OSFP-800G-SR8 OSFP112 Transceiver

800Gb/s SR8 MMF 50m Over OM4

Introduction

FIBRECROSS' s OSFP-800G-SR8 OSFP transceiver modules are designed for use in 2x400 Gigabit Ethernet or InfiniBand links up to 100m of multi-mode fiber. They are compliant with the OSFP MSA, IEEE802.3db6 and IEEE802.3ck7 . Digital diagnostic functions are available via the I2C interface, as specified by the OSFP MSA. The optical transceiver is RoHS compliant as described in Application Note AN-20382,3 .

PRODUCT FEATURES

- Hot-pluggable OSFP Type2 form factor
- with closed top heat sink
- Support 2x425Gb/s aggregate bit rate
- Power dissipation <16W
- RoHS Compliant
- Laser Eye Class 1M
- Case temperature range of 0°C to +70°C (C-temp)
- Single 3.3V power supply
- Aligned with IEEE 802.3db
- 8x100G PAM4 retimed 106.25Gb/s
- PAM4 electrical interface aligned to IEEE 802.3ck
- Dual MPO-12 APC receptacles
- I2C management interface

APPLICATIONS

- InfiniBand NDR
- 800G SR8/VR8 application with FEC
- 2x400G SR4/VR4 applications with FEC
- 8 x 100GbE breakout applications

Ordering Information

Part Number	Data Rate (Gbps)	Wavelength (nm)	Transmission Distance(m)	Temperature (ºC) (Operating Case)
OSFP-800G-SR8	800Gb	850nm	50m over OM4	0°C~+70°C

Pin Descriptions

The electrical pinout of the OSFP module is shown in Figure 1 below.

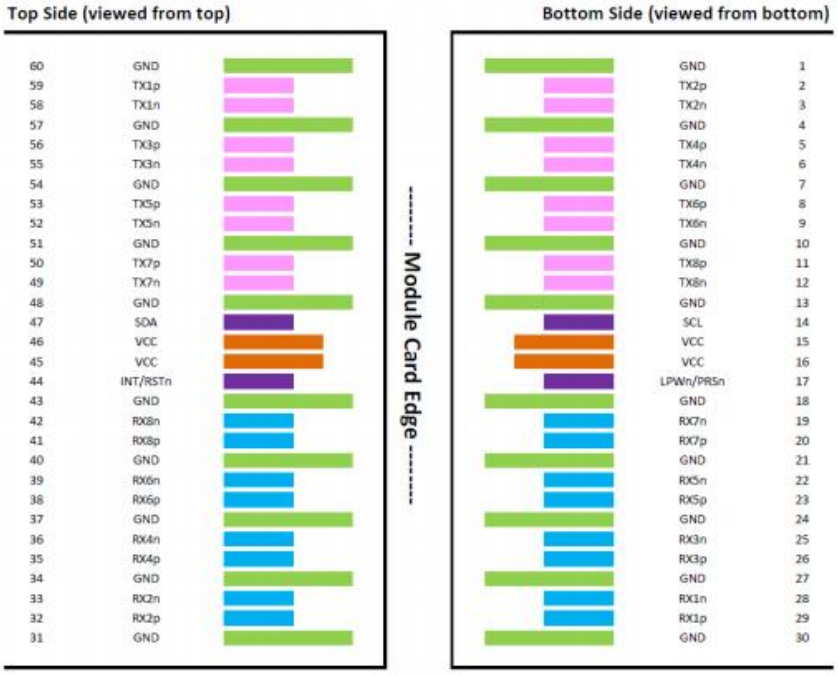

Figure 1 – OSFP Module Pinout (per OSFP MSA)

Absolute Maximum Ratings

Module performance is not guaranteed beyond the operating range (see Section VI). Exceeding the limits below may damage the transceiver module permanently.

Parameter	Symbol	Min	Typ	Max	Unit	Ref.
Maximum Supply Voltage	Vcc	-0.5		4.0	V	
Storage Temperature	TS	-40		+85	℃	
Case Operating Temperature	TOP	0		+70	℃	c-temp
Relative Humidity	RH	15		85	%	1
Receiver Damage Threshold, per Lane	PRdmg	5			dBm	

Notes:

1.Non-condensing.

Electrical Characteristics (EOL, TOP = 0 to +70 C, VCC = 3.135 to 3.465 Volts)

Aligned to IEEE P802.3ck

Parameter	Symbol	Min	Typ	Max	Unit	Ref.
Supply Voltage	Vcc	3.135	3.3	3.465	V	
Supply Current	Icc			5	A	
Module total power	P			16W	W	1
Transmitter						
Signaling rate per lane		53.125± 100 ppm.			Gbd	
Differential pk-pk input voltage tolerance		750			mV	
Differential to common mode input return loss		Per equation (120G-2)			dB	
Effective return loss, ERL		8.5			dB	
Differential termination mismatch				10	%	
Module stress input test		Per 120G.3.4.3				2
Single-ended voltage tolerance range		-0.4		3.3	V	
DC common mode voltage		-350		2850	mV	3
Receiver						
Signaling rate per lane		53.125			Gbd	4
AC common-mode output voltage (RMS)				80	mV	
Differential output voltage				845	mV	
Eye height, differential		15			mV	
Vertical eye closure				12	dB	
Common-mode to differential return loss		Per equation (120G-1)			dB	
Effective return loss, ERL		8.5			dB	
Differential termination mismatch				10	%	
Transition time (min, 20% to 80%)		8.5			ps	
DC common mode voltage		-350		2850	mV	3

Notes:

1. Maximum total power value is specified across the full temperature and voltage range.
2. Meets BER specified in 120G.1.1.
3. DC common-mode voltage is generated by the host. Specification includes effects of ground offset voltage.
4. The signaling rate range is derived from the PMD receiver input.

Optical Characteristics (EOL, TOP = 0 to +70 C, VCC = 3.135 to 3.465 Volts)

Each optical lane will meet the specifications in the below table:

	2x400GBASE-VR4	2x400GBASE-SR4	Unit	Ref
Transmitter				
Signaling rate, each lane	53.125 ± 100 ppm		GBd	
Modulation format	PAM4			
Center wavelengths (range)	842 to 948	844 to 870	nm	
RMS spectral width (max)	0.65	0.6	nm	1
Average launch power, each lane (max)	4		dBm	
Average launch power, each lane (min)	-4.6		dBm	
Outer OMA, each lane (max)	3.5		dBm	
Outer OMA, each lane (min) For max (TECQ, TDECQ) ≤ 1.8dB For 1.8 < max (TECQ, TDECQ) ≤4.4dB	-2.6 -4.4 + max (TECQ, TDECQ)		dBm dBm	
Transmitter and dispersion eye closure for PAM4 (TDECQ), each lane (max)	4.4		dB	
Transmitter eye closure for PAM4 (TECQ), each lane (max)	4.4		dB	
Overshoot/undershoot (max)	29		%	
Transmitter power excursion, each lane (max)	2.3		dBm	
Extinction ratio, each lane (min)	2.5		dB	
Transmitter transition time, each lane (max)	17		ps	
Average launch power of OFF transmitter, each line (max)	-30		dBm	
RIN14OMA (max)	-132		dB/Hz	
Optical return loss tolerance (max)	18		dB	
Receiver				
Signaling rate, each lane	53.125 ± 100 ppm		GBd	
Modulation format	PAM4			
Center wavelengths (range)	842 to 948		nm	
Average launch power, each lane (max)	4		dBm	
Average launch power, each lane (min)	-6.3	-6.4	dBm	
Damage threshold (min)	5		dBm	2
Receive power, each lane (OMAouter) (max)	3.5		dBm	
Receiver reflectance (max)	-15		dB	2
Receiver sensitivity (OMAouter) (max) For TECQ≤1.8dB For 1.8<TECQ≤4.4dB	-4.4 -6.2 + TECQ	-4.6 6.4 + TECQ	dBm	
Stressed receiver sensitivity (OMAouter) (max)	-1.8	-2.0	dBm	4
Conditions of stressed receiver sensitivity test				5

Stressed eye closure for PAM4 (SECQ), lane under test	4.4	dB	
OMA_{outer} of each aggressor lane	3.5	dBm	

Notes:

1.RMS spectral width is the standard deviation of the spectrum.

2.The receiver shall be able to tolerate, without damage, continuous exposure to an optical input signal having this average power level on one lane. The receiver does not have to operate correctly at this input power.

3.Average receive power, each lane (min)is not the principal indicator of signal strength. A received power below this value cannot be compliant; however, a value above this does not ensure compliance.

4.Measured with conformance test signal at TP3 for the BER specified in 167.1.1.

5.These test conditions are for measuring stressed receiver sensitivity. They are not characteristics of the receiver.

General Specifications

Parameter	Symbol	2x400GBASE-VR4	2x400GBASE-SR4	Unit	Ref
Bit Rate per Lane	BR		53.125± 100 ppm	GBd	1
PRE-FEC Bit Error Ratio	BER	2.4E-4			2
Maximum Supported Distances					
Fiber Type					
OM3-MMF	Lmax1	30	60	M	
OM4/OM5-MMF	Lmax2	50	100	M	

Notes:

1.Supports Ethernet and InfiniBand NDR

2.Tested with a PRBS 231 -1 test pattern

Environmental Specifications

FIBRECROSS' s OSFP-800G-SR8 OSFP transceivers have an operating case temperature range of 0°C to +70°C.

Parameter	Symbol	Min	Typ	Max	Units	Ref.
Case Operating Temperature	Top	0		+70	°C	
Storage Temperature	Tsto	-40		+85	°C	

Regulatory Compliance

The OSFP-800G-SR8 transceivers are RoHS compliant. Copies of certificates are available from Coherent Corp. upon request.

OSFP-800G-SR8 transceiver modules are Class 1M laser products. They are certified per the following standards:

Feature	Agency	Standard
Laser Eye Safety	FDA/CDRH	CDRH 21 CFR 1040 and Laser Notice 56
Laser Eye Safety	UL	IEC 60825-1:2014 IEC 60825-2:2004+A1+A2
Laser Eye Safety	UL	IEC 62368-1:2018

Laser Eye Safety	UL/CSA	CLASS 3862.07 CLASS 3862.87

CAUTION: Use of controls or adjustments or performance of procedures other than those specified herein may result in hazardous radiation exposure.

Digital Diagnostics Functions

OSFP-800G-SR8 2x400G-SR4/VR4 OSFP transceivers support the I2C-based diagnostics interface specified by the SFF Commitee1 .

Memory Contents

CMIS 5.0 per MSA configured with 8x100G by default. CMIS 4.0 and CMIS 5.X are also available upon request.

Firmware upgrade is supported via CDB commands.

Mechanical Specifications

OSFP-800G-SR8 2x400G-SR4/VR4 OSFP transceivers are compatible with the OSFP Specification for pluggable form factor Type 2 modules.

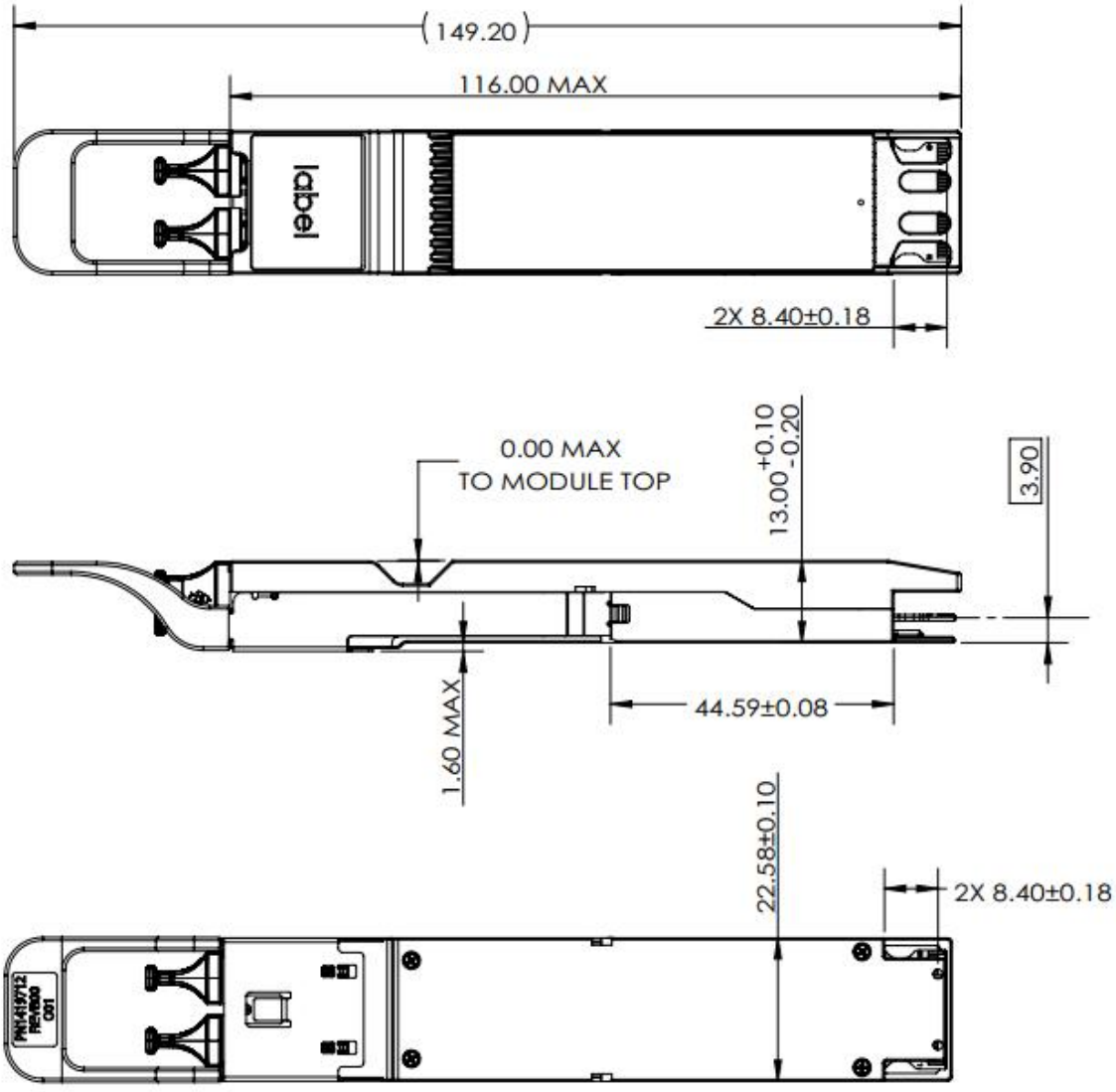

Figure 2. Mechanical Dimensions.