

# 56Gb/s QSFP+ SR4 Transceiver

## Features:

- Four-channel full-duplex transceiver modules
- Transmission data rate up to 14.025Gbit/s per channel
- 4 channels 850nm VCSEL array
- 4 channels PIN photo detector array
- Low power consumption <1.5W
- Housing isolated from connector ground
- Operating case temperature 0°C to +70°C
- 3.3V power supply voltage
- RoHS 6 compliant
- Hot Pluggable QSFP form factor
- Maximum link length of 100m on OM3 Multimode Fiber (MMF) and 150m on OM4 MMF
- Single MPO connector receptacle
- Built-in digital diagnostic function

## Applications:

- InfiniBand FDR
- 16x Fiber Channel
- PCI-e3.0
- Proprietary High Speed Interconnections
- SAS 3.0

## Electrical Specifications

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

## Note :

1. BER=10<sup>-12</sup>; PRBS 2<sup>31</sup>-1@10.3125Gbps.
2. Differential input voltage amplitude is measured between TxNp and TxNn.
3. Differential output voltage amplitude is measured between RxNp and RxNn.

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## Optical Characteristics

Parameter	Symbol	Min	Typical	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	Pout	-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>Transmitter</b>						
Centre Wavelength	$\lambda_c$	840		860	nm	
Stressed receiver sensitivity in OMA, each lane				-5.4	dBm	1
Average power at receiver input, each lane		-9.5		2.4	dBm	
Receiver Reflectance			850	-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