

10Gb/S SFP+ CWDM Transceiver

P/N: TSFPPC-AC1IxxA



Product Features

- Compliant with IEEE802.3ae 10GBASE-ER/EW
- Compliant with SFP+ MSA
- Up to 40km on 9/125um SMF
- 10Gb/s serial optical interface
- Maximum power consumption 1.8W
- SFP MSA package with duplex LC connector
- Very low EMI and excellent ESD protection
- Single 3.3V power supply
- SFP mechanical interface
- Digital Diagnostic Monitor Interface
- RoHS-6 Compliant

Application

- 10G Base-ER/EW
- 10G Fiber Channel

Absolute Maximum Rating

| Parameter | Min | Max | Unit | Note |
|---------------------------|------|-----|------|------|
| Storage Temperature | -40 | 85 | °C | |
| 3.3V Power Supply Voltage | -0.5 | 4.0 | V | |
| Relative Humidity | | 85 | % | |

Recommended Operating Conditions

| Parameter | Min | Typical | Max | Unit | Note |
|----------------------------|-----------|---------|-------|------|------|
| Case Operating Temperature | 0 | | 70 | °C | |
| Power Supply Voltage | 3.135 | 3.3 | 3.465 | V | |
| Data Rate | Ethernet | 10.3125 | | Gbps | |
| | SDH/Sonet | 9.953 | | | |
| Supply Current | | | 450 | mA | |
| Link Distance | | | 40 | km | |

Electrical Characteristics

| Parameter | Min | Typical | Max | Unit | Note |
|-----------------------------------|-----|---------|---------|------|------|
| Transmitter | | | | | |
| Differential Input Voltage | 120 | | 820 | mVpp | |
| Tx Disable input | H | 2.0 | Vcc+0.3 | V | |
| | L | 0 | 0.8 | | |
| Tx Fault output | H | 2.0 | Vcc+0.3 | V | |
| | L | 0 | 0.8 | | |
| Input Differential Impedance | | 100 | | Ω | |
| Receiver | | | | | |
| Differential output voltage swing | 340 | 650 | 800 | mVpp | |
| Rx LOS Output | H | 2.0 | Vcc+0.3 | V | |
| | L | 0 | 0.8 | | |

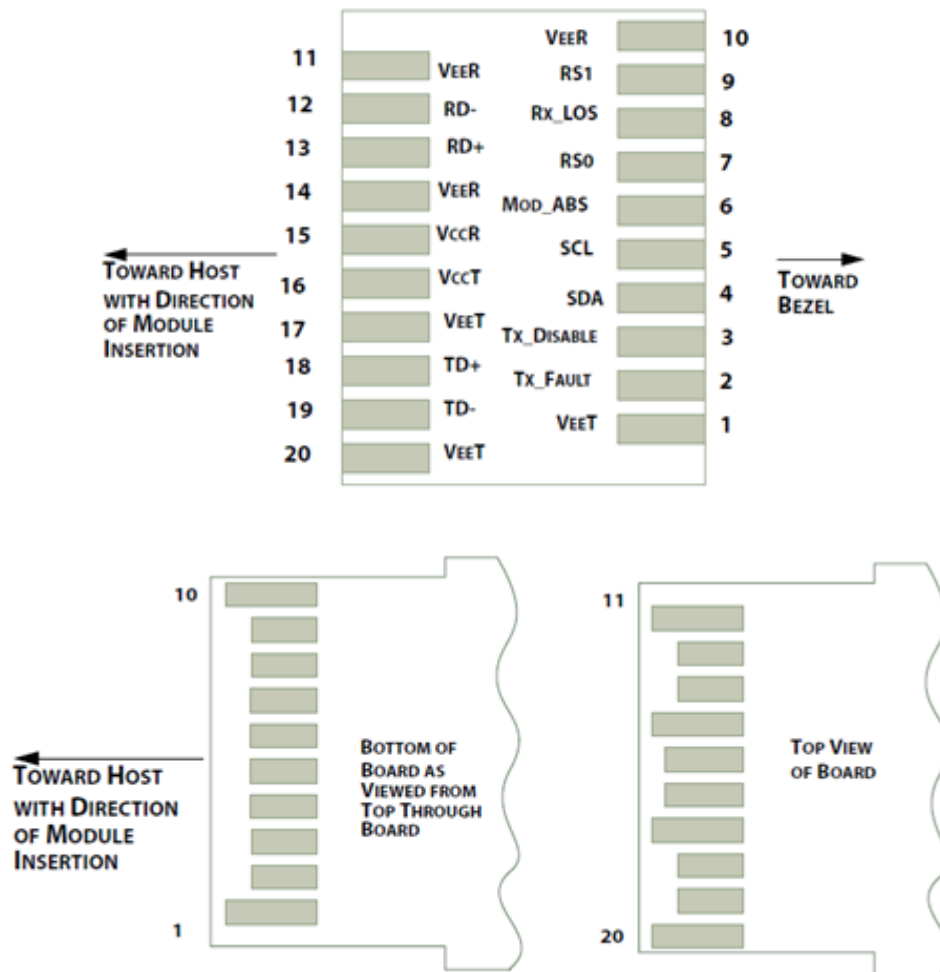
Optical Characteristics

| Parameter | Symbol | Min | Typical | Max | Unit | Note |
|-------------------------------------|-----------------|---------------------------|---------|------------------|------|------|
| Transmitter Optical Characteristics | | | | | | |
| Center Wavelength | λ | λ_c -6.5 | | λ_c +6.5 | nm | |
| Spectral Width – RMS | $\Delta\lambda$ | | | 1 | nm | |
| Side Mode Suppression Ratio | SMSR | 30 | | | dB | |
| Average Launch Optical Power | LOP | -1 | | +4 | dBm | 1 |
| Optical Modulation Amplitude | OMA | -5.2 | | | dBm | |
| Extinction Ratio | ER | 3.5 | | | dB | 1 |
| Rise/Fall time (20%~80%) | | | | 50 | ps | |
| Dispersion penalty | | | | 3 | dB | |
| Output Optical Eye | | IEEE 802.3-2005 Compliant | | | | |
| Receiver Optical Characteristics | | | | | | |
| Center Wavelength | λ | 1270 | | 1610 | nm | |
| Sensitivity | Psen | | | -16 | dBm | 2 |
| Min. overload | | 0.5 | | | dBm | |
| LOS Assert | LOSA | -35 | | | dBm | |
| LOS De-assert | LOSD | | | -18 | dBm | |
| LOS Hysteresis | LOSH | 0.5 | | 4 | dB | |

Notes

1. Measured at 10.3125b/s with PRBS $2^{31} - 1$ NRZ test pattern
2. Under the ER worst case, measured at 10.3125 Gb/s with PRBS $2^{31} - 1$ NRZ test pattern for BER $<1 \times 10^{-12}$

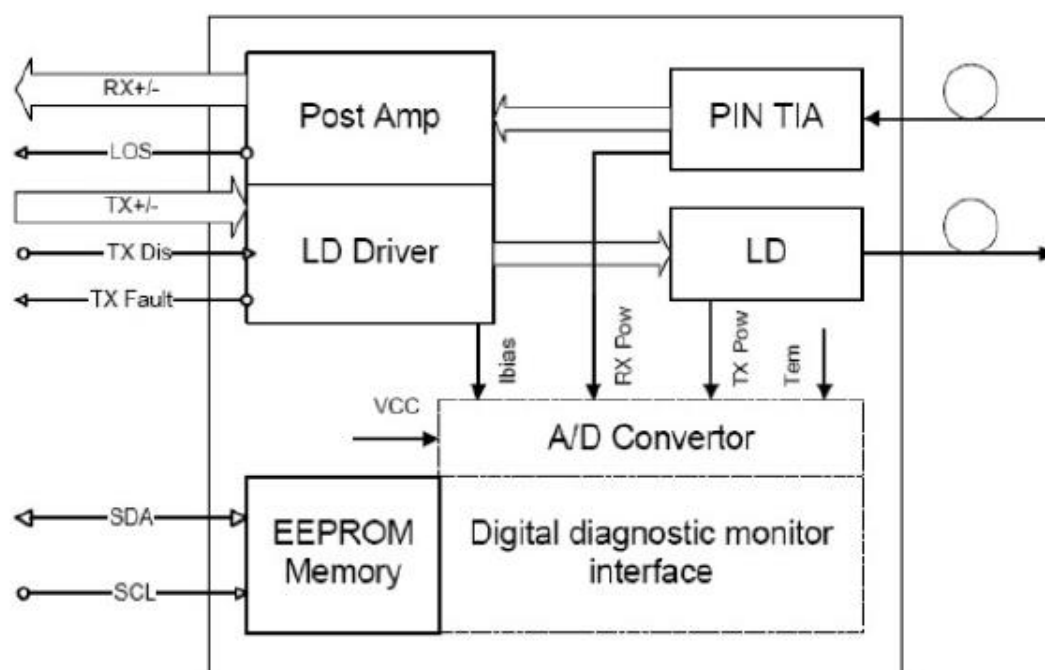
SFP+ Module Pad Assignments and Descriptions



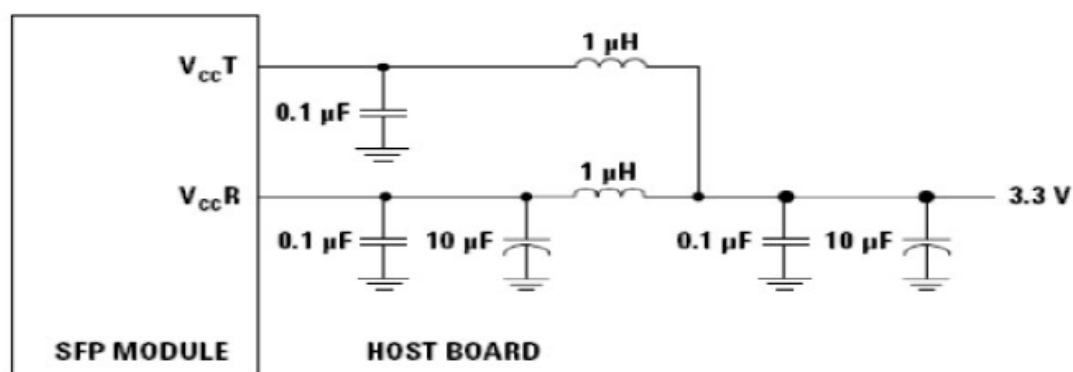
| PIN | Logic | Symbol | Name / Description | Note |
|-----|-----------|----------|--|------|
| 1 | | VeeT | Module Transmitter Ground | |
| 2 | LVTTL-O | TX_Fault | Module Transmitter Fault | |
| 3 | LVTTL-I | TX_Dis | Transmitter Disable; Turns off transmitter laser output | |
| 4 | LVTTL-I/O | SDA | 2-Wire Serial Interface Data Line | |
| 5 | LVTTL-I | SCL | 2-Wire Serial Interface Clock | |
| 6 | | MOD_DEF0 | Module Definition, Grounded in the module | |
| 7 | LVTTL-I | RS0 | Receiver Rate Select, default is high for 8G/10G application, when set to low by system, transceiver will set the bandwidth to under 4.25G to improve the sensitivity at low data rate | |

| | | | | |
|----|---------|--------|--|--|
| 8 | LVTTL-O | RX_LOS | Receiver Loss of Signal Indication Active LOW | |
| 9 | LVTTL-I | RS1 | Transmitter Rate Select, default input is high for 8G/10G application, when set to low by system, transceiver will set the TX optical output to be compliant with low data rate fiber channel specifications | |
| 10 | | VeeR | Module Receiver Ground | |
| 11 | | VeeR | Module Receiver Ground | |
| 12 | CML-O | RD- | Receiver Inverted Data Output | |
| 13 | CML-O | RD+ | Receiver Data Output | |
| 14 | | VeeR | Module Receiver Ground | |
| 15 | | VccR | Module Receiver 3.3 V Supply | |
| 16 | | VccT | Module Transmitter 3.3 V Supply | |
| 17 | | VeeT | Module Transmitter Ground | |
| 18 | CML-I | TD+ | Transmitter Non-Inverted Data Input | |
| 19 | CML-I | TD- | Transmitter Inverted Data Input | |
| 20 | | VeeT | Module Transmitter Ground | |

Transceiver Block Diagram

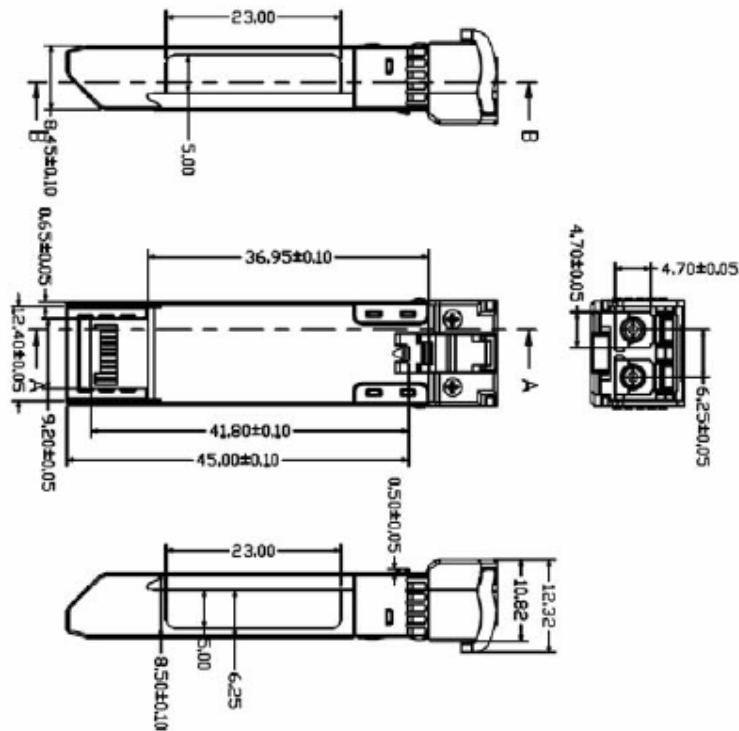


Recommended Host Board Power Supply Circuit



Mechanical Design Diagram

Unit: mm



Order Information

| Channel Code (xx) | Center Wavelength(nm) |
|-------------------|-----------------------|
| 47 | 1471 |
| 49 | 1491 |
| 51 | 1511 |
| 53 | 1531 |
| 55 | 1551 |
| 57 | 1571 |
| 59 | 1591 |
| 61 | 1611 |