

E-AC-SS-7D6xxxx00-LC

10-Gbps SFP+ Active Optical Cable



Data Sheet



Description

The FOCI's 10G E-AC-SS-7D6xxxx00-LC Small Form-Factor Pluggable Plus (SFP+) active optical cables (AOCs) are high-performance active optical cables to serve 10Gb Ethernet (10GbE) applications. They are fully compatible with industry standard SFP-8431 Pluggable (SFP+) interface requirements and performance. They are designed to support single channel high speed data link applications with a full duplex construction, capable of transmitting data rates up to 10 Gb/s and a maximum distance of 100 m.

Compared to conventional copper cables, longer and lighter optical cables enable the ease of complicated data-center cabling. The AOCs utilize multimode fiber with 850-nm VCSELs and PIN PDs. The certificated cables have superior signal integrity and bit-error-rate, which enables reliable operation performance. The SFP+ AOCs are very cost effective interconnect solutions for data center, storage and all high speed data applications.

Part number

10-Gbps SFP+ Active Optical Cable

E-AC-SS-7D6xxxx00-LC

Where xxxx=cable length in meters

Features

- 1 channel operating up to 10.3125 Gbps
- Fiber link up to 100 meters
- Reliable 850 nm VCSEL technology
- 0 to +70 degree Celsius operating temperature range
- Hot pluggable interface
- 3.3 V power supply only

Applications

- 1/10 Gigabit Ethernet (1/10GbE)
- InfiniBand (QDR/DDR/SDR)
- Data Center Networking
- HPC Interconnects
- Networked Storage Systems
- Proprietary Interconnects

Overview

Parameters	Value	Comments
Number of Data Lanes	1 Tx 1Rx per module	
Signaling Rate per Channel	Up to 10.5Gb/s	
Electrical Interface	20-pin edge connector	
Pin Description	Per SFF-8431	
Management Interface	12C Per SFF-8472	
BER	<10E-12	Tested with PRBS2 ³¹ -1 pattern
Power Supply	3.3Vcc	

Environmental Specifications

Parameters	Min	Max	Units
Operating case temperature	0	70	°C
Storage temperature	-20	85	°C
Operating relative humidity	5	85	%
Max supply voltage	-0.5	3.6	V

Electrical Characteristics

Test pattern unless otherwise specified: **PRBS31**

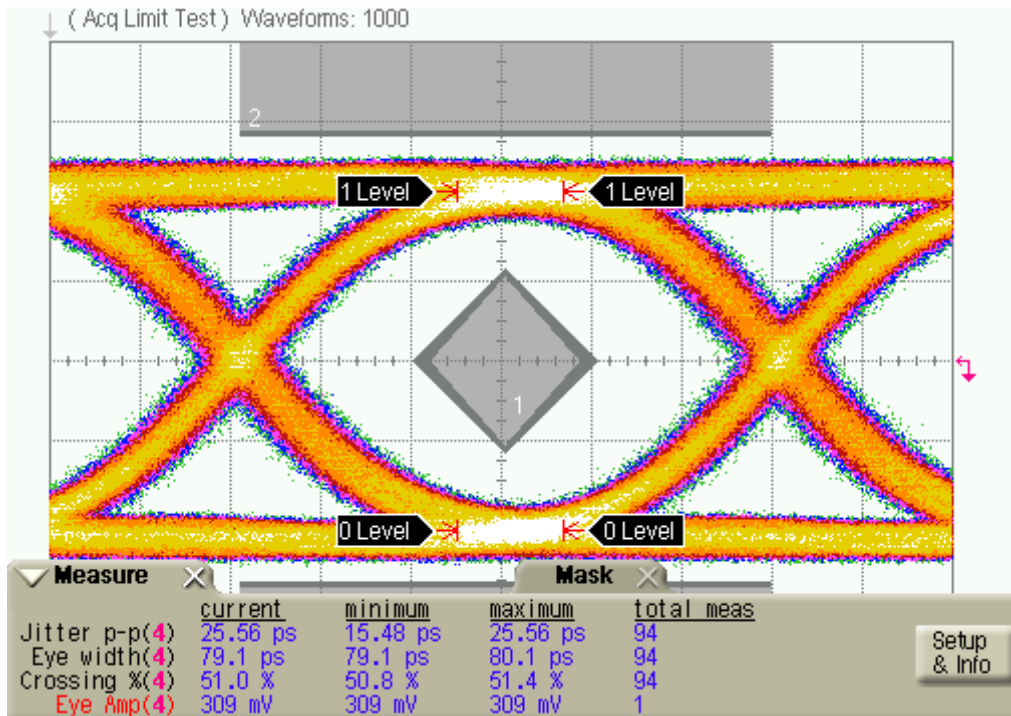
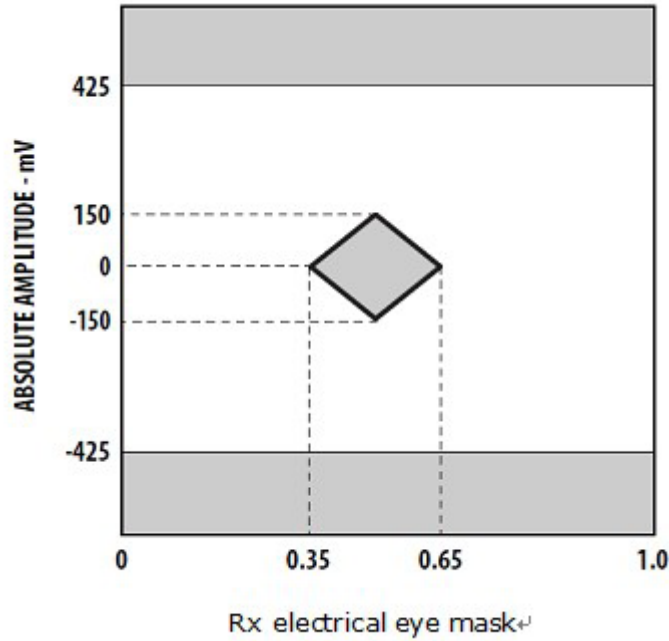
Parameter	Symbol	Min	Typ	Max	Units
Module					
Supply Voltage, Vcc	Vcc	3.15	3.3	3.45	V
Supply Current, Icc	Icc	90	110	140	mA
Instantaneous Peak Current at Hot Plug				400	mA
Sustained Peak Current at Hot Plug				330	mA
Operating Case Temperature		0		70	°C
Time to Initialize	t_start			300	ms
Transmitter					
Input differential swing voltage	Vpp	300		1200	mV
Data Rate		1		10.3125	Gb/s
Differential Input Return Loss	SDD11	Min -10dB (See Note 1)			
TX_DIS Assert Time	t_off			100	us
TX_DIS Negate Time	t_on			2	ms
Receiver					
Data Output Swing Single-ended	Voswing SE	150	250	425	mV
Data Output Swing Differential	Voswing Diff	300	500	850	mV
Data Rate		1		10.3125	Gb/s
Total Jitter	Tj			0.7	UI
RX_LOS Assert Delay	t_los_on			100	us
RX_LOS Negate Delay	t_los_off			100	us
RX_LOS Level High		2		3.3	V
RX_LOS Level Low		0		0.8	V
Output Rise/Fall Time(20%~80%))		28			ps
Differential Output Return Loss	SDD22	Min -10dB (See Note 1)			
Eye Mask		>10% (See Note2)			
Bit Error Rate			<10 ⁻¹²		Bit

Notes:

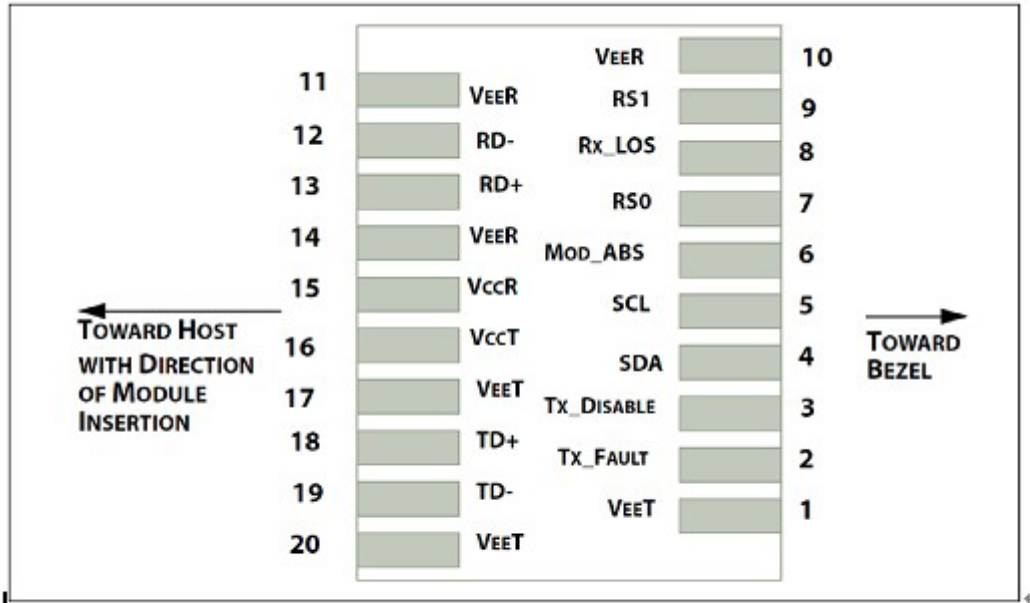
1. SDD11/22 differential input and output return loss from 0.05G to 3.9G.
2. SFF-8431 SFP+ MSA Section 3.6.2, Table 19, Figure 23 mask at 25°C 3.3V.

Active Optical Cable Rx Eye Performance

This transceiver eye mask specification is SFF-8431 SFP+ MSA Section 3.6.2, Table 19, Figure 23 mask, at 25°C, 3.3V.



Pin Description of Module Edge Connector

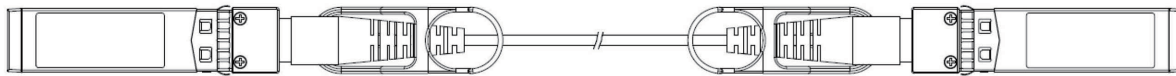
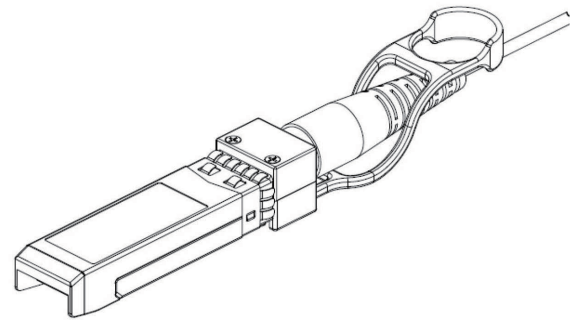
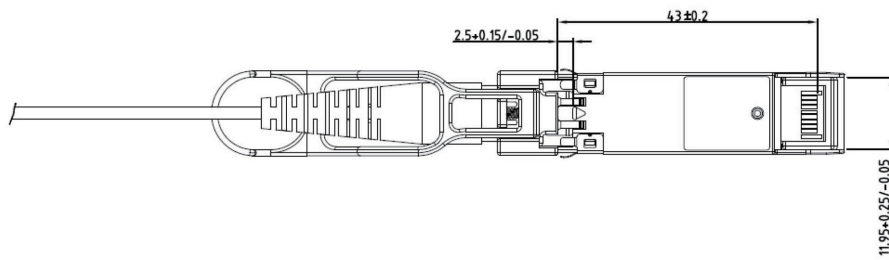
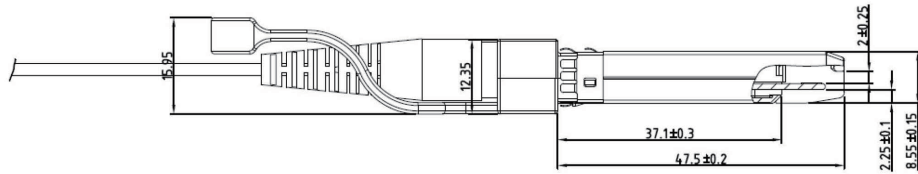
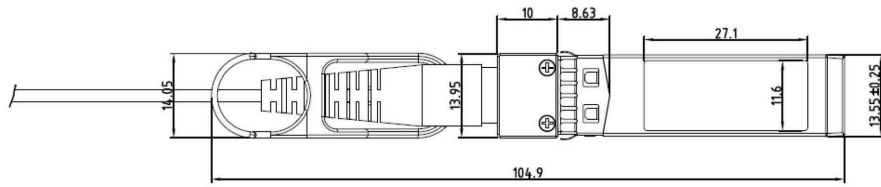


Host PCB SFP+ pad assignment top view

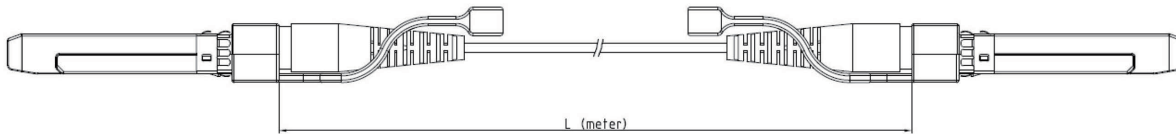
Pin Descriptions

Pin	Symbol	Description	Note
1	VeeT	Module Transmitter Ground	
2	Tx_Fault	Module Transmitter Fault	
3	Tx_Disable	Module Transmitter Disable	
4	SDA	Two-Wire Serial Interface Data Line	
5	SCL	Two-Wire Serial Interface Clock Line	
6	MOD_ABS	Module Absence	
7	RS0	Rate Select 0	No Support
8	LOS	Receiver Loss of Signal	
9	RS1	Rate Select 1	No Support
10	VeeR	Module Receiver Ground	
11	VeeR	Module Receiver Ground	
12	RD-	Receiver Inverted Data Output	
13	RD+	Receiver Non-Inverted Data Output	
14	VeeR	Module Receiver Ground	
15	VeeR	Module Receiver 3.3V Supply	
16	VccT	Module Transmitter 3.3V Supply	
17	VeeT	Module Transmitter Ground	
18	TD+	Transmitter Non-Inverted Data Output	
19	TD-	Transmitter Inverted Data Output	
20	VeeT	Module Transmitter Ground	

Package Outline



Unit: mm



Tolerance of cable length	
L	Tolerance
1M	+20/-0cm
3M	+20/-0cm
5M	+20/-0cm
10M	+50/-0cm
20M	+50/-0cm
30M	+50/-0cm
50M	+1/-0M
100M	+1/-0M



For product information and a complete list of cloud computing and data center related products, please go to our website: www.foci.com.tw
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