**longline**

# 1000BASE-T SFP Copper RJ-45 100m Transceiver

DGS-712-LL

## Application

- LAN 1000Base-T
- Gigabit Ethernet over Cat 5/5e/6 Cable
- Switch to Switch Interface
- Router/Server Interface

## Features

- Support 1000BASE-T Operation in Host Systems
- Support RX_LOS as Link indication function
- For 100m Reach Over UTP Cat 5/5e/6 Cable
- Hot-Pluggable SFP Footprint

- Fully Metallic Enclosure for Low EMI
- Low Power Dissipation (1.05W Typical)
- Compact RJ-45 Connector Assembly
- Access to Physical Layer IC via 2-Wire Serial Bus

- Detailed Product Information in EEPROM
- Compliant with MSA SFP
- Industrial Temperature Range:
  -40 to 85°C (-40 to 185°F)
- Commercial Temperature Range：
  0~70°C
- Compliant with IEEE Std 802.3-2002

## Description

SFP-GB-GE-T 1000BASE-T Copper Small Form Pluggable (SFP) modules are based on the SFP Multi Source Agreement (MSA). It is compliant with the Gigabit Ethernet and 1000BASE-T standards as specified in IEEE STD 802.3 and 802.3ab.

## Product Specifications

### I. General Specifications

| Parameter | Symbol | Typ. | Min | Max | Units | Notes |
|-----------|--------|------|-----|-----|-------|-------|
| Data rate | | 1000 | | | Mbps | |
| Distance | | | | 100 | m | Cat 5/5e/6 |

### II. Absolute Maximum Ratings

| Parameter | Symbol | Min | Typ. | Max | Unit |
|-----------|--------|-----|------|-----|------|
| Maximum Supply Voltage | Vcc | -0.5 | | 4.0 | V |
| Storage Temperature | Ts | 0 | | 70 | °C |

### III. Electrical Characteristics

| Parameter | Symbol | Typ. | Min | Max | Unit | Notes/Conditions |
|-----------|--------|------|-----|-----|------|------------------|
| **+3.3 Volt Electrical Power Interface** | | | | | | |
| Supply Current | Icc | | 300 | 350 | mA | |
| Input Voltage | Vcc | 3.13 | 3.3 | 3.47 | V | |
| Surge Current | Isurge | | | 30 | mA | |
| **Low-Speed Signals, Electronic Characteristics** | | | | | | |
| SFP Output LOW | $V_{OL}$ | 0 | | 0.5 | V | 4.7k to 10k pull-up to host_Vcc, measured at host side of connector |

| | | | | | | |
|---|---|---|---|---|---|---|
| **SFP Output HIGH** | V$_{OH}$ | 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** | f$_L$ | | 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

| | | | | | | |
|---|---|---|---|---|---|---|
| **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 |

## IV. Pin Description
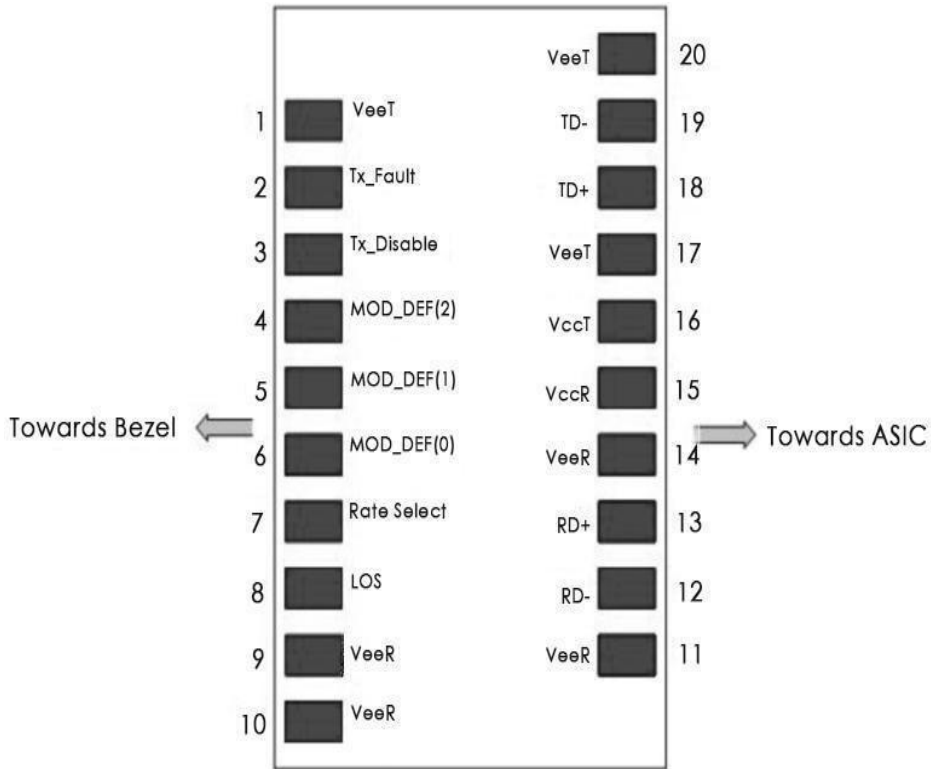


| Pin No. | Name | Function | Plug Seq. | Notes |
|---------|------|----------|-----------|-------|
| 1 | VeeT | Transmitter Ground | 1 | |
| 2 | TX Fault | Transmitter Fault Indication | 3 | Not used |
| 3 | TX Disable | Transmitter Disable | 3 | Note 1 |
| 4 | MOD-DEF2 | Module Definition 2 | 3 | Note 2 |
| 5 | MOD-DEF1 | Module Definition 1 | 3 | Note 2 |
| 6 | MOD-DEF0 | Module Definition 0 | 3 | Note 2 |
| 7 | Rate Select | Not Connected | 3 | |
| 8 | LOS | Receiver Ground | 1 | |

| 9 | VeeR | Receiver Ground | 1 | |
|---|---|---|---|---|
| 10 | VeeR | Receiver Ground | 1 | |
| 11 | RD- | Inv. Received Data Out | 3 | |
| 12 | RD+ | Received Data Out | 3 | |
| 13 | VeeR | Receiver Ground | 1 | |
| 14 | VccR | Receiver Power | 2 | |
| 15 | VccT | Transmitter Power | 2 | |
| 16 | VeeT | Transmitter Ground | 1 | |
| 17 | TD+ | Transmit Data In | 3 | |
| 18 | TD- | Inv. Transmit Data In | 3 | |
| 19 | 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 Ohm 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.

## V. Mechanical Specifications

Longline .COM Copper SFP transceivers are compliant with the dimensions defined by the SFPMulti -Sourcing Agreement (MSA).