

10G CWDM XFP 1270~1450nm 40km DOM Transceiver

CWDM-XFP10G-40M



Application

- SONET OC-192/SDH STM-64
- CWDM Networks
- 10GBASE-ER/EW Ethernet
- 40km 10G Fiber Channel

Features

- Support Multi Protocol from 9.95Gb/s to 11.3Gb/s
- Hot Pluggable 30 Pin Connector
- Compliant with XFP MSA
- Transmission Distance of 40km over Single Mode Fiber
(*Don't Consider High Fiber Dispersion on 1390~1450nm Wavelength)
- CWDM DFB Laser Transmitter
- 2-wire Interface for Management and Diagnostic Monitor
- Temperature Range 0°C to 70°C
- Power Dissipation: <3.5W
- RoHS Compliant

Description

FS' CWDM-XFP10G-40M Small Form Factor 10Gb/s (XFP) transceivers are compliant with the current XFP Multi-Source Agreement (MSA) Specification. The high performance cooled CWDM DFB transmitter and high sensitivity PIN receiver provide superior performance for SONET/SDH and Ethernet applications up to 40km optical links.

I. Absolute Maximum Ratings

Parameter	Symbol	Unit	Min	Max
Storage Temperature	T _{ST}	°C	-40	85
Oprating Temperature	T _{IP}	°C	-5	70
Supply Voltage	V _{CC}	V	-0.5	4

II. Electrical Characteristics

Parameter	Symbol	Unit	Min.	Typ.	Max.
Supply Current - Vcc supply	I _{CC}	mA			500
Supply Voltage	V _{CC}	V	3.13		3.45
Module total power	P	W			3.5

Transmitter						
Parameter	Symbol	Unit	Min.	Typ.	Max.	Note
Input Differential Impedance	R_{IN}	Ω		100		
Differential data input swing	$V_{IN,PP}$	mV	150		820	
Transmit Disable Voltage	VD	V	2.0		V_{CC}	
Transmit Enable Voltage	VEN	V	GND	GND+ 0.8	450	
Transmit Disable Assert Time	T_{off}	ms			100	
Tx Enable Assert Time	T_{on}	ms			100	
	V_{OL}	V	-0.3		0.8	

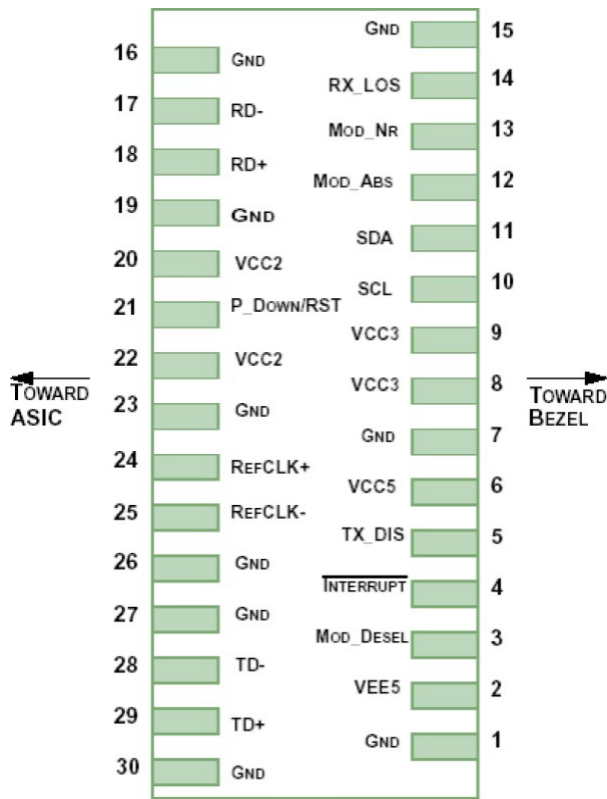
Receiver						
Differential data output swing	$V_{out,pp}$	mV	300	500	850	
Data output rise time	t_r	ps			35	
Data output fall time	t_f	ps			35	
LOS Fault	$V_{LOS\ fault}$	V	$V_{CC}-0.5$		V_{CCHOST}	
LOS Normal	$V_{LOS\ norm}$	V	GND		GND+0.4	
Power Supply Rejection	PSR					

III. Optical Transmitter/Receiver Characteristics

Parameter	Symbol	Unit	Min.	Typ.	Max.	Note
Transmitter						
Operating Date Rate	B	Gb/s	9.95		11.3	
Output Power	P _o				5	1
Optical Wavelength	λ	nm	λ-6.5		λ+6.5	
Optical Extinction Ratio	ER	dB	3.5			
Spectral Width	Δλ	nm			1	
Rise/Fall Time (20%~80%)	Tr/Tf	ps			35	
Average Launch power of OFF Transmitter	P _{OFF}	dBm			-30	
Receiver						
Operating Date Rate	BR	Gb/s	9.95		11.3	
Receiver Sensitivity	Sen	dBm			-15	2
Maximum Input Power	P _{MAX}	dBm	-1			2
Optical Center Wavelength	λ _C	nm	1260		1660	
Receiver Reflectance	R _{rx}	dB			-27	
LOS Hysteresis	LOS _H	dB	0.5		5	

Note1: Measured with 9/125μm single-mode fiber.
Note2: Measured with a PRBS 2³¹-1 test pattern @10.3125Gbps BER<10⁻¹².

V. Pin Configuration

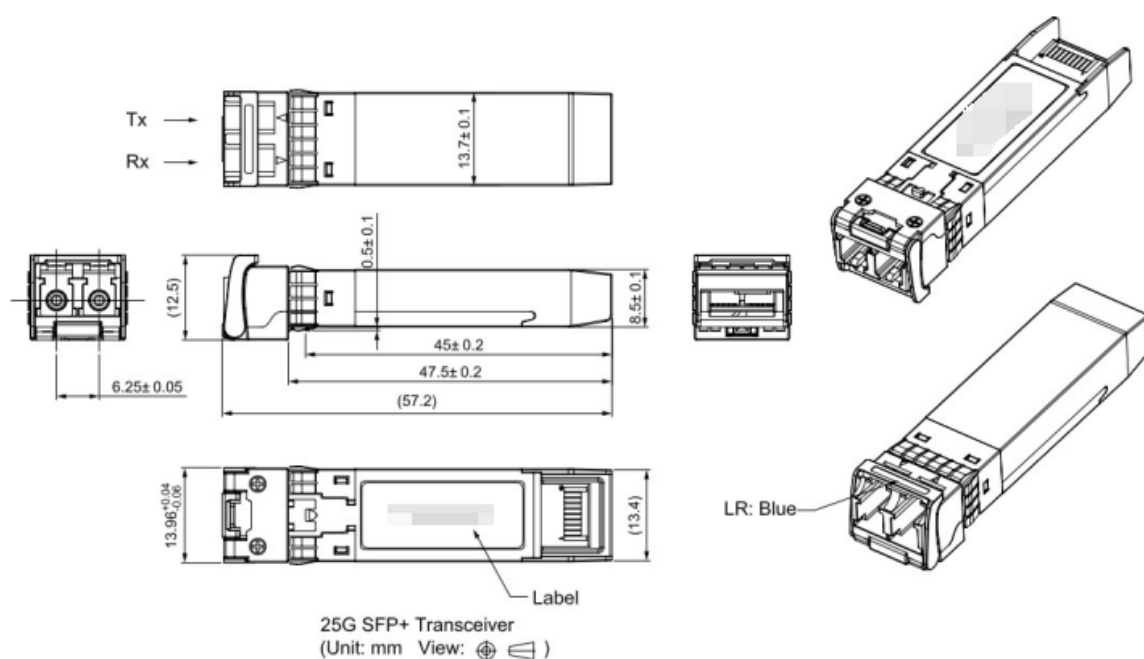


VI. Transceiver Pin Descriptions

Pin No.	Symbol	Logic	Description
1	GND		Module Ground
2	VEE5		Optional – 5.2 Power Supply – Not required
3	Mod-Desel	LVTTTL-I	Module De-select; When held low allows the module to , respond to 2-wire serial interface commands
4	Interrupt	LVTTTL-O	Interrupt (bar); Indicates presence of an important condition which can be read over the serial 2-wire interface
5	TX_DIS	LVTTTL-I	Transmitter Disable; Transmitter laser source turned off
6	VCC5		+5 Power Supply
7	GND	LVTTTL Input	Module Ground
8,9	VCC3		+3.3V Power Supply
10	SCL	LVTTTL-I	Serial 2-wire interface clock
11	SDA	LVTTTL-I/O	Serial 2-wire interface data line
12	Mod_Abs	LVTTTL-O	Module Absent; Indicates module is not present. Grounded in the module.
13	Mod_NR	LVTTTL-O	Module Not Ready
14	RX_LOS	LVTTTL-O	Receiver Loss of Signal indicator
15	GND		Module Ground
16	GND		Module Ground
17	RD-	CML-O	Receiver inverted data output
18	RD+	CML-O	Receiver non-inverted data output

19	GND		Module Ground
20	VCC2		+1.8V Power Supply - Not required
21	P_Down/RST	LVTTTL-I	Power Down; When high, places the module in the low power stand-by mode and on the falling edge of P_Down initiates a module reset Reset; The falling edge initiates a complete reset of the module including the 2-wire serial interface, equivalent to a power cycle.
22	VCC2		+1.8V Power Supply - Not required
23	GND		Module Ground
24	RefCLK+	PECL-I	Reference Clock non-inverted input, AC coupled on the host board – Not required
25	RefCLK-	PECL-I	Reference Clock inverted input, AC coupled on the host board – Not required
26	GND		Module Ground
27	GND		Module Ground
28	TD-	CML-I	Transmitter inverted data input
29	TD+	CML-I	Transmitter non-inverted data input
30	GND		Module Ground

VII. Mechanical Dimensions



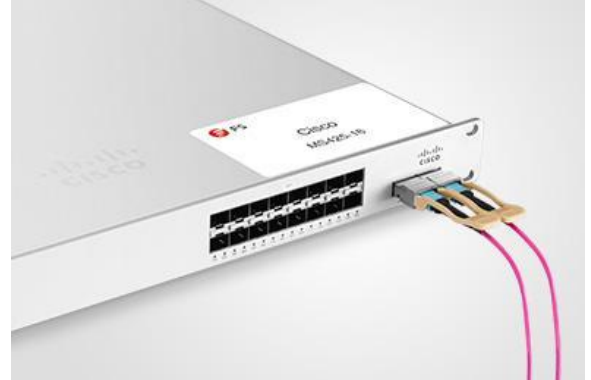
Test Center

I. Compatibility Testing

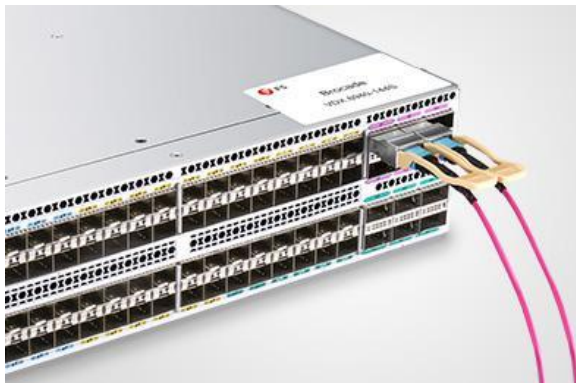
Each fiber optical transceiver has been tested in host device on site in FS Assured Program to ensure full compatibility with over 200 vendors.



Cisco Catalyst C9500-24Y4C



Cisco MS425-16



Brocade VDX 6940-144S



Dell EMC Networking Z9100-ON



Force@tm S60-44T

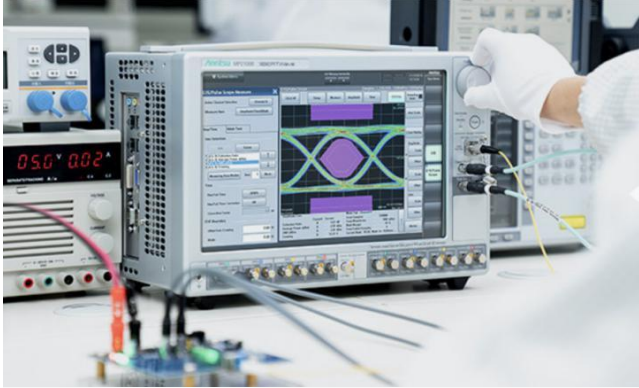


HUAWEI S6720-30L-HI-24S

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

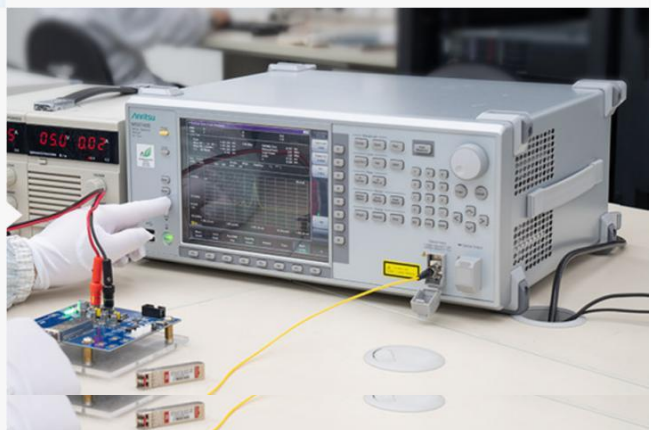
Test the actual transfer data rate and the transmission ability under different protocols with Network Master Pro.

- 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



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