

10/100BASE-T Copper SFP Transceiver SFP-100BASE-Tx

1.PRODUCT FEATURES

- Support 10base-T / 100base-Tx
- Hot-pluggable SFP footprint
- Compact RJ-45 connector assembly
- RoHS compliant and lead-free
- Single +3.3V power supply
- 10/100base-Tx Fast Ethernet over Cat 5 cable
- Ambient Operating temperature: -40°C to +85°C



2.PRODUCT DESCRIPTION

SFP-100BASE-Tx Copper Small Form Pluggable (SFP) transceivers are based on the SFP Multi Source Agreement (MSA) . They are compatible with the 10base-T / 100base-Tx standards as specified in IEEE Std 802.3 . SFP-100BASE-T uses the SFP's RX_LOS pin for link indication. If pull up SFP's TX_DISABLE pin, SWITCH IC be reset.

3. Cable Length

| Line Side | Cable | Reach | Host Interface |
|------------|-------|-------|----------------|
| 10base-T | CAT5 | 200m | 100base-FX |
| 100base-Tx | CAT5 | 100m | 100base-FX |

4.SFP to Host Connector Pin Out

| Pin | Symbol | Name/Description | Ref. |
|-----|-------------|---|------|
| 1 | VEET | Transmitter Ground (Common with Receiver Ground) | 1 |
| 2 | TFAULT | Transmitter Fault. Not supported. | |
| 3 | TDIS | Transmitter Disable. Laser output 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 | High indicates no linked. low indicates linked. | 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 $T_{DIS} > 2.0V$ or open, enabled on $T_{DIS} < 0.8V$
3. 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.
4. LVTTTL compatible with a maximum voltage of 2.5V.

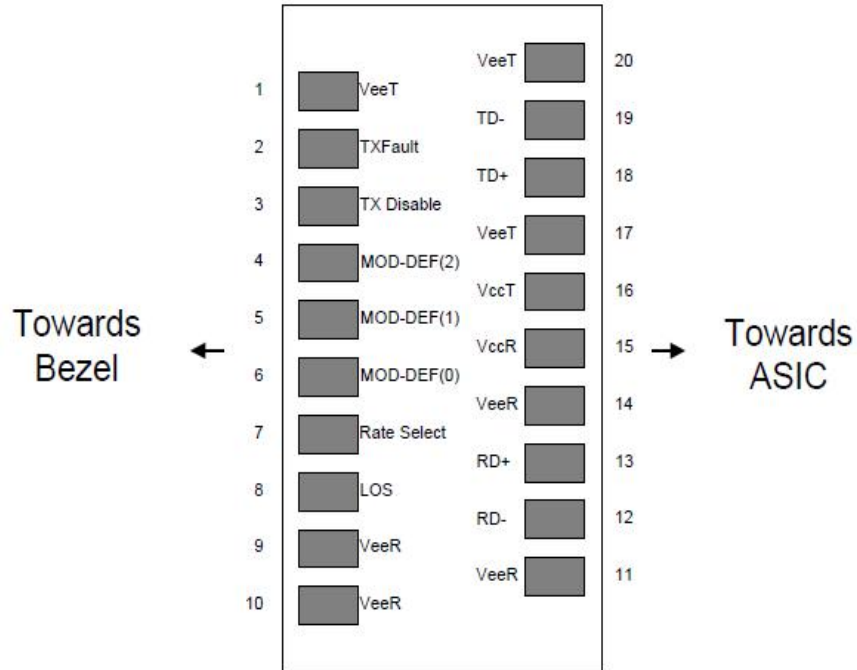


Figure 1. Diagram of host board connector block pin numbers and names

5. +3.3V Volt Electrical Power Interface

The SFP-100BASE-Tx has an input voltage range of 3.3 V +/- 5%. The 4V maximum voltage is not allowed for continuous operation.

| +3.3 Volt Electrical Power Interface | | | | | | |
|--------------------------------------|--------|------|-----|------|------|---|
| Parameter | Symbol | Min | Typ | Max | unit | Notes/Conditions |
| Supply Current | Is | | - | 300 | mA | 1.0W max power over full range of voltage and temperature. See caution note below |
| Input Voltage | Vcc | 3.13 | 3.3 | 3.47 | V | Referenced to GND |
| Maximum Voltage | Vmax | | | 4 | V | |
| Surge Current | Isurge | | TBD | | mA | Hot plug above steady state current. See caution note below |

Caution: Power consumption and surge current are higher than the specified values in the SFP MSA

6. Low-Speed Signals

MOD_DEF(1) (SCL) and MOD_DEF(2) (SDA), are open drain CMOS signals (see section VII, "Serial Communication Protocol"). Both MOD_DEF(1) and MOD_DEF(2) must be pulled up to host_Vcc

| Low-Speed Signals, Electronic Characteristics | | | | | |
|---|--------|---------------|----------------|------|---|
| Parameter | Symbol | Min | Max | unit | Notes/Conditions |
| SFP Output LOW | VOL | 0 | 0.5 | V | 4.7k to 10k pull-up to host_Vcc, measured at host side of connector |
| SFP Output HIGH | VOH | host_Vcc -0.5 | host_Vcc + 0.3 | V | 4.7k to 10k pull-up to host_Vcc, measured at host side of connector |
| SFP Input LOW | VIL | 0 | 0.8 | V | 4.7k to 10k pull-up to Vcc, measured at SFP side of connector |
| SFP Input HIGH | VIH | 2 | Vcc + 0.3 | V | 4.7k to 10k pull-up to Vcc, measured at SFP side of connector |

7.High-Speed Electrical Interface

All high-speed signals are AC-coupled internally.

| High-Speed Electrical Interface, Transmission Line-SFP | | | | | | |
|--|--------------------------------|-----|-----|------|------|---|
| Parameter | Symbol | Min | Typ | Max | unit | Notes/Conditions |
| Line Frequency | fL | | 125 | | MHz | 5-level encoding, per IEEE 802.3 |
| Tx Output Impedance | Zout,TX | | 100 | | Ohm | Differential, for all frequencies between 1MHz and 125MHz |
| Rx Input Impedance | Zin,RX | | 100 | | Ohm | Differential, for all frequencies between 1MHz and 125MHz |
| High-Speed Electrical Interface, Host-SFP | | | | | | |
| Parameter | Symbol | Min | Typ | Max | unit | Notes/Conditions |
| 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 | T _r ,T _f | | - | | psec | 20%-80% |
| Tx Input Impedance | Zin | | 50 | | Ohm | Single ended |
| Rx Output Impedance | Zout | | 50 | | Ohm | Single ended |

8.General Specifications

| General | | | | | | |
|-----------|--------|-----|-----|-----|--------|---|
| Parameter | Symbol | Min | Typ | Max | unit | Notes/Conditions |
| Data Rate | BR | 10 | | 100 | Mb/sec | IEEE 802.3 compatible. See Notes 1,2 below |

Notes:

1. Clock tolerance is +/- 50 ppm

9.Environmental Specifications

Automatic crossover detection is enabled. External crossover cable is not required

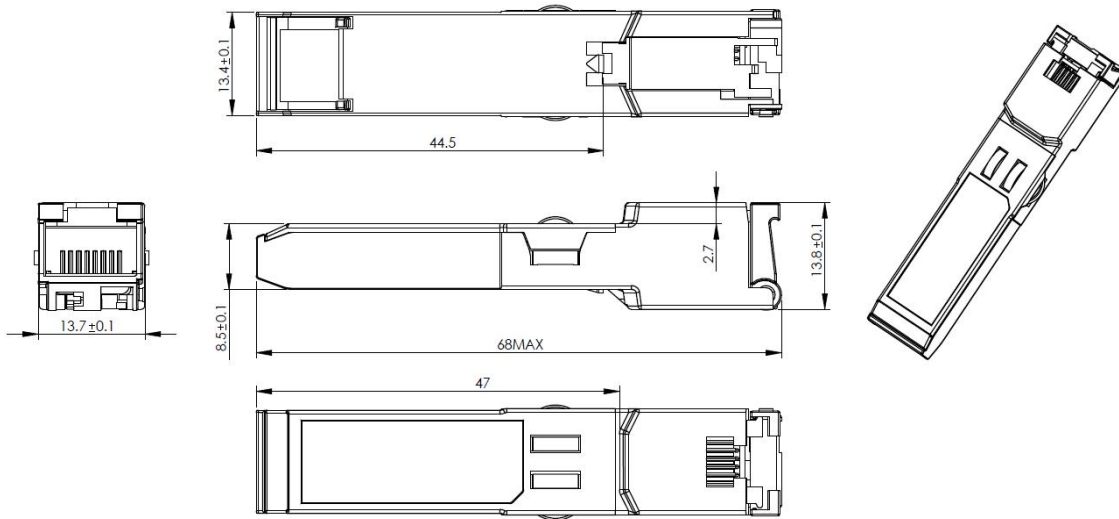
| ENVIRONMENT SPECIFICATION | | | | | | |
|---------------------------|--------|-----|-----|-----|------|---------------------|
| Parameter | Symbol | Min | Typ | Max | unit | Notes/Conditions |
| Operating Temperature | Top | -40 | | 85 | °C | Case temperature |
| Storage Temperature | Tsto | -40 | | 85 | °C | Ambient temperature |

10. Serial Communication Protocol

All WINTOP SFPs support the 2-wire serial communication protocol outlined in the SFP MSA. These SFPs use an MCU, can be accessed with address of A0h.

| Serial Bus Timing, Requirements | | | | | | |
|---------------------------------|--------|-----|-----|---------|------|------------------|
| Parameter | Symbol | Min | Typ | Max | unit | Notes/Conditions |
| I ² C Clock Rate | | 0 | | 200,000 | Hz | |

11. Mechanical Specifications (Unit:mm)



12. Ordering information

| Part Number | Description |
|-------------|--|
| OT-SFP-FE-T | 10/100Mbps, Copper SFP with spring latch |

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