XCVR-Q10V31-C

Ciena® Compatible TAA 100GBase-LR4 QSFP28 Transceiver (SMF, 1295nm to 1309nm, 10km, LC, DOM)

Features:

- SFF-8665 Compliance
- Duplex LC Connector
- Single-mode Fiber
- Commercial Temperature 0 to 70 Celsius
- Hot Pluggable
- Metal with Lower EMI
- Excellent ESD Protection
- RoHS Compliant and Lead Free

Applications:

- 100GBase Ethernet
- Access and Enterprise

Product Description

This Ciena® compatible QSFP28 transceiver provides 100GBase-LR4 throughput up to 10km 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 Ciena®. 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.

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

Absolute Maximum Ratings

Parameter	Symbol	Min.	Typ.	Max.	Unit
Maximum Supply Voltage	Vcc	-0.5		3.6	V
Storage Temperature	TS	-40		85	°C
Operating Case Temperature	Tc	0	25	70	°C
Operating Humidity	RH	5		85	%
Receiver Damage Threshold, per Lane	Rxdmg	5.5			dBm

Electrical Characteristics

Parameter	Symbol	Min.	Typ.	Max.	Unit	Notes
Power Dissipation	PD			3.5	W	
Power Supply Voltage	Vcc	3.135	3.3	3.465	V	
Transmitter						
Differential data input swing per lane	Vin			900	Mvp-p	
Input Impedance (Differential)	Zin			10	%	
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 Impedance (Differential)	Zout			10	%	
Output Rise/Fall Time	tr/tf	12			ps	20%~80%
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		
Lane_0 Center Wavelength	λC0	1294.53	1295.56	1296.59	nm	
Lane_1 Center Wavelength	λC1	1299.02	1300.05	1301.09	nm	
Lane_2 Center Wavelength	λC2	1303.54	1304.58	1305.63	nm	
Lane_3 Center Wavelength	λC3	1308.09	1309.14	1310.19	nm	
Average Launch Power each Lane	P_{each}	-4.3		4.5	dBm	1
Optical Modulation Amplitude (OMA) each Lane	TxOMA	-1.3		4.5	dBm	
Difference in launch power between any two lanes (OMA)				5	dB	
Launch power in OMA minus TDP, each lane		-2.3			dBm	
Transmitter and dispersion penalty (TDP), each lane				2.2	dB	
Extinction Ratio	ER	4			dB	
Side-mode Suppression ratio	SMSRmin	30			dB	
Average launch power of OFF transmitter per lane				-30	dBm	
Relative Intensity Noise	RIN			-130	dB/hz	
Transmitter Reflectance				-12	dB	
Optical Return Loss Tolerance				20	dB	
Transmitter eye mask definitions: X1, X2, X3, Y1, Y2, Y3	0.25, 0.4, 0.45, 0.25, 0.28, 0.4					2
Receiver						
Signaling Speed per Lane	BRAVE		25.78		Gbps	
Data Rate Variation		-100		+100	ppm	
Damage threshold per lane	Rxdmg	5.5			dBm	
Lane_0 Center Wavelength	λC0	1294.53	1295.56	1296.59	nm	
Lane_1 Center Wavelength	λC1	1299.02	1300.05	1301.09	nm	
Lane_2 Center Wavelength	λC2	1303.54	1304.58	1305.63	nm	
Lane_3 Center Wavelength	λC3	1308.09	1309.14	1310.19	nm	
Average Receive Power per Lane	Rxpow	-10.6		4.5	dBm	3
Receive Power (OMA) per Lane	RxOMA			4.5	dBm	
Receive Sensitivity in OMA per Lane	Rxsens			-8.6	dBm	
Receiver 3 dB electrical upper cutoff frequency, per lane				31	GHz	
Stressed Receiver Sensitivity (OMA) per Lane	RXSRS			-6.8	dBm	4

Optical Return Loss	ORL			-26	dB	
LOS Assert	LOSA	-25			dBm	
LOS De-Assert	LOSD			-12	dBm	
LOS Hysteresis		0.5			dB	
Conditions of stressed receiver sensitivity test						
Vertical eye closure penalty	VECP	1.8			dB	5
Stressed eye J2 Jitter	J2	0.3			UI	5
Stressed eye J9 Jitter	J9	0.47			UI	5

Notes:

1. Average launch power, each lane (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. Hit ratio $5x10^{-5}$.
3. Average receive power, each lane (min) 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.
4. Measured with conformance test signal at TP3 for BER = 10–12.
5. Vertical eye closure penalty, stressed eye J2 Jitter, and stressed eye J9 Jitter are test conditions for measuring stressed receiver sensitivity. They are not characteristics of the receiver.

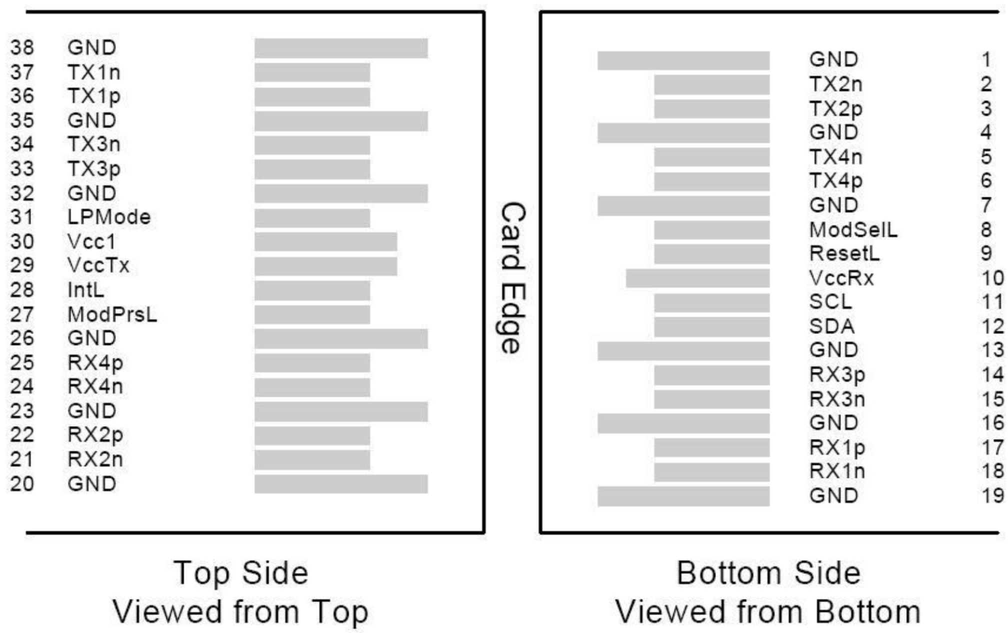
Pin Descriptions

Pin	Logic	Symbol	Name/Descriptions	Ref.
1		GND	Module Ground	1
2	CML-I	Tx2-	Transmitter inverted data input	
3	CML-I	Tx2+	Transmitter non-inverted data input	
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	LVTTL-I	MODSEIL	Module Select	2
9	LVTTL-I	ResetL	Module Reset	2
10		VCCRx	+3.3v Receiver Power Supply	
11	LVCMOS-I	SCL	2-wire Serial interface clock	2
12	LVCMOS-I/O	SDA	2-wire Serial interface data	2
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	
25	CML-O	RX4+	Receiver non-inverted data output	
26		GND	Module Ground	1
27	LVTTL-O	ModPrsL	Module Present, internal pulled down to GND	
28	LVTTL-O	IntL	Interrupt output, should be pulled up on host board	2
29		VCCTx	+3.3v Transmitter Power Supply	
30		VCC1	+3.3v Power Supply	
31	LVTTL-I	LPMode	Low Power Mode	2
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

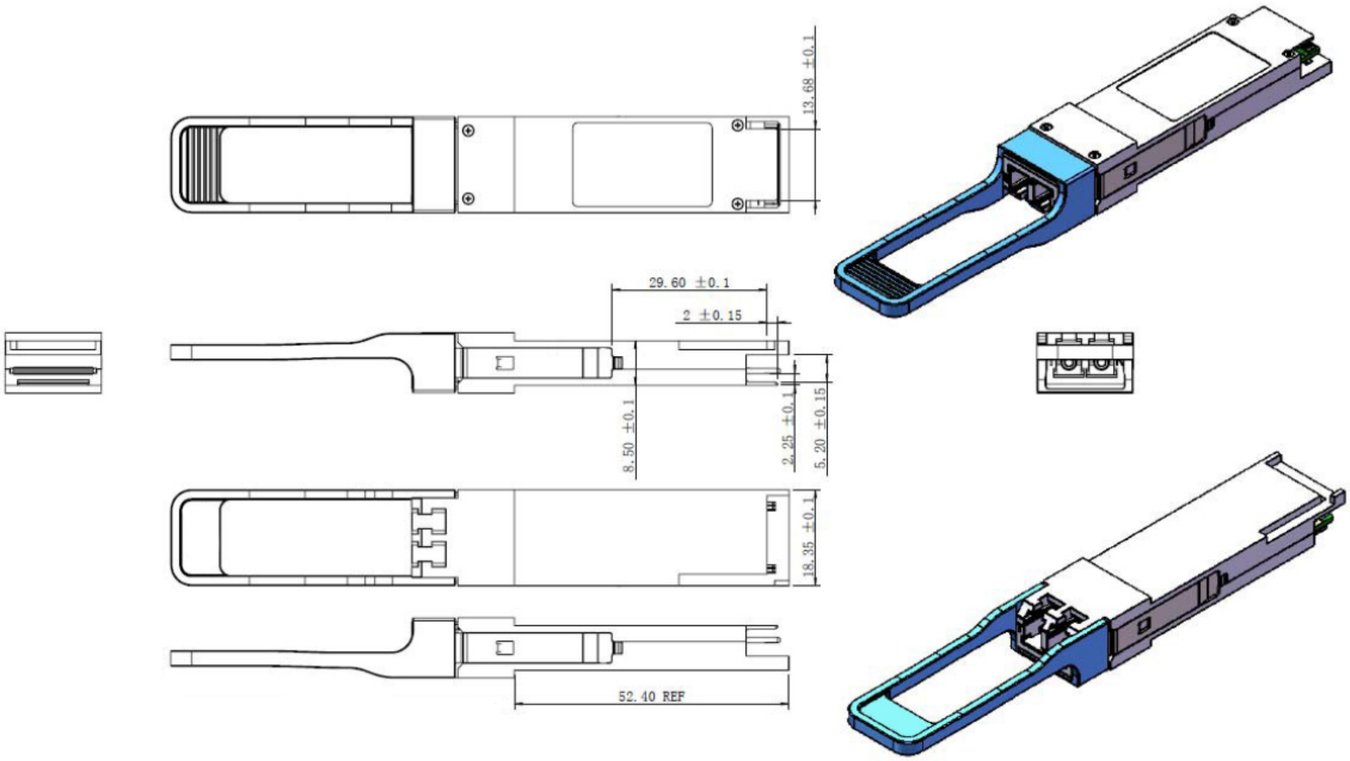
Notes:

1. Module circuit ground is isolated from module chassis ground with in the module.
2. Open collector; should be pulled up with 4.7k-10k ohms on host board to a voltage between 3.15V and 3.6V.

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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