

25G SFP28 Active Optical Cable

Specification

1 Description:

25G SFP28 active optical cable (AOC) components are supported by active circuits, which have a longer transmission distance than passive or active SFP28 copper cables. It is specially designed for high-speed, short-range data links via optical fiber lines. SFP28 AOC provides signal integrity, longer distance, superior electromagnetic immunity and better bit error rate. It is a cost-effective solution for data center/storage and all short-range data applications.

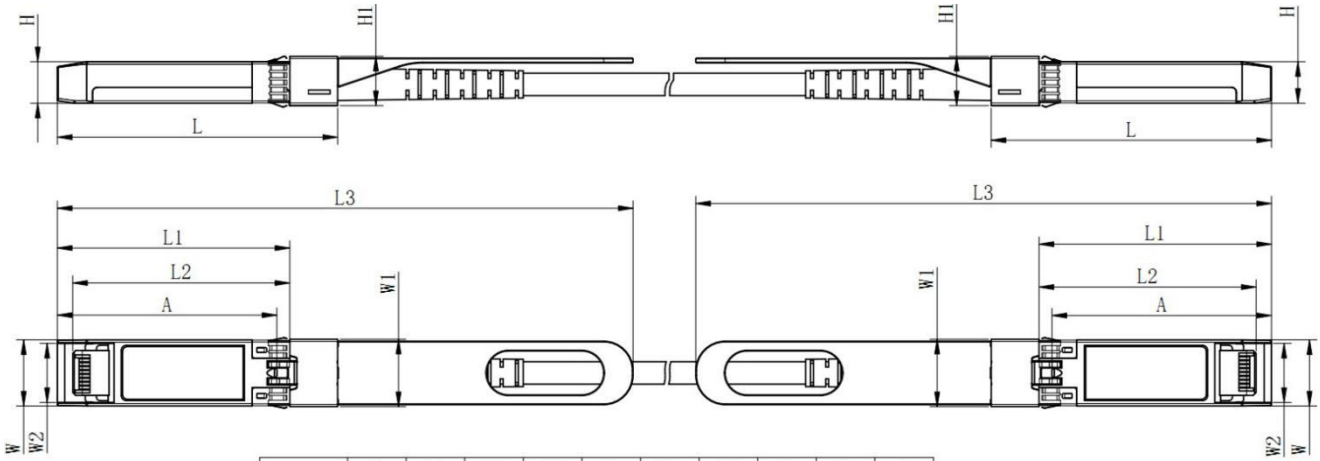
2 Features:

- Electrical interface compliant to SFF-8431
- 850nm VCSEL laser and PIN photo-detector
- Maximum link length of 70m on OM3 MMF and 100m on OM4 MMF
- Digital diagnostics functions are available via the I2C interface
- RoHS compliant
- Hot Pluggable

3 Applications:

- 25GBASE-SR Ethernet
- InfiniBand QDR, SDR, DDR
- Servers, switches, storage and host card adapters

4 Outline drawing:

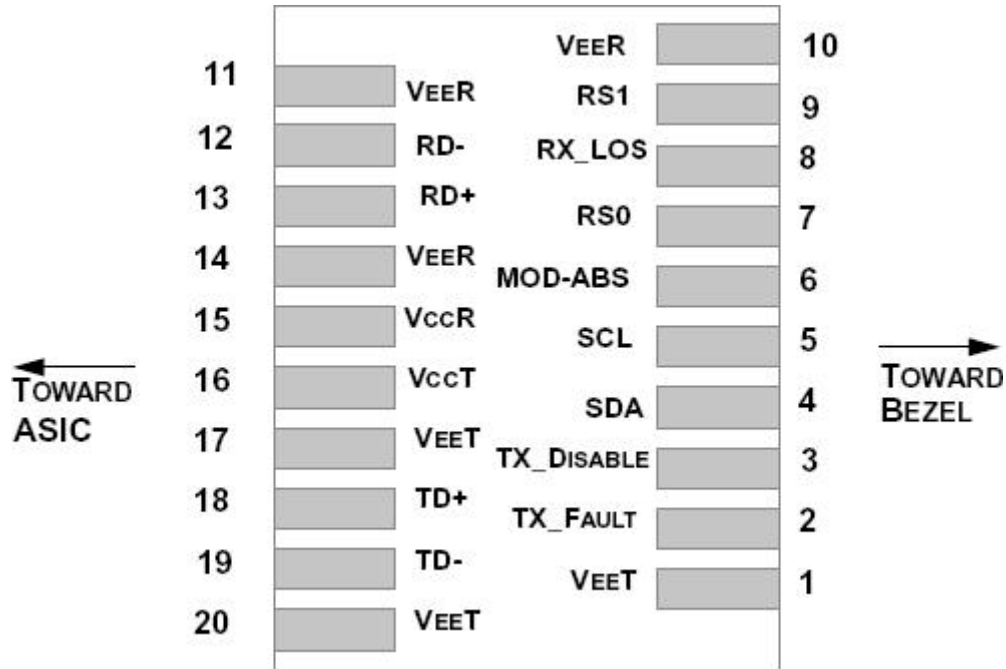


	L	L1	L2	L3	W	W1	W2	H	H1	A
MAX	57.6	47.7	44.55	119.9	13.8	14.0	12.3	8.7	10.3	45.25
Typical	57.4	47.5	44.35	117.9	13.55	13.8	12.1	8.5	10.1	45
MIN	57.2	47.3	44.15	115.9	13.3	13.6	11.9	8.4	9.9	44.65

Parameter	Value	Units
Diameter	3	mm
Minimum bend radius	30	mm
Length tolerance	Length < 1 m: +5 / -0	cm
	1 m ≤ length ≤ 4.5 m: +15 / -0	cm
	5 m ≤ length ≤ 14.5 m: +30 / -0	cm
	Length ≥ 15.0 m: +2% / -0	m
Cable color	Aqua(OM3),Magenta(OM4)	

5 Wiring Diagram:

5.1 pin design



5.2 Pin Descriptions

Pin	Symbol	Name/Description	Notes
1	VEET	Module Transmitter Ground	1
2	TX_FAULT	Module Transmitter Fault	2
3	TX_DISABLE	Transmitter Disable; Turns off transmitter laser output	3
4	SDA	2-Wire Serial Interface Data Line (MOD-DEF2)	
5	SCL	2-Wire Serial Interface Clock (MOD-DEF1)	
6	MOD_ABS	Module Absent, connected to V _{EE} T or V _{EE} R in the module	2
7	RS0	Rate Select 0, optionally controls SFP+ module receiver	
8	RX_LOS	Receiver Loss of Signal Indication (In FC designated as Rx_LOS and in Ethernet designated as NOT Signal Detect)	2
9	RS1	Rate Select 1, optionally controls SFP+ module transmitter	
10	V _{EE} R	Module Receiver Ground	1
11	V _{EE} R	Module Receiver Ground	1
12	RD-	Receiver Inverted Data Output	
13	RD+	Receiver Non-Inverted Data Output	
14	V _{EE} R	Module Receiver Ground	1
15	V _{CC} R	Module Receiver 3.3 V Supply	

16	V _{CC} T	Module Transmitter 3.3 V Supply	
17	V _{EE} T	Module Transmitter Ground	1
18	TD+	Transmitter Non-Inverted Data Input	
19	TD-	Transmitter Inverted Data Input	
20	V _{EE} T	Module Transmitter Ground	1

Remake:

1. The module ground pins are isolated from the module case.
2. The pins shall be pulled up with 4.7K-10Kohms to a voltage between 3.14V and 3.46V on host board.
3. The pin is pulled up to VCCT with a 4.7K-10KΩ resistor in the module.

6 Recommended Operating Conditions:

Parameter	Symbol	Min.	Typical	Max.	Unit	Notes
Operating Case Temperature	T _C	0	-	+70	°C	
Power Supply Voltage	V _{CC}	3.14	3.3	3.47	V	
Power Supply Current	I _{CC}	-	-	300	mA	
Power Dissipation	P _d	-	-	1.0	W	
Bit Rate	BR	8.5	25.78125	-	Gbps	
Fiber Bend Radius	R _b	3	-	-	cm	

7 Electrical Characteristics:

Parameter	Symbol	Min.	Typ	Max.	Units	Notes	
Transmitter							
Differential Data Input Swing	V _{in,P-P}	200	-	1600	mV _{PP}		
Input Differential Impedance	Z _{IN}	90	100	110	Ω		
Tx_Fault	Normal Operation	V _{OL}	0	-	0.8	V	
	Transmitter Fault	V _{OH}	2.0	-	V _{CC}	V	
Tx_Disable	Normal Operation	V _{IL}	0	-	0.8	V	
	Laser Disable	V _{IH}	2.0	-	V _{CC} +0.3	V	

Receiver						
Differential Data Output	V_{out}	400	-	800	mV	
Output Differential Impedance	Z_D	90	100	110	Ω	
Rx_LOS	Normal Operation	V_{OL}	0	-	0.8	V
	Lose Signal	V_{oH}	2.0	-	V_{CC}	V

8 Optical Characteristics:

Parameter	Symbol	Unit	Min	Typ	Max	Notes
Optical transmitter Characteristics						
Data Rate	DR	Gbps	8.5	25.78125		
Center Wavelength Range	λ_c	nm	820	850	880	
Laser Off Power	P _{off}	dBm	-	-	-45	
Launch Optical Power	P ₀	dBm	-6.0		2.4	
Extinction Ratio	ER	dB	2	-	-	
(rms) Spectral Width(RMS)	RMS	nm	-		0.65	
Optical Receiver Characteristics						
Data Rate	DR	Gbps	8.5	25.78125		
Bit Error Rate	BER	dBm	-	-	E-12	
Damage threshold	DT	dBm	3.4	-	-	
Overload Input Optical Power	P _{IN}	dBm	2.4	-	-	
Center Wavelength Range	λ_c	nm	820	-	880	
Receiver Sensitivity in Average Power	Sen	dBm	-	-	-5.2	
Los Assert	Los _A	dBm	-30	-	-	
Los De-Assert	Los _D	dBm	-	-	-13	
Los Hysteresis	Los _H	dB	0.5	-	-	



9 Absolute Maximum Ratings:

Parameter	Symbol	Min.	Typical	Max.	Unit	Notes
Supply Voltage	V _{CC3}	-0.5	-	+3.6	V	
Storage Temperature	T _s	-40	-	+85	°C	
Operating Humidity	RH	+5	-	+85	%	