10G XFP-LR Transceiver

MODEL: XFP-LR

PRODUCT FEATURES

- Support 10GBASE-LR/10GBASE-LW/10G Fiber Channel application
- XFP MSA Rev 4.5 compliant
- Multi rate of up to 11.3Gbps
- Transmission distance up to 10km
- +3.3V single power supply
- Low power consumption <2.5W
- Operating case temp : 0~+70°C
- RoHS 6/6 compliant

Absolute Maximum Ratings

Table 1- Absolute Maximum Ratings

Parameter	Symbol	Min.	Typical	Max.	Unit	Notes
Supply Voltage	Vcc3	-0.5	-	+3.6	V	
Storage Temperature	Ts	0	-	+70	°C	
Operating Humidity	RH	+5	-	+95	%	

Recommended Operating Conditions

Table 2- Recommended operating Conditions

Parameter	Symbol	Min.	Typical	Max.	Unit	Notes
Operating Case Temperature	TC	0	-	+70	°C	
Power Supply Voltage	Vcc	3.14	3.3	3.47	V	
Power Supply Current	Icc	-	-	450	mA	
Power Dissipation	Pd	-	-	1.5	W	
Bit Rate	BR	-	10.3125	-	Gbps	

Electrical Characteristics

Table 3- Electrical Characteristics

Parameter		Symbol	Min.	Typ.	Max.	Units	Notes
Transmitter							
Differential Data Input Swing		Vin,P-P	120	-	850	mVPP	
Input Differential Impedance		ZIN	80	100	120	Ω	
Tx_Fault	Normal Operation	VOL	0	-	+0.4	V	
	Transmitter Fault	VOH	2.0	-	VCC	V	
Tx_Disable	Normal Operation	VIL	0	-	+0.8	V	
	Laser Disable	VIH	2.0	-	VCC+0.3	V	
Receiver							
Differential Date Output		Vout	100	-	860	mV	
Output Differential Impedance		ZD	80	100	120	Ω	
Output Rise Time(20-80%)		TR	20	-	-	ps	
Output Fall Time (20-80%)		TF	20	-	-	ps	
Rx_LOS	Normal Operation	VOL	0	-	+0.4	V	
	Lose Signal	VOH	2.0	-	VCC	V	

Optical Characteristics

Table 4-Optical Characteristics

Parameter	Symbol	Unit	Min.	Typ.	Max.	Notes
Optical transmitter Characteristics						
Bit Rate	BR	Gbps	9.95	10.3125	11.3	
Center Wavelength Range	λc	nm	1290	1310	1330	
Average Launch power Tx_off	Poff	dBm	-	-	-45	
Launch Optical Power	P0	dBm	-5	-	0	1
Extinction Ratio	ER	dB	3.8	-	-	
Jitter P-P	JP	ps	-	-	20	
Jitter RMS	JR	ps	-	-	5	
Optical Rise/Fall time	Tr/tf	ps	20	-	100	
Eye Diagram	Compliant With IEEE 802.3-2005					
Optical receiver Characteristics						
Bit Rate	BR	Gbps	9.95	10.3125	11.3	
Receiver Sensitivity	RS	dBm	-	-	-14.8	2
Overload Input Optical Power	PIN	dBm	0	-	-	2
Center Wavelength Range	λc	nm	1290	1310	1330	
LOS	LOSD	dBm	-	-	-15.5	
	LOSA		-24.5	-	-	
LOS Hysteresis		dB	0.5	-	-	

Note:

1. Coupled into 9/125 SMF.
2. Measured with PRBS 231-1 test pattern @10.3125Gbps.BER=10E-12

Recommended Interface Circuit

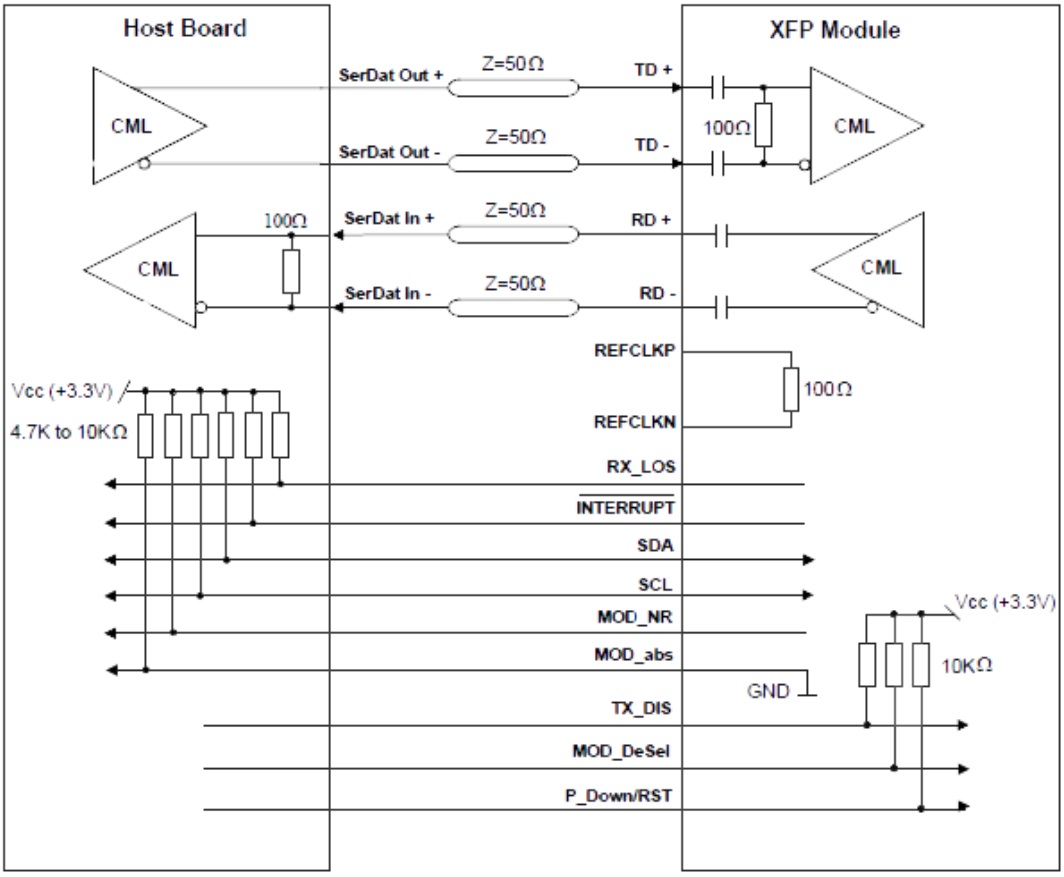

Figure 1, Recommended Interface Circuit

Recommended Host Board Power Supply Circuit

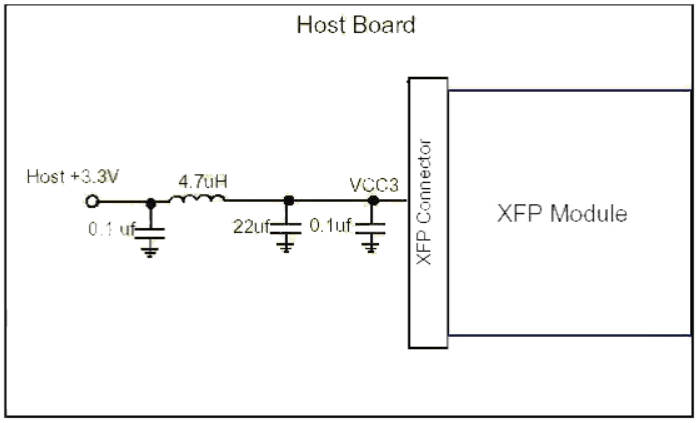

Figure 2, Recommended Host Board Power Supply Circuit

Pin arrangement

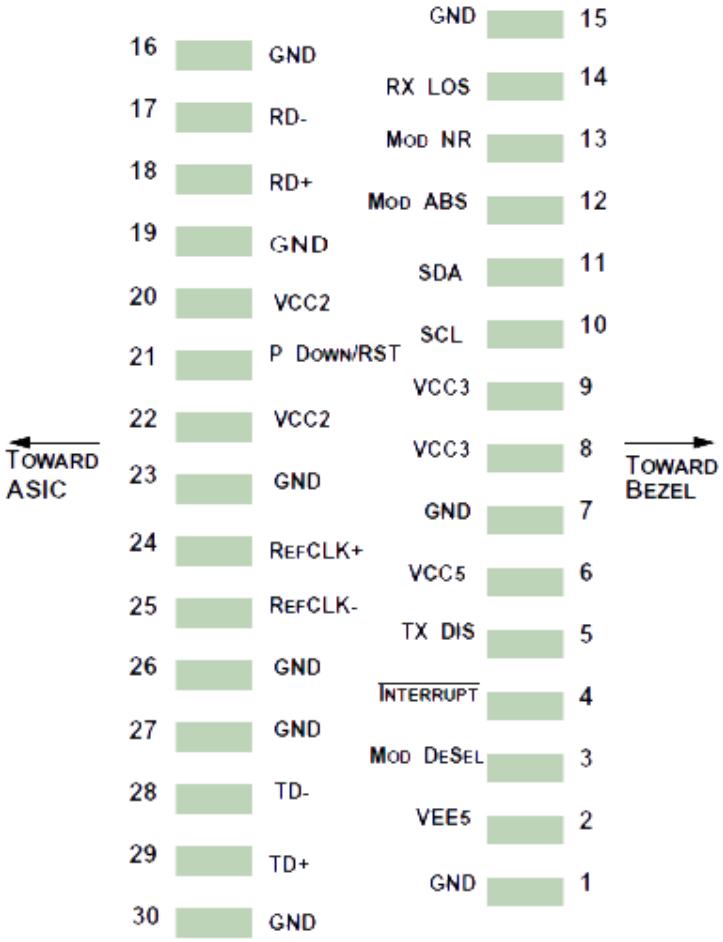

Figure 3, Pin View

Table 5-Pin Function Definitions

Pin	Logic	Symbol	Name/Description	Notes
1		GND	Module Ground	1
2		VEE5	Optional -5.2V Power Supply (Not implemented)	3
3	LVTTL-I	Mod_Desel	Module De-select; When held low allows the module to respond to 2-wire serial interface	
4	LVTTL-O	Interrupt	Interrupt; Indicates presence of an important condition which can be read over the 2-wire serial interface	2
5	LVTTL-I	TX_DIS	Transmitter Disable; Turns off transmitter laser output	
6		VCC5	+5V Power Supply (Not implemented)	
7		GND	Module Ground	1
8		VCC3	+3.3V Power Supply	
9		VCC3	+3.3V Power Supply	
10	LVTTL-I/O	SCL	2-Wire Serial Interface Clock	2

11	LVTTL-I/O	SDA	2-Wire Serial Interface Data Line	2
12	LVTTL-O	Mod_ABS	Indicates Module is not present. Grounded in the Module	2
13	LVTTL-O	Mod_NR	Module Not Ready; Indicating Module Operational Fault	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 implemented).	3
21	LVTTL-I	P_Down/RST	Power down; When high, requires the module to limit power consumption to 1.5W or below. 2-Wire serial interface must be functional in the low power mode.	
			Reset;The falling edge initiates a complete reset of the module including the2-wire serial interface, equivalent to a power cycle.	
22		VCC2	+1.8V Power Supply (Not implemented)	3
23		GND	Module Ground	1
24	PECL-I	RefCLK+	Not used, internally terminated to 50ohm (100ohm diff).	4
25	PECL-I	RefCLK-	Not used, internally terminated to 50ohm (100ohm diff).	4
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

Note:

1. Module ground pins GND are isolated from the module case and chassis ground within the module.
2. Shall be pulled up with 4.7K-10Kohms to a voltage between 3.15V and 3.45V on the host board.
3. The pins are open within module.
4. Reference Clock is not required

Digital Diagnostic Memory Map

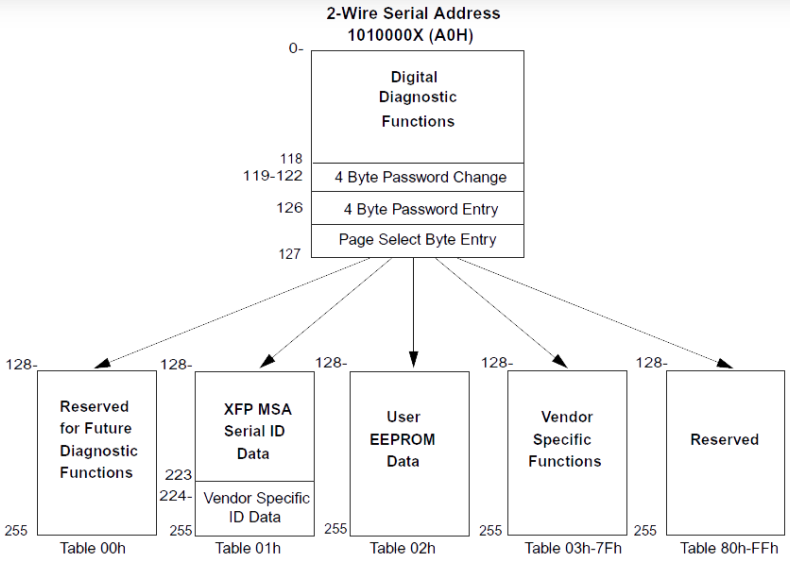

Figure 4, Memory Map

Mechanical

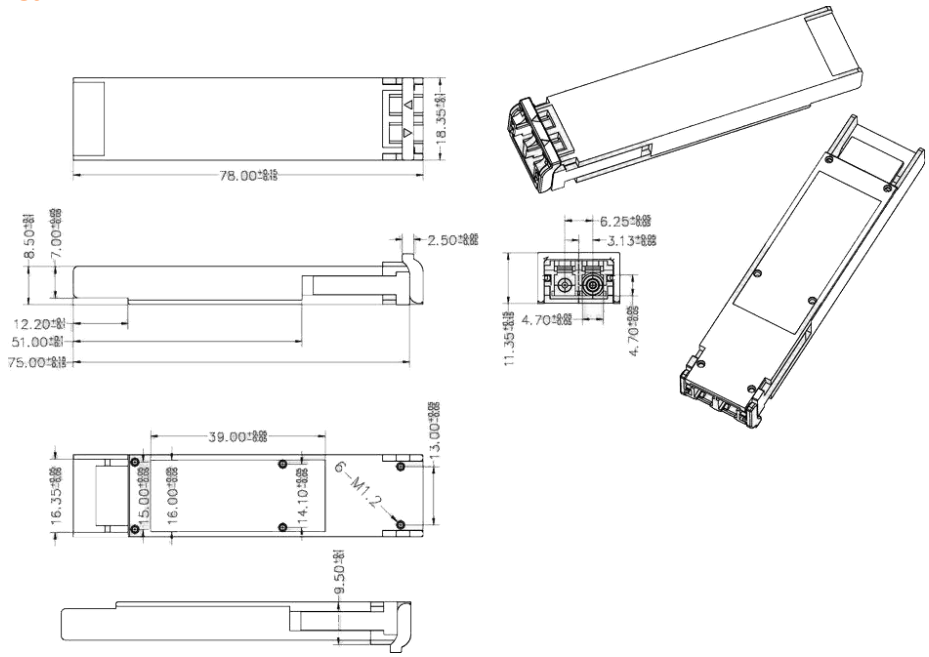

Figure 5, Mechanical Diagram

Order Information

Table 6-Order Information

Part No.	Bit Rate (Gbps)	Laser TX(nm)	Laser RX(nm)	Fiber Type	DDMI	Connector
XFP-LR	10.3125	1310	1310	SMF	YES	LC

Notice

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