TSSSS-85E-XXXD/ TSSSS-85E-XXXU Active Optical Cables

Multi-Mode 25G BASE SFP28 SR Active Optical Cable, With Diagnostic Monitoring

Features

- Hot-pluggable SFP28 form-factor connectors
- 850nm VCSEL laser and PIN photo-detector
- Internal CDR circuits on both receiver and transmitter channels
- Compliant with SFP28 MSA and IEEE 802.3by 25GBASE-SR
- Data rate up to 25.78125Gbps
- 3.3V power supply voltage
- Power consumption < 0.8W per end
- RoHS compliant (lead free)

Applications

- 25GBASE SR Ethernet

Product Description

T&S SFP28 Active Optical Cables are direct-attach fiber assemblies with SFP28 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 SFP28 for 25 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.

Absolute Maximum Rating

These values represent the damage threshold of the module. Stress in excess of any of the individual Absolute Maximum Ratings can cause immediate catastrophic damage to the module even if all other parameters are within Recommended Operating Conditions.

Parameters	Symbol	Min.	Max.	Unit
Power Supply Voltage	VCC	-0.5	+3.6	V
Storage Temperature	Tc	-40	+85	°C
Relative Humidity	RH	0	85	%

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Recommended Operating Conditions

Parameter	Symbol	Min	Typical	Max	Unit
Supply Voltage	VCC	3.15	3.3	3.45	V
Operating Case Temperature (Standard)	Tca	0	-	70	°C
Operating Case Temperature (Industrial)	Tca	-40	-	85	°C
Baud Rate Per Lane	DR	-	25.78125	-	Gbps
Fiber Bend Radius	Rb	3	-	-	cm

Notes:

1. Supply current is shared between VCCTX and VCCRX.
2. In-rush is defined as current level above steady state current requirements.

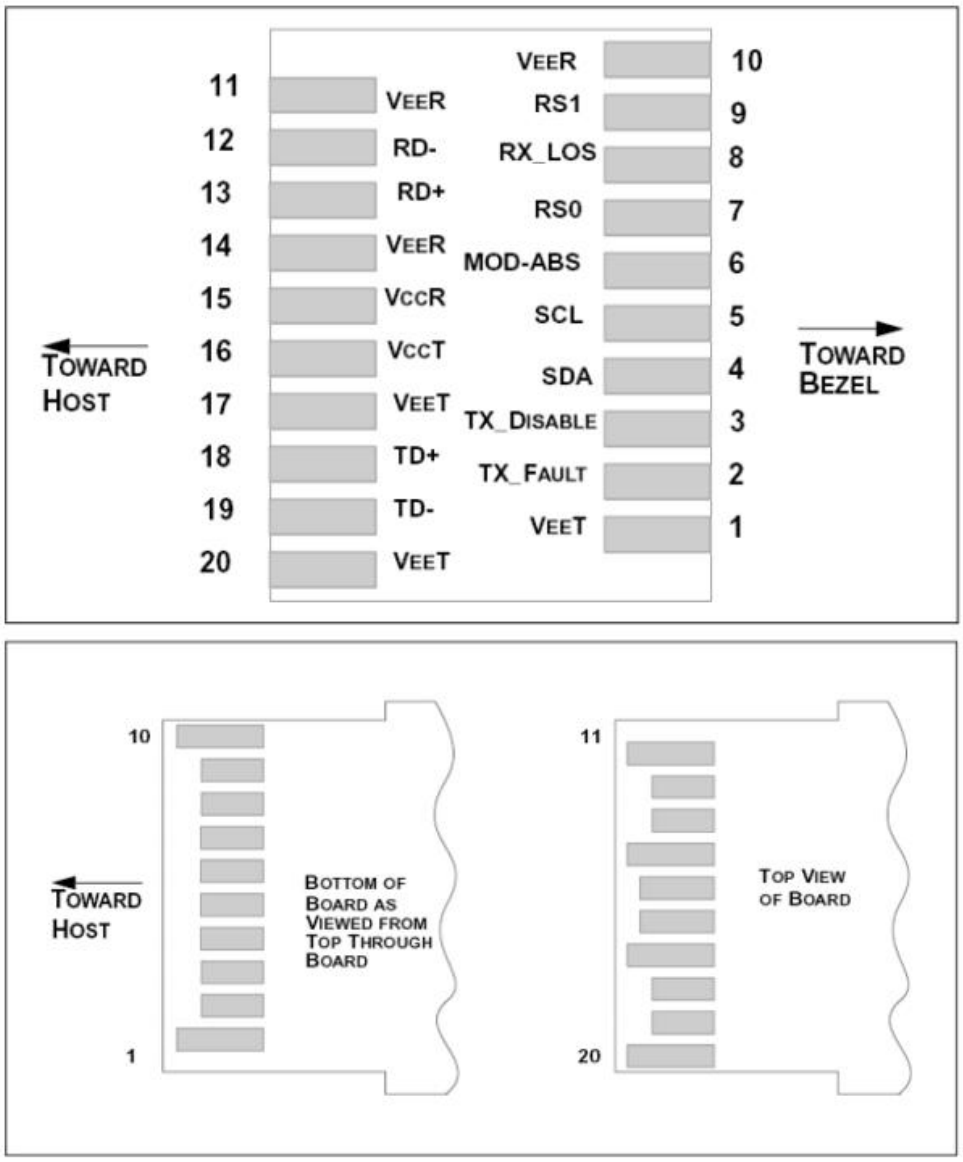
Transmitter Specifications

Parameter	Symbol	Min	Typical	Max	Unit
Input differential impedance	R_{in}	-	100	-	Ω
Differential Data Input Swing	V_{in}	300	-	1100	mV
Transmit Disable Voltage	VD	2.0	-	VCC+0.3	V
Transmit Enable Voltage	Ven	Vee	-	Vee+0.8	V

Receiver Specifications

Parameter	Symbol	Min	Typical	Max	Unit
Differential Data Output Swing	V_{out}	500	-	800	mV
Bit Error Rate	BER	-	-	10^{-12}	-
Output Differential Impedance	R_{out}	-	100	-	Ω
Loss of Signal –Asserted	-	2.0	-	VCC+0.3	V
Loss of Signal –Negated	-	Vee	-	Vee+0.8	V

SFP28 Transceiver Electrical Pad Layout



Pin Definition

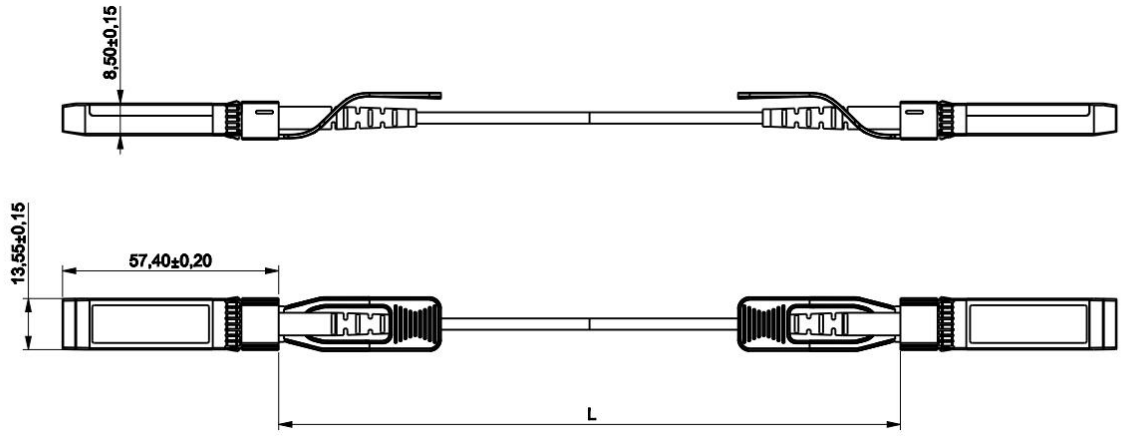
Pin	Symbol	Name/Description
1	VEET [1]	Transmitter Ground
2	Tx_FAULT [2]	Transmitter Fault
3	Tx_DIS [3]	Transmitter Disable. Laser output disabled on high or open
4	SDA [2]	2-wire Serial Interface Data Line
5	SCL [2]	2-wire Serial Interface Clock Line
6	MOD_ABS [4]	Module Absent. Grounded within the module
7	RS0 [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 3.15Vand 3.6V.
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 SFP28 module. The host may pull this contact up to VCC _Host with a resistor in the range 4.7 kΩ to10 kΩ.Mod_ABS is asserted “High” when the SFP28 module is physically absent from a host slot.
5. RS0 and RS1 are module inputs and are pulled low to VeeT with > 30 kΩ resistors in the module.

Mechanical



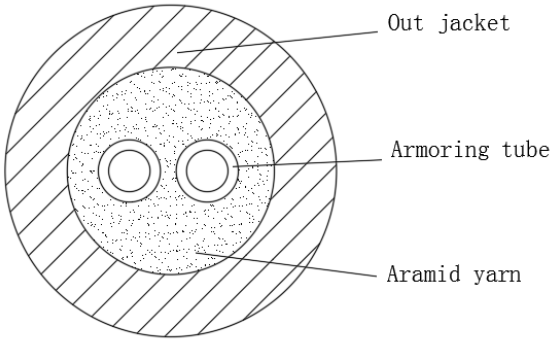
AOC product bagging circle size:

L	Disc fiber diameter (mm)	number of circle
0.5m	Based on actual circling	1.5
1m		2.5
1.5m	110≤Inner diameter，outer diameter≤130	3.5
2m		4.5
2.5m	120≤Inner diameter，outer diameter≤140	5.5
3m		6.5
3m<L≤5m	110≤Inner diameter，outer diameter≤160	Not required
5m<L≤7m	110≤Inner diameter，outer diameter≤170	
7m<L≤30m	110≤Inner diameter，outer diameter≤180	
30m<L≤50m	110≤Inner diameter，outer diameter≤210	
50m<L≤100m	110≤Inner diameter，outer diameter≤250	

Length tolerance table:

L	Tolerance (mm)
L≤1 M	+70/-0
1 M<L<7 M	+100/-0
L≥7 M	+2%L/-0

Cable Structure



Cable Technical Parameters

Parameter	Symbol	Typical
Armored tube	OD(mm)	0.9±0.1
	ID(mm)	0.5±0.1
	Material	Stainless steel spiral armor
Out jacket	OD(mm)	3.0±0.1
	Material	PVC/LSZH
Nominal weight(kg/km)		13
Max.tensile Strength(N)	Short-term	100
	Long-term	50
Max.Crush Resistance(N/100mm)	Short-term	3000
	Long-term	1000
Color		According to contract
Strength Members		Aramid yarn
Environmental Protection		RoHS COMPLIANT
Temperature range	Storage or transportation	-20~70℃
	Operation	-20~60℃
	Installation	-20~60℃

Ordering Information

Part Number	Product Description
TSSSS-85E-XXXD	25G SFP28 Armored Active Optical Cables 0℃ ~ +70℃
TSSSS-85E-XXXU	25G SFP28 Armored Active Optical Cables -40℃ ~ +85℃

XXX :001~070,1~70 Length in meters on OM3 MMF

XXX :001~100,1~100 Length in meters on OM4 MMF

Important Notice

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