

The GigaTech Products **1200485G1-GT** is programmed to be fully compatible and functional with all intended ADTRAN switching devices. This SFP module is based on the Gigabit Ethernet IEEE 802.3 and 1000Base-T 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 100 meters.

## Features:

- Up to 1.25GBd bi-directional data links
- Hot-pluggable SFP footprint
- Support 1000Base-T full duplex default
- Support 10/100/1000Base-T operation in host with SGMII
- RJ-45 Connectors
- Auto-sense MDI/MDIX
- Up to 100M over copper wire cabling
- Single power supply 3.3V
- Operating temperature range  
C-Temp: 0°C to 70°C



## Compliance:

- IEEE 802.3z, IEEE 802.3u, IEEE802.3ab
- SFP MSA SFF-8472
- RoHS

## Applications

- 1.25GBd Gigabit Ethernet

## Warranty:

GigaTech Branded Optical Transceivers- Lifetime Warranty

## General Specifications

| Parameter           | Symbol             | Min  | Typ | Max               | Unit | Remarks                  |
|---------------------|--------------------|------|-----|-------------------|------|--------------------------|
| Data Rate           | DR                 | 10   |     | 1000              | Mb/s | IEEE 802.3               |
| Cable Length        | CL                 |      |     | 100               | M    |                          |
| Bit Error Rate      | BER                |      |     | 10 <sup>-12</sup> |      |                          |
| Input Voltage       | V <sub>CC</sub>    | 3.13 | 3.3 | 3.47              | V    |                          |
| Maximum Voltage     | V <sub>MAX</sub>   | -0.5 |     | 4                 | V    | Electric Power Interface |
| Supply Current      | I <sub>S</sub>     |      | 320 | 375               | mA   | Electric Power Interface |
| Surge Current       | I <sub>SURGE</sub> |      |     | 30                | mA   | Hot Plug                 |
| Storage Temperature | T <sub>STO</sub>   | -40  |     | 85                | °C   | Ambient Temperature      |

**Note:** 10/100/1000M operation requires the host system to have an SGMII interface with no clock. With a SERDES interface, this transceiver will operate at 1000M only.

## High Speed Electrical Interface Host- SFP

| Parameter                   | Symbol               | Min | Typ | Max  | Unit | Remarks                |
|-----------------------------|----------------------|-----|-----|------|------|------------------------|
| Differential Input Voltage  | V <sub>INDIFF</sub>  | 250 |     | 1200 | mV   | Differential peak-peak |
| Differential Output Voltage | V <sub>OUTDIFF</sub> | 350 |     | 800  | mV   | Differential peak-peak |
| Rise/Fall Time              | T <sub>R-F</sub>     |     | 175 |      | psec | 20% - 80%              |
| Tx Input Impedance          | Z <sub>IN</sub>      |     | 50  |      | Ohm  | Single ended           |
| Rx Output Impedance         | Z <sub>OUT</sub>     |     | 50  |      | Ohm  | Single ended           |

## High Speed Electrical Interface Transmission Line- SFP

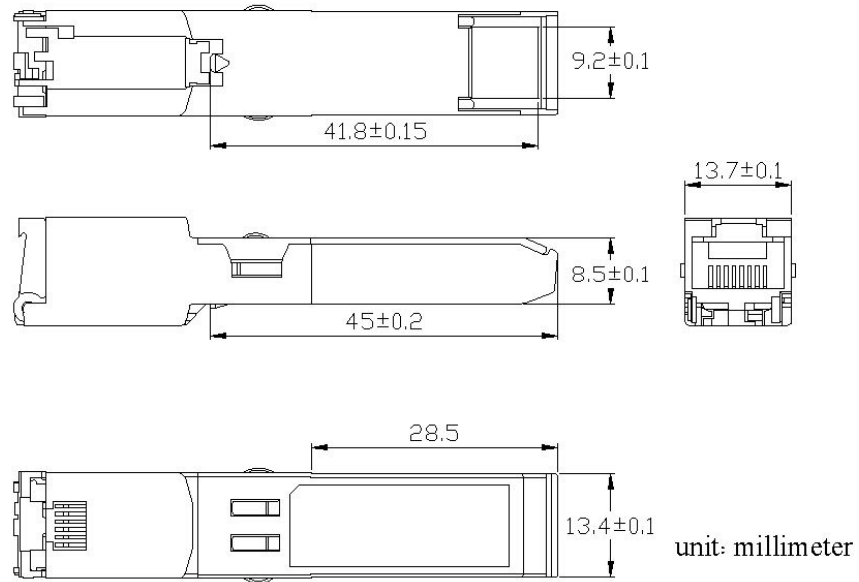
| Parameter           | Symbol           | Min | Typ | Max | Unit | Remarks          |
|---------------------|------------------|-----|-----|-----|------|------------------|
| Line Frequency      | F <sub>L</sub>   |     | 125 |     | MHz  | 5-level encoding |
| Tx Input Impedance  | Z <sub>IN</sub>  |     | 100 |     | Ohm  | 1MHz - 125MHz    |
| Rx Output Impedance | Z <sub>OUT</sub> |     | 100 |     | Ohm  | 1MHz - 125MHz    |

## Low Speed Electrical Signal (External 4.7 - 10k ohm pull-up resistor required)

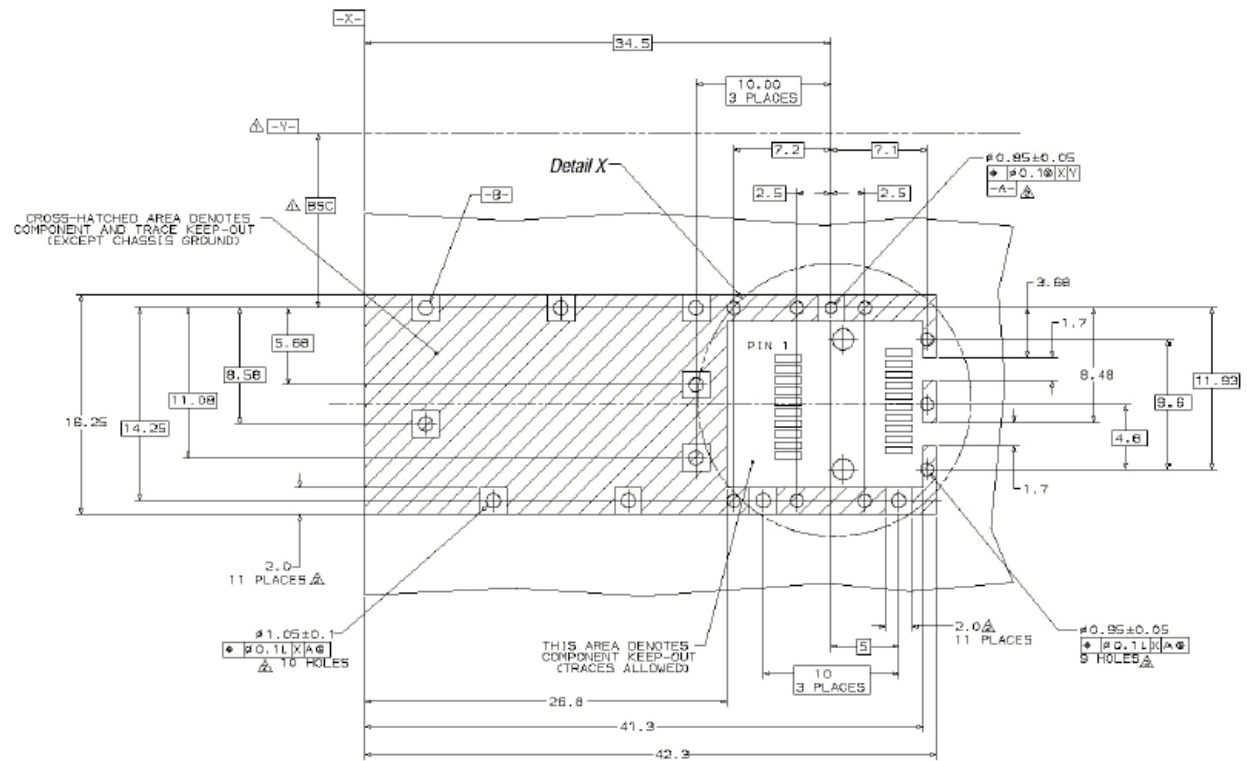
| Parameter       | Symbol                     | Min                       | Typ | Max                       | Unit | Remarks |
|-----------------|----------------------------|---------------------------|-----|---------------------------|------|---------|
| SFP Output Low  | V <sub>OL</sub>            | 0                         |     | 0.5                       | V    | Note 1  |
| SFP Output High | V <sub>OH</sub>            | Host_V <sub>CC</sub> -0.5 |     | Host_V <sub>CC</sub> +0.3 | V    | Note 1  |
| SFP Input Low   | V <sub>IL</sub>            | 0                         |     | 0.8                       | V    | Note 1  |
| SFP Input High  | I <sub>H<sub>L</sub></sub> | 2                         |     | V <sub>CC</sub> +0.3      | V    | Note 1  |

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

## Dimensions



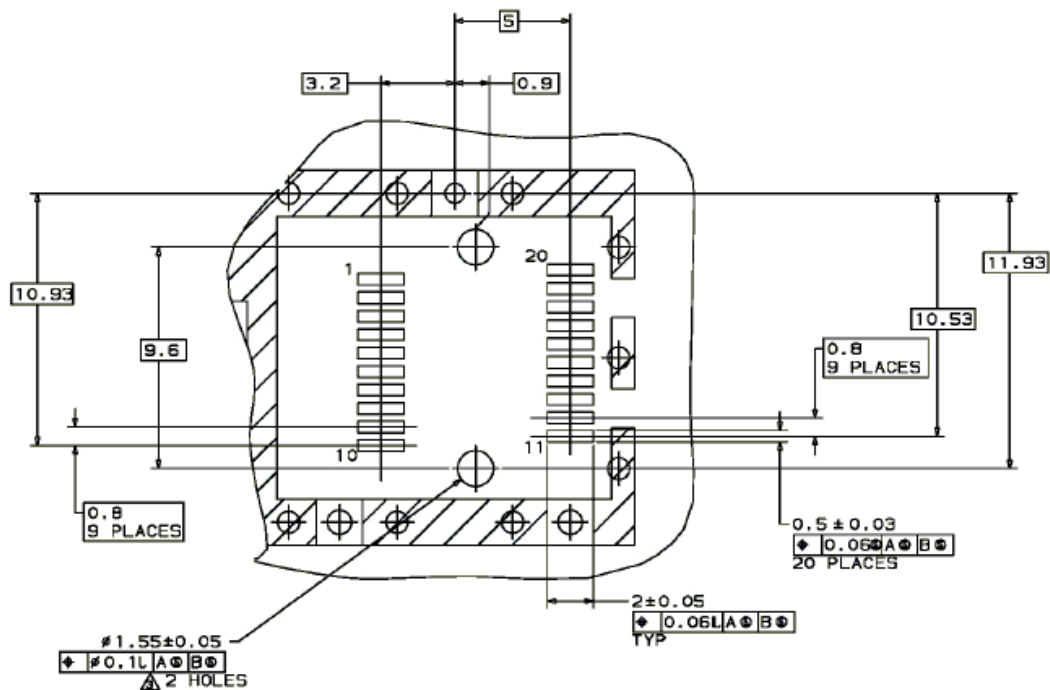
## PCB Layout Recommendation



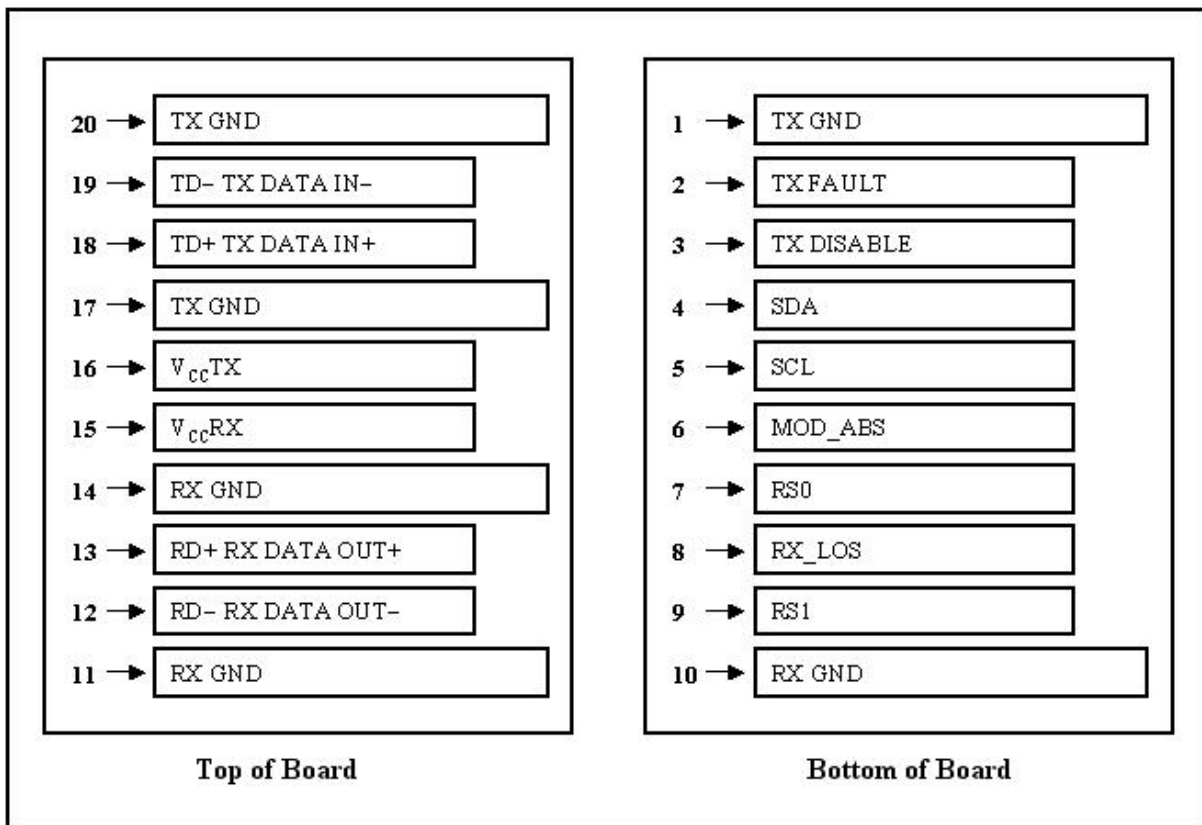
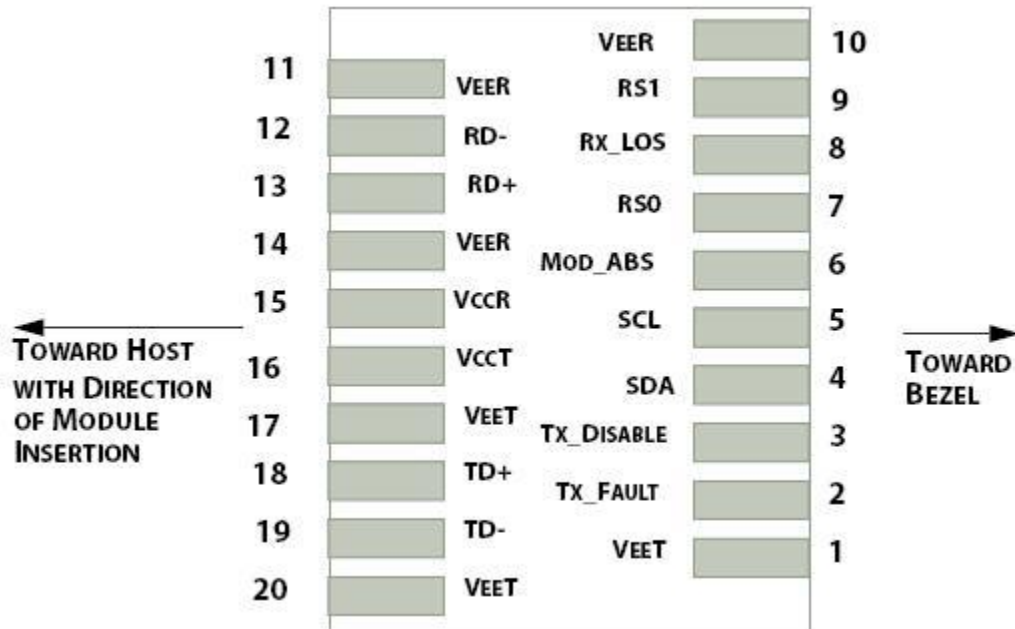
△ Datum and Basic Dimension Established by Customer

△ Pads and Vias are Chassis Ground, 11 Places

△ Through Holes are Unplated



## Electrical Pad Layout



## Pin Assignment

| <i><b>PIN #</b></i> | <i><b>Symbol</b></i> | <i><b>Description</b></i>                                 | <i><b>Remarks</b></i>                                                                  |
|---------------------|----------------------|-----------------------------------------------------------|----------------------------------------------------------------------------------------|
| 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, 2002.
2. Small Form Factor Pluggable (SFP) Transceiver Multi-Source Agreement (MSA), September 2000.
3. Marvell Corporation – Alaska Ultra 88E1111 Integrated 10/100/1000 Gigabit Ethernet Transceiver