

SFP 1.25G Duplex CWDM 40km LC

TSXXCAE-CN

FEATURES

- Duplex LC receptacle optical interface compliant
- Up to 1.25Gb/s Data Links
- Hot-Pluggable
- Up to 40km on 9/125 μ m SMF
- Duplex LC connector
- DFB laser transmitter
- Single +3.3V Power Supply
- Monitoring Interface Compliant with SFF-8472
- Maximum Power <1W
- RoHS compliant and Lead Free Industrial /Extended/ Commercial

APPLICATIONS

- Metro/Access Networks
- 1.25 Gb/s 1000Base-EX Ethernet
- 1 \times Fibre Channel
- Other Optical Links

ORDERING INFORMATION

| Part Number | Form Factor | Data Rate | Media | Distance (km) | Wavelength (nm) | Temperature (°C) |
|-------------|-------------|-----------|-------|---------------|-----------------|------------------|
| TSXXCAE-CN | SFP | 1.25G | SMF | 40 | CWDM | 0~70 |

NOTE:

CWDM: 1270、1290、1310、1330、1350、1370、1390、1410、1430、1450、1470、1490、1510、1530、1550、1570、1590、1610

1. ABSOLUTE MAXIMUM PARAMETERS

Exceeding the limits below may damage the active optical cable permanently.

| Parameter | Symbol | Min. | Max. | Unit. |
|---------------------------|--------|------|------|-------|
| Storage Temperature Range | Ts | -40 | 85 | °C |
| Relative Humidity | RH | 5 | 95 | % |
| Maximum Supply Voltage | Vcc3 | -0.5 | 4.0 | V |

2. RECOMMENDED OPERATING CONDITIONS

| Parameter | Symbol | Min. | Typ. | Max. | Unit. |
|----------------------------------|--------|------|------|-------|-------|
| Operating Case Temperature Range | Tc | 0 | | 70 | °C |
| Power Supply Voltage | Vcc | 3.14 | 3.3 | 3.46 | V |
| Bit Rate | BR | 1.0 | 1.25 | | Gb/s |
| Bit Error Ratio | BER | | | 1E-12 | |
| Max Supported Link Length | L | | | 40 | Km |

3. ELECTRICAL CHARACTERISTICS

| Parameter | Min. | Typ. | Max. | Unit. | Notes |
|----------------------------------|------|------|---------|-------|-------|
| Input Differential Impedance | 80 | 100 | 120 | Ω | |
| Differential Data Input | 150 | | 1100 | mVp-p | |
| Transmit Disable Voltage | 2 | | VCCHOST | V | |
| Transmit Enable Voltage | VEE | | VEE+0.8 | V | |
| Transmit Fault Assert Voltage | 2 | | VCCHOST | V | |
| Transmit Fault De-Assert Voltage | VEE | | VEE+0.4 | V | |
| Differential Data Output | 300 | | 600 | mVp-p | |
| Output Rise Time | 25 | | | pS | |
| Output Fall Time | 25 | | | pS | |
| LOS Fault | 2 | | VCCHOST | V | |
| LOS Normal | VEE | | VEE+0.4 | V | |

4. OPTICAL CHARACTERISTICS

| Optical transmitter Characteristics | | | | | | |
|---|----------------|---------------|-----------|---------------|------|-------|
| Parameter | Symbol | Min | Typical | Max | Unit | Notes |
| Nominal Wavelength | λ | $\lambda-6.5$ | λ | $\lambda+6.5$ | nm | |
| Optical Output Power | Pav | 0 | | 5 | dBm | |
| Spectral Width(RMS) | σ_{RMS} | | | 3 | nm | |
| Extinction Ratio | ER | 9 | | | dB | |
| Average Launch Power of OFF Transmitter | POFF | | | -45 | dBm | |
| Optical receiver Characteristics | | | | | | |
| Parameter | Symbol | Min | Typical | Max | Unit | Notes |
| Receiver Sensitivity | RSENSE | | | -26 | dBm | 1 |
| Receiver Overload | | -3 | | | dBm | |
| LOS Assert | LOSA | | | -28 | dBm | |
| LOS De-Assert LOS | LOSD | -38 | | | dBm | |
| LOS Hysteresis | | 0.5 | 2 | 6 | dB | |

NOTE:

1. Measured at CWDM, ER>9dBm, PRBS 2⁷-1 and BER better than or equal to 1E-12

5. PIN DESCRIPTIONS

| Pin | Symbol | Function/Description | Ref. |
|-----|-------------|---|------|
| 1 | VeeT | Transmitter Ground | |
| 2 | TX Fault | Transmitter Fault Indication | 1 |
| 3 | TX Disable | Transmitter Disable-Module disables on high or open | 2 |
| 4 | MOD-DEF2 | Module Definition 2-Two wire serial ID interface | 3 |
| 5 | MOD-DEF1 | Module Definition 1-Two wire serial ID interface | 3 |
| 6 | MOD-DEF0 | Module Definition 0-Two wire serial ID interface | 3 |
| 7 | Rate Select | Not Connected | |
| 8 | LOS | Loss of Signal | 4 |
| 9 | VeeR | Receiver Ground | |
| 10 | VeeR | Receiver Ground | |
| 11 | VeeR | Receiver Ground | |
| 12 | RD- | Inverse Received Data out | 5 |
| 13 | RD+ | Received Data out | 5 |
| 14 | VeeR | Receiver Ground | |
| 15 | VccR | Receiver Power — +3.3V±5% | 6 |
| 16 | VccT | Transmitter Power — +3.3 V±5% | 6 |
| 17 | VeeT | Transmitter Ground | |
| 18 | TD+ | Transmitter Data In | 7 |
| 19 | TD- | Inverse Transmitter Data In | 7 |
| 20 | VeeT | Transmitter Ground | |

NOTE:

1. TX Fault is open collector/drain output which should be pulled up externally with a 4.7K–10KΩ resistor on the host board to supply $<V_{ccT}+0.3V$ or $V_{ccR}+0.3V$. When high, this output indicates a laser fault of some kind. Low indicates normal operation. In the low state, the output will be pulled to $<0.8V$

2. TX Disable input is used to shutdown the laser output per the statetable below. It is pulled up within the module with a 4.7 – 10K resistor.

Low (0 to 0.8V): Transmitter on Between ($>0.8V, < 2.0V$): Undefined

High (2.0 to 3.47V): Transmitter Disabled Open: Transmitter Disabled

3. Mod-Def 0, 1, 2. These are the module definition pins. They should be pulled up with a 4.7 - 10K resistor on the host board to supply less than $V_{ccT}+0.3V$ or $V_{ccR}+0.3V$.

Mod-Def 0 is grounded by the module to indicate that the module is present

Mod-Def 1 is clock line of two wire serial interface for optional serial ID.

Mod-Def 2 is data line of two wire serial interface for optional serial ID.

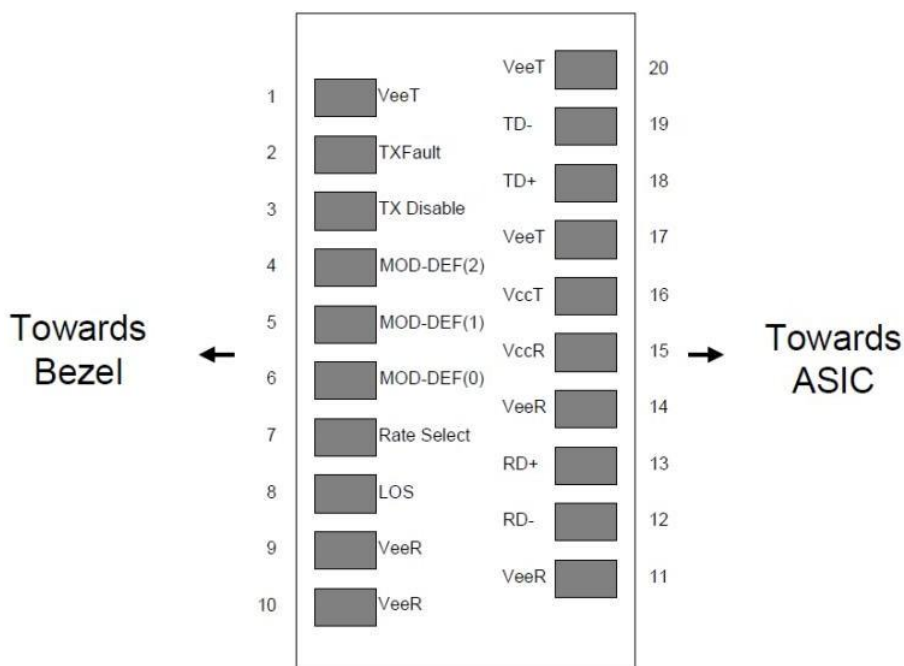
4. LOS (Loss of signal) is an open collector/drain output which should be pulled up externally with a 4.7K – 10K resistor on the host board to supply $<V_{ccT}+0.3V$ or $V_{ccR}+0.3V$. When high, this output indicates the received optical power is below the worst case receiver sensitivity (as defined by the standard in use). Low indicates normal operation. In the low state, the output will be pulled to $<0.8V$.

5. RD-/+ : These are the differential receiver outputs. They are AC coupled 100Ω differential lines which should be terminated with 100Ω differential at the user SERDES. The AC coupling is done inside the module and thus not required on the host board.

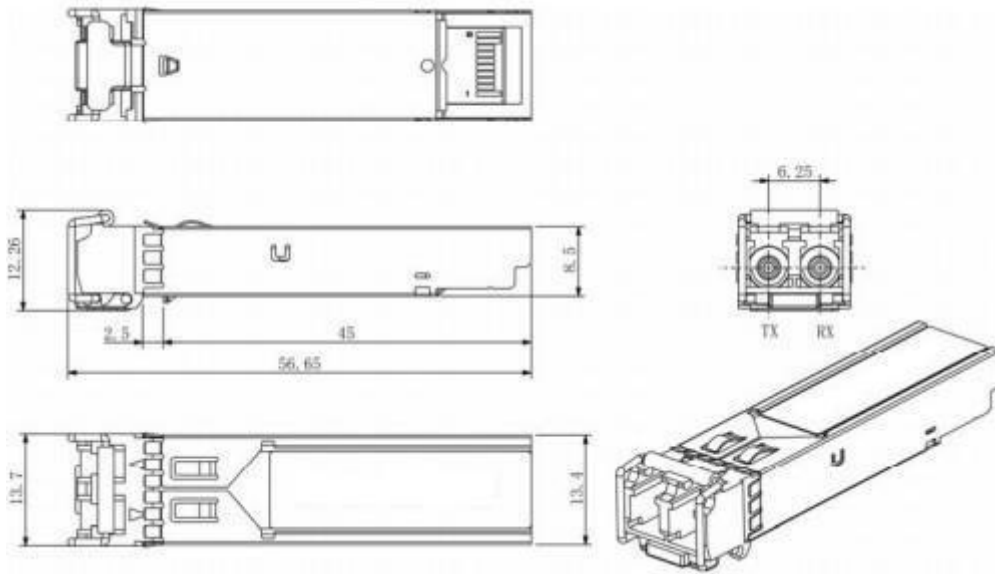
6. V_{ccR} and V_{ccT} are the receiver and transmitter power supplies. They are defined as $3.3V \pm 5%$ at the SFP connector pin. The in-rush current will typically be no more than 30mA above steady state supply current after 500ns

7. TD-/+ : These are the differential transmitter inputs. They are AC coupled differential lines with 100Ω differential termination inside the module. The AC coupling is done inside the module and is thus not required on host board

6. PIN DIAGRAM



7. Mechanical Design Diagram



8. LABEL DIAGRAM



TSXXCAE-CN

SFP 1.25G Duplex CWDM 40km LC

Class 1 Laser

MADE IN CHINA

S/N: ??????????



X.XX.XX.XXX