

### FCOPPER-SFP-100-PRO

Sixnet® FCOPPER-SFP-100 Compatible TAA Compliant 10/100/1000Base-TX SFP Transceiver (Copper, 100m, 0 to 70C, RJ-45)

#### Features

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



#### Applications:

- 1000Base Ethernet
- Access and Enterprise

#### Product Description

This Sixnet® FCOPPER-SFP-100 compatible 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 guaranteed to be 100% compatible with the equivalent Sixnet® transceiver. This easy to install, hot swappable transceiver has been programmed, uniquely serialized and data-traffic and application tested to ensure that it will initialize and perform identically. It is built to meet or exceed the specifications of Sixnet®, as well as to comply with MSA (Multi-Source Agreement) standards to ensure seamless network integration. This transceiver is Trade Agreements Act (TAA) compliant. We stand behind the quality of our products and proudly offer a limited lifetime warranty.

Proline's 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 |
|--------------------------------|----------|------|------|------|------|-------|
| <b>Transmission Line-SFP</b>   |          |      |      |      |      |       |
| Line Frequency                 | fL       |      | 125  |      | MHz  | 1     |
| TX Output impedance            | Zout, TX |      | 100  |      | Ohm  | 2     |
| Rx Input Impedance             | Zin, RX  |      | 100  |      | Ohm  | 2     |
| <b>Host-SFP</b>                |          |      |      |      |      |       |
| 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:

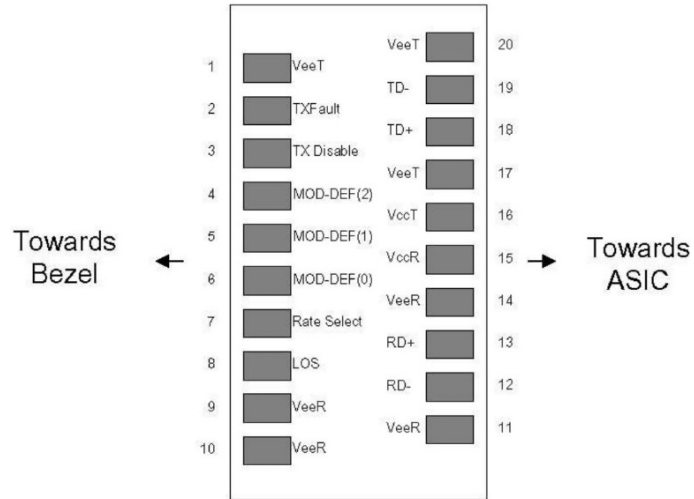
1. 5-level encoding, per IEEE 802.3
2. Differential, for all Frequencies between 1MHz and 125MHz
3. Single ended
4. 20%-80%

## 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    |

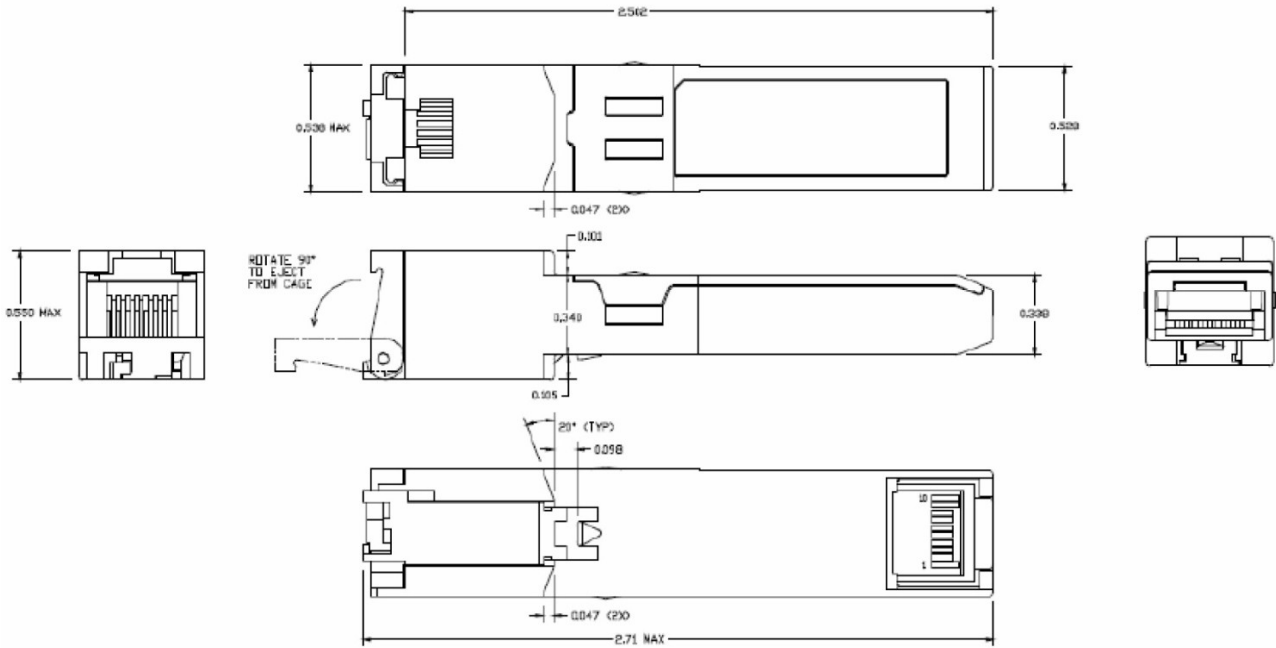
### Notes:

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 Us:**

Proline Options is one of North America's leading providers of transceivers and high speed cabling. With a reputation for quality, tested products that cover the connectivity spectrum, Proline Options has a solution for you regardless of the specification.

At Proline Options, every product is tested in its intended application - never batch or spec tested only. We run bandwidth, distance and IOS network tests. We have documented an impressive 0.03% failure rate over the last 10 years. To continue this rate of success we invest millions annually in our own on-site testing lab.



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