TSTST-85K-XXXD Active Optical Cables

100GBASE-SR SFP-DD Active Optical Cable, With Diagnostic Monitoring

Features

- Hot-pluggable SFP-DD form-factor connectors
- 2 channels 850nm VCSEL laser array and 2 channels PIN photo-detector array
- Internal CDR circuits on both receiver and transmitter channels
- Compliant with SFP-DD MSA and SFP-DD MIS
- Data rate up to 53.125Gbps per lane
- 2x53Gbps PAM4 transmitter and PAM4 receiver
- 3.3V power supply voltage
- Power consumption < 3.5W
- Case operation temperature range ： 0°C to 70°C
- RoHS compliant (lead free)

Applications

- 100GBASE SR Ethernet

Product Description

T&S SFP-DD Active Optical Cables are direct-attach fiber assemblies with SFP-DD 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 Double-Channel, Pluggable, Fiber-Optic SFP-DD for 100 Gigabit Ethernet Applications.

This module is designed to operate over multimode fiber systems using a nominal wavelength of 850nm. The electrical interface uses a 40 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 Environment

Recommended Operating Environment specifies parameters for which the electrical and optical characteristics hold unless otherwise noted.

Parameter	Symbol	Min	Typical	Max	Unit
Supply Voltage	VCC	3.15	3.30	3.45	V
Case Operating Temperature	Tca	0	-	70	℃
Data Rate Per Lane	DR	-	53.125	-	Gbps
Fiber Bend Radius	Rb	3	-	-	cm

Notes:

1. Supply current is shared between VccT, VccR, VccT1 and VccR1
2. In-rush is defined as current level above steady state current requirements.

Transmitter Specifications

Parameter	Symbol	Min	Typical	Max	Unit
Input differential impedance	Rin	-	100	-	Ω
Differential Input Voltage swing, per lane	Vin	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 Output Swing, per lane	Vout	300	-	900	mV
Bit Error Rate	BER	-	-	2.4E-4	-
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

Notes:

1. BER=2.4E-4; PRBS31Q@26.5625GBd. Pre-FEC

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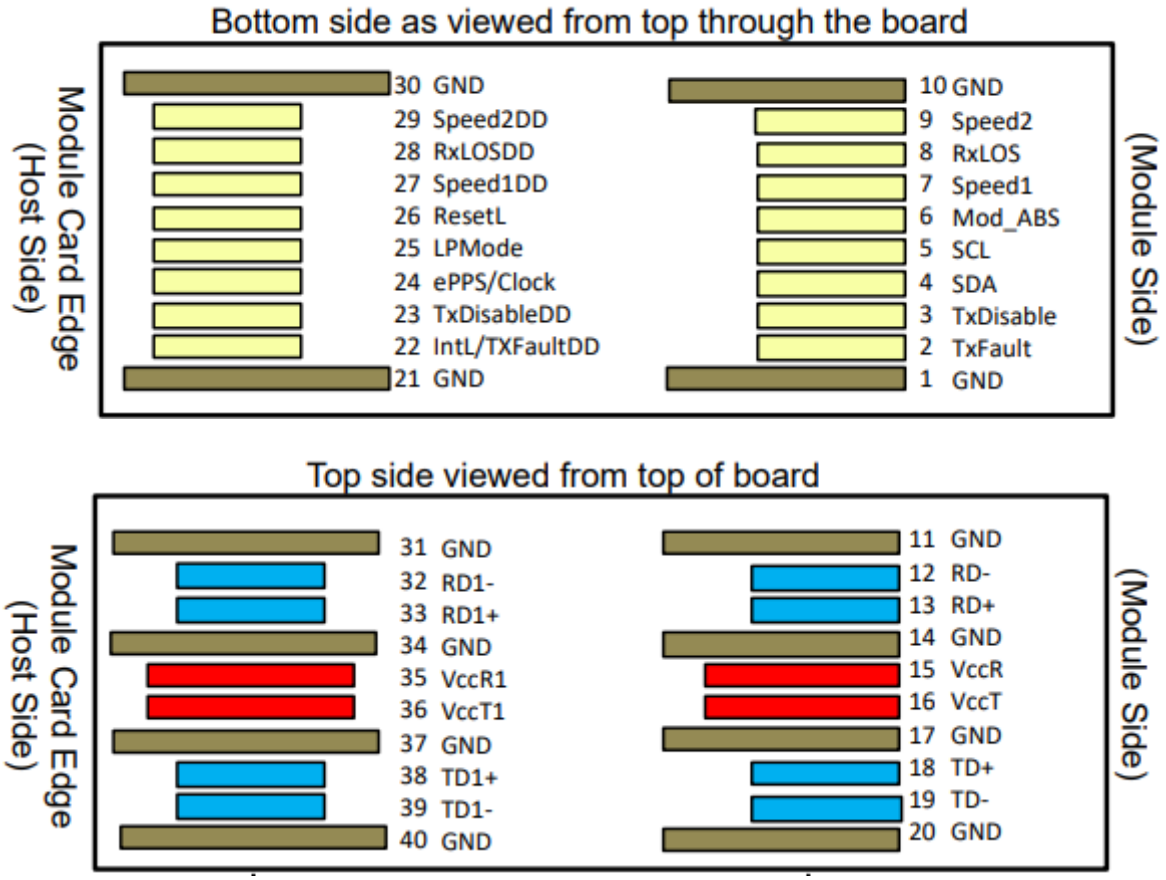
Transceiver Electrical Pad Layout



Pin Definition

Pin	Symbol	Name/Description
1	GND	Ground
2	TxFault	Transmitter Fault
3	TxDisable	Transmitter Disable for classic SFP channel
4	SDA	2-wire Serial Interface Data Line
5	SCL	2-wire Serial Interface Clock Line
6	Mod_ABS	Module Absent. Grounded within the module
7	Speed1	Rx Rate Select for classic SFP channel
8	RxLOS	SFP channel Loss of Signal indication. Logic 0 indicates normal operation
9	Speed2	Tx Rate Select for classic SFP channel
10	GND	Ground
11	GND	Ground
12	RD0-	Receiver Inverted DATA out for classic SFP+ channel. AC Coupled
13	RD0+	Receiver DATA out for classic SFP+ channel. AC Coupled
14	GND	Ground
15	VccR	Receiver Power Supply

16	VccT	Transmitter Power Supply
17	GND	Ground
18	TD0+	Transmitter DATA in for classic SFP+ channel. AC Coupled
19	TD0-	Transmitter Inverted DATA in for classic SFP+ channel. AC Coupled
20	GND	Ground
21	GND	Ground
22	IntL/ TxFaultDD	Interrupt: optionally configured as TxFaultDD via TWI as described in the SFP-DD MIS
23	TxDisableDD	Transmitter Disable for DD channel
24	ePPS/Clock	Precision Time Protocol (PTP) reference clock input
25	LPMode	Low Power Mode Control
26	ResetL	Module Reset
27	Speed1DD	Rx Rate Select for DD channel
28	RxLOSDD	SFP DD channel Loss of Signal indication. Logic 0 indicates normal operation
29	Speed2DD	Tx Rate Select for DD channel
30	GND	Ground
31	GND	Ground
32	RD1-	Receiver Inverted DATA out for DD channel. AC Coupled
33	RD1+	Receiver DATA out for DD channel. AC Coupled
34	GND	Ground
35	VccR1	Receiver Power for DD channel
36	VccT1	Transmitter Power for DD channel
37	GND	Ground
38	TD1+	Transmitter DATA in for DD channel. AC Coupled
39	TD1-	Transmitter Inverted DATA in for DD channel. AC Coupled
40	GND	Ground

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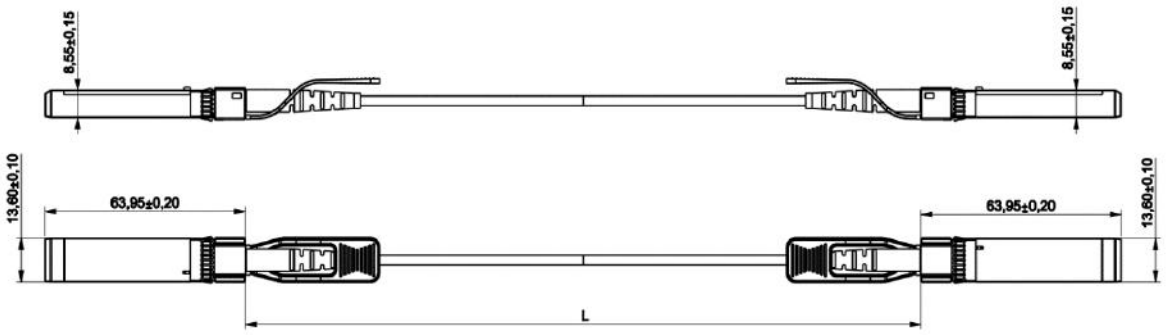
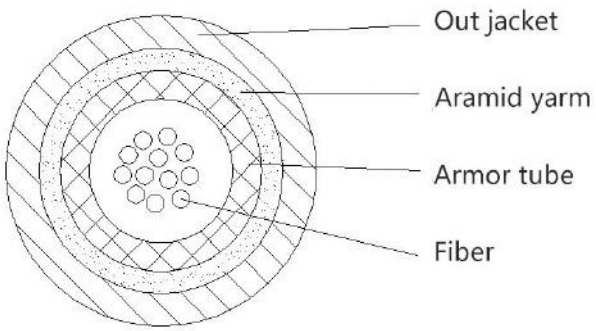
Mechanical



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
Model		GJFKV
Fiber	Count	2~12
	Color	Blue, orange, green, blown, gray, white, red, black, yellow, purple, pink, aqua
Cable	OD (mm)	3.0±0.1
	Material	PVC-OFNP
Armored tube	OD (mm)	1.8±0.1
	ID (mm)	1.2±0.1
Max.tensile Strength(N)	Short-term	150

	Long-term	80
Min.Bending Radius(mm)	Dynamic	20D
	Static	10D
Max.Crush Resistance(N/100mm)	Short-term	3000
	Long-term	1000
Strength Members		Aramid yarn
Temperature range	Storage or transportation	-20~70℃
	Operation	-20~60℃
	Installation	-20~60℃

Ordering Information

Part Number	Product Description
TSTST-85K-XXXD	100G SFP-DD Armored Active Optical Cables 0℃ ~ +70℃

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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