Q28-100GP4-LR4BXU2931-20-J-C

Juniper Networks® Compatible TAA 100GBase-BX PAM4 QSFP28 Transceiver Single Lambda (SMF, 1291nmTx/1311nmRx, 20km, LC, DOM)

Features:

- Compliant with QSFP28 MSA
- Compliant with SFF-8636 Rev 2.10a
- Supports 100Gbps
- Single 3.3V Power Supply
- 4x25G Electrical Interface Compliant with OIF CEI-28G-VSR
- Bidi LC Connectors
- Single-mode Fiber
- Commercial Temperature 0 to 70 Celsius
- RoHS Compliant and Lead Free

Applications:

- 100GBase Ethernet
- Datacenter

Product Description

This Juniper Networks® compatible QSFP28 transceiver provides 100GBase-BX throughput up to 20km over single-mode fiber (SMF) PAM4 using a wavelength of 1291nmTx/1311nmRx via an LC connector. This bidirectional unit must be used with another transceiver or network appliance of complementing wavelengths. 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. We stand behind the quality of our products and proudly offer a limited lifetime warranty.

ProLabs' transceivers are RoHS compliant and lead-free.

TAA refers to the Trade Agreements Act (19 U.S.C. & 2501-2581), which is intended to foster fair and open international trade. TAA requires that the U.S. Government may acquire only "U.S.-made or designated country end products.")

TAA COMPLIANT

Rev. 012026

Absolute Maximum Ratings

Parameter	Symbol	Min.	Typ.	Max.	Unit
Power Supply Voltage	Vcc	3.135	3.3	3.465	V
Supply Voltage	Vcc	-0.5		3.6	V
Storage Temperature	Tstg	-40		85	°C
Operating Case Temperature	Tc	0		70	°C
Operating Relative Humidity	RH	5		85	%
Damage Threshold	Rxdmg	7.6			dBm
Power Dissipation	P_{DISS}			4.5	W

Notes:

1. Exceeding any one of these values may damage the device permanently.
2. Power Supply Specifications, Instantaneous, Sustained, and Steady State Current are compliant with QSFP28 MSA Power Classification.

Electrical Characteristics

Parameter	Symbol	Min.	Typ.	Max.	Unit	Notes
Transmitter						
Differential Data Input Swing Per Lane		900			mVp-p	
Differential Input Impedance	ZIN	90	100	110	Ω	
DC Common-Mode Voltage (Vcm)		-350		2850	mV	
Receiver						
Differential Output Amplitude				900	mVp-p	
Differential Output Impedance	ZOUT	90	100	110	Ω	
Output Rise/Fall Time	Tr/Tf	12			ps	20-80%
Eye Width		0.57			UI	
Eye Height Differential		228			mV	@TP4, $1E^{-15}$
DC Common-Mode Voltage (Vcm)		-350		2850	mV	1

Notes:

1. Vcm is generated by the host. Specification includes effects of ground offset voltage.

Optical Characteristics

Parameter	Symbol	Min.	Typ.	Max.	Unit	Notes
Transmitter						
Signaling Speed			53.125		GBd	
Modulation Format			PAM4			
Center Wavelength	λC	1284.5	1291	1297.5	nm	
Side-Mode Suppression Ratio	SMSR	30			dB	
Extinction Ratio	ER	3.5			dB	
Transmit OMA for TDECQ<1.4dB	TxOMA	2.8		6.8	dBm	
Transmit OMA for 1.4dB<TDECQ<TDECQ (Maximum)	TxOMA	1.4+TDECQ		6.8	dBm	
Transmit Average Power	TxAVG	-0.2		6.6	dBm	1
Transmitter and Dispersion Eye Closure	TDECQ			3.6	dB	
Optical Return Loss Tolerance				15.6	dB	2
Receiver						
Signaling Speed			53.125		GBd	
Center Wavelength	λC	1304.5	1311	1317.5	nm	
Damage Threshold		7.6			dBm	
Receive Power (OMA_{outer})	RxOMA			6.8	dBm	
Average Receive Power	RxAVG	-10		6.6	dBm	
Receiver Sensitivity (OMA_{outer})	SenOMA			MAX (-7.6, SECQ-9)	dBm	3
Receiver Reflectance				-26	dB	
LOS Assert	LOSA	-15			dBm	
LOS De-Assert	LOSD			-12	dBm	
LOS Hysteresis		0.5			dB	

Notes:

1. Average launch power (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. Transmitter reflectance is defined looking into the transmitter.
3. Sensitivity is specified at $2.4x10^{-4}$ BER.

Pin Descriptions

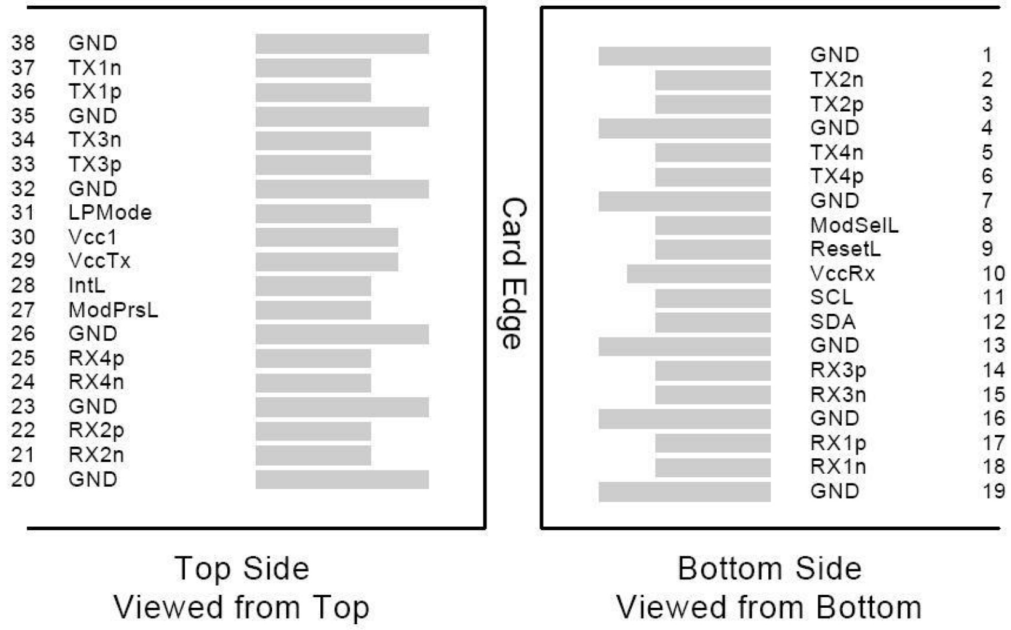
Pin	Logic	Symbol	Name/Description	Notes
1		GND	Module Ground.	1
2	CML-I	Tx2-	Transmitter Inverted Data Input.	
3	CML-I	Tx2+	Transmitter Non-Inverted Data Output.	
4		GND	Module Ground.	1
5	CML-I	Tx4-	Transmitter Inverted Data Input.	
6	CML-I	Tx4+	Transmitter Non-Inverted Data Input.	
7		GND	Module Ground.	1
8	LVTLL-I	ModSelL	Module Select.	
9	LVTLL-I	ResetL	Module Reset.	
10		VccRx	+3.3V Receiver Power Supply.	2
11	LVCMOS-I/O	SCL	2-Wire Serial Interface Clock.	
12	LVCMOS-I/O	SDA	2-Wire Serial Interface Data.	
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.	1
25	CML-O	Rx4+	Receiver Non-Inverted Data Output.	
26		GND	Module Ground.	1
27	LVTTL-O	ModPrsL	Module Present.	
28	LVTTL-O	IntL/RxLOSL	Interrupt. Optionally configurable as RxLOSL via the management interface (SFF-8636).	
29		VccTx	+3.3V Transmitter Power Supply.	2
30		Vcc1	+3.3V Power Supply.	2
31	LVTTL-I	LPMode/TxDis	Low-Power Mode. Optionally configurable as TxDis via the management interface (SFF-8636).	
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

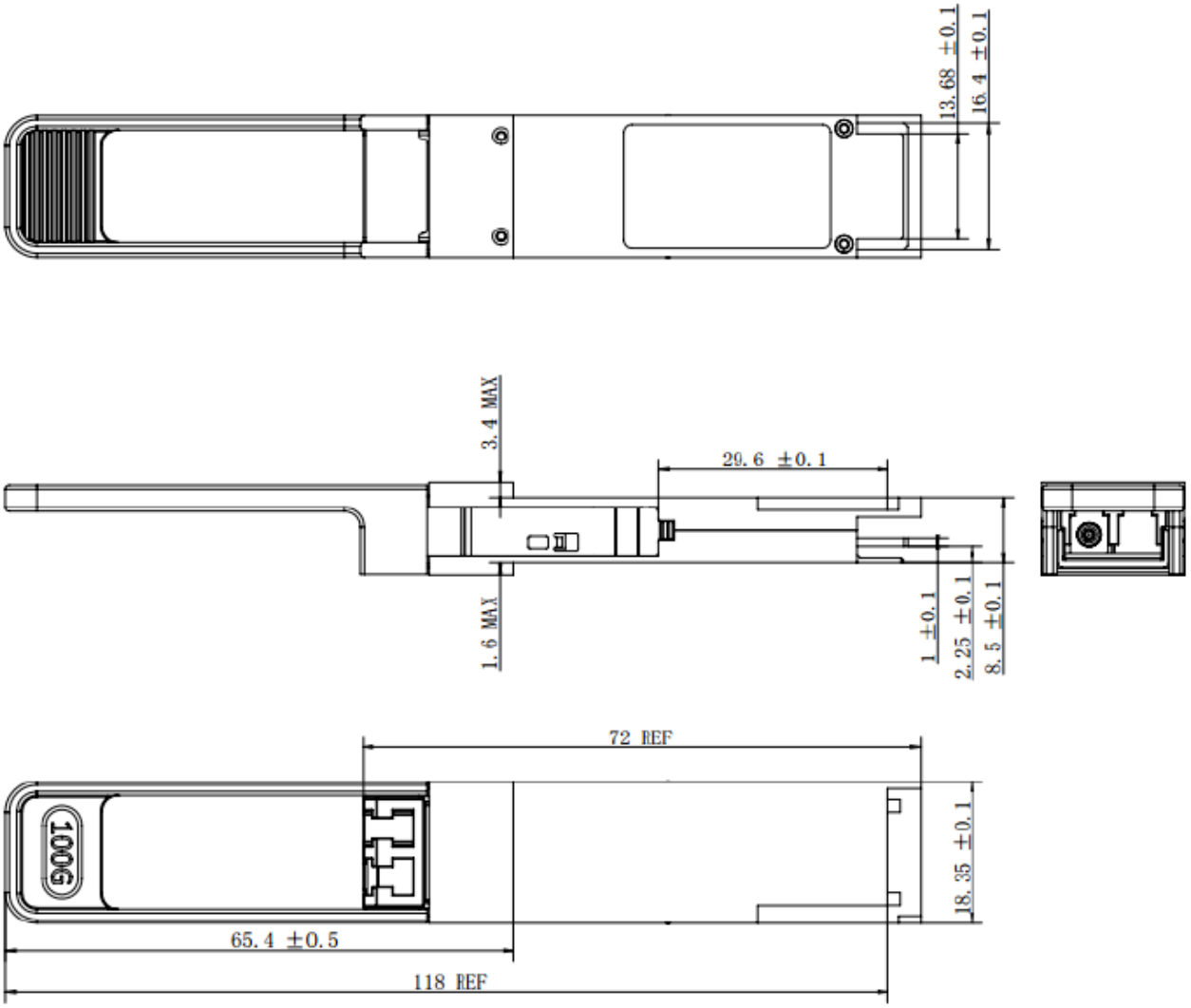
Notes:

1. GND is the symbol for signal and supply (power) common for QSFP28 modules. 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 transceiver module in any combination. The connector pins areeach rated for a maximum current of 1000mA.

Electrical Pin-Out Details



Mechanical Specifications



About ProLabs

Our extensive experience comes as standard. For over 20 years ProLabs has delivered optical connectivity solutions that give our customers freedom and choice through our ability to provide seamless interoperability. At the heart of our company is the ability to provide state-of-the-art optical transport and connectivity solutions that are compatible with more than 100 optical switching and transport platforms.

A Complete Portfolio of Network Solutions

ProLabs is focused on innovations in optical transport and connectivity. The combination of our knowledge of optics and networking equipment enables ProLabs to be your single source for optical transport and connectivity solutions from 100Mb to 1.6T while providing innovative solutions that increase network efficiency. We provide the optical connectivity expertise that is compatible with and enhances your switching and transport equipment.

The Trusted Partner

Customer service is our number one value. ProLabs has invested in people, labs and manufacturing capacity to ensure compatible products, and immediate answers to your questions. With Engineering and Manufacturing offices in the U.K. and U.S. augmented by field offices throughout the U.S., U.K. and Asia, ProLabs is able to be our customers best advocate 24 hours a day.

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