10Gb/s SFP+ Active Optical Cable

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

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

Compliance

- SFP MSA
- SFF-8472
- RoHS

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.

Specification

Table1-Absolute Maximum Ratings

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

Table2-Recommended Operating Conditions

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

Table3-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	

Table4-Receiver Operating Characteristic-Optical

Parameter	Symbol	Min	Typical	Max	Unit	Note
Center Wavelength	λr	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

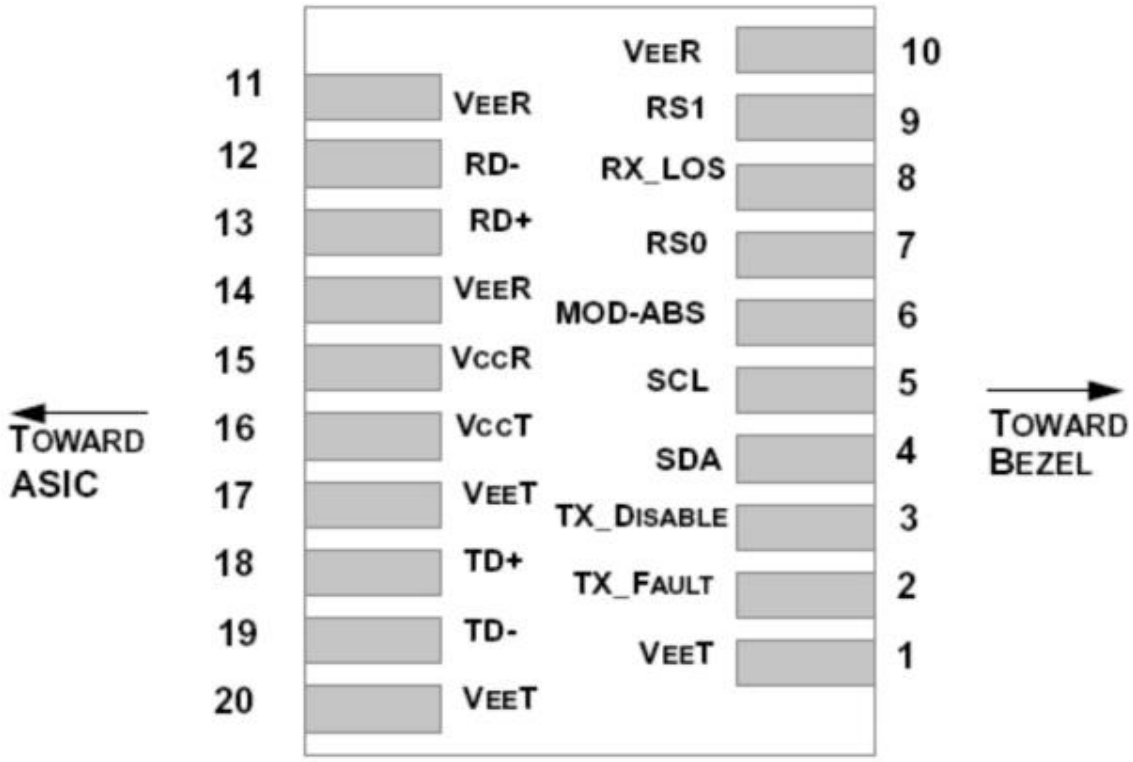

Figure1 Pin view

Table5-Pin Assignment

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

19	CML-I	TD-	Transmitter Inverted Data Input	3rd	
20		VeeT	Module Transmitter Ground	1st	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

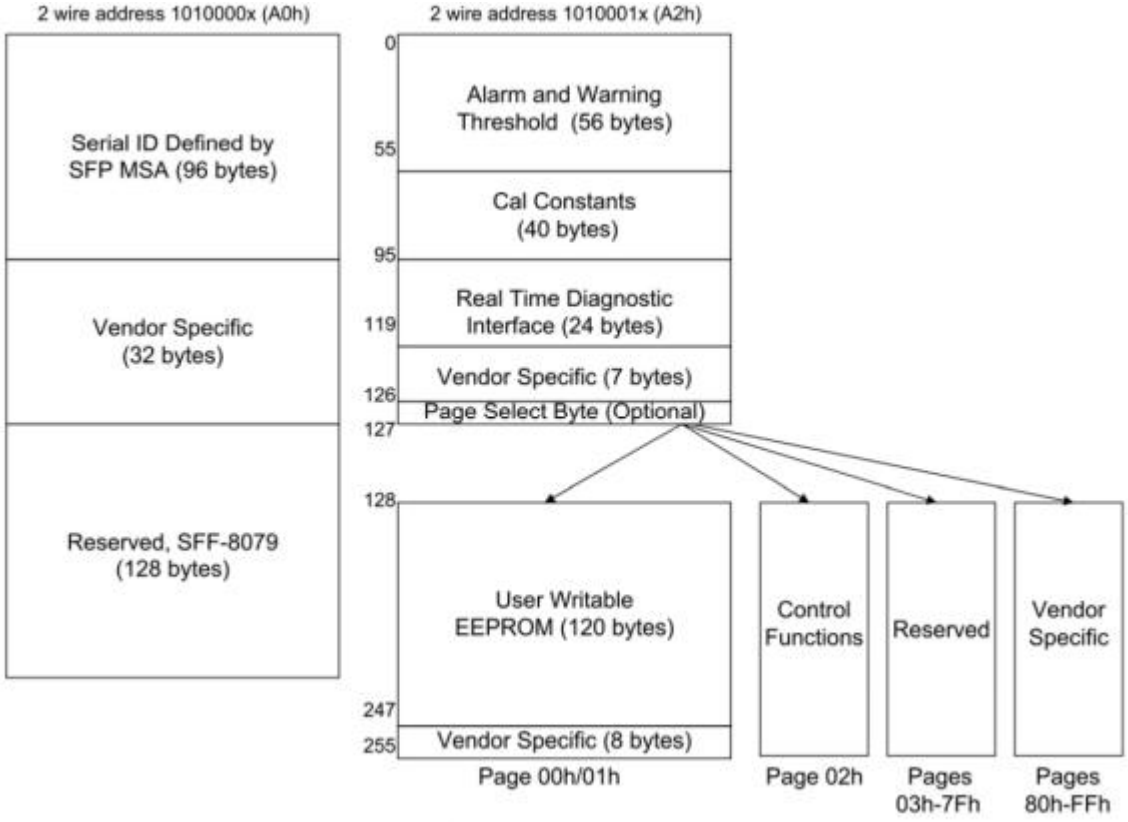

Figure2 Memory Map

Caution

All adjustments have been done at the factory before the shipment of the devices. No maintenance and user serviceable part is required. Tampering with and modifying the performance of the device will result in voided product warranty.

Contact Information

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