

10G XFP CWDM 20KM SOXC-XX99-20

● **Features :**

- Supports 9.95Gb/s to 11.1Gb/s Bit Rates
- Hot-Pluggable XFP Footprint
- Compliant with XFP MSA
- CWDM EML Transmitter from 1470nm to 1610nm, with Step 20nm
- Duplex LC Connector
- Power Dissipation < 3.5W
- Case Operation Temperature Range
0°C to 70°C
- 2-Wire Interface for Integrated Digital
- Diagnostic Monitoring

● **Applications :**

- SONET / SDH
- 10GBASE-ER/EW 10G Ethernet
- 1200-SM-LL-L 10G Fiber Channel
- 10GE over G.709 at 11.09Gbps
- OC192 over FEC at 10.709Gbps

● **Absolute Maximum Ratings**

Table 1- Absolute Maximum Ratings

Parameter	Symbol	Min.	Typical	Max.	Unit	Notes
Storage Temperature	Ts	-40	-	85	°C	
Supply Voltage	Vcc3	-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	Top	0	-	70	°C	

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Temperature						
Power Supply Voltage	Vcc5	4.75	5.0	5.25	V	
	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		40		km	

● Electrical Characteristics

Table 3- Electrical Characteristics

Transmitter						
Parameter	Symbol	Unit	Min.	Typ.	Max.	Notes
Differential Data Input Amplitude	V _{in,p-p}	mV _{pp}	120	-	820	
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 Amplitude	V _{out,p-p}	mV _{pp}	340		850	
Output Differential impedance	Z _{in}	Ω	85	100	115	
Output Rise Time,20%-80%	T _r	Ps	24			
Output Fall Time,20%-80%	T _f	Ps	24			
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
Tx_Fault	Normal	VOL	-0.3	-	0.4	V	

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	Operation						
	Transmitter Fault	VOH	2.4	-	Vcc	V	
	Laser Disable	VIH	2.0	-	VCC+0.3	V	
Average Launch Optical Power	Pout	-2	-	+4	dBm	1	
Extinction Ratio	ER	8.2	-	-	dB	2	
Average Launch power of OFF TX	Poff	-	-	-30	dBm	1	
Optical Wavelength	λ	$\lambda_c-6.5$	λ_c	$\lambda_c+6.5$	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	1270	-	1600	nm	
Los Assert	LOSA	-28	-	-	dBm	
Los De-assert	LOSD	-	-	-18	dBm	
Los hysteresis	LOSH	0.5	-		dB	
Rx_LOS	High		2.0		Vcc+0.3	V
	Low		0		0.8	V

Note:

1. The optical power is launched into SMF.

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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

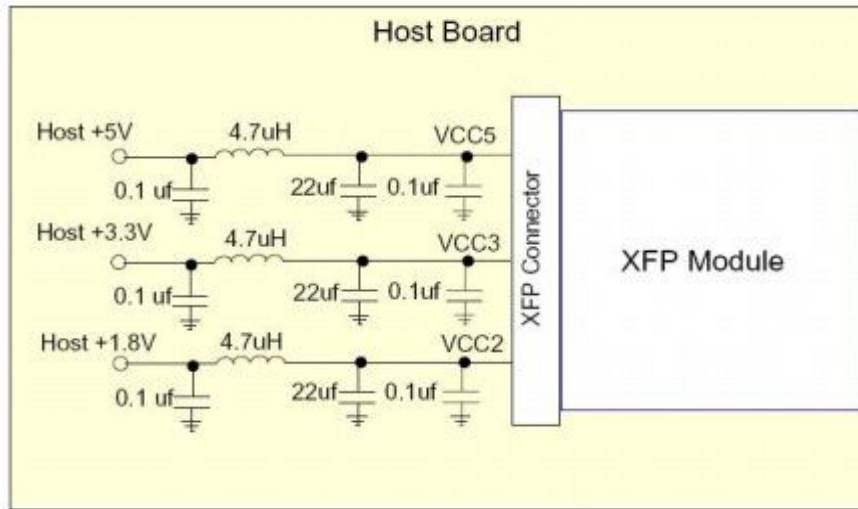
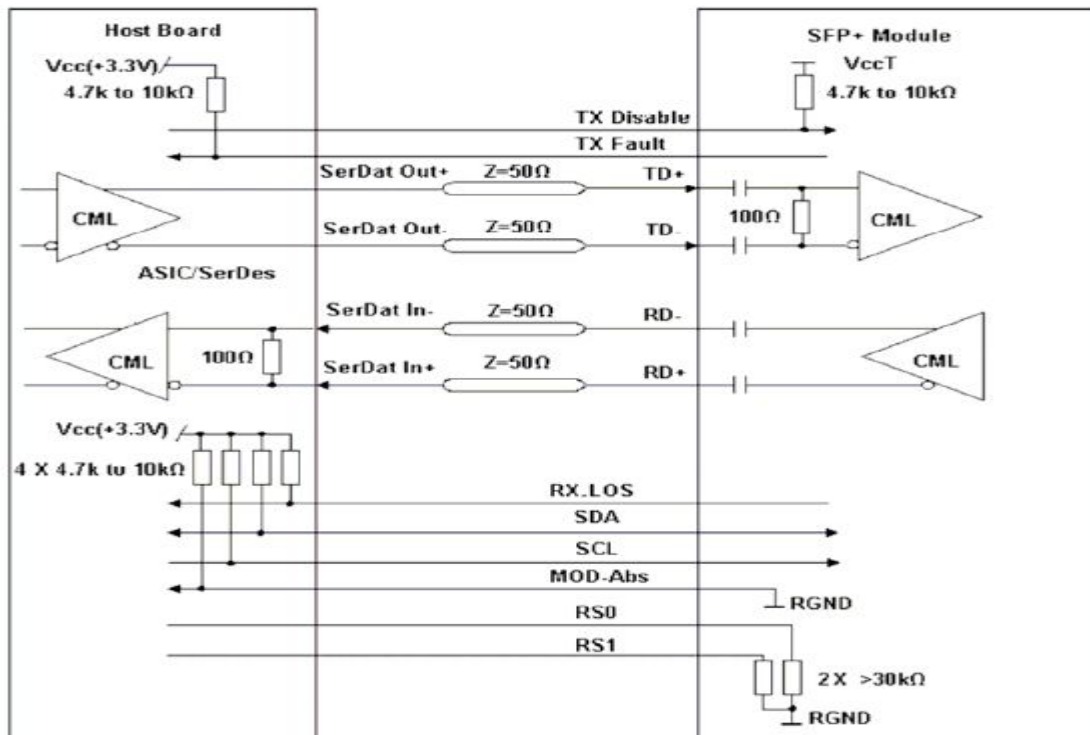


Figure 1,Recommended host board power supply circuit

● Recommended interface circuit



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Figure 2, recommended interface circuit

● **XFP Pins Definitions :**

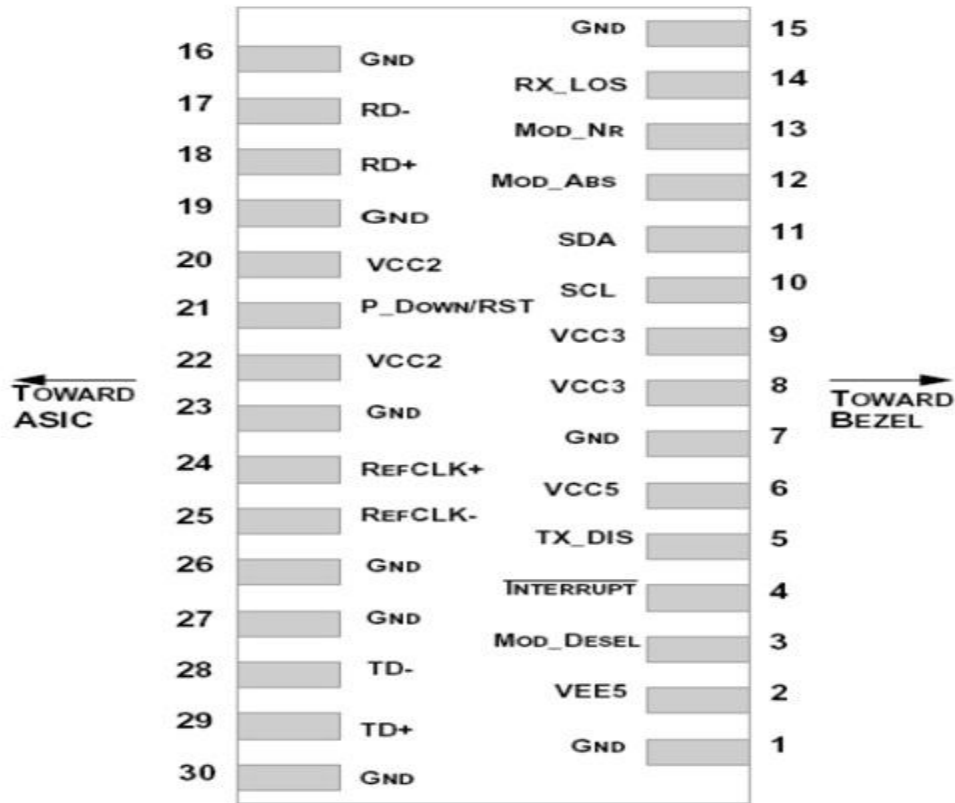


Figure 3, pins definitions

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	

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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.

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● Mechanical Dimension :

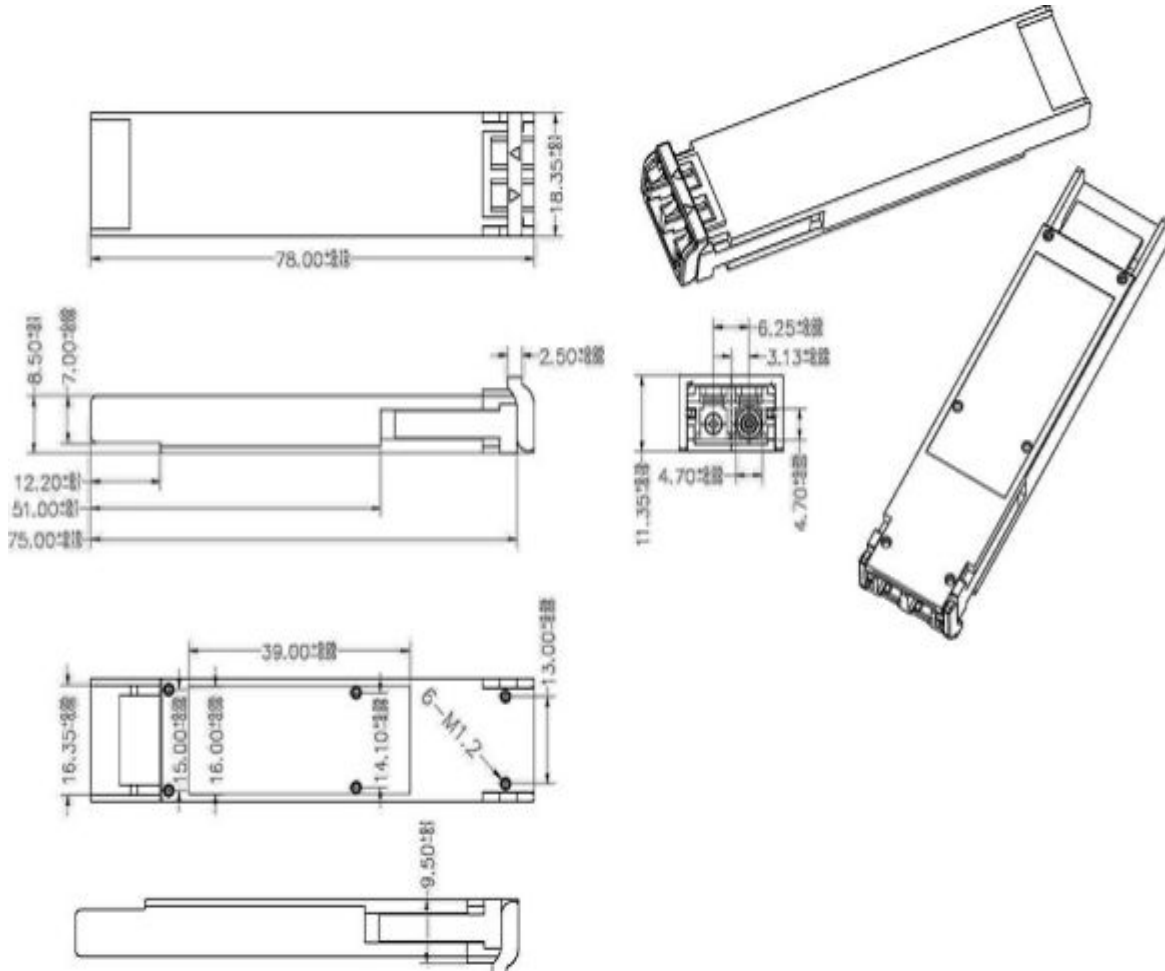


Figure 4,mechanical dimension

● Order Information and Related Products :

Table 7-order information

Part Number	Product Description
SOXC-XX99-20	XFP CWDM EML, 0°C~70°C, 20Km

Wavelength Guide (** value)

Table 7-wavelength guide

Band	Nomenclature“xx”		Wavelength(nm)		
	duplet	BiDI	Min.	Typ.	Max.
O-band Original	27	A	1264	1270	1277.5

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	29	B	1294	1290	1297.5
	31	C	1304	1310	1317.5
	33	D	1324	1330	1337.5
	35	E	1344	1350	1357.5
E-band Extended	37	F	1364	1370	1377.5
	39	G	1384	1390	1397.5
	41	H	1404	1410	1417.5
	43	I	1324	1430	1437.5
	45	J	1444	1450	1457.5
S-band Short Wavelength	47	K	1464	1470	1477.5
	49	L	1484	1490	1497.5
	51	M	1504	1510	1517.5
	53	N	1524	1530	1537.5
C-band Conventional	55	O	1544	1550	1557.5
L-band Long Wavelength	57	P	1564	1570	1577.5
	59	Q	1584	1590	1597.5
	61	R	1604	1610	1617.5

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