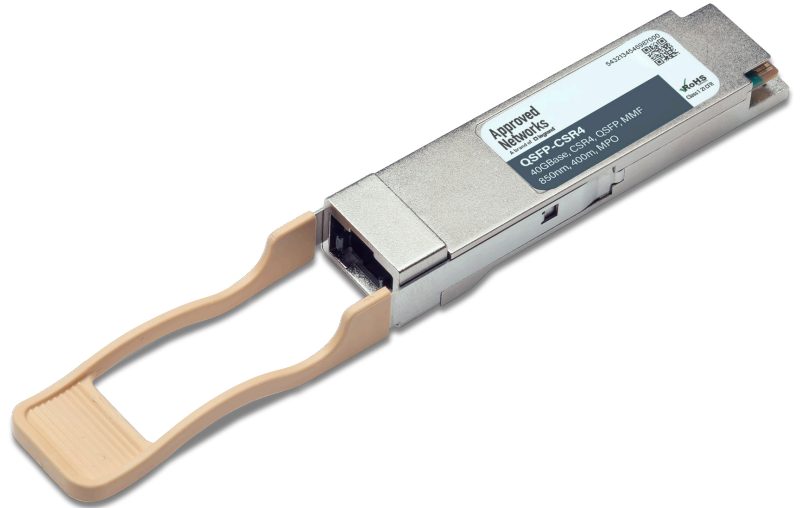


## Features

- 4 channels full-duplex transceiver modules
- Transmission data rate up to 10.5Gbps per channel
- 4 channels 850nm VCSEL array
- 4 channels PIN photo detector array
- Low power consumption <1.5W
- Hot Pluggable QSFP form factor
- Maximum link length of 300m on OM3 Multimode Fiber (MMF) and 400m on OM4 MMF
- Single MPO connector receptacle
- Built-in digital diagnostic functions
- Operating case temperature 0°C to +70°C
- 3.3V power supply voltage
- RoHS 6 compliant



## Applications

- 40GBASE-SR4 40G Ethernet
- Datacom/Telecom switch & router connections
- Data Aggregation and Backplane Applications
- Proprietary Protocol and Density Applications
- Infiniband transmission at 4ch SDR, DDR and QDR

## 1. Absolute Maximum Ratings

Parameter	Symbol	Min	Max	Unit
Supply Voltage	Vcc	-0.3	3.6	V
Input Voltage	Vin	-0.3	Vcc+0.3	V
Storage Temperature	Tst	-20	85	°C
Case Operating Temperature	Top	0	70	°C
Humidity (non-condensing)	Rh	5	95	%

## 2. Recommended Operating Conditions

Parameter	Symbol	Min	Typ.	Max	Unit
Supply Voltage	Vcc	3.13	3.3	3.47	V
Operating Case temperature	Tca	0		70	°C
Data Rate Per Lane	fd		10.3	10.5 (1)	Gbps
Humidity	Rh	5		85	%
Power Dissipation	Pm			1.5	W
Fiber Bend Radius	Rb	3			cm

**Note:** Up to 12.5 Gb/s may be supported.

## 3. Electrical Specifications

Parameter	Symbol	Min	Typ.	Max	Unit
Differential input impedance	Zin	90	100	110	ohm
Differential Output impedance	Zout	90	100	110	ohm
Differential input voltage amplitude	$\Delta V_{in}$	300		1100	mVp-p
Differential output voltage amplitude	$\Delta V_{out}$	500		800	mVp-p
Skew	Sw			300	ps
Bit Error Rate	BER			E-12	
Input Logic Level High	V <sub>IH</sub>	2.0		V <sub>CC</sub>	V
Input Logic Level Low	V <sub>IL</sub>	0		0.8	V
Output Logic Level High	V <sub>OH</sub>	V <sub>CC</sub> -0.5		V <sub>CC</sub>	V
Output Logic Level Low	V <sub>OL</sub>	0		0.4	V

### Notes:

- BER=10<sup>-12</sup>; PRBS 2<sup>31</sup>-1@10.3125Gbps.
- Differential input voltage amplitude is measured between TxnP and TxnN.
- Differential output voltage amplitude is measured between RxnN and RxnN.

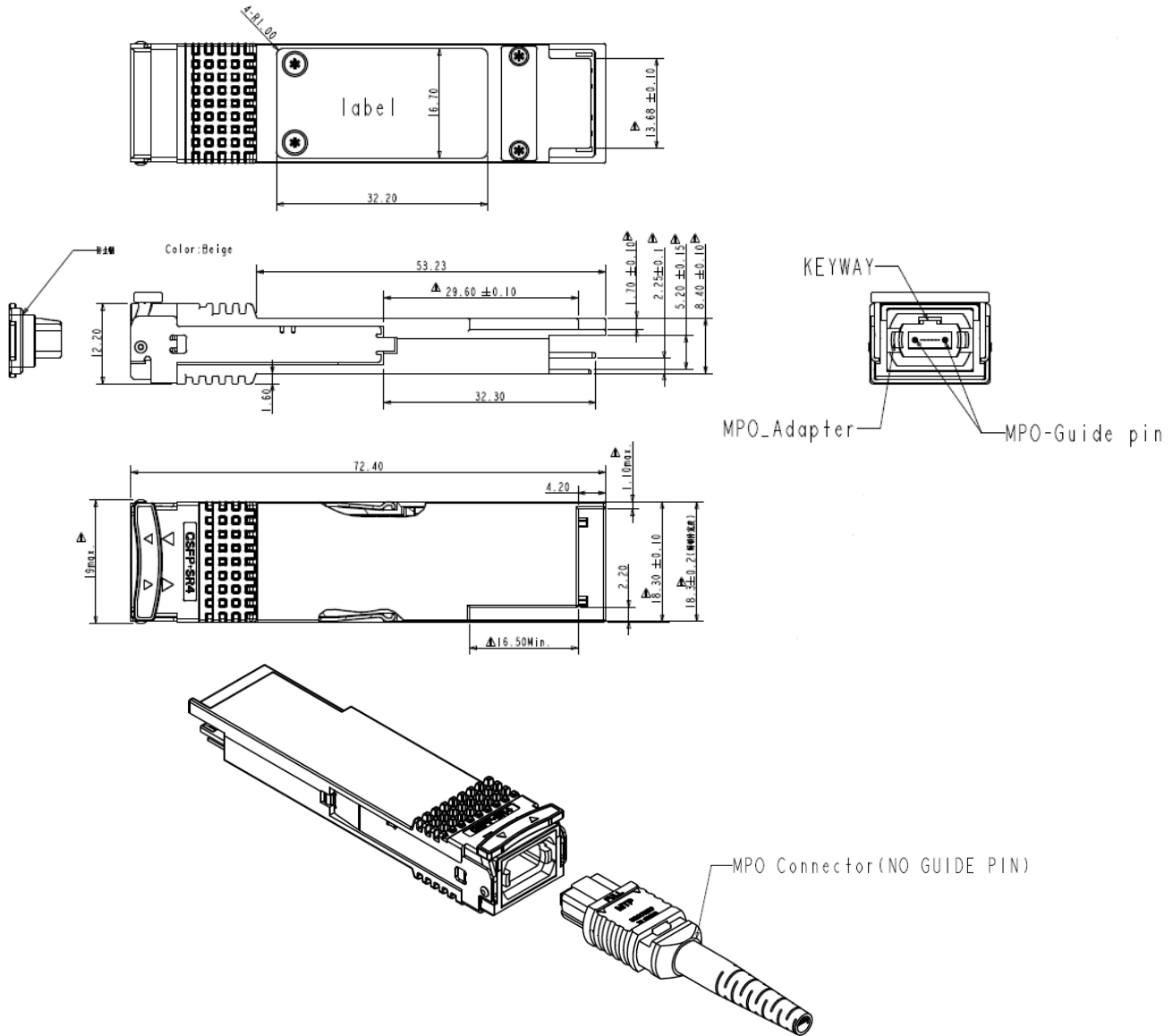
## 4. Optical Characteristics

Parameter	Symbol	Min	Typ	Max	Unit	Notes
<b>Transmitter</b>						
Centre Wavelength	$\lambda_c$	840	850	860	nm	-
RMS spectral width	$\Delta\lambda$	-	-	0.65	nm	-
Average launch power, each lane	P <sub>out</sub>	-7.5	-	2.5	dBm	-
Difference in launch power between any two lanes (OMA)				4	dB	-
Extinction Ratio	ER	3	-	-	dB	-
Peak power, each lane				4	dBm	-
Transmitter and dispersion penalty (TDP), each lane	TDP			3.5	dB	-
Average launch power of OFF transmitter, each lane				-30	dB	-
Eye Mask coordinates: X1, X2, X3, Y1, Y2, Y3	SPECIFICATION VALUES 0.23, 0.34, 0.43, 0.27, 0.35, 0.4					Hit Ratio = 5x10 <sup>-5</sup>
<b>Receiver</b>						
Centre Wavelength	$\lambda_c$	840	850	860	nm	-
Stressed receiver sensitivity in OMA				-5.4	dBm	1
Maximum Average power at receiver, each lane				2.4	dBm	-
Minimum Average power at receiver, each lane				-9.9	dBm	
Receiver Reflectance				-12	dB	-
Peak power, each lane				4	dBm	-
LOS Assert		-30			dBm	-
LOS De-Assert - OMA				-7.5	dBm	-
LOS Hysteresis		0.5			dB	-

**Note:**

1. Measured with conformance test signal at TP3 for BER = 10e-12

## 5. Mechanical Diagram



**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.

## 6. Ordering Information

OEM	Part Number	OEM	Part Number
Arista	QSFP-40G-XSR4-A	Huawei	QSFP-40G-ESR4-HU-A
Brocade-Foundry	40G-QSFP-ESR4-A	Intel	40GQSFPESR-A
Check Point	CPAC-TR-40SR-QSFP-300M-A	Ixia	QMM850-PLUS-E-A
Cisco	QSFP-40G-CSR4-A	Juniper	QFX-QSFP-40G-ESR4-A
Dell	331-8335-A	MSA Generic	AN-QSFP-CSR4
Dell	407-BBPH-A	MSA Generic	AN-QSFP40G-CSR4
Edgecore	ET6401-CSR4-A	MSA OnePort	OP-QSFP-CSR4
Force10	GP-QSFP-40GE-ESR-A	Palo Alto	PAN-40G-QSFP-CSR4-A
HP	JG709A-A	MSA Champion ONE	40GQSFP+E-ESR4

## 7. Contact Information

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