



800G (2x400G-VR4) OSFP Transceiver



Key Feature

- Compliant with IEEE 802.db and IEEE 802.ck
- Compliant with OSFP MSA
- Management interface based on CMIS 5.2 or updated version
- Optical Interface: 106.25 Gbps (PAM4) x 8
- Electrical Interface: 106.25 Gbps (PAM4) x 8
- 8 duplex channels transmitters and receivers
- Maximum link length of 50m on OM4 MMF
- Case operating temperature: 15°C to 70°C
- Single 3.3V power supply
- Power consumption: 15W Max.
- 2xMPO-12 APC connector
- RoHS compliant

Applications

- 800G Ethernet
- Datacom

Ordering Information - 800GBASE-2xVR4 OSFP

Part No.	Data Rate	Distance	Wavelength	Media	Connector	Temp.
LT00-VDVR4MC	800G	50m	850nm	MMF	Dual MPO-12/APC	C

Product Description

The 800G OSFP 2xVR4 Transceiver modules are designed for use in 800G Ethernet links on up to 50m over OM4 fiber. The Transceiver module has an integrated with the VCSEL laser and PIN receiver, compliant with the CMIS, OSFP MSA, IEEE 802.db and IEEE 802.ck.



Absolute Maximum Ratings

Parameter	Symbol	Min.	Max.	Unit	Note
Supply Voltage	VCC	-0.5	3.6	V	
Storage Temperature	TS	-40	85	°C	
Relative Humidity	RH	5	85	%	
Damage Threshold, each lane		5		dBm	

Recommended Operating Conditions

Parameter	Symbol	Min.	Typ	Max.	Unit	Note
Electrical Signal Rate, each lane		53.125 ± 100 ppm			GBd	
Optical Signal Rate, each lane		53.125 ± 100 ppm			GBd	
Supply Voltage	VCC	3.135	3.3	3.465	V	
Operating Case Temp.	TC	15		70	°C	
Power Consumption	PC			15	W	
Link Distance with OM4	DI	0.5		50	m	

Optical Characteristics

Parameter	Symbol	Min	Typ	Max	Unit	Note
Transmitter						
Signaling Speed per Lane		53.125 ± 100 ppm			GBd	
Modulation format		PAM4				
Lane wavelengths (range)	λ	840	-	948	nm	
RMS spectral width				0.65	nm	1
Average launch power, each lane	P	-4.6		4	dBm	2
OMAouter, each lane for max (TECQ, TDECQ) ≤ 1.8 dB for 1.8 < max (TECQ, TDECQ) ≤ 4.4 dB	POMA	-2.6 -4.4+ max (TECQ, TDECQ)		3.5 3.5	dBm	2,3
Transmitter and dispersion eye closure for PAM4 (TDECQ), each lane				4.4	dB	
Transmitter eye closure for PAM4 (TECQ), each lane				4.4	dB	
Extinction ratio, each lane	ER	2.5			dB	
Average launch power of OFF transmitter, each lane	P _{off}			-30	dBm	
RIN21OMA	RIN			-132	dB/Hz	
Optical return loss tolerance				14	dB	
Encircled flux		≥86% at 19μm ≤30% at 4.5μm				4



Parameter	Symbol	Min	Typ	Max	Unit	Note
Receiver						
Signaling Speed per Lane		53.125 ± 100 ppm			GBd	
Modulation format		PAM4				
Lane wavelengths (range)	λ	840	-	948	nm	
Damage Threshold, each lane		5			dBm	5
Average receive power, each lane		-6.3		4	dBm	6
Receive power (OMAouter), each lane	R_{OMA}			3.5	dBm	
Receiver Reflectance				-15	dB	
Receiver sensitivity (OMAouter), each lane	SEN	max(-4.4, TECQ-6.2)			dBm	7
Conditions of stressed receiver sensitivity test:						8
Stressed eye closure for PAM4 (SECQ), lane under test			4.4		dB	
OMAouter of each aggressor lane			3.5		dBm	
LOS Assert		-15			dBm	
LOS De-Assert				-6.6	dBm	
LOS Hysteresis		0.5			dB	

Notes:

1. RMS spectral width is the standard deviation of the spectrum.
2. Editors' note: Based on stressed receiver sensitivity of -2 dBm, and may increase by up to 0.4 dB based on the choice of stressed receiver sensitivity.
3. Even if the TDECQ < 1.4 dB, the OMA (min) must exceed this value.
4. If measured into type A1a.2 or type A1a.3, or A1a.4, 50 μ m fiber, in accordance with IEC 61280-1-4.
5. 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.
6. Average receive power, each lane (min) is informative and 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.
7. Receiver sensitivity is informative and is defined for a transmitter with a value of TECQ up to 4.4 dB.
8. These test conditions are for measuring stressed receiver sensitivity. They are not characteristics of the receiver.

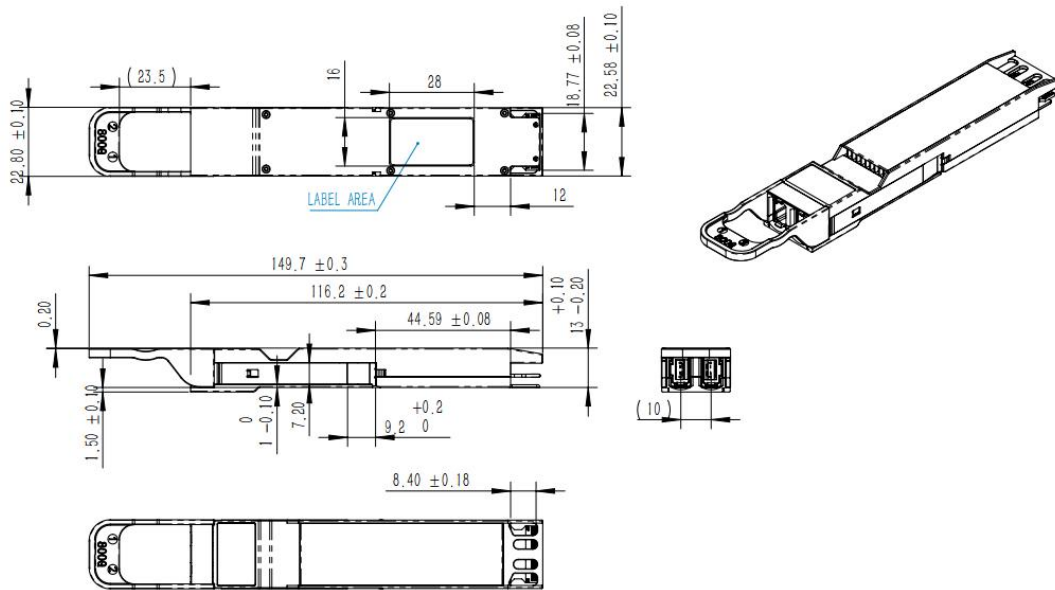
Digital Diagnostic Monitor Accuracy

The following characteristics are defined over recommended operating conditions

Parameter	Accuracy	Unit	Note
Measured transceiver temperature	±3	°C	
Measured transceiver supply voltage	±3	%	
Measured Tx bias current	±10	%	
Measured Tx output power	±3	dB	
Measured Rx received average optical power	±3	dB	



Mechanical Specifications



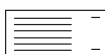


OSFP PIN Function Definitions

Pin	Logic	Symbol	Description
1		GND	Ground
2	CML-I	Tx2p	Transmitter Data Non-Inverted
3	CML-I	Tx2n	Transmitter Data Inverted
4		GND	Ground
5	CML-I	Tx4p	Transmitter Data Non-Inverted
6	CML-I	Tx4n	Transmitter Data Inverted
7		GND	Ground
8	CML-I	Tx6p	Transmitter Data Non-Inverted
9	CML-I	Tx6n	Transmitter Data Inverted
10		GND	Ground
11	CML-I	Tx6p	Transmitter Data Non-Inverted
12	CML-I	Tx6n	Transmitter Data Inverted
13		GND	Ground
14	LVCMOS-I/O	SCL	2-wire serial interface clock
15		VCC	+3.3V Power
16		VCC	+3.3V Power
17	Multi-Level	LPWn/PRSn	Low-Power Mode / Module Present
18		GND	Ground
19	CML-O	Rx7n	Receiver Data Inverted
20	CML-O	Rx7p	Receiver Data Non-Inverted
21		GND	Ground
22	CML-O	Rx5n	Receiver Data Inverted
23	CML-O	Rx5p	Receiver Data Non-Inverted



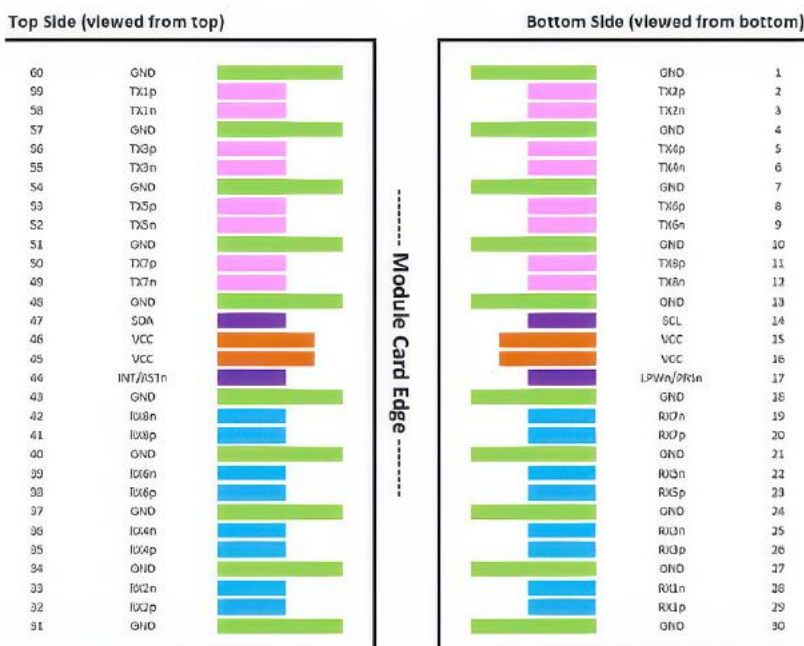
24		GND	Ground
25	CML-O	Rx3n	Receiver Data Inverted
26	CML-O	Rx3p	Receiver Data Non-Inverted
27		GND	Ground
28	CML-O	Rx1n	Receiver Data Inverted
29	CML-O	Rx1p	Receiver Data Non-Inverted
30		GND	Ground
31		GND	Ground
32	CML-O	Rx2p	Receiver Data Non-Inverted
33	CML-O	Rx2n	Receiver Data Inverted
34		GND	Ground
35	CML-O	Rx4p	Receiver Data Non-Inverted
36	CML-O	Rx4n	Receiver Data Inverted
37		GND	Ground
38	CML-O	Rx6p	Receiver Data Non-Inverted
39	CML-O	Rx6n	Receiver Data Inverted
40		GND	Ground
41	CML-O	Rx8p	Receiver Data Non-Inverted
42	CML-O	Rx8n	Receiver Data Inverted
43		GND	Ground
44	Multi-Level	INT/RSTn	Module Interrupt / Module Reset
45		VCC	+3.3V Power
46		VCC	+3.3V Power
47	LVCMOS—I/O	SDA	2-wire serial interface data
48		GND	Ground



49	CML-I	Tx7n	Transmitter Data Inverted
50	CML-I	Tx7p	Transmitter Data Non-Inverted
51		GND	Ground
52	CML-I	Tx5n	Transmitter Data Inverted
53	CML-I	Tx5p	Transmitter Data Non-Inverted
54		GND	Ground
55	CML-I	Tx3n	Transmitter Data Inverted
56	CML-I	Tx3p	Transmitter Data Non-Inverted
57		GND	Ground
58	CML-I	Tx1n	Transmitter Data Inverted
59	CML-I	Tx1p	Transmitter Data Non-Inverted
60		GND	Ground

OSFP Electrical Pad Layout

For detail mechanical information, please refer to the related document of OSFP MSA.





Laser Safety Warning

This product is classified as a Class 1 Laser Product according to IEC 60825-1.

It complies with 21 CFR 1040.10 and 1040.11 except for deviations pursuant to Laser Notice No. 50, dated June 24, 2007.

Caution: Use of optical instruments with this product will increase eye hazard. Do not view the laser beam directly with optical instruments or naked eyes.

Disclaimer

Images are for illustrative purposes only and may not accurately represent the actual product. Specifications and appearances are subject to change without prior notice.

The information provided in this datasheet is subject to change without notice. Lumulus Technologies assumes no responsibility for any errors or omissions. Performance may vary depending on application and operating conditions. Product specifications are provided for reference only and do not constitute a warranty.

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