

GG-5524-L8C

1.25Gbps GBIC Optical Transceiver, 80km Reach

Features

- ◆ Dual data-rate of 1.25Gbps/1.0625Gbps operation
- ◆ 1550nm DFB laser and PIN photodetector for 80km transmission
- ◆ Duplex SC optical interface
- ◆ Standard serial ID information compatible with SFF-8053
- ◆ +3.3V/5V single power supply
- ◆ RoHS Compliant
- ◆ Operating case temperature: 0 to +70°C



Applications

- ◆ Switch to Switch interface
- ◆ Switched backplane applications
- ◆ Router/Server interface
- ◆ Other optical transmission systems

Description

The GBIC transceiver is high performance, cost effective module supporting dual data-rate of 1.25Gbps/1.0625Gbps and from 40km transmission distance with SMF.

The transceiver consists of two sections: The transmitter section incorporates a DFB laser. And the receiver section consists of a PIN photodiode integrated with a trans-impedance preamplifier (TIA). All modules satisfy class I laser safety requirements.

The optical output can be disabled by a TTL logic high-level input of Tx Disable. Tx Fault is provided to indicate degradation of the laser. Loss of signal (LOS) output is provided to indicate the loss of an input optical signal of receiver.

The standard serial ID information Compatible with GBIC MSA describes the transceiver's capabilities, standard interfaces, manufacturer and other information. The host equipment can access this information via the two-wire serial CMOS EEPROM protocol. For further information, please refer to SFF-8053

Absolute Maximum Ratings

Stress in excess of the maximum absolute ratings can cause permanent damage to the module.

Table 1 - Absolute Maximum Ratings

| Parameter | Symbol | Min | Typical | Max | Unit |
|------------------------|-----------------|-----|---------|-----|------|
| Maximum Supply Voltage | V _{CC} | 0.5 | - | 4.5 | V |
| Storage Temperature | T _S | -40 | - | +85 | °C |
| Relative Humidity | R _H | 0 | - | +85 | % |

Recommended Operating Conditions

Table2 - Recommended Operating Conditions

| Parameter | Symbol | Min | Typical | Max | Unit |
|----------------------------|------------------|-----|---------|-----|------|
| Operating Case Temperature | T _C | 0 | - | +70 | °C |
| Power Supply Voltage | V _{CC} | 3.1 | | 5.5 | v |
| Power Supply Current | I _{CC} | | | 300 | mA |
| Data Rate | Gigabit Ethernet | | 1.25 | | Gbps |
| | Fibre Channel | | 1.0625 | | |

Optical and Electrical Characteristics

GG-5524-L8C: (1550nm DFB and PIN, 80km)

Table3 - Optical and Electrical Characteristics (Operating case temperature TC=25°C, VCC=3.3V)

| Parameter | Symbol | Min. | Typical | Max. | Unit | Notes |
|-------------------------------|---|------|---------|----------------------|------|-------|
| Transmitter | | | | | | |
| Centre Wavelength | λ _C | 1530 | 1550 | 1570 | nm | |
| Spectral Width (-20dB) | σ | | | 1 | nm | |
| Side Mode Suppression Ratio | SMSR | 30 | | | dB | |
| Average Output Power | P _{Out} | 0 | | +5 | dBm | 1 |
| Extinction Ratio | ER | 9 | | | dB | |
| Output Optical Eye | IEEE 802.3z and ANSI Fibre Channel compatible | | | | | 2 |
| Data Input Swing Differential | V _{IN} | 200 | | 2400 | mV | 3 |
| Input Differential Impedance | Z _{IN} | 90 | 100 | 110 | Ω | |
| TX Disable | Disable | 2.0 | | V _{CC} | V | |
| | Enable | 0 | | 0.8 | V | |
| TX Fault | Fault | 2.0 | | V _{CC} +0.3 | V | |

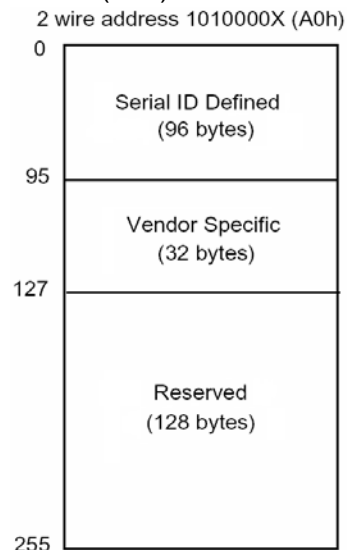
| | | | | | | | |
|--------------------------------|------------------|------|---|------|-----|---|---|
| | Normal | | 0 | | 0.8 | V | |
| Receiver | | | | | | | |
| Centre Wavelength | λ_c | 1260 | | 1580 | nm | | |
| Receiver Sensitivity | | | | -22 | dBm | | 4 |
| Receiver Overload | | -3 | | | dBm | | 4 |
| Optical Path Penalty | | | | 1 | dB | | 5 |
| LOS De-Assert | LOS _D | | | -23 | dBm | | |
| LOS Assert | LOS _A | -30 | | | dBm | | |
| LOS Hysteresis | | 1 | | 4 | dB | | |
| Data Output Swing Differential | V _{OUT} | 600 | | 1000 | mV | | 6 |

Notes:

1. The optical power is launched into SMF.
2. Measured with a PRBS 2^7-1 test pattern @1250Mbps.
3. CML input, internally AC coupled and terminated.
4. Measured with a PRBS 2^7-1 test pattern @1250Mbps, BER $\leq 1 \times 10^{-12}$.
5. Measured with a PRBS 2^7-1 test pattern @1250Mbps, over 20km G.652 SMF, BER $\leq 1 \times 10^{-12}$.
6. Internally AC coupled.

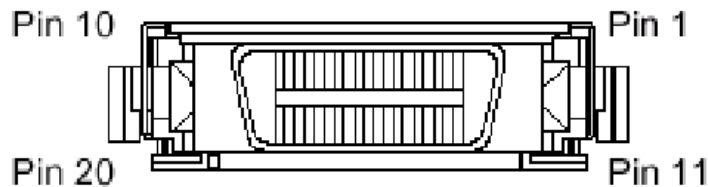
EEPROM Section

The SFF-8053 defines a 256-byte memory map in EEPROM describing the transceiver's capabilities, standard interfaces, manufacturer, and other information, which is accessible over a 2 wire serial interface at the 8-bit address 1010000X (A0h).



Pin Definitions

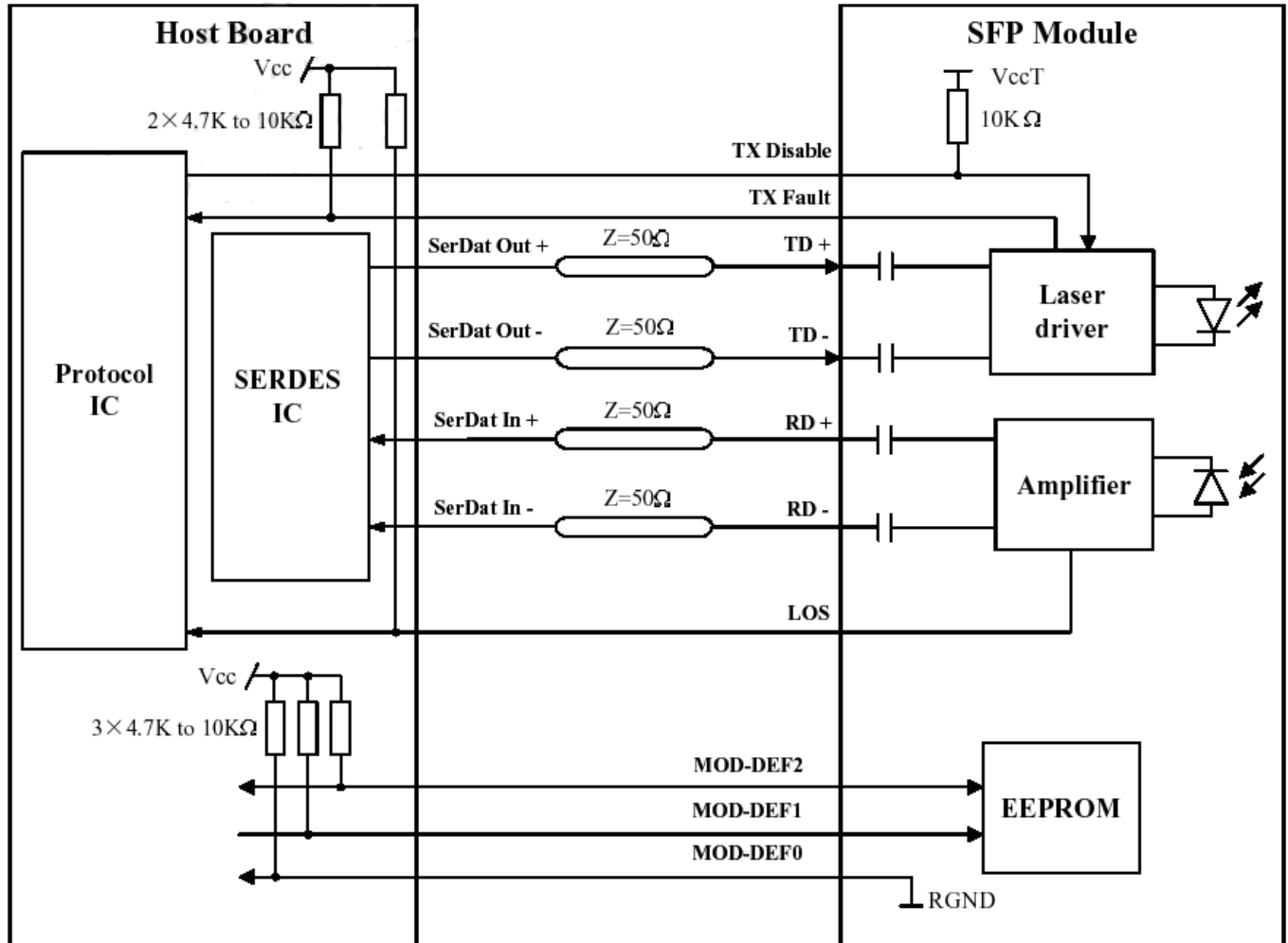
Pin Diagram



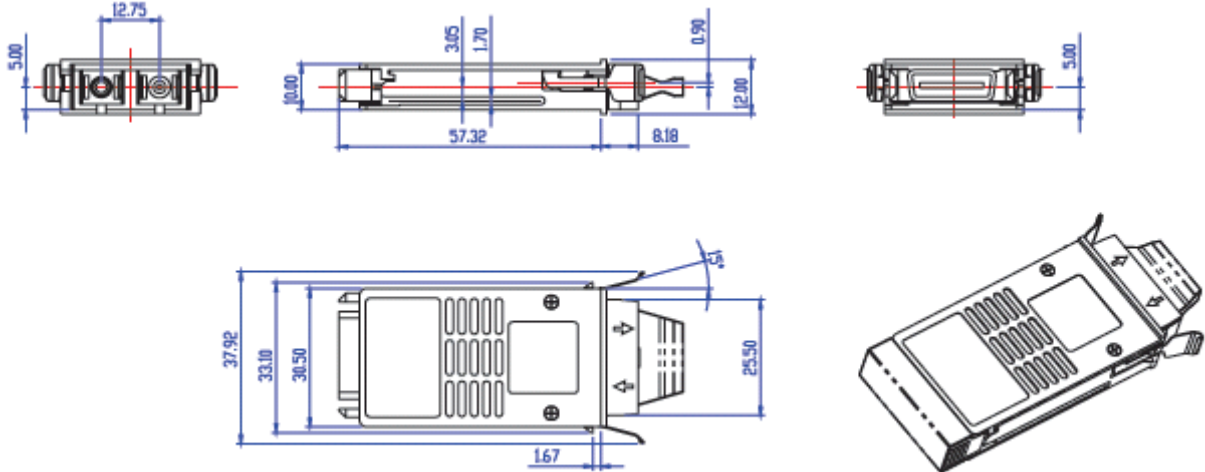
Pin Descriptions

| Pin Name | Pin# | Name/Function | Signal Specification |
|----------------------------|-----------|--|---|
| Receiver signals | | | |
| RGND | 2,3,11,14 | Receiver Ground (may be connected with TGND in GBIC) | Ground, to GBIC |
| VDDR | 15 | Receiver +3.3/5 volt (may be connected with VDDT in GBIC) | Power, to GBIC |
| -RX_DAT | 12 | Receive Data, Differential PECL | High speed serial, from GBIC |
| +RX_DAT | 13 | Receive Data, Differential PECL | High speed serial, from GBIC |
| RX_LOS | 1 | Receiver Loss of Signal, logic high, open collector compatible, 4.7k to 10k Ω pull up to VDDT on host | Low speed, from GBIC |
| Transmitter signals | | | |
| TGND | 8,9,17,20 | Transmitter Ground (may be connected with RGND internally) | Ground, to GBIC |
| VDDT | 16 | Transmitter +3.3/5 volt (may be connected with VDDR in GBIC) | Power, to GBIC |
| -TX_DAT | 18 | Transmit Data, Differential PECL | High speed serial, to GBIC |
| +TX_DAT | 19 | Transmit Data, Differential PECL | High speed serial, to GBIC |
| TX_DISABLE | 7 | Transmitter Disable, logic high, open collector Compatible, 4.7k to 10k Ω pull up to VDDT on GBIC | Low speed, to GBIC |
| TX_FAULT | 10 | Transmitter, Fault, logic high, open collector compatible, 4.7k to 10k Ω pull up to VDDT on host | Low speed, from GBIC |
| Control signals | | | |
| MOD_DEF(0) | 4 | TTL low, output | Please reference SFF-8053, Annex D; Module definition "4" |
| MOD_DEF(1) | 5 | SCL serial clock signal, input | |
| MOD_DEF(2) | 6 | SDA serial data signal, input/output | |

Block Diagram of Transceiver



Mechanical Dimensions



Ordering information

| Part number | Product Description |
|-------------|-----------------------------------|
| GG-5524-L8C | 1550nm, 1.25Gbps, 80km, 0°C~+70°C |

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