

Preliminary DATA SHEET

CFORTH-SFP-H10GB-AOCxM

10Gb/s SFP+ Active Optical Cable

CFORTH-SFP-H10GB-AOCxM Overview

CFORTH-SFP-H10GB-AOCxM SFP+ active optical cables are based on 10 Gigabit Ethernet and SFF-8431 standard, and provide a quick and reliable interface for the 10G Ethernet application. The digital diagnostic functions are available via 2-wire serial bus specified in SFF-8472.

Product Features

- Up to 10.5 Gb/s bi-directional data links
- Compliant with IEEE 802.3ae
- Compliant with SFF-8431
- Hot-pluggable SFP+ footprint
- 850nm VCSEL laser transmitter and PIN receiver
- Built-in digital diagnostic functions
- Up to 300m on OM3 MMF
- Low power consumption (Module work consumption <1W)
- Single power supply 3.3V
- RoHS Compliant
- Operating temperature range (Case Temperature): 0°C to 70°C

Applications

- 10G Ethernet Data Center Intra-Rack and Inter-Rack links

Ordering Information

Part Number	Description	Color on Clasp
CFORTH-SFP-H10GB-AOCxM	10G SFP+ Active Optical Cable up to 300m on OM3 MMF	Blue

General Specifications

Parameter	Symbol	Min	Typ	Max	Unit	Remarks
Data Rate	DR		10.3125		Gb/s	1
Bit Error Rate	BER			10^{-12}		
Operating Temperature	T_C	0		70	°C	2
Storage Temperature	T_{STO}	-40		85	°C	3
Supply Current	I_{CC}		180	290	mA	4
Input Voltage	V_{CC}	3.14	3.3	3.46	V	
Maximum Voltage	V_{MAX}	-0.5		4	V	4

Notes:

1. IEEE 802.3ae
2. Case temperature
3. Ambient temperature
4. For electrical power interface

Electrical – Characteristics – Transmitter **$V_{CC}=3.14V$ to $3.46V$, $T_C=0^{\circ}C$ to $70^{\circ}C$**

Parameter	Symbol	Min	Typ	Max	Unit	Remarks
Input differential impedance	R_{IN}		100		Ω	1
Differential data input swing	V_{IN_PP}	180		700	mV	
Transmit Disable Voltage	V_D	2		V_{CC}	V	
Transmit Enable Voltage	V_{EN}	V_{EE}		$V_{EE}+0.8$	V	

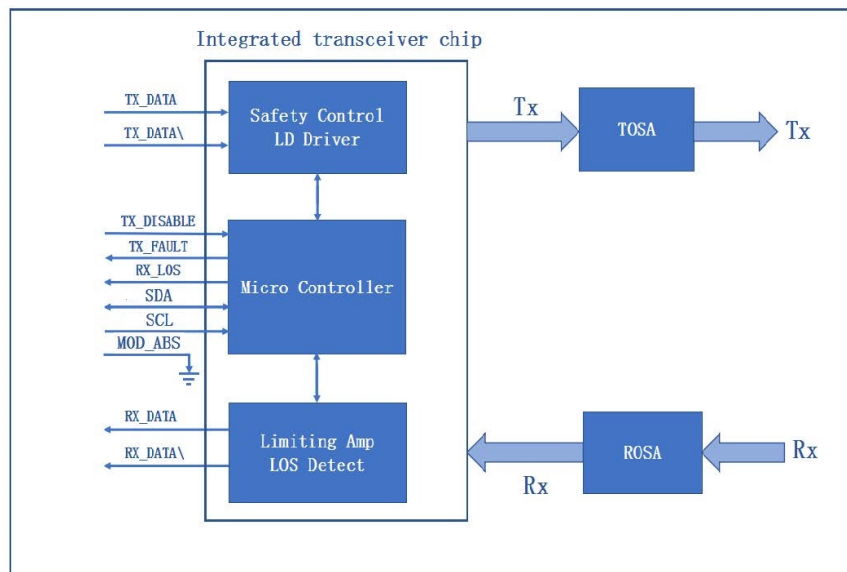
Notes:

1. Non-condensing

Electrical – Characteristics – Receiver **$V_{CC}=3.14V$ to $3.46V$, $T_C=0^{\circ}C$ to $70^{\circ}C$**

Parameter	Symbol	Min	Typ	Max	Unit	Remarks
Differential data output swing	V_{OUT_PP}	300		850	mV	
Data output rise time (20%-80%)	t_r	30			ps	
Data output fall time(20%-80%)	t_f	30			ps	
LOS Fault	V_{LOS_A}	2		V_{CC_HOST}	V	
LOS Normal	V_{LOS_D}	V_{EE}		$V_{EE}+0.5$	V	

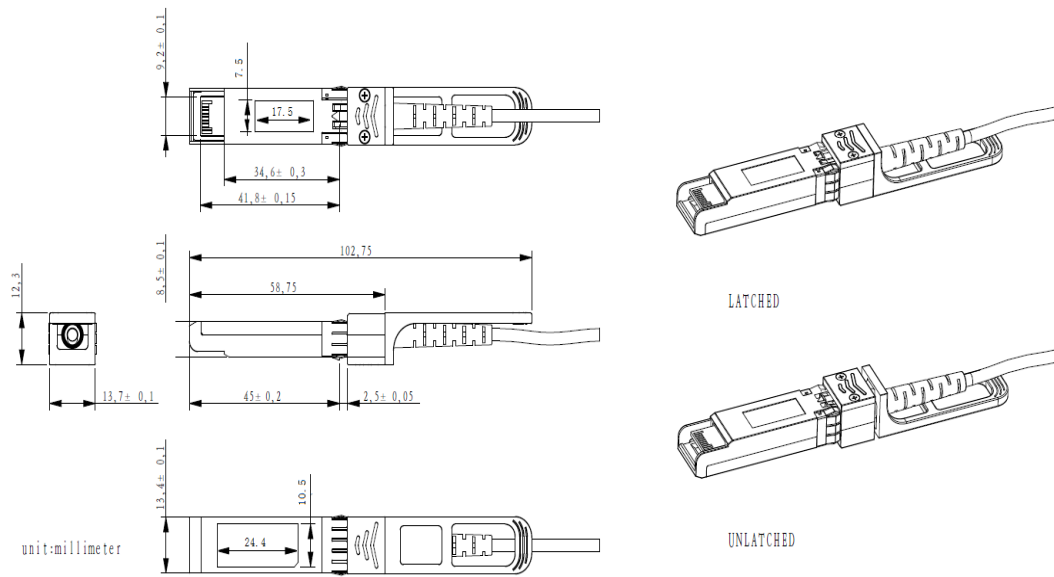
Block-Diagram-of-Transceiver



Optical Cable Details

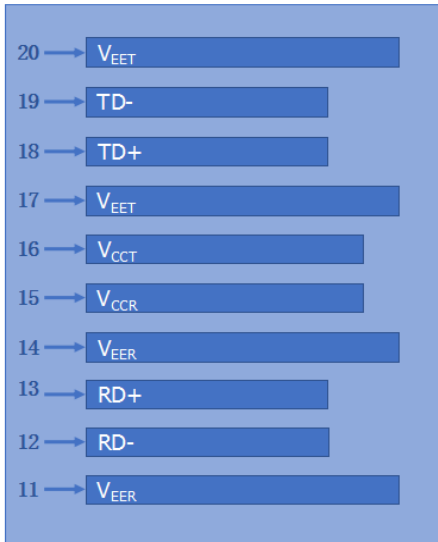
Parameter	Min	Typ	Max	Unit	Remarks
Jacket Material		LSZH			
Jacket Color		Aqua Green			
Flammability Rating		OFN			
Outer Diameter	2.8	3.0	3.2	mm	
Tensile Load(Short Term)			200	N	
Tensile Load(Long Term)			100	N	
Crush Resistance	10			N/mm	IEC 60794-1-21
Impact Resistance	0.5			N.m	IEC 60794-1-21
Flexing	300			Cycles	IEC 60794-1-21
Twist Bend					IEC 60794-1-21
Cable to SFP+ Plug Connection			90	N	
Bend Radius(Short Term)	25			mm	
Bend Radius(Long Term)	30			mm	

Dimensions

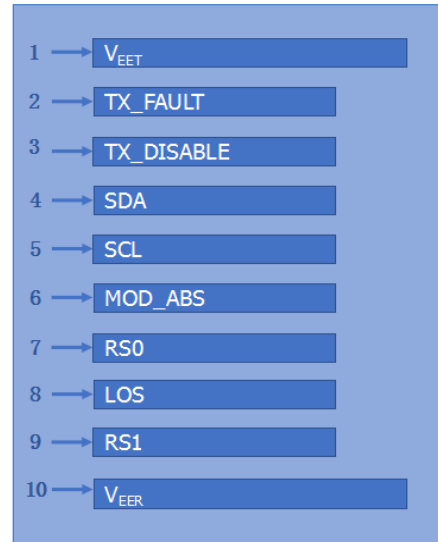


ALL DIMENSIONS ARE ±0.2mm UNLESS OTHERWISE SPECIFIED
UNIT: mm

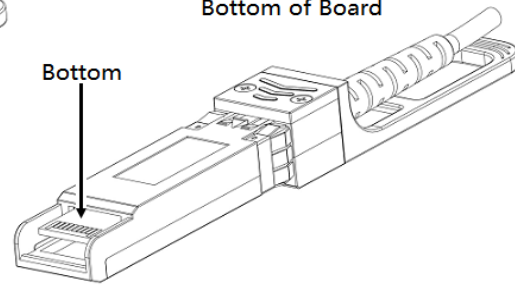
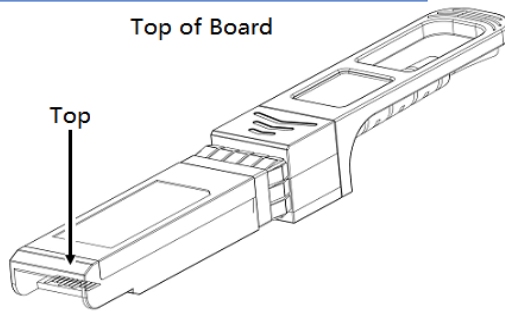
Electrical Pad Layout



Top of Board



Bottom of Board



Pin Assignment

PIN #	Symbol	Description	Remarks
1	V _{EET}	Transmitter ground (common with receiver ground)	1
2	TX_FAULT	Transmitter Fault	
3	TX_DISABLE	Transmitter Disable. Laser output disabled on high or open	2
4	SDA	2-wire Serial Interface Data Line	3
5	SCL	2-wire Serial Interface Clock Line	3
6	MOD_ABS	Module Absent. Grounded within the module	3
7	RS0	No connection required	
8	LOS	Loss of Signal indication. Logic 0 indicates normal operation	4
9	RS1	No connection required	1
10	V _{EER}	Receiver ground (common with transmitter ground)	1
11	V _{EER}	Receiver ground (common with transmitter ground)	1
12	RD-	Receiver Inverted DATA out. AC coupled	
13	RD+	Receiver Non-inverted DATA out. AC coupled	
14	V _{EER}	Receiver ground (common with transmitter ground)	1
15	V _{CCR}	Receiver power supply	
16	V _{CCT}	Transmitter power supply	
17	V _{EET}	Transmitter ground (common with receiver ground)	1
18	TD+	Transmitter Non-Inverted DATA in. AC coupled	
19	TD-	Transmitter Inverted DATA in. AC coupled	
20	V _{EET}	Transmitter ground (common with receiver ground)	1

Notes:

1. Circuit ground is isolated from chassis ground
2. Disabled: T_{DIS}>2V or open, Enabled: T_{DIS}<0.8V
3. Should Be pulled up with 4.7k 10k ohm on host board to a voltage between 2V and 3.6V
4. LOS is open collector output

References

1. IEEE standard 802.3ae. IEEE Standard Department, 2005.
2. Enhanced 8.5 and 10 Gigabit Small Form Factor Pluggable Module “SFP+” SFF-8431.
3. Digital Diagnostics Monitoring Interface for Optical Transceivers SFF-8472.