Product Features

- Compliant to OSFP MSA 5.0

- Compliant with CMIS 4.0

- 8x106. 25Gb/s Electrical Interface (800GAUI-8)

- Maximum Power Consumption 16W

- Case Temperature Range: 0 to 70℃

- RoHS Complaint

- Up to 106.25 Gbps Data Rate Per Channel by PAM4 Modulation

- Maximum link length of 30m on OM3 Multimode Fiber (MMF)and 50m on OM4 MMF with FEC

- Support 800GAUI-8 Electrical Interface

- Integrated 850nm VCSEL Array and PD Array

- DDM Function Implemented

- Hot-pluggable

- Single +3.3V Power Supply

Application

- Networks

- Data Centers and Cloud

Description

The 800GBASE-SR8 OSFP Optical Transceiver Module is designed for use in 800Gb/s systems throughput up to 30m over OM3 or   50m over OM4 multimode fiber (MMF) using a wavelength of 850nm via dual MTP/MPO-12 connectors. Digital diagnostics functions are also available via the I2C interface, as specified by the OSFP MSA, to allow access to real time operating parameters. With these features, this easy to install, hot swappable transceiver is suitable to be used in various applications, such as data centers, high-performance computing networks, enterprise core and distribution layer applications.

Absolute Maximum Ratings

Parameter	Unit	Min	Max
Storage Temperature Range	°C	-40	85
Supply Voltage	V	0	4

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Parameter	Unit	Min	Max
Relative Humidity (Non-condensing)	%	5	85

Recommended Operating Conditions:

Parameter	Unit	Min	Max
Case Temperature-Operating	°C	0	70
Supply Voltage	V	3.135	3.465
Power Consumption	W		16
Pre-FEC Bit Error Ratio			2.4*10-4

Optical Characteristics

Parameter	Unit	Min.	Typical	Max.
Transmitter				
Signaling Rate, Each Lane	GBd		53.125 ± 100 ppm	
Lane Wavelength Range	nm		850	
RMS Spectral Width	nm			0.6
Modulation Format			PAM4	
Average Optical Power Per Lane	dBm	-4.6		4
Outer Optical Modulation Amplitude (OMAouter), Each Lane				
for TDECQ≤1.8dB	dBm	-2.6		3.5
for 1.8<TDECQ≤4.4dB	dBm	-4.4+TDECQ		3.5
Outer Optical Modulation Amplitude (OMAouter), Each Lane				
for TDECQ≤1.8dB	dBm	-2.6		3.5
for 1.8<TDECQ≤4.4dB	dBm	-4.4+TDECQ		3.5
Transmitter and Dispersion Eye Closure for PAM4, Each Lane	dB			4.4
Transmitter Eye Closure for PAM4 (TECQ), Each Lane	dB			4.4
ER	dB	2.5		
Transmitter Excursion, Each Lane	dB			2
Transmitter Transition Time, Each Lane	ps			17
Average Launch Power Per Lane @ TX Off State	dBm			-30
Relative Intensity Noise12 (OMA)	dB/Hz			-131
Optical Return Loss Tolerance	dB			12
Encircled Flux	dB			>=86%at 19µm <=30% at

				4.5μm
Receiver				
Signaling Rate Each Lane	GBd		53.125±100ppm	
Lane Wavelength Range	nm			850
Modulation Format			PAM4	
Damage Threshold	dBm	5		
Average Receive Power, Each Lane	dBm	-6.4		4
Receiver Power, Each Lane (OMA)	dBm			3.5
Receiver Sensitivity Each Lane (OMAouter)				
for TDECQ≤1.8dB	dBm			-4.6
for 1.8<TDECQ≤4.4dB	dBm			-6.4+TDECQ
Receiver Reflectance	dB			-12
Stressed Receiver Sensitivity (OMAouter), Each Lane	dBm			-2
Stressed Conditions for Stress Receiver Sensitivity				
Stressed Eye Closure for PAM4 (SECQ), Lane under Test	dB		4.4	
OMAouter of Each Aggressor Lane	dBm		3.5	

Electrical Specifications

Parameter	Unit	Min.	Typ.	Max.
Transmitter Electrical Input Characteristics at TP1				
Signaling Rate, Per Lane	GBd		53.125	
Differential Pk-pk Input Voltage Tolerance	mV	900		
Common-mode to Differential Return Loss		802.3ck Equation(120G-1)		
Differential Termination Mismatch	%			10
Module Stressed Input Test		See 120G.3.4.1		
Single-ended Voltage Tolerance Range	V	-0.4		3.3
DC Common-mode Voltage	mV	-350		2850
Receiver Electrical Output Characteristics at TP4				
Signaling Rate Per Lane	GBd		53.125	
AC common-mode Output Voltage(RMS)	mV			17.5
Differential Peak-to-peak Output Voltage	dB			900
Near-end ESMW (Eye Symmetry Mask Width)	UI		TBD	
Near-end Eyeheight, Differential	mV	24		

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Near-end Vertical Eye Closure	dB			7.5
Far-end Eyeheight, Differential	mV	24		
Far-end Vertical Eye Closure	dB			7.5
Differential Termination Mismatch	%			10
Single-ended Voltage Tolerance Range	V	-0.4		3.3
DC Common-mode Voltage	mV	-350		2850
Receiver Electrical Output Characteristics at TP4				
Signaling Rate Per Lane	GBd		53.125	
AC common-mode Output Voltage(RMS)	mV			17.5
Differential Peak-to-peak Output Voltage	dB			900
Near-end Eyeheight, Differential	mV	24		
Near-end Vertical Eye Closure	dB			7.5
Differential Termination Mismatch	%			10
DC Common Mode Voltage	mV	-350		2850

Pin Definition and Description
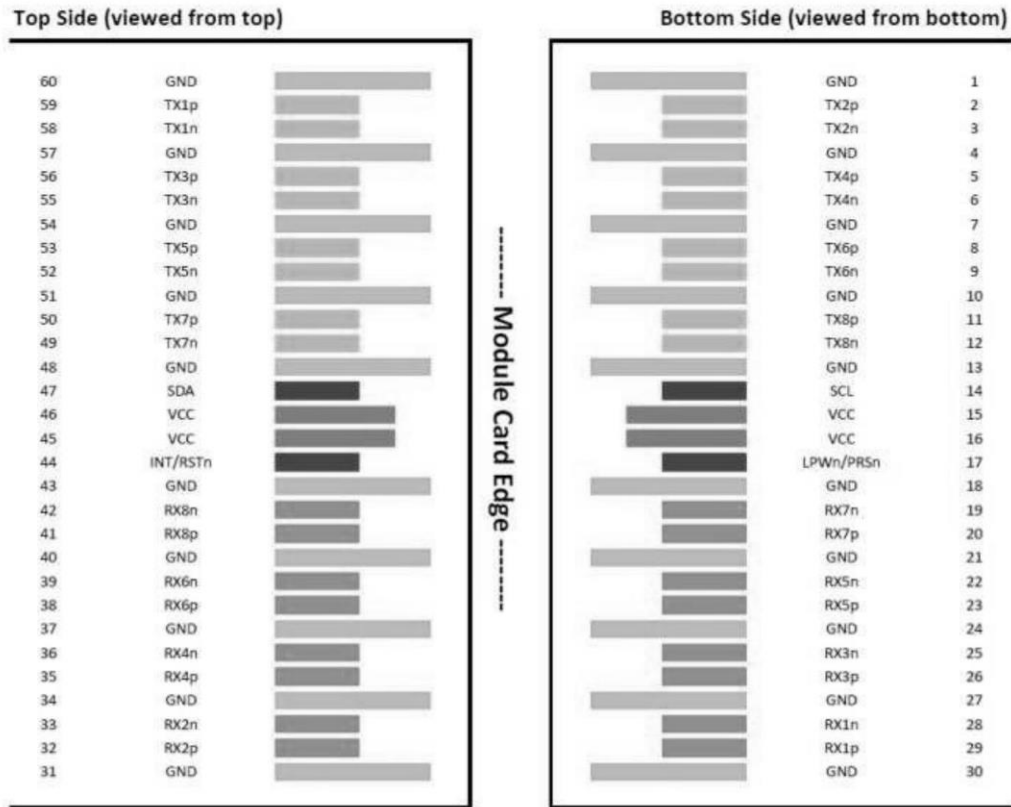
Table 1. Pin definition and descriptions

Pin	Symbol	Logic	Description	Note
1	GND		Ground	
2	TX2p	CML-I	Transmitted Data Non-Inverted	
3	TX2n	CML-I	Transmitted Data Inverted	
4	GND		Ground	
5	TX4p	CML-I	Transmitted Data Non-Inverted	
6	TX4n	CML-I	Transmitted Data Inverted	
7	GND		Ground	
8	TX6p	CML-I	Transmitted Data Non-Inverted	
9	TX6n	CML-I	Transmitted Data Inverted	
10	GND		Ground	
11	TX8p	CML-I	Transmitted Data Non-Inverted	
12	TX8n	CML-I	Transmitted Data Inverted	
13	GND		Ground	
14	SCL	LVCMOS-I/O	2-wire Serial Interface Clock	1
15	VCC		+3.3V Power	
16	VCC		+3.3V Power	

17	LPWn/PRSn	Multi-Level	Low-Power Mode / Module Present	2
18	GND		Ground	
19	RX7n	CML-O	Receiver Data Inverted	
20	RX7p	CML-O	Receiver Data Non-Inverted	
21	GND		Ground	
22	RX5n	CML-O	Receiver Data Inverted	
23	RX5p	CML-O	Receiver Data Non-Inverted	
24	GND		Ground	
25	RX3n	CML-O	Receiver Data Inverted	
26	RX3p	CML-O	Receiver Data Non-Inverted	
27	GND		Ground	
28	RX 1n	CML-O	Receiver Data Inverted	
29	RX 1p	CML-O	Receiver Data Non-Inverted	
30	GND		Ground	
31	GND		Ground	
32	RX2p	CML-O	Receiver Data Non-Inverted	
33	RX2n	CML-O	Receiver Data Inverted	
34	GND		Ground	
35	RX4p	CML-O	Receiver Data Non-Inverted	
36	RX4n	CML-O	Receiver Data Inverted	
37	GND		Ground	
38	RX6p	CML-O	Receiver Data Non-Inverted	
39	RX6n	CML-O	Receiver Data Inverted	
40	GND		Ground	
41	RX8p	CML-O	Receiver Data Non-Inverted	
42	RX8n	CML-O	Receiver Data Inverted	
43	GND		Ground	
44	INT/RSTn	Multi-Level	Module Interrupt / Module Reset	2
45	VCC		+3.3V Power	
46	VCC		+3.3V Power	
47	SDA	LVCMOS-I/O	2-wire Serial Interface Clock	1
48	GND		Ground	
49	TX7n	CML-I	Transmitted Data Inverted	
50	TX7p	CML-I	Transmitted Data Non-Inverted	
51		GND	Ground	
52	TX5n	CML-I	Transmitted Data Inverted	
53	TX5p	CML-I	Transmitted Data Non-Inverted	

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54		GND	Ground	
55	TX3n	CML-I	Transmitted Data Inverted	
56	TX3p	CML-I	Transmitted Data Non-Inverted	
57		GND	Ground	
58	TX 1n	CML-I	Transmitted Data Inverted	
59	TX 1p	CML-I	Transmitted Data Non-Inverted	
60		GND	Ground	

Notes:

1. Open-Drain with pull up resistor on Host.

2. See pin description for required circuit.

Digital Diagnostic Specification

Parameter	Units	Min	Typical	Max	Notes
Transceiver Case Temperature	℃	-3		+3	Over operating temp
Supply voltage monitor absolute error	V	-3%		+3%	Full operating range
Channel RX power monitor absolute	dB	-3		+3	Per channel
Channel Bias current monitor	mA	- 10%		+10%	Per channel
Channel TX power monitor absolute	dB	-3		+3	Per channel

Mechanical Dimensions