25GBASE-LR SFP28 1310nm 2km Industrial DOM Transceiver

SFP-25GLRL-31-I

Application

- 25GBASE-LR Lite
- CPRI Wireless

Standards

- SFF-8472

Features

- Support CPRI Wireless and 25GBASE- LR Application
- Support Multi-rate for Both 10Gps and 25Gbps
- Up to 2km Transmission on SMF
- 1310nm DFB Laser and PIN Receiver
- SFI High Speed Electrical Interface
- 2-wire Interface with Integrated Digital Diagnostic Monitoring
- SFP+ MSA Package with Duplex LC Connector
- Single +3.3V Power Supply
- Power consumption lower than 1.2W

Description

25G LR 2KM-I is a SFP28 module for duplex optical data communications support 25.78Gb/s data links. It use the SFP+ 20-pin connector to allow hot plug capability. Digital diagnostic functions are available via an I2C. It has built-in dual clock and data recovery (CDR).This module is designed for single-mode fiber and operates at a nominal wavelength of 1310nm.The transmitter section uses a high performance 1310nm DFB laser and is a class 1 laser compliant according to International Safety Standard IEC-60825.

I. Absolute Maximum Ratings

Parameter	Symbol	Unit	Min	Max
Storage Temperature Range	T_S	℃	-40	85
Relative Humidity	RH	%	5	85

II. Recommended Operating Conditions

Parameter	Symbol	Unit	Min.	Typ.	Max.
Operating Case Temperature Range	T_C	℃	-40		85
Supply Voltage	V_{CC}	V	3.135	3.3	3.465
Bit Rate	BR	Gb/s		25.78125	
Max Supported Link Length	L	km			2

III. Electrical Characteristics

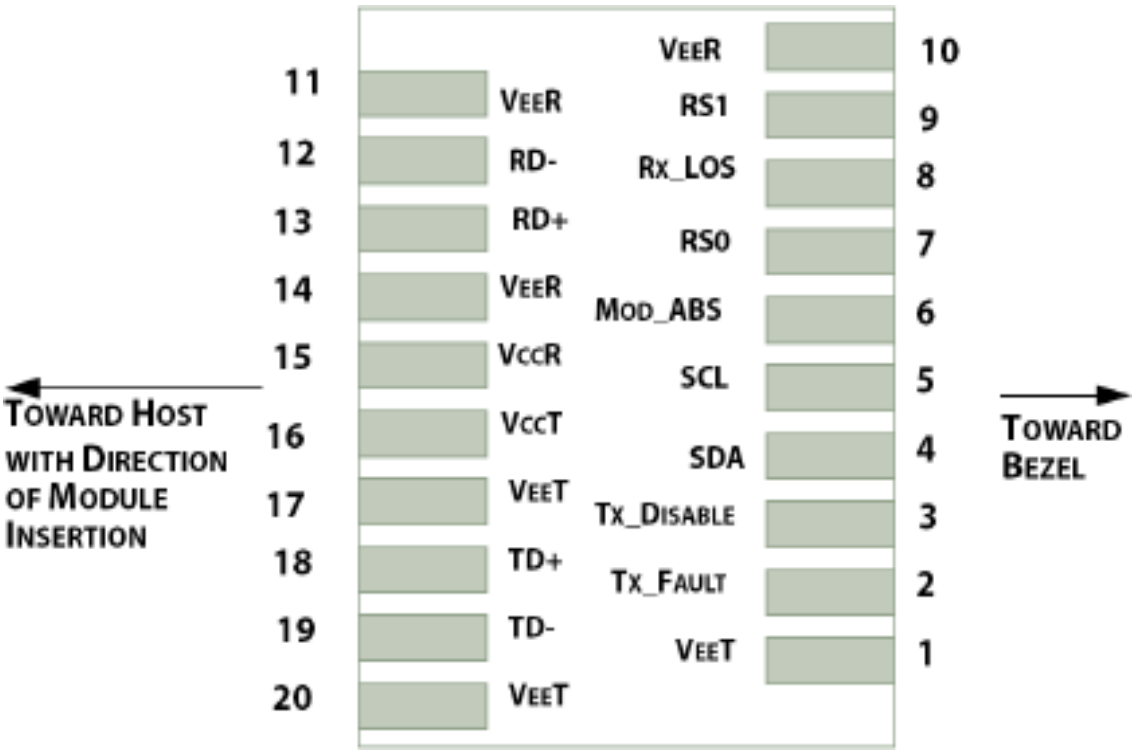
Parameter	Symbol	Unit	Min.	Typ.	Max.	Note
Power Dissipation		W			1.2	
Transmitter						
Input Differential Impedance	R_{IN}	Ω	90	100	110	
Differential Data Input Amplitude	$V_{IN,P-P}$	mVpp	180		900	
Tx_Disable: Normal Operation	V_{IL}	V	-0.3		0.8	
Tx_Disable: Laser Disable	V_{IH}	V	2.0		V_{CC}+0.3	
Tx_Fault: Normal Operation	V_{OL}	V	-0.3		0.4	
Tx_Fault: Transmitter Fault	V_{OH}	V	2.4		V_{CC}	
Receiver						
Output Differential Impedance	Zo	V	90	100	110	
Rx_LOS: Normal Operation	V_{OL}	V	-0.3		0.4	
Rx_LOS: Lose Signal	V_{OH}	V	2.4		V_{CC}	

IV. Optical Transmitter/Receiver Characteristics

Parameter	Symbol	Unit	Min.	Typ.	Max.	Note
Transmitter						
Center Wavelength	λ	nm	1260	1360	1325	
Data Rate	B	Gb/s		25.78		
Optical power OMA	OMA	dBm	-4		2.2	
Average Output Power*Note1	Po	dBm	-7		2	
Extinction Ratio*Note2	ER	dB	3			
Transmitter and Dispersion Penalty	TDP	dB			2.7	
Receiver						
Center Wavelength Range	λ	nm	1260		1360	
Overload		dBm	2			
Receiver Sensitivity (OMA)	P_{OMA}	dBm			-9	
Receiver Reflectance					-26	
LOS De-assert	S_D	dBm			-15	
LOS Hysteresis		dB	0.5			

Note 1: Measured with 9/125μm single-mode fiber.
Note 2: Measured with a PRBS 2^31-1 test pattern @25.78Gb/s

V. Pin Configuration



VI. Transceiver Pin Descriptions

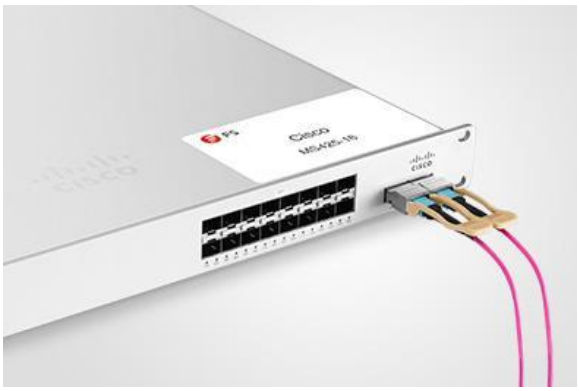
Pin No.	Symbol	Logic	Description
1,17,20	$V_{EE}T$		Module Transmitter Ground
2	TX Fault	LVTTL Output	Module Transmitter Fault
3	TX Disable	LVTTL Input	Transmitter Disable; Turns off transmitter laser output
4	SDA	LVTTL Input/Output	2-wire Serial Interface Data Line(Same as MOD- DEF2 in INF-8074i)
5	SCL	LVTTL Input/Output	2-wire Serial Interface Clock (Same as MOD-DEF1 in INF-8074i)
6	MOD-ABS		Module Absent, connected to VEET or VEER in the module
7	RS0	LVTTL Input	Rate Select 0, optionally controls SFP+ module receiver.
8	LOS	LVTTL Output	Receiver Loss of Signal Indication (In FC designated as Rx_LOS and in Ethernet designated as Signal Detect)
9	RS1	LVTTL Input	Rate Select 1, optionally controls SFP+ module transmitter
10,11,14	$V_{EE}R$		Module Receiver Ground
12	RD-	CML Output	Receiver Inverted Data Output
13	RD+	CML Output	Receiver Non-Inverted Data Output
15	$V_{CC}R$		Module Receiver 3.3 V Supply
16	$V_{CC}T$		Module Transmitter 3.3 V Supply
18	TD+	CML Input	Transmitter Non-Inverted Data Input
19	TD-	CML Input	Transmitter Inverted Data Input

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

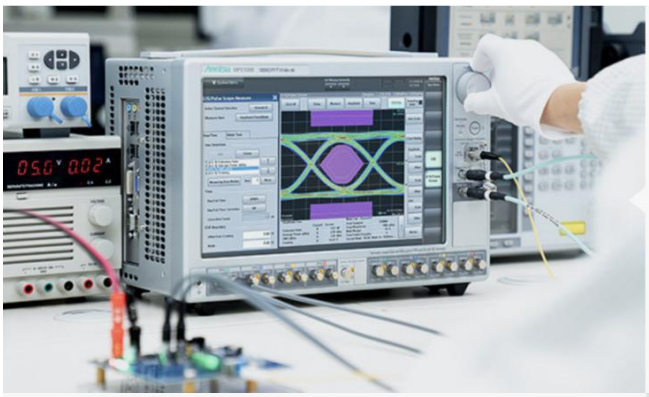
Force⑩tm S60-44T

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

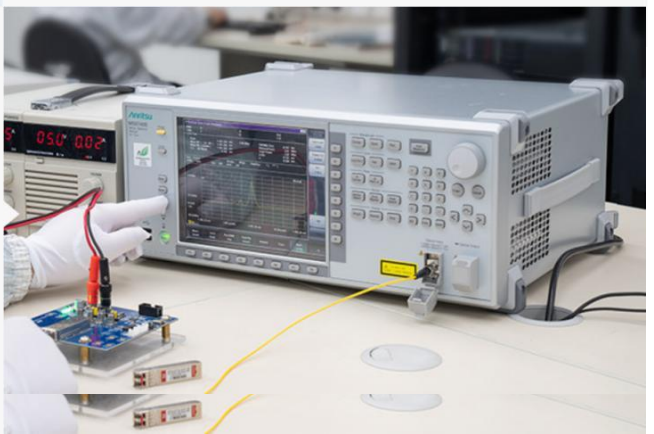
Test the actual transfer data rate and the transmission ability under different protocols with Network Master Pro.

- 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	Description
SFP28-25GSR-85	25G SFP28 850nm 100m DOM TFP28-25GSR-85
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