

**25Gbps -DAC 5M RoHS Compliant  
SFP28 Passive High Speed Cable****PSP28-DA8505M****Features**

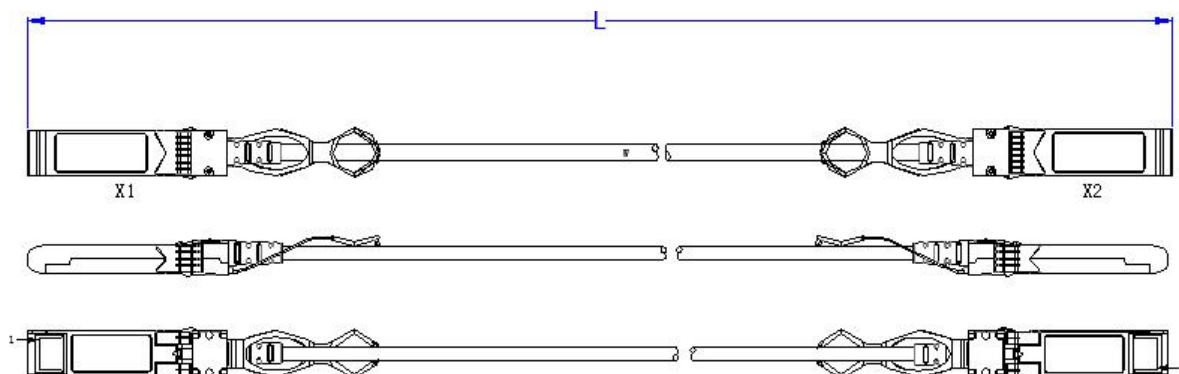
- Compliant with MSA SFF-8402 & IEEE 802.3.dj
- Support I2C two-wire serial interface, easy to control
- Support hot plug
- Low interference
- Low power consumption
- Passive cable assembly supports distances up to 10 meters
- 30AWG to 24AWG cable sizes available
- RoHS compliant and Halogen-Free option available

**Applications**

- 25G Ethernet
- Switch
- Router
- Hub
- Data Center, Cloud Server

**Description**

SFP28 is based on the same shape of SFP+ and supports 25G Ethernet standard. It can provide 25GB/s error-free transmission, and can be applied to high density 25G Ethernet switch and network interface to promote server connection in data center. It uses the popular SFP + packaging form, provides a more cost-effective solution for enterprises to upgrade 10G Ethernet connection.

**Outline drawing**

## Wiring Diagram

Starting	End	Remark
X1. 12	X2. 19	Pair
X1. 13	X2. 18	
X1. 18	X2. 13	Pair
X1. 19	X2. 12	
X1:1, 2, 6 8, 10, 11, 14, 17, 20	X2:1, 2, 6 8, 10, 11, 14, 17, 20	Drain wire
X1:1, 4, 5 15, 16	X1:1, 4, 5 15, 16	EEPROM point at both ends

## Electrical Performance

### 1. Signal Integrity

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>		$\text{Return\_loss}(f) \geq \begin{cases} 16.5-2\sqrt{f} & 0.05 \leq f < 4.1 \\ 10.66-14\log_{10}(f/5.5) & 4.1 \leq f \leq 19 \end{cases}$ 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 $S_{CD11}/S_{CD22}$ ]	$\text{Return\_loss}(f) \geq \begin{cases} 22-(20/25.78)f & 0.01 \leq f < 12.89 \\ 15-(6/25.78)f & 12.89 \leq f \leq 19 \end{cases}$ <p>Where  <math>f</math> is the frequency in GHz  <math>\text{Return\_loss}(f)</math> is the Differential to common-mode return loss at frequency <math>f</math></p>	$10\text{MHz} \leq f \leq 19\text{GHz}$																					
Common-mode to Common-mode (Input/Output)Return loss $S_{CC11}/S_{CC22}$	$\text{Return\_loss}(f) \geq 2\text{dB} \quad 0.2 \leq f \leq 19$ <p>Where  <math>f</math> is the frequency in GHz  <math>\text{Return\_loss}(f)</math> is the common-mode to common-mode return loss at frequency <math>f</math></p>	$10\text{MHz} \leq f \leq 19\text{GHz}$																					
Differential Insertion Loss ( $S_{DD21}$ Max.)	<p>(Differential Insertion Loss Max. For TPa to TPb Excluding Test fixture )</p> <table border="1" data-bbox="475 824 1273 987"> <tr> <td data-bbox="475 824 571 958"> <math>F</math> </td> <td data-bbox="571 824 683 958">1.25GHz</td> <td data-bbox="683 824 794 958">2.5GHz</td> <td data-bbox="794 824 906 958">5.0GHz</td> <td data-bbox="906 824 1018 958">7.0GHz</td> <td data-bbox="1018 824 1129 958">10Ghz</td> <td data-bbox="1129 824 1273 958">12.89Ghz</td> </tr> <tr> <td data-bbox="475 958 571 987"> <math>AWG</math> </td> <td colspan="6"></td> </tr> <tr> <td data-bbox="475 987 571 987">           30(1m)         </td> <td data-bbox="571 987 683 987">4.5dB</td> <td data-bbox="683 987 794 987">5.4dB</td> <td data-bbox="794 987 906 987">6.3dB</td> <td data-bbox="906 987 1018 987">7.5dB</td> <td data-bbox="1018 987 1129 987">8.5dB</td> <td data-bbox="1129 987 1273 987">10.5dB</td> </tr> </table>	$F$	1.25GHz	2.5GHz	5.0GHz	7.0GHz	10Ghz	12.89Ghz	$AWG$							30(1m)	4.5dB	5.4dB	6.3dB	7.5dB	8.5dB	10.5dB	$10\text{MHz} \leq f \leq 19\text{GHz}$
$F$	1.25GHz	2.5GHz	5.0GHz	7.0GHz	10Ghz	12.89Ghz																	
$AWG$																							
30(1m)	4.5dB	5.4dB	6.3dB	7.5dB	8.5dB	10.5dB																	

	Max.							
	30/28(3m)Max.	7.5dB	9.5dB	12.2dB	14.8dB	18.0dB	21.5dB	
	26(3m)Max.	5.7dB	7.2dB	9.9 dB	11.9dB	14.1dB	16.5dB	
	26/25(5m)Max.	7.8dB	10.0dB	13.5dB	16.0dB	19.0dB	22.0dB	
Differential to common-mode Conversion Loss-Differential Insertion Loss( $S_{CD21}-S_{DD21}$ )	$\text{Conversion\_loss}(f) - IL(f) \geq \begin{cases} 10 & 0.01 \leq f < 12.89 \\ 27-(29/22)f & 12.89 \leq f < 15.7 \\ 6.3 & 15.7 \leq f \leq 19 \end{cases}$ <p>Where  <math>f</math> is the frequency in GHz  <math>\text{Conversion\_loss}(f)</math> is the cable assembly differential to common-mode conversion loss  <math>IL(f)</math> is the cable assembly insertion loss</p>							10MHz ≤ f ≤ 19GHz
MDNEXT(multiple disturber near-end crosstalk)	≥26dB @12.89GHz							10MHz ≤ f ≤ 19GHz
Intra Skew	15ps/m,							10MHz ≤ f ≤ 19GHz

### 1. 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.

**Environment Performance**

ITEM	REQUIREMENT	TEST CONDITON
Operating Temp. Range	-20°C to +75°C	Cable operating temperature range.
Storage Temp. Range (in packed condition)	-40°C to +80°C	Cable storage temperature range in packed condition.
Thermal Cycling Non- Powered	No evidence of physical damage	EIA-364-32D, Method A, -25 to 90C, 100 cycles, 15 min. dwells
Salt Spraying	48 hours salt spraying after shell corrosive area less than 5%.	EIA-364-26
Mixed Flowing Gas	Pass electrical tests per 3.1 after stressing. (For connector only)	EIA-364-35 Class II,14 days.
Temp. Life	No evidence of physical damage	EIA-364-17C w/ RH, Damp heat 90°C at 85% RH for 500 hours then return to ambient
Cable Cold Bend	4H, No evidence of physical damage	Condition: -20°C±2°C, mandrel diameter is 6 times the cable diameter.

**Mechanical and Physical Characteristics**

ITEM	REQUIREMENT	TEST CONDITON
Vibration	Pass electrical tests per 3.1 after stressing.	Clamp & vibrate per EIA-364-28E, TC-VII, test condition letter – D, 15 minutes in X, Y & Z axis.
	No evidence of physical	Twist cable 180° (±90° from nominal

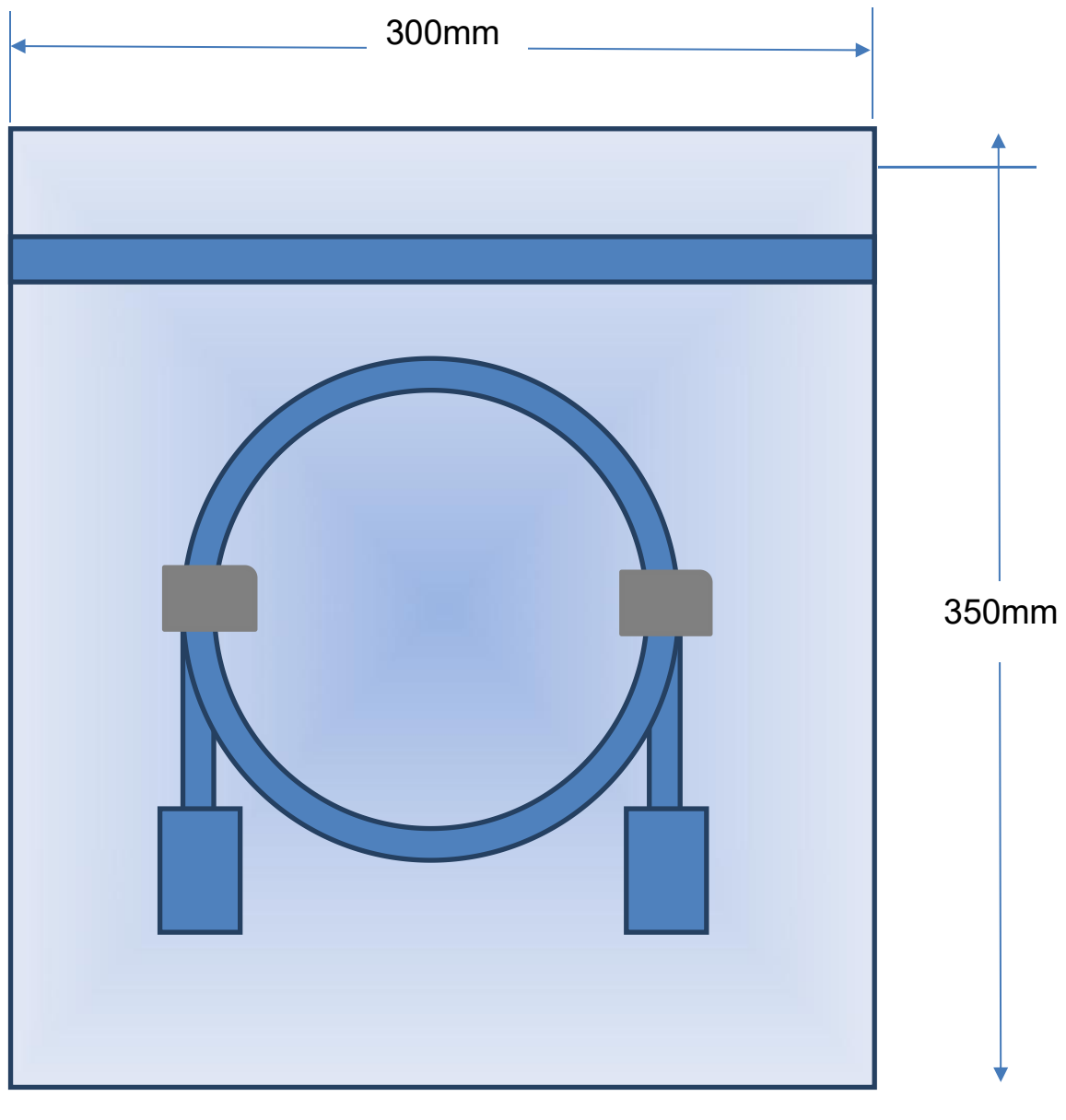
Twist	damage	position) for 100 cycles at 30 cycles per minute with a 0.5kg load applied to the cable jacket. Clamp position: 300mm
Cable Flex	No evidence of physical damage	Flex cable 180° for 20 cycles ( $\pm 90^\circ$ from nominal position) at 12 cycles per minute with a 1.0kg load applied to the cable jacket. Flex in the boot area 90° in each direction from vertical. Per EIA-364-41C
Cable Plug Retention in Cage	90N Min. No evidence of physical damage	Force to be applied axially with no damage to cage. Per SFF 8661 Rev 2.1 Pull on cable jacket approximately 1 ft behind cable plug. No functional damage to cable plug below 90N. Per SFF-8432 Rev 5.0
Cable Retention in Plug	90N Min. No evidence of physical damage	Cable plug is fixtured with the bulk cable hanging vertically. A 90N axial load is applied (gradually) to the cable jacket and held for 1 minute. Per EIA-364-38B
Mechanical Shock	Pass electrical tests Per 3.1 after stressing.	Clamp and shock per EIA-364-27B, TC-G, 3 times in 6 directions, 100g, 6ms.
Cable Plug Insertion	18N Max.(SFP28)	Per SFF-8432 Rev 5.0
Cable plug Extraction	12.5N Max. (SFP28)	Measure without the aid of any cage kick-out springs. Place axial load on de-latch to de-latch plug. Per SFF-8432 Rev 5.0
Durability	50 cycles, No evidence of physical damage	EIA-364-09, perform plug & unplug cycles: Plug and receptacle mate rate: 250times/hour. 50times for QSFP28/SFP28 module (CONNECTOR TO PCB)

**Package diagram**

The connectors are both protected by a protective sleeve, and each PCS is separately loaded into an anti-static bag.

<=3m :200mm\*300mm

>3m:300mm\*350mm



**Ordering information**

<b>Part Number</b>	<b>Product Description</b>
PSP28-DA8505M	SFP28 Passive High Speed Cable, 25GBASE-DAC 5M, -10°C ~ +70°C

**Contact Information**

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