

### Key Features

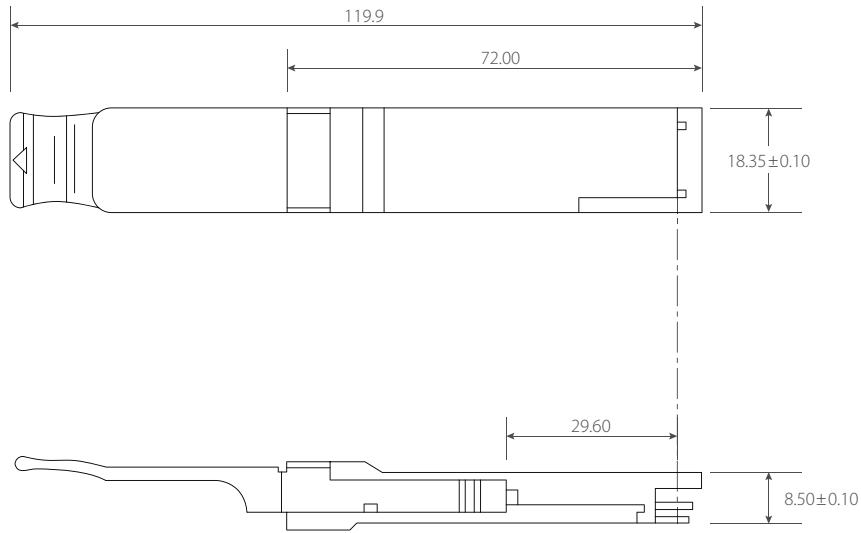
- 4 channels 850nm VCSEL array
- 4 channels full-duplex transceiver modules
- 4 channels PIN photo detector array
- Low power consumption <1.5W
- Hot pluggable QSFP form factor
- Hot pluggable electrical interface
- Single MPO connector receptacle
- Built-in digital diagnostic functions
- Transmission data rate up to 10.5Gbps per channel
- Operating case temperature 0°C to 70°C
- 3.3V power supply voltage
- Compliant with 40G Ethernet IEEE 802.3ba 40GBASE-SR4 standard
- RoHS 6 compliant (lead free)
- Maximum link length of 100m on OM3 Multimode Fiber (MMF) and 150m on OM4 MMF

### Applications

- 40GBASE-SR4 40G Ethernet
- Datacom/telecom switch and router connections
- Data aggregation and backplane applications
- Infiniband transmission at 4ch SDR, DDR, and QDR
- Client-side 40G telecom connections
- 4G/8G/10G fiber channel
- SATA/SAS storage



**Dimensions**



Unit: mm

**Absolute Maximum Ratings**

	Symbol	Min.	Max.
Supply Voltage	Vcc	-0.5V	3.6V
Data Input Voltage - Single Ended		-0.5V	Vcc+0.5V
Storage Temperature	Tst	-40°C	85°C
Case Operating Temperature	Top	0°C	70°C
Humidity (Non-condensing)	RH	5%	85%
Rx Optical Damage Threshold/Lane	DT	3.4dBm	

**Recommended Operating Conditions**

	Symbol	Min.	Typ.	Max.
Case Temperature	Tc	0°C	40°C	70°C
3.3V Power Supply Voltage	Vcc	3.135V	3.3V	3.465V
Signal Rate per Channel	B		10.3125GB/s	
Control Input Voltage High	Vih	2V		Vcc+0.3V
Control Input Voltage Low	Vil	-0.3V		0.8V
Two Wire Serial (TWS) Interface Clock Rate				400KHz
Receiver Differential Data Output Load	Zd		100Ohms	
Fiber Length: 500MHz.km 50um MMF (OM2)		0.5m		30m
Fiber Length: 2000MHz.km 50um MMF (OM3)		0.5m		100m
Fiber Length: 4700MHz.km 50um MMF (OM4)		0.5m		150m

Electrical Specifications - Transmitter	Symbol	Min.	Typ.	Max.
Power Consumption	P			1.5W
Power Supply Current	Icc			420mA
TRx Power-On Initialization Time *Note 1				2000ms
Data Input Differential Peak-to-Peak Voltage Swing	VDIFF	200mVpp		1200mVpp
Differential Input Return Loss *Note 2	Per IEEE 802.3ba, Section 86A.4.1.1dB			
Differential to Common Mode Input Return Loss *Note 2	10dB	10dB	10dB	
J2 Jitter Tolerance	Jt2UI	0.17UI		
J9 Jitter Tolerance	Jt9UI	0.29UI		
Eye Mask Coordinates: X1,X2;Y1,Y2 *Note 3		Specification Value 0.11,0.31;95,350.UI;mV		

Electrical Specifications - Receiver	Symbol	Min.	Typ.	Max.
Data Input Differential Peak-to-Peak Voltage Swing *Note 4		200mVpp		900mVpp
Output Transition Time 20% to 80%	Tr,Tf	28ps		
Differential Output Return Loss *Note 2	Per IEEE 802.3ba, Section 86A.4.1.2dB			
Differential Input Return Loss *Note 2	Per IEEE 802.3ba, Section 86A.4.1.1dB			
Output total Jitter				62ps
J2 Jitter Output	Jo2			0.42UI
J9 Jitter Output	Jo9			0.65UI
Eye Mask Coordinates: X1,X2;Y1,Y2 *Note 3		Specification Value 0.29,0.5;150,425.UI;mV		

Notes:

1. "Initialization Time" is the time from when the supply voltages reach and remain above the minimum "Recommended Operating Conditions" to the time when the module enables TWS access. The module at that point is fully functional.
2. 10M to 11.1 GHz according to IEEE 802.3ba specification.
3. Hit ratio=  $5 \times 10^{-5}$  per sample.
4. AC-Coupled with 100Ω differential output impedance.

Optical Specifications - Transmitter	Symbol	Min.	Typ.	Max.
Centre Wavelength	$\lambda_c$	840nm	850nm	860nm
RMS Spectral Width	$\Delta\lambda$	-	-	0.65nm
Average Launch Power/Lane	Pout	-7.5dBm	-	2.5dBm
Difference in Launch Power between any Two Lanes (OMA)				4dB
Extinction Ratio	ER	3dB	-	-
Peak Power/Lane				4dBm
Transmitter and Dispersion Penalty (TDP)/Lane	TDP			3.5dB
Average Launch Power of OFF Transmitter/Lane				-30dB
Eye Mask Coordinates: X1, X2, X3, Y1, Y2, Y3*	SPECIFICATION VALUES 0.23, 0.34, 0.43, 0.27, 0.35, 0.4			

### Optical Specifications - Receiver

	Symbol	Min.	Typ.	Max.
Centre Wavelength	$\lambda_c$	840nm	850nm	860nm
Stressed Receiver Sensitivity in OMA		-	-	-5.4dBm
Maximum Average Power at Receiver, each Lane Input, each Lane		-	-	2.4dBm
Minimum Average Power at Receiver /Lane		-	-	-9.5dBm
Receiver Reflectance		-	-	-12dB
Peak Power/Lane		-	-	4dBm
LOS Assert		-30dBm	-	-
LOS De-Assert – OMA		-	-	-7.5dBm
LOS Hysteresis		0.5dB	-	-

