

10G CWDM SFP+ 1270nm-1570nm 10km Industrial DOM Transceiver

CWxx-10GSFP-10-I



Application

- Gigabit Ethernet Switches and Routers
- Fiber Channel Switch Infrastructure

Features

- Compliant to SFP+ MSA
- All Metal Housing for Superior EMI Performance
- Compliant with SFF-8472
- Operating Data Rate up to 10.3125Gbps
- 16-Wavelength CWDM DFB Transmitter from 1271 to 1571nm ,with Step 20nm
- 2-Wavelength CWDM EML Transmitter from 1591 to 1611nm
- Hot-Pluggable SFP Footprint Duplex
- Low Power Consumption <1.2W
- Operating Case Temperature : -40°C to 85°C
- Single +3.3V $\pm$ 5% Power Supply
- ROHS 2.0 Compatible
- LC Duplex Connector

Description

The SFP+ transceiver supports up to 10km link lengths over single-mode fiber (SMF). This transceiver is compliant with SFF-8431 and SFF-8432 MSA standards. Digital diagnostics functions are available via a 2-wire serial interface, as specified in SFF-8472, to allow access to real-time operating parameters. With these features, this easy to install, hot swappable transceiver is suitable for fiber communications application up to 10G.

Product Specifications

I. Absolute Maximum Ratings

Parameter	Symbol	Unit	Min.	Max.
Storage Temperature Range	TS	°C	-40	85
Relative Humidity	RH	%	0	85
Supply Voltage	V _{CC}	V	-0.3	4.0

II. Recommended Operating Conditions

Parameter	Unit	Min.	Typ.	Max.
Data Rate	Gb/s		10.3125	
Power Consumption	W		574	1.2
Operating Case Temperature	°C	-40		85
Data Rate		26.5625		GBd
IIC Clock Frequency	KHz	100		400
IIC Clock Stretching	us			500

Parameter	Unit	Min.	Typ.	Max.
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IIC tHD: Data Hold Time	ns	300		
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III. Electrical Characteristics

Parameter	Unit	Min.	Typ.	Max.
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Supply Voltage	V	3.135	3.30	3.465
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Supply Current	mA			360
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Maximum Sustained Peak Current(<500ms)	mA			600
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Input Differential Impedance	Ω		100	
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Differential Data input Swing	mV	180		1000
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Differential Data Output Swing	mV	350		700
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LOS Squelch(Yes&No)	Yes
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Tx_Fault, LOS Output Voltage	High	V	2.0		V _{CC}
	Low	V	V _{EE}		V _{EE} +0.8

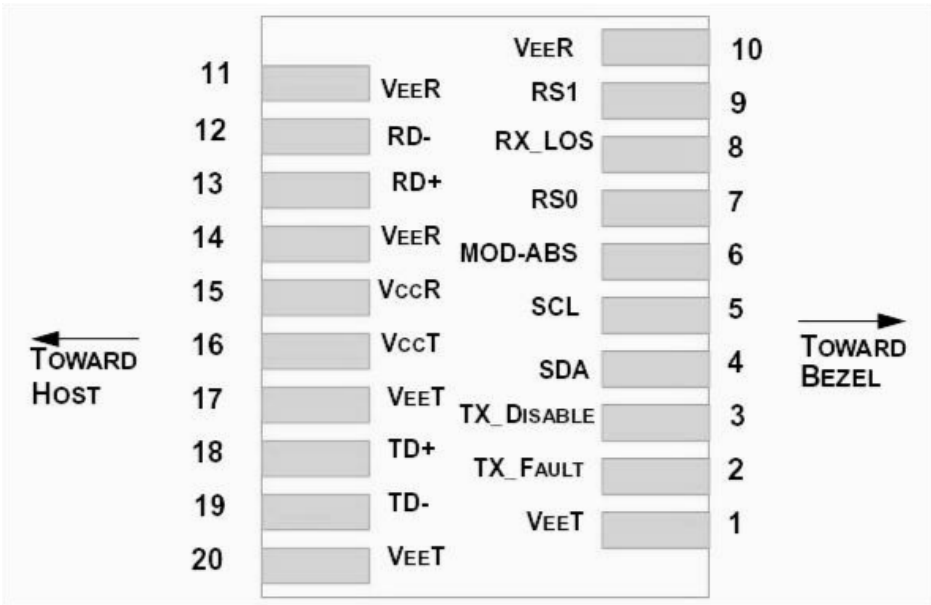
Tx Disable	V _{IL}	V	2.0		V _{CC}
	V _{IH}	V	V _{EE}		V _{EE} +0.8

IV. Optical Characteristics

Parameter	Symbol	Min.	Typ.	Max.	Unit
Power Budget		14			dB
Data Rate		0.6	9.953/10.3125		Gbps
Transmitter					
Center Wavelength	λ_C	$\lambda_C-6.5$	λ_C	$\lambda_C+6.5$	nm
Spectral Width (RMS)	$\Delta\lambda$			1	nm
Output Average Power (DFB)	P_{OUT}	0		5	dBm
Output Average Power (EML)	P_{OUT}	-2		4	dBm
Extinction Ratio	ER	3.5			dB
Average Power of OFF Transmitter	P_{OFF}			-30	dBm
Relative Intensity Noise	RIN			-128	dB/Hz
Side Mode Suppression Ratio	SMSR	30			dB
Transmitter Dispersion Penalty	TDP			1271~1451nm 3	dB
				1471~1531nm 5	
				1551~1571nm 7	
				1591~1611nm 2	
TX_Disable Assert Time	T_{OFF}			10	us

Parameter	Symbol	Min.	Typ.	Max.	Unit
Receiver					
Center Wavelength Range	λ_c	1260		1620	nm
Receiver Sensitivity (DFB)	P_{min}			-14.4	dBm
Receiver Sensitivity (EML)	P_{min}			-16	dBm
Receiver Overload	P_{max}	0			dBm
LOS De-Assert	LOSD			-16	dBm
LOS Assert	LOSA	-28			dBm
LOS-Hysteresis	P_{hys}	0.5			dB

V. Pin Descriptions

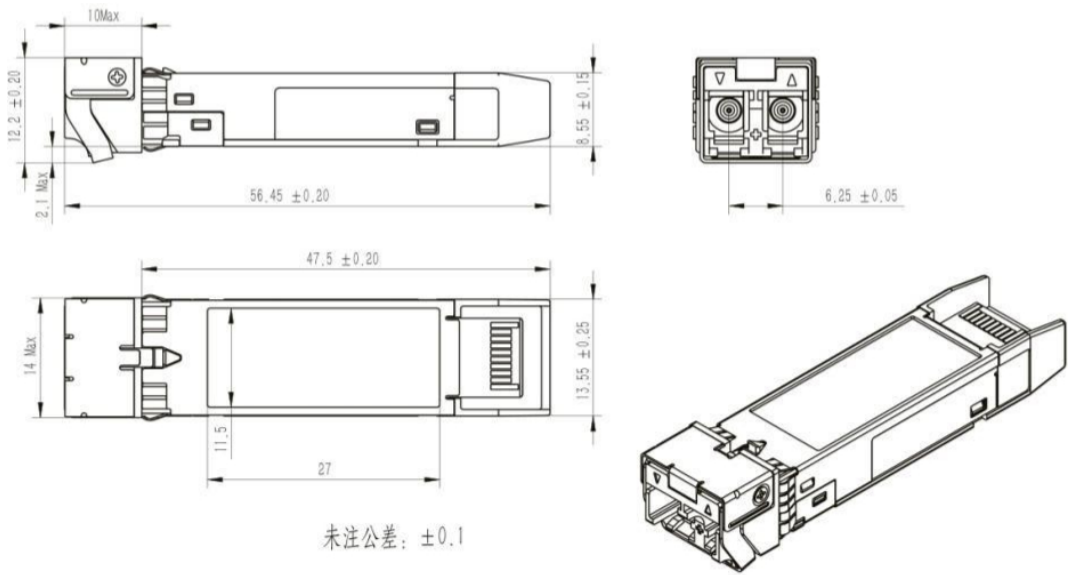


VI. Pin Definitions

Pin Number	Symbol	Name	Description
1,17,20	V _{EE} T	Transmitter Signal Ground	These pins should be connected to signal ground on the host board.
2	TX Fault	Transmitter Fault Out (OC)	Logic "1" Output = Laser Fault (Laser off before t _{fault}) Logic "0" Output = Normal Operation This pin is open collector compatible, and should be pulled up to Host V _{cc} with a 10kΩ resistor.
3	TX Disable	Transmitter Disable In (LVTTTL)	Logic "1" Input (or no connection) = Laser off Logic "0" Input = Laser on This pin is internally pulled up to V _{cc} T with a 10 kΩ resistor.
4	SDA	Module Definition Identifiers	Serial ID with SFF 8472 Diagnostics Module definition pins should be pulled up to Host V _{cc} with 10 kΩ resistors.
5	SCL		
6	MOD-ABS		
7	RS0	Receiver Rate Select (LVTTTL) Transmitter Rate Select (LVTTTL)	These pins have an internal 30kΩ pull-down to ground. A signal on either of these pins will not affect module performance.
9	RS1		
8	LOS	Loss of Signal Out (OC)	Sufficient optical signal for potential BER < 1x10 ⁻¹² = Logic "0" Insufficient optical signal for potential BER < 1x10 ⁻¹² = Logic "1" This pin is open collector compatible, and should be pulled up to Host V _{cc} with a 10kΩ resistor.
10,11,14	V _{ee} R	Receiver Signal Ground	These pins should be connected to signal ground on the host board.
12	RD-	Receiver Negative DATA Out	Light on = Logic "0" Output Receiver DATA output is internally AC coupled and series terminated with a 50Ω resistor.
13	RD+	Receiver Positive DATA Out	Light on = Logic "1" Output Receiver DATA output is internally AC coupled and series terminated with a 50Ω resistor.

Pin Number	Symbol	Name	Description
15	V _{cc} R	Receiver Power Supply	This pin should be connected to a filtered +3.3V power supply on the host board. See Figure 3.Recommended power supply filter.
16	V _{cc} T	Transmitter Power Supply	This pin should be connected to a filtered +3.3V power supply on the host board. See Figure 3.Recommended power supply filter.
18	TD+	Transmitter Positive DATA In	Logic "1" Input = Light on Transmitter DATA inputs are internally AC coupled and terminated with a differential 100Ω resistor.
19	TD-	Transmitter Negative DATA In	Logic "0" Input = Light on Transmitter DATA inputs are internally AC coupled and terminated with a differential 100Ω resistor.

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

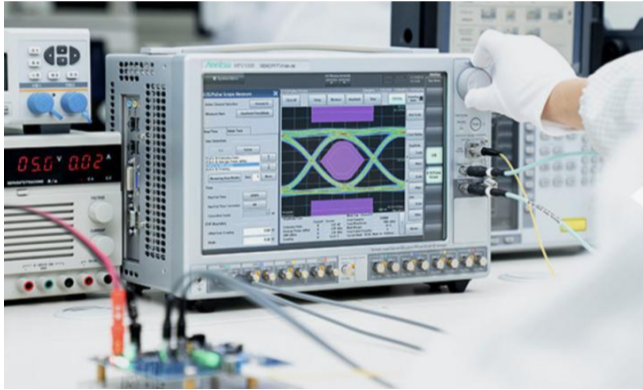


HUAWEI S6720-30L-HI-24S

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

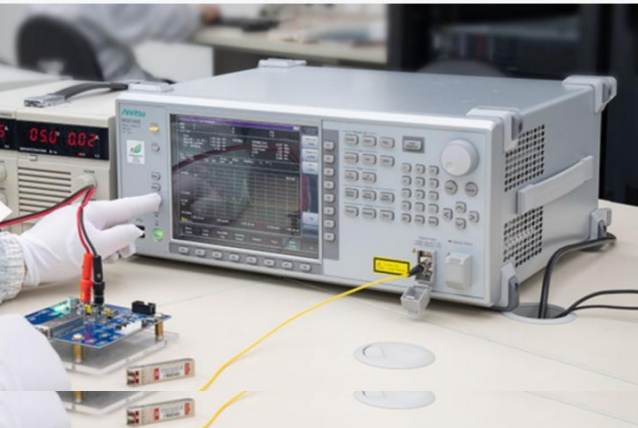
Test the actual transfer data rate and the transmission ability under different protocols with Network Master Pro.

- 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



Order Information

Part Number	Description
CWDM-SFP10G-40-I	10G CWDM SFP+ Transceiver, 1270nm-1370nm, Duplex LC, 40km over MMF
CWDM-SFP10G-80-I	10G CWDM SFP+ Transceiver, 1470nm-1610nm, Duplex LC, 80km over SMF