

LS-SM3125-10C

25Gbps SFP28 1310nm Duplex 10km Transceiver

Product Feature

- Up to 25.78 Gb/s bi-directional data links
- Hot-pluggable SFP28 footprint
- Up to 10 km on 9/125μm SMF
- Built-in digital diagnostic functions
- 1310nm DFB laser transmitter
- Duplex LC connector
- Metal enclosure, for lower EMI
- RoHS compliant
- 1.2W maximum power consumption with established link
- Supports optical and electrical loopback functions
- Single 3.3V power supply
- Case operating temperature
 - Commercial: 0°C to +70°C
 - Extended: -20°C to +85°C
 - Industrial: -40°C to +85°C

Applications

- 25GBASE-LR
- eCPRI
- Data center

Product Description

SFP28 transceivers are designed for use in Ethernet links up to 25.78 Gb/s data rate and up to 10 km link length. They are compliant SFF-8472 Rev 12.2^b and IEEE 802.3cc, and compatible with SFF-8432^a and applicable portions of SFF- 8431 Rev. 3.0^c. The product is RoHS compliant and lead-free per Directive 2011/96/EU^d.



Product Selection

| Part Number | Operating Case temperature | DDMI |
|---------------|----------------------------|------|
| LS-SM3125-10C | Commercial(0~70°C) | Yes |
| LS-SM3125-10E | Extended(-20°C~85°C) | Yes |
| LS-SM3125-10I | Industrial(-40~85°C) | Yes |

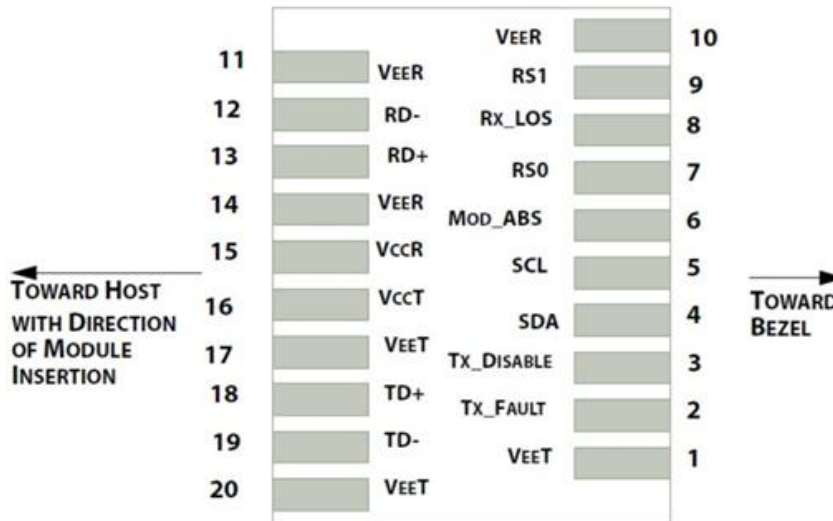
Pin Descriptions

| Pin | Symbol | Name/Description | NOTE |
|-----|---------|---|------|
| 1 | VEET | Module transmitter ground | 1 |
| 2 | Fault | Module transmitter Fault | 2 |
| 3 | Disable | Transmitter Disable; Turns off transmitter laser output | 3 |
| 4 | SDL | 2 wire serial interface data input/output (SDA) | 4 |
| 5 | SCL | 2 wire serial interface clock input (SCL) | 4 |
| 6 | MOD-ABS | Module Absent, connect to VeeR or VeeT in the module | 2 |
| 7 | RS0 | Rate select0: module inputs and are pulled low to VeeT with >30 kΩ resistors in the module. | |
| 8 | LOS | Receiver Loss of Signal Indication | |
| 9 | RS1 | Rate select1: module inputs and are pulled low to VeeT with >30 kΩ resistors in the module. | |
| 10 | VeeR | Module receiver ground | 1 |
| 11 | VeeR | Module receiver ground | 1 |
| 12 | RD- | Receiver inverted data out put | |
| 13 | RD+ | Receiver non-inverted data out put | |
| 14 | VeeR | Module receiver ground | 1 |
| 15 | VccR | Module receiver 3.3V supply | |
| 16 | VccT | Module transmitter 3.3V supply | |
| 17 | VeeT | Module transmitter ground | 1 |

| | | | |
|----|------|---------------------------------------|---|
| 18 | TD+ | Transmitter non-inverted data out put | |
| 19 | TD- | Transmitter inverted data out put | |
| 20 | VeeT | Module transmitter ground | 1 |

Notes:

1. The module ground pins shall be isolated from the module case.
2. This pin is an open collector/drain output pin and shall be pulled up with 4.7K-10Kohms to Host_Vcc on the host board.
3. This pin shall be pulled up with 4.7K-10Kohms to VccT in the module.
4. This pin is an open collector/drain output pin and shall be pulled up with 4.7K-10Kohms to Host_Vcc on the host board.



Pin-out of Connector Block on Host Board

Absolute Maximum Ratings

| Parameter | Symbol | Min. | Typ. | Max. | Unit | Note |
|----------------------|--------|------|------|------|------|------|
| Storage Temperature | Ts | -50 | | +95 | °C | |
| Relative Humidity | RH | 0 | | 95 | % | |
| Power Supply Voltage | VCC | -0.5 | | +4 | V | |

Recommended Operating Conditions

| Parameter | Symbol | Min. | Typ. | Max. | Unit | Note |
|----------------------------|----------------|------|-------|------|------|------------|
| Case Operating Temperature | T _A | 0 | | 70 | °C | Commercial |
| | | -20 | | 85 | °C | Extended |
| | | -40 | | 85 | °C | Industrial |
| Power Supply Voltage | VCC | 3.13 | 3.3 | 3.47 | V | |
| Power Supply Current | ICC | | | 300 | mA | Commercial |
| | | | | 430 | mA | Extended |
| | | | | 430 | mA | Industrial |
| Data Rate | BR | 24.3 | 25.78 | 26.5 | Gbps | |
| 9/125um G.652 SMF | Lmax | | | 10 | km | |

Electrical Characteristics

| Parameter | Symbol | Min. | Typ. | Max. | Unit | Note |
|-----------------------|--------|------|------|----------------------|------|------|
| Transmitter | | | | | | |
| Tx Disable Input-High | VDISH | 2 | | V _{CC} +0.3 | V | |
| Tx Disable Input-High | VDISH | 2 | | V _{CC} +0.3 | V | |
| Tx Disable Input-Low | VDISL | 0 | | 0.8 | V | |
| Tx Fault Input-High | VTxFH | 2 | | V _{CC} +0.3 | V | |
| Tx Fault Input-Low | VTxFL | 0 | | 0.8 | V | |
| Receiver | | | | | | |
| LOSS -High | VLOSH | 2 | | V _{CC} +0.3 | V | |
| LOSS -Low | VLOSL | 0 | | 0.8 | V | |

Optical Characteristics

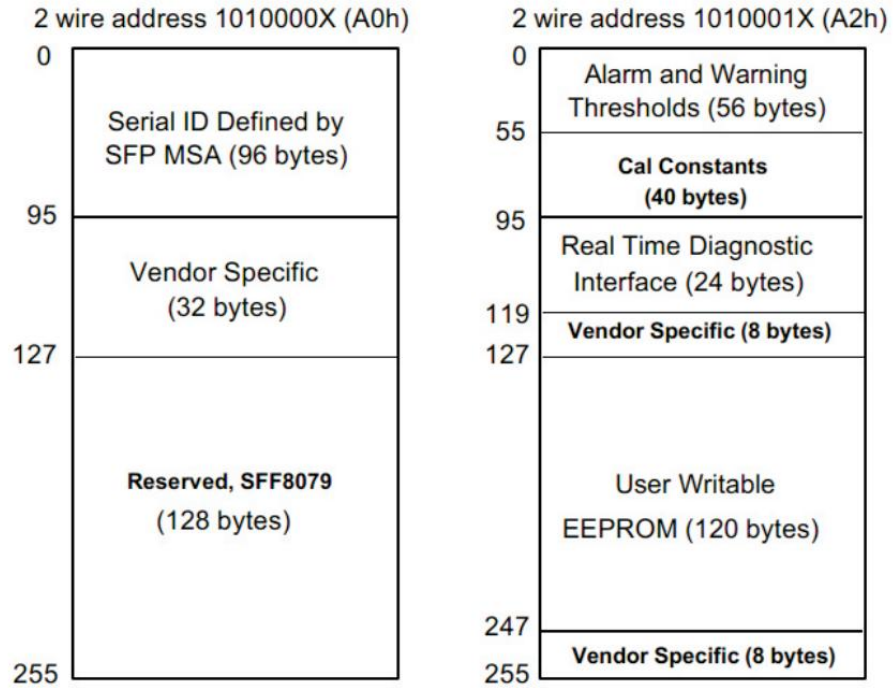
| Parameter | Symbol | Min. | Typ. | Max. | Unit | Note |
|------------------------------|-----------------|------|------|------|------|-----------|
| Transmitter | | | | | | |
| Average Output Power | POUT | -7 | | 2 | dBm | 1, 2 |
| Extinction Ratio | ER | 3.5 | | | dB | |
| Center Wavelength | λ_c | 1290 | 1310 | 1330 | nm | DFB Laser |
| Spectral Width (RMS)@25Gb/s | $\Delta\lambda$ | | | 0.6 | nm | |
| Side Mode Suppression Ratio | SMSR | 30 | | | dB | |
| Spectrum Bandwidth(-20dB) | σ | | | 1 | nm | 3 |
| Transmitter OFF Output Power | Poff | | | -45 | dBm | |
| Receiver | | | | | | |
| Receiver Sensitivity | SENS | | | -13 | dBm | 4 |
| Receiver Overload | | 2 | | | dBm | 3 |
| Input Optical Wavelength | λ_c | 1260 | | 1610 | nm | PIN-TIA |
| LOS De-assert | LOSD | | | -15 | dBm | |
| LOS Assert | LOSA | -30 | | | dBm | 2 |
| LOS Hysteresis | | 0.5 | | 6 | dB | |

Note:

1. Class 1 Laser Safety per FDA/CDRH and EN (IEC) 60825 regulations.
2. High Bandwidth Mode. Class 1 Laser Safety per FDA/CDRH and EN (IEC) 60825 regulations.
3. For information only.
4. Test at 25.78Gb/s $5E^{-5}$ BER, per IEEE802.3cc

EEPROM Information

EEPROM memory map specific data field description is as below:

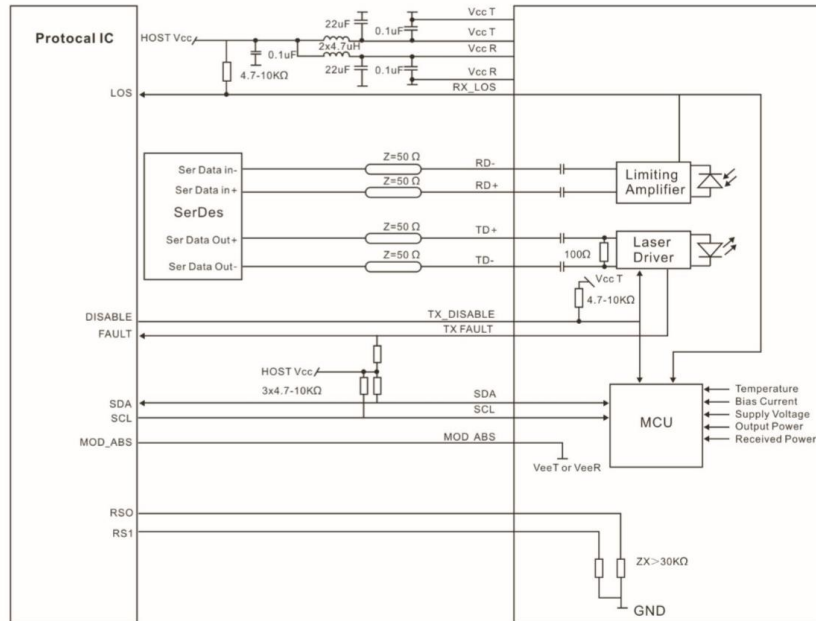


Digital Diagnostic Monitoring Interface

Five transceiver parameter values are monitored. The following table defines the monitored parameter's accuracy.

| Parameter | Range | Accuracy | Calibration |
|--------------|------------------|----------|-------------|
| Temperature | 0 to +70°C (C) | ±3°C | Internal |
| | -40 to +85°C (I) | | |
| Voltage | 3.13 to 3.47V | ±3% | Internal |
| Bias Current | 0 to 100mA | ±10% | Internal |
| TX Power | -8 to +3dBm | ±3dBm | Internal |
| RX Power | -14 to +3dBm | ±3dBm | Internal |

Recommend Circuit Schematic



Mechanical Specifications

