

Q28-100GP4-LR4BXD3129-20-J-C

Juniper Networks® Compatible TAA 100GBase-BX PAM4 QSFP28 Transceiver Single Lambda (SMF, 1311nmTx/1291nmRx, 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 1311nmTx/1291nmRx 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.")



Regulatory Compliance

- ESD to the Electrical PINs: compatible with MIL-STD-883E Method 3015.4.
- ESD to the LC Receptacle: compatible with IEC 61000-4-3.
- EMI/EMC: compatible with FCC Part 15 Subpart B Rules, EN55022:2010.
- Laser Eye Safety: compatible with FDA 21CFR, EN60950-1& EN (IEC) 60825-1, 2.
- RoHS: compliant with EU RoHS 2.0 directive 2015/863/EU.

Absolute Maximum Ratings

Parameter	Symbol	Min.	Typ.	Max.	Unit	Notes
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	
Relative Humidity	RH	5		85	%	
Damage Threshold	RX _{dmg}	5.5			dBm	

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}			4.5	W	
Transmitter						
Differential Data Input Swing Per Lane		900			mVp-p	
Differential Input Impedance	Z _{IN}	90	100	110	Ω	
DC Common-Mode Voltage (V _{cm})		-350		2850	mV	
Receiver						
Differential Output Amplitude				900	mVp-p	
Differential Output Impedance	Z _{OUT}	90	100	110	Ω	
Output Rise/Fall Time	T _r /T _f	12			ps	20-80%
Eye Width		0.57			UI	
Eye Height Differential		228			mV	@TP4, 1E ⁻¹⁵
DC Common-Mode Voltage (V _{cm})		-350		2850	mV	1

Notes:

1. V_{cm} 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	λ_C	1324.5	1331	1337.5	Nm	
Side-Mode Suppression Ratio	SMSR	30			dB	
Extinction Ratio	ER	3.5			dB	
Transmit OMA	TxOMA	0.7		4.7	dBm	
Transmit Average Power	TxAVG	-1.4		4.5	dBm	1
Launch Power in OMA _{outer} Minus TDECQ		-0.7			dBm	2
Launch Power in OMA _{outer} Minus TDECQ		-0.6			dBm	3
Transmitter and Dispersion Eye Closure	TDECQ			3.4	dB	
Launch Power of Off Transmitter Per Lane				-30	dBm	
Relative Intensity Noise	RIN			-136	dB/Hz	
Optical Return Loss Tolerance				15.6	dB	4
Transmitter Reflectance				-26	dB	
Receiver						
Signaling Speed			53.125		GBd	
Center Wavelength	λ_C	1264.5	1271	1277.5	Nm	
Damage Threshold		5.5			dBm	
Receive Power (OMA _{outer})	RxOMA			4.7	dBm	
Average Receive Power	RxAVG	-7.7		4.5	dBm	
Receiver Sensitivity (OMA _{outer})	SenOMA			MAX (-6.1, SECQ-7.5)	dBm	5
Stressed Sensitivity	SRS			-4.1	dBm	
Receiver Reflectance				-26	dB	
LOS Assert	LOSA	-26		-12	dBm	
LOS De-Assert	LOSD			-10	dBm	

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. For ER $\geq$ 4.5dB.
3. For ER<4.5dB.
4. Transmitter reflectance is defined looking into the transmitter.
5. Sensitivity is specified at 2.4×10^{-4} BER.

Pin Descriptions

Pin	Logic	Symbol	Name/Descriptions	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 Output.	
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	LVC MOS-I/O	SCL	2-Wire Serial Interface Clock.	
12	LVC MOS-I/O	SDA	2-Wire Serial Interface Data.	
13		GND	Module Ground.	
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	Interrupt.	
29		VccTx	+3.3V Transmitter Power Supply.	2
30		Vcc1	+3.3V Power Supply.	2
31	LVTTL-I	LPMode	Low-Power Mode.	
32		GND	Module Ground.	1
33	CML-I	Tx3+	Transmitter Non-Inverted Data Input.	
34	CML-I	Tx3-	Transmitter Inverted Data Output.	
35		GND	Module Ground.	1

36	CML-I	Tx1+	Transmitter Non-Inverted Data Input.	
37	CML-I	Tx1-	Transmitter Inverted Data Output.	
38		GND	Module Ground.	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. Recommended host board power supply filtering is shown below. VccRx, Vcc1, and VccTx may be internally connected within the QSFP28 transceiver module in any combination. The connector pins are each rated for a maximum current of 1000mA.

Electrical Pin-Out Details



Mechanical Specifications



About ProLabs

Our experience comes as standard; for over 15 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 over 90 optical switching and transport platforms.

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 400G 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.

Trusted Partner

Customer service is our number one value. ProLabs has invested in people, labs and manufacturing capacity to ensure that you get immediate answers to your questions and compatible product when needed. 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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