

# 4L-Q100CW4-02

QSFP28 100GBASE-CWDM4, SM, DDM, LC, 2Km



## Applications

- Compliant with 100GBASE-CWDM4 Ethernet
- Up to 103.1 Gbps Bit Rate
- Datacenter backbones
- High-speed servers
- 4 CWDM MUX/DEMUX Desing
- SAN, Routers, Hubs, Load Balancer
- High-performance Computing Clusters
- Other optical links

## Features

- QSFP28 100G Optical Transceiver
- QSFP28 MSA Compliant
- Up to 2Km links on SMF
- DFB laser transmitter
- Duplex LC receptacles
- 100G CWDM4 MSA Technical Spec Rev1.1
- 4x25G electrical interface (OIF CEI28G-VSR)
- Digital Diagnostic Monitoring
- RoHS-6 and Lead Free
- Operating temperature: 0°C ~ +70°C

## Description

The 4L-Q100CW4-02 is a QSFP28 transceiver module with four CWDM channel full duplex for singlemode (SMF) 100GBASE-CWDM4 / 100 Gigabit optical data communications. This modules are compatible with most switch/router/server brands and designed to operate with single mode fiber (SMF) and Duplex LC connectors, using 4 CWDM channels of 25Gb/s for up to 2km reach.

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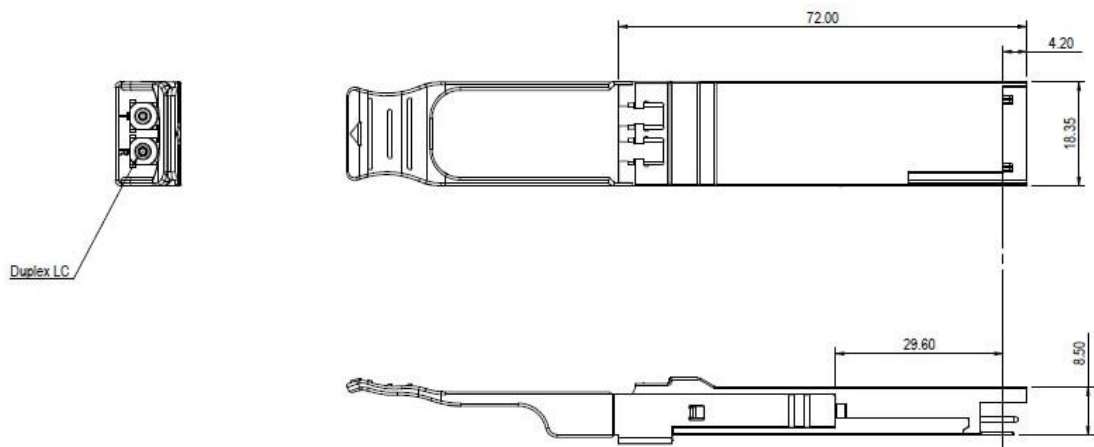
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## General Specifications – Absolute Maximum Ratings

Parameter	Symbol	Min	Typ	Max
Max Link Length	L <sub>max</sub>			2Km on SMF with FEC
Supply Voltage	V <sub>cc</sub>	-0.5		+4.0
Storage Temperature	T <sub>s</sub>	-40		85
Case Operating Temperature	T <sub>OP</sub>	0°C		70°C
Relative Humidity	RH	15		85%
Receiver Damage Threshold, per Lane	pR <sub>dmg</sub>	3.5		
Bit Rate (all wavelngths)	BR			103.1Gb/s
Bit Error Ratio – pre FEC	BER			10 <sup>-12</sup>

## Mechanical Specifications



## Optical Specifications - Transmitter

Parameter	Symbol	Min	Typ	Max	Unit
Signaling Speed per lane		25.78125±100ppm			Gb/s
Total Output Optical Power	$P_T$			8.5	dBm
Average Launch Power (Each Lane)	$P_{TX}$	-6.5		2.5	dBm
Optical Center Wavelength (L0 Lane)	$\lambda_C$	1264.5	1271	1277.5	nm
Optical Center Wavelength (L1 Lane)	$\lambda_C$	1284.5	1291	1297.5	nm
Optical Center Wavelength (L2 Lane)	$\lambda_C$	1304.5	1311	1317.5	nm
Optical Center Wavelength (L3 Lane)	$\lambda_C$	1324.5	1331	1337.5	nm
Optical Modulation Amplitude(Each Lane)	OMA	-4		2.5	dB
Extinction Ratio	ER	3.5			dB
Side Mode Suppression Ratio	SMSR	30			dB
Relative Intensity Noise	RIN			-130	dB/Hz
Transmitter Dispersion Penalty	TDP			1.8	dB
Optical Return Loss Tolerance				20	dB
Transmitter Eye Mask		Compliant with IEEE 802.3ba			

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Optical Center Wavelength (L2 Lane)	$\lambda_c$	1304.5	1311	1317.5	nm
Optical Center Wavelength (L3 Lane)	$\lambda_c$	1324.5	1331	1337.5	nm
Optical Input Power, each lane	P <sub>RX</sub>	-11.5		2.5	dBm
Receiver Sensitivity (OMA), each Lane	R <sub>X_SEN1</sub>			-10	dBm
Damage Threshold, each Lane	T <sub>Hd</sub>	3.5			dBm
LOS Assert	LOS <sub>A</sub>	-30			dBm
LOS De-Assert	LOS <sub>D</sub>			-12	dBm
LOS Hysteresis	LOS <sub>H</sub>	0.5			dB

## Electrical Specifications - Transmitter

Parameter	Symbol	Min	Typ	Max	Unit
Signaling Rate per lane		25.78125±100ppm			Gb/s
Differential data input swing	v <sub>IN_PP</sub>	100		1100	mV
Transmit disable voltage	V <sub>D</sub>	V <sub>CC</sub> -1.3		v <sub>CC</sub>	V
Transmit enable voltage	v <sub>EN</sub>	v <sub>EE</sub>		V <sub>EE</sub> +0.8	V

## Electrical Specifications - Receiver

Parameter	Symbol	Min	Typ	Max	Unit
Signaling Rate per lane		25.78125±100ppm			Gb/s
Differential data output swing	v <sub>OUT_PP</sub>	200		900	mV
Data output rise time (20%-80%)	t <sub>r</sub>		12		ps
Data output fall time (20%-80%)	t <sub>f</sub>		12		ps
LOS Fault	LOS <sub>A</sub>	V <sub>CC</sub> -1.3		v <sub>CC_HOST</sub>	V
LOS Normal	LOS <sub>D</sub>	v <sub>EE</sub>		V <sub>EE</sub> +0.5	V

## Ordering Information

Part Number	Description
4L-Q100SR4-M100	QSFP28 100GBASE-SR4, 850nm, MM, DDM, MPO/MTP, 100m
4L-Q100BSR4-100	QSFP28 100GBASE-SR4, 850/900nm, BiDi MM, DDM, LC, 150m
4L-Q100CW4-02	QSFP28 100GBASE-CWDM4, LC, DDM, SM 2km.
4L-Q100PLR4-M02	QSFP28 100GBASE-PLR4, 1310nm, SM, DDM, MPO/MTP, 2km
4L-Q100LR4-10	QSFP28 100GBASE-LR4, 1310nm, SM, DDM, Duplex LC, 10Km
4L-Q100LR4-20	QSFP28 100GBASE-LR4, 1310nm, SM, DDM, Duplex LC, 20Km
4L-Q100ER4-40	QSFP28 100GGBASE-ER4, 1310nm, SM, DDM, Duplex LC, 40Km
4L-Q100ZR4-70	QSFP28 100GGBASE-ZR4, 1310nm, SM, DDM, Duplex LC, 70Km
4L-Q100ZR4-80	QSFP28 100GGBASE-ZR4, 1310nm, SM, DDM, Duplex LC, 80Km

### Note

This modules have been tested by 4LAN on equipment like Cisco, Juniper, Dell, HP, Mikrotik, Huawei, and other brands. The equipment brand must be informed before shipping the order, so the transceivers are reprogrammed to the corresponding brand.

### Contact Information

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