

## **SFP-1000BASE-TX-C**

MSA and TAA 10/100/1000Base-TX SFP Transceiver (Copper, 100m, RJ-45)

### **Features:**

- INF-8074 Compliance
- RJ-45 Connector
- Copper Media Type
- Commercial Temperature 0 to 70 Celsius
- Hot Pluggable
- Metal with Lower EMI
- Excellent ESD Protection
- RoHS Compliant and Lead Free



### **Applications:**

- 1000Base Ethernet
- Access and Enterprise

### **Product Description**

This MSA Compliant SFP transceiver provides 10/100/1000Base-TX throughput up to 100m over a copper connection via a RJ-45 connector. This TX module supports 10/100/1000Base auto-negotiation and can be configured to fit your needs. It is built to MSA standards and is uniquely serialized and data-traffic and application tested to ensure that they will integrate into your network seamlessly. This transceiver is Trade Agreements Act (TAA) compliant. We stand behind the quality of our products and proudly offer a limited lifetime warranty.

ProLabs' transceivers are RoHS compliant and lead-free.

TAA refers to the Trade Agreements Act (19 U.S.C. & 2501-2581), which is intended to foster fair and open international trade. TAA requires that the U.S. Government may acquire only "U.S. – made or designated country end products."



### Absolute Maximum Ratings

| Parameter       | Symbol | Min. | Typ. | Max. | Unit | Notes |
|-----------------|--------|------|------|------|------|-------|
| Supply Current  | Is     |      | 320  | 375  | mA   | 1     |
| Input Voltage   | Vcc    | 3.13 | 3.3  | 3.47 | V    | 2     |
| Maximum Voltage | Vmax   |      |      | 4    | V    |       |
| Surge Current   | Isurge |      |      | 30   | mA   | 3     |

#### Notes:

1. 1.2W max power over full range of voltage and temperature. Power consumption and surge current are higher than the specified values in SFP MSA.
2. Referenced to GND
3. Hot plug above steady state current. Power consumption and surge current are higher than the specified values in SFP MSA.

### Recommended Operating Conditions

| Parameter             | Symbol | Min. | Typ. | Max. | Unit   | Notes |
|-----------------------|--------|------|------|------|--------|-------|
| Data Rate             | BR     | 10   |      | 1000 | Mb/sec | 3-5   |
| Distance Supported    | L      |      |      | 100  | m      | 1     |
| Operating Temperature | Top    | 0    |      | 85   | °C     |       |
| Storage Temperature   | Tsto   | -40  |      | 85   | °C     |       |

#### Notes:

1. Category 5 UTP. BER <10<sup>-12</sup>
2. Clock tolerance is +/- 50 ppm
3. By default, the GE-GB-P is a full duplex device in preferred master mode
4. Automatic crossover detection is enabled. External crossover cable is not required
5. 1000Base-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 only.

### Low-Speed Signals

| Parameter       | Symbol | Min.         | Typ. | Max.         | Unit | Notes |
|-----------------|--------|--------------|------|--------------|------|-------|
| SFP Output LOW  | VOL    | 0            |      | 0.5          | V    | 1     |
| SFP Output High | VOH    | Host_Vcc-0.5 |      | Host_Vcc+0.3 | V    | 1     |
| SFP Input LOW   | VIL    | 0            |      | 0.8          | V    | 2     |
| SFP Input HIGH  | VIH    | 2            |      | Vcc+0.3      | V    | 2     |

#### Notes:

1. 4.7k to 10k pull-up to Host\_Vcc, measured at host side of connector
2. 4.7k to 10k pull-up to Vcc, measured at SFP side of connector

### High-Speed Signals

| Parameter                      | Symbol   | Min. | Typ. | Max. | Unit | Notes |
|--------------------------------|----------|------|------|------|------|-------|
| Transmission Line-SFP          |          |      |      |      |      |       |
| Line Frequency                 | fL       |      | 125  |      | MHz  | 1     |
| TX Output impedance            | Zout, TX |      | 100  |      | Ohm  | 2     |
| Rx Input Impedance             | Zin, RX  |      | 100  |      | Ohm  | 2     |
| Host-SFP                       |          |      |      |      |      |       |
| Single ended data input swing  | Vinsing  | 250  |      | 1200 | mV   | 3     |
| Single ended data output swing | Voutsing | 350  |      | 800  | mV   | 3     |
| Rise/Fall Time                 | Tr,Tf    |      | 175  |      | Psec | 4     |
| Tx Input Impedance             | Zin      |      | 50   |      | Ohm  | 3     |
| Rx Output Impedance            | Zout     |      | 50   |      | Ohm  | 3     |

#### Notes:

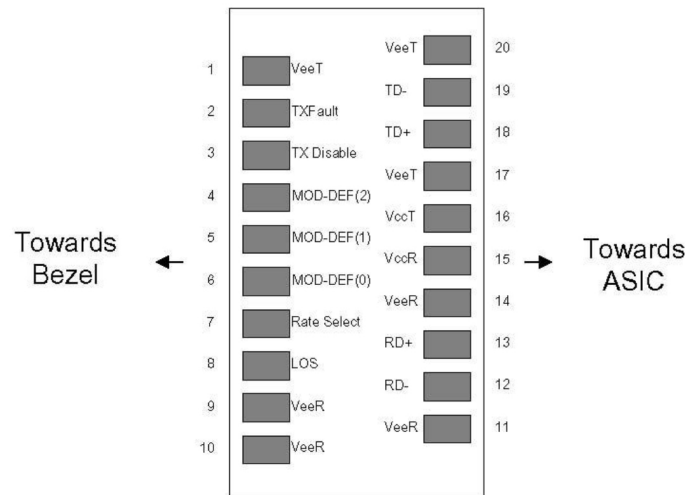
1. 5-level encoding, per IEEE 802.3
2. Differential, for all Frequencies between 1MHz and 125MHz
3. Single ended
4. 20%-80%

## Pin Descriptions

| Pin | Symbol      | Name/Descriptions                                  | Ref. |
|-----|-------------|----------------------------------------------------|------|
| 1   | VeeT        | Transmitter Ground (Common with Receiver Ground).  | 1    |
| 2   | TX Fault    | Transmitter Fault. Not Supported                   |      |
| 3   | TDIS        | Transmitter Disabled. PHY 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   | Rate Select | No connection required                             |      |
| 8   | LOS         | Loss of Signal indication.                         | 4    |
| 9   | VeeR        | Receiver Ground (common with Transmitter ground)   | 1    |
| 10  | VeeR        | Receiver Ground (common with Transmitter ground)   | 1    |
| 11  | VeeR        | 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  | VeeR        | Receiver Ground (Common with Transmitter Ground).  | 1    |
| 15  | VccR        | Receiver Power Supply.                             |      |
| 16  | VccT        | Transmitter Power Supply.                          |      |
| 17  | VeeT        | 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  | VeeT        | Transmitter Ground (Common with Receiver Ground).  | 1    |

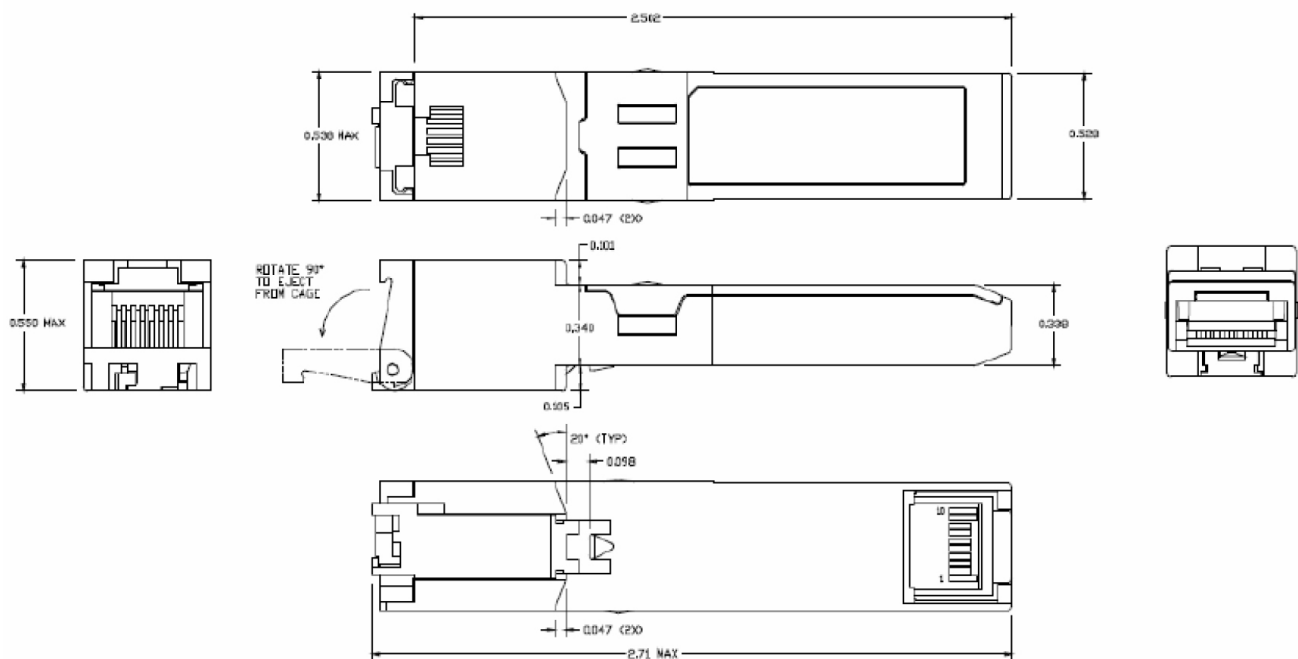
### Notes:

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 2.0V and 3.6V. MOD\_DEF (0) pulls line low to indicate module is plugged in.
4. LVTTTL compatible with a maximum voltage of 2.5V. Not supported on GE-GB-P



Pin-out of connector Block on Host board

## Mechanical Specifications



## About ProLabs

Our experience comes as standard; for over 15 years ProLabs has delivered optical connectivity solutions that give our customers freedom and choice through our ability to provide seamless interoperability. At the heart of our company is the ability to provide state-of-the-art optical transport and connectivity solutions that are compatible with over 90 optical switching and transport platforms.

## Complete Portfolio of Network Solutions

ProLabs is focused on innovations in optical transport and connectivity. The combination of our knowledge of optics and networking equipment enables ProLabs to be your single source for optical transport and connectivity solutions from 100Mb to 400G while providing innovative solutions that increase network efficiency. We provide the optical connectivity expertise that is compatible with and enhances your switching and transport equipment.

## Trusted Partner

Customer service is our number one value. ProLabs has invested in people, labs and manufacturing capacity to ensure that you get immediate answers to your questions and compatible product when needed. With Engineering and Manufacturing offices in the U.K. and U.S. augmented by field offices throughout the U.S., U.K. and Asia, ProLabs is able to be our customers best advocate 24 hours a day.



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