

50Gbps SFP56 Passive High Speed Cable Specification

1 Description:

SFP56 is based on the same shape of SFP+, supports 28G/56G Ethernet standard, can provide 25Gb/s NRZ and 56Gb/s PAM-4 without error code transmission, and can be applied in high-density 28G/56G Ethernet switches and network interfaces to promote server connection in data centers. It USES today's popular SFP+ packaging to provide a more cost effective solution for enterprises to upgrade their 10G Ethernet connections.

2 Product Features

Compliant with SFF-8402 & IEEE 802.3.bj & IEEE 802.3 cd

Support I2C two - line string interface, easy to control

Support for hot plugging

Low crosstalk

Low power

3 Applications :

28G/56G Ethernet

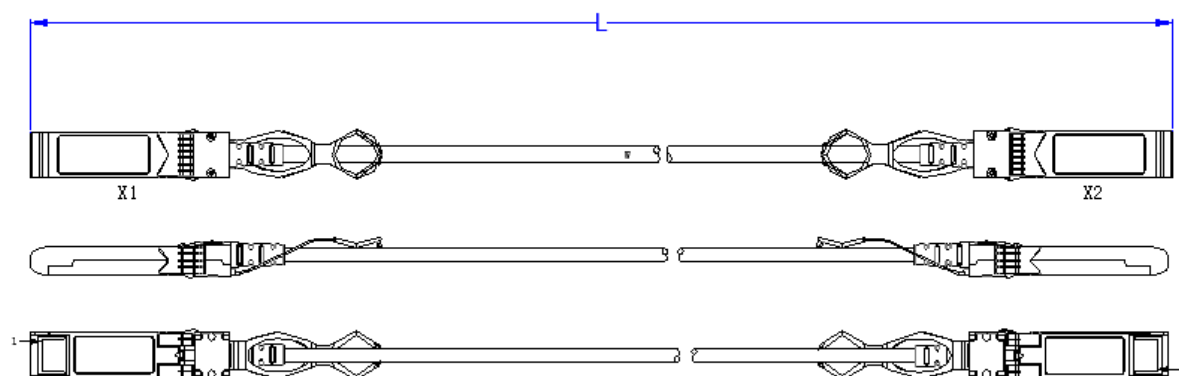
SWITCH

Router

Concentrator

Data center, cloud server

4 Outline drawing:



M.P/N	C.P/N	L(mm)	Tolerance
SFP56P-030261-004	TBD	3000	±45

5 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

6 Electrical Performance):

6.1 Signal Integrity

项目（ITEM）		要求（REQUIREMENT）							测试条件（TEST CONDITION）
差模阻抗 （Differential Impedance）	Cable Impedance	105+5/-10Ω							Rise time of 25ps (20 % - 80 %).
	Paddle Card Impedance	100±10Ω							
	Cable Termination Impedance	100±15Ω							
差模回波损耗 [Differential (Input/Output)Return loss S _{DD11} /S _{DD22}]		$\text{Return_loss}(f) \geq \left\{ \begin{array}{ll} 16.5-2\sqrt{f} & 0.05 \leq f < 4.1 \\ 10.66-14\log_{10}(f/ 5.5) & 4.1 \leq f \leq 19 \end{array} \right\}$ Where f is the frequency in GHz Return loss(f)is the return loss at frequency f							10MHz≤f ≤19GHz
差模转共模回波损耗 [Differential to common-mode (Input/Output)Return lossS _{CD11} /S _{CD22}]		$\text{Return_loss}(f) \geq \left\{ \begin{array}{ll} 22-(20/25.78)f & 0.01 \leq f < 12.89 \\ 15-(6/25.78)f & 12.89 \leq f \leq 19 \end{array} \right\}$ Where f is the frequency in GHz Return_loss(f)is the Differential to common-mode return loss at frequency f							10MHz≤f ≤19GHz
共模回波损耗[Common-mode to Common-mode (Input/Output)Return loss S _{CC11} /S _{CC22}]		<i>Return_loss(f)≥2dB</i> 0.2≤f≤19 Where f is the frequency in GHz Return_loss(f)isthe common-mode to common-mode return loss at frequencyf							10MHz≤f ≤19GHz
差模插入损耗[Differential Insertion Loss (S _{DD21} Max.)]		(Differential InsertionLoss Max. For TPa to TPb Excluding Test fixture)							10MHz≤f ≤19GHz
		F AWG	1.25GHz	2.5GHz	5.0GHz	7.0GHz	10Ghz	12.89Ghz	
		30(1m) Max.	4.5dB	5.4dB	6.3dB	7.5dB	8.5dB	10.5dB	
		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($S_{CD21}-S_{DD21}$)	$\text{Conversion_loss}(f) - IL(f) \geq \begin{cases} 10 & 0.01 \leq f < 0.07 \\ 12.89 & 0.07 \leq f < 12.89 \\ 27 & 12.89 \leq f < 19 \end{cases}$ Where f is the frequency in GHz $\text{Conversion_loss}(f)$ is the cable assembly differential to common-mode conversion loss $IL(f)$ is the cable assembly insertion loss							10MHz $\leq f \leq$ 19GHz
近端串音 [MDNEXT(multiple disturber near-end crosstalk)]	$\geq 26\text{dB @}12.89\text{GHz}$							10MHz $\leq f \leq$ 19GHz
对内延时差[Intra Skew]	15ps/m,							10MHz $\leq f \leq$ 19GHz

6.2 Other Electrical Performance

项目 (ITEM)	要求 (REQUIREMENT)	测试条件 (TEST CONDITON)
低功率接触阻抗[Low Level Contact Resistance]	70milliohms Max. From initial.	EIA-364-23:Apply a maximum voltage of 20mV And a current of 100 mA.
绝缘阻抗 Insulation Resistance	10Mohm(Min.)	EIA364-21:AC 300V 1minute
耐电压 [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.

7 Environment Performance

项目 (ITEM)	要求 (REQUIREMENT)	测试条件 (TEST CONDITON)
工作温度[Operating Temp.	-20°C to +75°C	Cable operating temperature range.

Range]		
储存温度[Storage Temp. Range (in packed condition)]	-40°C to +80°C	Cable storage temperature range in packed condition.
热循环[Thermal CyclingNon-Powered]	No evidence of physical damage	EIA-364-32D, Method A, -25 to 90C, 100 cycles, 15 min. dwells
盐雾测试[Salt Spraying]	48 hours salt spraying after shell corrosive area less than 5%.	EIA-364-26
混合气体测试 Mixed Flowing Gas	Pass electrical tests per 3.1 after stressing. (For connector only)	EIA-364-35 Class II, 14 days.
温度寿命 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
冷弯测试 Cable Cold Bend	4H, No evidence of physical damage	Condition: -20°C±2°C, mandrel diameter is 6 times the cable diameter.

8 Mechanical and Physical Characteristics

项目 (ITEM)	要求 (REQUIREMENT)	测试条件 (TEST CONDITON)
机械振动 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.
弯曲测试 Cable Flex	No evidence of physical damage	Flex cable 180° for 20 cycles (±90° 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
插头保持力 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
线缆保持力 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
机械冲击	Pass electrical tests	Clamp and shock per EIA-364-27B, TC-

Mechanical Shock	Per 3.1 after stressing.	G,3 times in 6 directions, 100g, 6ms.
插入力 Cable Plug Insertion	18N Max.(SFP28)	Per SFF-8432 Rev 5.0
拔出力 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
机械寿命 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)