

10G SFP+ Industrial Active Optical Cables

SFP-10G-AOxxx-I



Application

- 10GBASE SR Ethernet

Standards

- SFP+ MSA Compliant
- 10GBASE Ethernet

Features

- Electrical interface compliant to SFF-8431
- 850nm VCSEL laser and PIN photo-detector
- Maximum link length of 300m on OM3 MMF
- Hot Pluggable
- Built-in digital diagnostic functions
- Operation temperature:
-40°C to 85°C
- RoHS compliant (lead free)

Description

FS SFP+ 10G Active Optical Cables are direct-attach fiber assemblies with SFP+ connectors. They are suitable for very short distances and offer a cost-effective way to connect within racks and across adjacent racks. The module is a Single-Channel, Pluggable, Fiber-Optic SFP+ for 10 Gigabit Ethernet and Infiniband EDR Applications.

These modules are designed to operate over multimode fiber systems using a nominal wavelength of 850nm. The electrical interface uses a 20 contact edge type connector.

Product Specifications

I. Absolute Maximum Ratings

Parameter	Symbol	Min.	Max.	Unit
Storage Temperature	Vcc	-0.5	+3.6	V
Power Supply Voltage	Tc	-40	+85	°C
Relative Humidity (non-condensation)	RH	0	85	%

II. Recommended Operating Conditions

Parameter	Symbol	Min	Typical	Max	Unit
Supply Voltage	Vcc	3.15	3.3	3.45	V
Supply Current Perend	Icc	-	-	150	mA
Operating Case Temperature(Standard)	Tca	0	-	70	°C
Operating Case Temperature(Industrial)	Tca	-40		85	°C
Data Rate	DR		10.3125		Gbps
Fiber Bend Radius	Rb	3	-	-	cm

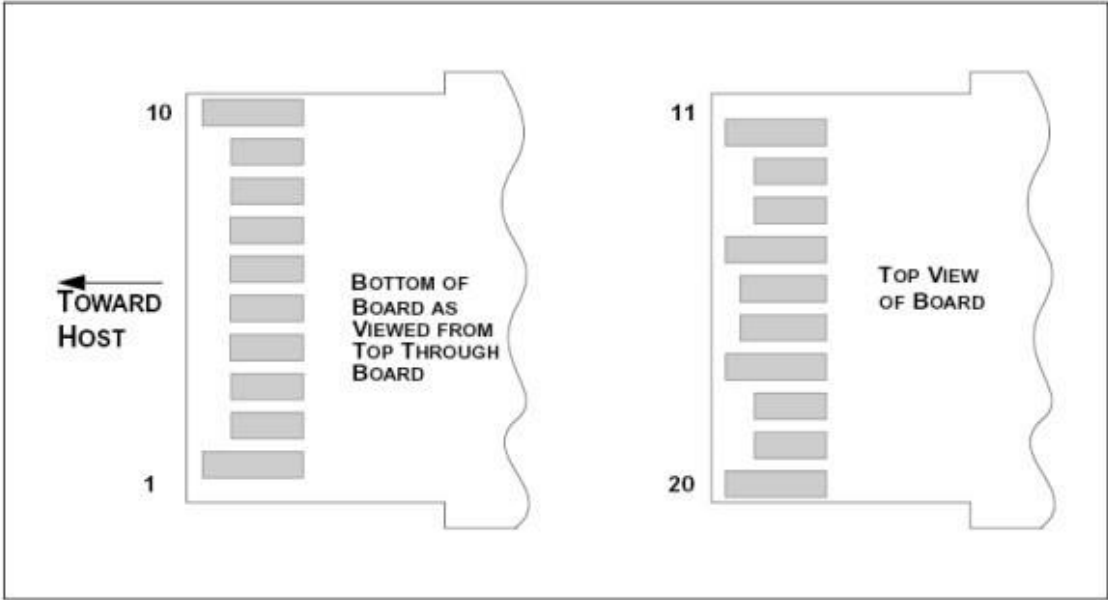
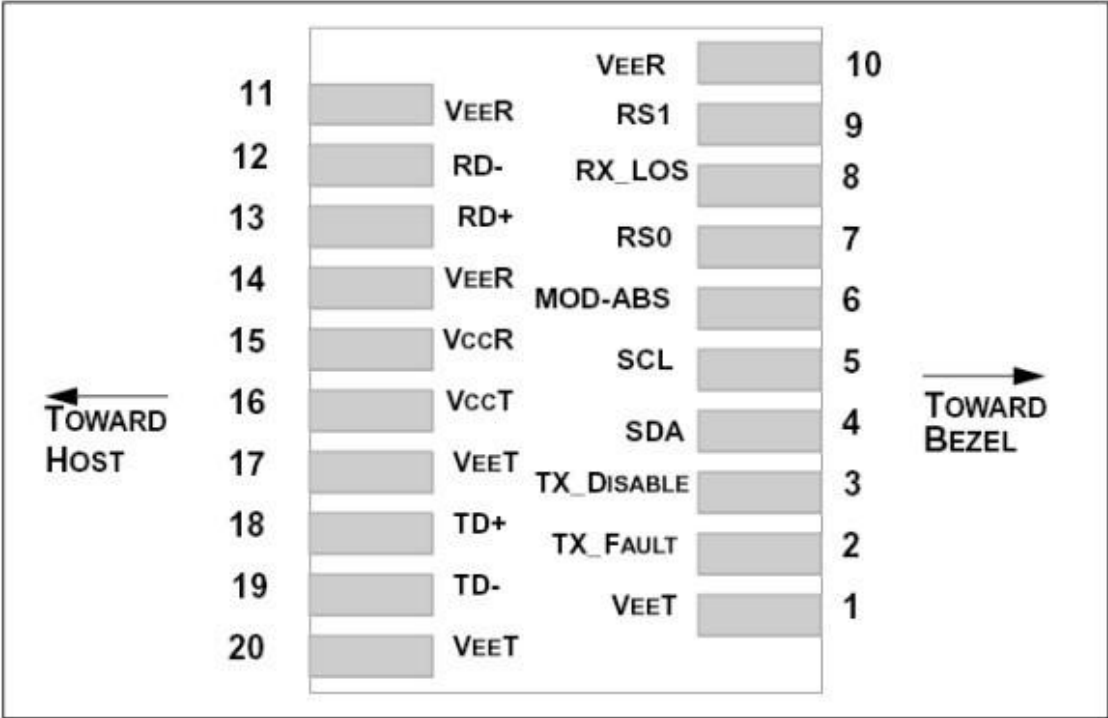
III. Transmitter Specifications

Parameter	Symbol	Min	Typical	Max	Unit
Input Differential Impedance	Rin	-	100	-	Ω
Differential Data Input Swing	Vin	150	-	1200	mV
Transmit Disable Voltage	VD	2.0	-	Vcc+0.3	V
Transmit Enable Voltage	Ven	Vee		Vee+0.8	V

IV. Receiver Specifications

Parameter	Symbol	Min	Typical	Max	Unit
Differential Data Output Swing	Vout	300	-	700	mV
Bit Error Rate	BER	-	-	10 ⁻¹²	
Output Differential Impedance	Rout	-	100	-	Ω
Loss of Signal–Asserted	-	2.0	-	Vcc+0.3	V
Loss of Signal–Negated	-	Vee		Vee+0.8	V

V. Electrical Pad Layout of SFP+ Transceiver



VI. PIN Function Definitions of SFP+

PinNo.	Symbol	Name/Description
1	VEET [1]	Transmitter Ground
2	Tx_FAULT [2]	Transmitter Fault
3	Tx_DIS [3]	Transmitter Disable. Laser output disabled on high or open
4	SDA [2]	2-wire Serial Interface Data Line
5	SCL [2]	2-wire Serial Interface Clock Line
6	MOD_ABS [4]	Module Absent. Grounded within the module
7	RSO [5]	Rate Select 0
8	RX_LOS [2]	Loss of Signal indication. Logic 0 indicates normal operation
9	RS1 [5]	Rate Select 1
10	VEER [1]	Receiver Ground
11	VEER [1]	Receiver Ground
12	RD-	Receiver Inverted DATA out. AC Coupled

13	RD+	Receiver DATA out. AC Coupled
14	VEER [1]	Receiver Ground
15	VCCR	Receiver Power Supply
16	VCCT	Transmitter Power Supply
17	VEET [1]	Transmitter Ground
18	TD+	Transmitter DATA in. AC Coupled
19	TD-	Transmitter Inverted DATA in. AC Coupled
20	VEET [1]	Transmitter Ground

Notes:

- [1] Module circuit ground is isolated from module chassis ground within the module.
- [2] Should be pulled up with 4.7k - 10k ohms on host board to a voltage between 3.15V and 3.45V.
- [3] Tx_Disable is an input contact with a 4.7 kΩ to 10 kΩ pullup to VccT inside the module.
- [4] Mod_ABS is connected to VeeT or VeeR in the SFP+ module. The host may pull this contact up to Vcc_Host with a resistor in the range 4.7 kΩ to 10 kΩ. Mod_ABS is asserted "High" when the SFP+ module is physically absent from a host slot.
- [5] RSO and RS1 are module inputs and are pulled low to VeeT with > 30 kΩ resistors in the module.

VII. Ordering Information

Part Number	Product Description
SFP-10G-AOxxx-I	10G SFP+ Active Optical Cables -40°C~+85°C

001~300,1~300 Length in meters on OM3 MMF