

# SA-SFP-T1

1000BASE-T Copper SFP Transceiver

## DESCRIPTION

SA-SFP-T1 Copper Small Form Pluggable (SFP) transceivers is high performance, cost effective module compliant with the Gigabit Ethernet and 1000- BASE-T standards as specified in IEEE 802. 3-2002 and IEEE 802.3ab, which supporting 1000Mbps data-rate up to 100 meters reach over unshielded twisted-pair CAT 5 cable. The module supports 1000 Mbps (or 10/100/1000Mbps) full duplex data-links with 5-level Pulse Amplitude Modulation (PAM) signals. All four pairs in the cable are used with symbol rate at 250Mbps on each pair. The module provides standard serial ID information compliant with SFP MSA, which can be accessed with address of A0h via the 2wire serial CMOS EEPROM protocol. The physical IC can also be accessed via 2 wire serial bus at address Ach.

## KEY FEATURES

- Up to 1.25Gb/s bi-directional data links
- Hot-pluggable SFP footprint
- Extended case temperature range (0°C to +85°C )
- Fully metallic enclosure for low EMI
- Low power dissipation (1.05 W typical)
- Compact RJ-45 connector assembly
- Access to physical layer IC via 2-wire serial bus
- 1000 BASE-T operation in host systems with SERDES interface
- 10/100/1000Mbps compliant in host systems with SGMII interface



## APPLICATIONS

- 1 Gigabit Ethernet over Cat 5 cable

## PRODUCT SELECTION

X	1	1000Base-T
	2	10/100/1000Base-T

## +3.3V VOLT ELECTRICAL POWER INTERFACE

The GE-GB-P has an input voltage range of 3.3 V +/- 5%. The 4 V maximum voltage is not allowed for continuous operation

### STARVIEW SA-S3208 SERIES SWITCH

Parameter	Symbol	Min	Typ	Max	Units	Note/Conditions
Supply Current	IS		320	375	mA	1.2W max power over full range of voltage and temperature. See caution note below
Input Voltage	VCC	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

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

## 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	Units	Note/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 Vcc, measured at SFP 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

## HIGH-SPEED ELECTRICAL INTERFACE

All high-speed signals are AC-coupled internally

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

Parameter	Symbol	Typ	Units	Note/Conditions
Line Frequency	fL	125	MHz	5-level encoding, per IEEE 802.3
Tx Output Impedance	Zout,TX	100	Ohm	Differential, for allFrequencies between 1MHz and 125MHz
Rx Input Impedance	Zin,RX	100	Ohm	Differential, for allFrequencies between 1MHz and 125MHz

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Performance specifications are typical. Due to constant research, specifications are subject to change without notice. For the most up-to-date specifications, please contact an authorized Starview representative.

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### Host-SFP

Parameter	Symbol	Min	Typ	Max	Units	Note/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	Tr. Tf		175		psec	20% -80%
Tx Input Impedance	Zin		50		Ohm	Single ended
Rx Output Impedance	Zout		50		Ohm	Single ended

## GENERAL SPECIFICATIONS

### General

Parameter	Symbol	Min	Typ	Max	Units	Note/Conditions
Data Rate	BR	10		1,000	Mb/sec	IEEE 802.3 compatible. See Notes 2 through 4 below
Cable Length	L			100	m	Category 5 UTP. BER <10-12

#### Notes:

1. Clock tolerance is +/- 50 ppm
2. By default, the GE-GB-P is a full duplex device in preferred master mode
3. Automatic crossover detection is enabled. External crossover cable is not required
4. 1000 BASE-T operation requires the host system to have an SGMII interface with no clocks, and the module PHY to be configured per Application Note AN-2036. With a SERDES that does not support SGMII, the module will operate at 1000BASE-T

## ENVIRONMENTAL SPECIFICATIONS

### Environmental Specifications

Parameter	Symbol	Min	Typ	Max	Units	Note/Conditions
Operating temperature	Top	0		85	°C	Case temperature
Storage temperature	Tsto	-40		85	°C	Ambient temperature

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