25G DWDM SFP28 1529.55-1561.42nm 10km Industrial Transceiver

DCxx-25GS28-10-I

Application

- 25G Ethernet
- CPRI & eCPRI

Standards

- Compliant to SFF-8431
- Compliant to SFF 8472
- SFP28 MSA
- RoHS Compliant

Features

- Hot-pluggable SFP28 Footprint
- Data Rate from 24.33Gbps to 25.78Gbps
- Up to 10km Reach with APD Receiver
- 100GHz ITU, C Band DWDM Cooled EML Laser
- Full Duplex LC Connector
- Single 3.3V Power Supply
- Built-in Digital Diagnostic Functions
- Power Dissipation <2.0W
- Operating Case Temperature: -40°C to +85°C

Description

This SFP28 transceiver provides 25GBase-DWDM throughput up to 10km over single mode fiber (SMF) using a wavelength of 1529.55-1561.42nm via an LC duplex connector. It provides 25GBASE Ethernet connectivity option for 25G Ethernet, telecom and data center. It is fully compliant with the SFP28 MSA, CPRI and eCPRI standard.

Products Specifications

I. Absolute Maximum Ratings

Parameter	Symbol	Min.	Max.	Unit
Storage Temperature Range	T_S	-40	85	ºC
Relative Humidity	R_H	0	85	%
Power Supply Voltage	V_{CC}	-0.3	4.0	V

II. Recommended Operating Conditions

Parameter	Symbol	Min.	Typical	Max.	Unit	Notes
Operating Temperature Range	T_{IP}	-40		85	ºC	
Power Supply Voltage	V_{CC}	3.14	3.3	3.47	V	
Power Supply Current	I_{CC}			600	mA	
Bit Rate	BR		25.78		Gbps	TX Rate/RX Rate
Max. Supported Link Length	L		10		km	
Coupled fiber			Single mode fiber			9/125um SMF

III. Optical Characteristics

Parameter	Symbol	Min.	Typical	Max.	Unit	Notes
Transmitter						
Wavelength	λ	1529.55		1561.42	nm	
Center Wavelength Spacing			100		GHz	
Average Launched Power	P_O	0		5	dBm	
Extinction Ratio	ER	6			dB	
Side Mode Suppression Ratio	$SMSR_{min}$	30			dB	
Average Launch Power (Laser Off)	P_{OFF}			-30	dBm	
Relative Intensity Noise	RIN 20 OMA			-130	dB/Hz	
Crossing		40	50	60	%	
Eye Mask Margin		10@Room temperature 5@High-low temperature			%	
Receiver						
Center Wavelength	λ_{IN}	1260		1620	nm	
Receiver Overload	$P_{overload}$	-5			dBm	
Receiver Sensitivity @5E-5 BOL	$P_{sen\ BOL}$			-20	dBm	Note1
Receiver Sensitivity @5E-5 EOL	$P_{sen\ EOL}$			-19.5	dBm	Note1
Receiver Sensitivity @5E-5 EOL after 10km fiber transmission	$P_{sen\ 1\ EOL}$			-14	dBm	Note1

Parameter	Symbol	Min.	Typical	Max.	Unit	Notes
Los Of Signal Assert	P_A	-35			dBm	
Los Of Signal De-assert	P_D			-24	dBm	
LOS Hysteresis	P_{Hys}	0.5		6	dB	

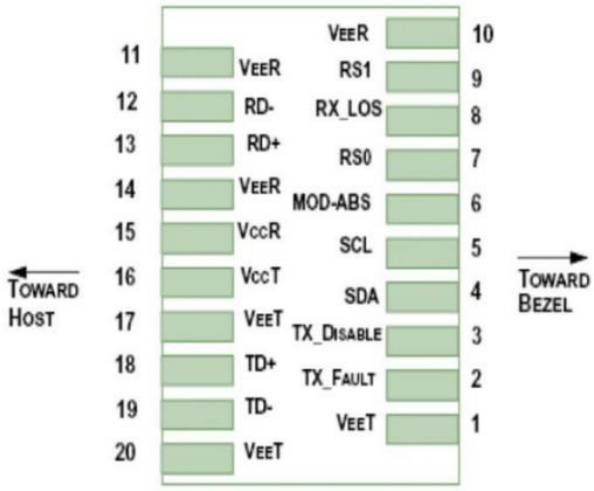
Notes

1. Measured at 5E-5, ER>6dB, PRBS 2^{31} -1

IV. Electrical Characteristics

Parameter	Symbol	Min.	Typical	Max.	Unit	Notes
Transmitter						
Data Input Swing Differential	V_{IN}	190		700	mV	
Differential line input Impedance	R_{IN}	80	100	120	Ohm	
Transmitter Fault Output-High	V_{FaultH}	2		V_{CC}+0.3	V	
Transmitter Fault Output-Low	V_{FaultL}	V_{EE}		V_{EE}+0.8	V	
Transmitter Disable Voltage- High	V_{DisH}	2		V_{CC}+0.3	V	
Transmitter Disable Voltage- low	V_{DisL}	V_{EE}		V_{EE}+0.8	V	
Receiver						
Differential line Output Impedance	R_{OUT}	80	100	120	Ohm	
Differential Data Output Voltage	V_{DR}	350		850	mVp-p	
LOS Output Voltage-High	V_{LOSH}	2		V_{CC}+0.3	V	
LOS Output Voltage-Low	V_{LOSL}	V_{EE}		V_{EE}+0.8	V	
Others						
Cold-Start time	$T_{start-cooled}$			35	s	

V. Pin Description



Pin Number	Symbol	Name/Description	Notes
1	V_{EET}	Transmitter Ground (Common with Receiver Ground)	1
2	T_{FAULT}	Transmitter Fault	2
3	T_{DIS}	Transmitter Disable. Laser output disabled on High or open.	3
4	SDA	2-wire Serial Interface Data Line	4
5	SCL	2-wire Serial Interface Clock Line	4
6	MOD_ABS	Module Absent. Grounded within the module	4
7	RS0	Rate Select 0, internal pull down	5
8	LOS	Loss of Signal indication. Logic 0 indicates normal operation.	6
9	RS1	Rate Select 1, internal pull down	1
10	V_{EER}	Receiver Ground (Common with Transmitter Ground)	1
11	V_{EER}	Receiver Ground (Common with Transmitter Ground)	1
12	RD-	Receiver Inverted DATA out. AC Coupled	
13	RD+	Receiver Non-inverted DATA out. AC Coupled	
14	V_{EER}	Receiver Ground (Common with Transmitter Ground)	1
15	V_{CCR}	Receiver Power Supply	
16	V_{CCT}	Transmitter Power Supply	
17	V_{EET}	Transmitter Ground (Common with Receiver Ground)	1
18	TD+	Transmitter Non-Inverted DATA in. AC Coupled.	
19	TD-	Transmitter Inverted DATA in. AC Coupled.	
20	V_{EET}	Transmitter Ground (Common with Receiver Ground)	1

Notes

1. Circuit ground is internally isolated from chassis ground.

2. T_{FAULT} is an open collector/drain output, which should be pulled up with a 4.7k – 10k Ohms resistor on the host board if intended for use. Pull up voltage should be between 2.0V to Vcc + 0.3V. A high output indicates a transmitter fault caused by either the TX bias current or the TX output power exceeding the preset alarm thresholds. A low output indicates normal operation. In the low state, the output is pulled to <0.8V.

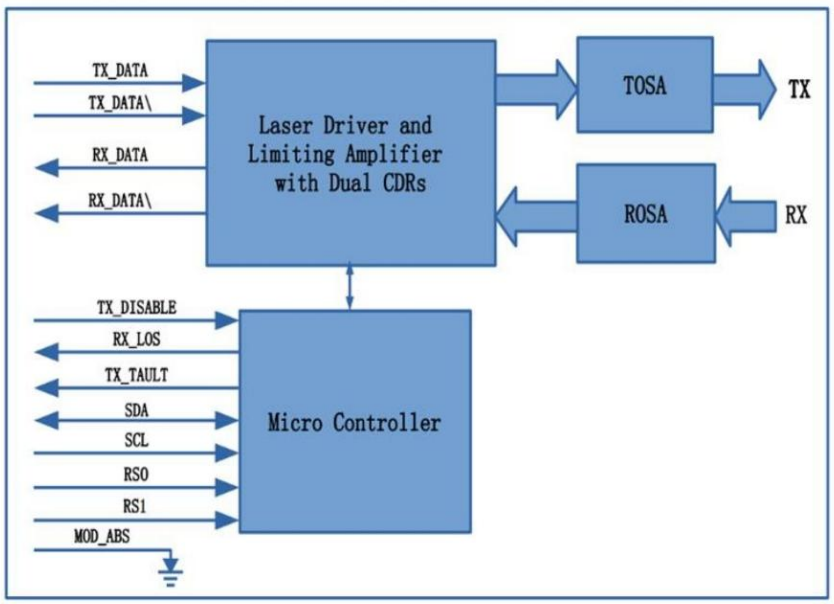
3. Laser output disabled on T_{DIS}>2.0V or open, enabled on T_{DIS}<0.8V.

4. Should be pulled up with 4.7kΩ- 10kΩ host board to a voltage between 2.0V and 3.6V. MOD_ABS pulls line low to indicate module is plugged in.

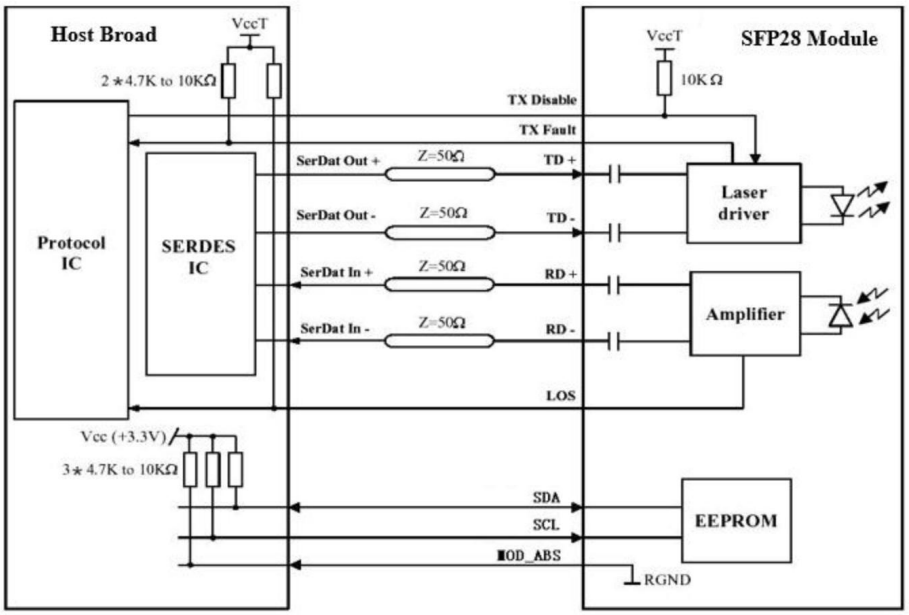
5. Internally pulled down per SFF-8431 Rev 4.1.

6. LOS is open collector output. It should be pulled up with 4.7kΩ – 10kΩ on host board to a voltage between 2.0V and 3.6V. Logic 0 indicates normal operation; logic 1 indicates loss of signal.

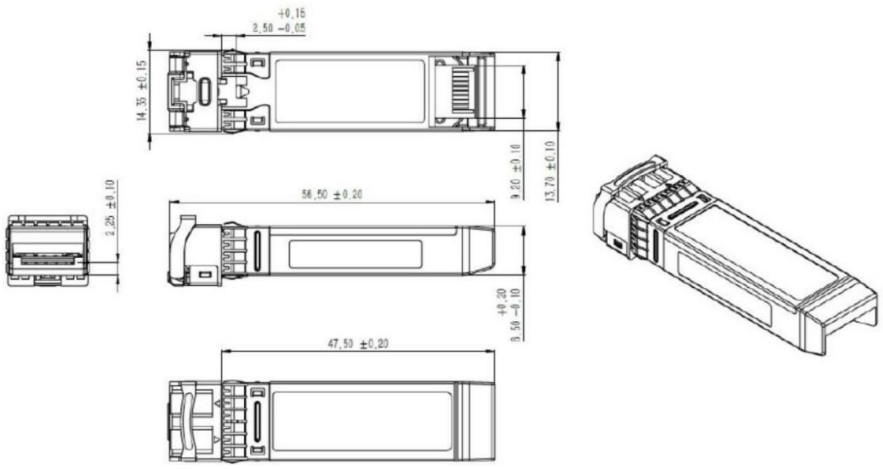
VI. Block Diagram of Transceiver



VII. Typical Application Circuit



VIII. Diagram Mechanial Drawing

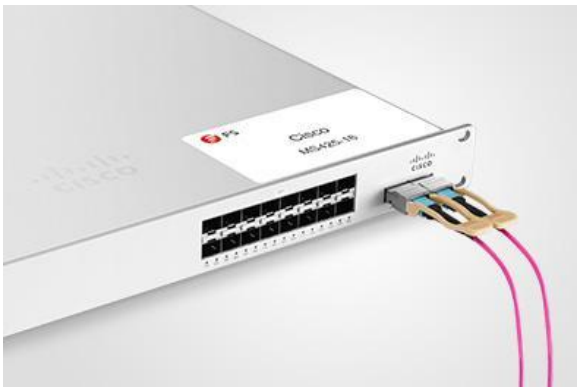


Test Center

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

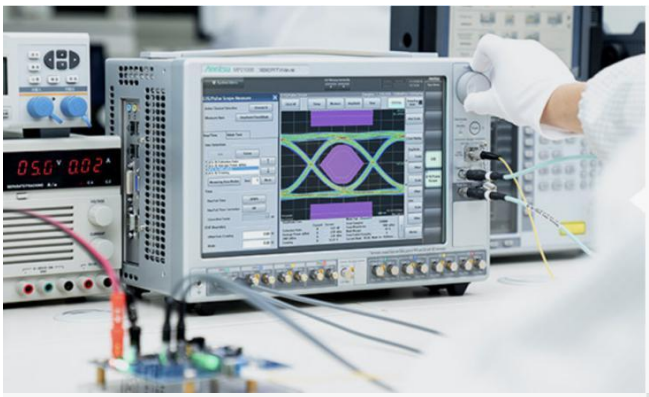
Force⑩tm S60-44T

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

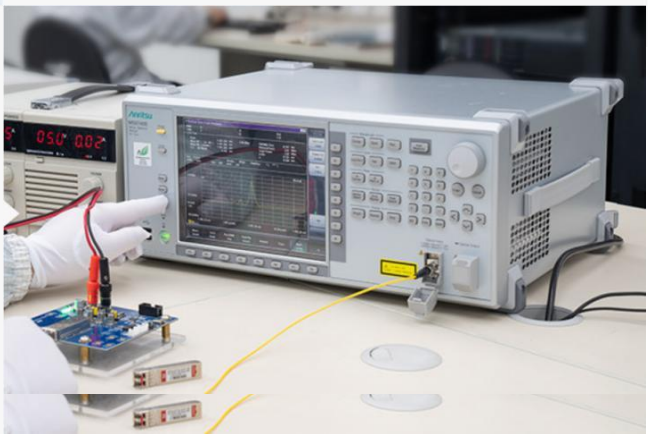
Test the actual transfer data rate and the transmission ability under different protocols with Network Master Pro.

- 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



Order Information

Part Number	Description
DCxx-25GS28-10-I	SFP28, 25GBase-LR, DWDM 1529.55-1561.42nm, SMF, 10km, Industrial, LC, DOM
DWDM-SFP25G-10	SFP28, 25GBase-LR, DWDM 1528.77-1563.86nm, SMF, 10km, LC, DOM
CWDM-SFP25G-10SP	SFP28, 25GBase-LR, CWDM 1270-1370nm, SMF, 10km, LC, DOM
CWDM-SFP25G-10M	SFP28, 25GBase-LR, CWDM 1470-1570nm, SMF, 10km, LC, DOM
CWDM-SFP25G-40S	SFP28, 25GBase-LR, CWDM 1270-1370nm, SMF, 30km, LC, DOM
LWDM-SFP25G-40	SFP28, 25GBase-ER, LWDM 1286.66-1309.14nm, SMF, 40km, LC, DOM