



RoHS compliant

1310 nm Single-mode XFP Transceiver up to 10KM link length
10GBASE-EW/ER (Ethernet)/ Fiber channel/ SONET OC192 IR2/
SONET OC192/IR-3/SDH STM-64.2b/ SDH STM S-64.3b/ ITU-T G709



Features

- RoHS compliant
- Compliant with IEEE802.3ae 10GBASE-LW/LR Ethernet
- Compliant with 10km 10G Fiber Channel
- Compliant with SONET OC-192 IR-2/SONET OC-192 IR-3
- Compliant with SDH STM S-64.2b/SDH STM S-64.3b
- Compliant with SONET OC-192/SDH STM-64 with ITU-T G.709
- Compliant with 10km 10G Ethernet with ITU-T G.709 FEC
- Compliant with XFP MSA INF-8077i
- Differential LVPECL inputs and CML outputs
- TTL signal detect indicator
- Hot Pluggable
- Power consumption < 3.5W
- Class 1 laser product complies with EN 60825-1

Ordering Information

PART NUMBER	INPUT/OUTPUT	MONITOR	VOLTAGE	TEMPERATURE
CL-XFP-LR-10	AC/AC	Yes	3.3V	-5°C to 70°C

Absolute Maximum Ratings

PARAMETER	SYMBOL	MIN	MAX	UNITS	NOTE
Storage Temperature	T_s	-40	85	°C	
Supply Voltage 1	V_{cc3}	-0.5	4.0	V	
Supply Voltage 2	V_{cc5}	-0.5	6.0	V	



RoHS compliant

1310 nm Single-mode XFP Transceiver up to 10KM link length
10GBASE-EW/ER (Ethernet)/ Fiber channel/ SONET OC192 IR2/
SONET OC192/IR-3/SDH STM-64.2b/ SDH STM S-64.3b/ ITU-T G709

Recommended Operating Conditions

PARAMETER	SYMBOL	MIN	MAX	UNITS	NOTE
Case operating Temperature	T_c	-5	70	°C	
Supply Voltage	V_{cc3}	3.1	3.5	V	
Supply Current	I_{cc3}	---	450	mA	
Supply Voltage	V_{cc5}	4.5	5.5	V	
Supply Current	I_{cc5}	---	400	mA	

Transmitter Electro-optical Characteristics

$V_{cc} = 3.1\text{ V to }3.5\text{ V}$ $V_{cc5} = 4.5\text{ V to }5.5\text{ V}$, $T_c = -5\text{ }^\circ\text{C to }70\text{ }^\circ\text{C}$ ($-40\text{ }^\circ\text{C to }85\text{ }^\circ\text{C}$)

PARAMETER	SYMBOL	MIN	TYP.	MAX	UNITS	NOTE
Operating Data Rate		9.95		11.3	Gbps	
Input Reference Clock Rate						
Output power	P_{OUT}	-8.2		-0.5	dBm	
Extinction Ratio	ER	5			dB	
Center Wavelength	λ_c	1290		1330	nm	
Transmitter and Dispersion Penalty				3.2	db	
Sidemode Supression ratio	SSR_{min}	30				
Relative Intensity Noise	RIN	---		-128	dB/Hz	
Output Eye						Compliant with IEEE802.3ae
Differential Input Voltage	V_{DIFF}	0.25		1.0		
Transmit Fault Output-Low	TX_FAULTL	0.0		0.5		
Transmit Fault Output-High	TX_FAULTH	2.4				
TX_DISABLE Assert Time	t_{off}	---		10	Ms	
TX_DISABLE Negate Time	t_{on}	---		2	Ms	
Time to initialize	t_{init}			300	Ms	



RoHS compliant

1310 nm Single-mode XFP Transceiver up to 10KM link length
10GBASE-EW/ER (Ethernet)/ Fiber channel/ SONET OC192 IR2/
SONET OC192/IR-3/SDH STM-64.2b/ SDH STM S-64.3b/ ITU-T G709

Receiver Electro-optical Characteristics

Vcc3 = 3.1 V to 3.5 V, Vcc5 = 4.5 V to 5.5 V, TA = -5°C to 70°C

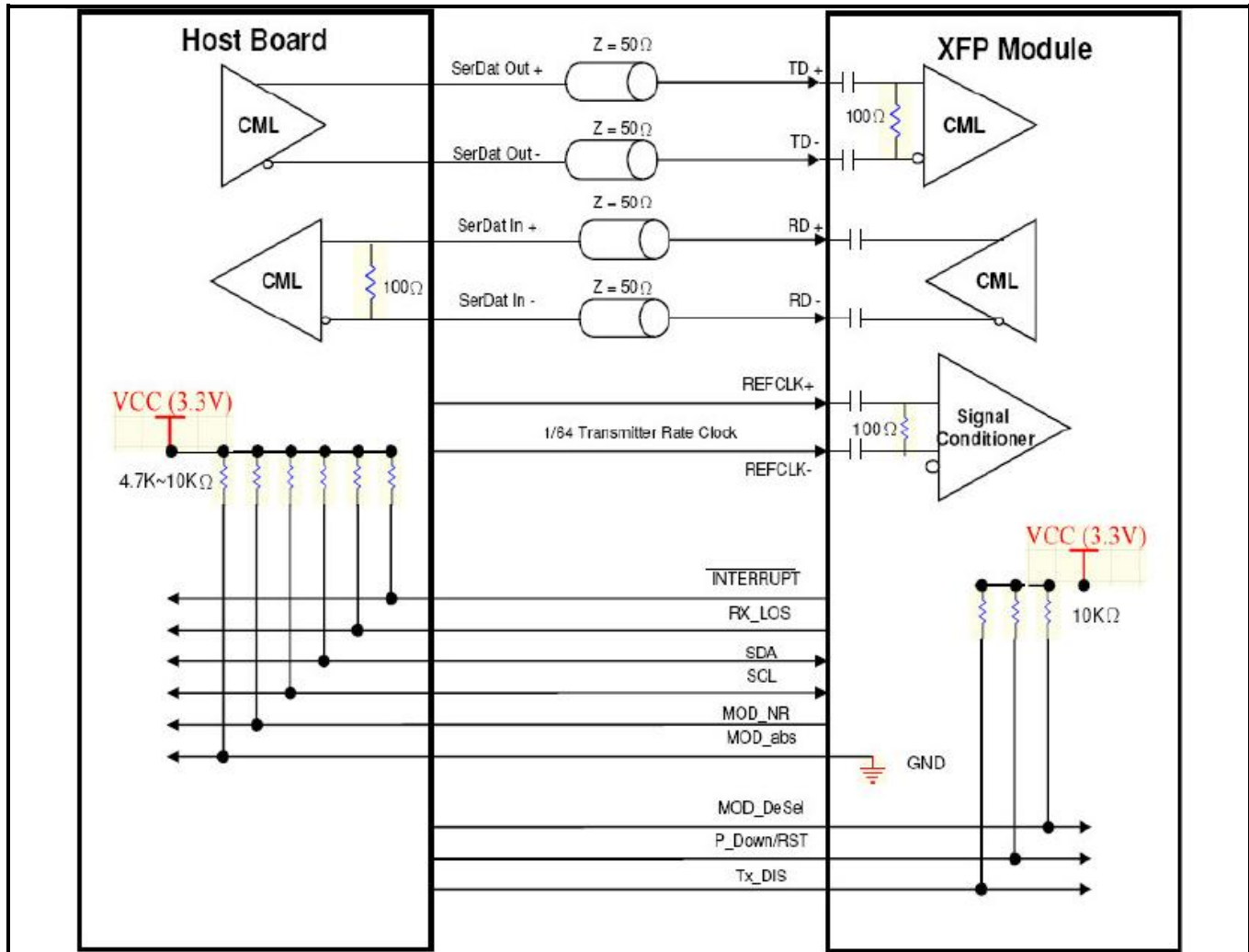
PARAMETER	SYMBOL	MIN	TYP.	MAX	UNITS	NOTE
Optical Input Power-maximum	<i>P_{IN}</i>	0.5				BER < 10 ⁻¹²
Receiver Sensitivity	<i>P_{IN}</i>			-16	dBm	BER < 10 ⁻¹²
Receiver Sensitivity (OMA)	<i>P_{IN}</i>			-14.1	dBm	BER < 10 ⁻¹²
Stressed Receiver Sensitivity (OMA)	<i>P_{IN}</i>			-11.3	dBm	BER < 10 ⁻¹²
Operating Center Wavelength	λ_C	1260		1355	nm	
Receiver Reflectance	<i>R_{rx}</i>	27			dB	
Dispersion Penalty				2	dB	40 Km
Loss of Signal-Asserted	<i>P_A</i>			-30	dBm	
Loss of Signal-Deasserted	<i>P_D</i>	-22			dBm	
Differential Output Voltage	<i>V_{DIFF}</i>	0.6		0.8		
TTL Input High Voltage		2		V _{cc}		
TTL Input Low Voltage		0		0.8		
TTL Output High Voltage		2.4		V _{cc}		
TTL Output Low Voltage		0		0.4		
Receiver Loss of Signal Assert Time (off to on)	<i>t_{A,RX,LOS}</i>			100		
Receiver Loss of Signal Assert Time (on to off)	<i>t_{D,RX,LOS}</i>			100		



RoHS compliant

1310 nm Single-mode XFP Transceiver up to 10KM link length
10GBASE-EW/ER (Ethernet)/ Fiber channel/ SONET OC192 IR2/
SONET OC192/IR-3/SDH STM-64.2b/ SDH STM S-64.3b/ ITU-T G709

Block Diagram of Transceiver



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



RoHS compliant

1310 nm Single-mode XFP Transceiver up to 10KM link length

10GBASE-EW/ER (Ethernet)/ Fiber channel/ SONET OC192 IR2/

SONET OC192/IR-3/SDH STM-64.2b/ SDH STM S-64.3b/ ITU-T G709

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

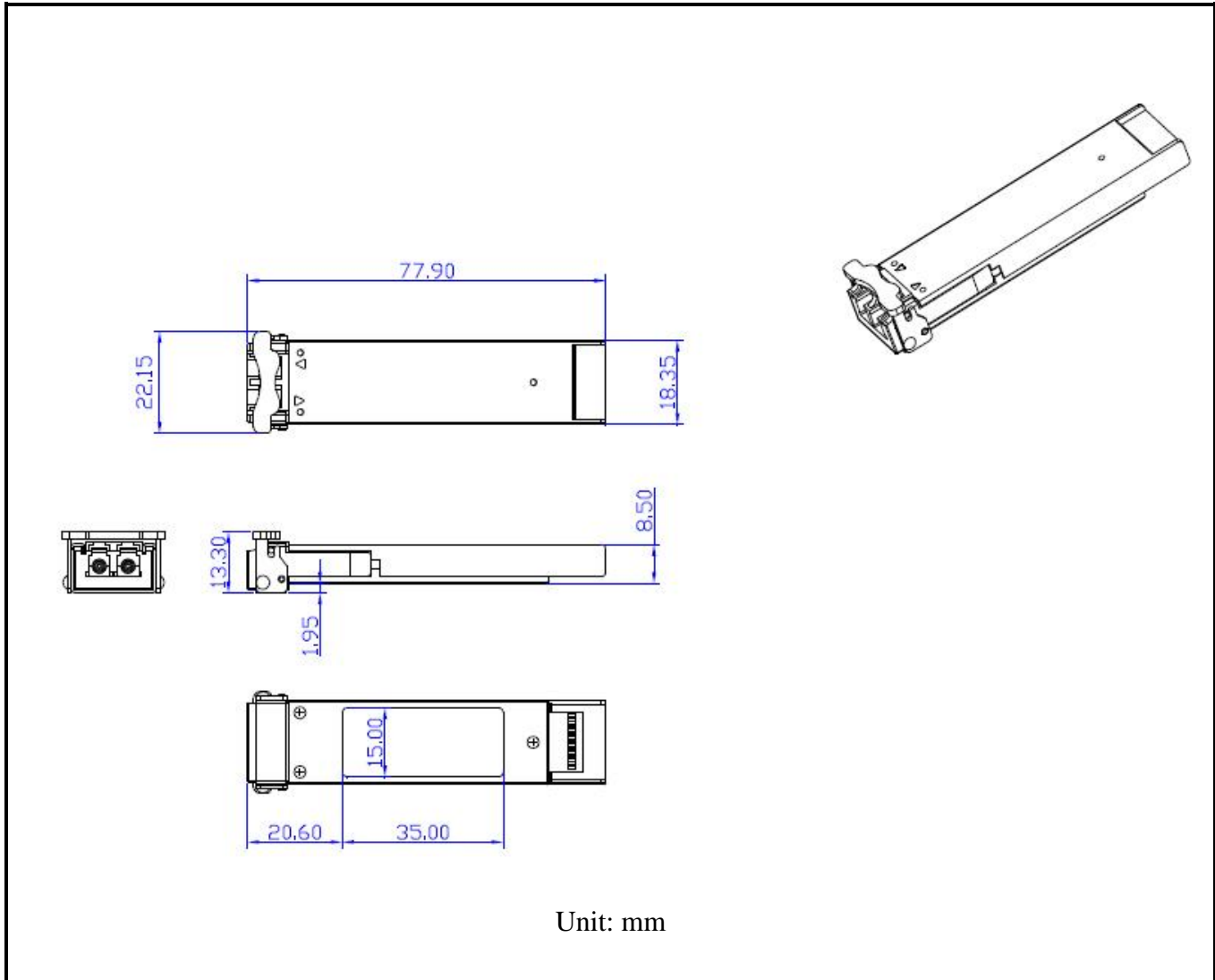
The P_Down pin, when held High by the host, places the module in the standby (Low Power) mode with a maximum power dissipation of 1.5W. This protects hosts which are not capable of cooling higher power modules which may be accidentally inserted.



RoHS compliant

1310 nm Single-mode XFP Transceiver up to 10KM link length
10GBASE-EW/ER (Ethernet)/ Fiber channel/ SONET OC192 IR2/
SONET OC192/IR-3/SDH STM-64.2b/ SDH STM S-64.3b/ ITU-T G709

Dimensions





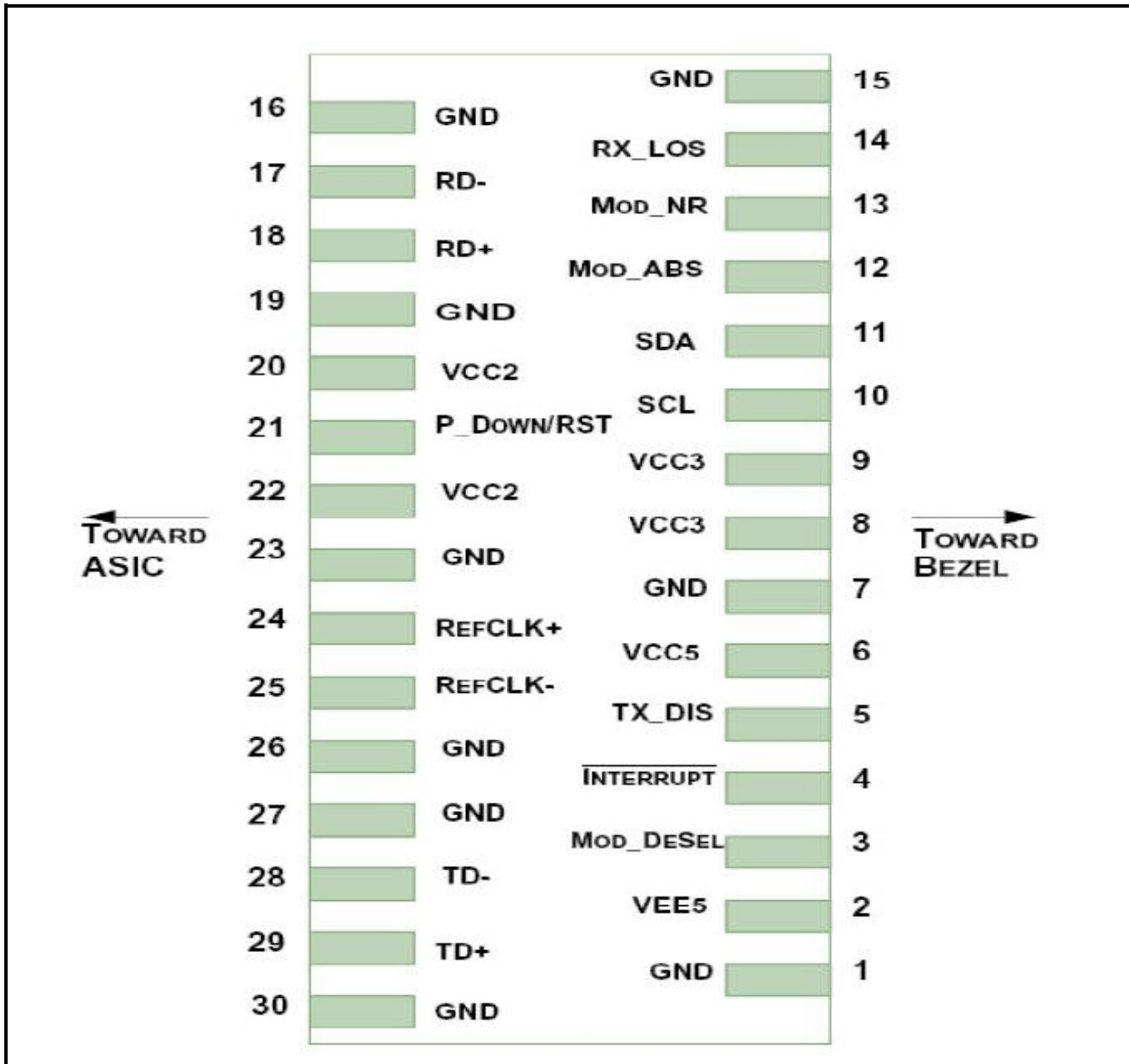
RoHS compliant

1310 nm Single-mode XFP Transceiver up to 10KM link length

10GBASE-EW/ER (Ethernet)/ Fiber channel/ SONET OC192 IR2/

SONET OC192/IR-3/SDH STM-64.2b/ SDH STM S-64.3b/ ITU-T G709

Pin Assignment





RoHS compliant

**1310 nm Single-mode XFP Transceiver up to 10KM link length
10GBASE-EW/ER (Ethernet)/ Fiber channel/ SONET OC192 IR2/
SONET OC192/IR-3/SDH STM-64.2b/ SDH STM S-64.3b/ ITU-T G709**

Eye Safety Mark

<p>The XFP series multimode transceiver is a class 1 laser product. It complies with EN 60825-1 and FDA 21 CFR 1040.10 and 1040.11. In order to meet laser safety requirements the transceiver shall be operated within the Absolute Maximum Ratings.</p> <p><u>Caution</u> All adjustments have been done at the factory before the shipment of the devices. No maintenance and user serviceable part is required. Tampering with and modifying the performance of the device will result in voided product warranty.</p>	<p><u>Required Mark</u></p> <div style="border: 1px solid black; padding: 5px; text-align: center;"><p>Class 1 Laser Product Complies with 21 CFR 1040.10 and 1040.11</p></div>
---	---

Note : All information contained in this document is subject to change without notice.