

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.

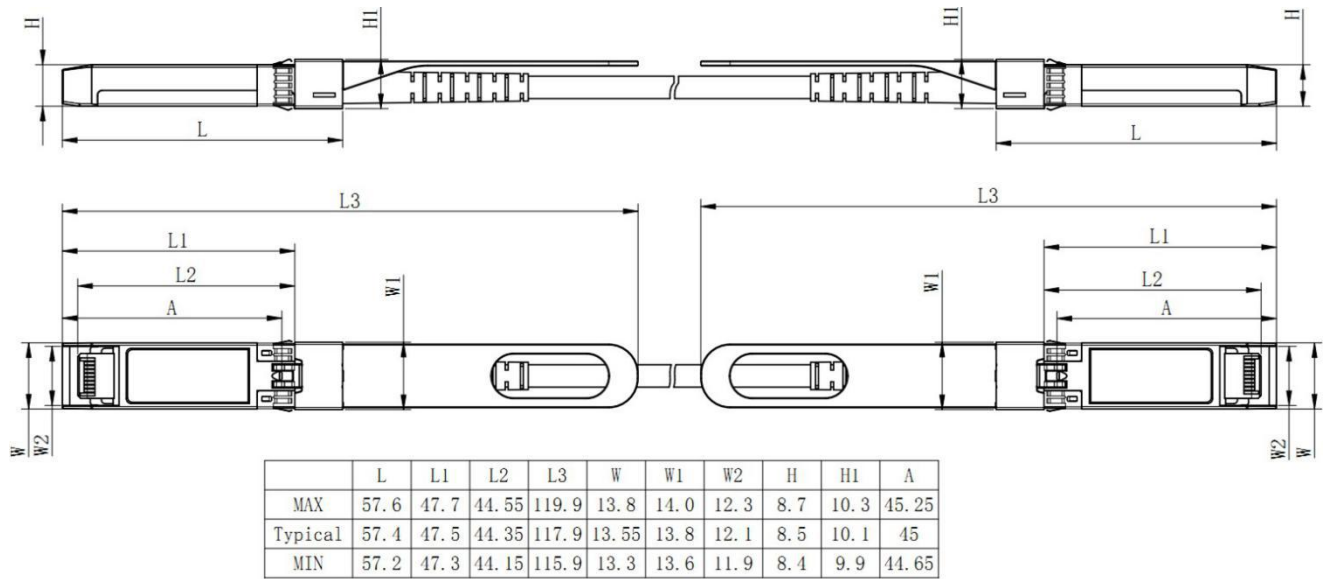
2 Features:

- 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 Pluggabl

3 Applications:

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

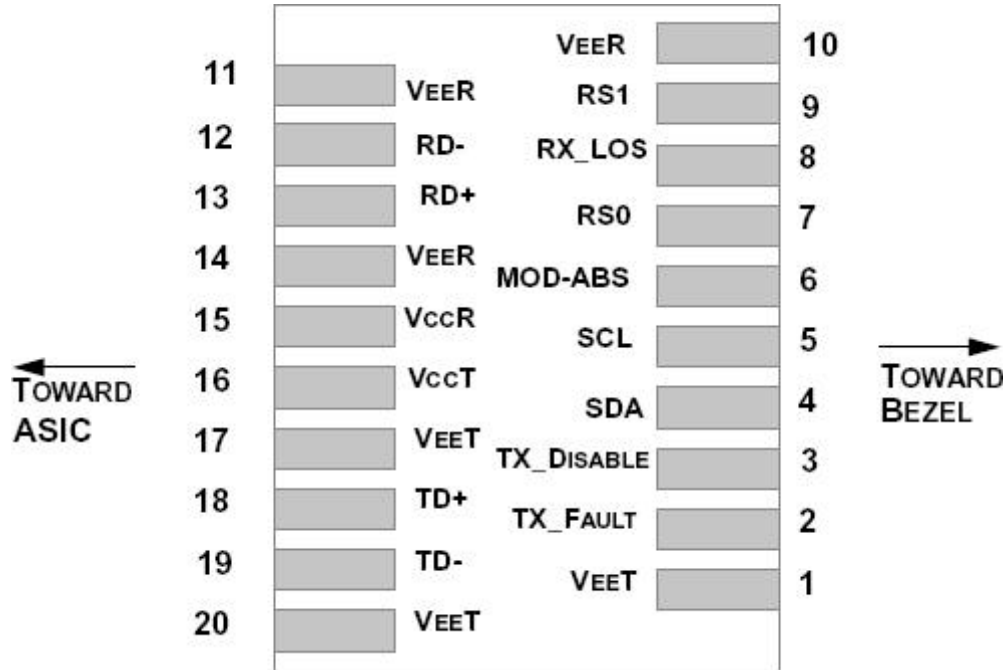
4 Outline drawing:



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 _{P-P}		
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	LosD	dBm	-	-	-13	
Los Hysteresis	LosH	dB	0.5	-	-	

9 Absolute Maximum Ratings:

Parameter	Symbol	Min.	Typical	Max.	Unit	Notes
Supply Voltage	Vcc ₃	-0.5	-	+3.6	V	
Storage Temperature	T _s	-40	-	+85	°C	
Operating Humidity	RH	+5	-	+85	%	