

## **SFP-DC11T5-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	°C	
Operating Case temperature	Tc	0	-	+70	°C	

## High Speed Characteristics

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

Differential to common-mode Conversion Loss-Differential Insertion Loss( $S_{CD21}-S_{DD21}$ )	$Conversion\_loss(f) - IL(f) \geq \begin{cases} 10 & 0.01 \leq f < 12.89 \\ 27-(29/22)f & 12.89 \leq f < 15.7 \\ 6.3 & 15.7 \leq f \leq 19 \end{cases}$ 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	$10MHz \leq f \leq 19GHz$
MDNEXT(multiple disturber near-end crosstalk)	$\geq 35dB @ 12.89GHz$	$10MHz \leq f \leq 19GHz$
Intra Skew	15ps/m,	$10MHz \leq f \leq 19GHz$

### 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.

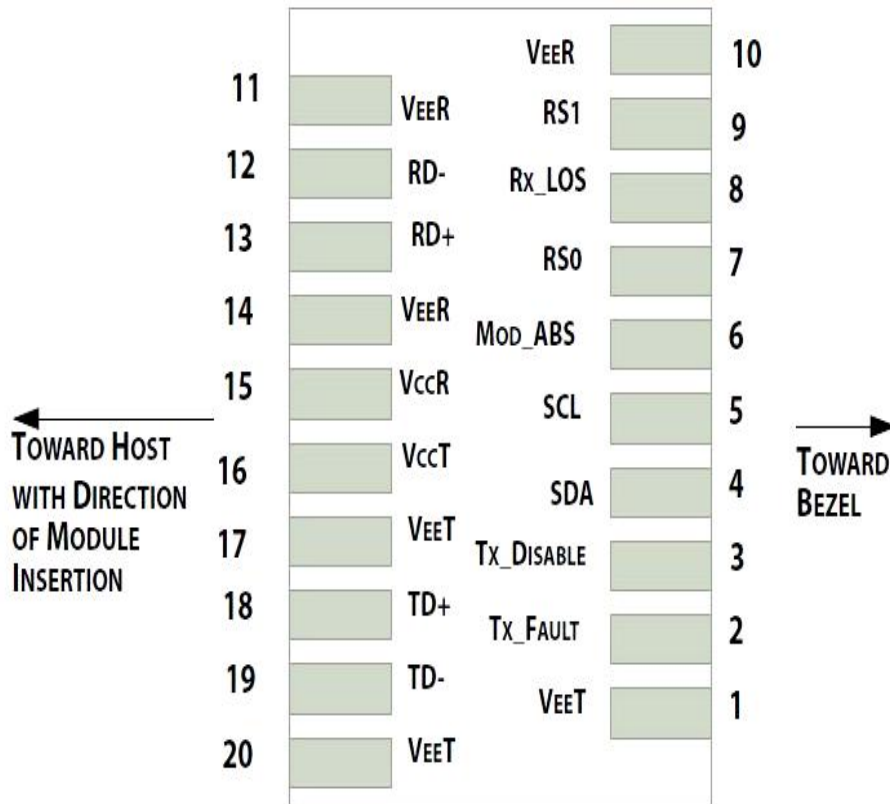
### PIN DESCRIPTIONS

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	

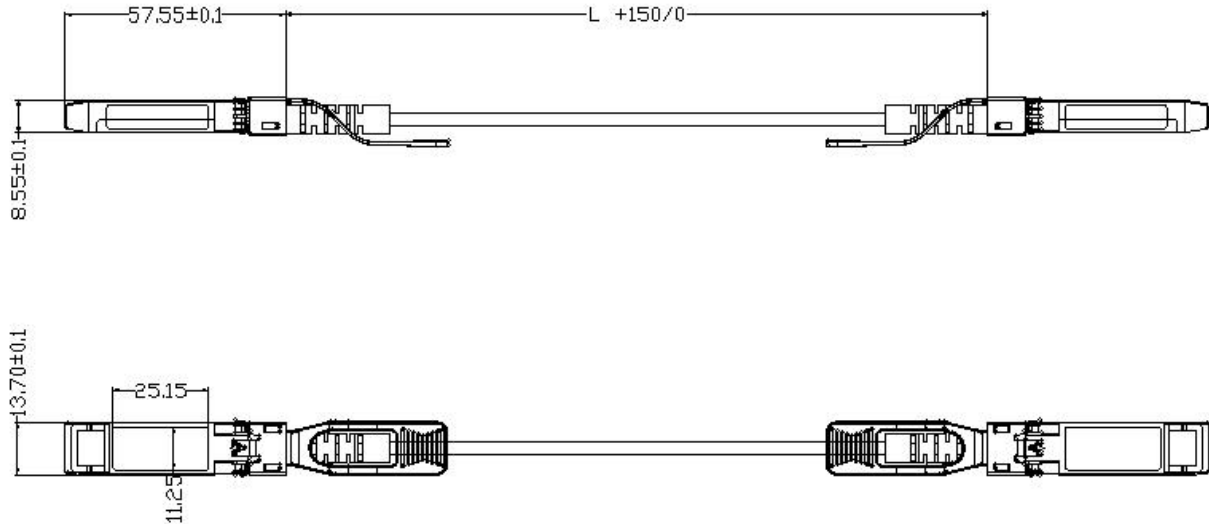
1. Signals not supported in SFP28 Copper pulled-down to VeeT with 30K ohms resistor
2. Passive cable assemblies do not support LOS and TX\_DIS

## PIN DIAGRAM



## MECHANICAL SPECIFICATIONS

Unit: mm



## Ordering information

Part Number	Product Description
SFP-DC11T5-1MC30	SFP28 Direct Attach Passive Cable (25G SFP28 Cu), 1m, AWG:30 , 0°C ~ +70°C
SFP-DC11T5-2MC30	SFP28 Direct Attach Passive Cable (25G SFP28 Cu),2m, AWG:30 , 0°C ~ +70°C
SFP-DC11T5-3MC30	SFP28 Direct Attach Passive Cable (25G SFP28 Cu), 3m, AWG:30, 0°C ~ +70°C
SFP-DC11T5-3MC26	SFP28 Direct Attach Passive Cable (25G SFP28 Cu), 3m, AWG:26 , 0°C ~ +70°C
SFP-DC11T5-4MC26	SFP28 Direct Attach Passive Cable (25G SFP28 Cu), 4m, AWG:26 , 0°C ~ +70°C
SFP-DC11T5-5MC26	SFP28 Direct Attach Passive Cable (25G SFP28 Cu), 5m, AWG:26 , 0°C ~ +70°C

## For More Information

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