

10G SFP+ Active Optical Cable

OPL-CB-XG15LC & OPL-CB-XG10LC



Description

10G SFP active optical cable (AOC) components are supported by active circuits, which have a longer transmission distance than passive or active SFP+ copper cables. SFP+AOC cable provides high-performance small form-factor pluggable (SFP+) interface, which is a cost-effective solution for data center, storage and short-range data applications.

10G SFP active optical cable providing improved signal integrity, longer distances, superior electromagnetic immunity and better bit error rate performance.

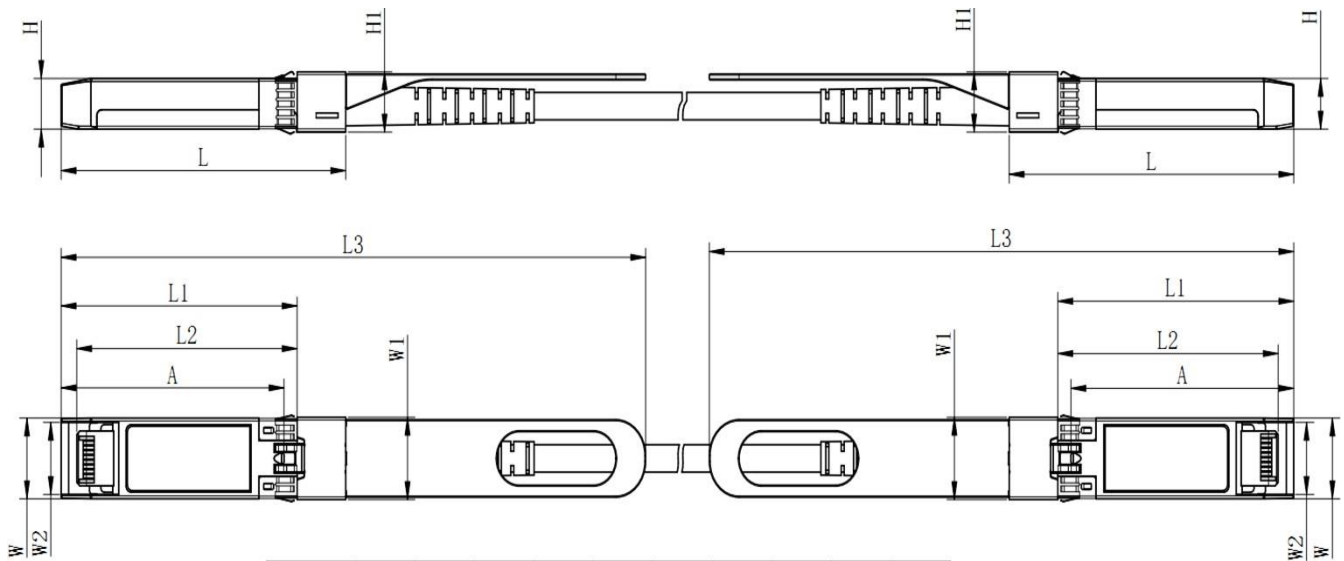
Features

- Electrical interface compliant to SFF-8431
 - 850nm VCSEL laser and PIN photo-detector
 - Maximum link length of 150m on OM2 MMF and 300m on OM3 MMF
 - Digital diagnostics functions are available via the I2C interface
 - RoHS compliant
 - Hot Pluggable
-

Applications

- 10 Gigabit Ethernet
- InfiniBand QDR, SDR, DDR
- Servers, switches, storage and host card adapter

Outline Drawing

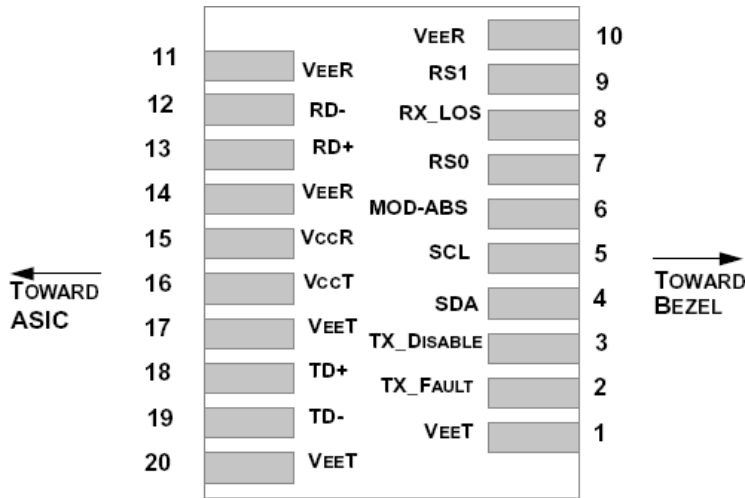


	L	L1	L2	L3	W	W1	W2	H	H1	A
MAX	57.6	47.7	44.55	119.9	13.8	14.0	12.3	8.7	10.3	45.25
Typical	57.4	47.5	44.35	117.9	13.55	13.8	12.1	8.5	10.1	45
MIN	57.2	47.3	44.15	115.9	13.3	13.6	11.9	8.4	9.9	44.65

Parameter	Value	Units
Diameter	3	mm
Minimum bend radius	30	mm
Length tolerance	Length < 1 m:	+5 /-0
	1 m ≤ length ≤ 4.5 m:	+15 /-0
	5 m ≤ length ≤ 14.5 m:	+30 /-0
	Length ≥ 15.0 m	+2% /-0
Cable color	Aqua(OM3); Orange(OM2)	

Wiring Diagram

5.1 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

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}	-	-	150	mA	
Power Dissipation	P_d	-	-	0.6	W	
Bit Rate	BR	-	10.3125	-	Gbps	
Fiber Bend Radius	R_b	3	-	-	cm	

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 Date Output		V_{out}	370	-	1600	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	

Optical Characteristics

Parameter	Symbol	Unit	Min	Typ	Max	Notes
Optical transmitter Characteristics						
Data Rate	DR	Gbps	9.953	10.3125	11.3	
Center Wavelength Range	λ_c	nm	820	850	880	
Laser Off Power	P _{off}	dBm	-	-	-45	
Launch Optical Power	P ₀	dBm	-6.0			1
Extinction Ratio	ER	dB	3	-	-	
(rms) Spectral Width(RMS)	RMS	nm	-		0.45	
Optical Receiver Characteristics						
Data Rate	DR	Gbps	9.953	10.3125	11.3	
Bit Error Rate	BER	dBm	-	-	E-12	2
Overload Input Optical Power	P _{IN}	dBm	2.4	-	-	2
Center Wavelength Range	λ_c	nm	820	-	880	
Receiver Sensitivity in Average Power	Sen	dBm	-	-	-9.9	3
Los Assert	LosA	dBm	-26	-	-	
Los De-Assert	LosD	dBm	-	-	-12	
Los Hysteresis	LosH	dB	0.5	-	-	

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	%	1
Receiver Damage Threshold	P R _{dmg}	+3.4	-	-	dBm	

