

25GBASE-BX SFP28 1270nmTX/1330nmRX 10km DOM Transceiver

SFP28-25G-BX-LL



Application

- 25GE LR
- eCPRI & CPRI

Features

- Hot-pluggable SFP28 footprint
- UP to 25.78Gb/s bi-directional data links
- Simplex LC connector
- Up to 10km on 9/125m SMF
- 1271nm DFB laser transmitter for -2733
- 1331nm DFB laser transmitter for -3327
- Single 3.3V Power Supply
- Operating temperature: Commercial: 0~ 70° C
- RoHS compliant
- 2-wire interface for management specifications compliant with SFF 8472 digital diagnostic monitoring interface for optical transceivers

Description

Longline's 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, and compatible with SFF-8432 and applicable portions of SFF-8431. The product is RoHS compliant and lead-free per Directive 2011/96/EU.

Product Specifications

I. General Specifications

| Parameter | Symbol | Min | Typ. | Max | Unit | Note |
|--------------------------------------|-----------------|------|------|------|------|------|
| Transmitter | | | | | | |
| Center Wavelength | λ_t | 1265 | 1271 | 1277 | nm | |
| | | 1325 | 1331 | 1337 | nm | |
| spectral width(-20dB) | $\Delta\lambda$ | | | 1 | nm | |
| Average Optical Power | P_{avg} | -5.0 | | +2.0 | dBm | 1 |
| Laser Off Power | P_{off} | | | -30 | dBm | |
| Side Mode Suppression Ratio | | 30 | | | | |
| Extinction Ratio | ER | 3.5 | | | dB | |
| Optical Return Loss Tolerance | | | | -12 | dB | |
| Receiver | | | | | | |
| Center Wavelength | λ_r | 1325 | 1331 | 1337 | nm | |
| | | 1265 | 1271 | 1277 | nm | |
| Receiver Sensitivity | S_{en} | | | -9 | dBm | 2 |
| Los Assert | LOS_A | -30 | | | dBm | |
| Los Dessert | LOS_D | | | -16 | dBm | |
| Los Hysteresis | LOS_H | 0.5 | | | dB | |
| Overload | | 2 | | | dBm | |

Notes:

1. Average power figures are informative only, per IEEE802.3cc.

2. Receiver sensitivity is informative. Shall be measured with conformance test signal for . BER = 5×10^{-5} .

II. Absolute Maximum Ratings

| Parameter | Symbol | Min | Typ. | Max | Unit | Note |
|----------------------------|-----------------|-----|------|-----|------|------------|
| Maximum Supply Voltage | V _{CC} | 0 | | 3.6 | V | |
| Storage Temperature | T _S | -40 | | 85 | ° C | |
| Case Operating Temperature | T _A | 0 | | 70 | ° C | Commercial |
| Relative Humidity | RH | 0 | | 85 | % | 1 |

Notes:

1. Non-condensing.

III. Electrical Characteristics (VCC = 3.14 to 3.46 Volts)

| Parameter | Symbol | Min | Typ. | Max | Unit | Note |
|-------------------|-----------------|------|------|------|------|------------|
| Supply Voltage | V _{CC} | 3.14 | | 3.46 | V | |
| Supply Current | I _{CC} | | | 300 | mA | Commercial |
| | | | | 360 | mA | Extended |
| | | | | 360 | mA | Industrial |
| Power Consumption | P | | | 1 | W | Commercial |
| | | | | 1.2 | W | Extended |
| | | | | 1.2 | W | Industrial |
| Data Rate | R | 24.3 | | 26.5 | Gb/s | |
| Fiber Length | L | | | 10 | KM | |

Transmitter (Tx)

| | | | | | | |
|-------------------------------|--------------------|-----------------|-----|-----------------------|----|---|
| Input Differential Impedance | R _{in} | | 100 | | Ω | 1 |
| Differential Data Input Swing | V _{in,pp} | 180 | | 450 | mV | 2 |
| Transmit Disable Voltage | V _D | 2 | | V _{CC} | V | 3 |
| Transmit Enable Voltage | V _{EN} | V _{EE} | | V _{EE} + 0.8 | V | |

Receiver (Rx)

| | | | | | | |
|----------------------------------------------|------------------------|-----------------|--|----------------------|----|---|
| Single Ended Output Voltage Tolerance | V | -0.3 | | 4 | V | |
| Rx Output Diff Voltage | V _o | 180 | | 450 | mV | |
| LOS asserted | V _{LOS fault} | 2 | | V _{CCHOST} | V | 4 |
| LOS de-asserted | V _{LOS norm} | V _{ee} | | V _{ee} +0.8 | V | 4 |

Notes:

- 1.Connected directly to TX data input pins. AC coupling from pins into laser driver IC.
- 2.Per SFF-8431 Rev 3.0
- 3.Into 100 ohms differential termination.
- 4.LOS is an open collector output. Should be pulled up with 4.7kΩ – 10kΩ on the host board. Normal operation is logic 0; loss of signal is logic 1. Maximum pull-up voltage is 5.5V.

IV. Optical Characteristics (VCC = 3.14 to 3.46 V)

| Parameter | Symbol | Min | Typ. | Max | Unit | Note |
|-----------|--------|-----|------|-----|------|------|
|-----------|--------|-----|------|-----|------|------|

Transmitter (Tx)

| | | | | | | |
|--------------------------------------|------------------|------|------|------|-----|---|
| Center Wavelength | λ_t | 1265 | 1271 | 1277 | nm | |
| | | 1325 | 1331 | 1337 | nm | |
| Average Launch Power | P _{AVE} | -2 | | 4 | dBm | 1 |
| Spectral Width(-20dB) | $\Delta\lambda$ | | | 1 | nm | |
| Laser Off Power | P _{off} | | | -30 | dBm | |
| Side Mode Suppression Ratio | | 30 | | | | |
| Extinction Ratio | ER | 3.5 | | | dB | |
| Optical Return Loss Tolerance | | | | -12 | dB | |

Receiver (Rx)

| | | | | | | |
|-----------------------------|------------------|------|------|------|-----|---|
| Center Wavelength | λ_r | 1325 | 1331 | 1337 | nm | |
| | | 1265 | 1271 | 1277 | nm | |
| Receiver Sensitivity | Sen | | | -13 | dBm | 2 |
| Overload | | 2 | | | dBm | |
| LOS De-Assert | LOS _A | | | -14 | dBm | |

| | | | | | | |
|-----------------------|------------------|-----|-----|--|-----|--|
| LOS Assert | LOS _A | -30 | -23 | | dBm | |
| LOS Hysteresis | | 0.5 | | | dB | |

Notes:

1. Average Power figures are informative only, per IEEE802.3cc.

2. Receiver sensitivity is informative. Shall be measured with conformance test signal for . BER = 5×10^{-5} .

V. Digital Diagnostic Specifications

| Parameter | Symbol | Units | Min | Max | Accuracy | Note |
|---------------------------------------------|------------------------|-------|------|------|----------|------------|
| Transceiver Temperature | T | | 0 | +70 | ± 5 °C | Commercial |
| Transceiver Supply Voltage | DD _{Voltage} | V | 3.15 | 3.15 | ± 3% | |
| Transmitter Bias Current | DD _{Bias} | mA | 0 | 35 | ± 10% | |
| Transmitter Output Power | DD _{Tx-Power} | dBm | -5 | +5 | ± 3dB | |
| Receiver Average Optical Input Power | DD _{Rx-Power} | dBm | -16 | -3 | ± 3dB | |

VI. Timing Characteristics

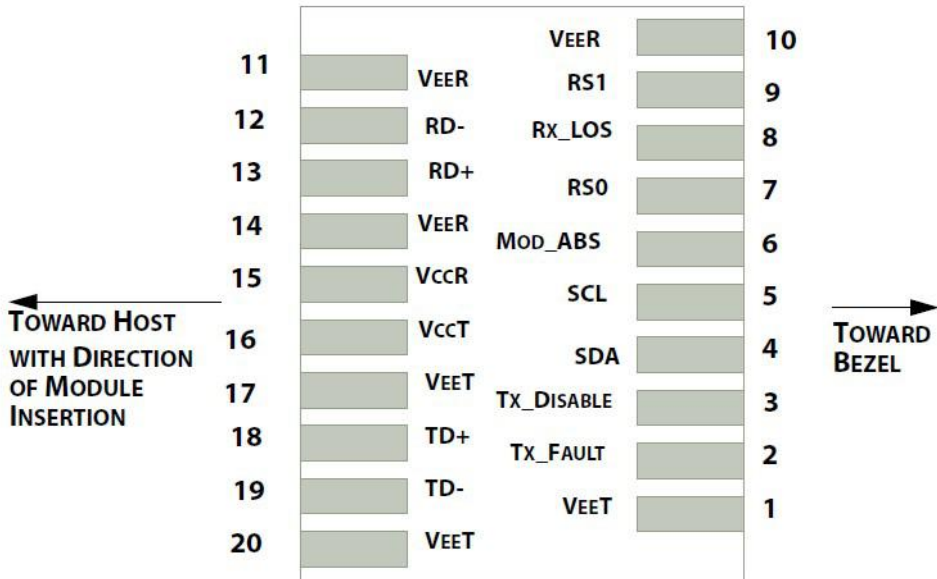
| Parameter | Symbol | Min | Typ. | Max | Unit |
|------------------------------------------------------------------------------------------------|------------------------------|-----|------|-----|------|
| TX_Disable Assert Time | t _{off} | | | 100 | us |
| TX_Disable Negate Time | t _{on} | | | 2 | ms |
| Time to Initialize 2-wire interface | t _{2w_start_up} | | | 300 | ms |
| Time to Initialize | t _{start_up} | | | 300 | ms |
| Time to Initialize cooled module and time to power up a cooled module to Power level II | t _{start_up_cooled} | | | 90 | s |
| Time to Power Up to Level II | t _{power_level2} | | | 300 | ms |
| Time to Power Down from Level II | t _{power_down} | | | 300 | ms |
| Tx_Fault assert | Tx_Fault_on | | | 1 | ms |
| Tx_Fault assert for cooled module | Tx_Fault_on_cooled | | | 50 | ms |
| TX_FAULT Reset | t _{reset} | 10 | | | us |
| Rx_LOS assert delay | t _{los_on} | | | 100 | us |
| Rx_LOS negate delay | t _{los_off} | | | 100 | us |

VII. Pin Description

| Pin | Name | Function | Notes |
|-----|------------------|----------------------------------------------------------------------------------------------|-------|
| 1 | V _{EET} | 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 | V _{EER} | Module receiver ground | 1 |
| 11 | V _{EER} | Module receiver ground | 1 |
| 12 | RD- | Receiver inverted data out put | |
| 13 | RD+ | Receiver non-inverted data out put | |
| 14 | V _{EER} | Module receiver ground | 1 |
| 15 | V _{CCR} | Module receiver 3.3V supply | |
| 16 | V _{CCT} | Module transmitter 3.3V supply | |
| 17 | V _{EET} | Module transmitter ground | 1 |
| 18 | TD+ | Transmitter non-inverted data out put | |
| 19 | TD- | Transmitter inverted data out put | |
| 20 | V _{EET} | 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.



VIII. Mechanical Specifications

