



### **QSFP-40GB-ZR4-J-OPC**

Juniper Networks® Compatible TAA 40GBase-ZR4 QSFP+ Transceiver (SMF, 1295nm to 1309nm, 80km, LC, DOM)

#### **Features**

- Compliant with QSFP28 MSA
- 4 cooled 10.3125Gbps channels LAN WDM EML TOSA
- 4 channels SOA PIN photo detector
- Single +3.3V power supply
- Class 1 laser safety certified
- Duplex LC Connector
- Single-mode Fiber
- Commercial Temperature 0 to 70 Celsius
- RoHS Compliant and Lead Free



#### **Applications:**

- 40GBase Ethernet
- Access and Enterprise

#### **Product Description**

This Juniper Networks® compatible QSFP+ transceiver provides 40GBase-ZR4 throughput up to 80km over single-mode fiber (SMF) using a wavelength of 1295nm to 1309nm via an LC 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.

OptioConnect's transceivers are RoHS compliant and lead-free.

## Absolute Maximum Ratings

Parameter	Symbol	Min.	Typ.	Max.	Unit
Supply Voltage	V <sub>CC</sub>	-0.5		4.0	V
Supply Voltage	V <sub>CC</sub>	3.135	3.3	3.465	V
Storage Temperature	T <sub>stg</sub>	-40		85	°C
Operating Case Temperature	T <sub>c</sub>	0	25	70	°C
Relative Humidity	RH	5		95	%
Data Rate Per Channel		10.3125			Gbps

### Notes:

1. Stresses exceeding the absolute maximum ratings can cause permanent damage to the device.
2. These are absolute stress ratings only.
3. Functional operation of the device is not implied at these or any other conditions in excess of those given in the operational sections of the datasheet.
4. Exposure to absolute maximum ratings for extended periods can adversely affect device reliability.

## Electrical Characteristics

Parameter	Symbol	Min.	Typ.	Max.	Unit
Module Supply Current	I <sub>CC</sub>			1650	mA
Power Dissipation	P <sub>DISS</sub>			5000	mW
Transmitter					
Single-Ended Input Voltage Tolerance		-0.3		4.0	V
Input Differential Impedance	Z <sub>IN</sub>		100		Ω
Differential Data Input Swing	V <sub>IN,pp</sub>	190		700	mVp-p
AC Common-Mode Input Voltage Tolerance		15			mV
Differential Input Voltage Swing Threshold			50		mVp-p
Receiver					
Single-Ended Output Voltage		-0.3		4.0	V
Output Differential Impedance	Z <sub>OUT</sub>	90	100	110	Ω
Differential Data Output Swing	V <sub>OUT,pp</sub>	300		850	mVp-p
AC Common-Mode Output Voltage				7.5	mV

## Optical Characteristics

Parameter	Symbol	Min.	Typ.	Max.	Unit	Notes
Transmitter						
Launch Optical Power Per Lane	Po	2.0		6.5	dBm	1
Total Launch Optical Power	Po			12.5	dBm	1
Center Wavelength Range	L1	1294.53	1295.56	1296.59	nm	
	L2	1299.02	1300.05	1301.09	nm	
	L3	1303.54	1304.58	1305.63	nm	
	L4	1308.09	1309.14	1310.19	nm	
Extinction Ratio	ER	8			dB	1
Spectral Width (-20dB)	$\Delta\lambda$			1	nm	
Side-Mode Suppression Ratio	SMSR	30			dB	
Optical Return Loss Tolerance	ORLT			20	dB	
POUT @ Tx_Disable Asserted	Poff			-30	dBm	1
Eye Mask (X1, X2, X3, Y1, Y2, Y3)	(0.25, 0.4, 0.45, 0.25, 0.28, 0.4)					
Receiver						
Center Wavelength	L1	1294.53	1295.56	1296.59	nm	
	L2	1299.02	1300.05	1301.09	nm	
	L3	1303.54	1304.58	1305.63	nm	
	L4	1308.09	1309.14	1310.19	nm	
Sensitivity Per Channel (OMA)	S1			-26.9	dBm	2
Sensitivity Per Channel (Average)	S2			-28	dBm	2
Overload (Per Channel)	POL	2			dBm	
Damage Threshold (Per Channel)	Pdmg	4.5			dBm	
Receiver Reflectance	Rf			-26	dB	
LOS De-Assert	LOSD			-28	dBm	
LOS Assert	LOSA	-35			dBm	
LOS Hysteresis	LOSH	0.5		5	dB	

### Notes:

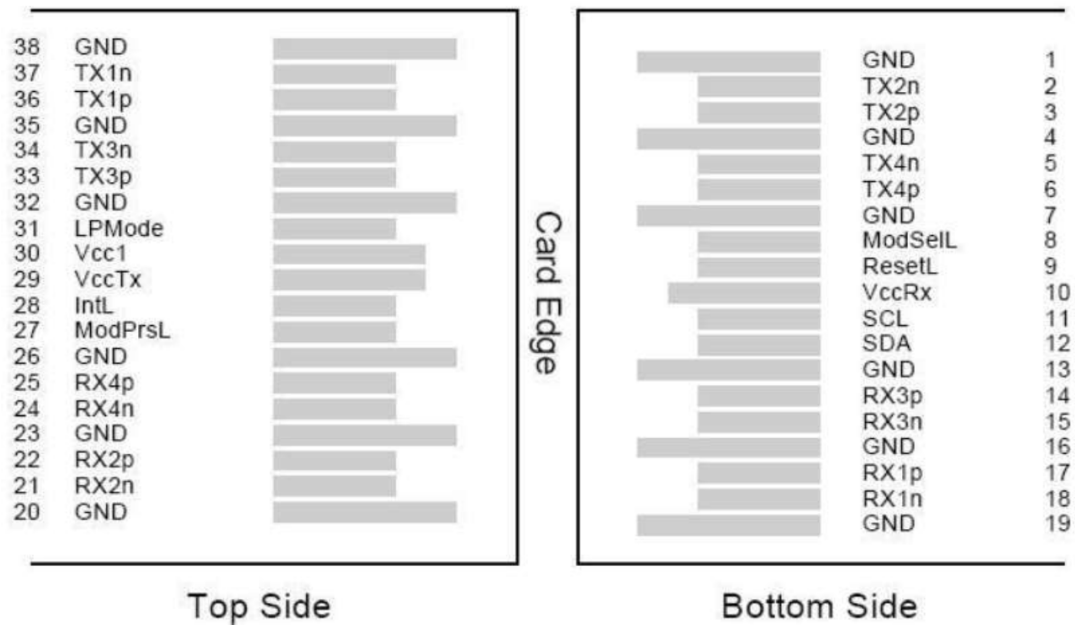
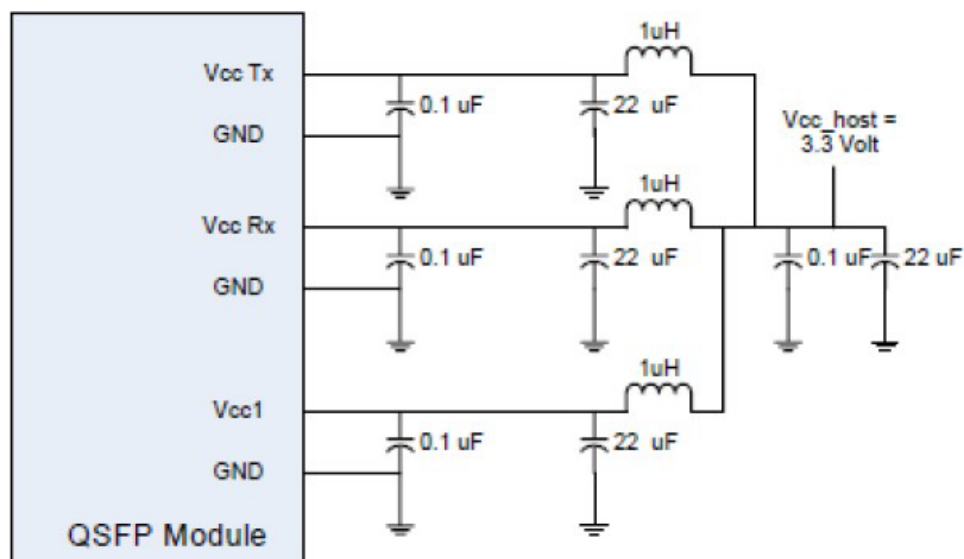
1. Measured with a PRBS  $2^{31}-1$  test pattern @10.3125Gbps.
2. Measured with a PRBS  $2^{31}-1$  test pattern, @10.3125Gbps, and BER  $5.0E^{-5}$ .

## Pin Description

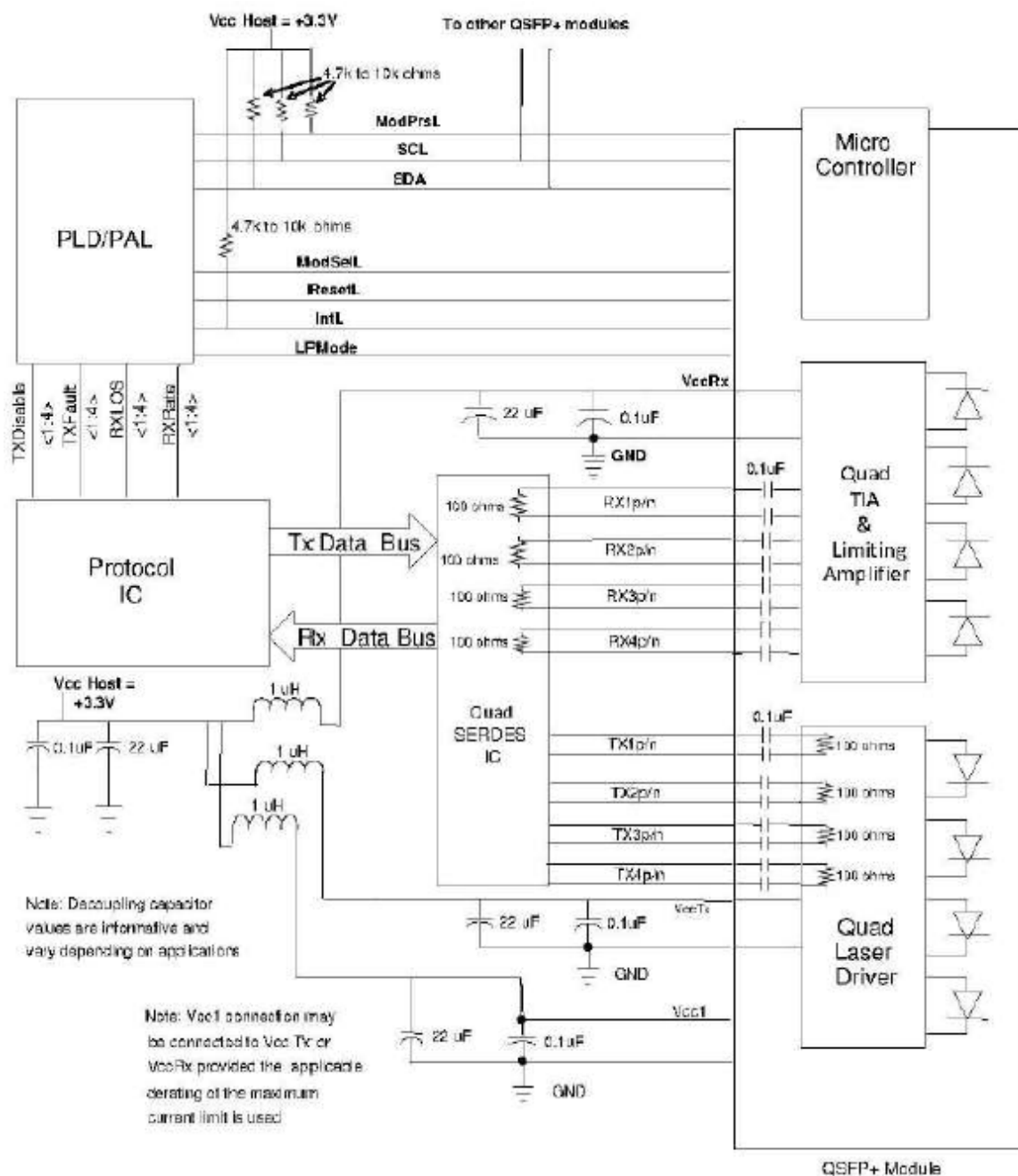
Pin	Symbol	Name/Description	Note
1	GND	Transmitter Ground (Common with Receiver Ground).	1
2	Tx2-	Transmitter Inverted Data Input.	
3	Tx2+	Transmitter Non-Inverted Data Output.	
4	GND	Transmitter Ground (Common with Receiver Ground).	1
5	Tx4-	Transmitter Inverted Data Input.	
6	Tx4+	Transmitter Non-Inverted Data Output.	
7	GND	Transmitter Ground (Common with Receiver Ground).	1
8	ModSelL	Module Select.	2
9	ResetL	Module Reset.	2
10	VccRx	+3.3V Power Supply Receiver.	
11	SCL	2-Wire Serial Interface Clock.	2
12	SDA	2-Wire Serial Interface Data.	2
13	GND	Transmitter Ground (Common with Receiver Ground).	1
14	Rx3+	Receiver Non-Inverted Data Output.	
15	Rx3-	Receiver Inverted Data Output.	
16	GND	Transmitter Ground (Common with Receiver Ground).	1
17	Rx1+	Receiver Non-Inverted Data Output.	
18	Rx1-	Receiver Inverted Data Output.	
19	GND	Transmitter Ground (Common with Receiver Ground).	1
20	GND	Transmitter Ground (Common with Receiver Ground).	1
21	Rx2-	Receiver Inverted Data Output.	
22	Rx2+	Receiver Non-Inverted Data Output.	
23	GND	Transmitter Ground (Common with Receiver Ground).	1
24	Rx4-	Receiver Inverted Data Output.	
25	Rx4+	Receiver Non-Inverted Data Output.	
26	GND	Transmitter Ground (Common with Receiver Ground).	1
27	ModPrsL	Module Present.	
28	IntL	Interrupt.	2
29	VccTx	+3.3V Transmitter Power Supply.	
30	Vcc1	+3.3V Power Supply.	
31	LPMODE	Low-Power Mode.	2
32	GND	Transmitter Ground (Common with Receiver Ground).	1
33	Tx3+	Transmitter Non-Inverted Data Input.	
34	Tx3-	Transmitter Inverted Data Output.	
35	GND	Transmitter Ground (Common with Receiver Ground).	1
36	Tx1+	Transmitter Non-Inverted Data Input.	
37	Tx1-	Transmitter Inverted Data Output.	
38	GND	Transmitter Ground (Common with Receiver Ground).	1

**Notes:**

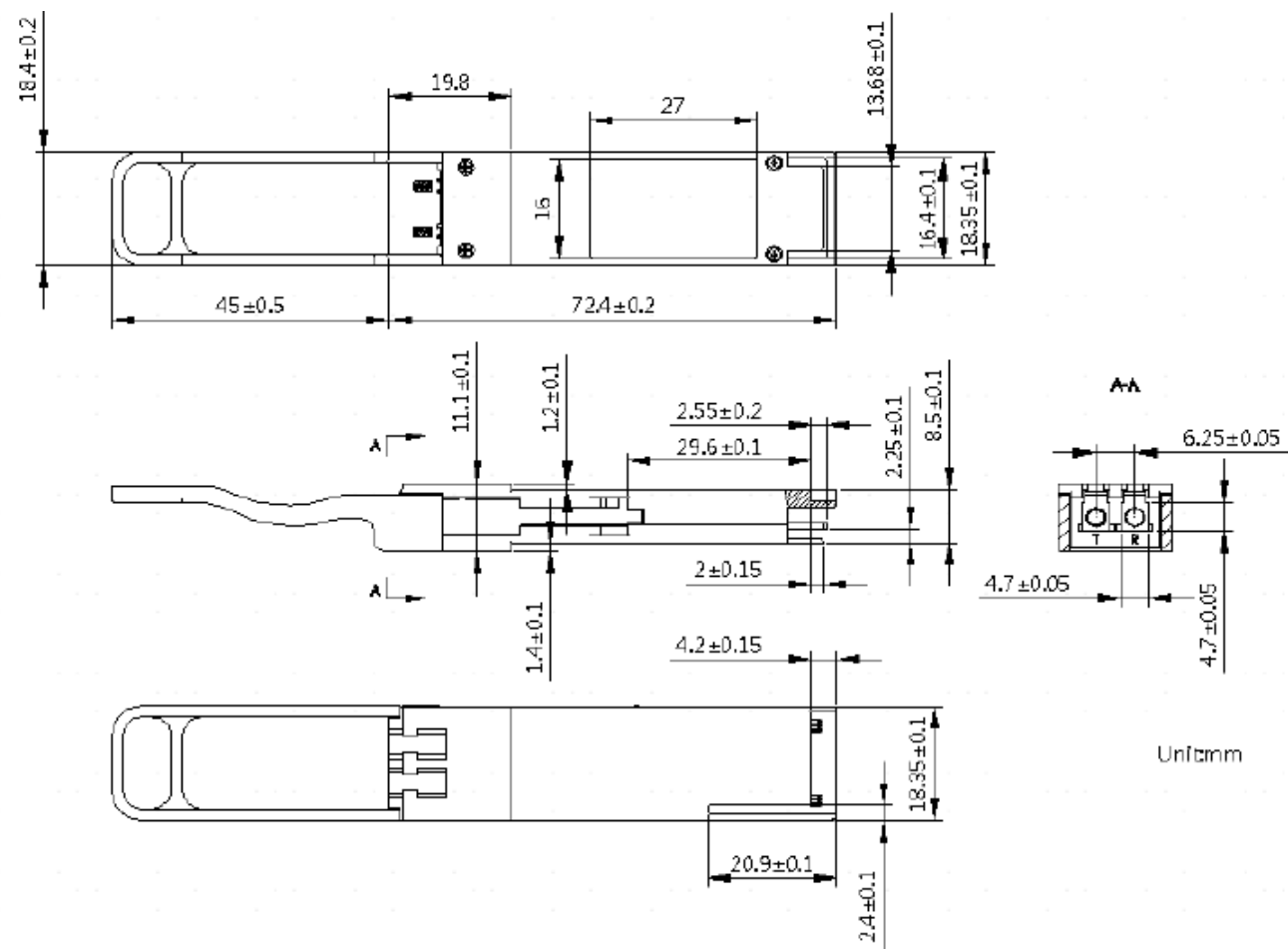
1. The module signal grounds are isolated from the module case.
2. This is an open collector/drain output that on the host board requires a 4.7k $\Omega$  to 10k $\Omega$  pull-up resistor to Host\_Vcc.

**Host PCB QSFP28 Pad Assignment Top View****Recommended Host Board Power Supply Filter Network**

## Recommended Application Interface Block Diagram



Mechanical Specifications



## **OptioConnect**

### **Innovation for the Future of High-Speed Networking**

#### **Who We Are**

OptioConnect is reshaping the landscape of communication and high-speed networking through intelligent technology. With a core focus on cutting edge technology, we deliver smarter fiber optic solutions for enterprise networks, data centers, and next-gen telecom infrastructures.

#### **What We Do**

At OptioConnect, we fuse advanced engineering with intelligent automation to drive the future of networking. Our AI-integrated solutions are designed to optimize performance and streamline operations with:

- Superior Performance
- Network and traffic optimization
- Intelligent energy management
- Seamless OEM compatibility
- Scalable cost-efficiency

#### **Smarter Networks by Design**

Innovation isn't just a goal—it's our process. We embed AI and machine learning across our R&D and product lines, enabling adaptive performance, automated tuning, and faster deployment cycles. The result? Networks that don't just work—they learn, evolve, and outperform.

#### **Our Team**

Our engineers, data scientists, and network architects bring decades of experience and a future-focused mindset. We provide hands-on support with intelligent insights that turn complex challenges into simple solutions.

#### **Our Mission**

To deliver AI-enhanced connectivity that reduces cost, increases speed, and maximizes efficiency—empowering our partners to operate at the forefront of a rapidly evolving digital world.

#### **Let's Connect**

Discover how OptioConnect's intelligent infrastructure solutions can power your network's next leap forward.

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