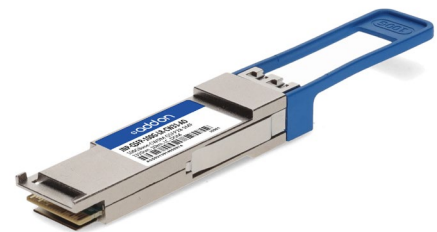


## JNP-QSFP-100G-LR-CW31-AO

Juniper Networks® JNP-QSFP-100G-LR-CW31 Compatible TAA Compliant 100GBase-CWDM QSFP28 Single Lambda Transceiver (SMF, 1310nm, 10km, LC, DOM, with FEC)

### Features:

- Supports 100Gbps
- 100G Lambda MSA 100G-LR Specification Compliant
- Single 3.3V Power Supply
- Power Dissipation < 4.5W
- Up to 10km over SMF with FEC
- QSFP28 MSA Compliant
- SFF-8636 Rev 2.10a Compliant
- 4x25G Electrical Interface
- LC Duplex Connector
- Operating Case Temperature: 0°C to 70°C
- I<sup>2</sup>C Interface with Integrated Digital Diagnostic Monitoring
- RoHS compliant



### Applications:

- 100G Ethernet
- Data Center

### Product Description

This Juniper Networks® JNP-QSFP-100G-LR-CW31 compatible QSFP28 transceiver provides 100GBase-CWDM throughput up to 10km over single-mode fiber (SMF) using a single lambda wavelength of 1310nm 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.

AddOn'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

### CWDM Available Wavelengths

Wavelengths	Min.	Typ.	Max.
27	1264.5	1271	1277.5
29	1284.5	1291	1297.5
31	1304.5	1311	1317.5
33	1324.5	1331	1337.5

### Absolute Maximum Ratings

Parameter	Symbol	Min.	Typ.	Max.	Unit
Maximum Supply Voltage	Vcc	-0.5		4.0	V
Storage Temperature	TS	-40		+85	°C
Operating Case Temperature	Tc	0		70	°C
Operating Relative Humidity	RH	5		85	%
Damage threshold	Rxdmg	5.5			dBm

## Electrical Characteristics

Parameter	Symbol	Min.	Typ.	Max.	Unit	Notes
Power Supply Voltage	Vcc	3.135	3.3	3.465	V	
Power Dissipation	PD			4.5	W	
<b>Transmitter</b>						
Differential data input swing per lane		900			mV <sub>p-p</sub>	
Differential input impedance	Zin	90	100	110	ohm	
DC common mode voltage (Vcm)		-350		2850	mV	
<b>Receiver</b>						
Differential output amplitude				900	mV <sub>p-p</sub>	
Differential output impedance	Zout	90	100	110	ohm	
Output Rise/Fall Time	t <sub>r</sub> /t <sub>f</sub>	12			ps	20%~80%
AC Common Mode Output Voltage				7.5	mV	
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	
<b>Transmitter</b>							
Signaling speed			53.125		Gbaud		
Modulation format		PAM4					
Optical center wavelength	$\lambda$	$\lambda_c - 6.5$	$\lambda_c$	$\lambda_c + 6.5$	nm		
Side-mode suppression ratio	SMSR	30			dB		
Extinction ratio	ER	3.5			dB		
Transmit OMA	TxOMA	0.7		4.7	dBm		
Transmit average	TxAVG	-1.4		4.5	dBm	1	
Launch power in OMA <sub>outer</sub> minus TDECQ		-0.7			dBm	2	
Launch power in OMA <sub>outer</sub> minus TDECQ		-0.6			dBm	3	
Transmitter and dispersion eye closure	TDECQ			3.4	dB		
Optical return loss tolerance				15.6	dB	4	
<b>Receiver</b>							
Signaling speed			53.125		Gbaud		
Damage threshold		5.5			dBm		
Receive power (OMA <sub>outer</sub> )	RxOMA			4.7	dBm		
Average receive power	RxAVG	-7.7		4.5	dBm		
Receiver sensitivity (OMA <sub>outer</sub> )	SenOMA			Max(-6.1, SECQ-7.5)	dBm	5	
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 (min) 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  $ER \geq 4.5$ dB
3. For  $ER < 4.5$ dB
4. Transmitter reflectance is defined looking into the transmitter.
5. Sensitivity is specified at  $2.4 \times 10^{-4}$  BER.

## Pin Descriptions

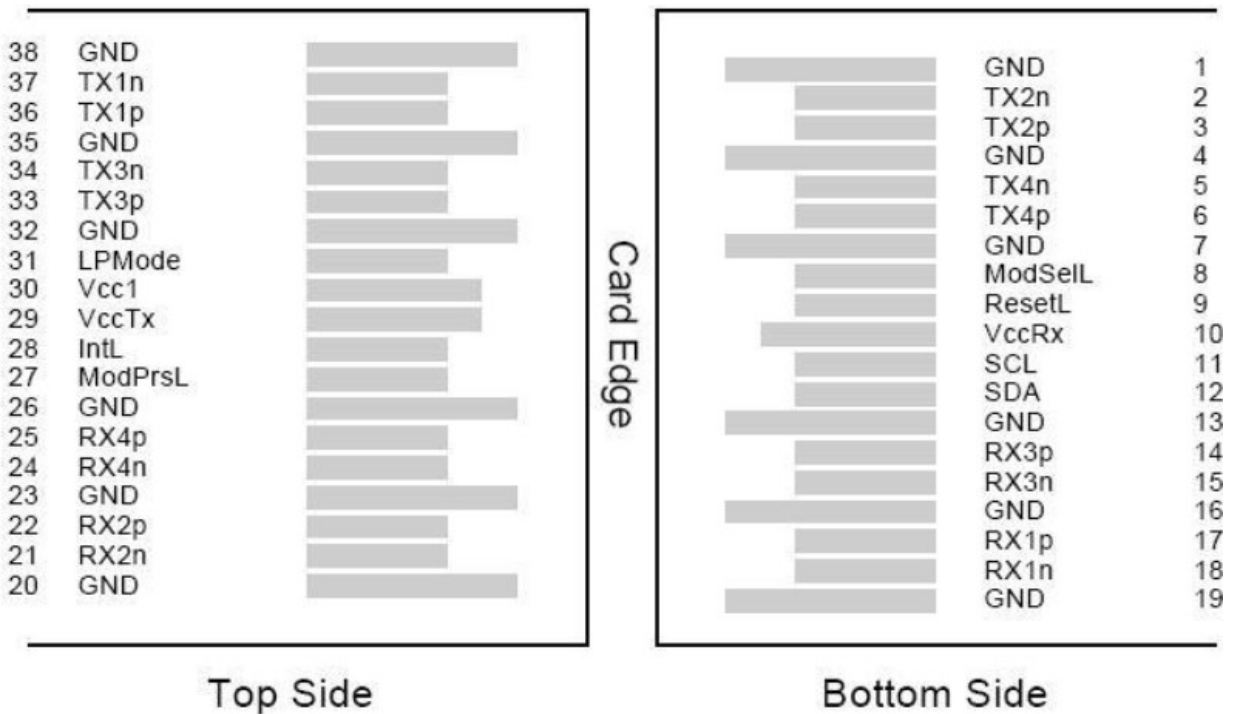
Pin	Symbol	Name/Descriptions	Ref.
1	GND	Transmitter Ground (Common with Receiver Ground)	1
2	Tx2-	Transmitter Inverted Data Input	
3	Tx2+	Transmitter Non-Inverted Data output	
4	GND	Transmitter Ground (Common with Receiver Ground)	1
5	Tx4-	Transmitter Inverted Data Input	
6	Tx4+	Transmitter Non-Inverted 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	1
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 power supply transmitter	
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

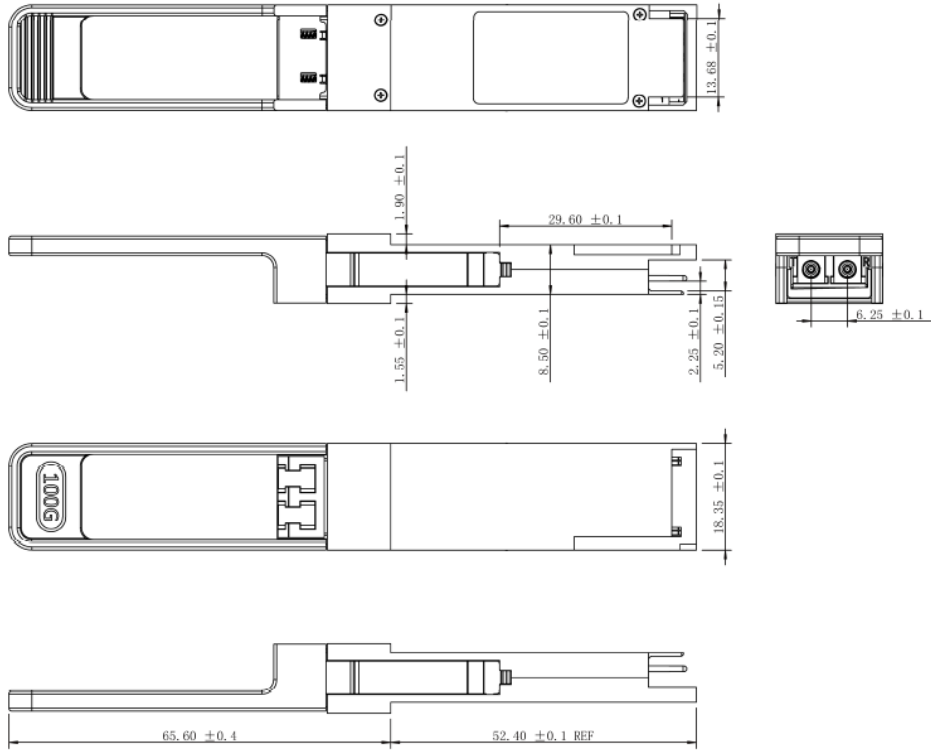
**Notes:**

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 4.7KΩ to 10KΩ pull-up resistor to Vcchost.

**Electrical Pin-out Details**



# Mechanical Specifications



## **About AddOn Networks**

In 1999, AddOn Networks entered the market with a single product. Our founders fulfilled a severe shortage for compatible, cost-effective optical transceivers that compete at the same performance levels as leading OEM manufacturers. Adhering to the idea of redefining service and product quality not previously had in the fiber optic networking industry, AddOn invested resources in solution design, production, fulfillment, and global support.

Combining one of the most extensive and stringent testing processes in the industry, an exceptional free tech support center, and a consistent roll-out of innovative technologies, AddOn has continually set industry standards of quality and reliability throughout its history.

Reliability is the cornerstone of any optical fiber network and is engrained in AddOn's DNA. It has played a key role in nurturing the long-term relationships developed over the years with customers. AddOn remains committed to exceeding industry standards with certifications from ranging from NEBS Level 3 to ISO 9001:2005 with every new development while maintaining the signature reliability of its products.

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