

10Gb/S SFP+ Active Optical Cable

SFP-10G-AOCxxM

Description

SFP+ Active Optical Cable (AOC) assemblies use active circuits to support longer distances than standard Passive or Active SFP+ Copper Cables. They are designed for high speed, short range data link via optical fiber wire. SFP+ AOC cables provide high performance Enhanced Small Form Factor Pluggable (SFP+) interface and it is a cost effective solution for Data Center/ storage and all short range data application.

These Active Optical Cable (AOC) can be used as an alternative solution to SFP+ passive and active copper cables, while providing improved signal integrity, longer distances, superior electromagnetic immunity and better bit error rate performance.

Features

- ✓ Support up to 10 Gb/s bi-directional operation
- ✓ Available lengths (in meters): 1, 2, 3, 4, 5....
- ✓ Hot-pluggable SFP+ cable ends
- ✓ Commercial temperature range(COM): 0 to 70°C
- ✓ Low power consumption: less than 1.0 W per end
- ✓ Bend insensitive fiber
- ✓ Single 3.3V power supply
- ✓ All-metal housing for superior EMI performance
- ✓ I²C standard management interface
- ✓ Electrical interface compliant to SFF-8431
- ✓ Compliant to industrial standard SFP MSA
- ✓ Compliant RoHS



Applications

- ✓ 10 Gigabit Ethernet (10GbE)
- ✓ 1 / 2 / 4 / 8G Fibre Channel (1 / 2 / 4 / 8GFC), Fibre Channel
- ✓ Cost effective 10G SFP+ link solution
- ✓ System cascade applications
- ✓ System Internal data link solution
- ✓ Proprietary high speed, high density data transmission
- ✓ Switch and router high speed backplane interconnect
- ✓ High performance computing, server and data storage

Absolute Maximum Ratings

Paramete	Symbol	Min.	Max.	Unit
Storage Temperature	Ts	-40	+85	°C
Operating Case Temperature	Tc	0	+70	°C
Supply Voltage	Vcc	3.135	3.465	V
Relative Humidity(Non-condensing)	RH	0	+85	%

Recommended Operating Conditions

Paramet	Symbol	Min.	Typical	Max.	Unit
Operating Case Temperature	Tc	0		+70	°C
Power Supply Voltage	Vcc	3.14	3.3	3.47	V
Power Supply Current	Icc	-	-	300	mA

Transmitter Operating Characteristic-Optical

Parameter	Symbol	Min	Typical	Max	Unit	Note
Operating Data Rate	DR	1.06	10.3125	11.3	Gb/s	
Output Center Wavelength	λ_c	840	850	860	nm	
Spectral width	Pm			1	nm	1
Transmitter Dispersion Penalty	TDP	-	-	3.9	dBm	
Average Optical Power	Pavg	-6.5		-1	dBm	2
Relative Intensity Nois	Rin			-128	dB/Hz	
Extinction Ratio	ER	3.5		-	dB	3
Optical Return Loss Tolerance				12	dB	

Receiver Operating Characteristic-Optical

Parameter	Symbol	Min	Typical	Max	Unit	Note
Center Wavelength	λ_r	840	850	860	nm	
Receiver Sensitivity	Psens			-11.1	dBm	4
Stressed Sensitivity in OMA				-7.5	dBm	4
Los function	Los	-30		-12	dBm	
Overload	Pin			-1	dBm	4
Receiver Reflectance				-12	dBm	

Notes:

[1] Trade-offs are available between spectral width, center wavelength and minimum OMA, as shown in the table

[2] The optical power is launched into MMF

[3] Measured with a PRBS 231-1 test pattern @10.3125Gbps.

[4] Measured with a PRBS 231-1 test pattern @10.3125Gbps, BER≤10⁻¹².

Pin Designation

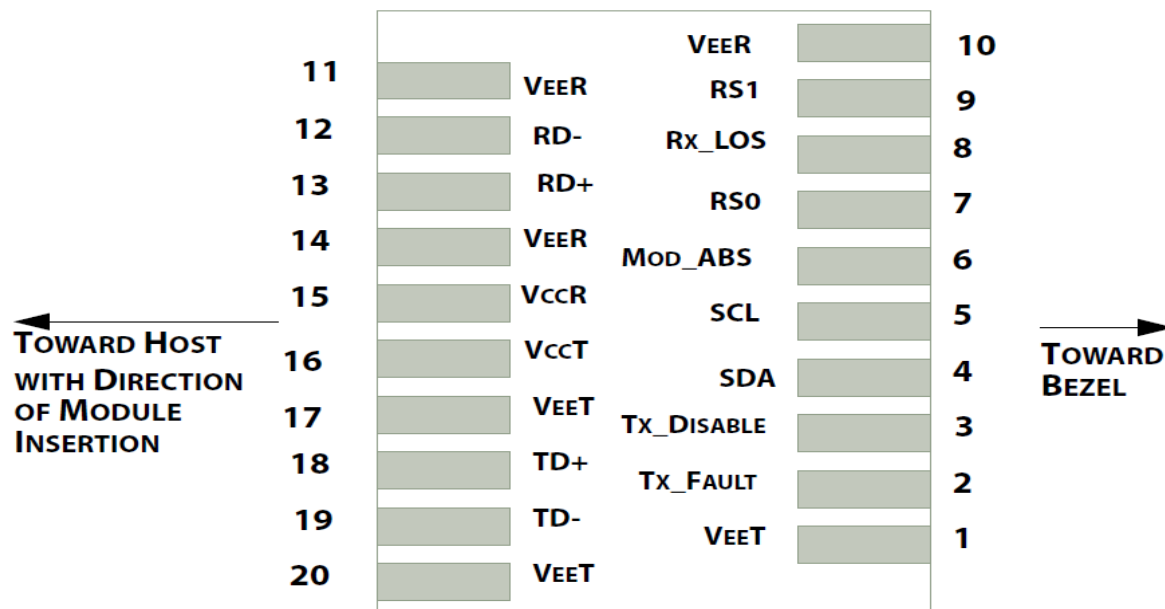


Figure1 Pin view

Pin Assignment

PIN	Logic	Symbol	Name / Description	Note
1		VeeT	Module Transmitter Ground	1
2	LVTTL-O	TX_Fault	Module Transmitter Fault	2
3	LVTTL-I	TX_Dis	Transmitter Disable; Turns off transmitter laser output	3
4	LVTTL-I/O	SDA	2-Wire Serial Interface Data Line	
5	LVTTL-I	SCL	2-Wire Serial Interface Clock	
6		MOD_ABS	Module Absent, connected to VeeT or VeeR in the module	4
7	LVTTL-I	RS0	Not used	
8	LVTTL-O	RX_LOS	Receiver Loss of Signal Indication Active High	2
9	LVTTL-I	RS1	Not used	
10		VeeR	Module Receiver Ground	1
11		VeeR	Module Receiver Ground	1
12	CML-O	RD-	Receiver Inverted Data Output	
13	CML-O	RD+	Receiver Data Output	
14		VeeR	Module Receiver Ground	1
15		VCCR	Module Receiver 3.3 V Supply	
16		VcCT	Module Receiver 3.3 V Supply	

17		VeeT	Module Transmitter Ground	1
18	CML-I	TD+	Transmitter Non-Inverted Data Input	
19	CML-I	TD-	Transmitter Inverted Data Input	
20		VeeT	Module Transmitter Ground	1

Notes:

[1] The module signal ground pins, VeeR and VeeT, shall be isolated from the module case.

[2] This pin is an open collector/drain output pin and shall be pulled up with 4.7kΩ-10kΩ to Host_Vcc on the host board. Pull ups can be connected to multiple power supplies, however the host board design shall ensure that no module pin has voltage exceeding module VccT/R + 0.5V.

[3] This pin is an open collector/drain input pin and shall be pulled up with 4.7kΩ-10kΩ to VccT in the Module.

[4] This pin shall be pulled up with 4.7kΩ-10kΩ to Host_Vcc on the host board.

Monitoring Specification

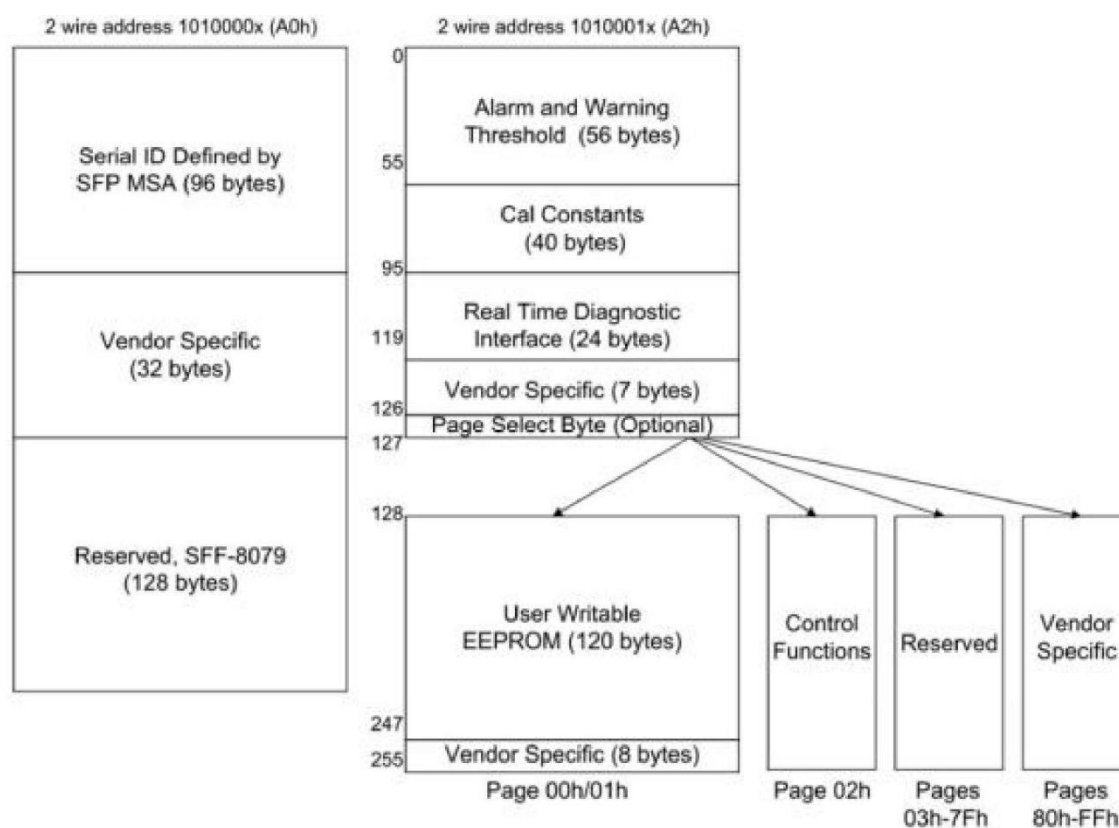
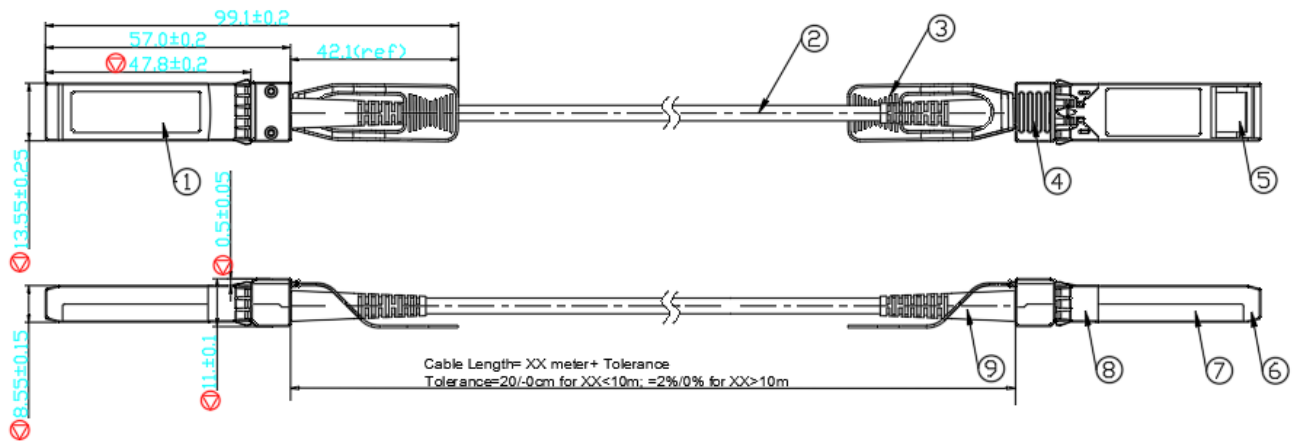


Figure2 Memory Map

Mechanical Drawing



Information

Part Number	Product Description	Fiber Spec.
SFP-10G-AOC1M	10G SFP+ Active Optical Cable 1Meters	OM2or OM3
SFP-10G-AOC3M	10G SFP+ Active Optical Cable 3Meters	OM2or OM3
SFP-10G-AOC5M	10G SFP+ Active Optical Cable 5Meters	OM2or OM3
SFP-10G-AOC10M	10G SFP+ Active Optical Cable 10Meters	OM2or OM3
SFP-10G-AOC30M	10G SFP+ Active Optical Cable 30Meters	OM3
SFP-10G-AOC50M	10G SFP+ Active Optical Cable 50Meters	OM3
SFP-10G-AOC100M	10G SFP+ Active Optical Cable 100Meters	OM3