

10G XFP-ER Transceiver

MODEL: XFP-ER



Product Features

- 1550nm EML Transmitter
- Distance up to 40km over SMF
- Single 3.3V Power supply and LVTTTL Logic Interface
- Duplex LC Connector Interface
- Hot Pluggable
- Power Dissipation < 1.5 W
- Dispersion Tolerance 800ps/nm
- Operating Case Temperature
- Standard: 0°C~+70°C
- Compliant with SFF-8431 MSA
- Compliant with SFF-8432 MSA
- Compliant with SFF-8472 MSA

Applications

- 10GBASE-ER/EW
- 8G/10G FC
- Other optical links

Absolute Maximum Ratings

Table 1- Absolute Maximum Ratings

Parameter	Symbol	Min.	Typical	Max.	Unit	Notes
Storage Temperature	Ts	-40	-	85	°C	
Supply Voltage	Vcc5	-0.5	-	4.0	V	
Operating Humidity	RH	-	-	+85	%	

Recommended Operating Conditions

Table 2- Recommended operating Conditions

Parameter	Symbol	Min.	Typ.	Max.	Unit	Notes
Operating Case Temperature	TOP	0		70	°C	
Power Supply Voltage	VCC	3.14	3.3	3.46	V	
Power Supply Current	ICC	-	-	450	mA	
Power Dissipation	PD	-	-	1.5	W	
Data Rate	BR	9.95		11.3	Gbps	

Electrical Characteristics

Table 3- Electrical Characteristics

Transmitter						
Parameter	Symbol	Unit	Min.	Typ.	Max.	Notes
Differential Data Input swing	V _{in,p-p}	mV _{pp}	180	-	700	
Input Differential impedance	Z _{in}	Ω	85	100	115	
Tx_Disable,P_Down/RST	V _{IL}	V	-0.3		0.8	
	V _{IH}	V	2.0	-	V _{cc} +0.3	
Receiver						
Differential Data Output	V _{out}	mV _{pp}	300		850	
Output Differential impedance	Z _{in}	Ω	80	100	120	
Output Rise Time,20%-80%	T _r	Ps	28			
Output Fall Time,20%-80%	T _f	Ps	28			
Rx_Los,Mod_NR,Interrupt	V _{oL}	V	0		0.4	
	V _{oH}	V	V _{cc} -0.5		V _{cc} +0.3	

Transmitter Performance:

Table 4- optical TX Characteristics

Parameter	Symbol	Min.	Typical	Max.	Unit	Notes
Average Launch Optical Power	P _{out}	-4	-	+4	dBm	1
Extinction Ratio	ER	8.2	-	-	dB	2
Average Launch power of OFF TX	P _{off}	-	-	-30	dBm	1
Optical Wavelength	λ	1530	-	1565	nm	
Dispersion penalty@9.95/10.7Gpbs	DP1	-	-	2	dB	2
Dispersion penalty@11.1/11.3Gpbs	DP2	-	-	3	dB	3
Side Mode Suppression Ratio	SMSR	30	-	-	dB	

Receiver Performance:

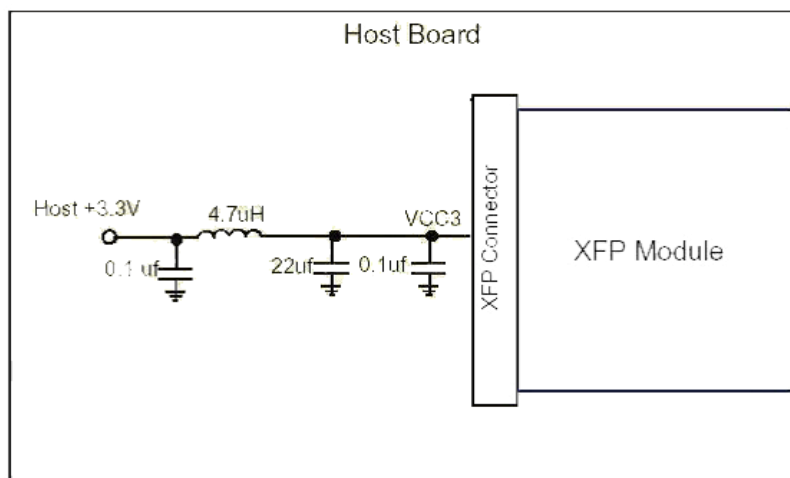
Table 5- optical RX Characteristics

Parameter	Symbol	Min.	Typical	Max.	Unit	Notes
Receiver Sensitivity @9.95Gpbs/10.7Gpbs	PIN_SENS1	-	-	-16	dBm	2
Receiver Sensitivity @11.1Gpbs/11.3Gpbs	PIN_SENS2	-	-	-14	dBm	3
Overload	PIN_OL	-7.0	-		dBm	3
Optical Center Wavelength	λ _C	1260	-	1600	nm	
LOS	LOSA	-30	-	-	dBm	
	LOSD	-	-	-18	dBm	
Los hysteresis	LOSH	0.5	-		dB	
Rx_LOS	High	2.0		V _{cc} +0.3	V	
	Low	0		0.8	V	

Note:

1. The optical power is launched into SMF.
2. Measured with a PRBS 231-1 test pattern @9.95Gbps.
3. Measured with a PRBS 231-1 test pattern , @11.1Gbps. BER≤10⁻¹².

Recommended Host Board Power Supply Circuit



Recommended Interface Circuit

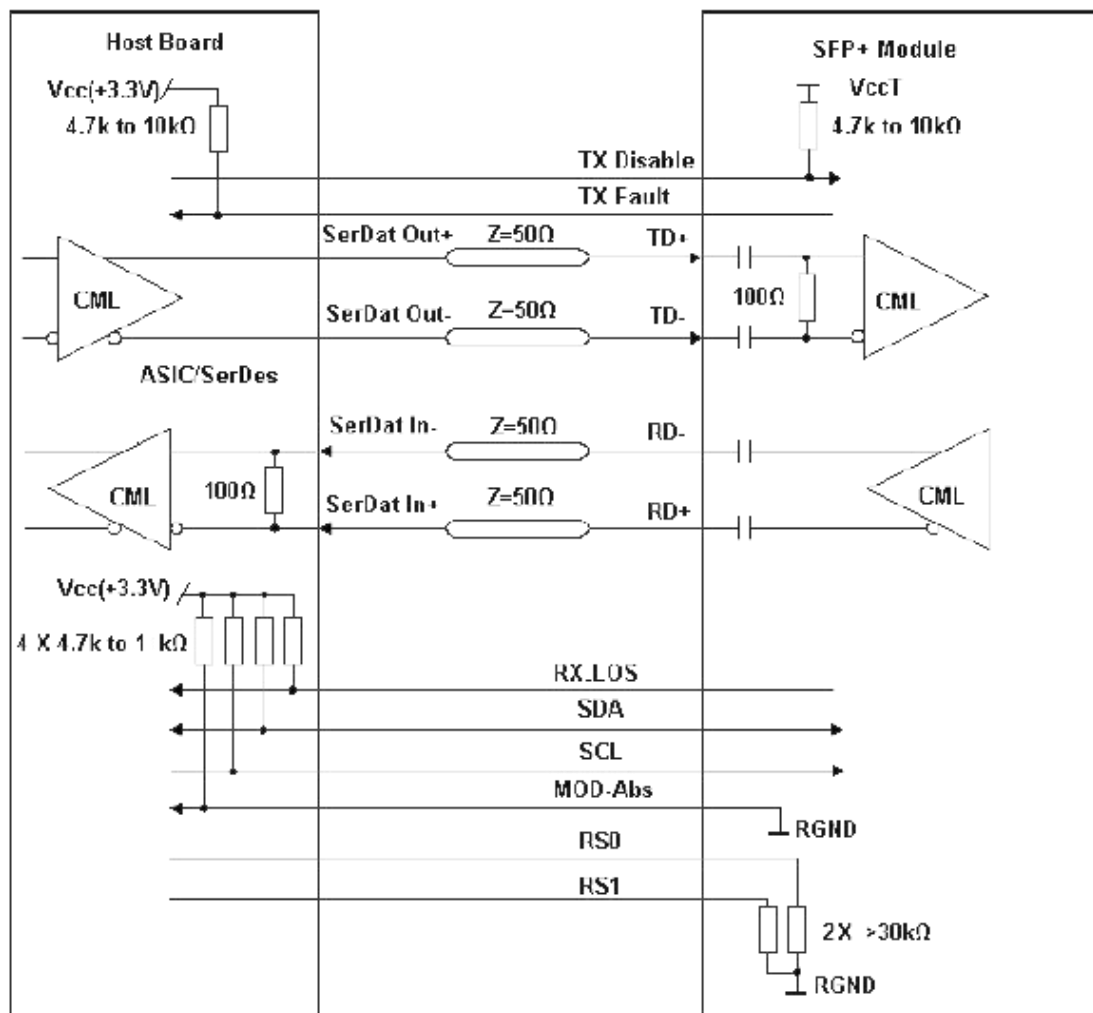


Figure 2, Recommended Interface Circuit

Pin arrangement

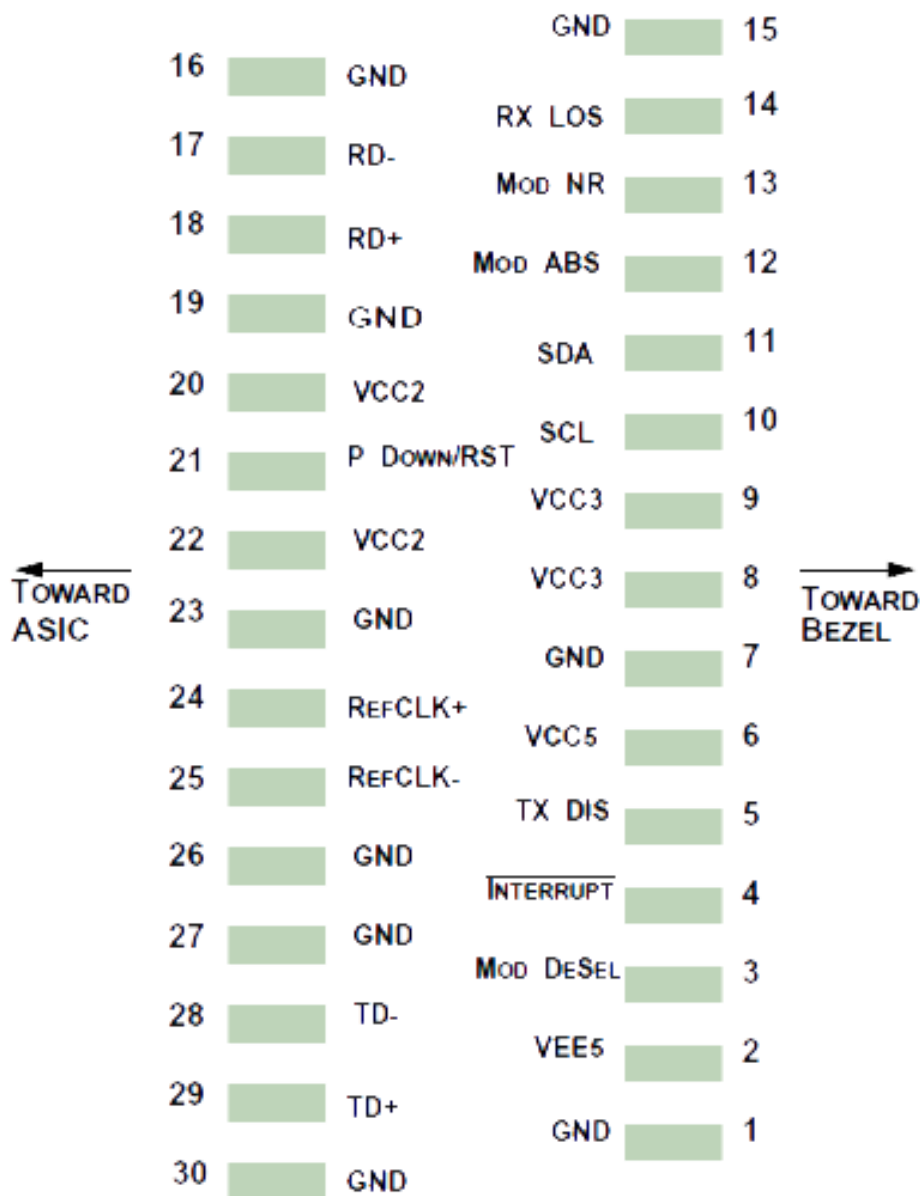


Figure 3, Pin View

Table 6-Pin Function Definitions

Pin	Logic	Symbol	Name/Description	Note
1		GND	Module Ground	1
2		VEE5	Optional -5.2V Power Supply	
3	LVTTTL-I	MOD_DESEL	Module De-select; When held low allows the module to respond to 2-wire serial interface	
4	LVTTTL-O	INTb	Interrupt; Indicates presence of an important	2

			condition which can be read via the 2-wire serial interface	
5	LVTTTL-I	TX_DIS	Transmitter Disable; Turns off transmitter laser output	
6		VCC5	+5V Power Supply	
7		GND	Module Ground	1
8		VCC3	+3.3V Power Supply	
9		VCC3	+3.3V Power Supply	
10	LVTTTL-I/O	SCL	2-Wire Serial Interface Clock	2
11	LVTTTL-I/O	SDA	2-Wire Serial Interface Data Line	2
12	LVTTTL-O	MOD_Abs	Indicates Module is not present. Grounded in the Module	2
13	LVTTTL-O	MOD_NR	Module Not Ready; Indicating Module Operational Fault	2
14	LVTTTL-O	RX_LOS	Receiver Loss Of Signal Indicator	2
15		GND	Module Ground	1
16		GND	Module Ground	1
17	CML-O	RDN	Receiver Inverted Data Output	
18	CML-O	RDP	Receiver Non-Inverted Data Output	
19		GND	Module Ground	1
20		VCC2	+1.8V Power Supply	
21	LVTTTL-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 the 2-wire serial interface, equivalent to a power cycle.	
22		VCC2	+1.8V Power Supply	
23		GND	Module Ground	1
24	PECL-I	REFCLKP	Not used, internally terminated to 50ohm (100ohm diff).	3
25	PECL-I	REFCLKN	Not used, internally terminated to 50ohm (100ohm diff).	3
26		GND	Module Ground	1
27		GND	Module Ground	1
28	CML-I	TDN	Transmitter Inverted Data Input	
29	CML-I	TDP	Transmitter Non-Inverted Data Input	
30		GND	Module Ground	1

Note:

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

Mechanical Dimension:

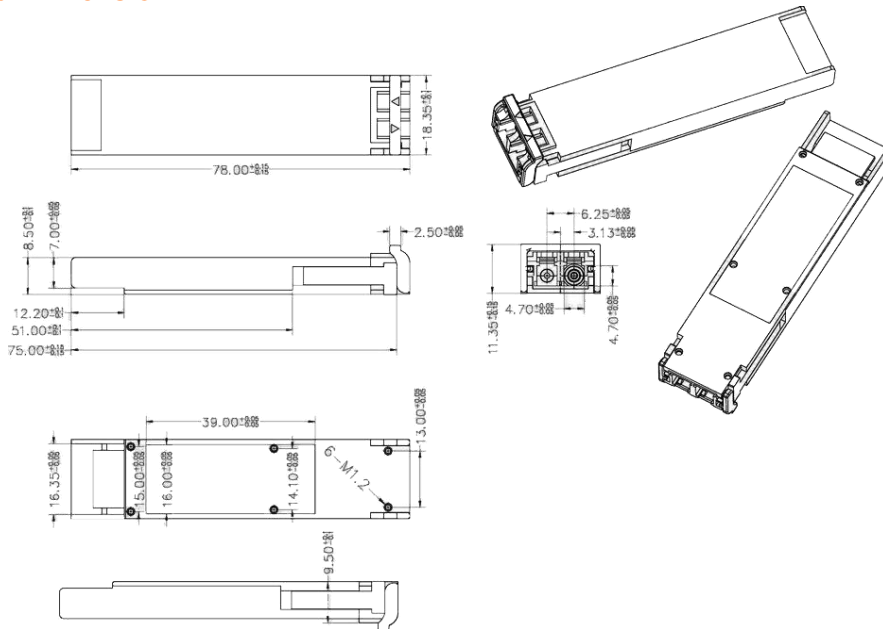


Figure 4, Mechanical Diagram

Order Information

Table 7-Order Information

Part Number	Product Description
XFP-ER	XFP-ER 1550nm EML, 0°C~70°C, 40Km

Notice

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