

## JNP-QSFP-100G-CWDML-C

Juniper Networks® JNP-QSFP-100G-CWDML Compatible TAA 100GBase-CWDM4 QSFP28 Transceiver (SMF, 1270nm to 1330nm, 500m, LC, 15 to 55C)

### Features:

- SFF-8636/ 8661/ 8679/ 8682 Compliance
- Duplex LC Connector
- Single-mode Fiber
- Single-mode Fiber
- Integrated CWDM DFB TOSA (1271,1291,1311,1331nm) and PIN ROSA
- Supports 25.78125Gbps Data rate per wavelength
- Build in CDR on both TX and RX
- DDM function implemented
- Hot pluggable QSFP28 form factor
- Operating case temperature: 15~55C
- Power consumption: 3.5W
- Single +3.3V power supply



### Applications:

- Ethernet over CWDM
- Access, Metro and Enterprise

### Product Description

This Juniper Networks® JNP-QSFP-100G-CWDML-XXX compatible QSFP28 transceiver provides 100GBase-CWDM4 throughput up to 500m over single-mode fiber (SMF) using wavelengths between 1270nm to 1330nm via an LC connector. It is guaranteed to be 100% compatible with the equivalent Juniper Networks® transceiver. This easy to install, hot swappable transceiver has been programmed, uniquely serialized and data-traffic and application tested to ensure that it will initialize and perform identically. Digital optical monitoring (DOM) support is also present to allow 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.

ProLabs's 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
Maximum Supply Voltage	V <sub>cc</sub>	-0.5		3.6	V
Storage Temperature	T <sub>S</sub>	-40		85	°C
Operating Case Temperature	T <sub>c</sub>	15	25	55	°C
Relative Humidity (non-condensing)	RH	5		85	%
Receiver Damage Threshold, each lane	P <sub>max</sub>	3.5			dBm

### Recommended Operating Conditions

Parameter	Symbol	Min.	Typ.	Max.	Unit
Operating Case Temperature	T <sub>c</sub>	15	25	55	°C
Power Supply Voltage	V <sub>cc</sub>	3.135	3.3	3.465	V
Power Dissipation	P <sub>D</sub>			3.5	W
Total Data Rate			103.125		Gbps
Data Rate, each lane			25.78125		Gbps
Transmission Distance				0.5	km

## Optical and Electrical Characteristics

Parameter	Symbol	Min.	Typ.	Max.	Unit	Notes	
<b>Transmitter</b>							
Bit Rate, each Lane		25.78125±100ppm			Gbps		
Line Wavelengths (Range)	CH0	$\lambda_0$	1264.5		1277.5	nm	
	CH1	$\lambda_1$	1284.5		1297.5	nm	
	CH2	$\lambda_2$	1304.5		1317.5	nm	
	CH3	$\lambda_3$	1324.5		1337.5	nm	
Side Mode Suppression Ratio	SMSR	30			dB		
Average Launch Power, each lane	$P_{TX}$	-6.5		2.5	dBm		
Transmitter Optical Modulation Amplitude (OMA), each lane	OMA	-4		2.5	dBm		
Extinction Ratio	ER	3.5			dB		
Average Launch Power of OFF Transmitter, each lane				-30	dBm		
Transmitter Reflectance				-12	dB		
Input Differential Impedance, each lane			100		$\Omega$		
Transmitter Eye Mask Definition {X1, X2, X3, Y1, Y2, Y3}		{0.31, 0.4, 0.45, 0.34, 0.38, 0.4}				1	
<b>Receiver</b>							
Bit Rate, each Lane		25.78125±100ppm			Gbps		
Line wavelengths (range)	CH0	$\lambda_0$	1264.5		1277.5	nm	
	CH1	$\lambda_1$	1284.5		1297.5	nm	
	CH2	$\lambda_2$	1304.5		1317.5	nm	
	CH3	$\lambda_3$	1324.5		1337.5	nm	
Average receive power, each lane		-11.5		2.5	dBm		
Unstressed Receiver Sensitivity (OMA), each lane				-10	dBm	2	

### Notes:

1. Eye mask hit ratio  $5 \times 10^{-5}$ .
2. Receiver sensitivity is informative. Measured with 25.78125Gb/s, PRBS31 NRZ, BER= $5 \times 10^{-5}$ .

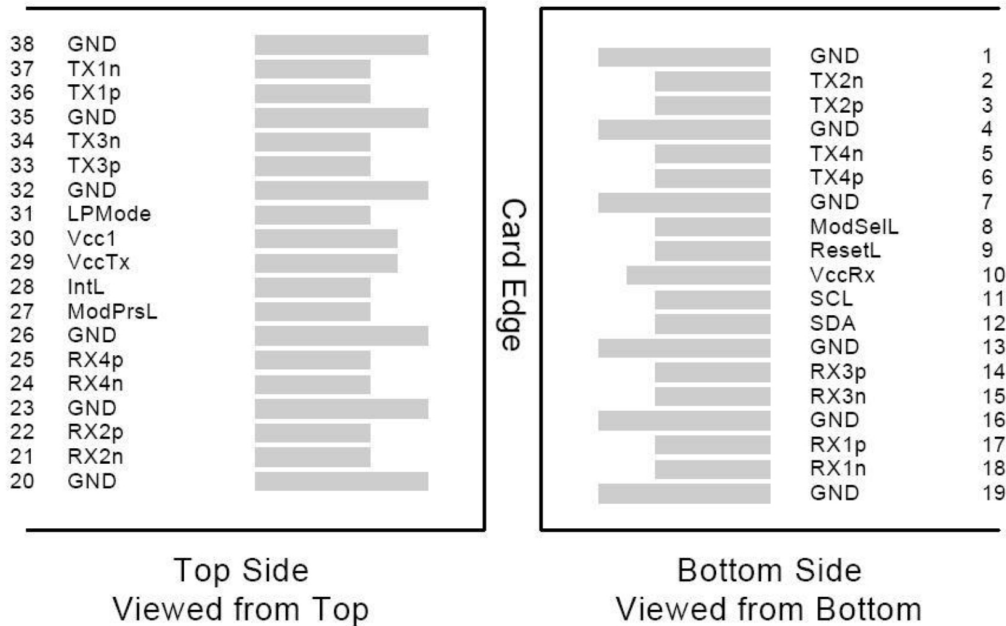
## Pin Descriptions

Pin	Symbol	Name/Descriptions	Ref.
1	GND	Ground	1
2	Tx2n	Transmitter Inverted Data Input	
3	Tx2p	Transmitter Non-Inverted Data output	
4	GND	Ground	1
5	Tx4n	Transmitter Inverted Data Input	
6	Tx4p	Transmitter Non-Inverted Data output	
7	GND	Ground	1
8	ModSelL	Module Select	
9	ResetL	Module Reset	
10	VccRx	+3.3V Power Supply Receiver	2
11	SCL	2-Wire Serial Interface Clock	1
12	SDA	2-Wire Serial Interface Data	
13	GND	Ground	
14	Rx3p	Receiver Non-Inverted Data output	
15	Rx3n	Receiver Inverted Data output	
16	GND	Ground	1
17	Rx1p	Receiver Non-Inverted Data output	
18	Rx1n	Receiver Inverted Data output	
19	GND	Ground	1
20	GND	Ground	1
21	Rx2n	Receiver Inverted Data output	
22	Rx2p	Receiver Non-Inverted Data output	
23	GND	Ground	1
24	Rx4n	Receiver Inverted Data output	1
25	Rx4p	Receiver non-Inverted Data output	
26	GND	Ground	1
27	ModPrsL	Module Present	
28	IntL	Interrupt	
29	VccTx	+3.3V Power Supply Transmitter	2
30	VccI	+3.3V Power Supply	2
31	LPMode	Low Power Mode	
32	GND	Ground	1
33	Tx3p	Transmitter Non-Inverted Data input	
34	Tx3n	Transmitter Inverted Data output	
35	GND	Ground	1
36	Tx1p	Transmitter Non-Inverted Data input	
37	Tx1n	Transmitter Inverted Data output	
38	GND	Ground	1

**Notes:**

1. GND is the symbol for signal and supply (power) common for QSPF28 modules. All are common within the QSPF28 module and all module voltages are referenced to this potential unless otherwise noted. Connected these directly to the host board signal common ground plane.
2. VccRx, Vcc1 and VccTx are the receiving and transmission power suppliers and shall be applied concurrently. VccRx, Vcc1 and VccTx may be internally connected within the QSPF28 transceiver module in any combination. The connector pins are each rated for a maximum current of 1000mA.

**Electrical Pin-out Details**



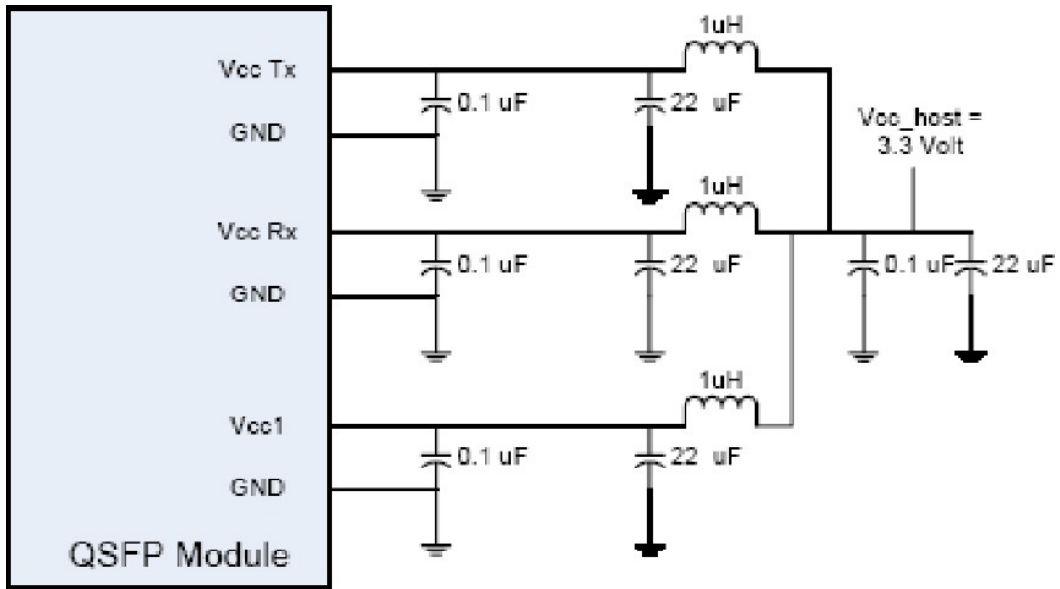
**Digital Diagnostic Functions**

Parameter	Symbol	Min.	Typ.	Max.	Unit	Notes
Temperature monitor absolute error	DMI_Temp	-3		3	°C	1
Supply voltage monitor absolute error	DMI_Vcc	-3%		3%	V	2
Bias current monitor absolute error	DMI_Ibias	-10%		10%	mA	
Laser power monitor absolute error	DMI_Tx	-3		3	dB	
RX power monitor absolute error	DMI_Rx	-3		3	dB	

**Notes:**

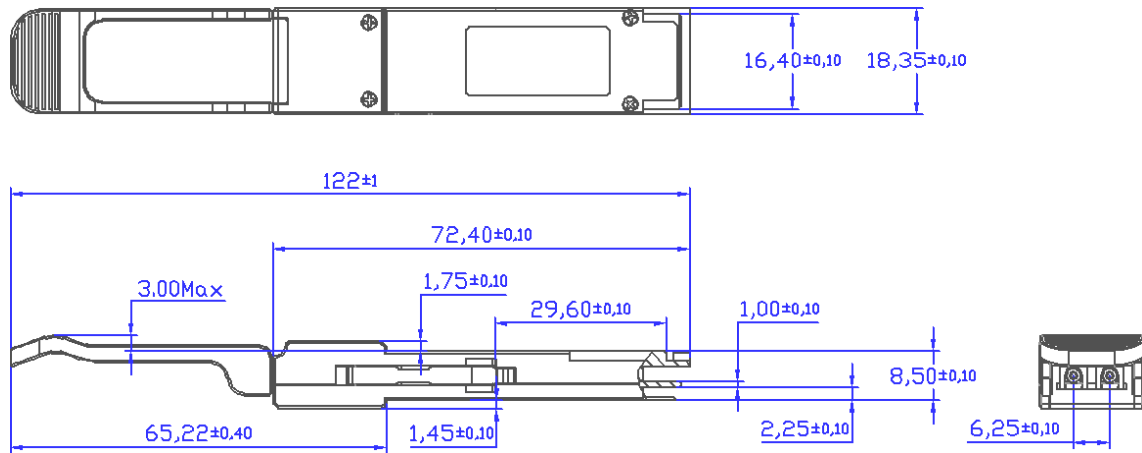
1. Over operating temperature
2. Over operating voltage

**Recommended Interface Circuit**



**Mechanical Specifications**

Measurement unit: mm





## **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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