

25G CWDM SFP28 1270nm-1370nm 10km DOM Transceiver

CWDM-SFP25G-10SP



Applications

- 25GBASE Ethernet
- CPRI Option 10 and eCPRI

Features

- Universal SFP28 MSA Package with Duplex LC Connector
- Compliant with SFF-8431 Rev 4.1
- Compliant with SFF-8472 Rev12.3
- Compliant with SFF-8024 Rev4.9
- Compliant with SFF-8402 Rev1.1
- Uncool DML Laser and PIN Photo-detector
- Complies with EU Directive 2015/863EU (RoHS Compliant)
- International Class 1 Laser Safety Certified

Description

The CWDM-SFP25G-10SP transceiver provides 25GBase-CWDM throughput up to 10km over single mode fiber (SMF) using a wavelength of 1270-1370nm 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.

Product Specifications

I. Absolute Maximum Ratings

Parameter	Symbol	Min.	Typ.	Max.	Unit
Storage Temperature	T _S	-40		85	°C
Supply Current	T _S			330	mA
Maximum Power Dissipation	P _D			1	W
Aggregate Bit Rate	ABR	24.33		25.78	Gb/s
Operating Distance		2		10000	m

II. Recommended Operating Conditions

Parameter	Symbol	Min.	Typ.	Max.	Unit
Operating Case Temperature	T _{OP}	0		70	°C
Power Supply Voltage	V _{CC}	3.13	3.3	3.46	V
Instantaneous Peak Current at Hot Plug	I _{CC_IP}			400	mA
Sustained Peak Current at Hot Plug	I _{CC_SP}			330	mA

III. Optical Characteristics

Parameter	Symbol	Min.	Typ.	Max.	Unit	Note
Transmitter						
Nominal Wavelength	λ_{CO}	1264.5 1284.5 1304.5 1324.5 1344.5 1364.5	1271 1291 1311 1331 1351 1371	1277.5 1297.5 1317.5 1337.5 1357.5 1377.5	nm	
Side-mode Suppression Ratio	SMSR	37			dB	
Spectral Width	$\Delta\lambda$			1	nm	
OFF_Average Power	P_{OFF}			-40	dBm	
Average Optical Power	P_{OUTL}	0		6	dBm	
Optical Modulation Amplitude	OMA	0		6	dBm	
Extinction Ratio	ER	3.5			dB	
Transmitter and Dispersion Penalty (1271/1291/1311nm/1331nm)	TDP			3	dB	
Transmitter and Dispersion Penalty (1351/1371nm)				4.5		
Optical Return Loss Tolerance	ORLT			20	dB	
Eye Mask Margin		10@25°C 5@70°C&0°C			%	1
Crossing		40	50	60	%	
Receiver						
Center Wavelength	λ_{CO}	1271		1371	nm	

Parameter	Symbol	Min.	Typ.	Max.	Unit	Note
Overload Input Optical Power	P _{MAX}	3			dBm	
Receiver Sensitivity_OMA	BOL			-14.5	dBm	2
Receiver Sensitivity (OMA)	EOL			-14	dBm	
Optical Return Loss	ORL	27			dBm	
Receiver Reflectance	RXR			-30	dBm	
LOS De-Assert	LOSD			-17	dBm	
LOS Assert	LOSA	-30			dBm	
LOS Hysteresis		0.5		4	dB	

Notes:

- 1. EYE Mask Margin test conditions, sample waveform ≥1000 wfms, Hit Ratio 5E-5.
- 2. Measured with a PRBS 2³¹-1 test pattern @25.78125 Gbps, BER≤5E-5.

IV. Electrical Characteristics

Parameter	Symbol	Min.	Typ.	Max.	Unit
Supply Voltage	V _{CC}	3.14	3.3	3.46	V
Supply Current	I _{CC}			330	mA
Transmitter					
Input Differential Impedance	R _{IN_diff}		100		Ω
Single Ended Data Input Swing	V _{IN}	90		450	mVp-p
Transmit Disable Voltage	V _{DIS}	2		V _{CCHOST} +0.3	V
Transmit Enable Voltage	V _{EN}	V _{EE}		V _{EE} +0.8	V
Transmit Fault Assert Voltage	V _{FA}	2.2		V _{CCHOST} +0.3	V
Transmit Fault De-Assert Voltage	V _{FDA}	V _{EE}		V _{EE} +0.4	V
Receiver					
Single Ended Data Output Swing	V _{OD}	225		375	mVp-p
LOS Fault	LOS_FT	2.2		V _{CCHOST} +0.3	V
LOS Normal	LOS_Nor	V _{EE}		V _{EE} +0.4	V

V. Pin Definition

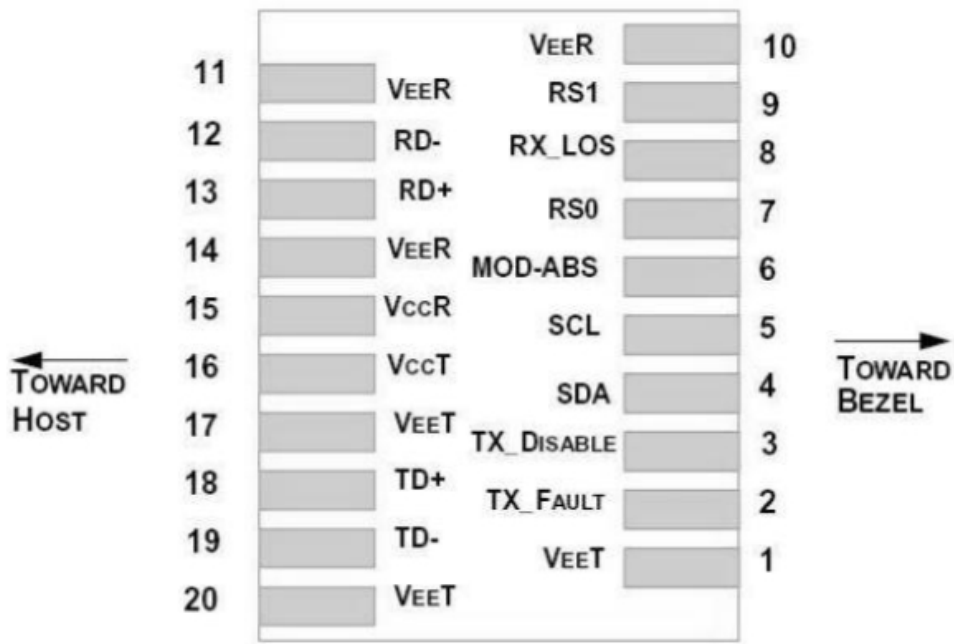


Figure 1. Pin Function Definitions

VI. Pin Description

Pin	Symbol	Logic	Description
1,17,20	VeeT		Connected to Signal Ground on the Host Board.
2	TX Fault	LVTTL Output	Module Transmitter Fault Output
3	TX Disable	LVTTL Input	Module Transmitter Disable Control
4	SDA	LVTTL Input/Output	2-wire Serial Interface Data
5	SCL	LVTTL Input/Output	2-wire Serial Interface Clock
6	MOD-ABS		Module Absent (Connected to Module Ground)
7	RS0	LVTTL Input	Rate Select 0 (Rx): Low=CDR Bypass ; High=CDR Select

Pin	Symbol	Logic	Description
8	LOS	LVTTL Output	Receiver Loss of Signal
9	RS1	LVTT LInput	Rate Select1 (Tx): Low=CDR Bypass; High=CDR Select
10,11,14	VeeR		Connected to Signal Ground on the Host Board.
12	RD-	CML Output	Receiver Inverted Data Output, Internally AC Coupled and Terminated.
13	RD+	CML Output	Receiver Non-inverted Data Output, Internally AC Coupled andterminated.
15	VccR		Receiver Power 3.3V Supply
16	VccT		Transmitter Power 3.3V Supply
18	TD+	CML Input	Transmitter Non-inverted Data Input, Internally AC Coupled and Terminated.
19	TD-	LVTTL Output	Transmitter Inverted Data Input, Internally AC Coupled and Terminated.

VII. Digital Diagnostic Monitoring Specifications

Parameter	Range	Accuracy	Unit
DDM Accuracy			
Operating Case Temperature	0 to 70	±3	°C
Voltage	3.13 to 3.46	± 3%	V
Tx Bias Current (Each Lane)	20 to 80	±10%	mA
Tx Output Power (Each Lane)	0 to 6	±2	dB
Rx Power (Each Lane)	-14.5 to 3	±2	dB

Parameter	Comments	Unit
DDM Alarm & Warning Threshold		
Temp High Alarm	75	°C
Temp Low Alarm	-5	°C
Temp High Warning	70	°C
Temp Low Warning	0	°C
V _{CC} High Alarm	3.63	V
V _{CC} Low Alarm	2.97	V
V _{CC} High Warning	3.46	V
V _{CC} Low Warning	3.13	V
T _x Bias High Alarm	100	mA
T _x Bias Low Alarm	10	mA
T _x Bias High Warning	80	mA
T _x Bias Low Warning	20	mA
T _x Power High Alarm	8.2	dBm
T _x Power Low Alarm	-3	dBm
T _x Power High Warning	6	dBm
T _x Power Low Warning	0	dBm
R _x Power High Alarm	5	dBm

Parameter	Comments	Unit
R _x Power Low Alarm	-16.5	dBm
Rx Power High Warning	3	dBm
Rx Power Low Warning	-14.5	dBm

VIII. Mechanical Dimensions

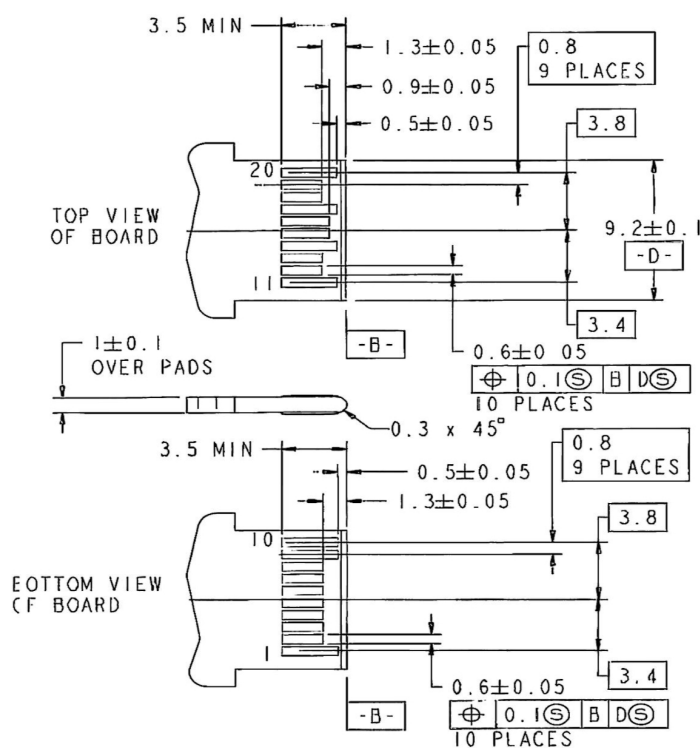


Figure 3. Mechanical Dimensions

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



Force@tm S60-44T

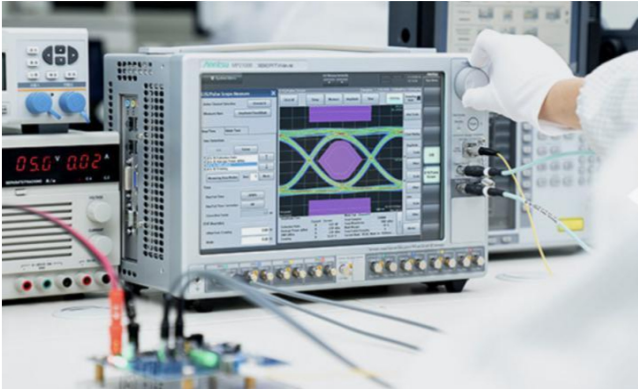


HUAWEI S6720-30L-HI-24S

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.

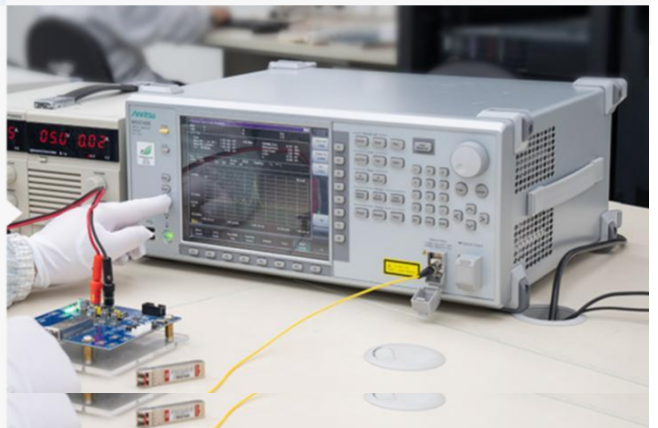
- Ethernet
- Fibre Channel
- SDH/SONET
- CPRI



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



Order Information

Part Number	Description
CWDM-SFP25G-10SP	25G CWDM SFP28 1270nm-1370nm Transceiver, Duplex LC, 10km over SMF
CWDM-SFP25G-10M	25G CWDM SFP28 1470nm-1570nm Transceiver, Duplex LC, 10km over SMF
CWDM-SFP25G-40S	25G CWDM SFP28 1270nm-1370nm Transceiver, Duplex LC, 30km over SMF