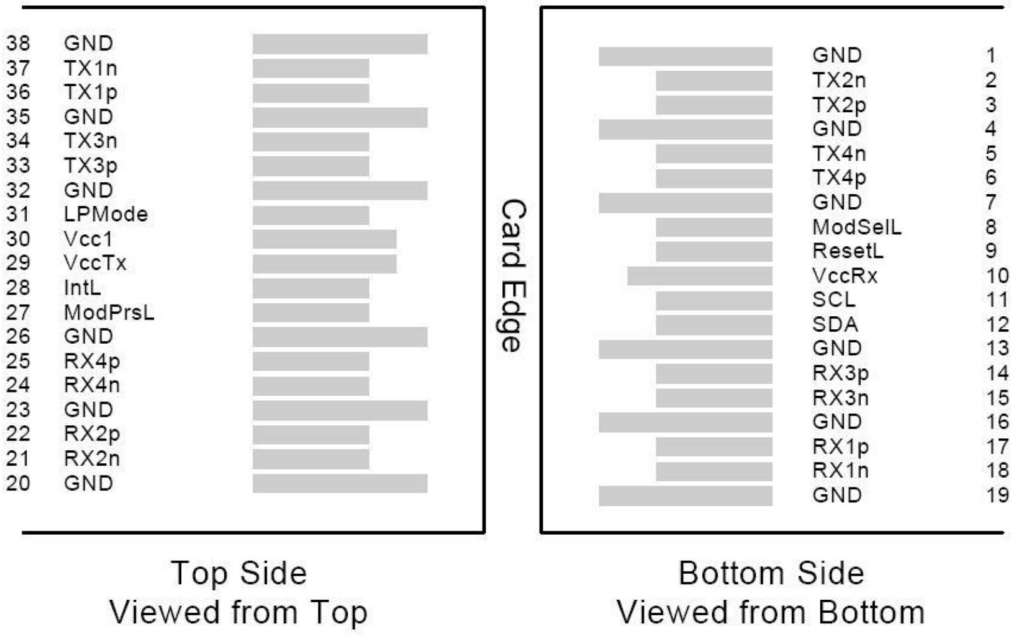
Pin Descriptions

Pin	Logic	Symbol	Name/Descriptions	Ref.
1		GND	Module Ground	1
2	CML-I	Tx2-	Transmitter inverted data input	
3	CML-I	Tx2+	Transmitter non-inverted data input	
4		GND	Module Ground	1
5	CML-I	Tx4-	Transmitter inverted data input	
6	CML-I	Tx4+	Transmitter non-inverted data input	
7		GND	Module Ground	1
8	LVTTL-I	MODSEIL	Module Select	2
9	LVTTL-I	ResetL	Module Reset	2
10		VCCRx	+3.3v Receiver Power Supply	
11	LVCMOS-I	SCL	2-wire Serial interface clock	2
12	LVCMOS-I/O	SDA	2-wire Serial interface data	2
13		GND	Module Ground	1
14	CML-O	RX3+	Receiver non-inverted data output	
15	CML-O	RX3-	Receiver inverted data output	
16		GND	Module Ground	1
17	CML-O	RX1+	Receiver non-inverted data output	
18	CML-O	RX1-	Receiver inverted data output	
19		GND	Module Ground	1
20		GND	Module Ground	1
21	CML-O	RX2-	Receiver inverted data output	
22	CML-O	RX2+	Receiver non-inverted data output	
23		GND	Module Ground	1
24	CML-O	RX4-	Receiver inverted data output	
25	CML-O	RX4+	Receiver non-inverted data output	
26		GND	Module Ground	1
27	LVTTL-O	ModPrsL	Module Present, internal pulled down to GND	
28	LVTTL-O	IntL	Interrupt output should be pulled up on host board	2
29		VCCTx	+3.3v Transmitter Power Supply	
30		VCC1	+3.3v Power Supply	
31	LVTTL-I	LPMode	Low Power Mode	2
32		GND	Module Ground	1
33	CML-I	Tx3+	Transmitter non-inverted data input	
34	CML-I	Tx3-	Transmitter inverted data input	
35		GND	Module Ground	1
36	CML-I	Tx1+	Transmitter non-inverted data input	
37	CML-I	Tx1-	Transmitter inverted data input	
38		GND	Module Ground	1

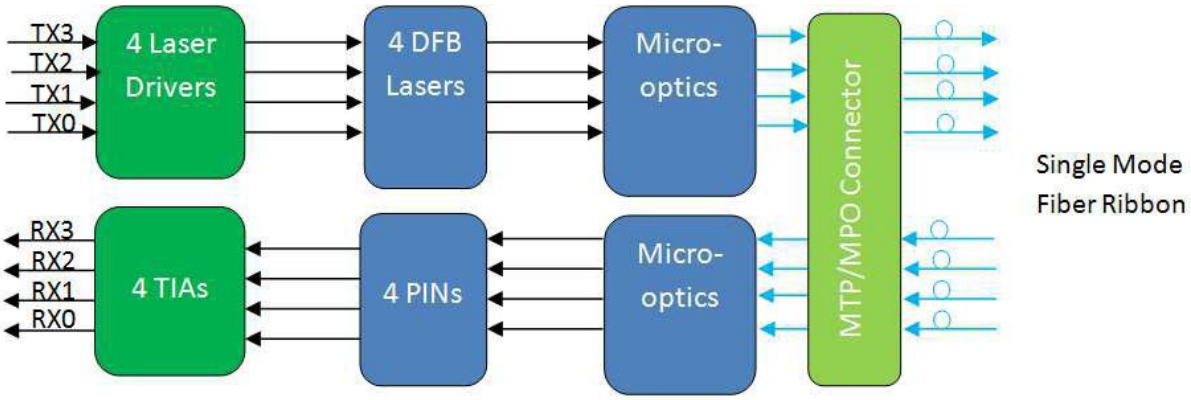
Notes:

1. Module circuit ground is isolated from module chassis ground with in the module.
2. Open collector; should be pulled up with 4.7k-10k ohms on host board to a voltage between 3.15V and 3.6V.

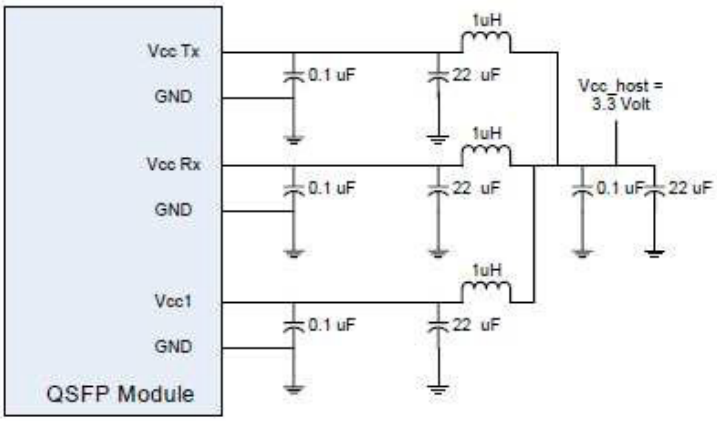
Electrical Pin-out Details



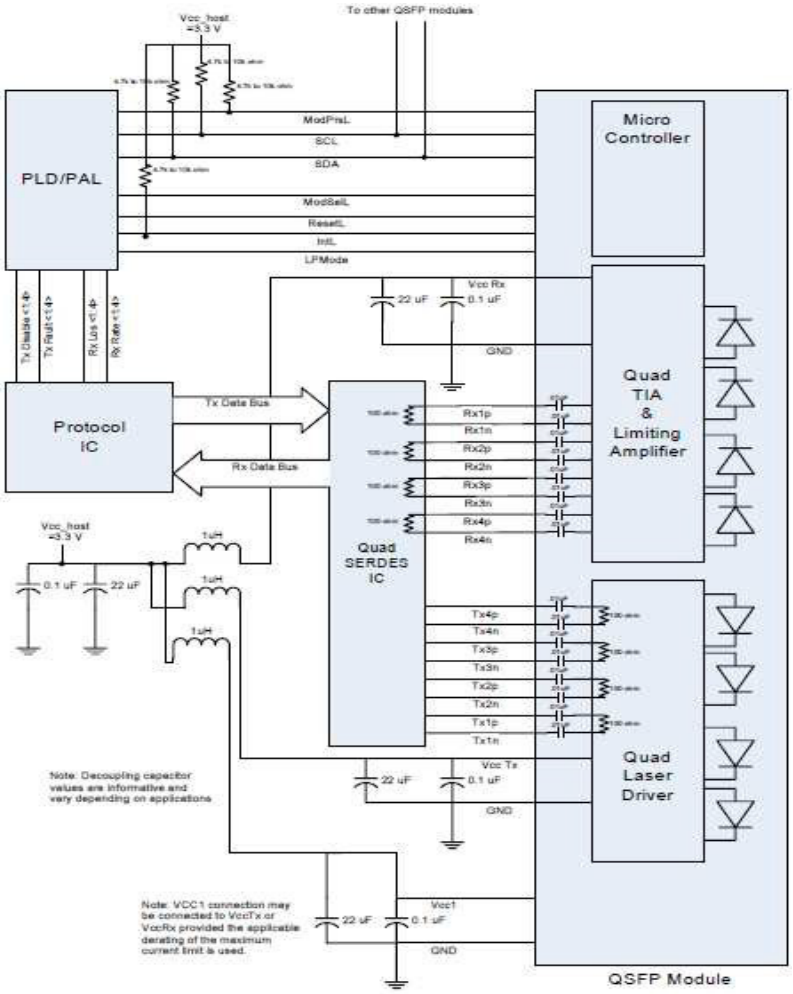
Transceiver Diagram Block



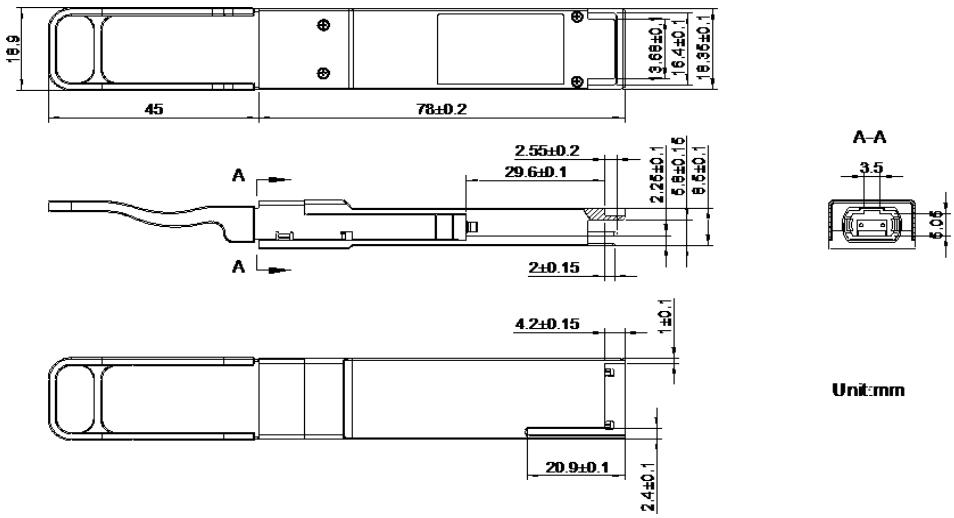
Recommended Host Board Power Supply Filter Network



Recommended Application Interface Block Diagram



Mechanical Specifications



Attention: To minimize MPO connection induced reflections, an MPO receptacle with 8-degree angled end-face is utilized for this product. A female MPO connector with 8-degree end-face should be used with this product as illustrated in below Figure.