

LS-BL273325-10I

25.78Gbps SFP28 LC BIDI 10km Transceiver

Product Feature

- UP to 25.78Gb/s bi-directional data links
- Hot-Pluggable SFP28 footprint
- 1270nm DFB Laser and 1330nm PIN receiver for LS-BL273325-10X
- 1330nm DFB Laser and 1270nm PIN receiver for LS-BL332725-10X
- BIDI LC connector
- DFB laser transmitter
- Up to 10km on 9/125m SMF
- Power Supply :+3.3V
- RoHS compliant
- 2-wire interface for management specifications compliant with SFF 8472 digital diagnostic monitoring interface for optical transceivers
- Case operating temperature:
 - Commercial: 0°C to +70°C
 - Expanded: -20°C to +85°C
 - Industrial: -40°C to +85°C

Applications

- 25G Ethernet
- Data center

Standard

- Compliant to SFP28 MSA
- Compliant to SFP28 MSA
- Compliant with SFF-8432, SFF-8472
- RoHS complaint



Product Description

The SFP28 BIDI optical Transceiver integrates receiver and transmitter path on one module. In the transmit side, one of serial data streams are recovered, retimed, and passed to laser driver. In the receive side, the optical data streams is recovered by a PIN and trans-impedance amplifier, retimed. This module features a hot-pluggable electrical interface, low power consumption.

The product is designed with form factor, optical/electrical connection and digital diagnostic interface according to the SFP28 and compliant to IEEE 802.3cc.

Product Selection

| Part Number | Operating Case temperature | DDMI |
|-----------------|----------------------------|------|
| LS-BLxxxx25-10C | Commercial(0~70°C) | Yes |
| LS-BLxxxx25-10E | Expanded(-20~85°C) | Yes |
| LS-BLxxxx25-10I | Industrial(-40~85°C) | Yes |

Pin Assignment

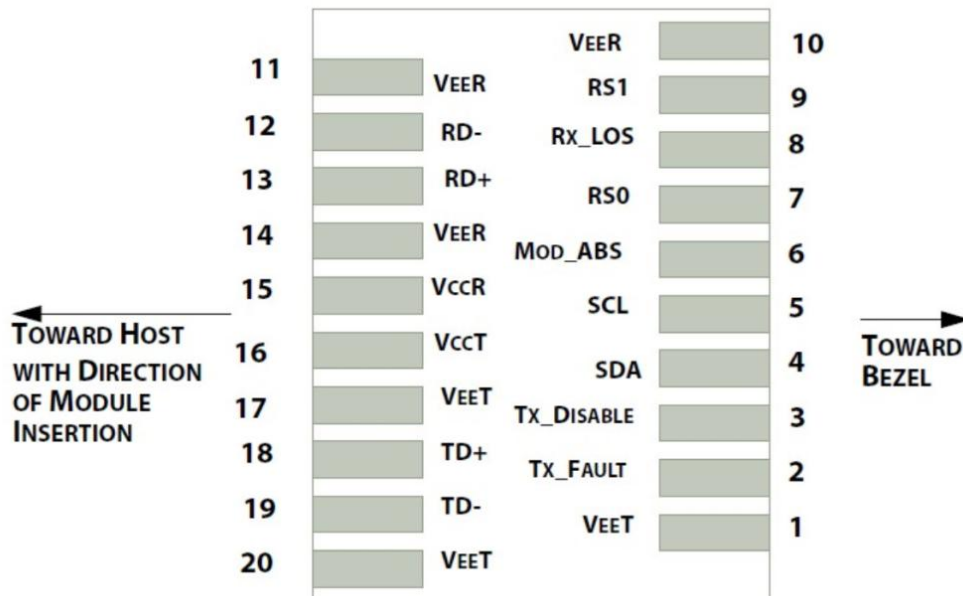


Diagram of Host Board Connector Block Pin Numbers and Names

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.

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 | | +3.6 | V | |

Recommended Operating Conditions

| Parameter | Symbol | Min. | Typ. | Max. | Unit | Note |
|----------------------------|--------|------|-------|------|------|------------|
| Case Operating Temperature | TA | 0 | | 70 | °C | Commercial |
| | | -20 | | 85 | °C | Expanded |
| | | -40 | | 85 | °C | Industrial |
| Power Supply Voltage | Vcc | 3.15 | 3.3 | 3.46 | V | |
| Power Supply Current | Icc | | | 450 | mA | |
| Power Consumption | P | | | 1.5 | W | |
| 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 | | Vcc+0.3 | V | |
| Tx Disable Input-Low | VDISL | 0 | | Vee+0.8 | V | |
| Tx Fault Input-High | VTxFH | 2 | | Vcc+0.3 | V | |
| Tx Fault Input-Low | VTxFL | 0 | | Vee+0.8 | V | |
| Receiver | | | | | | |
| LOSS -High | VLOSH | 2 | | Vcc+0.3 | V | |
| LOSS -Low | VLOSL | 0 | | Vee+0.8 | V | |

Optical Characteristics

| Parameter | Symbol | Min. | Typ. | Max. | Unit | Note |
|--|------------------|------------------------------------|------|------|------|-----------------|
| Transmitter | | | | | | |
| Average Output Power | POUT | -2 | | 4 | dBm | 1 |
| Transmit OMA per Lane | TxOMA | -3 | | 4.5 | dBm | |
| Extinction Ratio | ER | 3.5 | | | dB | |
| Center Wavelength | λ_c | 1260 | 1270 | 1280 | nm | LS-BL273325-10x |
| | | 1320 | 1330 | 1340 | nm | LS-BL332725-10x |
| Spectral Width (RMS)@25Gb/s | $\Delta\lambda$ | | | 1 | nm | |
| Side Mode Suppression Ratio | SMSR | 30 | | | dB | |
| Spectrum Bandwidth(-20dB) | σ | | | 1 | nm | |
| Transmitter OFF Output Power | Poff | | | -45 | dBm | |
| Transmitter and Dispersion Penalty | TDP | | | 2.7 | dB | |
| Transmitter Eye mask definition {X1,X2, X3, Y1, Y2, Y3} | | {0.31, 0.4, 0.45, 0.34, 0.38, 0.4} | | | | 1,2 |
| Receiver | | | | | | |
| Receiver Sensitivity | SENS | | | -13 | dBm | 3 |
| Receiver Overload | RMAX | 2 | | | dBm | |
| Input Optical Wavelength | λ_c | 1320 | 1330 | 1340 | nm | LS-BL273325-10X |
| | | 1260 | 1270 | 1280 | nm | LS-BL332725-10X |
| Receiver Reflectance | | | | -26 | dB | |
| LOS De-assert | LOS _D | | | -15 | dBm | |
| LOS Assert | LOS _A | -30 | | | dBm | 3 |
| LOS Hysteresis | LOS _H | 0.5 | | | dB | |

Note:

1. Average power figures are informative only, per IEEE802.3cc.
2. Transmitter hit Ratio 5E-5 hits/sample.
3. OMA receiver sensitivity is informative. Shall be measured with conformance test signal for . BER =5E⁻⁵ .

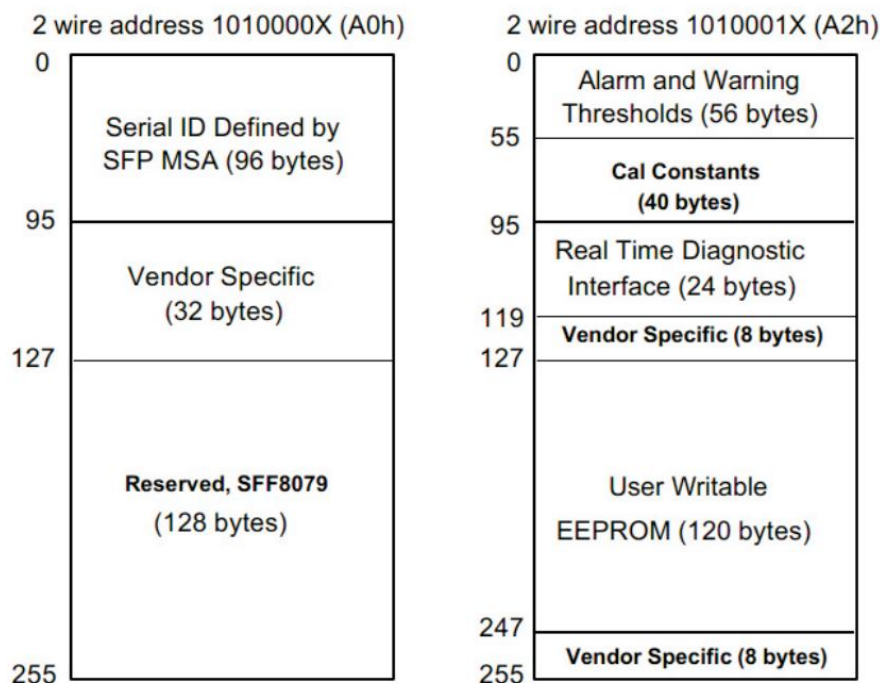
Digital Diagnostic Monitoring Interface

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

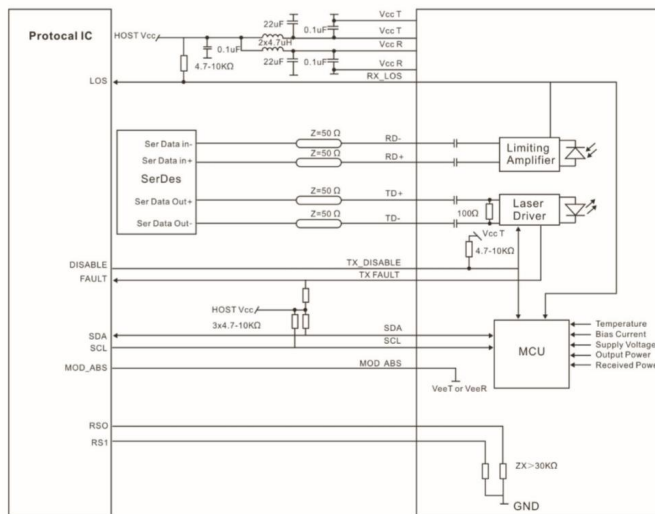
| Parameter | Range | Accuracy | Calibration |
|--------------|------------------|----------|-------------|
| Temperature | 0 to +70°C (C) | ±3°C | Internal |
| | -20 to +85°C (E) | | |
| | -40 to +85°C (I) | | |
| Voltage | 3.13 to 3.47V | ±5% | Internal |
| Bias Current | 0 to 100mA | ±10% | Internal |
| TX Power | -3 to +5dBm | ±3dBm | Internal |
| RX Power | -14 to +3dBm | ±3dBm | Internal |

EEPROM Information

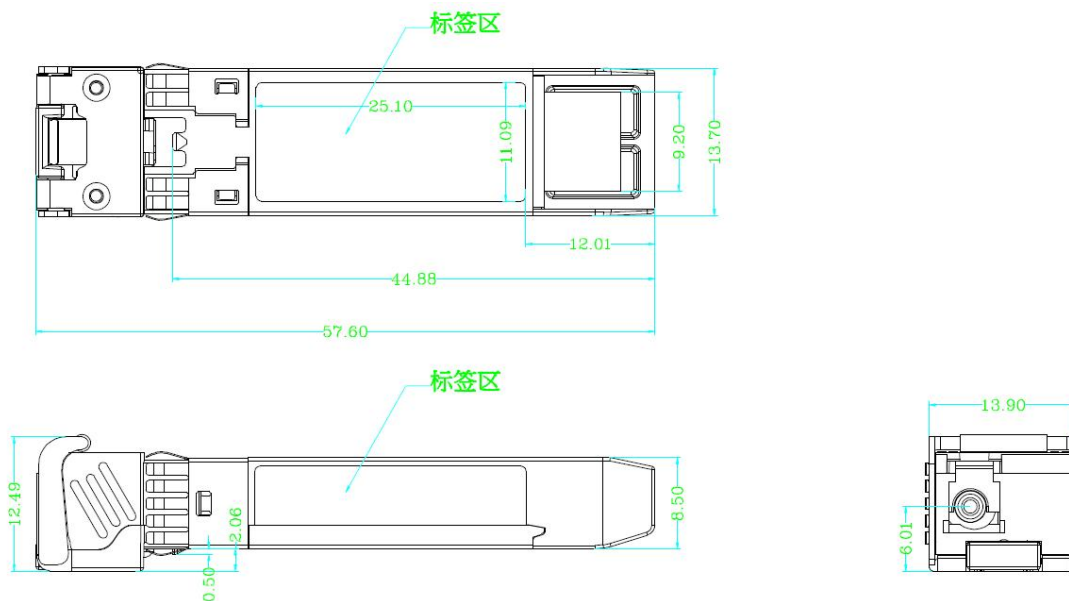
EEPROM memory map specific data field description is as below:



Recommend Circuit Schematic



Mechanical Specifications



Ordering information

| Part. No | Specifications | | | | | | |
|-----------------|----------------|-------------|------------|-----|-----------|------------|--------|
| | Pack | Rate (Gb/s) | Tx (nm) | Rx | Temp (°C) | Reach (km) | Others |
| LS-BL273325-10I | SFP28 | 25.78 | 1270nm DML | PIN | -40~+85 | 10 | RoHS |
| LS-BL332725-10I | SFP28 | 25.78 | 1330nm DML | PIN | -40~+85 | 10 | RoHS |
| LS-BL273325-10E | SFP28 | 25.78 | 1270nm DML | PIN | -20~+85 | 10 | RoHS |
| LS-BL332725-10E | SFP28 | 25.78 | 1330nm DML | PIN | -20~+85 | 10 | RoHS |
| LS-BL273325-10C | SFP28 | 25.78 | 1270nm DML | PIN | 0~70 | 10 | RoHS |
| LS-BL332725-10C | SFP28 | 25.78 | 1330nm DML | PIN | 0~70 | 10 | RoHS |