



Epic 10/100/1000BASE-T SFP Transceiver



Description

GLC-T 10/100/1000BASE-T Copper Small Form Pluggable (SFP) is based on the SFP Multi Source Agreement (MSA). It is compatible with the Gigabit Ethernet and 10/100/1000BASE-T standards as specified in IEEE Std 802.3

ALL OF OUR TRANSCEIVERS ARE TIER 1 LASERS, MANUFACTURED TO OEM SPECIFICATIONS, ROHS (LEAD FREE), TAA COMPLIANT AND COMPLIANT WITH THE SFP MSA (MULTISOURCE AGREEMENT) AND COME WITH A LIFETIME WARRANTY.

Features

- Support 10/100/1000BASE-T operation in host systems with SGMII interface.
- Up to 1.25Gbps bi-direction data links.
- Hot-pluggable SFP footprint.
- Fully metallic enclosure for low EMI.
- Low power dissipation (1.05 W typical).
- Compact RJ-45 connector assembly.
- 100m transmission over unshielded twisted pair(UTP) Category 5 Cable
- Access to physical layer IC via 2-wire serial bus

Applications

- LAN 1000Base-T.
- 1.25 Gigabit Ethernet over Cat 5 cable.
- Switch to switch interface.
- Router/Server interface.

Absolute Maximum Ratings

| Parameter | Symbol | Min. | Typ | Max. |
|------------------------|--------|------|-----|------|
| Maximum Supply Voltage | Vcc | -0.5 | | 4.0 |
| Storage Temperature | Vcc | -40 | | 85 |

Normal Operating Conditions

| Parameter | Symbol | Min. | Typical | Max. | Unit |
|-----------------------|--------|------|---------|------|------|
| Operating Temperature | Top | 0 | | 70 | °C |
| Supply Voltage | Vcc | 3.14 | 3.3 | 3.46 | V |

Electrical Characteristics

| Parameter | Symbol | Min. | Typical | Max. | Unit | Notes/Conditions |
|---|-----------------------|----------------|---------|----------------|------|---|
| +3.3 Volt Electrical Power Interface | | | | | | |
| Supply Current | Icc | | 300 | 3350 | mA | |
| Input Voltage | Vcc | 3.13 | 3.3 | 3.47 | V | |
| Surge Current | I _{surge} | | | 30 | mA | |
| Low-Speed Signals, Electronic Characteristics | | | | | | |
| 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. |
| High-Speed Electrical Interface, Transmission Line-SFP | | | | | | |
| Line Frequency | fL | | 125 | | MHz | 5-level encoding, per IEEE 802.3 |
| Tx Output Impedance | Z _{out} , Tx | | 100 | | Ohm | Differential, for all frequencies between 1 MHz and 125MHz |
| Rx Input Impedance | Z _{in} , RX | | 100 | | Ohm | Differential, for all frequencies between 1 MHz and 125MHz |

Electrical Characteristics

| Parameter | Symbol | Min. | Typical | Max. | Unit | Notes/Conditions |
|--|--------|------|---------|------|------|------------------|
| High-Speed Electrical Interface, Host-SFP | | | | | | |
| Single ended data input swing | Vin | 250 | | 1200 | mV | Single Ended |
| Single ended data output swing | Vout | 350 | | 800 | mV | Single Ended |
| Rise/Fall Time | Tr, Tf | | 175 | | psec | 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/Conditions |
|-----------|--------|------|---------|------|------|---|
| Datarate | | 10 | | 1000 | Mbps | |
| Distance | | | | 100 | m | Category 5 UTP. BER <10 ⁻¹² |

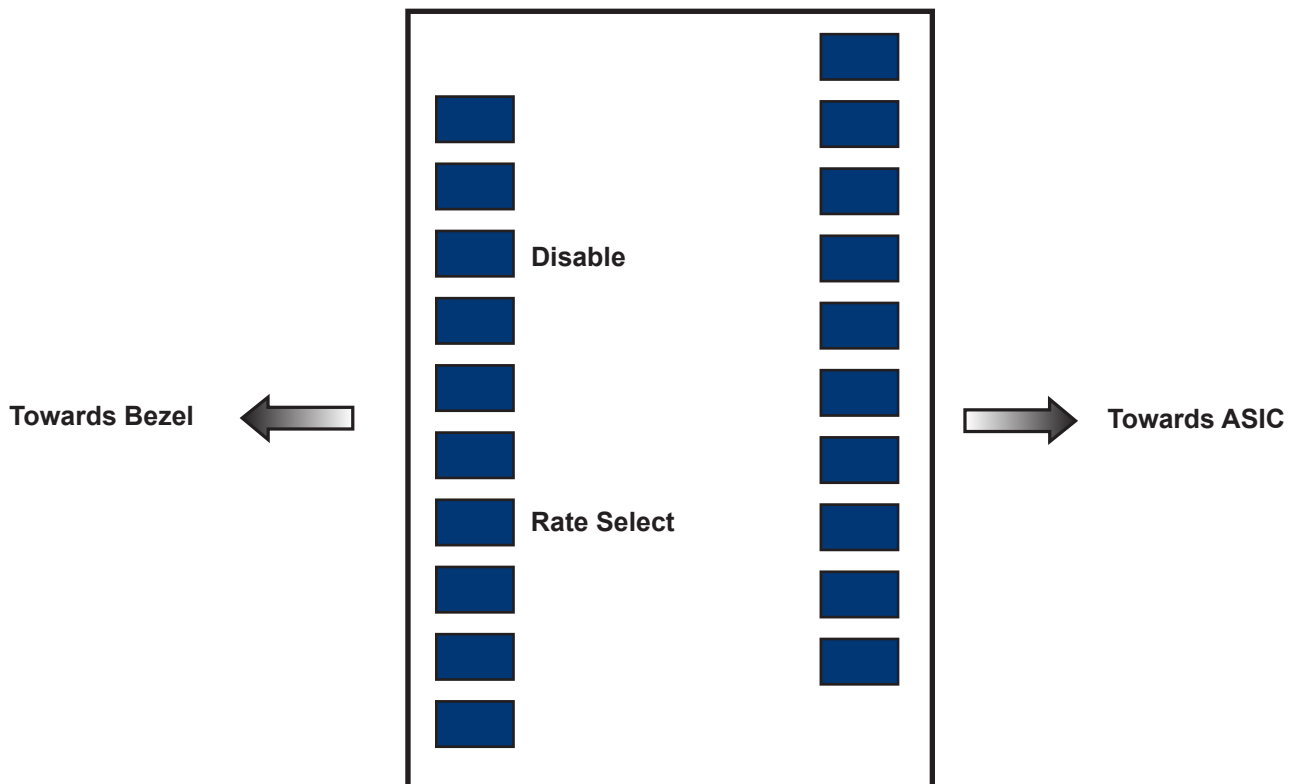
Pin Function Definitions

| Pin Number | Name | Function | Plug Seq. | Notes |
|------------|-------------|------------------------------|-----------|------------------------|
| 1 | Vee T | Transmitter Ground | 1 | |
| 2 | TX Fault | Transmitter Fault Indication | 3 | Not used |
| 3 | TX Disable | Transmitter Disable | 3 | 1 |
| 4 | MOD-DEF2 | Module Definition 2 | 3 | 2 |
| 5 | MOD-DEF1 | Module Definition 1 | 3 | 2 |
| 6 | MOD-DEF0 | Module Definition 0 | 3 | 2 |
| 7 | Rate Select | Not Connect | 3 | Function not available |
| 8 | LOS | Loss of Signal | 3 | Not used |
| 9 | VeeR | Receiver Ground | 1 | |
| 10 | VeeR | Receiver Ground | 1 | |
| 11 | VeeR | Receiver Ground | 1 | |
| 12 | RD- | Inv. Received Data Out | 3 | |
| 13 | RD+ | Received Data Out | 3 | |
| 14 | VeeR | Receiver Ground | 1 | |
| 15 | VccR | Receiver Power | 2 | |
| 16 | VccT | Transmitter Power | 2 | |
| 17 | VeeT | Transmitter Ground | 1 | |
| 18 | TD+ | Transmit Data In | 3 | |
| 19 | TD- | Inv. Transmit Data In | 3 | |
| 20 | VeeT | Transmitter Ground | 1 | |

Notes:

- 1) PHY disabled on TDIS > 2.0V or open, enabled on TDIS < 0.8V, used to reset the module.
- 2) 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.

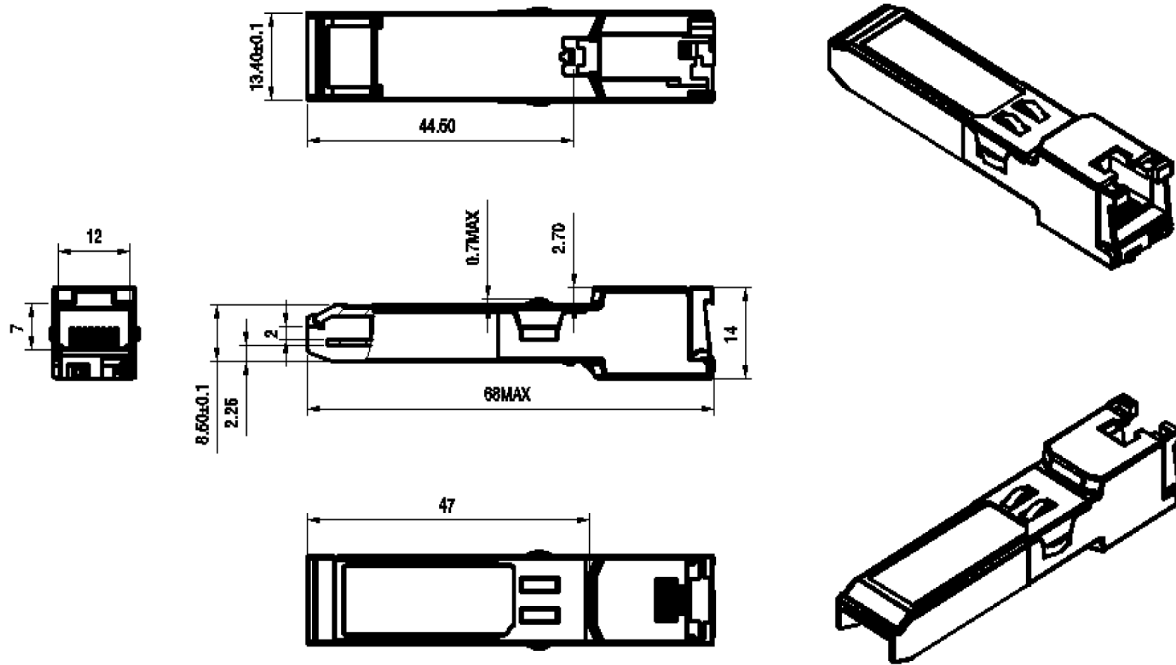
SFP Transceiver Electrical Pad Layout



Serial Communication Protocol

The GLC-T Copper SFP supports the 2-wire serial communication protocol outlined in the SFP MSA. This SFP uses a 128 byte EEPROM with an address of A0h. The 10/100/1000BASE-T physical layer IC can also be accessed via the 2-wire serial bus at address ACh.

Mechanical Specifications



Ordering Information

| Pin Number | Data Rate | Link type | Distance | Connector |
|------------|--------------|-----------|----------|-----------|
| GLC-T | 10/100/1000M | Cat 5 | 100m | RJ45 |