Product Features

- 4 channels full-duplex transceiver modules
- Transmission data rate up to 106.25G per channel
- 4x106.25Gbps PAM4 transmitter and PAM4 receiver
- 4 channels 850nm VCSEL array
- 4 channels PIN photo detector array
- Power consumption <8W
- Hot Pluggable OSFP form factor and Compliant with CMIS
- Maximum link length of 100m on OM4 MMF with FEC
- Built-in digital diagnostic functions
- Operating case temperature 0℃ to +70℃
- 3.3V power supply voltage
- RoHS compliant

Application

- 400GBASE-VR4 Ethernet (PAM4)
- The transceiver is designed for Ethernet, Telecom and Infiniband use cases.

Standards

- OSFP_Module_Specification_Rev5.0
- CMIS V4.0
- IEEE 802.3db
- IEEE802.3ck

Description

The 400G OSFP AOC is a Four-Channel, Pluggable,Parallel for 400 Gigabit Ethernet Applications. This AOC is a high performance module for short-range multi-lane data communication and interconnection applications. It integrates four data lanes in each direction with 4x53.125GBd. Each lane can operate at 106.25Gbps up to 100m using OM4 fiber with FEC. These modules are designed to operate over multimode fiber systems using a nominal wavelength of 850nm. The Common Management Interface Specification (CMIS) for OSFP modules.

Absolute Maximum Ratings:

Parameter	Unit	Min	Max
Supply Voltage	V	-0.3	3.6
Input Voltage	V	-0.3	Vcc+0.3
Storage Temperature	℃	-20	85
Case Operating Temperature	℃	0	70
Humidity(non-condensing)	%	5	95

Recommended Operating Conditions:

Parameter	Unit	Min	Typical	Max
Supply Voltage	V	3.13	3.3	3.47
Operating Case temperature	℃	0		70
Data Rate Per Lane	Gbps		106.25	
Humidity	%	5		85
Power Dissipation	W		7.5	8

Electrical Specifications:

Parameter	Unit	Min	Typical	Max
Differential input impedance	ohm	90	100	110
Differential Output impedance	ohm	90	100	110
Differential input voltage amplitude	mVp-p	400		900
Differential output voltage	mVp-p			850
Bit Error Rate	-			2.4E-4
Input Logic Level High	V	2.0		Vcc
Input Logic Level Low	V	0		0.8
Output Logic Level High	V	Vcc-0.5		Vcc
Output Logic Level Low	V	0		0.4
Input Logic Level High	V	2.0		Vcc

Note：

1. BER=2.4E-4; PRBS31Q@53. 125GBd. Pre-FEC

2. Differential input voltage amplitude is measured between TxnP and TxnN.

3. Differential output voltage amplitude is measured between RxnP and RxnN.

Optical Characteristics:

Parameter	Unit	Min	Typical	Max	Notes
Transmitter					
Centre Wavelength	nm	840	850	860	-
RMS spectral width	nm	-	-	0.6	-
Average launch power, each lane	dBm	-4.6	-	5.5	-
Optical Modulation Amplitude (OMAouter), each lane	dBm	-2.6		4	-
Transmitter and dispersion eye closure for PAM4(TDECQ),each lane	dB			4.4	
Extinction Ratio	dB	2.5	-	-	-
Average launch power of OFF transmitter, each lane	dB			-30	-
Receiver					
Centre Wavelength	nm	840	850	860	-
Receiver Sensitivity in MAout	dBm			(-4.4,TEC-6.2)	1
Stressed Receiver Sensitivity in OMAout	dBm			-1.8	2
Maximum Average power at receiver , each lane input, each lane	dBm			5.5	-
Minimum Average power at receiver , each lane	dBm	-6.3			
Receiver Reflectance	dB			-15	-
LOS Assert	dBm	-15		-8.5	-
LOS De-Assert	dBm			-6.5	-
LOS Hysteresis	dB	0.5			-

Note：

1.Measured with conformance test signal at TP3 for BER = 2.4E-4 Pre-FEC.

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

Pin Definition and Description

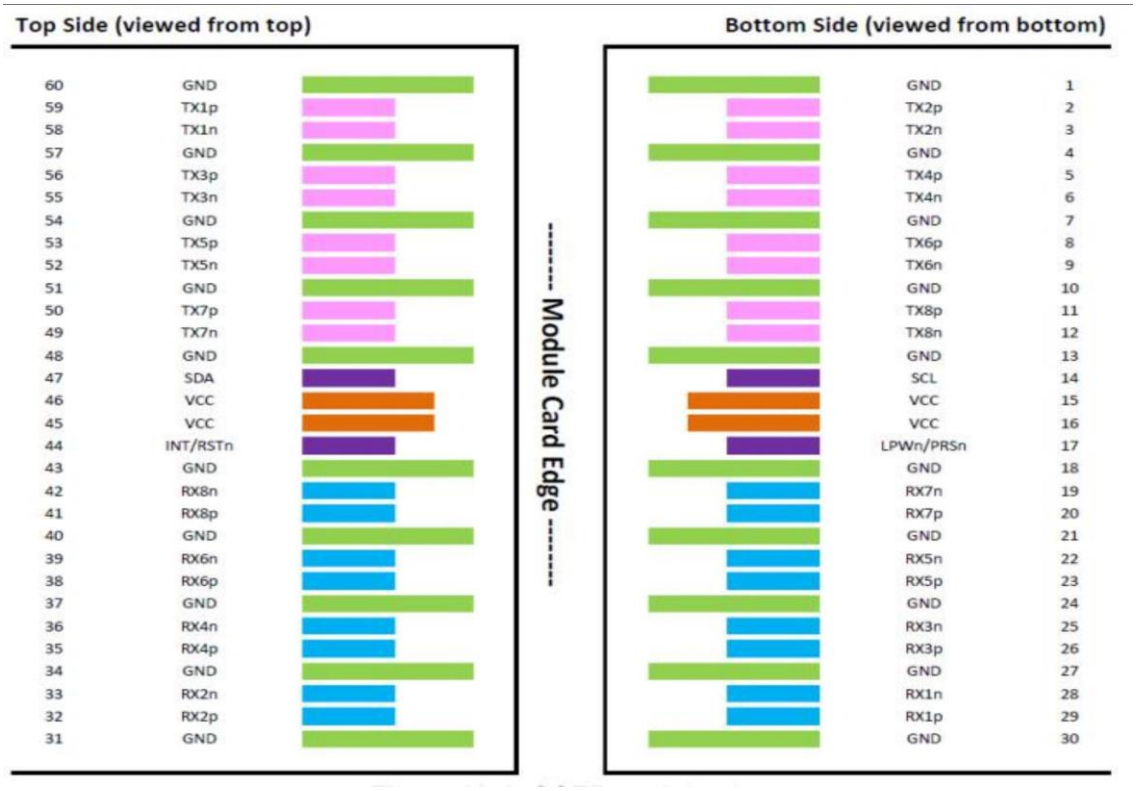

Table 1. Pin definition and descriptions

Pin	Symbol	Description	Logic
1	GND	Ground	
2	TX2p	Transmitter Data Non- Inverted	CML-I
3	TX2n	Transmitter Data Inverted	CML-I
4	GND	Ground	
5	TX4p	Transmitter Data Non- Inverted	CML-I
6	TX4n	Transmitter Data Inverted	CML-I
7	GND	Ground	
8	TX6p	Transmitter Data Non- Inverted	CML-I
9	TX6n	Transmitter Data Inverted	CML-I
10	GND	Ground	
11	TX8p	Transmitter Data Non- Inverted	CML-I
12	TX8n	Transmitter Data Inverted	CML-I
13	GND	Ground	
14	SCL	2-wire Serial interface clock	LVCMOS-I/O
15	VCC	+3.3V Power	
16	VCC	+3.3V Power	
17	LPWn/PRSn	Low-Power Mode / Module Present	Multi-Level

18	GND	Ground	
19	RX7n	Receiver Data Inverted	CML-O
20	RX7p	Receiver Data Non-Inverted	CML-O
21	GND	Ground	
22	RX5n	Receiver Data Inverted	CML-O
23	RX5p	Receiver Data Non-Inverted	CML-O
24	GND	Ground	
25	RX3n	Receiver Data Inverted	CML-O
26	RX3p	Receiver Data Non-Inverted	CML-O
27	GND	Ground	
28	RX1n	Receiver Data Inverted	CML-O
29	RX1p	Receiver Data Non-Inverted	CML-O
30	GND	Ground	
31	GND	Ground	
32	RX2p	Receiver Data Non-Inverted	CML-O
33	RX2n	Receiver Data Inverted	CML-O
34	GND	Ground	
35	RX4p	Receiver Data Non-Inverted	CML-O
36	RX4n	Receiver Data Inverted	CML-O
37	GND	Ground	
38	RX6p	Receiver Data Non-Inverted	CML-O
39	RX6n	Receiver Data Inverted	CML-O
40	GND	Ground	
41	RX8p	Receiver Data Non-Inverted	CML-O
42	RX8n	Receiver Data Inverted	CML-O
43	GND	Ground	
44	INT/RSTn	Module Interrupt / Module Reset	Multi-Level
45	VCC	+3.3V Power	
46	VCC	+3.3V Power	
47	SDA	2-wire Serial interface data	LVCMOS-I/O
48	GND	Ground	
49	TX7n	Transmitter Data Inverted	CML-I
50	TX7p	Transmitter Data Non- Inverted	CML-I
51	GND	Ground	
52	TX5n	Transmitter Data Inverted	CML-I
53	TX5p	Transmitter Data Non- Inverted	CML-I
54	GND	Ground	
55	TX3n	Transmitter Data Inverted	CML-I
56	TX3p	Transmitter Data Non- Inverted	CML-I

57	GND	Ground	
58	TX1n	Transmitter Data Inverted	CML-I
59	TX1p	Transmitter Data Non- Inverted	CML-I
60	GND	Ground	

Digital Diagnostic Monitoring Functions

Parameter	Units	Min	Typ	Max	Notes
Transceiver Case Temperature	℃	-3		+3	Over operating temp
Supply voltage monitor absolute error	V	-0.1		0.1	Full operating range
Channel RX power monitor absolute error	dB	-2		+2	Per channel
Channel Bias current monitor	mA	-10%		+10%	Per channel
Channel TX power monitor absolute error	dB	-2		+2	Per channel

Mechanical Dimensions(mm)

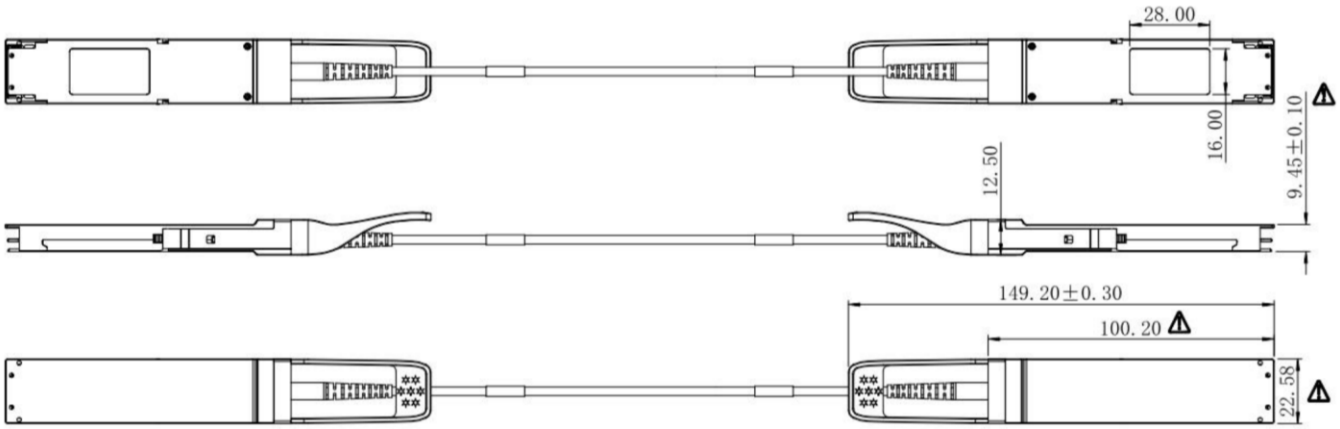

Figure5. Mechanical Specifications