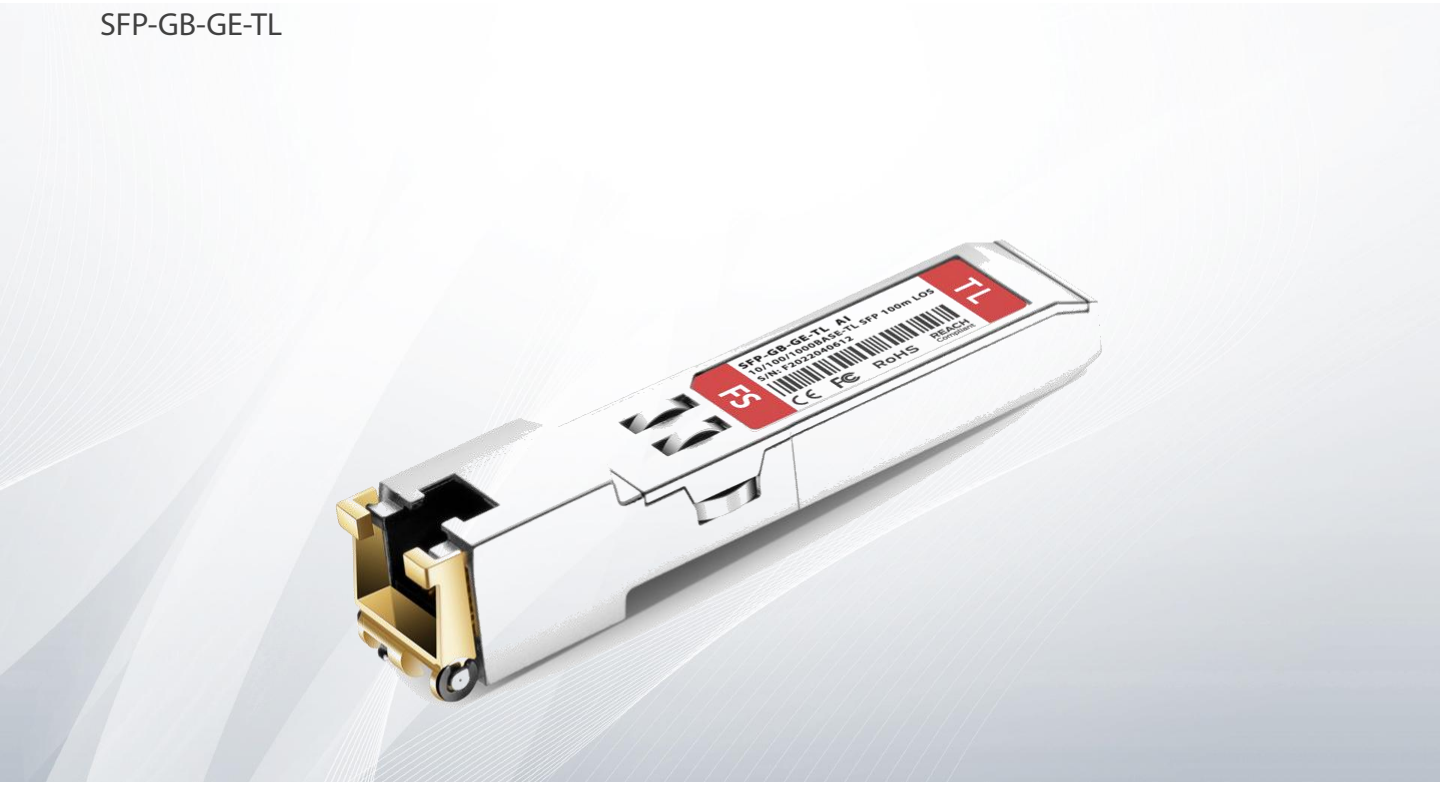
10/100/1000BASE-TL SFP Copper RJ-45 100m Transceiver (LOS)

SFP-GB-GE-TL



Applications

- LAN 10/100/1000Base-T
- Gigabit Ethernet over Cat6/Cat6a Cable
- Switch to Switch Interface
- Router/Server Interface

Features

- Up to 1.25 Gb/s Bi-directional Data Links
- Hot-pluggable SFP Footprint
- Low Power Dissipation(1.5W Typical)
- Compact RJ-45 Connector Assembly
- Fully Metal Enclosure, for Lower EMI
- RoHS Compliant and Lead-free
- Single 3.3V Power Supply
- Default Auto-negotiation 10/100/1000Mbps with SGMII Interface 1G-T.
- 1.25 Gigabit Ethernet over Cat 6/Cat 6a Cable
- Operating Case Temperature: Commercial Temp: 0℃~70℃

Description

1G-T Copper Small Form Pluggable (SFP) transceivers are based on the SFP Multi FS Agreement (MSA) . It's compatible with the Gigabit Ethernet and IEEE Std 802.3. the SFP's RX_LOS pin use for link indication. If pull up SFP's TX_DISABLE pin, PHY IC be reset. The transceiver supports up to 100m link lengths over a copper connection via a RJ-45 connector. Featuring low power consumption, the hot swappable 1G SFP transceiver is ideal for enterprise networking for LAN applications and different other networking places using copper connections.

Product Specifications

I. General Specifications

Parameter	Symbol	Min.	Max.	Unit	Notes/Conditions
Data Rate	BR	10	1000	Mb/sec	IEEE802.3 Compatible. See Notes 2 trough 3 Below
Cable Length	L		100	m	Category 5UTP. BER

Notes

1. Clock tolerance is +/- 50 ppm.
2. By default, module is a full duplex device in preferred master mode.
3. Automatic crossover detection is enabled. External crossover cable is not required.

II. Environmental Specifications

Parameter	Symbol	Min.	Max.	Unit	Note
Operating Case Temperature	Top	0	70	℃	C Temp
Storage Temperature	Tsto	-40	85	℃	Ambient Temperature

III. Electronic Characteristics

3.1 +3.3 Volt Electrical Power Interface

Parameter	Symbol	Min.	Typical	Max.	Unit	Notes/Conditions
Supply Current	I_S		320	450	mA	1.2W Max. Power over Full Range of Voltage and Temperature. See Caution Note Below
Input Voltage	V_{CC}	3.13	3.3	3.47	V	Referenced to GND
Maximum Voltage	Vmax			4	V	
Surge Current	Isurge			30	mA	Hot Plug Above Steady State Current. See Caution Note Below

Notes

1. Module has an input voltage range of 3.3 V +/- 5%. The 4V maximum voltage is not allowed for continuous operation.
2. Power consumption and surge current are higher than the specified values in the SFP MSA

3.2 Low-Speed Signals

Parameter	Symbol	Min.	Max.	Unit	Notes/Conditions
SFP Output LOW	VOL	0	0.5	V	4.7k to 10k Pull-up to Host_Vcc, Measured at Host Side of Connector
SFP Output HIGH	VOH	host_V_{CC}-0.5	host_V_{CC}+0.3	V	4.7k to 10k Pull-up to Host_Vcc, Measured at Host Side of Connector
SFP Input LOW	VIL	0	0.8	V	4.7k to 10k Pull-up to Vcc, Measured at SFP Side of Connector
SFP Input HIGH	VIH	2	Vcc+0.3	V	4.7k to 10k Pull-up to Vcc, Measured at SFP Side of Connector

Note

1. MOD_DEF(1) (SCL) and MOD_DEF(2) (SDA), are open drain CMOS signals. Both MOD_DEF(1) and MOD_DEF(2) must be pulled up to host_Vcc

3.3 High-Speed Electrical Interface

Parameter	Symbol	Min.	Typical	Max.	Unit	Notes/Conditions
			Transmission Line-SFP			
Line Frequency	fL		125		MHz	5-level encoding, per IEEE802.3
Tx Output Impedance	Zout, TX		100		Ohm	Differential, for all Frequencies Between 1MHz and 125MHz
Rx Input Impedance	Zin, RX		100		Ohm	Differential, for all Frequencies Between 1MHz and 125MHz
			Host-SFP			
Single Ended Data Input Swing	Vinsing	250		1200	mV	Single Ended
Single Ended Data Output Swing	Voutsing	350		800	mV	Single Ended
Rise/ Fall Time	T_r, T_f		175		psec	20%-80%
Tx Input Impedance	Zin		50		Ohm	Single Ended
Rx Output Impedance	Zout		50		Ohm	Single Ended

Note

1. All high-speed signals are AC-coupled internally

IV. Pin Assignment

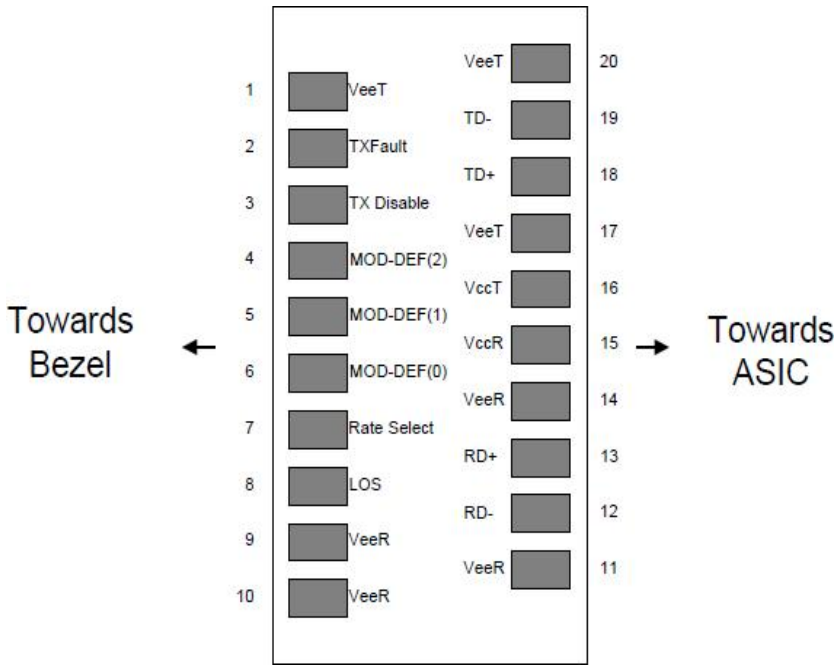


Figure 1. Diagram of host board connector block pin numbers and names

Pin	Symbol	Name/Description	Ref.
1	$V_{EE}T$	Transmitter Ground (Common with Receiver Ground)	1
2	TFAULT	Transmitter Fault. Not Supported.	
3	TDIS	Transmitter Disable. Laser Output Disabled on High or Open.	2
4	MOD_DEF(2)	Module Definition 2. Data Line for Serial ID.	3
5	MOD_DEF(1)	Module Definition 1. Clock Line for Serial ID.	3
6	MOD_DEF(0)	Module Definition 0. Grounded Within the Module.	3
7	RateSelect	No Connection Required	
8	LOS	Loss of Signal Indication. Logic 0 Indicates Normal Operation. Logic 1 Indicates No Link.	

Pin	Symbol	Name/Description	Ref.
9	$V_{EE}R$	Receiver Ground (Common with Transmitter Ground)	1
10	$V_{EE}R$	Receiver Ground (Common with Transmitter Ground)	1
11	$V_{EE}R$	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	$V_{EE}R$	Receiver Ground (Common with Transmitter Ground)	1
15	Vcc	Receiver Power Supply	
16	VccT	Transmitter Power Supply	
17	$V_{EE}T$	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	$V_{EE}T$	Transmitter Ground (Common with Receiver Ground)	1

Notes

1. Circuit ground is connected to chassis ground.

2. PHY disabled on TDIS> 2.0V or open, enabled on TDIS < 0.8V.

3. Should be pulled up with 4.7k - 10k Ohms on host board to a voltage between 2.0 V and 3.6 V. MOD_DEF(0) pulls line low to indicate module is plugged in.

V. Mechanical Diagram

unit: mm

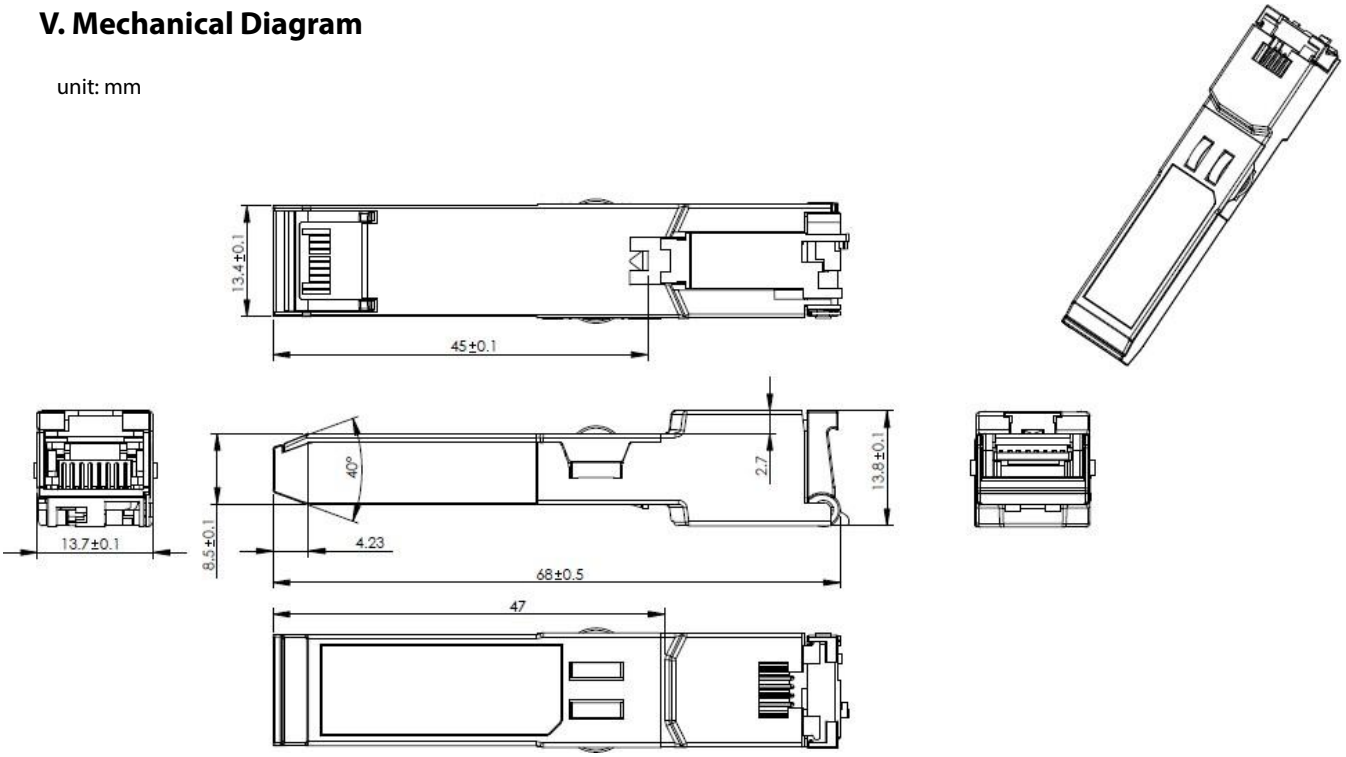


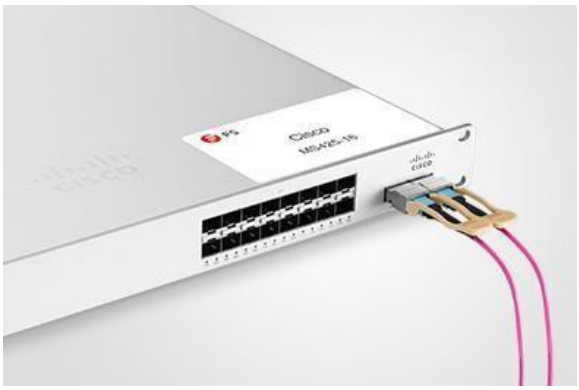
Figure 2. Outline Drawing

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

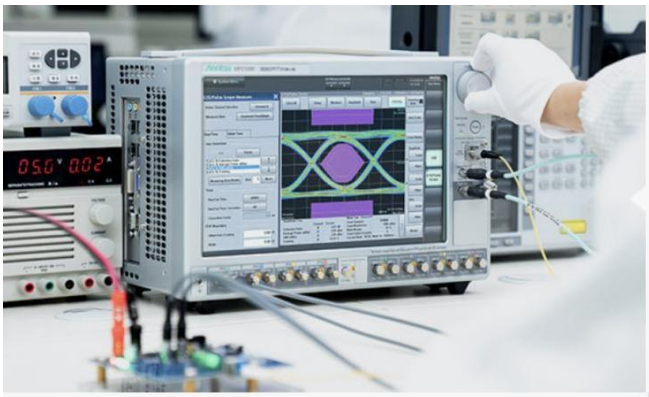
Force⑩tm S60-44T

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

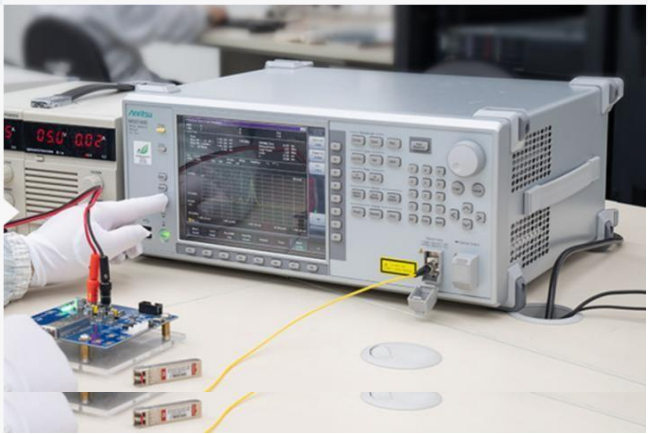
Test the actual transfer data rate and the transmission ability under different protocols with Network Master Pro.

- 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
SFP1G-SX- 85	SFP, 1000BASE-SX, 850nm, MMF, 550m, LC,DOM
SFP1G-SX-31	SFP, 1000BASE-SX,1310nm, SMF, 2km, LC,DOM
SFP1G-LX-31	SFP, 1000BASE-LX,1310nm, SMF, 10km, LC,DOM
SFP1G-LX-31	SFP, 1000BASE-LX,1310nm, SMF, 15km, LC,DOM
SFP1G-LX-31	SFP, 1000BASE-LX/LH,1310nm, SMF, 20km, LC,DOM
SFP1G-LH-31	SFP, 1000BASE-EX, 1310nm, SMF, 40km, LC,DOM
SFP1G-EX-55	SFP, 1000BASE-EX, 1550nm, SMF, 40km, LC,DOM
SFP1G-ZX-55	SFP, 1000BASE-EX, 1550nm, SMF, 60km, LC,DOM
SFP1G-ZX-55	SFP, 1000BASE-ZX, 1550nm, SMF, 80km, LC,DOM
SFP1G-EZX-55	SFP, 1000BASE-EZX, 1550nm, SMF, 100km, LC,DOM
SFP1G-EZX-55	SFP, 1000BASE-EZX, 1550nm, SMF, 120km, LC,DOM
SFP-GB-T	SFP, 10/100/1000Base-T, SERDES/SGMII Interface
SFP-GB-T	SFP, 10/100/1000Base-T, SERDES Interface

Note:

1G SFP transceiver module is individually tested on corresponding equipment such as Cisco, Arista, Juniper, Dell, Brocade and other brands, and passes the monitoring of FS.COM intelligent quality control system.

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