



TECHNICAL DATA SHEET
FOR 1.25G Copper SFP Transceiver(RJ45)
(SFP-GE-T)

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1. Product Features

- Up to 1.0Gb/s data rate
- Hot-pluggable SFP
- Fully metallic case for low EMI
- Low power consumption(0.5W typical)
- Compact RJ-45 connector assembly
- 10/100/1000Mbps compliant in host systems with SGMII interface
- Compatible with RoHS and lead-free
- Case operating temperature: 0°C to +70°C

Applications

- LAN 1000Base-T
- 1.25 Gigabit Ethernet over Cat 5 cable
- Switch to Switch interface
- Router/Server interface



2. Product Description

The SFP-1G-T Copper Small Form Pluggable (SFP) transceivers is high performance, cost effective module compliant with the Gigabit Ethernet and 1000BASE-T standards as specified in IEEE 802.3-2002 and IEEE 802.3ab, which supporting 1000Mbps data-rate up to 100meters reach over unshielded twisted-pair category 5 cable. The module supports 10/100/1000Mbps auto negotiation data-links when the SFP interface support SGMII also. The module provides standard serial ID information compliant with SFP MSA, which can be accessed with address of 0xA0- 0xA2 via the IIC BUS protocol.

3. Regulatory Compliance

OPT transceivers are Class 1 Laser Products comply with FDA regulations. Meet Class 1 eye safety requirements of EN 60825 and the electrical safety requirements of EN 60950.

4.Pin Definitions

Pin Diagram

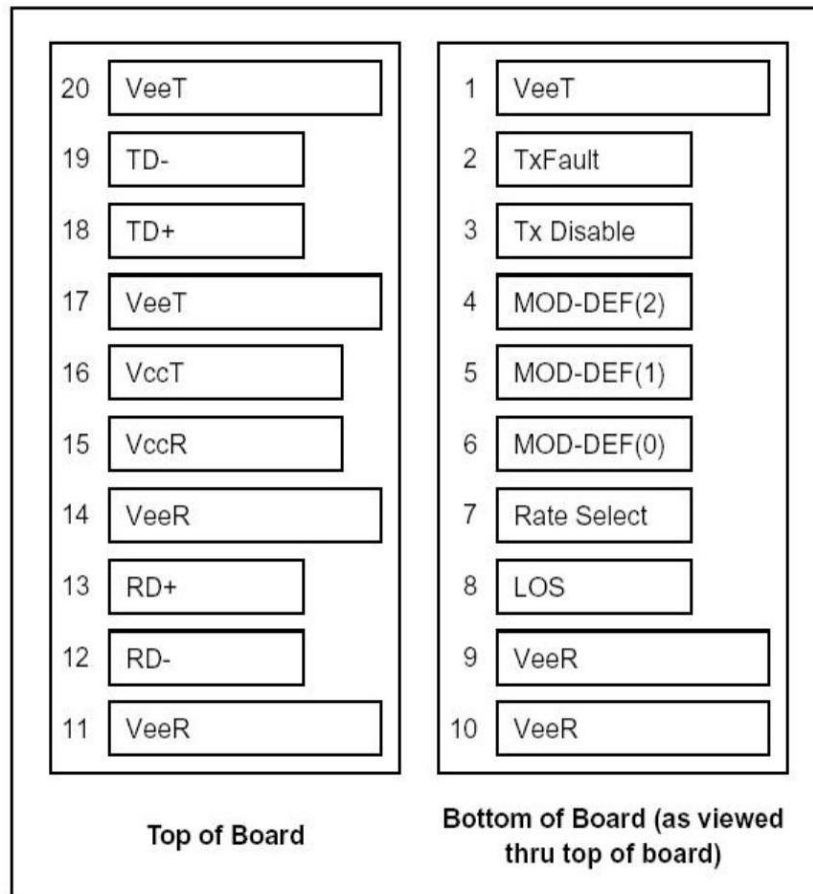


Figure1

Pin Descriptions

Pin Descriptions				
Pin	Signal Name	Description	Plug Seq.	Notes
1	VeeT	Transmitter Ground	1	
2	TX FAULT	Transmitter Fault Indication	3	Note1
3	TX DISABLE	Transmitter Disable	3	Note2
4	MOD_DEF(2)	SDA Serial Data Signal	3	Note3
5	MOD_DEF(1)	SCL Serial Clock Signal	3	Note3
6	MOD_DEF(0)	TTL Low	3	Note3
7	Rate Select	Not Connected	3	

8	LOS	Loss of Signal	3	Note4
9	Veer	Receiver ground	1	
10	Veer	Receiver ground	1	
11	Veer	Receiver ground	1	
12	RX-	Inv. Receiver Data Out	3	Note5
13	RX+	Receiver Data Out	3	Note5
14	VeeR	Receiver ground	1	
15	VccR	Receiver Power Supply	2	
16	VccT	Transmitter Power Supply	2	
17	VeeT	Transmitter Ground	1	
18	TX+	Transmit Data In	3	Note6
18	TX-	Inv. Transmit Data In	3	Note6
20	VeeT	Transmitter Ground	1	

Notes: Plug Seq.: Pin engagement sequence during hot plugging.

- 1) TX Fault is an open collector output, which should be pulled up with a 4.7k~10kΩ resistor.
- 2) TX Disable is an input that is used to shut down the strong power. It is pulled up within the module with a 4.7k~10kΩ resistor.
- 3) Mod-Def 0,1,2. These are the module definition pins. They should be pulled up with a 4.7K~10K resistor on the host board.

Mod-Def 0 is grounded by the module to indicate that the module is present and ready.

Mod-Def 1 is the clock line of two wire serial interface for serial ID(iic_clock)

Mod-Def 2 is the data line of two wire serial interface for serial ID(iic_data)

- 4) LOS (Loss of Signal) is an open collector/drain output, it should be pulled up with a 4.7K~10K resistor on the host board.

- 5) RD-/+: These are the differential receiver outputs. They are AC coupled 100R differential lines which should be terminated with 100R (differential) at the user SERDES.

- 6) TD-/+: These are the differential transmitter inputs. They are AC-coupled, differential lines with 100R differential termination inside the module.

5.3.3V Volt Electrical Power Interface

The SFP-T has an input voltage range of 3.3V +/- 5%. The 3.3V maximum voltage is not allowed for continuous operation.

Caution: Power consumption and surge current are higher than the specified values in the SFP MSA

3.3V Electrical PowerInterface						
Parameter	Symbol	Min	Typ	Max	unit	Notes/Conditions
Supply Current	Is		300	350	mA	
Input Voltage	Vcc	3.13	3.3	3.47	V	
Maximum Voltage	Vmax			4	V	
Surge Current	Isurge			30	mA	Hot plug above steady state current. See caution note below

6.Low-Speed Signals

MOD_DEF(1) (SCL) and MOD_DEF(2) (SDA), are open drain CMOS signals (see section VII, “Serial Communication Protocol”). Both MOD_DEF(1) and MOD_DEF(2) must be pulled up to host_Vcc.

Low-Speed Signals, Electronic Characteristics					
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_Vcc -0.5	host_Vcc + 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

7.High-Speed Electrical Interface

All high-speed signals are AC-coupled internally.

High-Speed Electrical Interface, Transmission Line-SFP						
Parameter	Symbol	Min	Typ	Max	unit	Notes/Conditions
Line Frequency	fL		125		MHz	5-level encoding, per IEEE 802.3
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

8. High-speed electrical interface, host-SFP

High-Speed Electrical Interface, Host-SFP						
Parameter	Symbol	Min	Typ	Max	unit	Notes/Conditions
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	Z _{in}		50		Ohm	Single ended
Rx Output Impedance	Z _{out}		50		Ohm	Single ended

9. General Specifications

General						
Parameter	Symbol	Min	Typ	Max	unit	Notes/Conditions
Data Rate	BR	10		1000	Mb/sec	IEEE 802.3 compatible. See Notes2 through 4 below
Cable Length	L			100	m	Category 5UTP.BER<10-12

Notes:

1. Automatic crossover detection is enabled. External crossover cable is not required
2. SFP-T support SGMII and 1000Base-FX SERDES interface . With a SERDES the module will operate at 10/100/1000 BASE-TX or 1000BASE-TX by smart process handle .

10.Mechanical Specifications(Unit:mm)

