
MPB25D1-D0I-8VT1

Features

- ◆ Hot-pluggable SFP28 form factor
- ◆ Supports 25.78125Gb/s bit rate
- ◆ Maximum link length of 70m on OM3 MMF and 100m on OM4 MMF
- ◆ Duplex LC receptacle
- ◆ Operating environment temperature -40 ~ +85°C
- ◆ Low power consumption
- ◆ SFP28 housing with enhanced EMI shielding
- ◆ Single 3.3V power supply

Application

- ◆ 25GBASE-SR Ethernet
- ◆ 32G Fibre Channel

Standard

- ◆ Compliant with SFF-8472
- ◆ Compliant with IEEE802.3by
- ◆ Compliant with SFF-8431
- ◆ RoHS complaint

1. General Description

MPB25D1-D0I-8VT1 is a single-Channel, Pluggable, Fiber-Optic SFP28 for 25 Gigabit Ethernet and Infiniband EDR Applications. It is a high performance module for short-range data communication and interconnect applications which operate at 25.78125Gbps up to 70m using OM3 fiber or 100m using OM4 fiber. This module is designed to operate over multimode fiber systems using a nominal wavelength of 850nm. The electrical interface uses a 20 contact edge type connector. The optical interface uses duplex LC receptacle.

2. Absolute Maximum Ratings

It has to be noted that the operation in excess of any individual absolute maximum ratings might cause permanent damage to this module.

| Parameter | Symbol | Min | Max | Unit |
|---------------------|--------|------|-----|------|
| Storage Temperature | Ts | -40 | +85 | °C |
| Operating Humidity | RH | 0 | 85 | % |
| Supply Voltage | Vcc | -0.5 | 3.6 | V |

3. Recommended Operating Environment

Recommended Operating Environment specifies parameters for which the electrical and optical characteristics hold unless otherwise noted.

| Parameter | Symbol | Min | Typical | Max | Unit |
|--|--------|------|---------|-------|------|
| Operating Case Temperature | Tc | -40 | | +85 | °C |
| Supply Voltage | Vcc | 3.13 | 3.3 | 3.47 | V |
| Supply Current | Icc | | | 300 | mA |
| Bit Rate | BR | | 25.78 | 28.05 | Gb/s |
| Fiber Length on 50/125μm high-bandwidth(OM3) MMF | | | | 70 | m |
| Fiber Length on 50/125μm high-bandwidth(OM4) MMF | | | | 100 | m |

4. Optical Characteristics

The following Optical characteristics are defined over the Recommended Operating Environment unless otherwise specified.

| Parameter | Symbol | Min | Typical | Max | Unit | Notes |
|---|------------------|------|---------|-------|------|-------|
| Transmitter Characteristics | | | | | | |
| Centre Wavelength | λ_c | 840 | 850 | 860 | nm | |
| Spectral Width(RMS) | σ | | | 0.6 | nm | |
| Average output power | Pavg | -8.4 | | 2.4 | dBm | |
| Extinction Ratio | ER | 2 | | | dB | |
| Optical Return Loss Tolerance | ORL | | | 12 | dB | |
| Receiver Characteristics | | | | | | |
| Centre Wavelength | λ_c | 840 | 850 | 860 | nm | |
| Receiver Sensitivity (Average power) | Psen | | | -10.3 | dBm | 1 |
| Stressed Sensitivity (OMA) | | | | -5.2 | dBm | 2 |
| LOS De-Assert | LOS _D | | | -13 | dBm | |
| LOS Assert | LOS _A | -30 | | | dBm | |
| LOS Hysteresis | | 0.5 | | | dB | |
| Receiver Reflectance | Rr | | | -12 | dB | |
| Input Saturation Power (Overload) | Psat | 2.4 | | | dBm | |

Notes:

- Receiver Sensitivity measured with a PRBS 2³¹-1 test pattern, @25.78125Gb/s, BER<5E-5.
- Stressed Sensitivity measured with a PRBS 2³¹-1 test pattern, @25.78125Gb/s, BER<1E-12.

5. Electrical Characteristics

The following electrical characteristics are defined over the Recommended Operating Environment unless otherwise specified.

| Parameter | Symbol | Min | Typ | Max | Unit | NOTE |
|----------------------------------|--------------------------------|-------|-----|----------------------|------|------|
| Supply Voltage | V _{cc} | 3.135 | 3.3 | 3.465 | V | |
| Supply Current | I _{cc} | | 180 | 300 | mA | |
| Transmitter | | | | | | |
| Input differential impedance | R _{in} | | 100 | | Ω | 1 |
| Differential data input swing | V _{in,pp} | 95 | | 900 | mV | |
| Transmit Disable Voltage | | 2.0 | | V _{cc} +0.3 | V | |
| Transmit Enable Voltage | | 0 | | 0.8 | V | |
| Receiver | | | | | | |
| Differential data output swing | V _{out,pp} | 300 | | 900 | mV | 2 |
| Data output rise time, fall time | T _r ,T _f | 8 | | | ps | 3 |
| LOS Assert Voltage | | 2.0 | | V _{cc} +0.3 | V | |
| LOS Deassert Voltage | | -0.3 | | +0.4 | V | |

Notes:

1. Connected directly to TX data input pins. AC coupled thereafter.
2. Into 100 ohms differential termination.
3. 20 – 80%. Measured with Module Compliance Test Board and OMA test pattern.

6. Pin Assignment

The SFP+ modules are hot-pluggable. Hot pluggable refers to plugging in or unplugging a module while the host board is powered. The SFP+ host connector is a 0.8 mm pitch 20 position right angle improved connector specified by SFF-8431, or stacked connector with equivalent electrical performance. SFP+ module contacts mates with the host in the order of ground, power, followed by signal as illustrated by Figure 1 and the contact sequence order listed in Table 1.

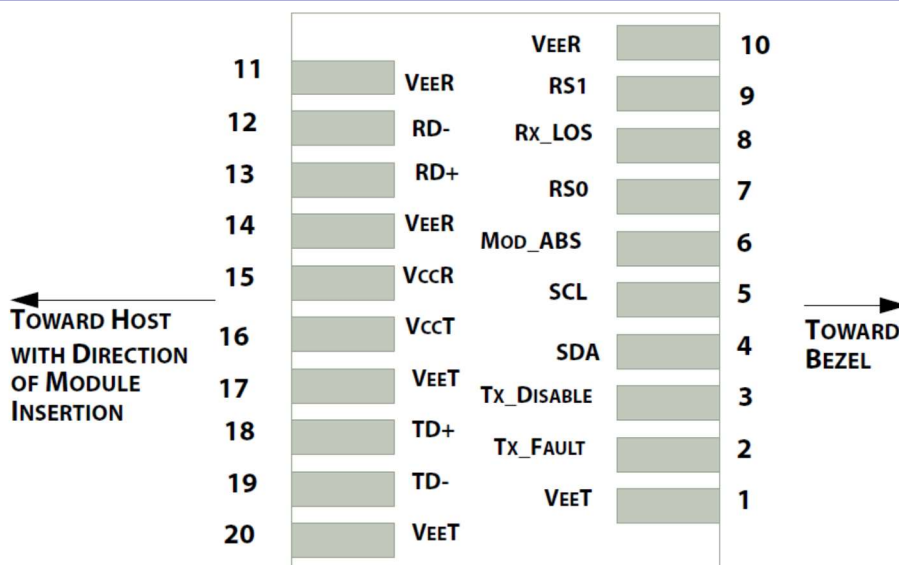


Figure1 SFP+ Pad assignment Top View

Table 1

| Pin | Symbol | Name/Description | Power Seq. | Ref. |
|-----|------------|---|------------|------|
| 1 | VeeT | Transmitter Ground | 1st | 1 |
| 2 | TX_Fault | Transmitter Fault | 3rd | 2 |
| 3 | TX_Disable | Transmitter Disable | 3rd | 3 |
| 4 | SDA | 2-Wire Serial Interface Data Line | 3rd | 4 |
| 5 | SCL | 2-Wire Serial Interface Data Line | 3rd | 4 |
| 6 | Mod_ABS | Module Absent, Connect to VeeT or VeeR in Module | 3rd | 5 |
| 7 | RS0 | No connection required | 3rd | 6 |
| 8 | RX_LOS | Receiver Loss of Signal indication | 3rd | 7 |
| 9 | RS1 | No connection required | 3rd | 8 |
| 10 | VeeR | Receiver Ground | 1st | 1 |
| 11 | VeeR | Receiver Ground | 1st | 1 |
| 12 | RD- | Receiver Inverted DATA out. AC Coupled. CML-O | 3rd | 9 |
| 13 | RD+ | Receiver Non-inverted DATA out. AC Coupled. CML-O | 3rd | 9 |
| 14 | VeeR | Receiver Ground | 1st | 1 |
| 15 | VccR | Receiver Power Supply | 2nd | 10 |
| 16 | VccT | Transmitter Power Supply | 2nd | 10 |
| 17 | VeeT | Transmitter Ground | 1st | 1 |
| 18 | TD+ | Transmitter Non-Inverted DATA in. AC Coupled. CML-I | 3rd | 11 |

| | | | | |
|----|------|---|-----|----|
| 19 | TD- | Transmitter Inverted DATA in. AC Coupled. CML-I | 3rd | 11 |
| 20 | VeeT | Transmitter Ground | 1st | 1 |

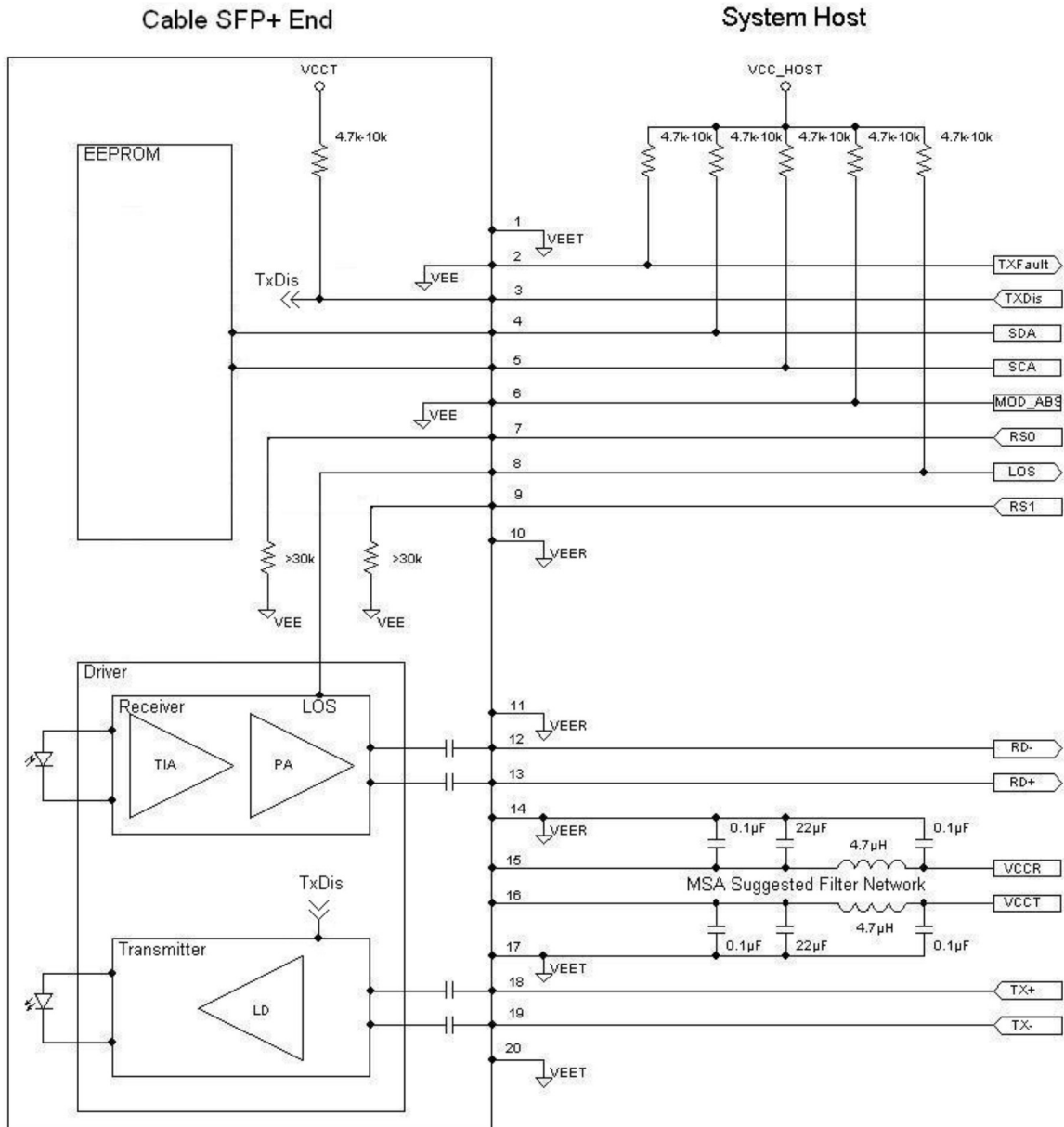
SFP28 Module PIN Definition

Power Seq.: Pin engagement sequence during hot plugging.

Notes:

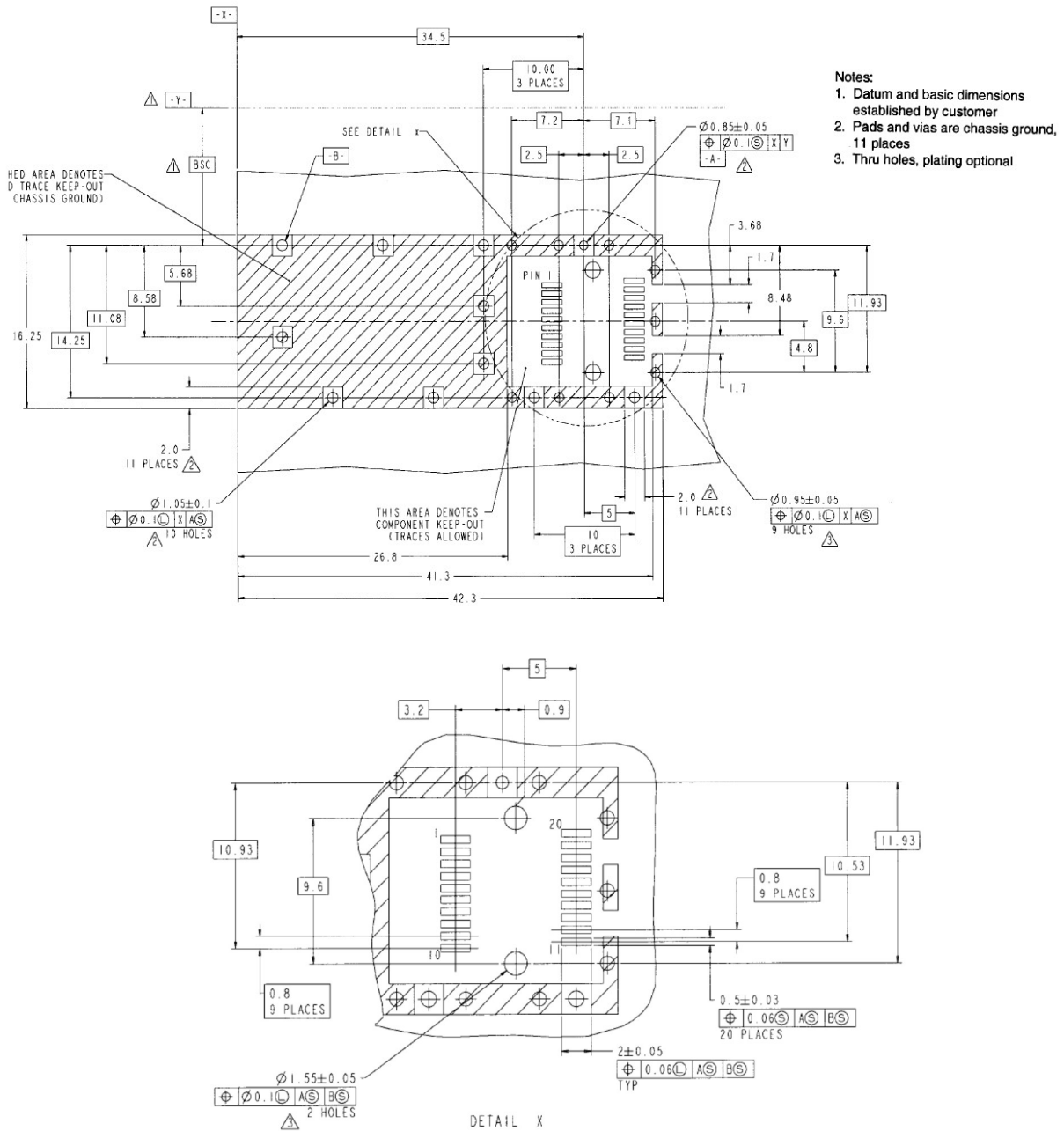
1. The module signal ground contacts.
2. This pin is an open drain/collector and should be pulled up to Vcc-host in the host with a 4.7k~10k Ohm resistor.
3. This pin should be pulled up to Vcct with a 4.7k~10k Ohm resistor in modules.
4. SDA&SCL (IIC) are needed pull up 4.7k~10k Ohm resistors on host board.
5. Mod_ABS is connected to VeeT or VeeR in the SFP+ module.
6. Rate Select 0,no connection required.
7. Module RX_Los of signal indication need pull up 4.7k~10k Ohm resistor on host board.
8. Rate Select 1,no connection required.
9. RD -/+: These are the differential receiver outputs. They are CML AC-coupled with 100 Ohm terminal resistor matching internal.
10. VccR and VccT are the receiver and transmitter power supplies.
11. TD-/+: These are the differential transmitter inputs. They are CML AC-coupled with 100 Ohm terminal resistor matching internal.

7. Host-Active optical cable end Interface Block Diagram



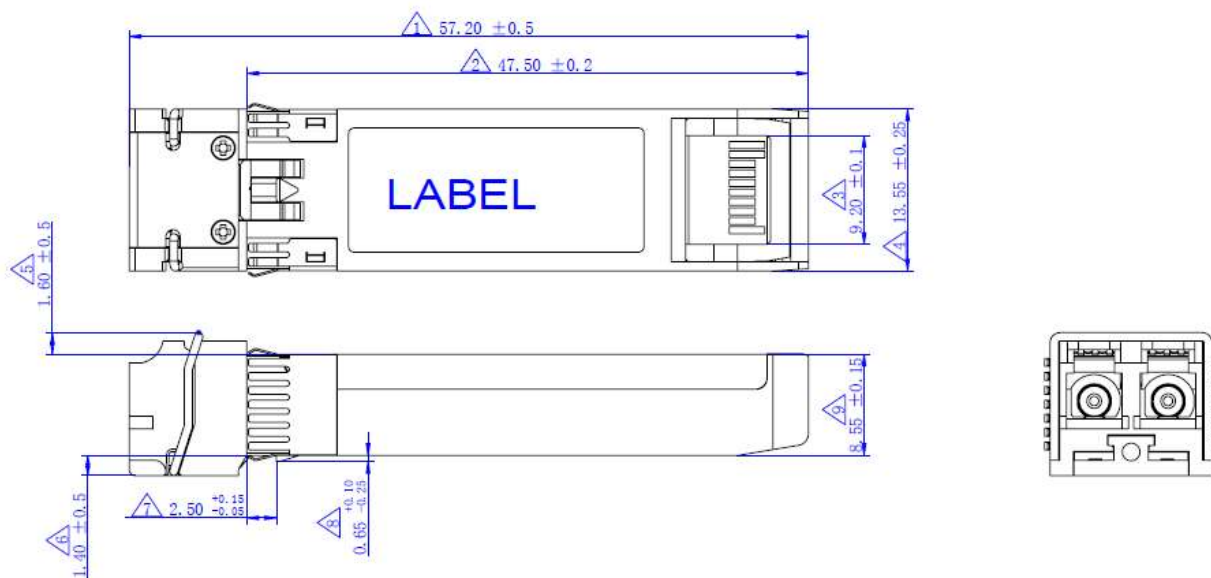
8. Host PCB Layout

Dimensions are in millimeters. (Unit: mm)



9. Mechanical Drawing

Dimensions are in millimeters. (Unit: mm)



10. Ordering information

| Part. No | Specifications | | | | | | |
|------------------|----------------|-------------|-----------|-----|-----------|-----------|--------|
| | Pack | Rate (Gbps) | Tx (nm) | Rx | Temp (°C) | Reach (m) | Others |
| MPB25D1-D0I-8VT1 | SFP28 | 25.78125 | 850 VCSEL | PIN | -40~+85 | 100 | RoHS |

*Note:

1. OM3 Cable length =<70m or OM4 Cable length =<100m
2. More detail product selection and cable lengths, please contact MNC