# SFP28-25G-L10D-CxxL

**SFP28, 25 GbE-LR, DDM, 10km, Low-Band CWDM 1271-1371nm, 8dB, SM**

## 1. Product overview

SFP28 optical transceiver supporting up to 25.78 Gbps and 10 km transmission over single-mode fiber. The optical assembly uses a cooled EML transmitter and APD receiver with a transimpedance preamplifier and MCU control. Digital diagnostics are available through a two-wire serial interface.

## 2. Key features

Hot-pluggable SFP+ footprint; single +3.3 V supply; real-time digital diagnostics; duplex LC receptacle; SFF-8472 management. Power dissipation <2.3 W; standard and industrial temperature options are listed.

## 3. Applications

25G Ethernet; CPRI 10.

## 4. Technical data

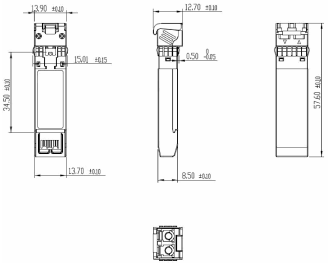
| Absolute maximum rating | Specification | Absolute maximum rating | Specification |
|---|---|---|---|
| Storage temperature | -40 to +85°C | Supply voltage | -0.5 to 4.5 V |
| Humidity | 5-85% (source operating/relative humidity) | Optical connector | Duplex LC |

**Electrical interface**

| Parameter | Specification | Parameter | Specification |
|---|---|---|---|
| Differential input swing | 180-850 mV | Differential output swing | 300-900 mV |
| Input differential impedance | 90 / 100 / 110 Ω (min/typ/max) | TX-disable / TX-fault high | 2.0 to Vcc V |
| TX-enable / TX-fault normal | 0-0.8 V | LOS high / low | 2.0 to Vcc V / 0.8 V max |

PECL input, internally AC-coupled and terminated. Receiver output is internally AC-coupled.

**Mechanical dimensions** - original drawing



**Simplified functional illustration**


Optical RX → APD + TIA → RX data
MCU / two-wire control: SCL, SDA
Monitor: temperature, voltage, bias, TX/RX power

## 5. Recommended operating conditions

| Parameter | Specification |
|---|---|
| Case temperature | 0 to +70°C |
| Supply voltage, min / typ / max | 3.135 / 3.3 / 3.465 V |
| Supply current / data rate | 400 mA max / 25.78 Gbps typ (TX and RX) |
| Transmission distance / fiber | 10 km / SMF |

# SFP28-25G-L10D-CxxL

## 6. Optical characteristics

| Transmitter | Specification |
|---|---|
| Centre wavelength, min / typ / max | λ1271-1371 nm |
| Spectral width (-20 dB) | 1 nm max |
| SMSR | 30 dB min |
| Average output power | -1 to +6 dBm |
| Extinction ratio | 6 dB min |

| Receiver | Specification |
|---|---|
| Centre wavelength | 1271-1371nm |
| Sensitivity | -18 dBm max |
| Overload | 2 dBm min |
| LOS deassert | -19 dBm max |
| LOS assert | -35 dBm min |
| LOS hysteresis | 0.5 dB min |

Power launched into SMF. Sensitivity and overload measured with PRBS $2^{31}$-1 at 25.78 Gbps, BER ≤$5x10^{-5}$.

## 7. Digital diagnostics and management

| Monitor | Range | Accuracy | Calibration |
|---|---|---|---|
| Temperature | 0 to +70°C | ±3°C | Internal |
| Supply voltage | 3.0-3.6 V | ±3% | Internal |
| Bias current | 0-100 mA | ±10% | Internal |
| TX power | -7 to +2 dBm | ±3 dB | Internal |
| RX power | -14 to +2 dBm | ±3 dB | Internal |

Two-wire serial interface SCL/SDA provides serial ID and live diagnostics. The memory-map description states both internal and external calibration; the monitor table specifies internal calibration.

| Timing / logic | Specification | Timing / logic | Specification |
|---|---|---|---|
| TX-disable negate / assert | 2 ms / 100 µs max | Initialize, incl. fault reset | 300 ms max |
| TX-fault assert | 100 µs max | TX-disable to reset | 10 µs min |
| LOS assert / deassert | 100 / 100 µs max | Serial-ID clock | 100 kHz typ; 400 kHz max |
| MOD_DEF(0:2) high | 2 to Vcc V | MOD_DEF(0:2) low | 0.8 V max |

**Memory map:** A0h (1010000X): serial ID 0-95 (96 bytes); vendor-specific 96-127 (32); reserved 128-255 (128). A2h (1010001X): alarm/warning thresholds 0-55 (56); calibration constants 56-95 (40); real-time diagnostics 96-119 (24); vendor-specific 120-127 (8); user-writable EEPROM 128-247 (120); vendor-specific 248-255 (8).

**Pin map:** TX grounds 1/17/20; RX grounds 10/11/14; TX-fault 2; TX-disable 3; SDA 4; SCL 5; module-absent 6 (grounded in module); RS0/RS1 7/9: not connected; LOS 8; RX data -/+ 12/13; RX/TX supply 15/16; TX data +/- 18/19. Hot-plug sequence: grounds 1; supplies 2; remaining contacts 3.

TX-fault and LOS are open-collector: host pull-ups 4.7-10 kΩ to 2.0 V through Vcc+0.3 V (TX-fault), or 2.0-3.6 V (LOS). Low means normal; high means fault/loss. TX disabled above 2.0 V or open; enabled below 0.8 V. RX outputs are AC-coupled 100 Ω differential lines, requiring 100 Ω SERDES termination. TX inputs are AC-coupled and internally terminated at 100 Ω. Source circuit: 50 Ω single-ended data paths; 10 kΩ module TX-disable pull-up; two host TX-control and three management pull-ups of 4.7-10 kΩ.

## 8. Safety and regulatory

Class I laser; RoHS compatibility; SFP/SFP+ MSA and SFF-8472.

## 9. Ordering information

| GLOBALfiber part number | Original product description |
|---|---|
| S25G-L10D-CxxL | SFP28, 25 GbE-LR, DDM, 10km, Low-Band CWDM 1271-1371nm, 8dB, SM |