SFP-10G-AOCxM

10Gb/s SFP+ to SFP+ Active Optical Cable, 1~300m Length

Features

- Up to 10.5Gb/s bi-directional data links
- Compliant with IEEE 802.3ae
- Compliant with SFF-8431
- Hot-pluggable SFP+ footprint
- Built-in digital diagnostic functions
- Up to 300m on OM3 MMF
- Single power supply 3.3V
- ROHS compliant and lead-free
- Operating Temperature: 0~70ºC

Applications

- 10G Ethernet Data Center Intra-Rack and Inter-Rack links
- 4G and 8G Fibre Channel Applications
- 1x InfiniBand QDR. DDR, SDR
- High-performance computing clusters
- Servers, switches, storage and host card adapters

Description

Optcore's SFP-10G-AOCxM family are SFP+ active optical cables (AOC) for 10Gb Ethernet (10GbE) applications. The 10G SFP+ AOC cables provide an ideal alternative solution to SFP+ direct attach copper cables (DAC) and SFP+ transceivers of short reach, while providing improved signal integrity, exceptional cost and performance value. They are designed expressed for high speed, high density and low power consumption for today's data center networking applications. The SFP+ AOC cables are composed of SFP+ optical transceivers in both ends and OM3 multimode fiber cable in different cable length from 1 to 300 meters. The digital diagnostic functions are available via 2-wire serial bus specified in SFF-8472.

Absolute Maximum Ratings

Parameter	Symbol	Min	Max	Unit	Notes
Maximum Supply Voltage	Vcc	-0.5	4.5	V	
Storage Temperature	T_S	-40	85	°C	
Operating Humidity	RH	5	85	%	

Recommended Operating Conditions

Parameter	Symbol	Min.	Typ.	Max.	Unit	Notes
Power Supply Voltage	Vcc	3.13	3.3	3.47	V	
Power Supply Current	Icc		180	220	mA	Per end
Case Operating Temperature	Tc	0		70	°C	Standard
Data Rate			10.3	10.5	Gbps	

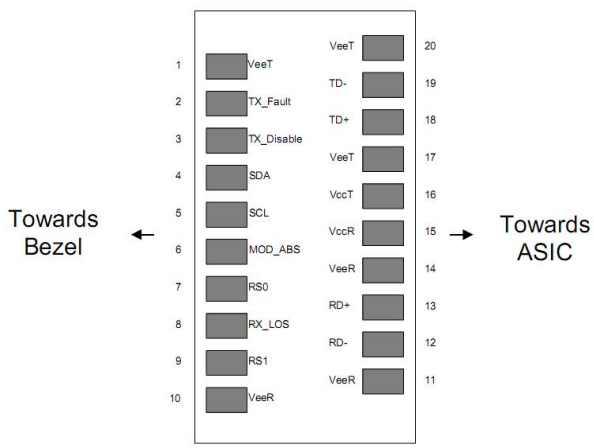
Optical Characteristics

Parameter		Symbol	Min	Typical	Max	Unit	Notes
Transmitter							
Centre Wavelength		λc	840	850	860	nm	
Spectral Width（RMS）		Δλ			0.45	nm	
Side-Mode Suppression Ratio		SMSR	-	-	-	dB	
Average Output Power		P_{out}	-6.0		-1.0	dBm	1
Extinction Ratio		ER	3.5			dB	
Data Input Swing Differential		V_{IN}	180		950	mV	2
Input Differential Impedance		Z_{IN}	90	100	110	Ω	
TX Disable	Disable		2.0		Vcc	V	
	Enable		0		0.8	V	
TX Fault	Fault		2.0		Vcc	V	
	Normal		0		0.8	V	
Receiver							
Centre Wavelength		λc	840	850	860	nm	
Receiver Sensitivity					-10.0	dBm	3
Receiver Overload			0.5			dBm	3
LOS De-Assert		LOS_D			-12	dBm	
LOS Assert		LOS_A	-22			dBm	
LOS Hysteresis			0.5		4	dB	
Data Output Swing Differential		V_{out}	500	700	900	mV	4
LOS		High	2.0		Vcc	V	
		Low			0.8	V	

Note :

1. The optical power is launched into MMF.
2. PECL input, internally AC-coupled and terminated.
3. Measured with a PRBS 2^{31}-1 test pattern @10312Mbps, BER ≤1×10^{-12}.
4. Internally AC-coupled.

Pin Definitions



Pin Descriptions

Pin	Signal Name	Description	Plug Seq.	Notes
1	V_{EET}	Transmitter Ground	1	
2	TX FAULT	Transmitter Fault Indication	3	Note 1
3	TX DISABLE	Transmitter Disable	3	Note 2
4	SDA	SDA Serial Data Signal	3	
5	SCL	SCL Serial Clock Signal	3	
6	MOD_ABS	Module Absent. Grounded within the module	3	
7	RS0	Not Connected	3	
8	LOS	Loss of Signal	3	Note 3
9	RS1	Not Connected	3	
10	V_{EER}	Receiver ground	1	
11	V_{EER}	Receiver ground	1	
12	RD-	Inv. Received Data Out	3	Note 4
13	RD+	Received Data Out	3	Note 4
14	V_{EER}	Receiver ground	1	
15	V_{CCR}	Receiver Power Supply	2	
16	V_{CCT}	Transmitter Power Supply	2	
17	V_{EET}	Transmitter Ground	1	
18	TD+	Transmit Data In	3	Note 5
19	TD-	Inv. Transmit Data In	3	Note 5
20	V_{EET}	Transmitter Ground	1	

Notes:

Plug Seq.: Pin engagement sequence during hot plugging.

1. TX Fault is an open collector output, which should be pulled up with a 4.7k~10kΩ resistor on the host board to a voltage between 2.0V and Vcc+0.3V. Logic 0 indicates normal operation; Logic 1 indicates a laser fault of some kind. In the low state, the output will be pulled to less than 0.8V.

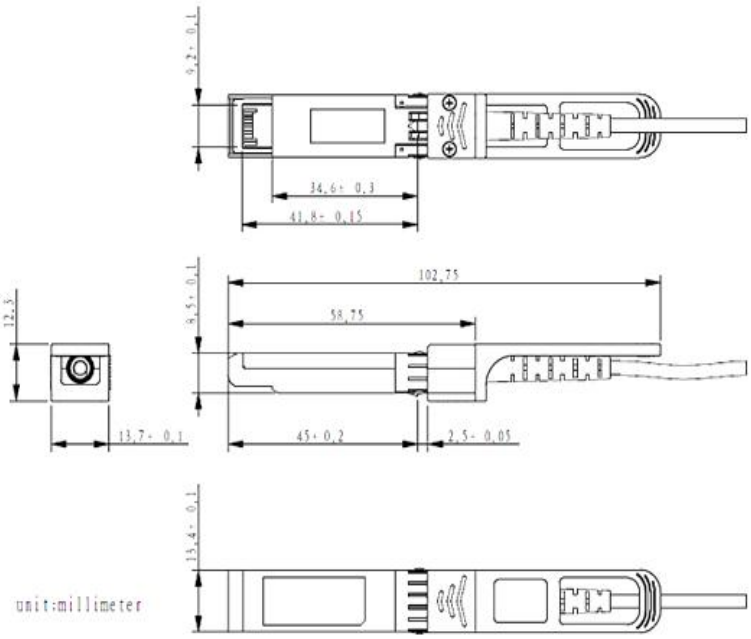
2. Laser output disabled on TDIS >2.0V or open, enabled on TDIS <0.8V.

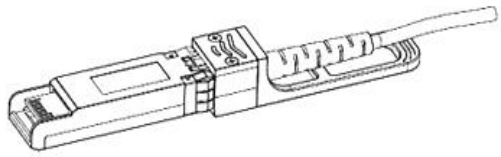
3. LOS is open collector output. Should be pulled up with 4.7k~10kΩ on host board to a voltage between 2.0V and 3.6V. Logic 0 indicates normal operation; logic 1 indicates loss of signal.

4. RD-/+: These are the differential receiver outputs. They are internally AC-coupled 100 differential lines which should be terminated with 100Ω (differential) at the user SERDES.

5. TD-/+: These are the differential transmitter inputs. They are internally AC-coupled, differential lines with 100Ω differential termination inside the module.

Mechanical Dimensions





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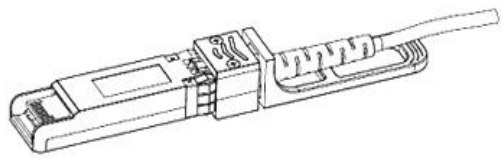

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Ordering information

Part number	Description	Fiber Type
SFP-10G-AOC1M	10G SFP+ Active Optical Cable, 1M	OM2
SFP-10G-AOC2M	10G SFP+ Active Optical Cable, 2M	OM2
SFP-10G-AOC3M	10G SFP+ Active Optical Cable, 3M	OM2
SFP-10G-AOC5M	10G SFP+ Active Optical Cable, 5M	OM2
SFP-10G-AOC7M	10G SFP+ Active Optical Cable, 7M	OM2
SFP-10G-AOC10M	10G SFP+ Active Optical Cable, 10M	OM2
SFP-10G-AOC15M	10G SFP+ Active Optical Cable, 15M	OM2
SFP-10G-AOC20M	10G SFP+ Active Optical Cable, 20M	OM2
SFP-10G-AOC30M	10G SFP+ Active Optical Cable, 30M	OM2
SFP-10G-AOC40M	10G SFP+ Active Optical Cable, 40M	OM2
SFP-10G-AOC50M	10G SFP+ Active Optical Cable, 50M	OM3
SFP-10G-AOC75M	10G SFP+ Active Optical Cable, 75M	OM3
SFP-10G-AOC100M	10G SFP+ Active Optical Cable, 100M	OM3
SFP-10G-AOC150M	10G SFP+ Active Optical Cable, 150M	OM3
SFP-10G-AOC200M	10G SFP+ Active Optical Cable, 200M	OM3
SFP-10G-AOC250M	10G SFP+ Active Optical Cable, 250M	OM3
SFP-10G-AOC300M	10G SFP+ Active Optical Cable, 300M	OM3
SFP-10G-AOCxxM	Customized 10G SFP+ Active Optical Cable, x:1~300, Length in meters	OM2<50M, OM3>50M

Warnings

Process plug

The transceiver optics is supplied with a dust cover. This plug protects the transceiver optics during standard manufacturing processes by preventing contamination from air borne particles.It is recommended that the dust cover remain in the transceiver whenever an optical fiber connector is not inserted.

Handling Precautions

The transceiver optics is susceptible to damage as a result of electrostatic discharge (ESD). A static free environment is highly recommended. Follow guidelines according to proper ESD procedures.

Laser Safety

The transceiver optics is a Class 1 laser product per international standard IEC 60825-1. Radiation emitted by laser devices can be dangerous to human eyes. Avoid eye exposure to direct or indirect radiation.

For more product information, visit us on the web at www.optcore.net