SP-D11T5-xxMxxx

SFP28 Direct Attach Passive Copper Cables, 1m-5m Reach

DESCRIPTION

The DAC SFP28 cable assemblies are high-performance, cost effective I/O solutions for 25Gbps Ethernet applications. SFP28 passive copper modules allow hardware manufacturers to achieve high port density, configurability and utilization at a very low cost and to reduce power budget.

FEATURES

- Support for multi-gigabit data rates up to 25.78Gbps
- Compliant with SFF-8402 and SFF-8432
- Compatible to SFP+ MSA SFF-8431
- Hot-pluggable SFP 20PIN footprint
- Lowest total system EMI solution
- Low insertion loss and low crosstalk
- Comply with RoHS 2.0
- Operating case temperature:
  Standard: 0 to +70°C

APPLICATION

- 25G Ethernet
- Switch
- Router
- Hub
- Data center, cloud server

RECOMMENDED OPERATING CONDITIONS

Parameter	Symbol	Min	Typical	Max	Unit	Notes
Storage Ambient Temperature	Ts	-40	-	85	ºC	
Operating Case temperature	Tc	0	-	+70	ºC	

High Speed Characteristics

<table>
<tr><th colspan="2">ITEM</th><th>REQUIREMENT</th><th>TEST CONDITION</th></tr>
<tr><td rowspan="3">Differential Impedance</td><td>Cable Impedance</td><td>105+5/-10Ω</td><td rowspan="3">Rise time of 25ps (20 % - 80 %).</td></tr>
<tr><td>Paddle Card Impedance</td><td>100±10Ω</td></tr>
<tr><td>Cable Termination Impedance</td><td>100±15Ω</td></tr>
<tr><td colspan="2">Differential (Input/Output)Return loss S_{DD11}/S_{DD22}</td><td>Return_loss(f)≥ $\begin{cases} 16.5-2\sqrt{f} & 0.05 \leqslant f < 4.1 \\ 10.66-14\log_{10}(f/5.5) & 4.1 \leqslant f \leqslant 19 \end{cases}$
Where
f is the frequency in GHz
Return loss(f) is the return loss at frequency f</td><td>10MHz≤f ≤19GHz</td></tr>
<tr><td colspan="2">Differential to common-mode (Input/Output)Return loss S_{CD11}/S_{CD22}</td><td>Return_loss(f)≥ $\begin{cases} 22-(20/25.78)f & 0.01 \leqslant f < 12.89 \\ 15-(6/25.78)f & 12.89 \leqslant f \leqslant 19 \end{cases}$
Where
f is the frequency in GHz
Return loss(f) is the Differential to common-mode return loss at frequency f</td><td>10MHz≤f ≤19GHz</td></tr>
<tr><td colspan="2">Common-mode to Common-mode (Input/Output)Return loss S_{CC11}/S_{CC22}</td><td>Return_loss(f)≥2dB 0.2≤f≤19
Where
f is the frequency in GHz
Return loss(f) is the common-mode to common-mode return loss at frequency f</td><td>10MHz≤f ≤19GHz</td></tr>
<tr><td colspan="2">Differential Insertion Loss (S_{DD21} Max)</td><td>Differential Insertion Loss Max. For TPa to TPb Excluding Test fixture.
<table>
<tr><th>F / AWG</th><th>1.25GHz</th><th>2.5GHz</th><th>5.0GHz</th><th>7.0GHz</th><th>10Ghz</th><th>12.89Ghz</th></tr>
<tr><td>30 1m Max</td><td>4.5dB</td><td>5.4dB</td><td>6.8dB</td><td>8.0dB</td><td>10.0dB</td><td>12.5dB</td></tr>
<tr><td>30/28 3m Max</td><td>7.5dB</td><td>9.5dB</td><td>12.7dB</td><td>15.3dB</td><td>19.5dB</td><td>23.0dB</td></tr>
<tr><td>26 3m Max</td><td>5.7dB</td><td>7.2dB</td><td>10.5 dB</td><td>12.4dB</td><td>15.6dB</td><td>18.0dB</td></tr>
<tr><td>26 5m Max</td><td>7.8dB</td><td>10.0dB</td><td>14.0dB</td><td>16.5dB</td><td>20.5dB</td><td>23.5dB</td></tr>
</table></td><td>10MHz≤f ≤19GHz</td></tr>
</table>

Differential to common-mode Conversion Loss-Differential Insertion Loss(S_{CD21}-S_{DD21})	Conversion _loss(f) – IL(f)≥ $\begin{cases} 10 & 0.01 \leqslant f < 12.89 \\ 27-(29/22)f & 12.89 \leqslant f < 15.7 \\ 6.3 & 15.7 \leqslant f \leqslant 19 \end{cases}$ Where f is the frequency in GHz Conversion loss(f) is the cable assembly differential to common-mode conversion loss IL(f) is the cable assembly insertion loss	10MHz≤f ≤19GHz
MDNEXT(multiple disturber near-end crosstalk)	≥35dB @12.89GHz	10MHz≤f ≤19GHz
Intra Skew	15ps/m,	10MHz≤f ≤19GHz

Other Electrical Performance

ITEM	REQUIREMENT	TEST CONDITON
Low Level Contact Resistance	70milliohms Max. From initial.	EIA-364-23:Apply a maximum voltage of 20mV and a current of 100 mA.
Insulation Resistance	10Mohm(Min.)	EIA364-21:AC 300V 1minute
Dielectric Withstanding Voltage	NO disruptive discharge.	EIA-364-20:Apply a voltage of 300 VDC for 1minute between adjacent terminals and between adjacent terminals and ground.

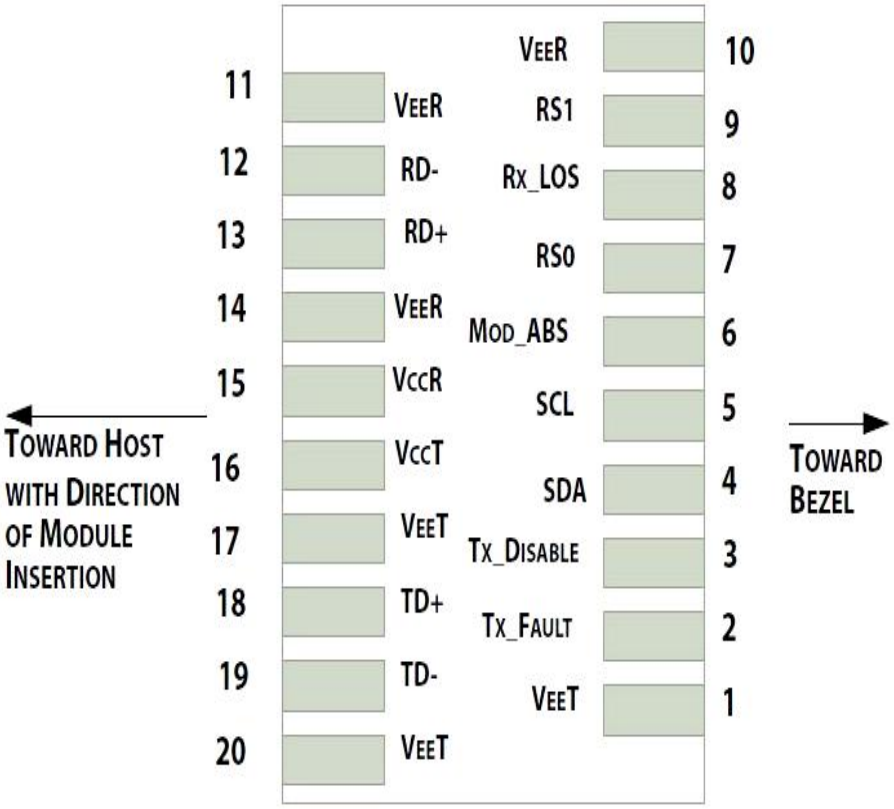
PIN DESCRIPTIONS

Pin	Symbol	Name/Description	Note
1	VeeT	Transmitter Ground	
2	TX Fault	N/A	1
3	TX Disable	Transmitter Disable	2
4	SDA	Tow Wire Serial Data	
5	SCL	Tow Wire Serial Clock	
6	Mod_ABS	Module present, connect to VeeT	
7	RS0	N/A	1
8	LOS	LOS of Signal	2
9	RS1	N/A	1
10	VeeR	Reciever Ground	
11	VeeR	Reciever Ground	
12	RD-	Reciever Data Inverted	
13	RD+	Reciever Data Non-Inverted	

Pin	Symbol	Name/Description	Note
14	VeeR	Reciever Ground	
15	VccR	Reciever Supply 3.3V	
16	VccT	Transmitter Supply 3.3V	
17	VeeT	Transmitter Ground	
18	TD+	Transmitter Data Non-Inverted	
19	TD-	Transmitter Data Inverted	
20	VeeT	Transmitter Ground	

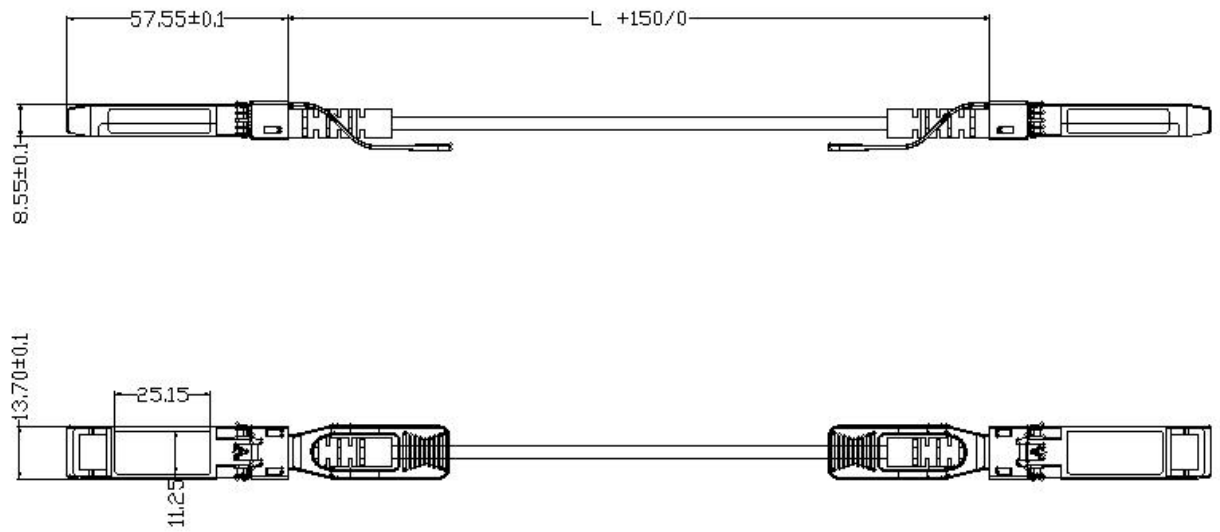
1. Signals not supported in SFP28 Copper pulled-down to VeeT with 30K ohms resistor
2. Passive cable assemblies do not support LOS and TX_DIS

PIN DIAGRAM



MECHANICAL SPECIFICATIONS

Unit: mm



Ordering information

Part Number	Product Description
SP-D11T5-1MC30	SFP28 Direct Attach Passive Cable (25G SFP28 Cu), 1m, AWG:30 , 0ºC ~ +70ºC
SP-D11T5-2MC30	SFP28 Direct Attach Passive Cable (25G SFP28 Cu),2m, AWG:30 , 0ºC ~ +70ºC
SP-D11T5-3MC30	SFP28 Direct Attach Passive Cable (25G SFP28 Cu), 3m, AWG:30, 0ºC ~ +70ºC
SP-D11T5-3MC26	SFP28 Direct Attach Passive Cable (25G SFP28 Cu), 3m, AWG:26 , 0ºC ~ +70ºC
SP-D11T5-4MC26	SFP28 Direct Attach Passive Cable (25G SFP28 Cu), 4m, AWG:26 , 0ºC ~ +70ºC
SP-D11T5-5MC26	SFP28 Direct Attach Passive Cable (25G SFP28 Cu), 5m, AWG:26 , 0ºC ~ +70ºC

For More Information

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