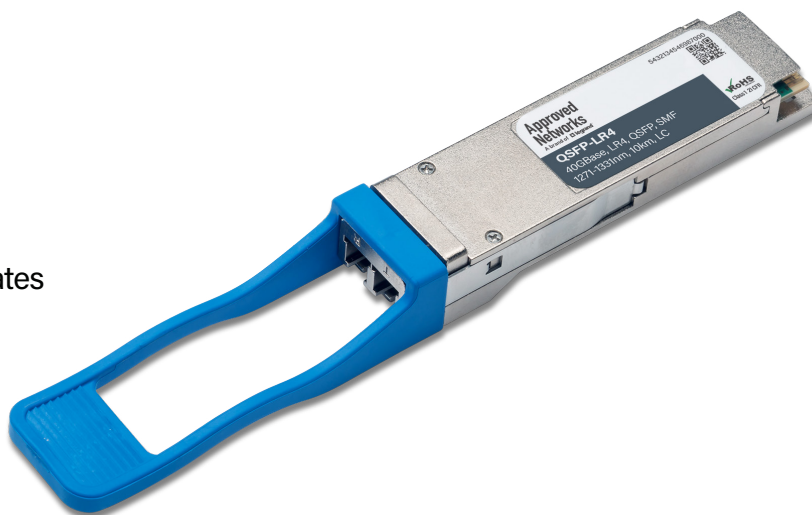


Features

- Support up to 11.3Gbps per channel
- QSFP+ MAS compliant
- Compliant with QDR/DDR Infiniband data rates
- Maximum link length of 10km SMF
- Hot pluggable electrical interface
- +3.3V power supply
- Operating case temperature range 0~70°C
- RoHS 6 Compliant
- LC duplex connector
- Maximum power consumptions: 3.5W



Applications

- 40GBASE-LR4 40G Ethernet Links
- Infiniband QDR and DDR interconnects
- Client-side 40G Datacom connections

1. Absolute Maximum Ratings

These values represent the damage threshold of the module. Stress in excess of any of the individual maximum ratings can cause damage to the module even if all other parameters are within recommended operating conditions.

Parameter	Symbol	Min.	Max.	Unit
Storage Temperature	Ts	-40	85	°C
Operating Case Temperature	Top	0	70	°C
Power supply Voltage	Vcc	0	3.6	V
Relative Humidity	RH	0	85	%
Maximum Optical Input Power	Pin	-5	0	dBm

2. Recommended Operating Conditions

Parameter	Symbol	Min.	Typ.	Max.	Unit
Operating Case Temperature	TC	0		+70	°C
Power Supply Voltage	Vcc	3.14	3.3	3.47	V
Power Supply Current	ICC			1000	mA
Power Dissipation	PD			3.5	W

Data Rate per Lane	DR		10.3125	11.3	Gbps
Link Distance on SMF		2		10	km

3. Transmitter Specification (Optical)

Parameter	Symbol	Min	Typ.	Max	Unit
Center wavelength	λ_{c0}	1264.5		1277.5	nm
	λ_{c1}	1284.5		1297.5	
	λ_{c2}	1304.5		1317.5	
	λ_{c3}	1324.5		1337.5	
Side-mode suppression Ratio	SMSR	30			dB
Extinction Ratio	ER	3.5		4	dB
Spectral Width	$\Delta\lambda$			1	nm
Average launch power	PO,AVG	-7		2.3	dBm
Optical Modulation Amplitude, each lane	OMA	-4		+3.5	dBm
Relative Intensity Noise	Rin			-128	dB/Hz
Optical Return Loss Tolerance 20 dB					
Transmitter Reflectance	RT			-12	dB
Transmitter Eye Mask Definition (X1,X2,X3, Y1, Y2, Y3)		Compliant with 802.3ba Standard (0.25,0.4,0.45,0.25,0.28,0.4)			
Average Launch Power OFF	POFF			-30	dBm

4. Transmitter Specification (Electrical)

Parameter	Symbol	Min.	Typ.	Max.	Unit
Supply Voltage	Vcc	3.14	3.3	3.47	V
Supply Current	Icc			1000	mA
Maximum Power Consumption				3.5	W
Data Rate per lane			10.3125	11.3	Gb/s
Differential Input Impedance			100		ohms

5. Receiver Specification (Optical)

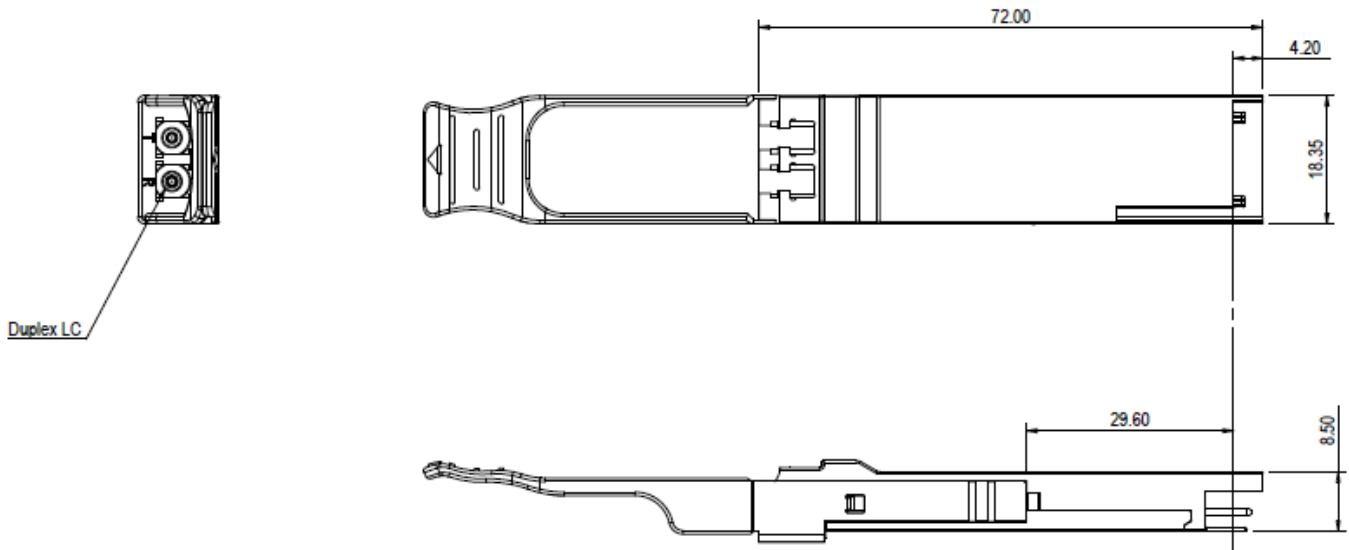
Parameter	Symbol	Min.	Typ.	Max.	Unit
Center Wavelength	λ_{c0}	1264.5		1277.5	nm
	λ_{c1}	1284.5		1297.5	
	λ_{c2}	1304.5		1317.5	
	λ_{c3}	1324.5		1337.5	

Damage Threshold				3.3	dBm
Receiver Reflectance				-26	dB
Receiver Sensitivity (OMA) per lane				-11.5	dBm
Stressed Receiver Sensitivity (OMA), each lane				-9.6	dBm
LOS Assert	LOS	-30			dBm
LOS De-assert	LOSD			-17	dBm
LOS Hysteresis	LOSH	0.5			dBm

6. Receiver Specification (Electrical)

Parameter	Symbol	Min.	Typ.	Max.	Unit
Supply Voltage	Vcc	3.14	3.3	3.47	V
Supply Current	Icc			1000	mA
Maximum Power Consumption				5.5	W
Data Rate Per Lane			10.312	11.3	Gb/s
Differential Input Impedance			100		Ohms
Differential Data Output Voltage Swing	Vout, p-p	200		850	mV
Output Differential Impedance	Rout		100		Ω

7. Mechanical Diagram (Unit: MM)



Note: External physical characteristics are subject to variation. This may include, but is not limited to, external case designs, pull tab colors and/or shapes, removal latch styles or colors, and label sizes and placement. These variations do not affect the function or characteristics of the transceivers.

8. Ordering Information

OEM	Part Number	OEM	Part Number
A10 Networks	AXSK-QSFP-LR-A	Force	GP-QSFP-40GE-1LR-A
Alcatel	3HE06485AA-A	Fortinet	FG-TRAN-QSFP-LR-A
Alcatel	CPAC-TR-40LR-SSM160-QSFP-A	Gigamon	QSF-503-A
Alcatel	F5-UPG-QSFP+LR4-A	HP	JL286A-A
Alcatel	QSFP-40G-LR-A	HP	JH232A-A
Alcatel	BN-CKM-QS-LR-A	HP	JG661A-A
Alcatel	10320-A	HP	40GEQ-LR4-HP
Alcatel	JL661A-A	Huawei	QSFP-40G-LR4-HU-A
Arista	QSFP-LR4-A	Infinera	TOM-40G-Q-LR4-A
Arista	QSFP-40G-LR4-AN-A	Ixia	QLR4-PLUS-A
Avago	AFCT-88EEPZ-A	Juniper	QFX-QSFP-40G-LR4-A
Avaya	AA1404001-E6-A	Juniper	JNP-QSFP-40GE-IR4-A
Brocade	40G-QSFP-LR4-A	Juniper	QSFPP-40GBASE-LR4-A
Cisco	QSFP-40GE-LR4-A	Juniper	JNP-QSFP-40G-LR4-A
Cisco	QSFP-40G-LR4-S-A	Juniper	QSFPP-40GBASE-LR4-C1
Cisco	WSP-Q40GLR4L-A	Mellanox	MC2210511-LR4-A
Cisco	40GEQ-LR4-CSC	Meraki	MA-QSFP-40G-LR4-A
Cisco	QSFP-40G-LR4-C1	MSA	AN-QSFP-LR4
Cisco	QSFP-40G-LR4-S-C1	MSA Champion ONE	40GQSFP+E-LR4
Dell	407-BBGN-A	NoviFlow	400000515-A
Edgecore	ET6401-LR4-A	OnePort	OP-QSFP-LR4
Enterasys	40GB-LR4-QSFP-A	Palo Alto	PAN-QSFP-40GBASE-LR4-A
Finisar	FTL4C1QE2C-A	Plexxi	PX-CBL-LR4-40G-QSFP-10KM-A
Finisar	FTL4C1QE1C-A	Ruckus	E40G-QSFP-LR4-A

9. Contact Information

Tel: 800.590.9535

Web: <http://www.approvednetworks.com>