

## 10G XFP ER 1550nm 40KM SOXP-5599-40

### ● Features :

- Supports 9.95Gb/s to 11.3Gb/s Bit Rates  
Hot-pluggable XFP Footprint
- Maximum Link Length up to 80km
- Temperature-Stabilized EML transmitter  
Duplex LC Connector
- Built-in Digital Diagnostic Functions
- Case Operating Temperature:  
Standard: 0°C to 70°C

### ● Applications :

- OC192/ STM 64
- 10GBASE-ZR/ZW 10G Ethernet
- 1200-SM-LL-L 10G Fiber Channel
- P1L1-2D2
- ITU-T G.709

### ● 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.	Typical	Max.	Unit	Notes
Operating Case Temperature	Top	0	-	70	°C	
Power Supply Voltage	Vcc5	4.75	5.0	5.25	V	

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	VCC3	3.14	3.3	3.46	V	
Power Supply Current	ICC5	-	-	370	mA	
	ICC3	-	-	500	mA	
Power Dissipation	PD	-	-	3.5	W	
Data Rate	BR	9.95		11.3	Gbps	
Transmission Distance	TD	2		40000	m	

### ● Electrical Characteristics

**Table 3- Electrical Characteristics**

Transmitter						
Parameter	Symbol	Unit	Min	Typ	Max	Notes
Differential Data Input swing	V <sub>in,p-p</sub>	mV <sub>pp</sub>	120	-	820	
Input Differential impedance	Z <sub>in</sub>	Ω	85	100	115	
Tx_Disable,P_Down/RST	V <sub>IL</sub>	V	-0.3		0.8	
	V <sub>IH</sub>	V	2.0	-	V <sub>cc</sub> +0.3	
Receiver						
Differential Data Output	V <sub>out,p-p</sub>	mV <sub>pp</sub>	340		850	
Output Differential impedance	Z <sub>in</sub>	Ω	80	100	120	
Output Rise Time,20%-80%	Tr	Ps	28			
Output Fall Time,20%-80%	Tf	Ps	28			
Rx_Los,Mod_NR,Interrupt	V <sub>oL</sub>	V	0		0.4	
	V <sub>oH</sub>	V	V <sub>cc</sub> -0.5		V <sub>cc</sub> +0.3	

### ● Transmitter Performance :

**Table 4- optical TX Characteristics**

Parameter	Symbol	Min.	Typical	Max.	Unit	Notes
Tx_Fault	Normal Operation	V <sub>OL</sub>	-0.3	-	0.4	V
	Transmitter Fault	V <sub>OH</sub>	2.4	-	V <sub>cc</sub>	V
	Laser Disable	V <sub>IH</sub>	2.0	-	V <sub>CC</sub> +0.3	V
Average Launch Optical Power	P <sub>out</sub>	0	-	+4	dBm	1
Extinction Ratio	ER	9	-	-	dB	2

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Average Launch power of OFF TX	Poff	-	-	-30	dBm	1
Optical Wavelength	$\lambda$	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	35	-	-	dB	

**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.

### ● Receiver Performance :

**Table 5- optical RX Characteristics**

Parameter	Symbol	Min.	Typical	Max.	Unit	Notes
Receiver Sensitivity @9.95Gpbs/10.7Gpbs	PIN_SENS1	-	-	-24	dBm	2
Receiver Sensitivity @11.1Gpbs/11.3Gpbs	PIN_SENS2	-	-	-23	dBm	3
Overload	PIN_OL	-7.0	-		dBm	3
Optical Center Wavelength	$\lambda_C$	1270	-	1600	nm	
Los Assert	LOSA	-38	-	-	dBm	
Los De-assert	LOSD	-	-	-25	dBm	
Los hysteresis	LOSH	0.5	-		dB	
Rx_LOS	High		2.0		Vcc+0.3	V
	Low		0		0.8	V

**Note:**

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

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- **Recommended Host Board Power Supply Circuit**

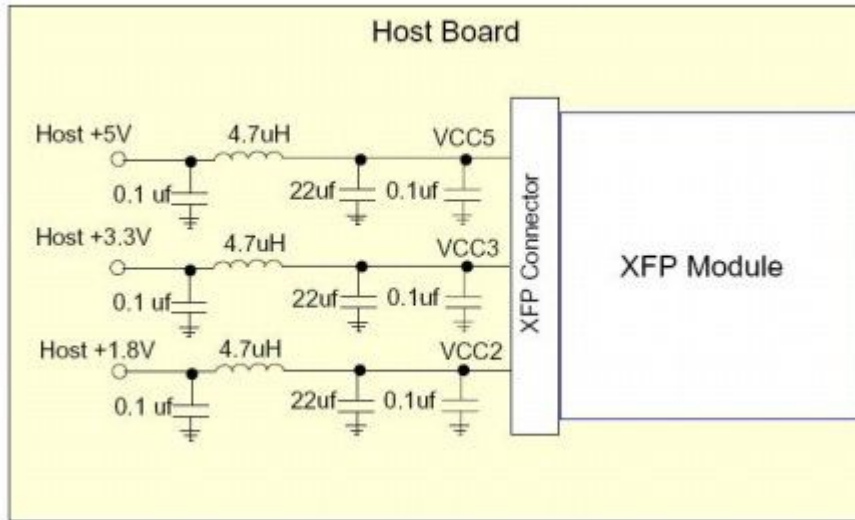


Figure 1, recommended host board power supply circuit

- **Recommended interface circuit**

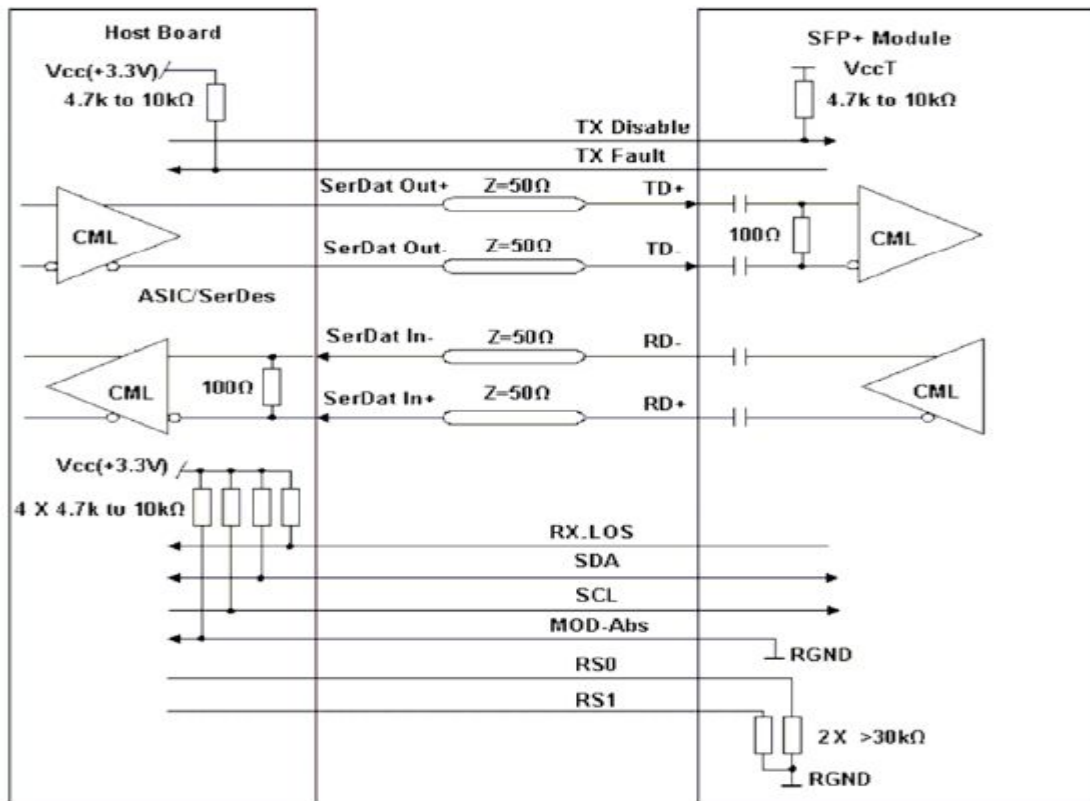


Figure 2, recommended interface circuit

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### ● XFP Pins Definitions :

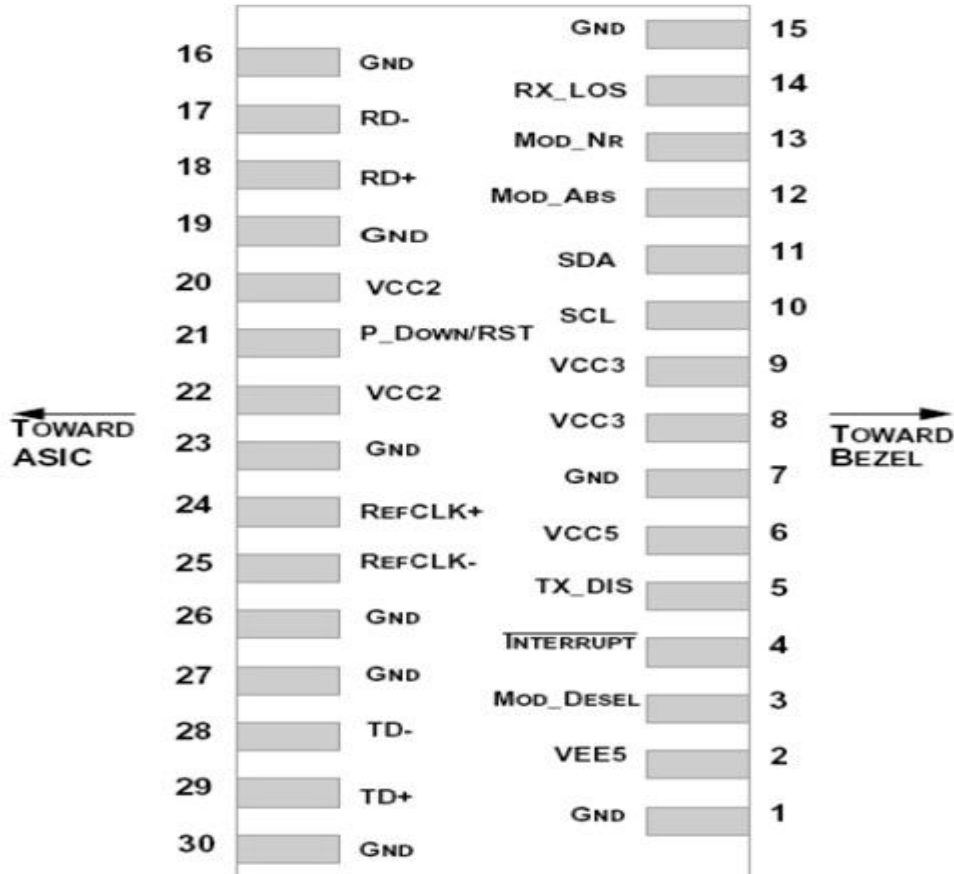


Figure 3,pins definitions

**Table 6- Pin Definitions**

Pin	Logic	Symbol	Name/Description	Note
1		GND	Module Ground	1
2		VEE5	Optional -5.2V Power Supply	
3	LVTTL-I	MOD_DESEL	Module De-select; When held low allows the module to respond to 2-wire serial interface	
4	LVTTL-O	INTb	Interrupt; Indicates presence of an important condition which can be read via the 2-wire serial interface	2
5	LVTTL-I	TX_DIS	Transmitter Disable; Turns off transmitter laser output	

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6		VCC5	+5V Power Supply	
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	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	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 the 2-wire serial interface, equivalent to a power cycle.	
22		VCC2	+1.8V Power Supply	
23		GND	Module Ground	1

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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.

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### ● Mechanical Dimension :

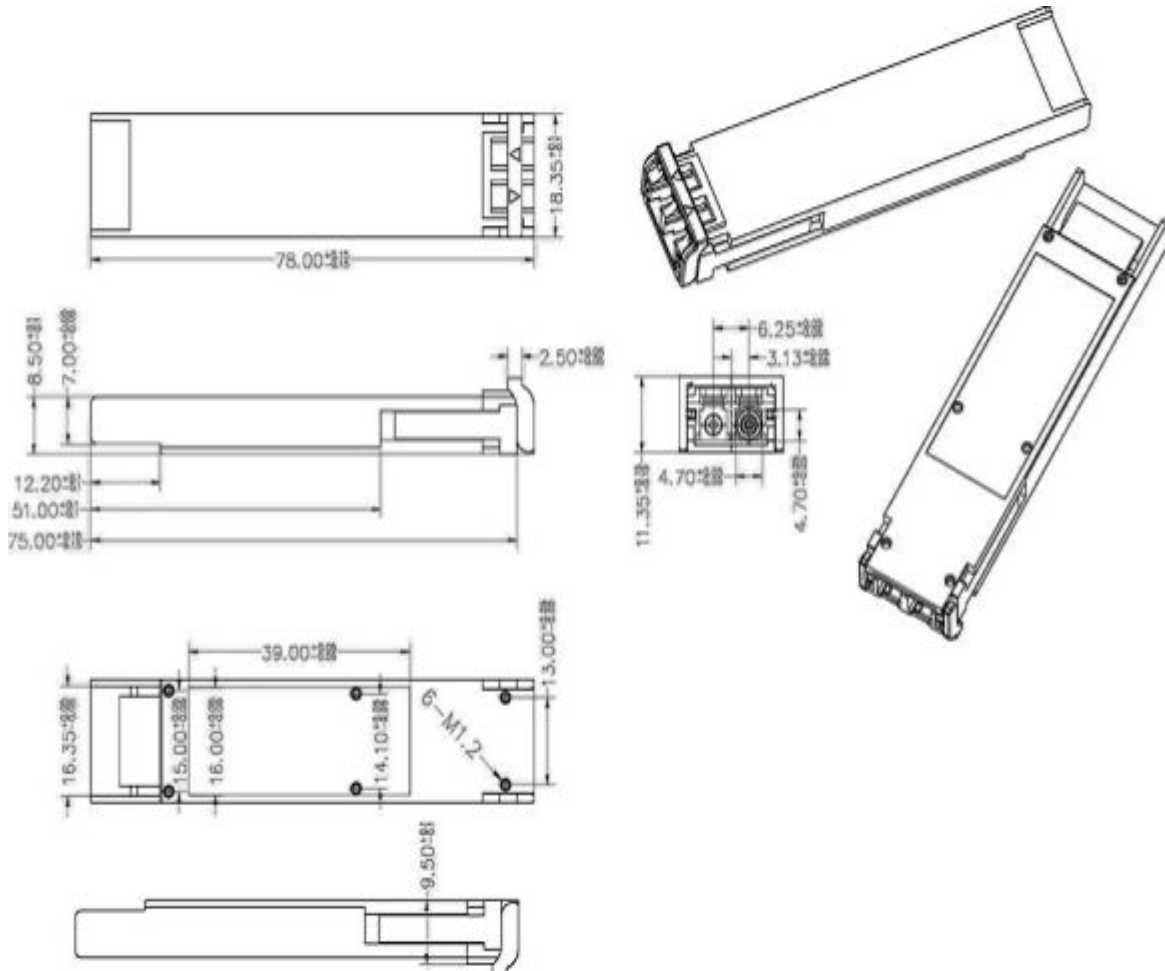


Figure 4,mechanical dimension

### ● Order Information and Related Products :

Table 7-order information

Part Number	Product Description
SOXP-5599-40	XFP ER 1550nm EML, 0°C~70°C, 40Km



## **10G XFP ER 1550nm 40KM SOXP-5599-40**

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