The GigaTech Products **SFP-10G-T-GT** is programmed to be fully compatible and functional with all intended CISCO switching devices. This SFP+ module is based on the Gigabit Ethernet IEEE 802.3az standard and is designed to be compliant with SFF-8472 SFP Multi-Source Agreement (MSA). This module is designed for copper wire cabling up to 30 meters.

## Features:


- Up to 10GBd bi-directional data links
- Hot-pluggable SFP footprint
- Support 10GBase-T operation in host system
- RJ-45 Connectors
- Auto-sense MDI/MDIX
- Up to 30M over Cat 6A/7 copper cabling
- Operating temperature range

  C-Temp: 0℃ to 70℃

## Compliance:

- IEEE 802.3az
- SFP MSA SFF-8472, SFF-8431
- RoHS

## Applications

- 10GBd Gigabit Ethernet

## Warranty:

GigaTech Branded Optical Transceivers- Lifetime Warranty

## General Specifications

| *Parameter* | *Symbol* | *Min* | *Typ* | *Max* | *Unit* | *Remarks* |
|---|---|---|---|---|---|---|
| Data Rate | *DR* | | 10 | | Gb/s | IEEE 802.3 |
| Cable Length | *CL* | | 30 | | M | Category 6A/7 UTP |
| Bit Error Rate | *BER* | | | $10^{-12}$ | | |
| Input Voltage | $V_{CC}$ | 3.13 | 3.3 | 3.47 | V | |
| Maximum Voltage | $V_{MAX}$ | | | 4 | V | Electric Power Interface |
| Supply Current | $I_S$ | | 700 | 750 | mA | Electric Power Interface |
| Surge Current | $I_{SURGE}$ | | | 30 | mA | Hot Plug |
| Storage Temperature | $T_{STO}$ | -40 | | 85 | ℃ | Ambient Temperature |

## High Speed Electrical Interface Host- SFP

| *Parameter* | *Symbol* | *Min* | *Typ* | *Max* | *Unit* | *Remarks* |
|---|---|---|---|---|---|---|
| Differential Input Voltage | $V_{INDIFF}$ | 250 | | 1200 | mV | Differential peak-peak |
| Differential Output Voltage | $V_{OUTDIFF}$ | 350 | | 800 | mV | Differential peak-peak |
| Tx Input Impedance | $Z_{IN}$ | | 50 | | Ohm | Single ended |
| Rx Output Impedance | $Z_{OUT}$ | | 50 | | Ohm | Single ended |

## High Speed Electrical Interface Transmission Line- SFP

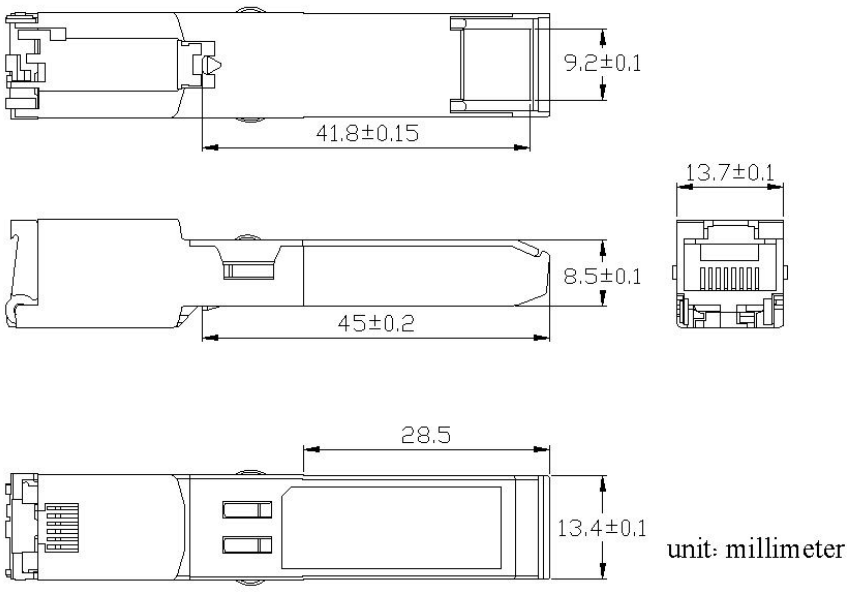
| *Parameter* | *Symbol* | *Min* | *Typ* | *Max* | *Unit* | *Remarks* |
|---|---|---|---|---|---|---|
| Tx Input Impedance | $Z_{IN}$ | | 100 | | Ohm | 1MHz - 125MHz |
| Rx Output Impedance | $Z_{OUT}$ | | 100 | | Ohm | 1MHz - 125MHz |

## Low Speed Electrical Signal

| *Parameter* | *Symbol* | *Min* | *Typ* | *Max* | *Unit* | *Remarks* |
|---|---|---|---|---|---|---|
| SFP Output Low | $V_{OL}$ | 0 | | 0.5 | V | Note 1 |
| SFP Output High | $V_{OH}$ | Host_$V_{CC}$ -0.5 | | Host_$V_{CC}$ +0.3 | V | Note 1 |
| SFP Input Low | $V_{IL}$ | 0 | | 0.8 | V | Note 1 |
| SFP Input High | $IH_L$ | 2 | | $V_{CC}$ +0.3 | V | Note 1 |

**Note 1:** External 4.7-10k ohm pull-up resistor required

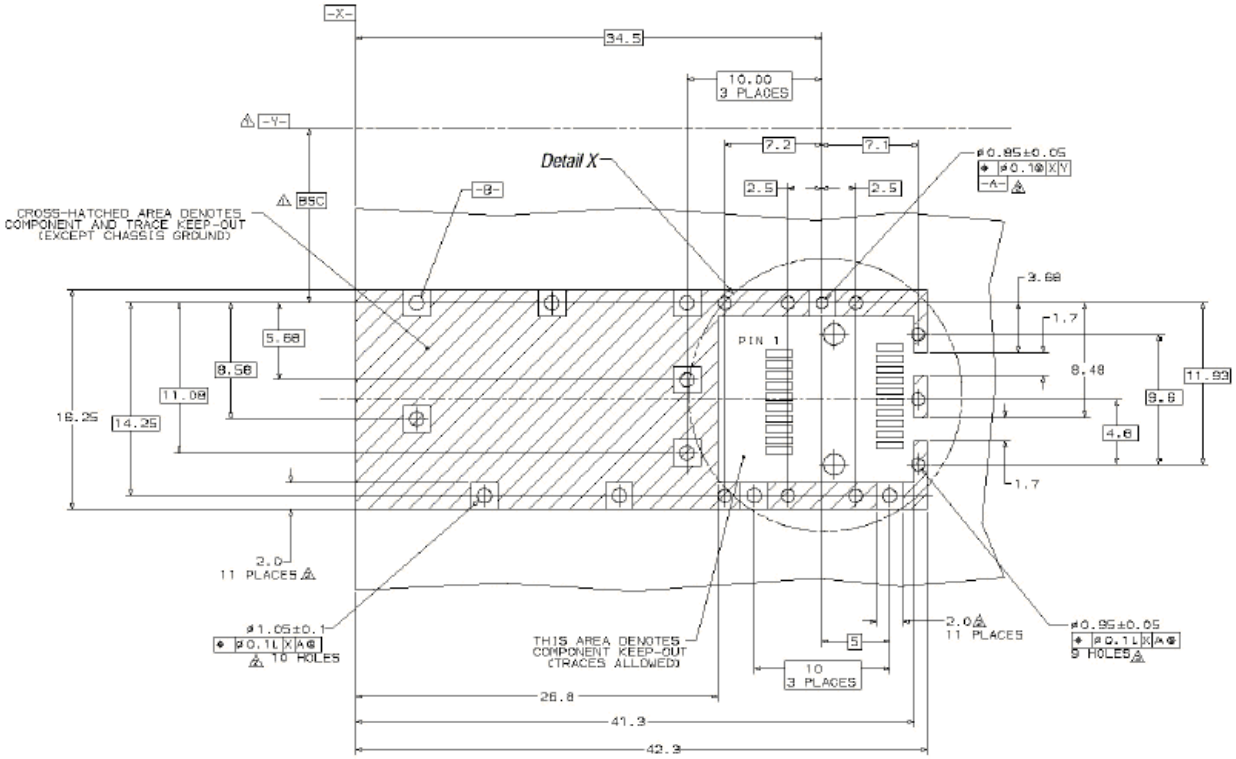
**Dimensions**




ALL DIMENSIONS ARE ±0.2mm UNLESS OTHERWISE SPECIFIED

UNIT: mm

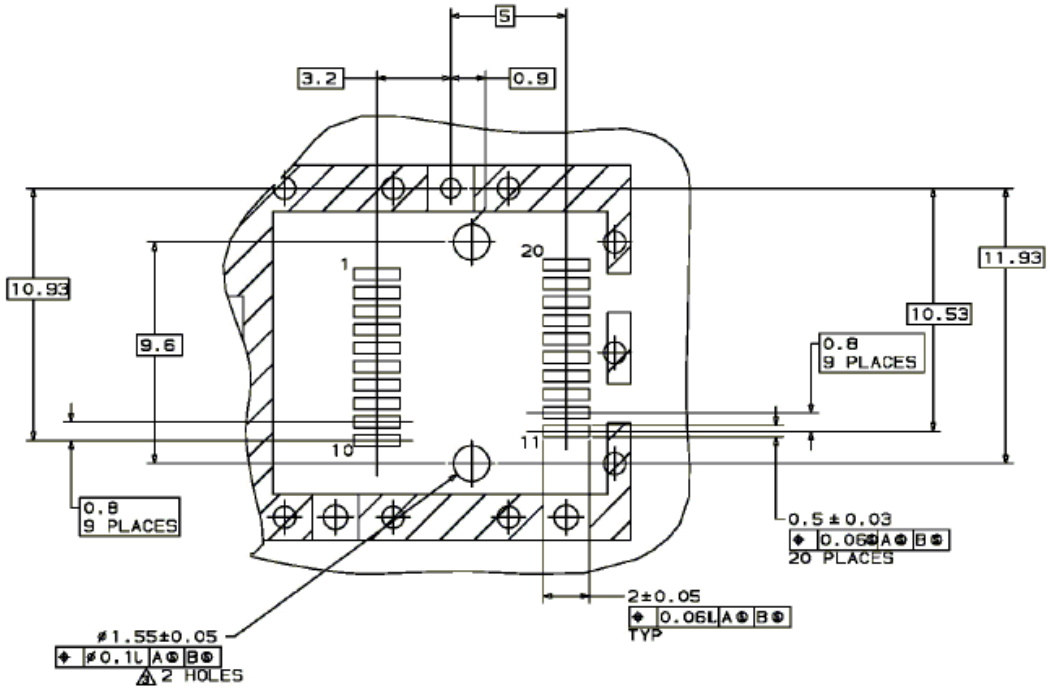
## PCB Layout Recommendation



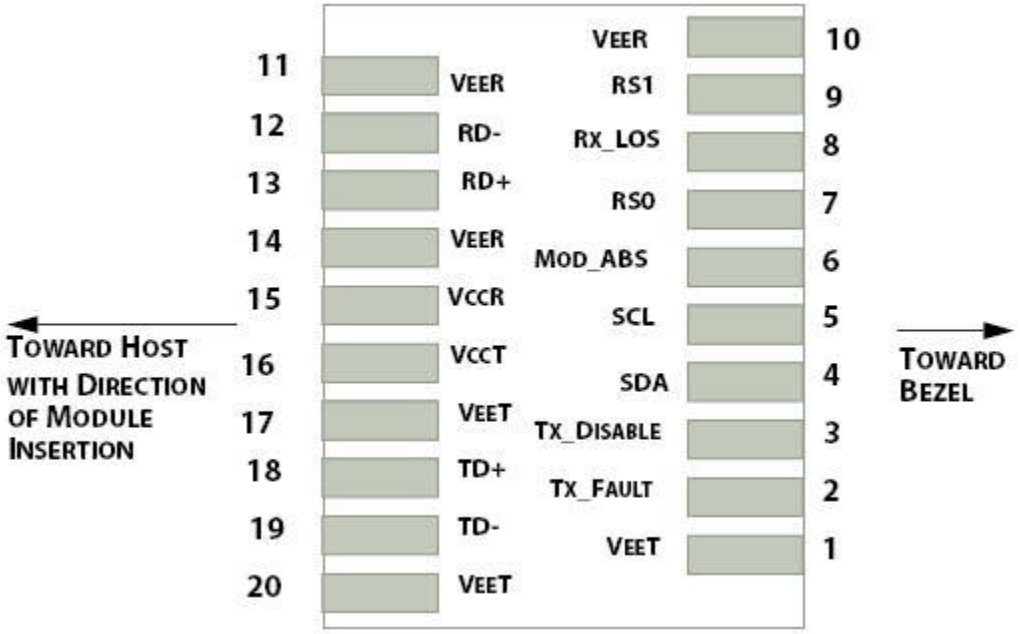

Datum and Basic Dimension Established by Customer

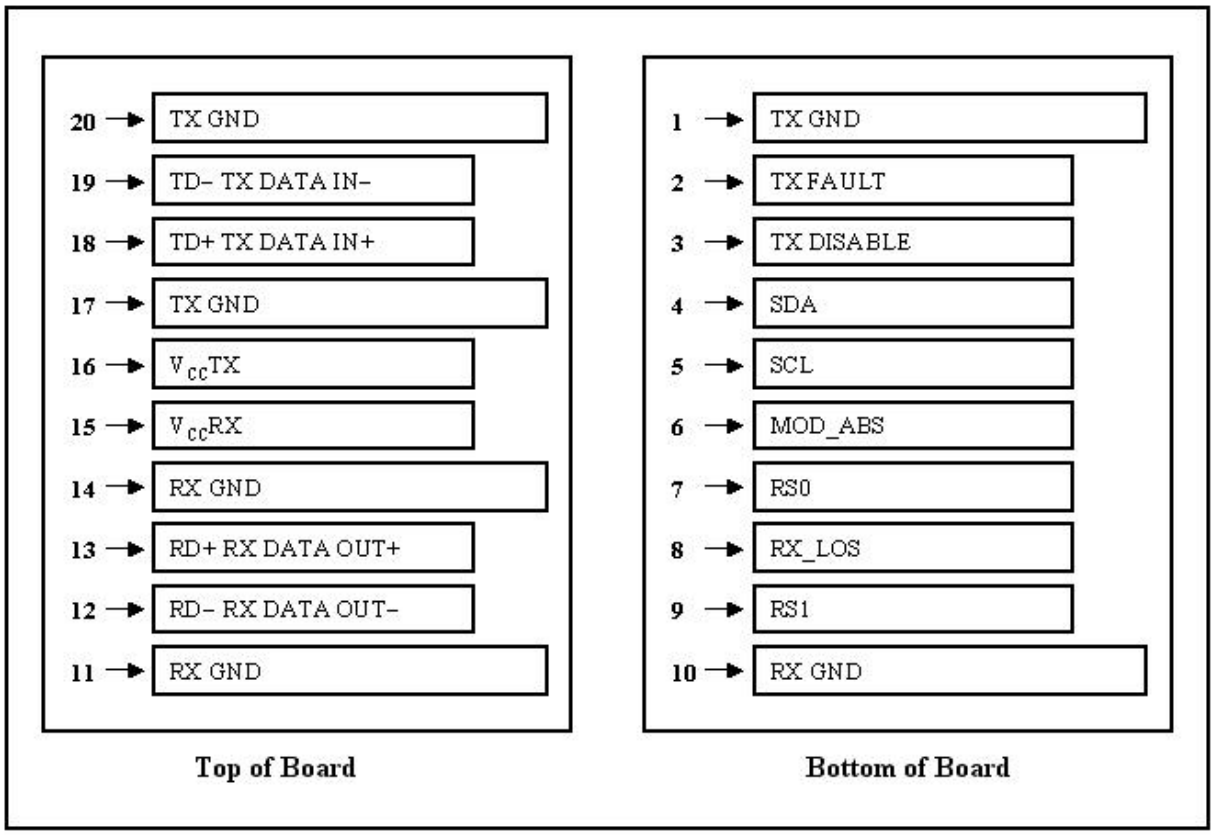
Pads and Vias are Chassis Ground, 11 Places

Through Holes are Unplated



**Electrical Pad Layout**



## Pin Assignment

| *PIN #* | *Symbol* | *Description* | *Remarks* |
|---|---|---|---|
| 1 | VEET | Transmitter ground (common with receiver ground) | Circuit ground is isolated from chassis ground |
| 2 | TFAULT | Transmitter Fault | |
| 3 | TDIS | Transmitter Disable. Laser output disable on high or open | Disabled: TDIS>2V or open<br>Enabled: TDIS<0.8V |
| 4 | MOD_DEF (2) | Module Definition 2. Data Line for Serial ID | Should Be pulled up with 4.7k – 10k ohm on host board to a voltage between 2V and 3.6V |
| 5 | MOD_DEF (1) | Module Definition 1. Data Line for Serial ID | |
| 6 | MOD_DEF (0) | Module Definition 0. Data Line for Serial ID | |
| 7 | RS | No Connection required | |
| 8 | LOS | Loss of Signal indication | Not Supported |
| 9 | VEER | Receiver ground (common with transmitter ground) | Circuit ground is isolated from chassis ground |
| 10 | VEER | Receiver ground (common with transmitter ground) | |
| 11 | VEER | Receiver ground (common with transmitter ground) | |
| 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) | Circuit ground is isolated from chassis ground |
| 15 | VCCR | Receiver power supply | |
| 16 | VCCT | Transmitter power supply | |
| 17 | VEET | Transmitter ground (common with receiver ground) | Circuit ground is connected to chassis ground |
| 18 | TD+ | Transmitter Non-inverted DATA out. AC coupled | |
| 19 | TD- | Transmitter Inverted DATA out. AC coupled | |
| 20 | VEET | Transmitter ground (common with receiver ground) | Circuit ground is connected to chassis ground |

**References**

1. IEEE standard 802.3. IEEE Standard Department, 2005.

2. Small Form Factor Pluggable (SFP) Transceiver Multi-Source Agreement (MSA), September 2000.