

SO-SFP-622M-L40D-Cxx

SFP, 622 Mbps, CWDM, SM, DDM, 23dB, 40 km

OVERVIEW

The SO-SFP-622M-L40D-Cxx series single mode transceiver is small form factor pluggable module for serial optical data communications such as SONET OC-12/SDH STM-4 and Fast Ethernet. It is with the SFP 20-pin connector to allow hot plug capability. This module is designed for single mode fiber and operates at a nominal wavelength of CWDM. There are eighteen center wavelengths available from 1270nm to 1610nm, with each step 20nm. The transmitter section uses a multiple quantum well CWDM DFB laser and is a class 1 laser compliant according to International Safety Standard IEC-60825. The receiver section uses an integrated InGaAs avalanche detector preamplifier (IDP) mounted in an optical header and a limiting post-amplifier IC. The SO-SFP-622M-L40D-Cxx series are designed to be compliant with SFF-8472.

PRODUCT FEATURES

- Operating data rate up to 622Mbps
- 18-Wavelength CWDM DFB LD transmitter from 1270nm to 1610nm, with step 20nm
- Single 3.3V power supply and TTL logic interface
- Hot-Pluggable SFP footprint duplex LC connector interface
- Compliant with Class 1 FDA and IEC60825-1 laser safety
- Operating case temperature
 - Standard 0°C to 70°C.
 - Extended -20°C to +85°C.
- Compliant with SFP MSA
- Compliant with SFF-8472

APPLICATIONS

- SDH/SONET
- Fast Ethernet
- CWDM, Optical networking and equipment connectivity

ORDERING INFORMATION

| Part Number | Description |
|-------------------------|--|
| SO-SFP-622M-L40D-Cxx* | SFP, 622 Mbps, CWDM, SM, DDM, 23dB, 40 km |
| SO-SFP-622M-L40D-Cxx-E* | SFP, 622 Mbps, CWDM, SM, DDM, 23dB, 40 km, ext. temp |

*xx = Refers to notation for frequency data. Please see extended order information on last page for additional information.

ABSOLUTE MAXIMUM RATINGS

| Parameter | Symbol | Min | Max | Unit |
|-----------------------------|--------|------|-----|------|
| Storage Temperature | TS | -40 | +85 | °C |
| Supply Voltage | VCC | -0.5 | 3.6 | V |
| Operating Relative Humidity | | | 95 | % |

RECOMMENDED OPERATING CONDITIONS

| Parameter | Symbol | Min | Typ | Max | Unit | |
|----------------------------|-------------|-------------------------|-----|------|------|----|
| Operating Case Temperature | Tc | SO-SFP-622M-L40D-Cxx | 0 | | +70 | °C |
| | | SO-SFP-622M-L40D-Cxx -I | -20 | | +85 | °C |
| Power Supply Voltage | Vcc | 3.15 | 3.3 | 3.45 | V | |
| Power Supply Current | Icc | | | 300 | mA | |
| Data Rate | OC-12/STM-4 | | 622 | | Mbps | |
| | OC-3/STM-1 | | 155 | | | |
| | 100M | | 100 | | | |

PERFORMANCE SPECIFICATIONS – ELECTRICAL TRANSMITTER

| Parameter | Symbol | Min | Typ | Max | Unit | Notes |
|--------------------------------|----------|-----|-----|---------|------|----------------------|
| LVPECL Inputs(Differential) | V_{IN} | 400 | | 2000 | mVpp | AC coupled inputs |
| Input Impedance (Differential) | Z_{IN} | 85 | 100 | 115 | ohms | Rin > 100 kohms @ DC |
| TX Disable | Disable | 2 | | Vcc | V | |
| | Enable | 0 | | 0.8 | | |
| TX FAULT | Fault | 2 | | Vcc+0.3 | V | |
| | Normal | 0 | | 0.8 | | |

PERFORMANCE SPECIFICATIONS – ELECTRICAL RECEIVER

| Parameter | Symbol | Min | Typ | Max | Unit | Notes |
|---------------------------------|-----------|-----|-----|---------|------|--------------------|
| LVPECL Outputs (Differential) | V_{out} | 370 | | 2000 | mVpp | AC coupled outputs |
| Output Impedance (Differential) | Z_{out} | 85 | 100 | 115 | ohms | |
| Rx_LOS Output Voltage – High | | 2 | | Vcc+0.3 | V | |
| Rx_LOS Output Voltage – Low | | 0 | | 0.8 | V | |
| MOD_DEF (2:0) | VoH | 2.5 | | | V | With Serial ID |
| | VoL | 0 | | 0.8 | V | |

PERFORMANCE SPECIFICATIONS – OPTICAL

| Parameter | Symbol | Min | Typ | Max | Unit |
|-----------|--------|-----|-----|-----|------|
| Data Rate | | 100 | 622 | | Mbps |

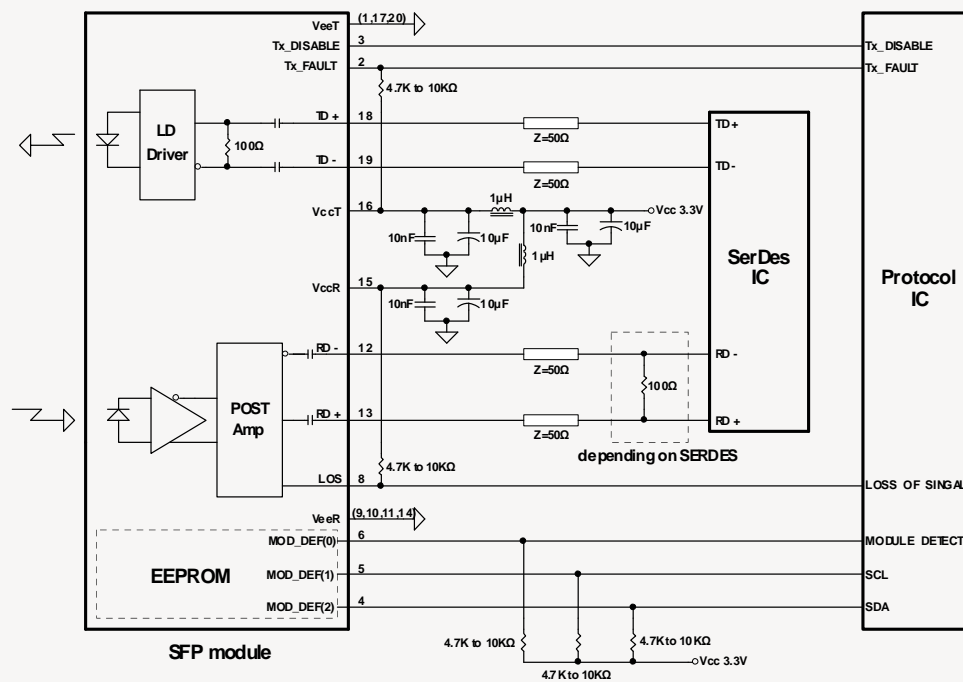
PERFORMANCE SPECIFICATIONS – OPTICAL TRANSMITTER

| Parameter | Symbol | Min | Typ | Max | Unit |
|-----------------------------|-----------------|-----------------------|-------------|-----------------|------|
| Centre Wavelength | λ_c | $\lambda_c-5.5$ | λ_c | $\lambda_c+7.5$ | nm |
| Spectral Width (RMS) | $\Delta\lambda$ | | | 1 | nm |
| Average Output Power | P_{out} | -5 | | 0 | dBm |
| Extinction Ratio | ER | 8.2 | | | dB |
| Side Mode Suppression Ratio | SMSR | 30 | | | dB |
| Rise/Fall Time(20%~80%) | t_r/t_f | | | 2 | ns |
| Output Optical Eye | | IUT-T G.957 Compliant | | | |
| TX Disable Assert Time | t_{off} | | | 10 | us |

PERFORMANCE SPECIFICATIONS – OPTICAL RECEIVER

| Parameter | Symbol | Min | Typ | Max | Unit |
|----------------------|-----------|-------------|-----|------|------|
| Centre Wavelength | λ | 1100 | | 1650 | nm |
| Receiver Sensitivity | P_{min} | OC-12/STM-4 | | -28 | dBm |
| | | OC-3/STM-1 | | -29 | |
| | | 100M | | -30 | |
| Receiver Overload | P_{max} | -8 | | | dBm |
| Return Loss | | 14 | | | dB |
| Optical Path Penalty | | | | 1 | dB |
| LOS De-Assert | LOSD | | | -29 | dBm |
| LOS Assert | LOSA | -42 | | | dBm |
| LOS Hysteresis | | 0.5 | | | dB |

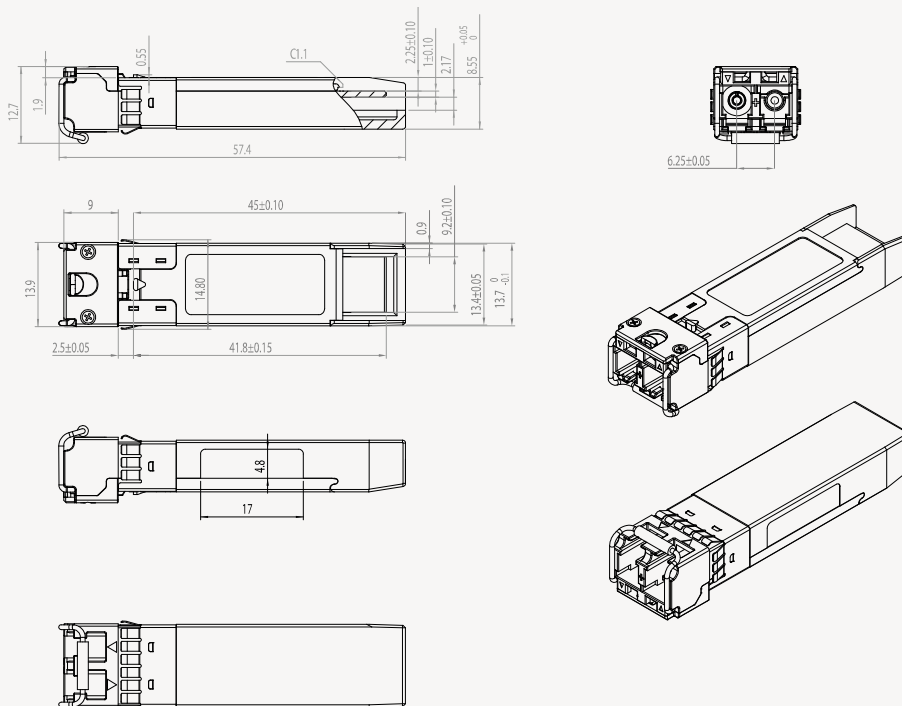
FUNCTIONAL DIAGRAM OF TRANSCEIVER



PIN ASSIGNMENT ACCORDING TO MSA

| PIN | Signal Name | Description | PIN | Signal Name | Description |
|-----|-------------------|---|-----|-------------------|-----------------------------|
| 1 | V _{EE} T | Transmitter Signal Ground | 11 | V _{EE} R | Receiver Signal Ground |
| 2 | TX_Fault | Transmitter Fault Indication. Logic "1" Output = Laser Fault. Logic "0" Output = Normal Operation | 12 | RD- | Inverse Receiver Data Out |
| 3 | TX_Disable | Logic "1" Input (or no connection) = Laser off, Logic "0" = Laser on. | 13 | RD+ | Receiver Data Out |
| 4 | SDA | Modulation Definition 2 – Two wires serial ID Interface | 14 | V _{EE} R | Receiver Signal Ground |
| 5 | SDL | Modulation Definition 1 – Two wires serial ID Interface | 15 | V _{CC} R | Receiver Power – 3.3V±5% |
| 6 | MOD-ABS | Modulation Definition 0 – Ground in Module | 16 | V _{CC} T | Transmitter Power – 3.3V±5% |
| 7 | RS0 | RX Rate Select (LVTTTL). This pin has an internal 30k pull-down to ground. A signal on this pin will not affect module performance. | 17 | V _{EE} T | Transmitter Signal Ground |
| 8 | RX_LOS | Loss of Signal Out (OC). | 18 | TD+ | Transmitter Data In |
| 9 | RS1 | TX Rate Select (LVTTTL). This pin has an internal 30k pull-down to ground. A signal on this pin will not affect module performance. | 19 | TD- | Inverse Transmitter Data In |
| 10 | V _{EE} R | Receiver Signal Ground | 20 | V _{EE} T | Transmitter Signal Ground |

MECHANICAL DIMENSIONS



Subject to change without notice.

For more information, visit smartoptics.com.

EXTENDED ORDERING INFORMATION, STANDARD

| Part Number | Description |
|----------------------|---|
| SO-SFP-622M-L40D-C27 | SFP, 622 Mbps, CWDM, SM, DDM, 23dB, 40 km, 1270nm |
| SO-SFP-622M-L40D-C29 | SFP, 622 Mbps, CWDM, SM, DDM, 23dB, 40 km, 1290nm |
| SO-SFP-622M-L40D-C31 | SFP, 622 Mbps, CWDM, SM, DDM, 23dB, 40 km, 1310nm |
| SO-SFP-622M-L40D-C33 | SFP, 622 Mbps, CWDM, SM, DDM, 23dB, 40 km, 1330nm |
| SO-SFP-622M-L40D-C35 | SFP, 622 Mbps, CWDM, SM, DDM, 23dB, 40 km, 1350nm |
| SO-SFP-622M-L40D-C37 | SFP, 622 Mbps, CWDM, SM, DDM, 23dB, 40 km, 1370nm |
| SO-SFP-622M-L40D-C39 | SFP, 622 Mbps, CWDM, SM, DDM, 23dB, 40 km, 1390nm |
| SO-SFP-622M-L40D-C41 | SFP, 622 Mbps, CWDM, SM, DDM, 23dB, 40 km, 1410nm |
| SO-SFP-622M-L40D-C43 | SFP, 622 Mbps, CWDM, SM, DDM, 23dB, 40 km, 1430nm |
| SO-SFP-622M-L40D-C45 | SFP, 622 Mbps, CWDM, SM, DDM, 23dB, 40 km, 1450nm |
| SO-SFP-622M-L40D-C47 | SFP, 622 Mbps, CWDM, SM, DDM, 23dB, 40 km, 1470nm |
| SO-SFP-622M-L40D-C49 | SFP, 622 Mbps, CWDM, SM, DDM, 23dB, 40 km, 1490nm |
| SO-SFP-622M-L40D-C51 | SFP, 622 Mbps, CWDM, SM, DDM, 23dB, 40 km, 1510nm |
| SO-SFP-622M-L40D-C53 | SFP, 622 Mbps, CWDM, SM, DDM, 23dB, 40 km, 1530nm |
| SO-SFP-622M-L40D-C55 | SFP, 622 Mbps, CWDM, SM, DDM, 23dB, 40 km, 1550nm |
| SO-SFP-622M-L40D-C57 | SFP, 622 Mbps, CWDM, SM, DDM, 23dB, 40 km, 1570nm |
| SO-SFP-622M-L40D-C59 | SFP, 622 Mbps, CWDM, SM, DDM, 23dB, 40 km, 1590nm |
| SO-SFP-622M-L40D-C61 | SFP, 622 Mbps, CWDM, SM, DDM, 23dB, 40 km, 1610nm |

EXTENDED ORDERING INFORMATION, EXTENDED

| Part Number | Description |
|------------------------|--|
| SO-SFP-622M-L40D-C27-E | SFP, 622 Mbps, CWDM, SM, DDM, 23dB, 40 km, 1270nm, ext. temp |
| SO-SFP-622M-L40D-C29-E | SFP, 622 Mbps, CWDM, SM, DDM, 23dB, 40 km, 1290nm, ext. temp |
| SO-SFP-622M-L40D-C31-E | SFP, 622 Mbps, CWDM, SM, DDM, 23dB, 40 km, 1310nm, ext. temp |
| SO-SFP-622M-L40D-C33-E | SFP, 622 Mbps, CWDM, SM, DDM, 23dB, 40 km, 1330nm, ext. temp |
| SO-SFP-622M-L40D-C35-E | SFP, 622 Mbps, CWDM, SM, DDM, 23dB, 40 km, 1350nm, ext. temp |
| SO-SFP-622M-L40D-C37-E | SFP, 622 Mbps, CWDM, SM, DDM, 23dB, 40 km, 1370nm, ext. temp |
| SO-SFP-622M-L40D-C39-E | SFP, 622 Mbps, CWDM, SM, DDM, 23dB, 40 km, 1390nm, ext. temp |
| SO-SFP-622M-L40D-C41-E | SFP, 622 Mbps, CWDM, SM, DDM, 23dB, 40 km, 1410nm, ext. temp |
| SO-SFP-622M-L40D-C43-E | SFP, 622 Mbps, CWDM, SM, DDM, 23dB, 40 km, 1430nm, ext. temp |
| SO-SFP-622M-L40D-C45-E | SFP, 622 Mbps, CWDM, SM, DDM, 23dB, 40 km, 1450nm, ext. temp |
| SO-SFP-622M-L40D-C47-E | SFP, 622 Mbps, CWDM, SM, DDM, 23dB, 40 km, 1470nm, ext. temp |
| SO-SFP-622M-L40D-C49-E | SFP, 622 Mbps, CWDM, SM, DDM, 23dB, 40 km, 1490nm, ext. temp |
| SO-SFP-622M-L40D-C51-E | SFP, 622 Mbps, CWDM, SM, DDM, 23dB, 40 km, 1510nm, ext. temp |
| SO-SFP-622M-L40D-C53-E | SFP, 622 Mbps, CWDM, SM, DDM, 23dB, 40 km, 1530nm, ext. temp |
| SO-SFP-622M-L40D-C55-E | SFP, 622 Mbps, CWDM, SM, DDM, 23dB, 40 km, 1550nm, ext. temp |
| SO-SFP-622M-L40D-C57-E | SFP, 622 Mbps, CWDM, SM, DDM, 23dB, 40 km, 1570nm, ext. temp |
| SO-SFP-622M-L40D-C59-E | SFP, 622 Mbps, CWDM, SM, DDM, 23dB, 40 km, 1590nm, ext. temp |
| SO-SFP-622M-L40D-C61-E | SFP, 622 Mbps, CWDM, SM, DDM, 23dB, 40 km, 1610nm, ext. temp |

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