

# 1000BASE-T SFP Copper RJ-45 100m Transceiver

SFP-GB-GE-T



## Application

- LAN 1000Base-T
- Gigabit Ethernet over Cat 5/5e/6 Cable
- Switch to Switch Interface
- Router/Server Interface

## Features

- Support 1000BASE-T Operation in Host Systems
- Support RX\_LOS as Link indication function
- For 100m Reach Over UTP Cat 5/5e/6 Cable
- Hot-Pluggable SFP Footprint
- Fully Metallic Enclosure for Low EMI
- Low Power Dissipation (1.05W Typical)
- Compact RJ-45 Connector Assembly
- Access to Physical Layer IC via 2-Wire Serial Bus
- Detailed Product Information in EEPROM
- Compliant with MSA SFP
- Industrial Temperature Range: -40 to 85°C (-40 to 185°F)
- Commercial Temperature Range: 0~70°C
- Compliant with IEEE Std 802.3-2002

## Description

SFP-GB-GE-T 1000BASE-T Copper Small Form Pluggable (SFP) modules are based on the SFP Multi Source Agreement (MSA). It is compliant with the Gigabit Ethernet and 1000BASE-T standards as specified in IEEE STD 802.3 and 802.3ab.

## Product Specifications

### I. General Specifications

Parameter	Symbol	Typ.	Min	Max	Units	Notes
<b>Data rate</b>		1000			Mbps	
<b>Distance</b>				100	m	Cat 5/5e/6

### II. Absolute Maximum Ratings

Parameter	Symbol	Min	Typ.	Max	Unit
<b>Maximum Supply Voltage</b>	V <sub>cc</sub>	-0.5		4.0	V
<b>Storage Temperature</b>	T <sub>s</sub>	0		70	°C

### III. Electrical Characteristics

Parameter	Symbol	Typ.	Min	Max	Unit	Notes/Conditions
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#### +3.3 Volt Electrical Power Interface

<b>Supply Current</b>	I <sub>cc</sub>		300	350	mA	
<b>Input Voltage</b>	V <sub>cc</sub>	3.13	3.3	3.47	V	
<b>Surge Current</b>	I <sub>surge</sub>			30	mA	

#### Low-Speed Signals, Electronic Characteristics

<b>SFP Output LOW</b>	V <sub>OL</sub>	0		0.5	V	4.7k to 10k pull-up to host_V <sub>cc</sub> , measured at host side of connector
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<b>SFP Output HIGH</b>	$V_{OH}$	host_Vcc - 0.5		host_Vcc +	0.3	V	4.7k to 10k pull-up to host_Vcc, measured at host side of connector
<b>SFP Input LOW</b>	$V_{IL}$	0			0.8	V	4.7k to 10k pull-up to Vcc, measured at SFP side of connector
<b>SFP Input HIGH</b>	$V_{IH}$	2		Vcc +	0.3	V	4.7k to 10k pull-up to Vcc, measured at SFP side of connector

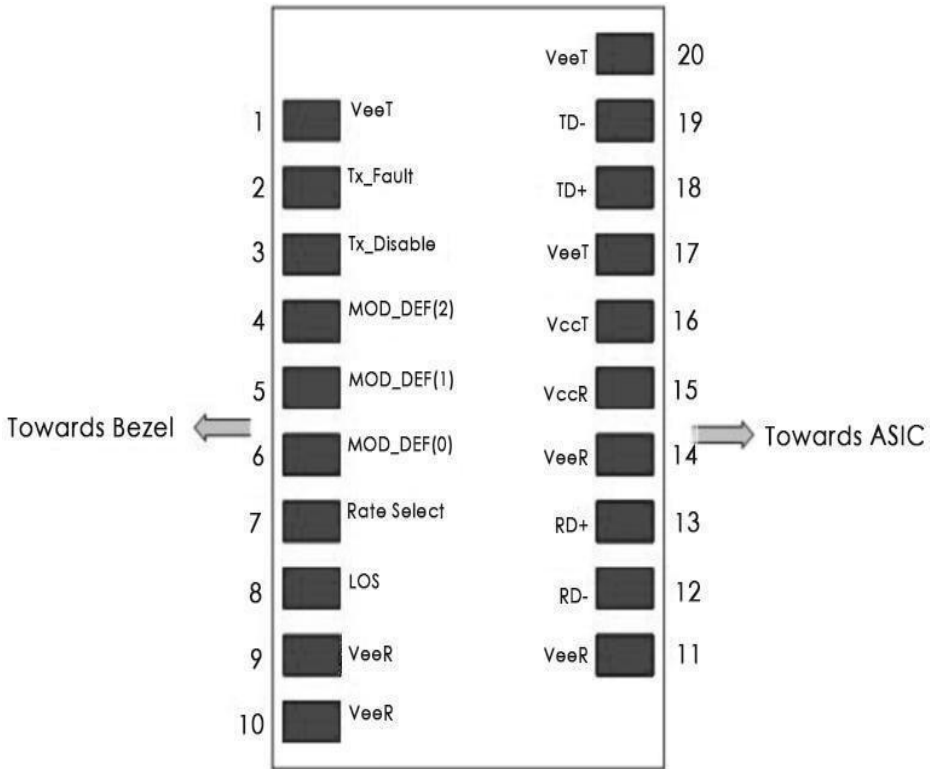
### High-Speed Electrical Interface, Transmission Line-SFP

<b>Line Frequency</b>	$f_L$		125			MHz	5-level encoding, per IEEE 802.3
<b>Tx Output Impedance</b>	$Z_{out, TX}$		100			Ohm	Differential, for all frequencies between 1MHz and 125MHz
<b>Rx Input Impedance</b>	$Z_{in, RX}$		100			Ohm	Differential, for all frequencies between 1MHz and 125MHz

### High-Speed Electrical Interface, Host-SFP

<b>Single ended data input swing</b>	$V_{in}$	250		1200		mV	Single ended
<b>Single ended data output swing</b>	$V_{out}$	350		800		mV	Single ended
<b>Rise/Fall Time</b>	$T_r, T_f$		175			psec	20%-80%
<b>Tx Input Impedance</b>	$Z_{in}$		50			Ohm	Single ended
<b>Rx Output Impedance</b>	$Z_{out}$		50			Ohm	Single ended

### IV. Pin Description



Pin No.	Name	Function	Plug Seq.	Notes
1	VeeT	Transmitter Ground	1	
2	TX Fault	Transmitter Fault Indication	3	Not used
3	TX Disable	Transmitter Disable	3	Note 1
4	MOD-DEF2	Module Definition 2	3	Note 2
5	MOD-DEF1	Module Definition 1	3	Note 2
6	MOD-DEF0	Module Definition 0	3	Note 2
7	Rate Select	Not Connected	3	
8	LOS	Receiver Ground	1	

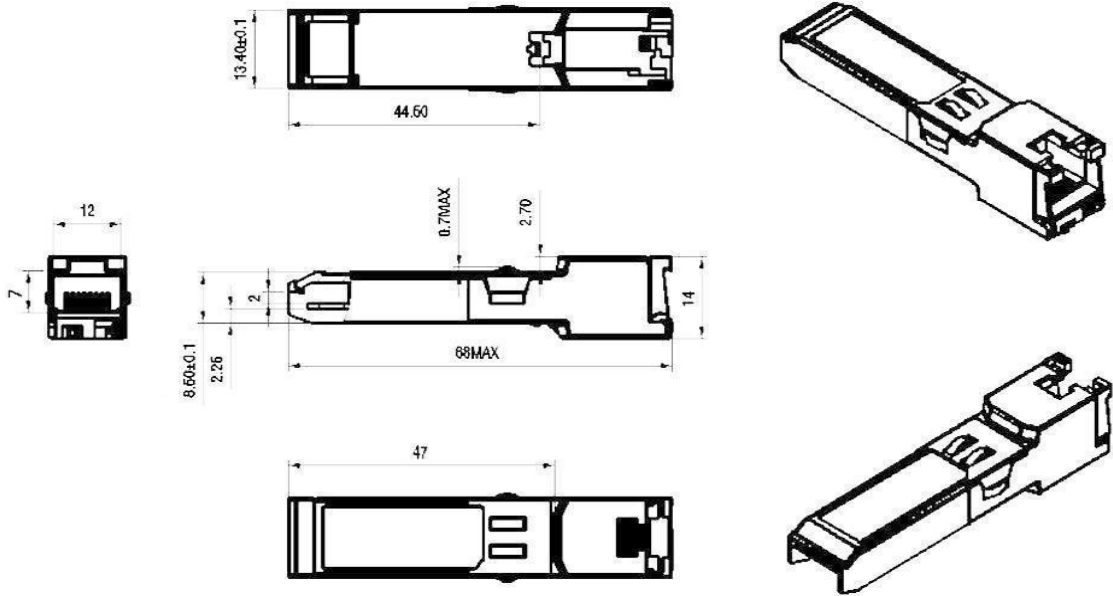
9	VeeR	Receiver Ground	1	
10	VeeR	Receiver Ground	1	
11	RD-	Inv. Received Data Out	3	
12	RD+	Received Data Out	3	
13	VeeR	Receiver Ground	1	
14	VccR	Receiver Power	2	
15	VccT	Transmitter Power	2	
16	VeeT	Transmitter Ground	1	
17	TD+	Transmit Data In	3	
18	TD-	Inv. Transmit Data In	3	
19	VeeT	Transmitter Ground	1	

**Notes:**

1. PHY disabled on TDIS > 2.0V or open, enabled on TDIS < 0.8V, used to reset the module.
2. Should be pulled up with 4.7k – 10k Ohm 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 Specifications

FS.COM Copper SFP transceivers are compliant with the dimensions defined by the SFP Multi-Sourcing Agreement (MSA).



## Test Center

FS.COM transceivers are tested to ensure connectivity and compatibility in our test center before shipped out. FS.COM test center is supported by a variety of mainstream original brand switches and groups of professional staff, helping our customers make the most efficient use of our products in their systems, network designs and deployments.

The original switches could be found nowhere but at FS.COM test center, eg: Juniper MX960 & EX 4300 series, Cisco Nexus 9396PX & Cisco ASR 9000 Series, HP 5900 Series & HP 5406R ZL2 V3(J9996A), Arista 7050S-64, Brocade ICX7750-26Q & ICX6610-48, Avaya VSP 7000 MDA 2, etc.



Cisco ASR 9000 Series(A9K-MPA-X40GE)



ARISTA 7050S-64(DCS-7050S-64)



Juniper MX960



Brocade ICX 7750-26Q



Extreme Networks X670V VIM-40G4X



Mellanox M3601Q



Dell N4032F



HP 5406R ZL2V3(J9996A)



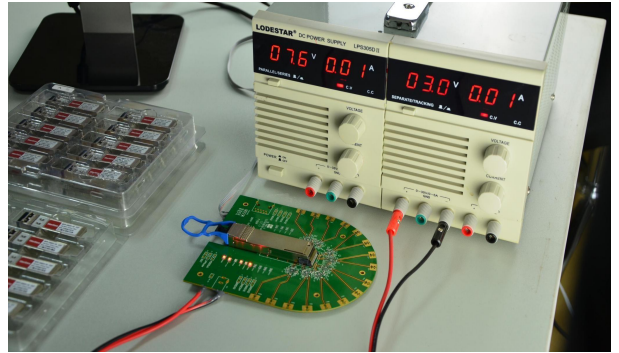
AVAYA 7024XLS(7002QQ-MDA)

## Test Assured Program

FS.COM truly understands the value of compatibility and interoperability to each optics. Every module FS.COM provides must run through programming and an extensive series of platform diagnostic tests to prove its performance and compatibility. In our test center, we care of every detail from staff to facilities—professionally trained staff, advanced test facilities and comprehensive original-brand switches, to ensure our customers to receive the optics with superior quality.



Our smart data system allows effective product management and quality control according to the unique serial number, properly tracing the order, shipment and every part.



Our in-house coding facility programs all of our parts to standard OEM specs for compatibility on all major vendors and systems such as Cisco, Juniper, Brocade, HP, Dell, Arista and so on.



With a comprehensive line of original-brand switches, we can recreate an environment and test each optics in practical application to ensure quality and distance.



The last test assured step to ensure our products to be shipped with perfect package.



## 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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The information in this document is subject to change without notice. FS has made all efforts to ensure the accuracy of the information, but all information in this document does not constitute any kind of warranty.