

10Gb/s Multirate DDMI XFP (XFP LR)

1310nm uncooled EML with PIN Receiver

10km transmission distance

065-10GLRXFP

FEATURE

- XFP MSA Rev 4.5 compliant
- Supports 9.95, 10.31, 10.52, 10.7 and 11.1Gb/s
- XFI High Speed Electrical Interface
- Digital Diagnostics Monitor
- 1310nm uncooled EML
- PIN Receiver
- 10km Reach
- RoHS Compliant
- Power dissipation <2.5W
- 0 to 70 C temperature range
- Class 1 Laser, 21CFR 1040.10/1040.11
- EN 60825-1/A1:2002 Compliant
- Bail Latch Color: BLUE

APPLICATION

- 10G Ethernet at 9.953 & 10.3125Gbps
- 10G Fiber Channel at 10.51875Gbps
- OC192 over FEC at 10.709Gbps
- 10GE over G.709 at 11.09Gbps



ABSOLUTE MAXIMUM RATING

| PARAMETER | SYMBOL | MIN | TYPICAL | MAX | UNIT |
|-------------------------------|------------------|------|---------|-----|------|
| Maximum Supply Voltage (3.3V) | V _{cc3} | -0.5 | -- | 4.0 | V |
| Maximum Supply Voltage (5.0V) | V _{cc5} | -0.5 | -- | 6.0 | V |
| Storage Temperature | T _{st} | -40 | -- | 85 | °C |

GENERAL OPERATIONS

| PARAMETER | SYMBOL | MIN | TYPICAL | MAX | UNIT |
|------------------------------|------------------|--------------|---------|------|------|
| Operating Temperature (case) | T _{op} | 0 | -- | 70 | °C |
| Supply Voltage (3.3V) | V _{cc3} | 3.13 | 3.3 | 3.47 | V |
| Supply Voltage (5V) | V _{cc5} | 4.75 | 5 | 5.25 | V |
| Power Supply Current (3.3V) | I _{cc3} | -- | -- | 500 | mA |
| Power Supply Current (5V) | I _{cc5} | -- | -- | 200 | mA |
| Power Dissipation | P _d | -- | -- | 2.5 | W |
| Data Rate | -- | 9.953 | -- | 11.1 | Gb/s |

OPTICAL CHARACTERISTICS

| PARAMETER | SYMBOL | MIN | TYPICAL | MAX | UNIT |
|---|-----------------|--------------|---------|------|------|
| Transmitter | | | | | |
| Operating Data Rate | – | 9.953 | – | 11.1 | Gb/s |
| Output Power | P_O | -6 | – | -1 | dBm |
| Extinction Ratio | ER | 6 | – | – | dB |
| Eye Mask Compliant with ITU-T G.691 and GR-253-CORE | | | | | |
| Side Mode Suppression Ratio | SMSR | 30 | – | – | dB |
| Center Wavelength | λ | 1290 | – | 1330 | nm |
| Spectral Width | $\Delta\lambda$ | – | – | 1 | nm |
| Dispersion Penalty at specified distance | DP | – | – | 1 | dB |
| Receiver | | | | | |
| Operating Data Rate | – | 9.953 | – | 11.1 | Gb/s |
| Sensitivity (9.953Gb/s) | $R_{X_{IN}}$ | – | -16 | -11 | dBm |
| Overload (9.953Gb/s) | $R_{X_{OL}}$ | -1 | – | – | dBm |
| Wavelength | λ | 1260 | – | 1600 | nm |
| LOS Assert | LOS_A | -25 | – | – | dBm |
| LOS De-assert | LOS_D | – | – | -15 | dBm |
| LOS Hysteresis | – | 1 | – | 4 | dB |
| Receiver Reflectance | – | – | – | -14 | dB |

ELECTRICAL CHARACTERISTICS

| PARAMETER | SYMBOL | MIN | TYPICAL | MAX | UNIT |
|--|-----------|--------------|---------|-----------------|----------|
| High-speed Signal (CML) Interface Specification | | | | | |
| Input Data Rate | – | 9.953 | – | 11.1 | Gb/s |
| Differential Data Input Amplitude | – | 120 | – | 1200 | – |
| Input Differential Impedance | – | – | 100 | – | Ω |
| Output Data Rate | – | 9.953 | – | 11.1 | Gb/s |
| Differential Data Output Amplitude | – | 500 | – | 800 | – |
| Output Differential Impedance | – | – | 100 | – | Ω |
| Low-speed Signal (LVTTTL) Interface Specification | | | | | |
| Input High Voltage | – | 2.0 | – | Vdd1=3.3 | V |
| Input Low Voltage | – | GND | – | 0.8 | V |
| Output High Voltage | – | 2.4 | – | Vdd1=3.3 | V |
| Output Low Voltage | – | GND | – | 0.4 | V |
| 2 Wire Serial Interface (LVTTTL) Specification | | | | | |
| Clock Frequency | f_{SCL} | – | – | 400 | kHz |

SUGGEST TRANSCEIVER / HOST INTERFACE

MOD_NR

The Mod_NR is an output pin that when High, indicates that the module has detected a condition that renders transmitter and or receiver data invalid, shall consist of logical OR of the following signals:

- Transmit Signal Conditioner Loss of Lock
- Transmitter Laser Fault
- Receiver Signal Conditioner Loss of Lock

MOD_DESEL

The Mod_DeSel is an input pin. When held Low by the host, the module responds to 2-wire serial communication commands. The Mod_DeSel allows the use of multiple XFP modules on a single 2-wire interface bus.

When the Mod_DeSel pin is "High", the module shall not respond to or acknowledge any 2-wire interface communication from the host.

INTERRUPT

Interrupt is an output pin. When "Low", indicates possible module operational fault or a status critical to the host system.

TX_DIS

TX_DIS is an input pin. When TX_DIS is asserted High, the XFP module transmitter output must be turned off.

MOD_ABS

Mod_ABS is pulled up to Host_Vcc on the host board and grounded in the XFP module. Mod_ABS is then asserted "High" when the XFP module is physically absent from a host slot.

RX_LOS

The RX_LOS when High indicates insufficient optical power for reliable signal reception.

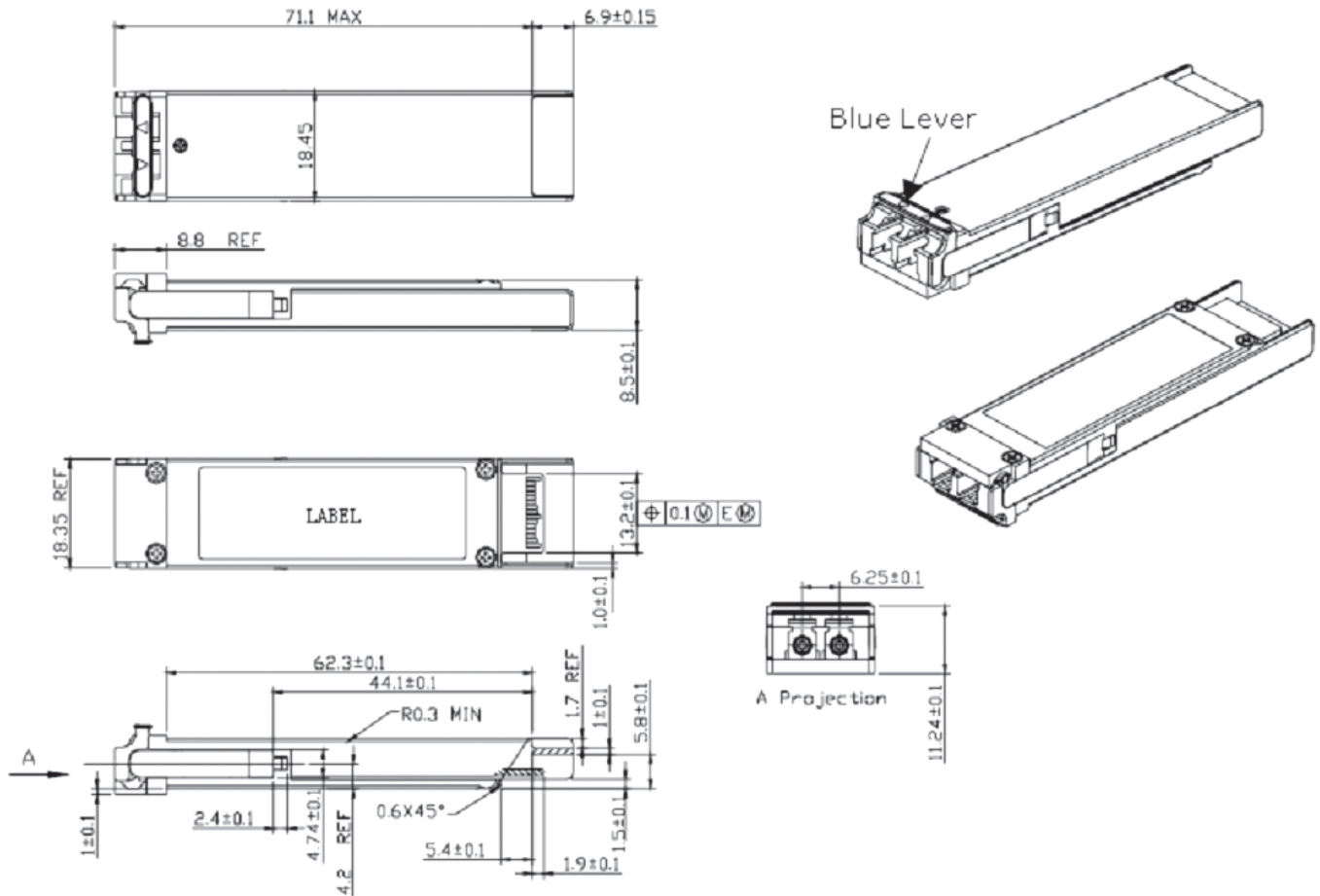
P_DOWN/RST

This is a multifunction pin for module Power Down and Reset. The P_Down/RST pin must be pulled up to VCC3 in the XFP module.

POWER DOWN FUNCTION

The P_Down pin, when held High by the host, places the module in the standby (Low Power) mode with a maximum power dissipation of 1.5W. This protects hosts which are not capable of cooling higher power modules which may be accidentally inserted.

DIMENSIONS (mm)



SAFETY INFORMATION

- All versions of this laser are Class 1 laser products per IEC* 60825-1:2001. Users should observe safety precautions such as those recommended by ANSI** Z136.1-2000, ANSI Z36.2-1997 and IEC 60825-1:2001.
- Caution: use of controls or adjustments or performance of procedures other than those specified herein may result in hazardous radiation exposure.



**INVISIBLE LASER RADIATION
EMITTED FROM END OF FIBER**

**Avoid Exposure to Beam
Class 1 Laser Product**

Wavelength 1250-1630nm, Peak Output Power 5 mW

classified in accordance with IEC 60825-1:2001-08

*IEC is a registered trademark of the International Electrotechnical Commission

**ANSI is a registered trademark of the American National Standards Institute