



QSFP28-100GB-ZR4P-J-OPC

Juniper Networks® Compatible TAA 100GBase-ZR4+ QSFP28 Transceiver (SMF, 1295nm to 1309nm, 80/95km, LC, DOM)

Features

- Supports up to 103Gbps
- Single 3.3V Power Supply
- Power Dissipation 5.5W
- Four 25Gbps EML LAN-WDM lasers on the transmitter side
- Receiver: 4x25Gbps SOA+PIN ROSA
- 4x25Gbps Electrical Interface
- Hot-pluggable QSFP28 MSA form factor
- Duplex LC Connector
- I2C interface with integrated Digital Diagnostic Monitoring
- Commercial Temperature 0 to 70 Celsius
- RoHS Compliant and Lead Free



Applications:

- 100GBase Ethernet

Product Description

This Juniper Networks® compatible QSFP28 transceiver provides 100GBase-ZR4+ throughput up to 80/95km 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
Maximum Supply Voltage	V _{CC}	-0.5		3.6	V
Storage Temperature	T _{stg}	-40		85	°C
Operating Case Temperature	T _c	0		70	°C
Operating Relative Humidity	RH	5		85	%

Notes:

- Exceeding any one of these values may destroy the device immediately.

Electrical Characteristics

Parameter	Symbol	Min.	Typ.	Max.	Unit	Notes
Power Supply Voltage	V _{CC}	3.135	3.3	3.465	V	
Power Dissipation	P _{DISS}			5.5	W	
Transmitter						
Differential Data Input Swing Per Lane				900	mVp-p	
Input Differential Impedance	Z _{IN}	85	100	115	Ω	
Stressed Input Parameters						
Eye Width		0.46			UI	
Applied Pk-Pk Sinusoidal Jitter		IEEE 802.3bm Table 88-13				
Eye Height		95			mV	
DC Common-Mode Voltage		-350		2850	mV	
Receiver						
Differential Output Amplitude		200		900	mVp-p	
Output Differential Impedance	Z _{OUT}	85	100	115	Ω	
Eye Width		0.57			UI	
Eye Height Differential		228			mV	
Vertical Eye Closure				5.5	dB	

Optical Characteristics

Parameter	Symbol	Min.	Typ.	Max.	Unit	Notes
Transmitter						
Signaling Speed Per Lane	BRAVE		25.78		Gbps	
Data Rate Variation		-100		100	ppm	
Lane 0 Center Wavelength	λ_{C0}	1294.53	1295.56	1296.59	nm	
Lane 1 Center Wavelength	λ_{C1}	1299.02	1300.05	1301.09	nm	
Lane 2 Center Wavelength	λ_{C2}	1303.54	1304.58	1305.63	nm	
Lane 3 Center Wavelength	λ_{C3}	1308.09	1309.14	1310.19	nm	
Spectral Width (-20dB)	$\Delta\lambda$			1	nm	
Total Average Output Power	POUT			13	dBm	
Average Launch Power Per Lane	P _{each}	3		7	dBm	1
Optical Modulation Amplitude Per Lane	POMA	3.7		7.8	dBm	
Average Launch Power of Off Transmitter Per Lane	P _{off}			-30	dBm	
Side-Mode Suppression Ratio	SMSR	30			dB	
Transmitter Dispersion Penalty Per Lane	TDP			3	dB	4
Difference in Launch Power Between Any Two Lanes				3.6	dB	
Optical Return Loss Tolerance				20	dB	
Transmitter Reflectance				-26		
Extinction Ratio	ER	6	8		dB	
Transmitter Eye Mask Definition: X1, X2, X3, Y1, Y2, Y3	(0.25, 0.4, 0.45, 0.25, 0.28, 0.4)					
Receiver						
Signaling Speed Per Lane	BRAVE		25.78		Gbps	
Data Rate Variation		-100		100	ppm	
Damage Threshold Per Lane (Minimum)	TH _d			5.5	dBm	3
Lane 0 Center Wavelength	λ_{C0}	1294.53	1295.56	1296.59	nm	
Lane 1 Center Wavelength	λ_{C1}	1299.02	1300.05	1301.09	nm	
Lane 2 Center Wavelength	λ_{C2}	1303.54	1304.58	1305.63	nm	
Lane 3 Center Wavelength	λ_{C3}	1308.09	1309.14	1310.19	nm	
Average Receive Power Per Lane	R _{x_pow}	-31		4.5	dBm	2
Receiver Overload Per Lane	P _{sat}	4.5			dBm	
Receive Sensitivity Average Per Lane	R _{x_sens}			-29	dBm	4
Stressed Sensitivity Per Lane	SRS			-25.1	GHz	4
Receiver Reflectance				-26	dBm	
LOS Assert	LOSA	-40			dBm	
LOS De-Assert	LOSD			-31.5	dBm	
LOS Hysteresis		0.5			dB	

Notes:

1. Average launch power, per lane (minimum), is informative and not the principal indicator of signal strength. A transmitter with launch power below this value cannot be compliant; however, a value above this does not ensure compliance.
2. Average receive power, per lane (minimum), is informative and not the principal indicator of signal strength. A received power below this value cannot be compliant; however, a value above this does not ensure compliance.
3. The receiver shall be able to tolerate, without damage, continuous exposure to an optical input signal having this average power level.
4. Measured with conformance test signal for BER=5E⁻⁵ @25.78Gbps and PRBS³¹-1.

Pin Descriptions

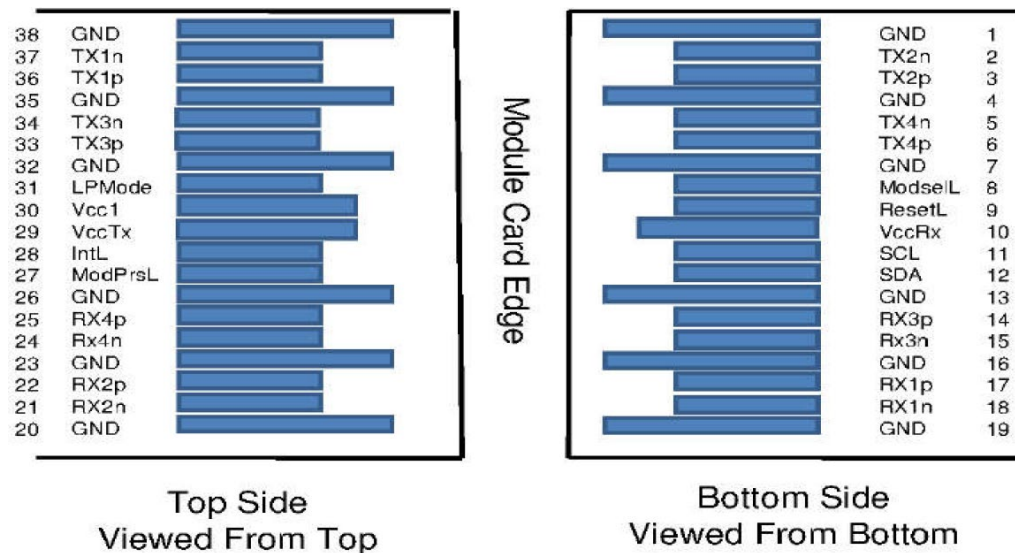
Pin	Logic	Symbol	Name/Description	Plug Sequence	Notes
1		GND	Module Ground.	1	1
2	CML-I	Tx2-	Transmitter Inverted Data Input.	3	
3	CML-I	Tx2+	Transmitter Non-Inverted Data Input.	3	
4		GND	Module Ground.	1	1
5	CML-I	Tx4-	Transmitter Inverted Data Input.	3	
6	CML-I	Tx4+	Transmitter Non-Inverted Data Input.	3	
7		GND	Module Ground.	1	1
8	LVTTL-I	ModSelL	Module Select.	3	
9	LVTTL-I	ResetL	Module Reset.	3	
10		VccRx	+3.3V Receiver Power Supply.	2	2
11	LVC MOS-I/O	SCL	2-Wire Serial Interface Clock.	3	
12	LVC MOS-I/O	SDA	2-Wire Serial Interface Data.	3	
13		GND	Module Ground.	1	1
14	CML-O	Rx3+	Receiver Non-Inverted Data Output.	3	
15	CML-O	Rx3-	Receiver Inverted Data Output.	3	
16		GND	Module Ground.	1	1
17	CML-O	Rx1+	Receiver Non-Inverted Data Output.	3	
18	CML-O	Rx1-	Receiver Inverted Data Output.	3	
19		GND	Module Ground.	1	1
20		GND	Module Ground.	1	1
21	CML-O	Rx2-	Receiver Inverted Data Output.	3	
22	CML-O	Rx2+	Receiver Non-Inverted Data Output.	3	
23		GND	Module Ground.	1	1
24	CML-O	Rx4-	Receiver Inverted Data Output.	3	
25	CML-O	Rx4+	Receiver Non-Inverted Data Output.	3	
26		GND	Module Ground.	1	1

27	LVTTL-O	ModPrsL	Module Present.	3	
28	LVTTL-O	IntL	Interrupt.	3	
29		VccTx	+3.3V Transmitter Power Supply.	2	2
30		Vcc1	+3.3V Power Supply.	2	2
31	LVTTL-I	LPMode	Low-Power Mode.	3	
32		GND	Module Ground.	1	1
33	CML-I	Tx3+	Transmitter Non-Inverted Data Input.	3	
34	CML-I	Tx3-	Transmitter Inverted Data Input.	3	
35		GND	Module Ground.	1	1
36	CML-I	Tx1+	Transmitter Non-Inverted Data Input.	3	
37	CML-I	Tx1-	Transmitter Inverted Data Input.	3	
38		GND	Module Ground.	1	1

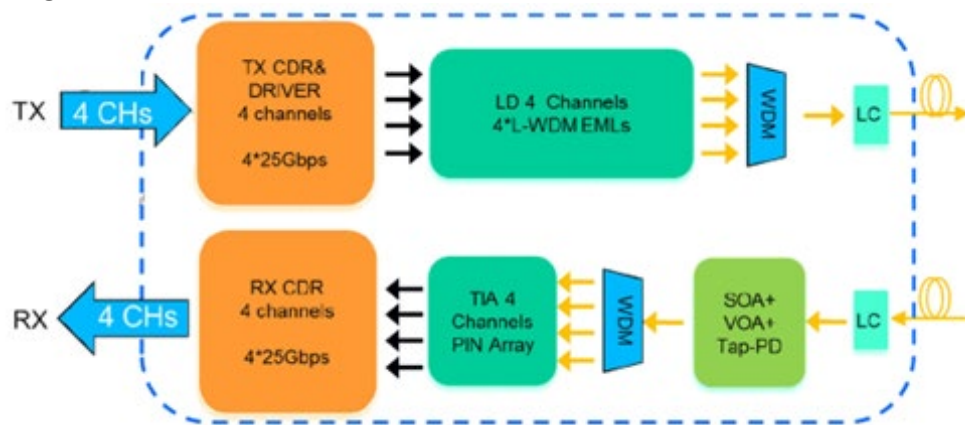
Notes:

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 plane.
2. VccRx, Vcc1, and VccTx are the receiver and transmitter power supplies and shall be applied concurrently. VccRx, Vcc1, and VccTx may be internally connected within the QSFP28 module in any combination. The connector pins are each rated for a maximum current of 1000mA.

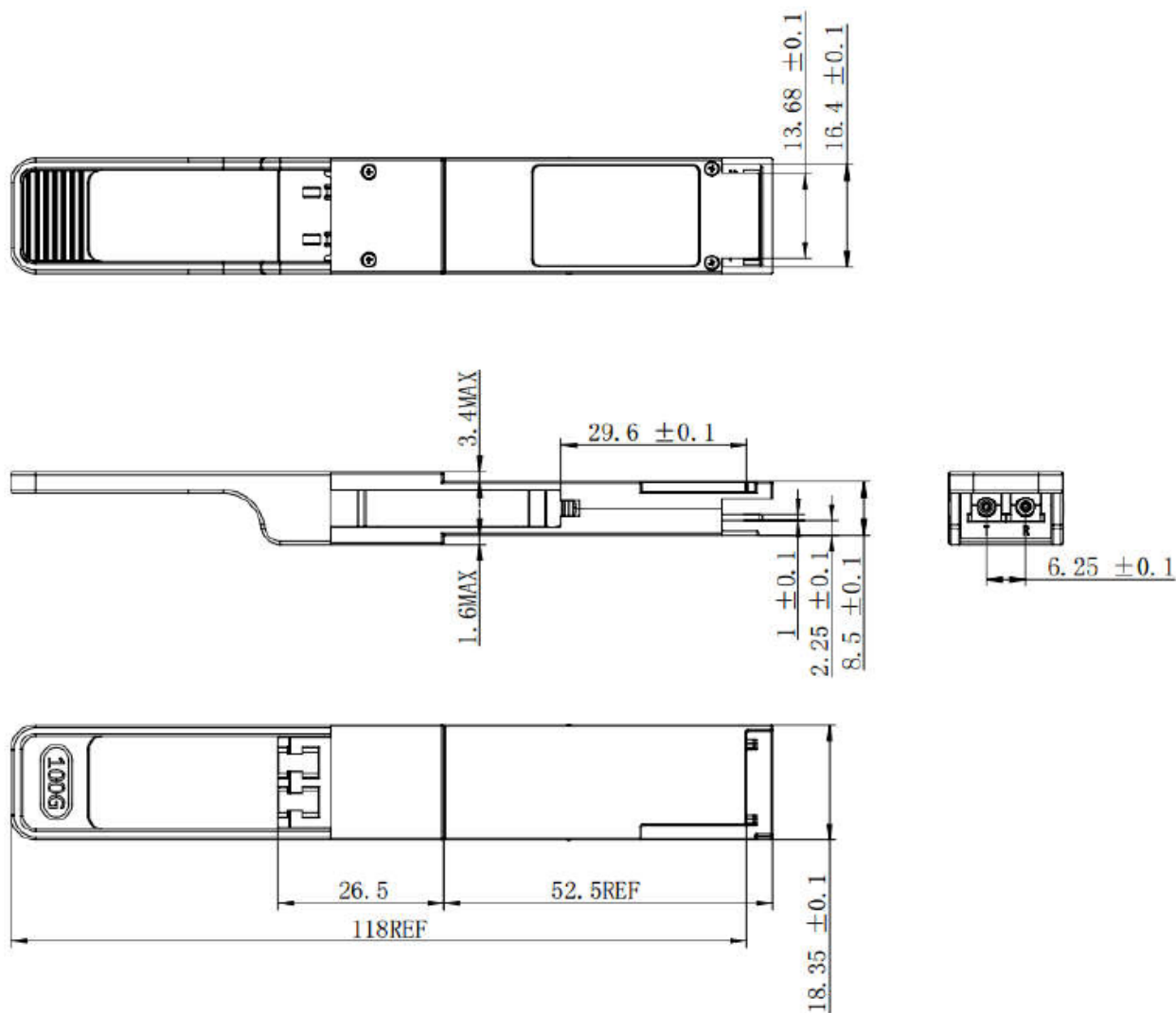
Electrical Pin-Out Details



Function 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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