

SFP+RJ10

SFP Copper Module

10G Copper SFP+ RJ45 30M



Features

- Up to 10Gb/s bi-directional data links
- Access to physical layer IC via 2-wire serial bus
- Compact RJ-45 connector assembly
- Hot-pluggable SFP+ footprint
- Supports Links up to 30m using Cat 6a/7 Cable
- Fully metallic enclosure for low EMI
- Low power dissipation
- Compatible with RoHS
- Operating case temperature: 0 to +70° C

Application

- 10 Gigabit Ethernet over Cat 6a/7 cable

Description

SFP-10G-T Copper Small Form Pluggable (SFP) transceivers are high performance, cost effective module compliant with the 10G Ethernet and 10GBASE-T standards as specified in IEEE 802.3az, which supporting 10Gbps data- rate up to 30 meters reach over unshielded twisted-pair category 6a/7 cables. The module provides standard serial ID information compliant with SFP+ MSA, which can be accessed with address of A0h via the 2wire serial EEPROM protocol. The physical IC can also be accessed via 2wire serial bus at address A0h.

Cable Length

| Standard | Cable | Reach | Host Port |
|-----------|-------|-------|-----------|
| 10Gbase-T | CAT6A | 30m | XFI |

Specification

| +3.3V Volt Electrical Power Interface | | | | | | |
|---------------------------------------|--------|--------------------------|---------|------|------|---|
| Parameter | Symbol | Min | Typical | Max | Unit | Notes |
| Input Voltage | Vcc | 3.13 | 3.3 | 3.47 | V | |
| Supply Current | Icc | | 700 | 900 | mA | 3.0W max power over full range of voltage and temperature. See caution note below |
| Maximum Voltage | Vmax | -0.3 | | 4.0 | V | |
| Surge Current | Surge | | TBD | | mA | |
| Current | | current See caution note | | | | |

Notes:

1. Power consumption and surge current are higher than the specified values in the SFP MSA.

| Low-Speed Signals Electronic Characteristics | | | | | | |
|--|---------|-------------------|---------|-------------------|------|-----------------------------------|
| Parameter | Symbol | Min | Typical | Max | Unit | Notes |
| SFP Output LOW | VOL | 0 | | 0.5 | V | 4.7k to 10k pull-up to host_ Vcc. |
| SFP Output HIGH | VOH | host_Vc c -0.5 | | host_V cc +0.3 | V | 4.7k to 10k pull-up to host_ Vcc. |
| SFP Input LOW | VIL | 0 | | 0.8 | V | 4.7k to 10k pull-up to host_ Vcc. |
| SFP Input HIGH | VIH | 2 | | Vcc + 0.3 | V | 4.7k to 10k pull-up to host_ Vcc. |
| High-Speed Electrical Interface, Transmission Line-SFP | | | | | | |
| Parameter | Symbol | Min | Typical | Max | Unit | Notes |
| Line Frequency | fL | | 125 | | MHz | 5-level encoding, per IEEE 802.3 |
| Tx Output Impedance | Zout,TX | | 100 | | Ohm | Differential |
| Rx Input Impedance | Zin,RX | | 100 | | Ohm | Differential |

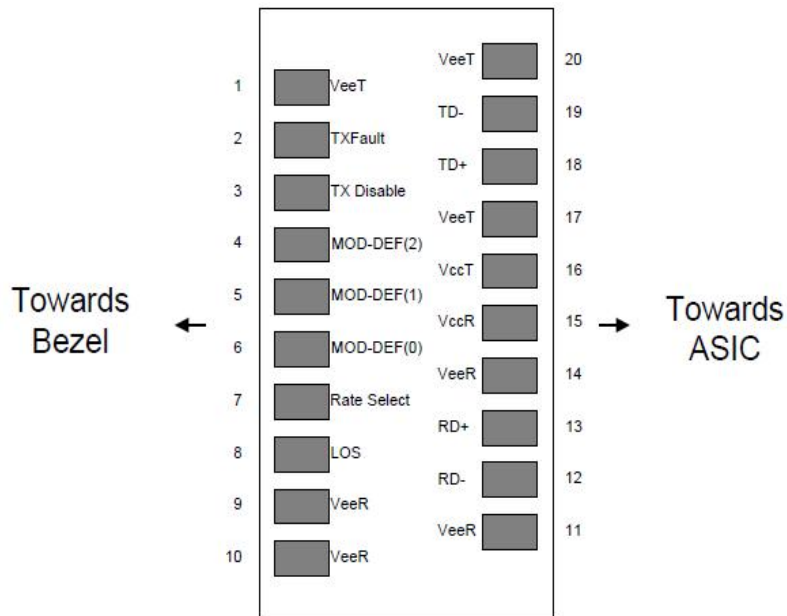
| High-Speed Electrical Interface, Transmission Line-SFP | | | | | | |
|--|----------|-----|-----|------|-----|--------------|
| Single Ended Data Input Swing | Vinsing | 250 | | 1200 | mV | Single ended |
| Single Ended Data Output Swing | Voutsing | 350 | | 800 | mV | Single ended |
| Rise/Fall Time | Tr,Tf | | 175 | | ps | 20%-80% |
| Tx Input Impedance | Zin | | 50 | | Ohm | Single ended |
| Rx Output Impedance | Zout | | 50 | | Ohm | Single ended |

| General Specifications | | | | | | |
|-----------------------------|--------|-----|---------|---------|------|-----------------------|
| Parameter | Symbol | Min | Typical | Max | Unit | Notes |
| Data Rate | BR | 10 | | 1000 | Mb/s | IEEE 802.3 compatible |
| Storage temperature | TS | -40 | | 85 | °C | Case temperature |
| Operating temperature range | Top | 0 | | 60 | °C | Ambient temperature |
| I 2C Clock Rate | | 0 | | 200,000 | Hz | |

Notes:

- 1) Clock tolerance is +/- 50 ppm.
- 2) By default, the 10G Copper SFP is a full duplex device in preferred master mode.
- 3) Automatic crossover detection is enabled. External crossover cable is not required.
- 4) By default, 1000 GBASE-T operation requires the host system to have an SERDES interface with no clocks.

Pin Definitions



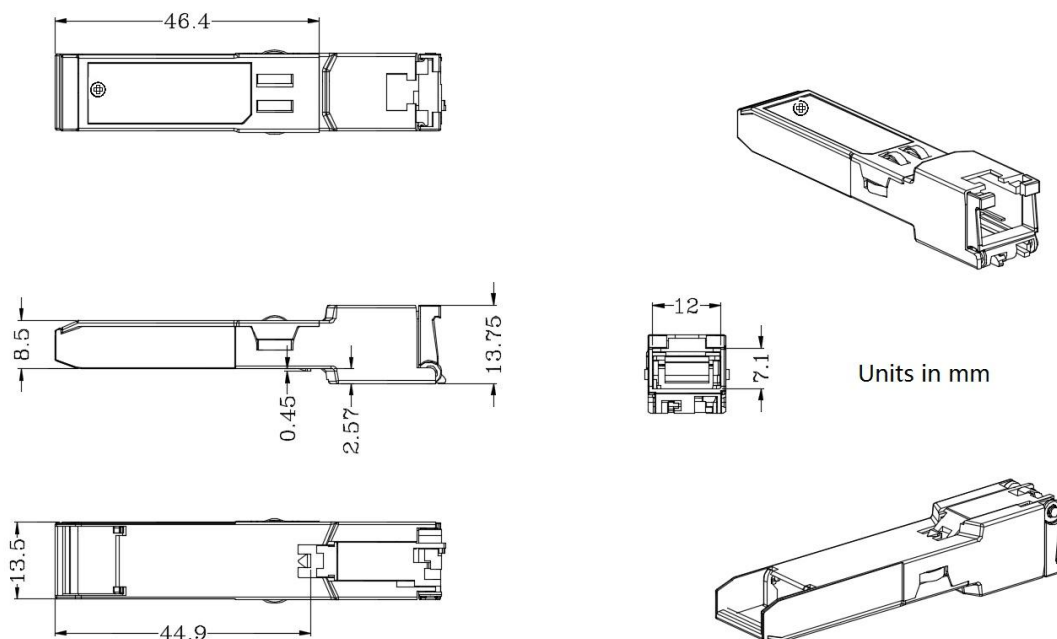
As Viewed Through Top of Board

| Pin | Symbol | Function/Description | Ref. |
|-----|-------------|---|------|
| 1 | VeeT | Transmitter Ground | 1 |
| 2 | TX Fault | Transmitter Fault Indication | |
| 3 | TX Disable | Transmitter Disable-Module disables on high or open | |
| 4 | MOD-DEF2 | Module Definition 2-Two wire serial ID interface | 2 |
| 5 | MOD-DEF1 | Module Definition 1-Two wire serial ID interface | 2 |
| 6 | MOD-DEF0 | Module Definition 0-Two wire serial ID interface | 2 |
| 7 | Rate Select | Not Connected | |
| 8 | LOS | Loss of Signal | 3 |
| 9 | VeeR | Receiver Ground | 1 |
| 10 | VeeR | Receiver Ground | 1 |
| 11 | VeeR | Receiver Ground | 1 |
| 12 | RD- | Inverse Received Data out | |
| 13 | RD+ | Received Data out | |
| 14 | VeeR | Receiver Ground | 1 |
| 15 | VccR | Receiver Power | |
| 16 | VccT | Transmitter Power | |
| 17 | VeeT | Transmitter Ground | 1 |
| 18 | TD+ | Transmitter Non-Inverted Data In | |
| 19 | TD- | Transmitter Inverted Data In | |
| 20 | VeeT | Transmitter Ground | 1 |

Notes:

- 1) Circuit ground is connected to chassis ground.
- 2) Should be pulled up with 4.7k - 10k Ohms on host board to a voltage between 2.0 V and 3.6 V. MOD_DEF (0) pulls line low to indicate module is plugged in.
- 3) LVTTTL compatible with a maximum voltage of 2.5V.

Mechanical Dimensions



Ordering information

| Model No. | Product Description |
|-----------|--------------------------------|
| SFP+RJ10 | 10G, RJ45, Copper SFP+, 0~70°C |