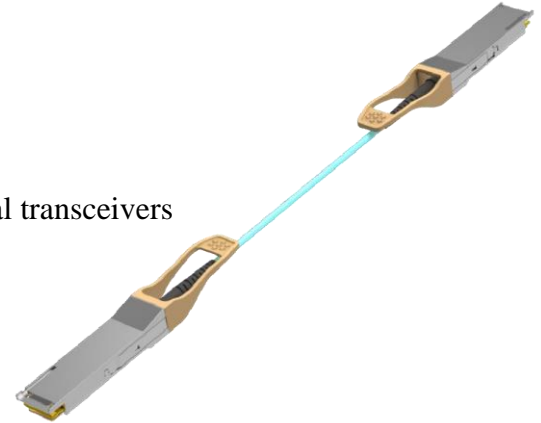


25G SFP28 Active Optical Cables

NSS-MDO250-XXXX

Features

- SFF-8432 Mechanical MSA
- 25G 850nm VCSEL transmitter
- 25G PIN photo-detector
- 2-wire interface for management specifications compliant with SFF 8472 digital diagnostic monitoring interface for optical transceivers
- Pre-terminated fiber cable
- Up to 70m/100m by active optical cable with OM3/OM4 fiber
- Operating environment temperature: 0 to 70°C
- SFP28 housing with enhanced EMI shielding
- 25G electrical interface (OIF CEI-28G-VSR)
- Maximum power consumption 1.0W each terminal
- Single 3.3V power supply
- RoHS compliant



Applications

- 25G Ethernet
- High capacity IO with SFP28 interface
- Data center and in-rack connection

Absolute Maximum Ratings

Parameter	Symbol	Min.	Max.	Units	Note
Power Supply Voltage	VCC	0	3.6	V	
Storage Temperature	Ts	40	85	°C	
Operating Case Temperature	Tc	0	70	°C	
Relative Humidity	RH	0	85	%	

Recommended Operating Conditions

Parameter	Symbol	Min.	Typical	Max.	Units	Note
Power Supply Voltage	Vcc	3.135	3.3	3.465	V	
Operating Case Temperature	Tc	0	25	70	°C	
Data Rate, each Lane			25.78125		Gb/s	
Data Rate Accuracy		-100		100	ppm	
Control Input Voltage High		2		Vcc	V	
Control Input Voltage Low		0		0.8	V	
Fiber Bend Radius	Rbend	3			cm	

Electrical Characteristics – Transmitter

Parameter	Test point	Min.	Typical	Max.	Units	Note
Power Consumption				1.0	W	1
Supply Current	I _{cc}			300	mA	1
Overload Differential Voltage pk-pk	TP1a	900			mV	
Common Mode Voltage (V _{cm})	TP1	-350		2850	mV	2
Differential Termination Resistance Mismatch	TP1			10	%	At 1MHz
Differential Return Loss (SDD11)	TP1			See CEI-28G VSR Equation	dB	
Common Mode to Differential conversion and Differential to Common Mode conversion (SDC11, SCD11)	TP1			See CEI-28G VSR Equation 13-20	dB	
Stressed Input Test	TP1a			See CEI-28G-VSR Section		

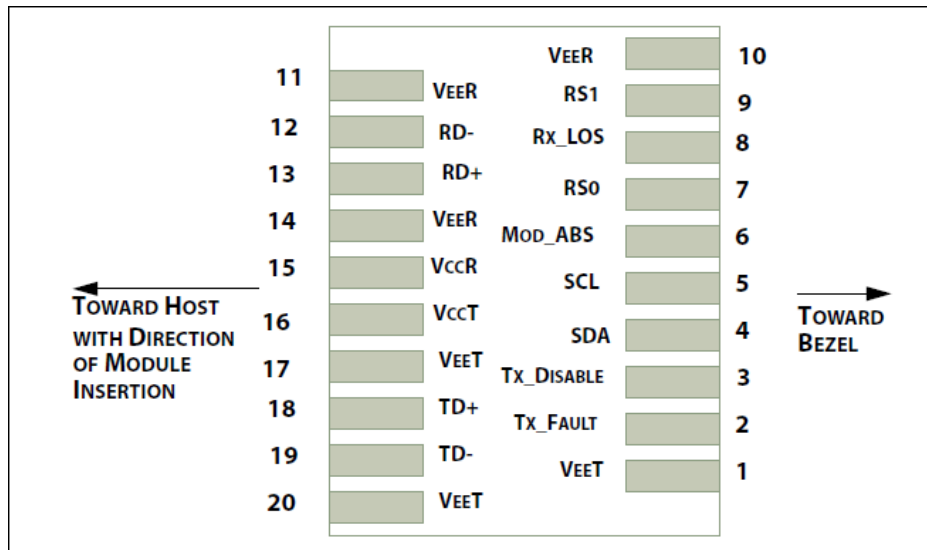
Electrical Characteristics – Receiver

Parameter	Symbol	Min.	Typical	Max.	Units	Note
Differential Voltage, pk-pk	TP4			900	mV	
Common Mode Voltage (V _{cm})	TP4	-350		2850	mV	2
Common Mode Noise, RMS	TP4			17.5	mV	At 1MHz
Differential Termination Resistance Mismatch	TP4			10	%	
Differential Return Loss (SDD22)	TP4			See CEI-28G VSR Equation 13-	dB	
Common Mode to Differential conversion and Differential to Common Mode conversion (SDC22, SCD22)	TP4			See CEI-28G VSR Equation 13-19	dB	
Common Mode Return Loss (SCC22)	TP4			-2	dB	3
Transition Time, 20 to 80%	TP4	9.5			Ps	
Vertical Eye Closure (VEC)	TP4			5.5	dB	
Eye Width at 10 ⁻¹⁵ probability (EW15)	TP4	0.57			UI	
Eye Height at 10 ⁻¹⁵ probability (EH15)	TP4	228		mV		

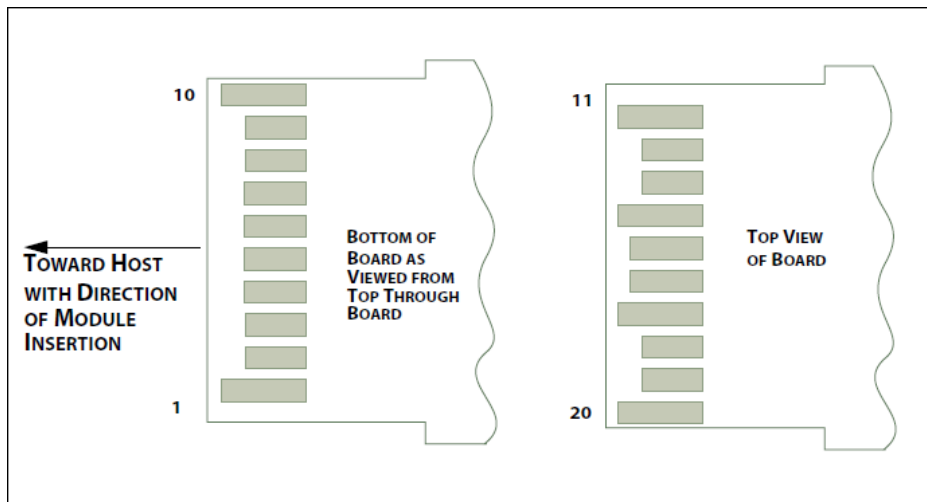
Notes:

1. Per terminal.
2. V_{cm} is generated by the host. Specification includes effects of ground offset voltage.
3. From 250MHz to 30GHz.

Pin Assignment



Interface to Host



Contact Assignment

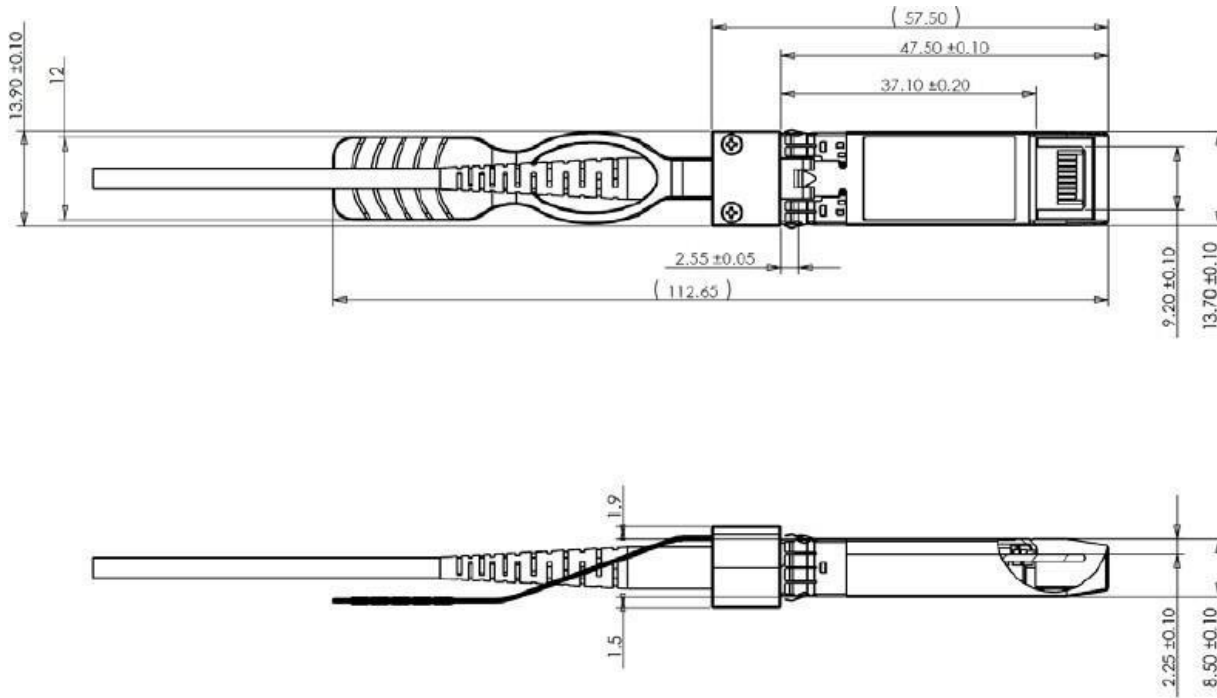
Pin Description

Pin	Logic	Symbol	Description	Note
1		VeeT	Module Transmitter Ground	1
2	LVTTL-O	TX_Fault	Module Transmitter Fault	
3	LVTTL-I	TX_Dis	Transmitter Disable; Turns off transmitter laser output	
4	LVTTL-I/O	SDA	2-Wire Serial Interface Data Line	2
5	LVTTL-I	SCL	2-Wire Serial Interface Clock	2
6		MOD-	Module Definition, Grounded in the	
7	LVTTL-I	RS0	No connection required	
8	LVTTL-O	RX-LOS	Receiver Loss of Signal Indication. Logic 0 indicates normal operation	
9	LVTTL-I	RS1	No connection required	
10		VeeR	Module Receiver Ground	1
11		VeeR	Module Receiver Ground	1
12	CML-O	RD-	Receiver Inverted Data Output	
13	CML-O	RD+	Receiver Data Output	
14		VeeR	Module Receiver Ground	1
15		VccR	Module Receiver 3.3 V Supply	
16		VccT	Module Receiver 3.3 V Supply	
17		VeeT	Module Transmitter Ground	1
18	CML-I	TD+	Transmitter Non-Inverted Data Input	
19	CML-I	TD-	Transmitter Inverted Data Input	
20		VeeT	Module Transmitter Ground	1

Notes:

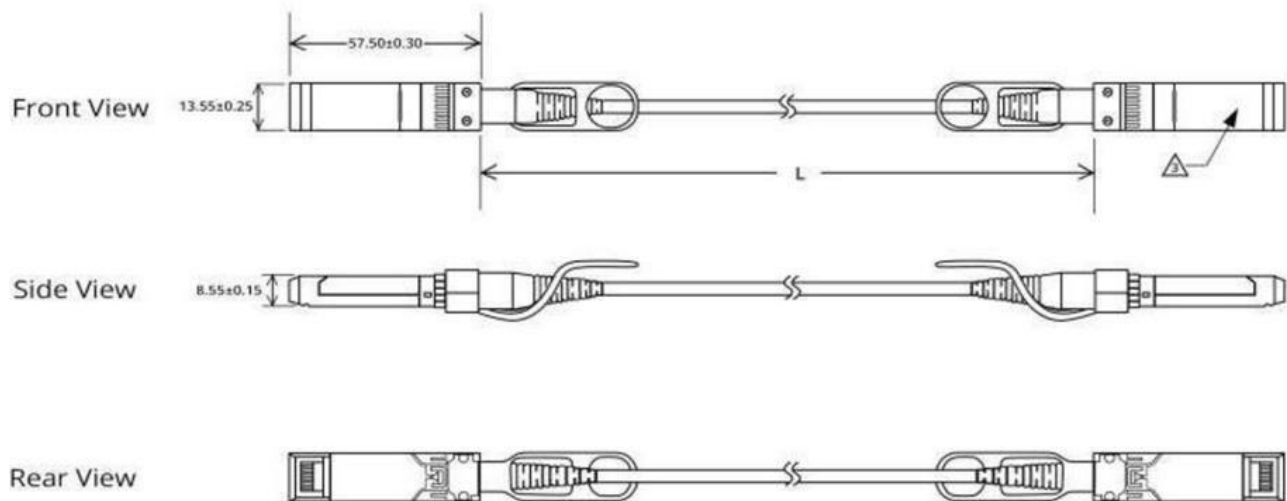
1. Module ground pins GND are isolated from the module case.
2. Shall be pulled up with 4.7K-10Kohms to a voltage between 3.15V and 3.45V on the host board.

Dimensions



The length

The length starts at the module connection and the module connection (as shown below). Acceptable Standards are shown below



Acceptable standard

Type	Length (m)		tolerance (cm)
AOC	$L \leq 1$		$+7 \sim -0$
	$1 < L < 7$		$+10 \sim -0$
	$L \geq 7$		$+2\% \sim -0$

Lable solt size

type	Size (mm)	tolerance (mm)
lable	31mm*10mm	±0.5mm

Order Information

Part Number	Product Description
NSS-MDO250-XXXC	x meter SFP28 Active Optical Cable,x=0.5~100m

Note:

1. Cable Length which is 100m maximum can be defined as the customer required.
2. Cable Length is defined as the length of the fiber only (not including the SFP28 module-ends).