

25G SFP28 Active Direct Attach Copper Twinax Cable



Application

- 25G Ethernet
- Switches, Routers, and HBAs
- Enterprise & Data Center Networking & Storage
- High Performance Computing Clusters

Features

- Up to 25.78125Gbps Data Rate
- Single +3.3V Power Supply
- I2C Management Interface and Eeprom in Cable Assembly
- Compliant with SFF-8402, IEEE802.3 by 25GBASE-CR
- Operating Temperature Range: 0°C to 70°C
- RoHS Compliant Products
- Maximum Link Length: up to 9m
- Low Cross-Talk and Pair-to-Pair Skew Maintains Signal Integrity

Description

The 25G SFP28 Active Direct Attach Copper Twinax Cable is designed for use in 25GBASE Ethernet. Each SFP28 connector comprises an EEPROM providing product information which can be read by the host system. This cable is compliant with IEEE 802.3 by Ethernet standard and SFP28 MSA Compliant.

Product Specification

I. Absolute Maximum Ratings

Parameter	Unit	Min.	Typical	Max.	Notes
Storage Temperature	°C	-40		85	
Operating Relative Humidity	%			85	
Power Supply Working Voltage	V	-0.5		3.63	

II. Recommended Operating Conditions

Parameter	Unit	Min.	Typical	Max.	Notes
Operating Case Temperature	°C	0		70	
Power Supply Working Voltage	V	3.135	3.135	3.135	
Bit Rate	Gbps		25.78125		

III. Electrical Characteristics

Parameter	Unit	Min.	Typical	Max.	Notes
Differential Impedance	Ω	90	100	110	1
Differential Insertion Loss SDD21			-22.48dB Min. @12.89GHz		

Parameter	Unit	Min.	Typical	Max.	Notes
Intra-Pair Skew	ps/m			15	2
NEXT	dB			-35	
COM	dB	4			
Dielectric Withstand Voltage	VDC	300			3
Insulation Resistance	MΩ	10			4
Low Level Contact Resistance	Milliohms			70	5

Note:

1. Test condition: Rise time of 25ps (20 % - 80 %), cable termination.
2. $10\text{MHz} \leq f \leq 19\text{GHz}$.
3. EIA-364-20: Apply a voltage of 300 VDC for 1 minute between adjacent terminals, and between adjacent terminals and ground.
4. EIA364-21: AC 300V 1minute.
5. EIA-364-23: Apply a maximum voltage of 20mV, and a current of 100 mA.

IV. Performance Specification

All performance is defined over the recommended operating environment unless otherwise specified.

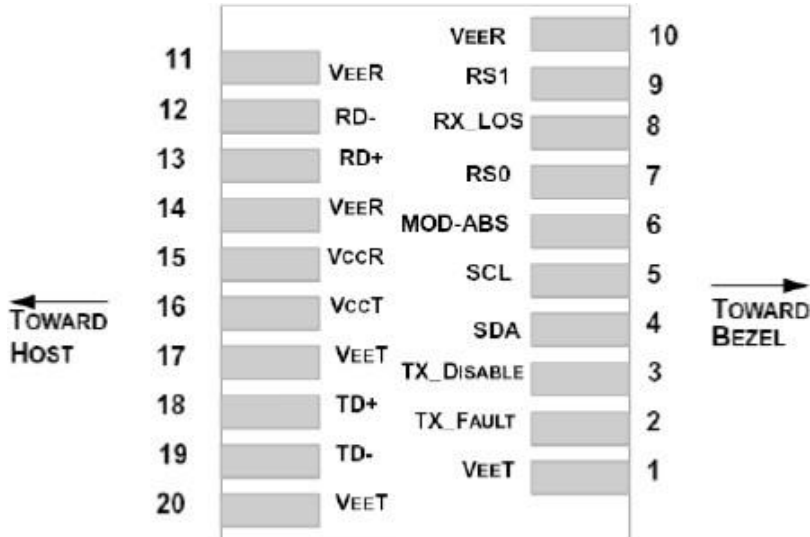
1. Cable

Parameter	Typical
Wire Gauge	AWG30/AWG28/AWG26
Impedance	$100 \pm 5\Omega$
Construction	Twin-Axial
Jacket Type	PVC
Bend Radius	5X Cable OD -Single, 10X Cable OD - Repeated

2. Plug

Parameter	Typical
Backshell Material	Nickel-Plated Zinc Diecast
Contact Material	PCB with Gold-Plated Pads
Latch	Positive Latching w/Pull Tab
Insertion Force	18N Max.
Withdrawal Force	12.5N Max.
Retention Force	90N Min.
Durability	50 Cycles Min.

V. PIN Function Definitions



VI. Transceiver Pin Descriptions

Pin No.	Symbol	Level / Logic	Description
1	VeeT		Module Transmitter Ground

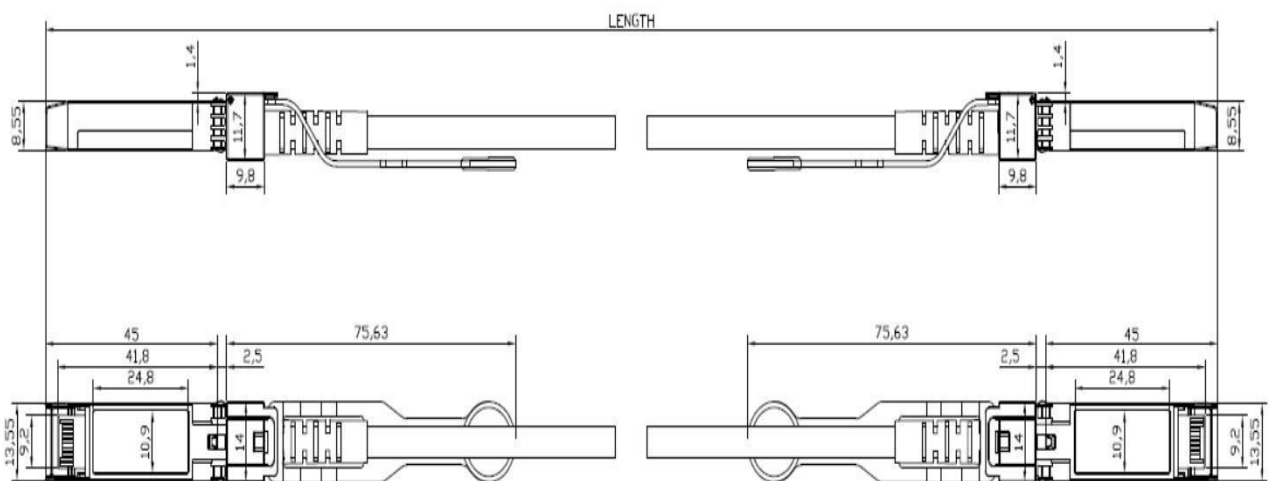
Pin No.	Symbol	Level / Logic	Description
2	Tx_Fault	LVTTTL-O	Module Transmitter Fault Indication
3	Tx_DIS	LVTTTL-I	Transmitter Disable, Active High Disable Transmitter Output
4	SDA	LVTTTL-I	2-Wire Serial Interface Data Line
5	SCL	LVTTTL-I/O	2-Wire Serial Interface Clock
6	MOD_ABS	LVTTTL-O	Module Absent, Connected to Ground in The Module
7	RS0		Rate Select 0, Optionally Controls SFP28 Module Receiver
8	RX_LOS	LVTTTL-O	Loss of Receiver Signal Indication
9	RS1		Rate Select 1, Optionally Controls SFP28 Module Transmitter
10	VeeR		Module Receiver Ground
11	VeeR		Module Receiver Ground
12	RD-	CML-O	Receiver Inverted Data Output
13	RD+	CML-O	Receiver Non-Inverted Data Output
14	VeeR		Module Receiver Ground
15	VccR		Module Receiver 3.3V Supply
16	VccT		Module Transmitter 3.3V Supply
17	VeeT		Module Transmitter Ground
18	TD+	CML-I	Transmitter Non-Inverted Data Input
19	TD-	CML-I	Transmitter Inverted Data Input
20	VeeT		Module Transmitter Ground

VII. Recommended 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

VIII. Mechanical Specifications

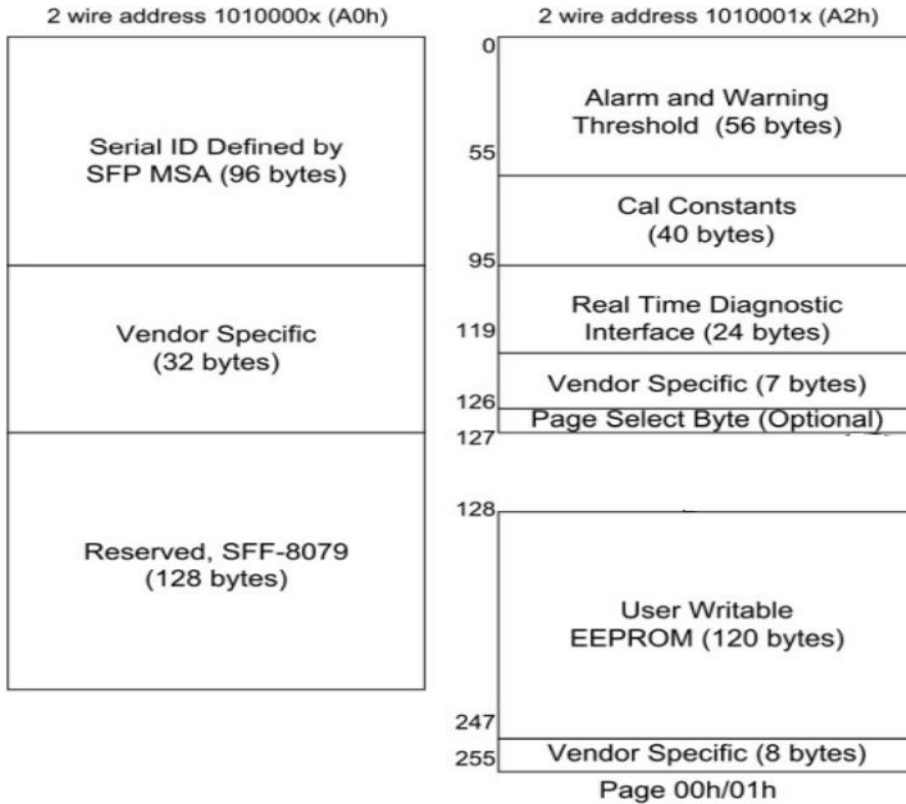
For detail mechanical information, please refer to the related document of SFF-8432.



Unit: mm

IX. EEPROM Information

The digital diagnostic memory map specific data field define as following. For detail EEPROM information, please refer to the related document of SFF 8472 Rev 12.0.



X. ESD

This Product is Specified As ESD Threshold 1kv for High Speed Data Pins and 2kv for All Other Electrical Input Pins, tested Per Mil-std-883, Method 3015.4 /jesd22-a114-a (hbm). However, normal ESD Precautions Are Still Required During the Handling of This Module. This Product is Shipped in ESD Protective Packaging. It Should Be Removed from the Packaging and Handled Only in an ESD Protected Environment.

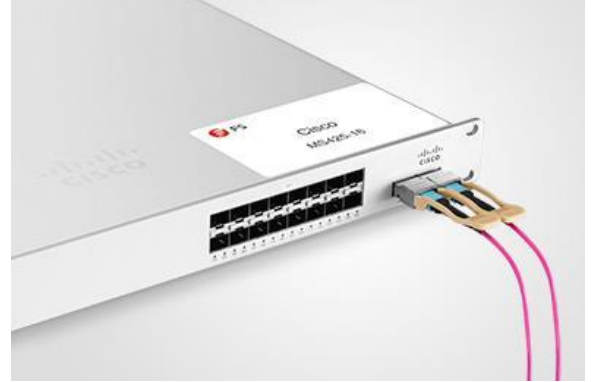
Test Center

I. Compatibility Testing

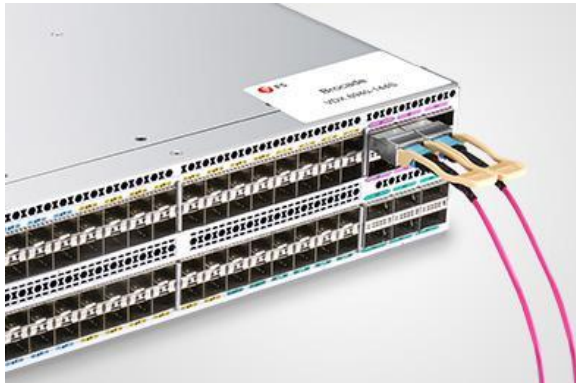
Each fiber optical transceiver has been tested in host device on site in FS Assured Program to ensure full compatibility with over 200 vendors.



Cisco Catalyst C9500-24Y4C



Cisco MS425-16



Brocade VDX 6940-144S



Dell EMC Networking Z9100-ON



Force@tm S60-44T

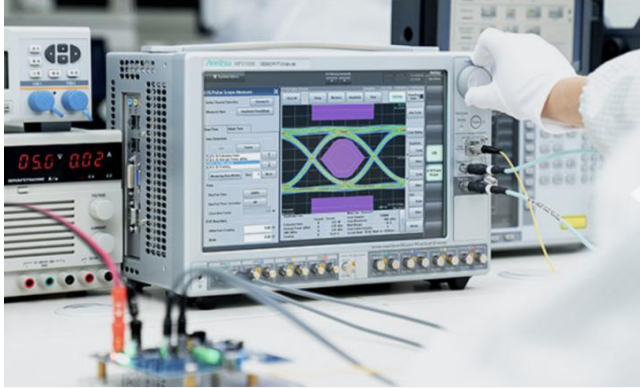


HUAWEI S6720-30L-HI-24S

Above is part of our test bed network equipment. For more information, please click the Test Bed PDF. It will be updated in real time as we expand our portfolio.

II. Performance Testing

Each fiber optical transceiver has been fully tested in FS Assured Program equipped with world's most advanced analytical equipment to ensure that our transceivers work perfectly on your device.



1. TX/RX Signal Quality Testing

Equipped with the all-in-one tester integrated 4ch BERT & sampling oscilloscope, and variable optical attenuator to ensure the input and output signal quality.

- Eye Pattern Measurements: jitter, Mask Margin, etc
- Average Output Power
- OMA
- Extinction Ratio
- Receiver Sensitivity
- BER Curve

2. Reliability and Stability Testing

Subject the transceivers to dramatic changes in temperature on the thermal shock chamber to ensure reliability and stability of the transceivers.

- Commercial: 0 °C to 70 °C
- Extended: -5 °C to 85 °C
- Industrial: -40 °C to 85 °C



3. Transfer Rate and Protocol Testing

Test the actual transfer data rate and the transmission ability under different protocols with Network Master Pro.

- Ethernet
- Fibre Channel
- SDH/SONET
- CPRI



4. Optical Spectrum Evaluation

Evaluate various important parameters with the Optical Spectrum Analyzer to meet the industry standards.

- Center Wavelength, Level
- OSNR
- SMSR
- Spectrum Width



Ordering Information

Part Number	Data Rate	Length	Wire Gauge	Connector Type	Temp. Range	Cable Jacket
S28-AC01	Up to 25G	1m	AWG30	Active Copper	0-70°C	PVC
S28-AC02	Up to 25G	2m	AWG30	Active Copper	0-70°C	PVC
S28-AC03	Up to 25G	3m	AWG30	Active Copper	0-70°C	PVC
S28-AC04	Up to 25G	4m	AWG30	Active Copper	0-70°C	PVC
S28-AC05	Up to 25G	5m	AWG28	Active Copper	0-70°C	PVC
S28-AC06	Up to 25G	6m	AWG28	Active Copper	0-70°C	PVC
S28-AC07	Up to 25G	7m	AWG26	Active Copper	0-70°C	PVC
S28-AC08	Up to 25G	8m	AWG26	Active Copper	0-70°C	PVC
S28-AC09	Up to 25G	9m	AWG26	Active Copper	0-70°C	PVC



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