

1.25G SFP SR Optical Transceiver

Product Features

- Up to 1.25 Gb/s bi-directional data links
- Compliant with IEEE 802.3z Gigabit Ethernet and 1000BASE-SX
- Compliant with SFP MSA
- Hot-pluggable SFP footprint
- 850nm VCSEL laser transmitter
- Duplex LC connector
- Built-in digital diagnostic functions
- Up to 550m on 50/125um MMF
- Up to 300m on 62.5/125um MMF
- Single power supply 3.3V
- RoHS Compliant
- Class 1 laser product complies with EN 60825-1
- Operating temperature range: 0 oC to 70 oC



Application

- 1.25 Gb/s Gigabit Ethernet
- 1.063 Gb/s Fiber Channel

Absolute Maximum Ratings

| Parameter | Unit | Min. | Typical | Max. | Notes |
|----------------------------------|------|------|---------|------|-------|
| Storage Temperature | °C | -40 | | 85 | 1 |
| Operating Relative Humidity | % | 5 | | 95 | |
| Power Supply not Damaged Voltage | V | -0.5 | | 4 | |

Notes:

1. Ambient temperature

Recommended Operating Conditions

| Parameter | Unit | Min. | Typical | Max. | Notes |
|----------------------------|------|-------|---------|-------|-------|
| Operating Case Temperature | °C | 0 | | 70 | 1 |
| Power Supply Voltage | V | 3.135 | 3.3 | 3.465 | |
| Supply Current | mA | | 130 | 180 | 2 |
| Power Dissipation | W | | | 1 | |
| Bit Rate | Gbps | | 1.25 | | 3 |
| | | | 1.062 | | 4 |

Notes:

1. Case temperature
2. For electrical power interface
3. IEEE 802.3
4. FC-PI-2 Rev 5

Characteristics

All performance is defined over the recommended operating environment unless otherwise specified.

Transmitter Optical Characteristics

| Parameter | Symbol | Min | Typical | Max | Unit | Notes |
|----------------------------------|-----------------|------|---------|------|-------|-------|
| Output Optical Power | P_{out} | -9.5 | - | 0 | dBm | 1 |
| Optical Center Wavelength | λ_C | 830 | - | 860 | nm | - |
| Extinction Ratio@1.25Gb/s | ER | 9 | - | - | dB | - |
| Tx Disabled Power | P_{TX_DIS} | - | - | -30 | dBm | - |
| Spectral Width (RMS) | $\Delta\lambda$ | - | - | 0.85 | nm | - |
| Optical Rise/Fall Time (20%-80%) | t_r/t_f | - | 100 | 150 | ps | - |
| Relative Intensity Noise | RIN | - | - | -120 | dB/Hz | - |
| Generated Jitter (peak to peak) | G_{JPP} | - | - | 0.16 | UI | - |
| Mask Margin | - | - | 20 | - | % | 2 |
| Optical Return Loss Tolerance | T_{ORL} | - | - | 12 | dB | - |
| Transmitter Dispersion Penalty | TDP | - | - | 2 | dB | - |

Notes:

1. Average
2. Compliant with IEEE802.3z standard

Receiver Optical Characteristics

| Parameter | Symbol | Min | Typical | Max | Unit | Notes |
|--|-------------|-----|---------|------|------|-------|
| Receiver Overload | P_{ol} | 0 | - | - | dBm | - |
| Optical Center Wavelength | λ_C | 770 | - | 860 | nm | - |
| Receiver Sensitivity @ 1.063Gb/s | - | - | - | -23 | dBm | 1 |
| Receiver Sensitivity @ 1.25Gb/s | - | - | - | -23 | dBm | 2 |
| Receiver Sensitivity OMA | S_{OMA} | - | - | -21 | dBm | - |
| Receiver Reflectance | R_{REFL} | - | - | -12 | dB | - |
| Receiver Electrical 3dB Upper cutoff frequency | - | - | - | 1500 | MHz | - |
| LOS Assert | LOS-A | -30 | - | - | dBm | - |
| LOS De-Assert | LOS-D | - | - | -23 | dBm | - |
| LOS Hysteresis | LOS-H | 0.5 | - | - | dB | - |
| Generated Jitter(peak to peak) | R_{JP-p} | - | - | 0.16 | UI | - |

Notes:

1. FC-PI-2 Rev.5
2. IEEE 802.3

Transceiver Electrical Characteristics

| Parameter | Symbol | Min | Typ | Max | Unit | Notes |
|--------------------------------------|----------------------|----------|---------|--------------|----------|-------|
| Transmitter | | | | | | |
| Input differential impedance | R_{IN} | - | 100 | - | Ω | - |
| Single ended data input swing | V_{INPP} | 250 | - | 1200 | mV | - |
| Transmit disable voltage | V_D | VCC-1.3 | - | VCC | V | - |
| Transmit enable voltage | V_{EN} | VEE | - | $V_{EE}+0.8$ | V | - |
| Transmit disable assert time | - | - | - | 10 | μs | - |
| Receiver | | | | | | |
| Single ended data output swing | V_{OUTPP} | 300 | - | 800 | mV | - |
| Data output rise/fall time (20%-80%) | t_r/t_f | - | - | 300 | PS | - |
| RX_LOS | Loss of signal (LOS) | V_{OH} | VCC-0.5 | V_{CCHOST} | V | - |
| | Normal Operation | V_{OL} | VEE | $V_{EE}+0.5$ | V | - |

Notes:

3. FC-PI-2 Rev.5

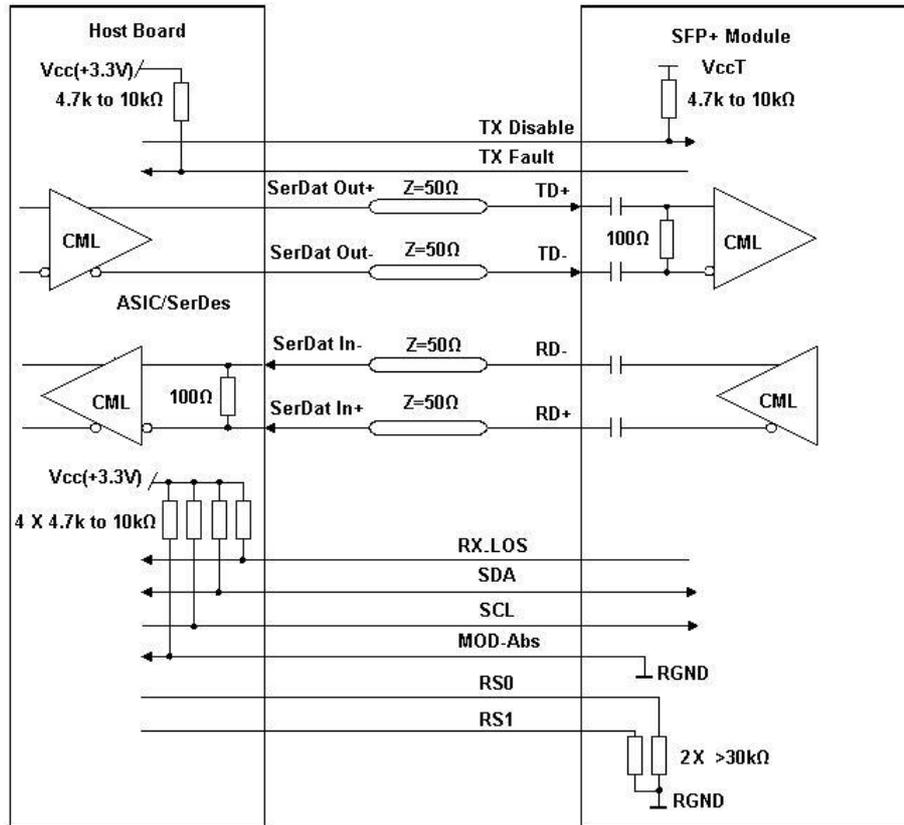
4. IEEE 802.3

PIN Function Definitions

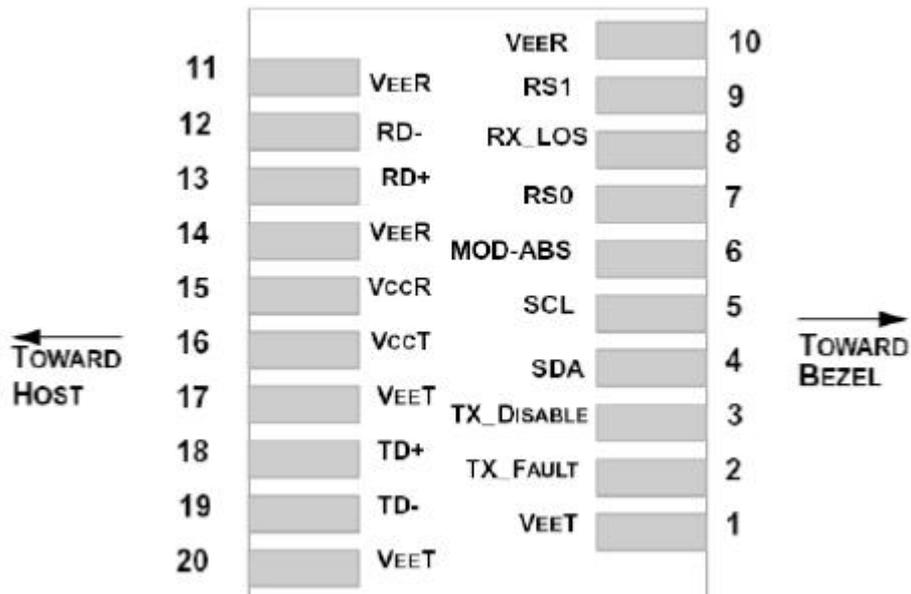
| Pin No. | Symbol | Description | Notes |
|---------|-------------|---|-------|
| 1 | VEET | Transmitter ground (common with receiver ground) | 1 |
| 2 | TX_FAULT | Transmitter Fault. Not supported | - |
| 3 | TX DISABLE | Transmitter Disable. Laser output disabled on high or open | 2 |
| 4 | MOD_DEF(2) | 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 | Loss of Signal indication. Logic 0 indicates normal operation | 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 isolated from chassis ground
2. Disabled: TDIS > 2V or open, Enabled: TDIS < 0.8V
3. Should Be pulled up with 4.7k – 10k ohm on host board to a voltage between 2V and 3.6V
4. LOS is open collector output

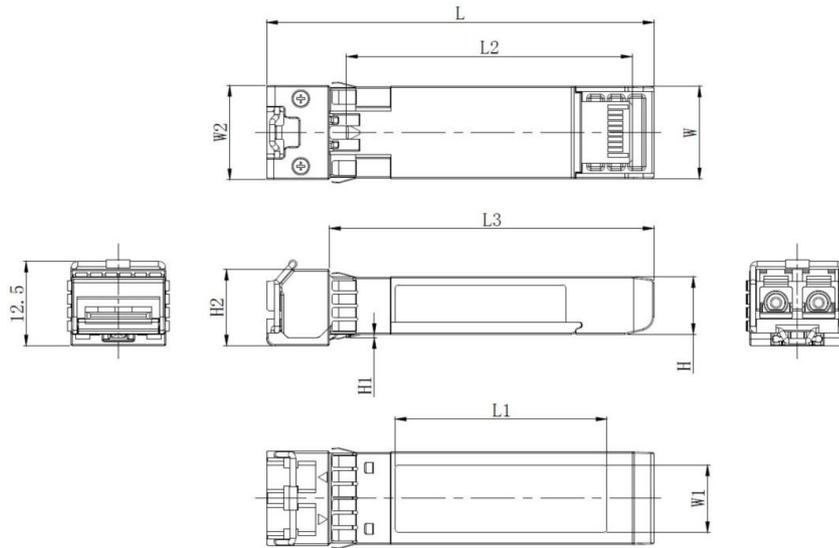


Electrical Pad Layout



Mechanical Specifications

For detail mechanical information, please refer to the related document of SFF-8432.

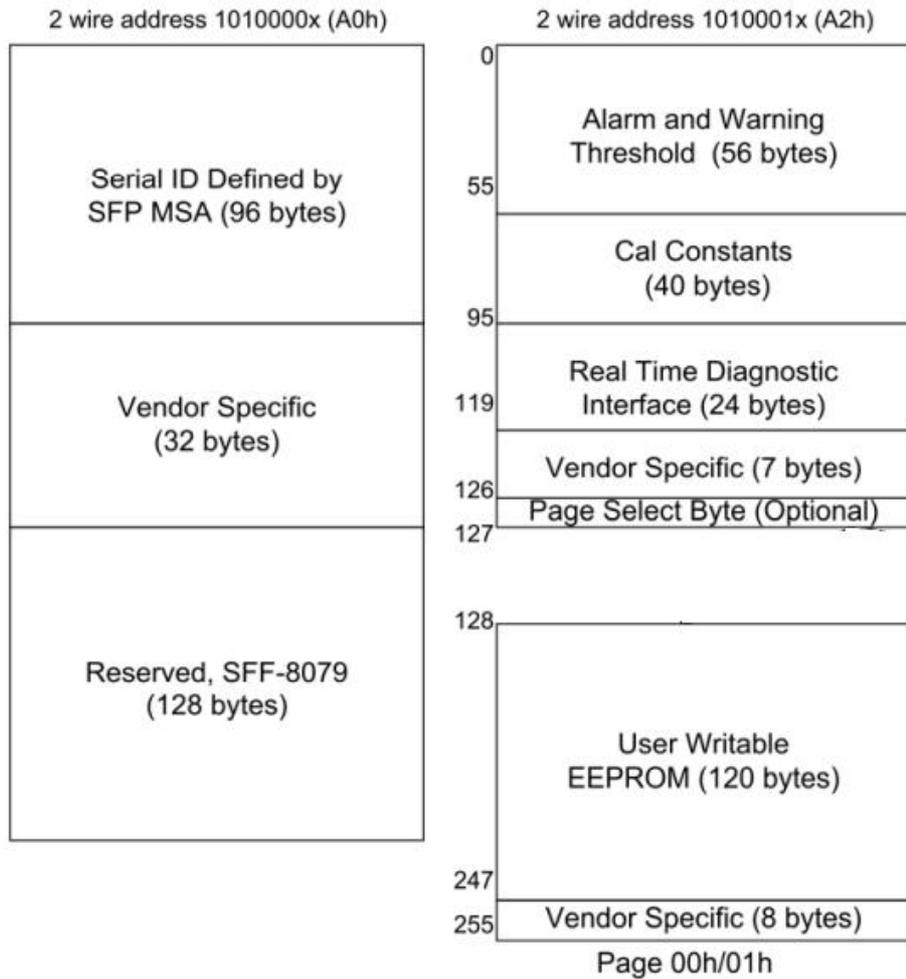


Unit: mm

| | L | L1 | L2 | L3 | W | W1 | W2 | H | H1 | H2 |
|---------|------|------|-------|------|------|------|------|-----|-----|------|
| MAX | 56.9 | 31.2 | 41.95 | 47.7 | 13.8 | 10.2 | 14.0 | 8.6 | 0.6 | 11.5 |
| Typical | 56.7 | 31.0 | 41.80 | 47.5 | 13.7 | 10.0 | - | 8.5 | 0.5 | 11.3 |
| MIN | 56.5 | 30.8 | 41.65 | 47.3 | 13.5 | 9.8 | - | 8.4 | 0.4 | 11.1 |

EEPROM Information

The digital diagnostic memory map specific data field define as following. For detail EEPROM information, please refer to the related document of SFF 8472 Rev 12.0.



ESD

The SFP module and host SFI contacts (High Speed Contacts) shall withstand 1kV electrostatic discharge based on Human Body Model and all host contacts with exception of the SFI contacts (High Speed Contacts) shall withstand 2kV electrostatic discharge based on Human Body Model. The SFP module shall meet ESD requirements given in EN61000-4-2, criterion B test specification such that units are subjected to 15kV air discharges during operation and 8kV direct contact discharges to the case per section 2.9 in SFF-8431 REV4.1. However, normal ESD precautions are still required during the handling of this module. This transceiver is shipped in ESD protective packaging. It should be removed from the packaging and handled only in an ESD protected environment.

Laser Safety

This is a Class 1 Laser Product according to IEC 60825-1:2007. This product complies with 21 CFR 1040.10 and 1040.11 except for deviations pursuant to Laser Notice No. 50, dated (June 24, 2007).

Ordering Information

| Ordering P/Ns | Description |
|---------------|--|
| AOM01M-S550 | 1.25G SFP SR, 550m, 1.25Gbps, Tx 850nm, Rx 850nm, SFP form-factor, Duplex LC/UPC receptacle connector, 0~70°C Commercial temperature |

Revision History

| Version | Date | Description |
|---------|------------|-------------|
| V001 | 2024-02-23 | New release |