

800G OSFP SR8 850nm 100M MMF 2x MPO12 Transceiver

PN: AE-OSFP800-SR8

Features

- Hot-pluggable OSFP form factor
- VCSEL transmitter and PIN PD receiver
- Support 850Gb/s aggregate bit rate
- Support both 8x100G Ethernet and InfiniBand NDR
- Compliant with IEEE 802.3-2022:
- 8x100GBASE-VR1 optical interface
- Compliant with IEEE 802.3ck-2022:
- 8x100GAUI-1 C2M electrical interface
- Compliant with InfiniBand Trade Association (IBTA) Specification 1.6
- InfiniBand NDR electrical and optical interface
- Compliant with OSFP MSA Specification Rev 5.0 Type 2 housing with Dual MPO-12/APC receptacle
- Compliant with CMIS Rev 5.0
- Case operating temperature 0°C to 70°C
- Power dissipation < 16W
- Two wire serial Interface with digital diagnostic monitoring
- Complies with EU Directive 2011/65/EU (RoHS compliant)
- Class 1 Laser

Module Characteristics

Table 1 – Absolute Maximum Ratings

Parameter	Symbol	Min.	Max.	Unit	Notes
Storage Temperature	TS	-40	85	°C	
Supply Voltage	VCC	-0.5	3.6	V	
Relative Humidity (non-condensing)	RH	5	85	%	
Data Input Voltage Differential	IVDIP-VDINI	-	1	V	
Control Input Voltage	VI	-0.3	VCC+0.5	V	
Control Output Current	IO	-20	20	mA	

Table 2 – Recommended Operating Conditions

Parameter	Symbol	Min.	Typical	Max.	Unit	Notes
Operating Case Temperature	TOPR	0	-	70	°C	1
Power Supply Voltage	VCC	3.135	3.3	3.465	V	

Instantaneous peak current at hot plug	ICC_IP	-	-	6400	mA	
Sustained peak current at hot plug	ICC_SP	-	-	5328	mA	
Maximum Power Dissipation	PD	-	-	16	W	
Maximum Power Dissipation, Low Power Mode	PDLP	-	-	2	W	
Signalling Speed per Lane	DRL	-	53.125	-	GBd	
Control Input Voltage High	VIH	VCC*0.7	-	VCC+0.3	V	
Control Input Voltage Low	VIL	-0.3	-	VCC*0.3	V	
Two Wire Serial Interface Clock Rate	-	-	-	400	kHz	
Power Supply Noise 1 kHz - 1 MHz (p-p)	-	-	-	66	mVpp	
Operating Distance	-	2	-	50	m	1

Note 1: 0.5 m to 30 m for OM3, 0.5 m to 50 m for OM4 and OM5, with FEC.

Functional Characteristics (Optical)

The following tables list the performance specifications for the various functional blocks of the integrated optical transceiver module.

Table 3 – Transmitter Optical Specifications

Parameter	Symbol	Min.	Typical	Max.	Unit	Notes
Signaling rate, each lane (range)	-	53.125 ± 100 ppm			GBd	
Wavelength	λ_C	844	-	860	nm	
RMS spectral width	RMS	-	-	0.65	dB	1
Average Launch Power, each lane	AOPL	-4.6	-	4	dBm	
Outer Optical Modulation Amplitude (OMA _{outer}), each lane for max (TECQ, TDECQ) ≤ 1.8 dB for 1.8 < max (TECQ, TDECQ) ≤ 4.4 dB	OMA _{outer}	-2.6 - 4.4+max(TECQ, TDECQ)	-	3.5	dBm	
Transmitter and Dispersion Eye Closure for PAM4 (TDECQ), each lane	TDECQ	-	-	4.4	dB	
Transmitter eye closure for PAM4 (TECQ), each lane	TECQ	-	-	4.4	dB	
Over/under-shoot	-	-		29	%	
Transmitter power excursion, each lane	-	-		2.3	dBm	
Average Launch Power of OFF		-	-	-30	dBm	

Transmitter, each lane	TOFF					
Extinction Ratio, each lane	ER	2.5	-	-	dB	
Transmitter transition time, each lane	Tr	-	-	17	ps	
RIN14OMA	RIN			-132	dB/Hz	
Optical return loss tolerance	ORL			14	dB	
Encircled flux	-	>=86% at 19μm <=30% at 4.5μm			-	-

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

Table 4 – Receiver Optical Specifications

Parameter	Symbol	Min.	Typical	Max.	Unit	Notes
Signaling rate, each lane (range)	-	53.125 ± 100 ppm			GBd	
Wavelength	λC0	840	-	860	nm	
Damage Threshold, each Lane	AOPD	5	-	-	dBm	
Average Receive Power, each Lane	AOPR	-6.3	-	4	dBm	
Receive Power (OMOuter), each Lane	OMAR	-	-	3.5	dBm	
Receiver Reflectance	RR	-	-	-15	dB	
Receiver sensitivity (OMOuter) for TECQ < 1.4 dB for 1.4 dB ≤ TECQ ≤ 3.4 dB	SOMA	-	-	-4.4 -6.2 + TECQ	dBm	
Stressed Receiver Sensitivity (OMOuter), each Lane	SRS	-	-	-1.8	dBm	1
Conditions of stressed receiver sensitivity test						
Stressed eye closure for PAM4 (SECQ), lane under test	SECQ	-	4.4	-	dB	
OMOuter of each aggressor lane			3.5		dBm	

Note 1: Measured with conformance test signal at TP3 for the BER = 2.4x10⁻⁴.

Functional Characteristics (Electrical)

Table 5 – Electrical Specification High Speed Signal

Receiver (Module Output, TP4)						
Parameter	Symbol	Min.	Typical	Max.	Unit	Notes
Peak-to-peak AC common-mode voltage	-					
Low-frequency, VCMLF Full-band, VCMFB		-	-	32 80	mV	

Differential peak-to-peak output voltage	-					
Short mode Long mode		-	-	600 845	mV	
Eye height	EH	15	-	-	mV	
Vertical eye closure	VEC	-	-	12	dB	
Common-mode to differential-mode return loss	RLDc	802.3ck 120G-1			dB	
Effective return loss	ERL	8.5	-	-	dB	
Differential termination mismatch	-	-	-	10	%	
Transition time	-	8.5	-	-	ps	
DC common-mode voltage tolerance	-	-0.35	-	2.85	V	
Transmitter (Module Input, TP1)						
Parameter	Symbol	Min.	Typical	Max.	Unit	Notes
Differential pk-pk input Voltage tolerance (TP1a)	-	750	-	-	mV	
Peak-to-peak AC common-mode voltage tolerance Low-frequency, VCMLF Full-band, VCMFB	-	32 80	-	-	mV	
Differential-mode to common-mode return loss	RLcd	802.3ck 120G-2			dB	
Effective return loss	ERL	8.5	-	-	dB	
Differential termination mismatch	-	-	-	10	%	
Single-ended voltage tolerance range	-	-0.4	-	3.3	V	
DC common-mode voltage tolerance	-	-0.35	-	2.85	V	

Table 6 – Electrical Specification Low Speed Control and Sense Signals

Parameter	Symbol	Min.	Max.	Unit	Condition
Module output SCL and SDA	VOL	0	0.4	V	
	VIL	-0.3	VCC*0.3	V	
Module Input SCL and SDA	VIH	VCC*0.7	VCC+0.5	V	
INT/RSTn	Comply with OSFP MSA 5.0 Table 13-4				

Pin Definitions

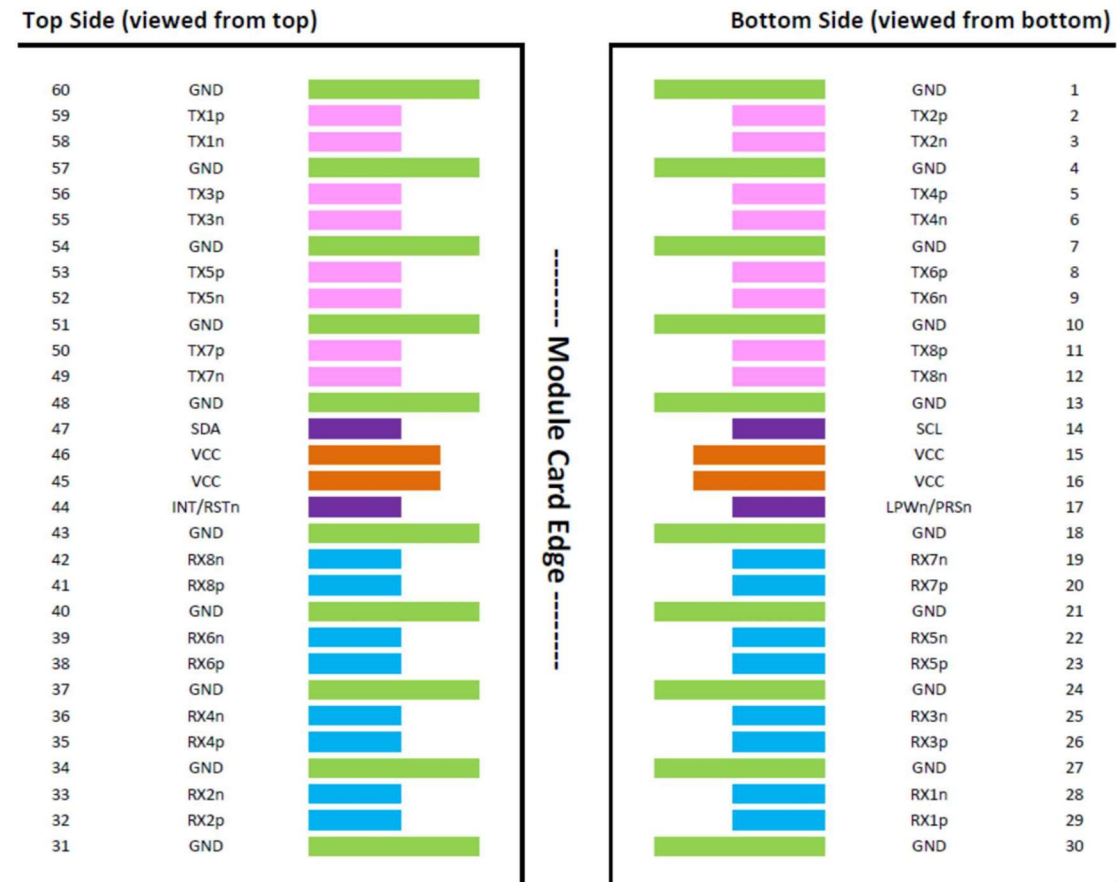


Figure 1 – Pinout definitions of OSFP module inputs/outputs

Table 7 – Module Pin Definitions

Pin #	Symbol	Description	Logic	Pin #	Symbol	Description	Logic
1	GND	Ground		31	GND	Ground	
2	TX2p	Transmitter Data Non-Inverted	CML-I	32	RX2p	Receiver Data Non-Inverted	CML-O
3	TX2n	Transmitter Data Inverted	CML-I	33	RX2n	Receiver Data Inverted	CML-O
4	GND	Ground		34	GND	Ground	
5	TX4p	Transmitter Data Non-Inverted	CML-I	35	RX4p	Receiver Data Non-Inverted	CML-O
6	TX4n	Transmitter Data Inverted	CML-I	36	RX4n	Receiver Data Inverted	CML-O
7	GND	Ground		37	GND	Ground	
8	TX6p	Transmitter Data Non-Inverted	CML-I	38	RX6p	Receiver Data Non-Inverted	CML-O

9	TX6n	Transmitter Data Inverted	CML-I	39	RX6n	Receiver Data Inverted	CML-O
10	GND	Ground		40	GND	Ground	
11	TX8p	Transmitter Data Non-Inverted	CML-I	41	RX8p	Receiver Data Non-Inverted	CML-O
12	TX8n	Transmitter Data Inverted	CML-I	42	RX8n	Receiver Data Inverted	CML-O
13	GND	Ground		43	GND	Ground	
14	SCL	2-wire Serial interface clock	LVC MOS-I/O	44	INT/RSTn	Module Interrupt / Module Reset	Multi-Level
15	VCC	+3.3V Power		45	VCC	+3.3V Power	
16	VCC	+3.3V Power		46	VCC	+3.3V Power	
17	LPWn/P RSn	Low-Power Mode / Module Present	Multi-Level	47	SDA	2-wire Serial interface data	LVC MOS-I/O
18	GND	Ground		48	GND	Ground	
19	RX7n	Receiver Data Inverted	CML-O	49	TX7n	Transmitter Data Inverted	CML-I
20	RX7p	Receiver Data Non-Inverted	CML-O	50	TX7p	Transmitter Data Non-Inverted	CML-I
21	GND	Ground		51	GND	Ground	
22	RX5n	Receiver Data Inverted	CML-O	52	TX5n	Transmitter Data Inverted	CML-I
23	RX5p	Receiver Data Non-Inverted	CML-O	53	TX5p	Transmitter Data Non-Inverted	CML-I
24	GND	Ground		54	GND	Ground	
25	RX3n	Receiver Data Inverted	CML-O	55	TX3n	Transmitter Data Inverted	CML-I
26	RX3p	Receiver Data Non-Inverted	CML-O	56	TX3p	Transmitter Data Non-Inverted	CML-I
27	GND	Ground		57	GND	Ground	
28	RX1n	Receiver Data Inverted	CML-O	58	TX1n	Transmitter Data Inverted	CML-I
29	RX1p	Receiver Data Non-Inverted	CML-O	59	TX1p	Transmitter Data Non-Inverted	CML-I
30	GND	Ground		60	GND	Ground	

Recommended OSFP Host Board Schematic

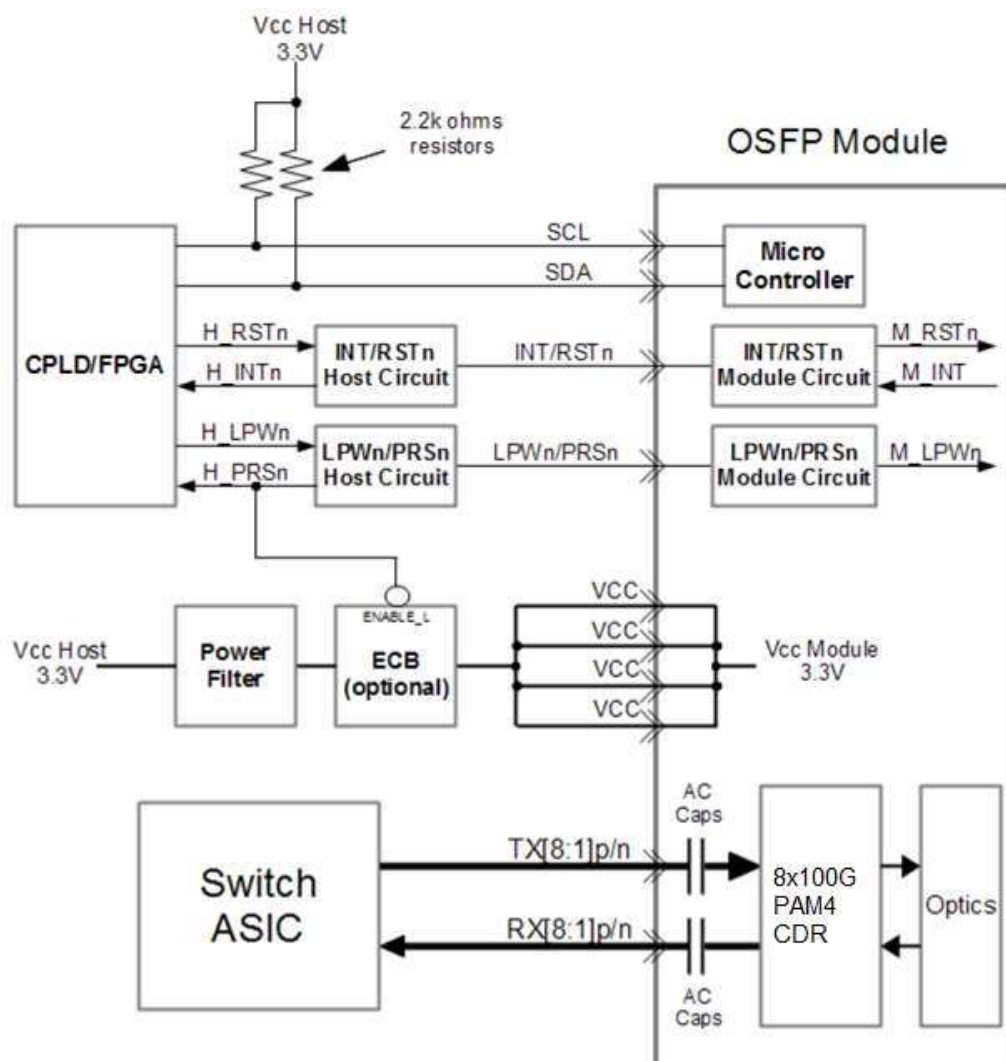
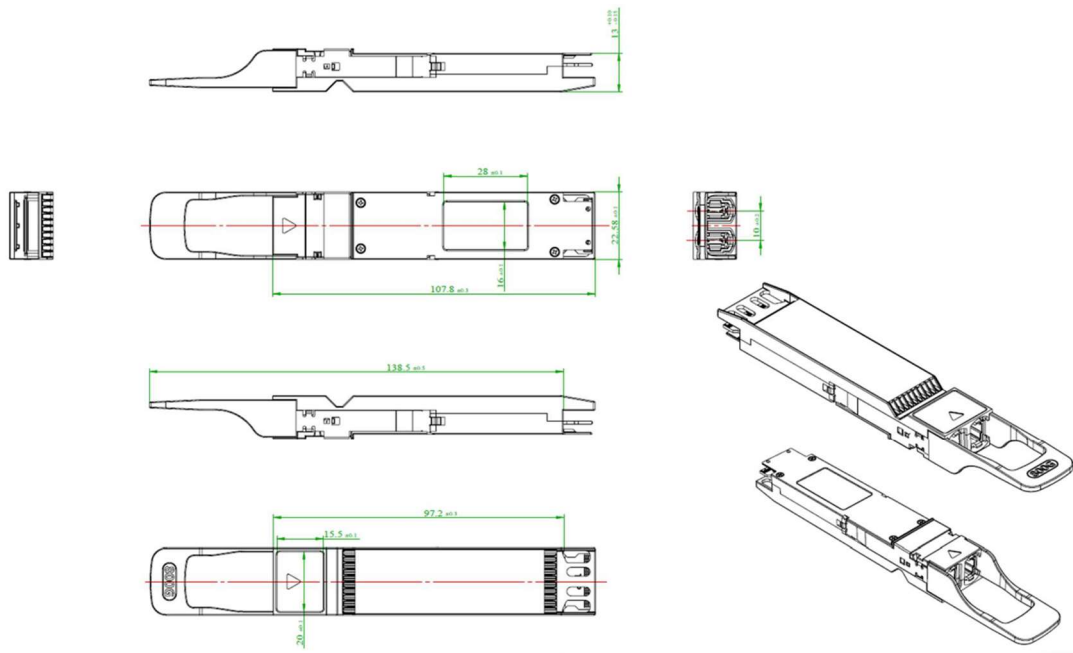


Figure 2 – Recommended OSFP Host Board Schematic

Table 8 – Digital Diagnostics

Parameter	Range	Accuracy	Unit	Calibration
Temperature	0 to 70	±3	°C	Internal
Voltage	3.135 to 3.465	±3%	V	Internal
Tx Bias Current (Each Lane)	0 to 15	10%	mA	Internal
Tx Output Power (Each Lane)	-4.6 to +4	±3	dB	Internal
Rx Receive Power (Each Lane)	-6.3 to +4	±3	dB	Internal

Mechanical Diagram



Ordering Information

Part No.	Application	Data Rate	Laser Source	Fiber Type
AE-OSFP800-SR8	Ethernet InfiniBand	850Gb/s	VCSEL	Multi Mode Fiber