

# 25GBASE-ER SFP28 1310nm 40km Industrial DOM Transceiver

SFP28-25GER-31-I



## Application

- 25GBASE ER
- CPRI Option 10 / eCPRI

## Features

- Compliant to SFP28 MSA
- Fully RoHS Compliant
- All Metal Housing for Superior EMI Performance
- Operating Data  
25.78Gbps±100 ppm
- Cooled DML DFB Laser
- APD Receiver
- LC Duplex Connector
- Hot Pluggable 20pin Connector
- Low Power Consumption <2.2W
- -40°C to 85°C Operating Wide Temperature Range
- Single +3.3V Power Supply
- Digital Monitoring SFF-8472 Rev 10.2 Compliant
- Real Time Monitoring of Transmitted Optical Power Received Optical Power ; Laser Bias Current Temperature ; Supply Voltage

## Description

The SFP28 Transceiver is designed for use in Ethernet/eCPRI/ CPRI links up to 25.78 Gb/s data rate and up to 40km link length.

They are compliant with SFF8472,SFF-8431,SFF-8432. Digital diagnostics functions are available via a 2-wire serial interface, as specified in SFF-8472.

## Product Specifications

### I. Absolute Maximum Ratings

Parameter	Symbol	Min.	Max.	Unit
<b>Storage Temperature Range</b>	$T_S$	-40	85	°C
<b>Relative Humidity</b>	RH	0	95	%

### II. Optical Characteristics $(T_{OP} = 0 \text{ to } 70 \text{ }^\circ\text{C}, V_{CC} = 3.00 \text{ to } 3.60 \text{ Volts})$

Parameter	Symbol	Min.	Typical	Max.	Unit	Note
<b>Transmitter</b>						
<b>Center Wavelength</b>	$\lambda$	1295		1310	nm	
<b>Side Mode Suppression Ratio</b>	SMSR	30			dB	
<b>Optical Output Power</b>	$P_{AV}$	-1		5	dBm	
<b>Extinction Ratio</b>	ER	4			dB	
<b>Transmitter and Dispersion Penalty</b>	TDP			2.7	dB	
<b>Average Launch Power of OFF Transmitter</b>	$P_{OFF}$			-30	dBm	
<b>Relative Intensity Noise</b>	$RIN_{20OMA}$			-130	dB/Hz	

Parameter	Symbol	Min.	Typical	Max.	Unit	Note
<b>Receiver</b>						
<b>Center Wavelength</b>	$\lambda$	1295		1325	nm	
<b>Receiver Sensitivity</b>	R <sub>sen</sub>			-19	dBm	1
<b>Maximum Input Power</b>		-4			dBm	
<b>Optical Return Loss</b>		27			dB	
<b>Assert LOS</b>	LOS <sub>A</sub>	-35			dBm	
<b>De-Assert LOS</b>	LOS <sub>D</sub>			-19	dBm	
<b>LOS Hysteresis</b>		0.5		6	dB	

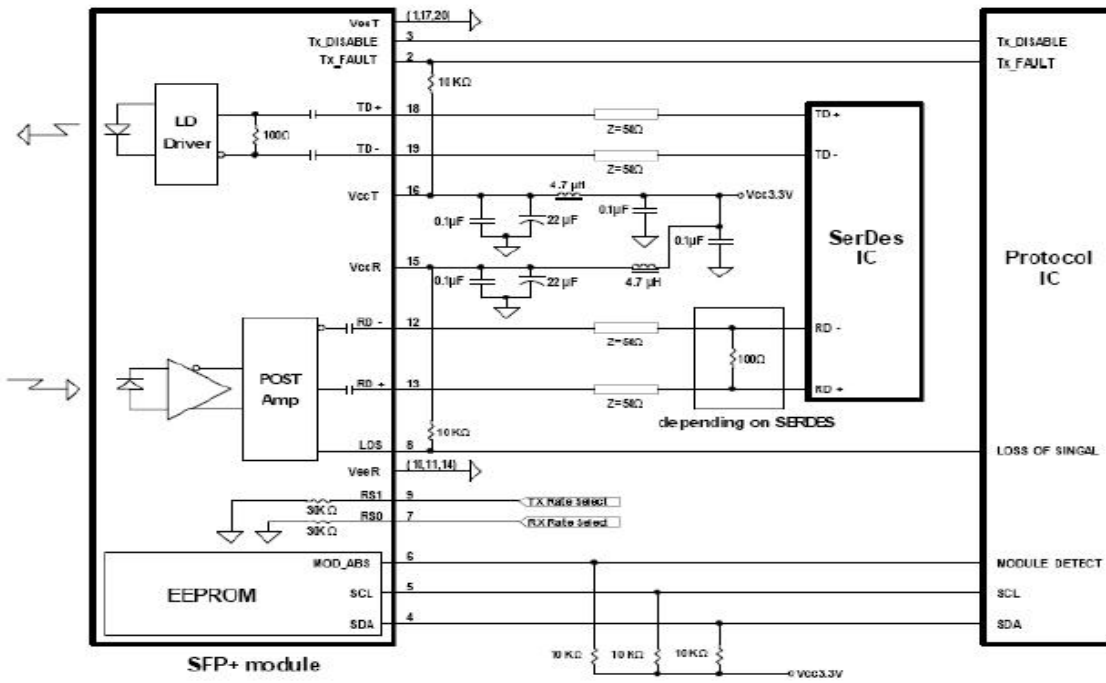
### III. Qualification Reliability

Feature	Test Method	Performance
<b>Electrostatic Discharge (ESD) to The Electrical Pins</b>	MIL-STD-883C Method 3015.4	Class1 (>1KV) for high speed I/O pins Class 1 (>2KV) for all other pins
<b>Electrostatic Discharge (ESD) to The Duplex LC Receptacle</b>	Variation of IEC 61000-4-2	The SFP28 modules meet ESD requirements given in EN61000-4-2, criterion B test specification such that units are subjected to 15kV air discharges during operation and 8kV direct contact discharges to the case.
<b>Electromagnetic Interference (EMI)</b>	CISPR22 ITE Class BEN55022 Class B	Compliant with standards
<b>EMC</b>		FCC Class B/CE Class B
<b>Immunity</b>	IEC61000-4-3 Class 2EN55024	Typically show no measurable effect from a 3V/m field swept from 80 to 1000MHz applied to the transceiver without a chassis enclosure.

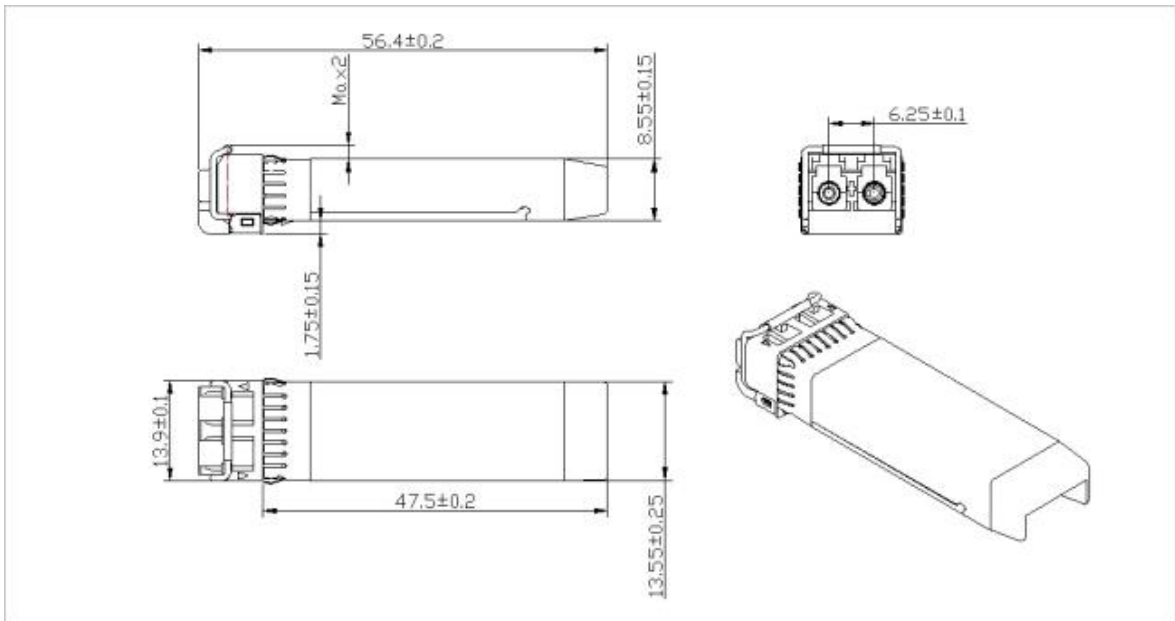
### IV. Environmental Safety

Feature	Test Method	Performance
<b>RoHS Compliance</b>		Less than 1000 ppm of cadmium, lead, mercury, hexavalent chromium, polybrominated biphenyls, and polybrominated biphenyl ethers.

### V. Typical Application Circuit



### VI. Mechanical Dimensions



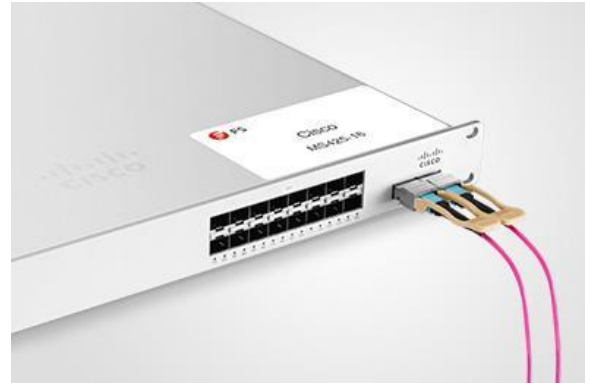
## Test Center

### I. Compatibility Testing

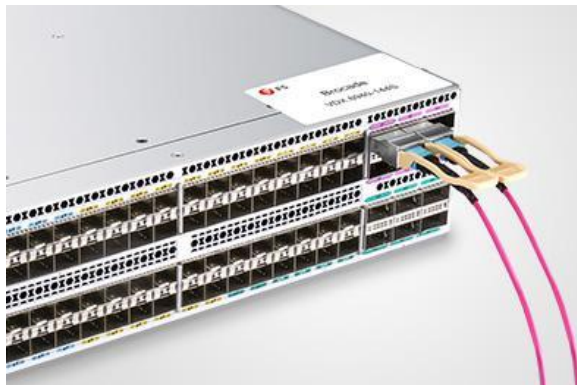
Each fiber optical transceiver has been tested in host device on site in FS Assured Program to ensure full compatibility with over 200 vendors.



Cisco Catalyst C9500-24Y4C



Cisco MS425-16



Brocade VDX 6940-144S



Dell EMC Networking Z9100-ON



Force10 S60-44T

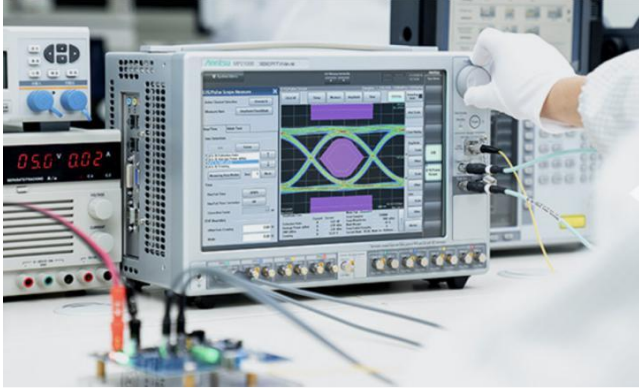


HUAWEI S6720-30L-HI-24S

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.

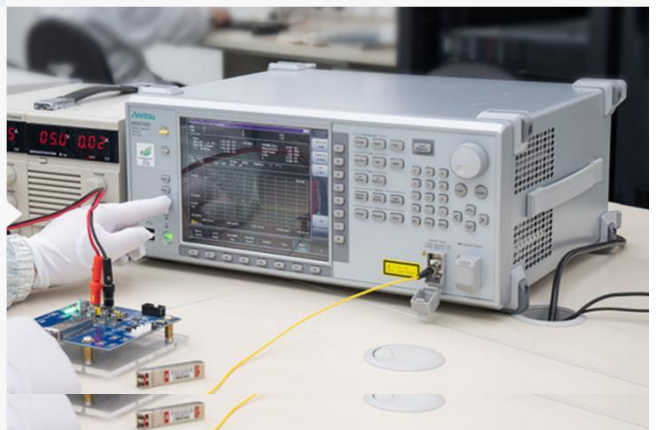
- Ethernet
- Fibre Channel
- SDH/SONET
- CPRI



### 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



## Order Information

Part Number	Description
SFP28-25GSR-85	25G SFP28 850nm 100m DOM Transceiver
SFP28-25GLR-31	25G SFP28 1310nm 10km DOM Transceiver
SFP28-25GER-31	25G SFP28 1310nm 30km DOM Transceiver
SFP28-25GER-31	25G SFP28 1310nm 40km DOM Transceiver
SFP28-25GSR-85-I	25G SFP28 850nm 100m Industrial DOM Transceiver
SFP28-25GLR-31-I	25G SFP28 1310nm 10km Industrial DOM Transceiver
SFP28-25GER-31-I	25G SFP28 1310nm 30km Industrial DOM Transceiver
SFP28-25GER-31-I	25G SFP28 1310nm 40km Industrial DOM Transceiver





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