# WT-XFP-LR

## 10Gb/s 1310nm XFP 10Km

## 1.Feature

- Supports 9.95Gb/s to 11.3Gb/s bit rates
- Hot Pluggable XFP Footprint
- 1310nm DFB Laser and PIN photo detector
- Up to 10km transmission on SMF
- Power dissipation < 2W
- Single Power Supply: 3.3V
- No Reference Clock Required
- Compatible with RoHS
- Built-in Digital Diagnostic Functions

## 2.Application

- 10GBASE-LR/LW 10G Ethernet
- SONET OC-192 SR-1
- SDH STM I-64.1
- 1200-SM-LL-L 10G Fibre Channel
- 10GBASE-LR/LW with FEC
- 1200-SM-LL-L 10G Fibre Channel with FEC

## 3.Absolute Maximum Ratings

| Parameter | Symbol | Minimum | Maximum | Units |
|---|---|---|---|---|
| Storage Temperature | Tst | -40 | +85 | °C |
| Supply Voltage | Vcc | 0 | +3.6 | V |
| Operating Relative Humidity | RH | 0 | 85 | % |

## 4.Operation Environment

| Parameter | Symbol | Min | Typical | Max | Units |
|---|---|---|---|---|---|
| Supply Voltage | Vcc | 3.15 | | 3.45 | V |
| Operating Case Temperature | Tc | 0 | | +70 | °C |
| Power Dissipation | | | | 2 | W |
| Data Rate | | 9.95 | | 11.3 | Gbps |

## 5.Optical Characteristics

(Ambient Operating Temperature 0°C to +70°C, Vcc =3.3 V)

| Parameter | Symbol | Min. | Typ. | Max. | Units |
|---|---|---|---|---|---|
| **Transmitter Section** | | | | | |
| Center Wavelength | λo | 1290 | 1310 | 1330 | nm |
| Side-Mode Suppression Ratio | SMSR | 35 | - | - | dB |
| Average Output Power | Po | -5 | - | +0.5 | dBm |
| Extinction Ratio | Er | 4 | - | - | dB |
| Jitter(p-p) | | | | 0.1 | UI |
| Relative Intensity Noise | $RIN_{12}OMA$ | | | -130 | dB/Hz |
| **Receiver Section** | | | | | |
| Center Wavelength | λo | | 1310 | | nm |
| Receiver Sensitivity | Rsen | | | -13 | dBm |
| Stressed Sensitivity | Rsen | | | -12 | dBm |
| Receiver Overload | Rov | 0 | | | dBm |
| Return Loss | | 12 | | | dB |
| LOS Assert | $LOS_A$ | -28 | | | dBm |
| LOS Dessert | $LOS_D$ | | | -14 | dBm |
| LOS Hysteresis | | 0.5 | | 4 | |

## 6.Electrical Characteristics

(Ambient Operating Temperature 0°C to +70°C, Vcc =3.3 V)

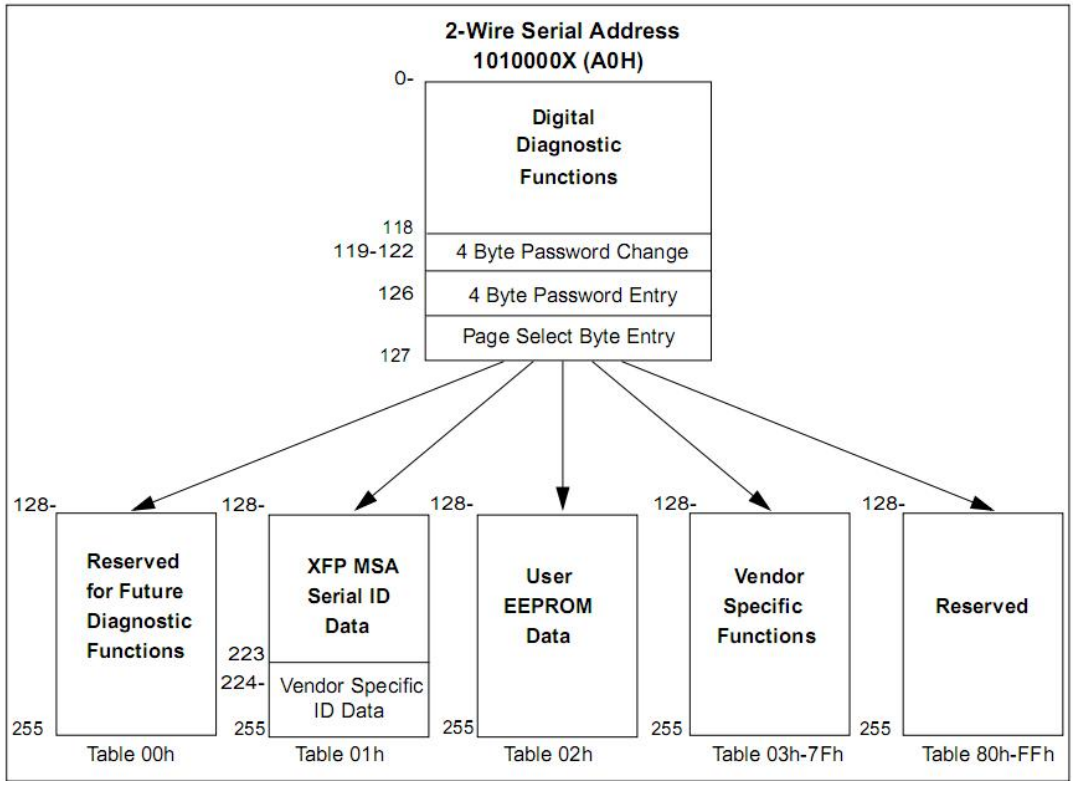
| Parameter | | Symbol | Min. | Typ. | Max. | unit |
|---|---|---|---|---|---|---|
| **Transmitter Section** | | | | | | |
| Input Differential Impendence | | Zin | 90 | 100 | 110 | Ohm |
| Data Input Swing Differential | | Vin | 120 | | 850 | mV |
| TX Disable | Disable | | 2.0 | | Vcc | V |
| | Enable | | 0 | | 0.8 | V |
| TX Fault | Assert | | 2.0 | | Vcc | V |
| | Deassert | | 0 | | 0.8 | V |
| **Receiver Section** | | | | | | |
| Output differential impendence | | Zout | | 100 | | Ohm |
| Data output Swing Differential | | Vout | 340 | 650 | 850 | mV |
| Rx_LOS | Assert | | 2.0 | | Vcc | V |
| | Deassert | | 0 | | 0.8 | V |

## 7.Diagnostics

| Parameter | Range | Accuracy | Unit | Calibration |
|---|---|---|---|---|
| Temperature | -10 ~ 75 | ±3 | °C | Internal |
| Bias Current | 0 ~ 100 | 0.5 | mA | Internal |
| Tx Power | -8 ~ 1 | ±1 | dBm | Internal |
| Rx Power | -18 ~ 0 | ±1 | dBm | Internal |

For more detailed information including memory map, please see XFP MSA Specification

## 8.EEPROM INFORMATION（A0）:



## 9.Pin Description:

| Pin | Logic | Symbol | Name/Description | Ref. |
|---|---|---|---|---|
| 1 | | GND | Module Ground | 1 |
| 2 | | VEE5 | Optional –5.2 Power Supply – **Not required** | |
| 3 | LVTTL-I | Mod-Desel | Module De-select; When held low allows the module to respond to 2-wire serial interface commands | |
| 4 | LVTTL-O | $\overline{\text{Interrupt}}$ | Interrupt (bar); Indicates presence of an important condition which can be read over the serial 2-wire interface | 2 |
| 5 | LVTTL-I | TX_DIS | Transmitter Disable; Transmitter laser source turned off | |
| 6 | | VCC5 | +5 Power Supply– **Not required** | |
| 7 | | GND | Module Ground | 1 |
| 8 | | VCC3 | +3.3V Power Supply | |
| 9 | | VCC3 | +3.3V Power Supply | |
| 10 | LVTTL-I | SCL | Serial 2-wire interface clock | 2 |
| 11 | LVTTL-I/O | SDA | Serial 2-wire interface data line | 2 |
| 12 | LVTTL-O | Mod_Abs | Module Absent; Indicates module is not present. Grounded in the module. | 2 |
| 13 | LVTTL-O | Mod_NR | Module Not Ready; Finisar defines it as a logical OR between RX_LOS and Loss of Lock in TX/RX. | 2 |
| 14 | LVTTL-O | RX_LOS | Receiver Loss of Signal indicator | 2 |
| 15 | | GND | Module Ground | 1 |
| 16 | | GND | Module Ground | 1 |
| 17 | CML-O | RD- | Receiver inverted data output | |
| 18 | CML-O | RD+ | Receiver non-inverted data output | |
| 19 | | GND | Module Ground | 1 |
| 20 | | VCC2 | +1.8V Power Supply – **Not required** | |
| 21 | LVTTL-I | P_Down/RST | Power Down; When high, places the module in the low power stand-by mode and on the falling edge of P_Down initiates a module reset | |
| | | | Reset; The falling edge initiates a complete reset of the module including the 2-wire serial interface, equivalent to a power cycle. | |
| 22 | | VCC2 | +1.8V Power Supply – **Not required** | |
| 23 | | GND | Module Ground | 1 |
| 24 | PECL-I | RefCLK+ | Reference Clock non-inverted input, AC coupled on the host board – **Not required** | 3 |
| 25 | PECL-I | RefCLK- | Reference Clock inverted input, AC coupled on the host board – **Not required** | 3 |
| 26 | | GND | Module Ground | 1 |
| 27 | | GND | Module Ground | 1 |
| 28 | CML-I | TD- | Transmitter inverted data input | |
| 29 | CML-I | TD+ | Transmitter non-inverted data input | |
| 30 | | GND | Module Ground | 1 |

Notes:

1. Module circuit ground is isolated from module chassis ground within the module.
2. Open collector; should be pulled up with 4.7k – 10kohms on host board to a voltage between 3.15V and 3.6V
3. A Reference Clock input is not required. If present, it will be ignored.

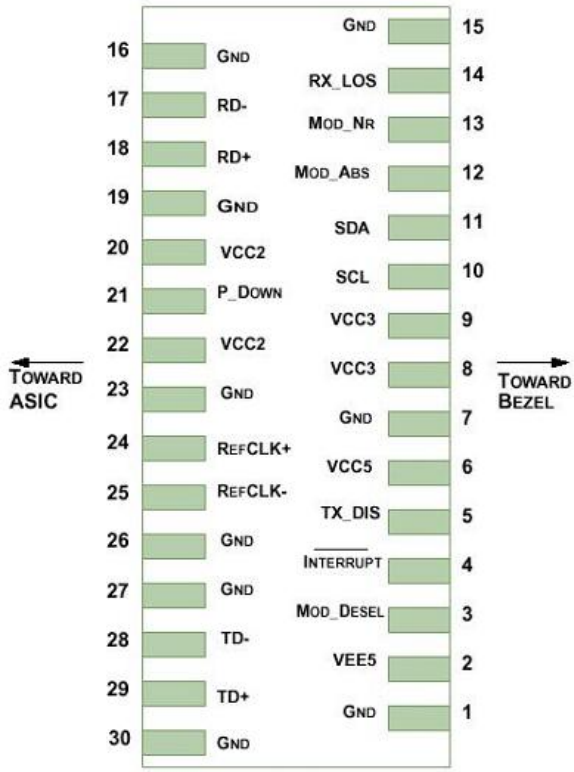



Diagram of Host Board Connector Block Pin Numbers and Name

## 10. Outline Dimensions (mm)