

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

F5-UPG-SFPC-R-LL



## 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

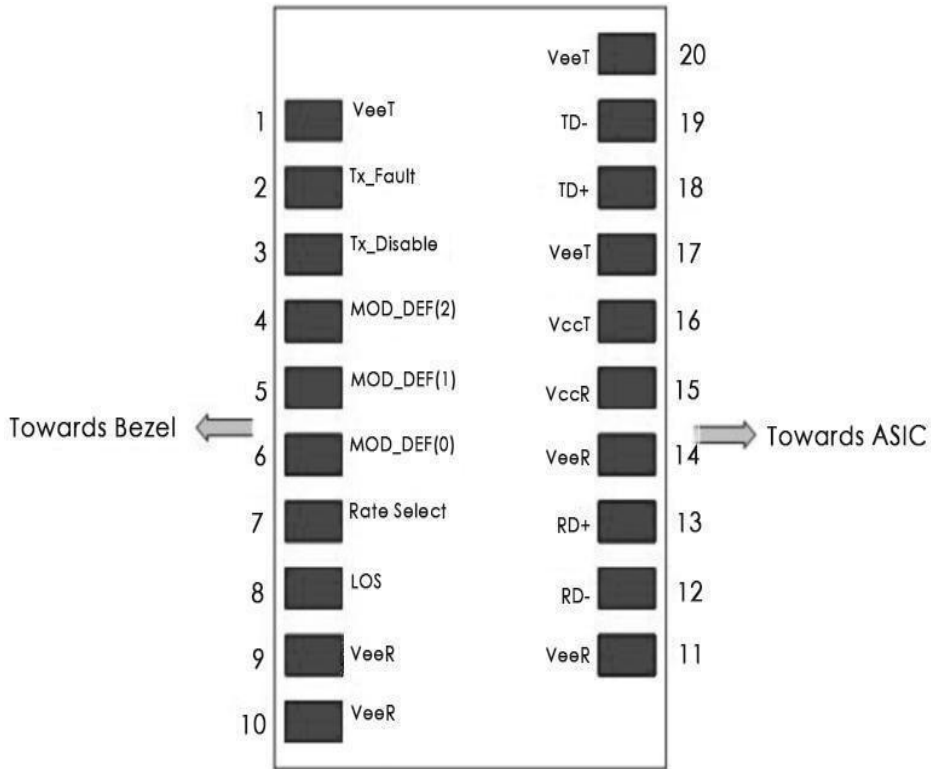
### High-Speed Electrical Interface, Transmission Line-SFP

<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

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

