

4L-Q40ER4-40

QSFP+ 40GBASE-ER4, 1310nm, CWDM, SM, DDM, LC Duplex, 40Km



Applications

- Compliant with 40GBASE-ER4 Ethernet
- Infiniband QDR/DDR
- OTU3, OTU3e1, OTU3e2, IEEE802.3bm and IEEE802.3ba
- 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+ MSA Compliant
- Up to 40Km links on SMF
- DFB laser transmitter
- LC Duplex
- 4x Tx and 4x Rx using CWDM
- Digital Diagnostic Monitoring
- XLPI electrical interface
- RoHS-6 and Lead Free
- Operating temperature: 0°C ~ +70°C

Description

The 4L-Q40ER4-40 is a QSFP+ four CWDM channel full duplex transceiver module for singlemode fiber(SMF) 40GBASE-ER4 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 40km 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}			40Km
Optical Budget	dB	13dB		
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

Transmitter				
Parameter	Symbol	Min	Recommended	Max
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
Average Output Power per Lane		-2dBm		+4dBm
Total Average Output Power	Pout			8.3dBm
Transmitter Eye Mask Definition {X1, X2, X3, Y1, Y2, Y3}		{0.25, 0.4, 0.45, 0.25, 0.28, 0.4}		
Optical Modulation Amplitude, each Lane		-4dBm		+4.5dBm

Receiver				
Parameter	Symbol	Min	Recommended	Max
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
Receiver Sensitivity per lane	Rsen	-15dBm		
Damage Threshold	Pmax			0dBm
LOS De-Assert				-25dBm
LOS Assert		-35dBm		
LOS Hysteresis		0.5dB		

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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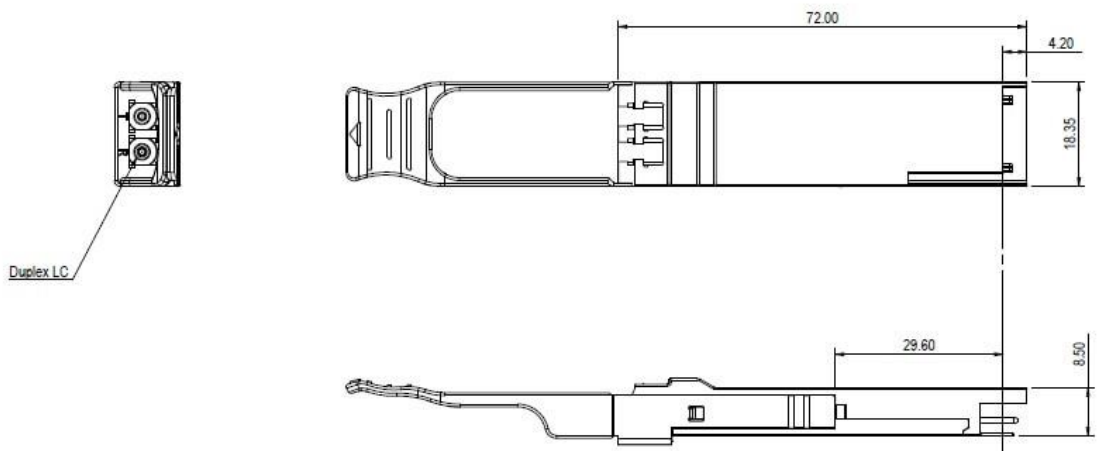
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Electrical Specifications

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-Q40SR4-M100	QSFP+ 40GBASE-SR4, 850nm, MM, DDM, MPO/MTP, 100m
4L-Q40BSR4-001	QSFP+ 40GBASE-SR4, 850/900nm, BiDi MM, DDM, LC, 150m
4L-Q40BLX4-02	QSFP+ 40GBASE-LX4, CWDM, LC, MM 150m, SM 2km.
4L-Q40PLR4-M10	QSFP+ 40GBASE-LR4, 1310nm, SM, DDM, Duplex LC, 10Km
4L-Q40LR4-10	QSFP+ 40GBASE-LR4, 1310nm, SM, DDM, Duplex LC, 10Km
4L-Q40LR4-20	QSFP+ 40GBASE-LR4, 1310nm, SM, DDM, Duplex LC, 20Km
4L-Q40ER4-40	QSFP+ 40GBASE-ER4, 1310nm, SM, DDM, Duplex LC, 40Km
4L-Q40ZR4-60	QSFP+ 40GBASE-ZR4 Lite, 1310nm, SM, DDM, Duplex LC, 60Km
4L-Q40ZR4-80	QSFP+ 40GBASE-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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