

4L-Q40GLR4-L10

QSFP+ 40GBASE-LR4, 1310nm, CWDM, SM, DDM, LC Duplex, 10Km



Applications

- Compliant with 40GBASE-LR4 Ethernet
- Infiniband QDR
- Datacenter backbones
- Metro Networks
- High-speed servers
- CWDM 4 Channels
- SAN, Routers, Hubs, Load Balancer
- High-performance Computing Clusters
- Other optical links

Features

- QSFP+ 40G Optical Transceiver
- QSFP+ MSA2 Compliant
- Up to 10Km links on SMF
- DFB laser transmitter
- LC Duplex
- 4x Tx and 4x Rx using CWDM
- Digital Diagnostic Monitoring
- XLPP electrical interface
- RoHS-6 and Lead Free
- Operating temperature: 0°C ~ +70°C

Description

The 4L-Q40GLR4-L10 is a QSFP+ four CWDM channel full duplex transceiver module for singlemode fiber(SMF) 40GBASE-LR4 optical data communications.

This modules are compatible with most switch/router/server brands and designed to operate with single mode fiber and LC Duplex connectors, using the wavelengths 1271nm, 1291nm, 1311nm and 1331nm for up to 10km depending on the fiber loss.

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General Specifications – Absolute Maximum Ratings

Parameter	Symbol	Min	Recommended	Max
Data Rate Per Channel			10.3125Gbps	11.2Gbps
Max.LinkLength	l_{max}			10Km
Optical Budget	dB	8dB		
Storage Temperature	Tc	-40°C		+85°C
Operating Case Temperature	Tc	0°C		+70°C
Supply Voltage	Vcc	-0.5V	3.3V	3.6V

Optical Specifications

Parameter	Symbol	Min	Typ.	Max	Unit	Ref.
Transmitter						
Signaling Speed per Lane				11.2	GBd	
Wavelength Assignment	L0	1264.5	1271	1277.5		
	L1	1284.5	1291	1297.5		
	L2	1304.5	1311	1317.5		
	L3	1324.5	1331	1337.5		
Total Average Launch Power	P _{OUT}			+8.3	dBm	
Transmit OMA per Lane	T _{xOMA}	-4dBm		+3.5	dBm	
Average launch power per Lane	T _{xP_x}	-2.3dBm		+2.3dBm	dBm	
Average launch power of OFF transmitter, per Lane				-30dBm	dBm	
Relative Intensity Noise	RIN			-128	dB Hz	
Sidemode Suppression ratio	SSR _{min}	30			dB	
Optical Extinction Ratio	ER	4.5			dB	
Optical Return Loss Tolerance				20	dB	
Transmitter Reflectance				-12	dB	
Transmitter eye mask definition {X1, X2, X3, Y1, Y2, Y3}		0.25, 0.4, 0.45, 0.25, 0.28, 0.4				

Parameter	Symbol	Min	Typ.	Max	Unit	Ref.
Receiver						
Signaling Speed per Lane				11.2	GBd	
Wavelength Assignment	L0	1264.5	1271	1277.5		
	L1	1284.5	1291	1297.5		
	L2	1304.5	1311	1317.5		
	L3	1324.5	1331	1337.5		
Total Average Receive Power	PIN			+8.3	dBm	
Receive Power (OMA) per Lane	RxOMA			+3.5	dBm	
Average Receive power per Lane	RXP _x	-13.7		+2.3	dBm	
Receiver Sensitivity (OMA) per Lane	Rxsens			-11.5	dBm	
Stressed Receiver Sensitivity(OMA) per Lane	SSRmin			-9.6	dBm	
Damage Threshold per Lane	P _{MAX}			+3.4	dBm	
Return Loss	RL			-26	dB	
Vertical eye closure penalty, per lane				+1.9	dB	
Receive electrical 3 dB upper cutoff frequency, per lane				12.3	GHz	
LOSDe-Assert	LOS _D			-15	dBm	
LOSAssert	LOS _A	-28			dBm	
LOSHysteresis					dB	

Electrical Specifications

Parameter	Symbol	Min	Typ	Max	Unit	Note
Data Rate per Channel		-	10.3125	11.2	Gbps	
Power Consumption		-	2.5	3.5	W	
Supply Current	I _{cc}		0.75	1.0	A	
Control I/O Voltage-High	V _{IH}	2.0		V _{cc}	V	
Control I/O Voltage-Low	V _{IL}	0		0.7	V	
Inter-Channel Skew	TSK			150	Ps	
RESETL Duration			10		Us	
RESETL De-asserttime				100	ms	
Power On Time				100	ms	
Transmitter						
Single Ended Output Voltage Tolerance		0.3		4	V	1
Common mode Voltage Tolerance		15			mV	
Transmit Input Diff Voltage	V _I	150		1200	mV	
Transmit Input Diff Impedance	Z _{IN}	85	100	115		
Data Dependent Input Jitter	DDJ		0.3		UI	
Receiver						
Single Ended Output Voltage Tolerance		0.3		4	V	
Rx Output Diff Voltage	V _o	370	600	950	mV	
Rx Output Rise and Fall Voltage	Tr/Tf			35	ps	1
Total Jitter	TJ		0.3		UI	

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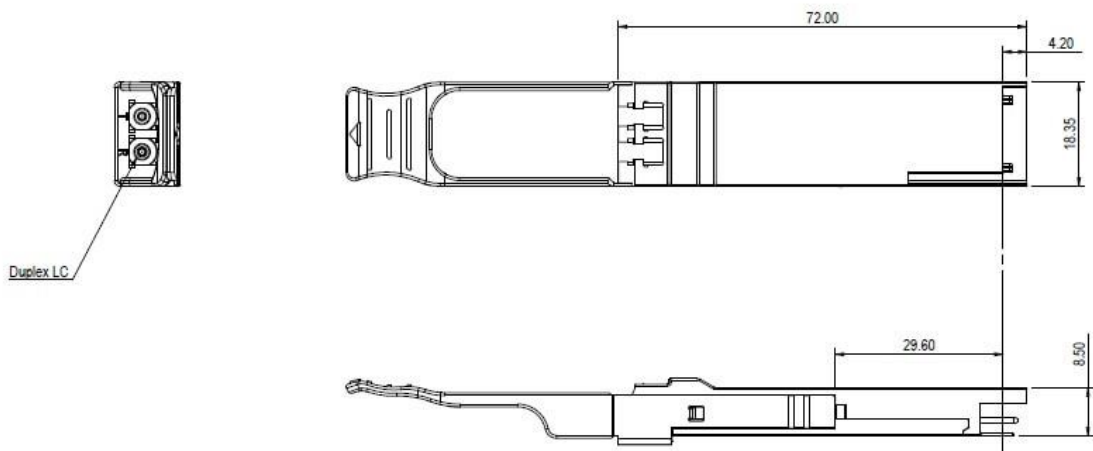
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Electrical Specifications

AC common mode output voltage (RMS)				mV
Termination mismatch at 1 MHz				
Differential output return loss	Per IEEE P	ba Section	A	dB
Common mode output return loss	Per IEEE P	ba Section	A	dB
Output transition time, 20% to 80%				ps
J2 Jitter output	Jo			UI
J9 Jitter output	Jo			UI
Eye mask coordinates #1 {X1, X2, Y1, Y2}				UI mV
Power Supply Ripple Tolerance	PSR			mVpp

Mechanical Specifications



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Ordering Information

Part Number	Description
4L-Q40GSR4-L100	QSFP+ 40GBASE-SR4, 850nm, MM, DDM, MPO/MTP, 100m
4L-Q40GLR4-L10	QSFP+ 40GBASE-LR4, 1310nm, SM, DDM, Duplex LC, 10Km
4L-Q40GER4-L40	QSFP+ 40GBASE-ER4, 1310nm, SM, DDM, Duplex LC, 40Km

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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