

DEM-311GT-LEG
DELL 1000BASE-SX SFP MMF
850NM 550M REACH LC DOM



DEM-311GT-LEG

1.25Gbps SFP Transceiver

Features

- Up to 1.25Gb/s data links
- Duplex LC connector
- Hot-pluggable SFP footprint
- 850nm VCSEL Laser transmitter
- RoHS compliant and Lead Free
- Up to 550m on 50/125µm MMF
Up to 500m on 62.5/125µm MMF
- Metal enclosure for lower EMI
- Single +3.3V power supply
- Low power dissipation <800mW
- Commercial and industrial
operating temperature optional
- SFP MSA SFF-8074i Complaint
- Digital diagnostic compatible with SFF-847 Rev11.0

Applications

- 1000Base-SX
- 1x Fibre Channel

Product Description

Legrand's DEM-311GT-LEG Small Form Factor Pluggable (SFP) transceivers are compatible with the Small Form Factor Pluggable Multi-Sourcing Agreement (MSA). The SFP transceivers are high performance, cost effective modules supporting dual data-rate of 1.25Gbps/1.06Gbps and support distance up to 550m with MMF.

Legrand's SFP transceivers are RoHS compliant and lead-free.

Regulatory Compliance

- ESD to the Electrical PINs: compatible with MIL-STD-883 Method 3015.
- ESD to the Duplex LC Receptacle: compatible with IEC 61000-4-2.
- Immunity compatible with IEC 61000-4-3.
- EMI compatible with FCC Part 15 Class B EN55022 Class B (CISPR 22B) VCCI Class B.
- Laser Eye Safety compatible with FDA 21CFR 1040.10 and 1040.11 EN60950, EN (IEC) 60825-1,2.
- RoHS compliant with 2002/95/EC 4.1&4.2 2005/747/EC.



Pin Descriptions

| Pin | Symbol | Name/Descriptions | Ref. |
|-----|-------------|--|------|
| 1 | VeeT | Transmitter Ground (Common with Receiver Ground) | 1 |
| 2 | TX Fault | Transmitter Fault. | |
| 3 | TX Disable | Transmitter Disable. Laser output disabled on high or open. | 2 |
| 4 | MOD_DEF (2) | Module Definition 2. Data line for Serial ID. | 3 |
| 5 | MOD_DEF (1) | Module Definition 1. Clock line for Serial ID. | 3 |
| 6 | MOD_DEF (0) | Module Definition 0. Grounded within the module. | 3 |
| 7 | Rate Select | No connection required. | |
| 8 | LOS | Loss of Signal indication. Logic 0 indicates normal operation. | 4 |
| 9 | VeeR | Receiver Ground (Common with Transmitter Ground) | 1 |
| 10 | VeeR | Receiver Ground (Common with Transmitter Ground) | 1 |
| 11 | VeeR | Receiver Ground (Common with Transmitter Ground) | 1 |
| 12 | RD- | Receiver Inverted DATA out. AC Coupled. | |
| 13 | RD+ | Receiver Non-inverted DATA out. AC Coupled. | |
| 14 | VeeR | Receiver Ground (Common with Transmitter Ground) | 1 |
| 15 | VccR | Receiver Power Supply. | |
| 16 | VccT | Transmitter Power Supply. | |
| 17 | VeeT | Transmitter Ground (Common with Receiver Ground) | 1 |
| 18 | TD+ | Transmitter Non-Inverted DATA in. AC Coupled. | |
| 19 | TD- | Transmitter Inverted DATA in. AC Coupled. | |
| 20 | VeeT | Transmitter Ground (Common with Receiver Ground) | 1 |

Notes:

1. Circuit ground is internally isolated from chassis ground.
2. Laser output disabled on TX Disable >2.0V or open, enabled on TX Disable <0.8V.
3. Should be pulled up with 4.7k-10kohms on host board to a voltage between 2.0V and 3.6V. MOD_DEF (0) pulls line low to indicate module is plugged in.
4. LOS is open collector output. Should be pulled up with 4.7k-10kohms on host board to a voltage between 2.0V and 3.6V. Logic 0 indicates normal operation; logic 1 indicates loss of signal.

Recommended Operating Conditions

| Parameter | Symbol | Min. | Typ. | Max. | Unit |
|---|--------|------|-------|------|------|
| Power Supply Voltage | Vcc | 3.13 | 3.30 | 3.47 | V |
| Power Supply Current | Icc | | | 250 | mA |
| Case Operating Temperature – Commercial | Tc | 0 | | 70 | °C |
| Case Operating Temperature – Industrial | Ti | -40 | | 85 | °C |
| Data Rate (Gigabit Ethernet) | | | 1.25 | | Gbps |
| Data Rate (Fibre Channel) | | | 1.063 | | Gbps |
| 50/125µm MMF | L | | | 550 | m |

Electrical Characteristics (TOP=25°C, Vcc=3.3V)

| Parameter | Symbol | Min. | Typ. | Max. | Unit | Notes |
|--------------------------------|----------|---------|------|---------|------|-------|
| Transmitter | | | | | | |
| Input differential impedance | Rin | | 100 | | Ω | 1 |
| Single ended data input swing | Vin, pp | 250 | | 1200 | mV | |
| TX Disable-High | | Vcc-1.3 | | Vcc | V | |
| TX Disable-Low | | Vee | | Vee+0.8 | V | |
| TX Fault-High | | Vcc-0.5 | | Vcc | V | |
| TX Fault-Low | | Vee | | Vee+0.5 | V | |
| Receiver | | | | | | |
| Single ended data output swing | Vout, pp | 300 | 400 | 800 | mV | 2 |
| Data output rise time | tr | | | 175 | ps | 3 |
| Data output fall time | tf | | | 175 | ps | 3 |
| LOS-High | | Vcc-0.5 | | Vcc | V | |
| LOS-Low | | Vee | | Vee+0.5 | V | |

Notes:

1. AC coupled.
2. Into 100 ohm differential termination.
3. 20% - 80%

Optical and Electrical Characteristics

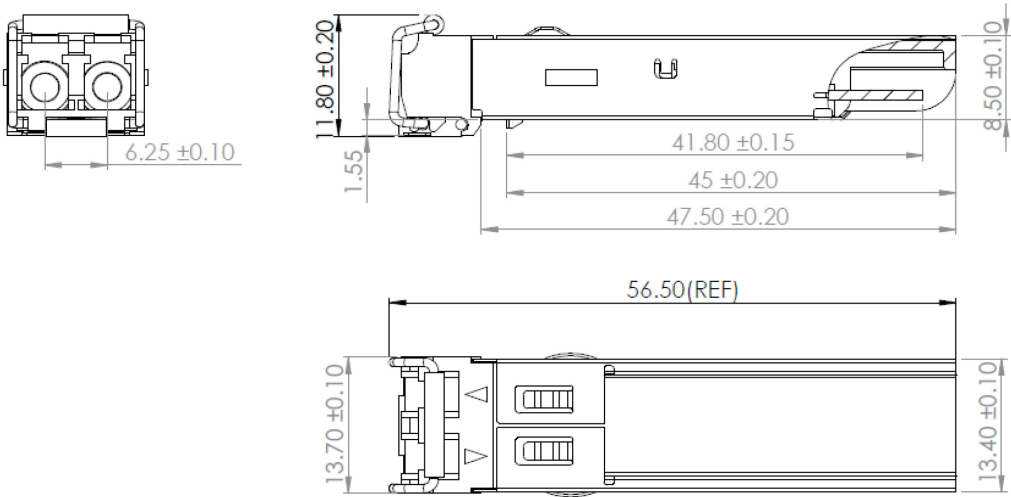
| Parameter | Symbol | Min. | Typ. | Max. | Unit | Notes |
|--------------------------|-------------------|------|------|------|------|-------|
| Transmitter | | | | | | |
| Average Output Power | PO | -9 | | -4 | dBm | 1 |
| Optical Wavelength | λ | 830 | 850 | 860 | nm | |
| Spectral Width | σ | | | 0.85 | nm | |
| Optical Rise/Fall Time | tr/tf | | | 260 | ps | 2 |
| Total Jitter | TJ | | | 200 | ps | |
| Optical Extinction Ratio | ER | 9 | | | dB | |
| Receiver | | | | | | |
| Receiver Sensitivity | RSNS | | | -18 | dBm | 3,4 |
| Maximum Received Power | RX _{MAX} | 0 | | | dBm | |
| Centre Wavelength | λ_C | 770 | | 860 | nm | |
| LOS De-Assert | LOSD | | | -26 | dBm | |
| LOS Assert | LOSA | -40 | | | dBm | |
| LOS Hysteresis | | 0.5 | | 5 | dB | |

Notes:

1. Class 1 Laser Safety.
2. Unfiltered, 20%-80%. Complies with GE and 1x FC eye masks when filtered.
3. Measured with conformance signals defined in FC-PI-2 Rev. 10.0 specifications.
4. Measured with PRBS 2⁷-1 at 10⁻¹⁰ BER.

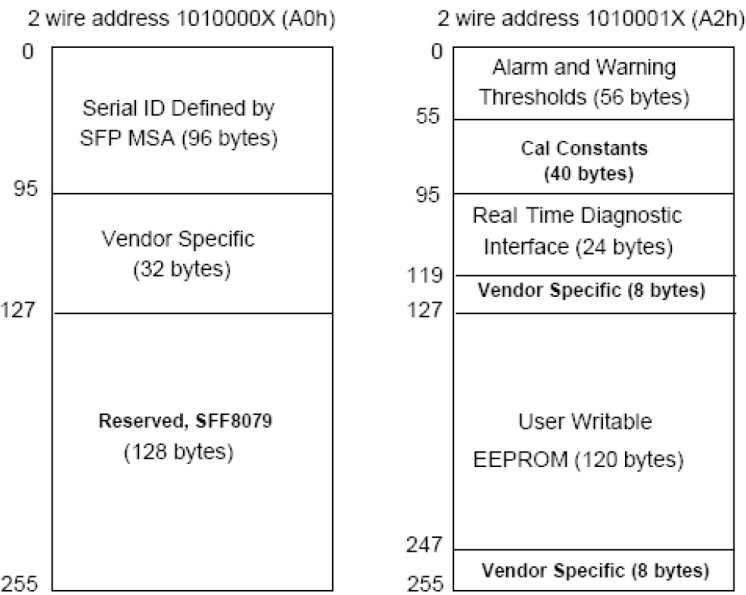
Mechanical Specifications

Small Form Factor Pluggable (SFP) transceivers are compatible with the dimensions defined by the SFP Multi-Sourcing Agreement (MSA).



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°C to 70°C (C) | ±3°C | Internal |
| | -40°C to 85°C (I) | | |
| Voltage | 2.97V to 3.63V | ±3% | Internal |
| Bias Current | 0mA to 100mA | ±10% | Internal |
| TX Power | -9dBm to -4dBm | ±3dB | Internal |
| RX Power | -18dBm to 0dBm | ±3dB | Internal |



Data Communications

125 Eugene O'Neill Drive
New London, CT 06320
800.934.5432
www.legrand.us

570 Applewood Crescent
Vaughan, Ontario L4K 4B4
905.738.9195
www.legrand.ca