

## 6C-XFP-ER

6COM, XFP,10Gbps ,1550nm,SMF,40KM, DDM,LC connector, 0°C ~ +70°C

### FEATURES

- ◆ Supports 10GBE Application at the Data-Rate of 9.953Gbps to 10.3125Gbps
- ◆ Maximum link length of 40km with SMF
- ◆ 1550nm cooled EML laser and PIN photodiode
- ◆ XFP MSA package with duplex LC connector
- ◆ XFI High Speed Electrical Interface
- ◆ +5V, +3.3V power supply
- ◆ Power dissipation <3.5W
- ◆ 2-wire interface for management and diagnostic monitor
- ◆ Compatible with RoHS
- ◆ Compatible with IEEE 802.3ae 10 Gigabit Ethernet
- ◆ Compatible with Sonet OC-192/SDH STM-64



### APPLICATIONS

- ◆ SONET(OC-192)/SDH(STM64) line card
- ◆ 10GE Ethernet switches and routers
- ◆ 10GE Core-routers
- ◆ 10GE Storage
- ◆ Inter Rack Connection
- ◆ Other high speed data connections

### PRODUCT DESCRIPTION

6COM's 6C-XFP-ER transceiver comply with XFP MSA, and can support diverse applications for SDH/Sonet equipment including FEC (9.95Gb/s to 10.7Gb/s),as well as Ethernet LAN(10.325Gb/s) and WAN(9.95Gb/s) applications. The high performance cooled 1550nm cooled EML transmitter and high sensitivity PIN receiver provide superior performance for SONET /SDH and Ethernet applications at up to 40km links. Digital diagnostics functions are available via a 2-wire serial interface, as specified in the XFP MSA.

## 1. Absolute Maximum Ratings

Parameter	Symbol	Min	Max	Unit	Ref.
Storage Ambient Temperature Range		-40	+85	°C	
Powered case Temperature Range		-5	+70	°C	
Operating Relative Humidity	RH		80	%	
Supply Voltage Range @ 5V	Vcc5	-0.5	6.0	V	
Supply Voltage Range @ 3.3V	Vcc3	-0.5	4.0	V	

Any stress beyond the maximum ratings can result in permanent damage. The device specifications are guaranteed only under the recommended operating conditions.

## 2. Recommended Operating Conditions

Parameter	Symbol	Min	Typical	Max	Unit
Operating Case Temperature	Tc	0		+70	°C
Power Supply Voltage	Vcc5	4.75	5.0	5.25	V
	Vcc3	3.13	3.3	3.47	
Power Dissipation	PD			3.5	W

## 3. Transmitter E/O Characteristics

Parameter	Symbol	Min.	Typ.	Max.	Unit	Note
Operating Data Rate		9.95		11.1	Gb/s	
Ave. Output Power	Po	-2		4	dBm	1
Output Centre Wavelength	$\lambda$	1530	1550	1565	nm	
Disable Power	Poff			-30	dBm	
Extinction Ratio	ER	8.2			dB	1
Sidemode Suppression Ratio		30			dB	
Rise/Fall Time (20%~80%)	Tr/Tf			38	PS	
Dispersion penalty				2	dB	1
Generation Jitter1(20KHZ-80MHZ)				0.3	Ulp-p	1
Generation Jitter 2(4MHZ-80MHZ)				0.1	Ulp-p	1
Optical Eye Mask 1		GR-253-CORE/ITU-T G.6911				1
Optical Eye Mask 2		IEEE802.3ae				2

## 4. Receiver E/O Characteristics

Parameter	Symbol	Min.	Typ.	Max.	Unit	Note
Operating Data Rate		9.95		11.1	Gb/s	
Overload	Po	0.5			dBm	
Input Centre Wavelength	$\lambda$	1270		1600	nm	
Minimum Sensitivity	Pmin			-15.8	dBm	1
Stressed Sensitivity in OMA				-13.8	dBm	2
LOS Assert	LosA	-30			nm	
LOS De-assert	LosD			-17	dBm	
LOS Hysteresis		0.5			dBm	
Optical Return Loss		27			dB	
Jitter Tolerance		GR-253-CORE/ITU-T G.783				1

### Note:

1. Measured at 9.95328Gb/s, Framed PRBS2<sup>31</sup>-1, NRZ
2. Measured at 10.3125Gb/s, Non-framed PRBS2<sup>31</sup>-1, NRZ

## 5. Pin Descriptions

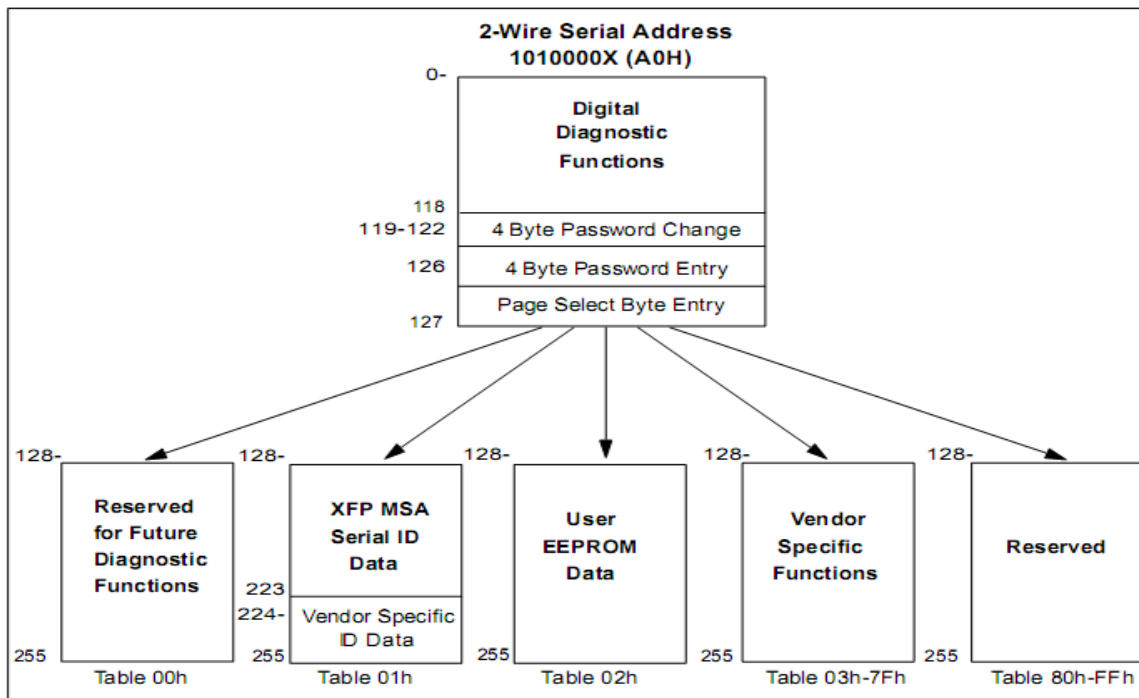
Pin	Logic	Symbol	Name/Description	Note
1		GND	Module Ground	1
2		VEE5	Optional -5.2V Power Supply (Not required)	
3	LVTTL-I	MOD_DESEL	Module De-select; When held low allows the module to respond to 2-wire serial interface	
4	LVTTL-O	INTb	Interrupt; Indicates presence of an important condition which can be read via the 2-wire serial interface	2
5	LVTTL-I	TX_DIS	Transmitter Disable; Turns off transmitter laser output	
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 (Not required).	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 the 2-wire serial interface, equivalent to a power cycle.	
22		VCC2	+1.8V Power Supply (Not required)	3
23		GND	Module Ground	1

24	PECL-I	REFCLKP	Not used, internally terminated to 50ohm (100ohm diff).	4
25	PECL-I	REFCLKN	Not used, internally terminated to 50ohm (100ohm diff).	4
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

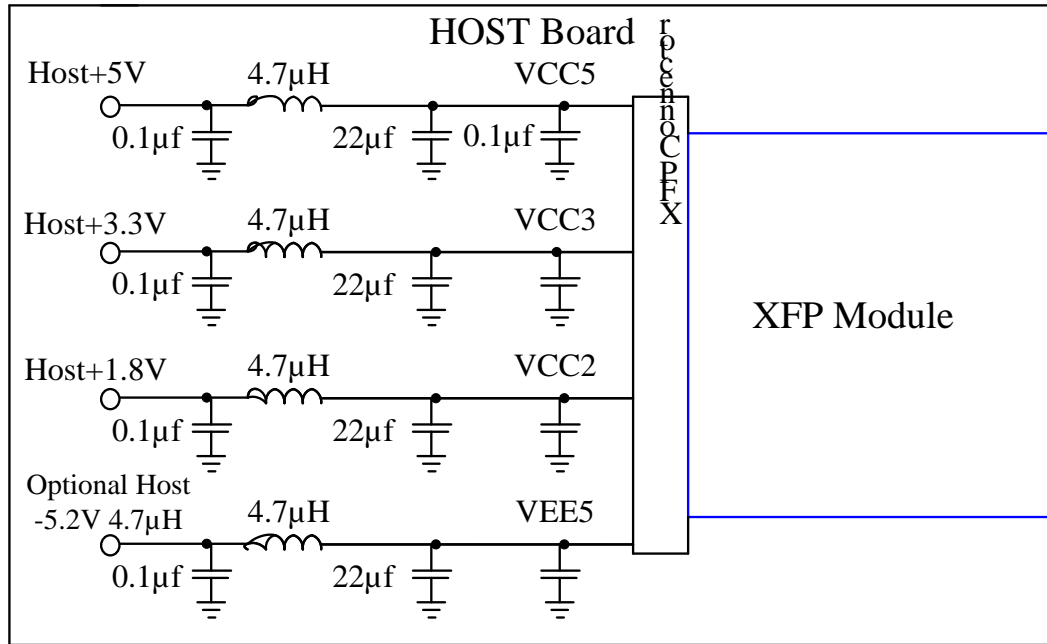
1. Module ground pins GND are isolated from the module case and chassis ground within the module.  
2. Open collector; Shall be pulled up with 4.7K-10Kohms to a voltage between 3.15V and 3.6V on the host board.  
3. The pins are open within module.  
4. Reference Clock is not required.

## 6. Management Interface

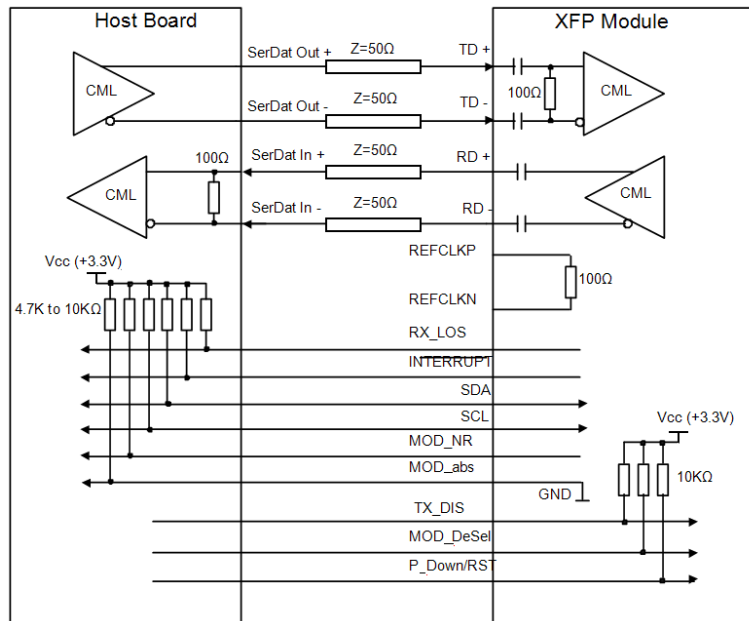
- The transceivers provide serial ID memory contents and diagnostic information about the present operating conditions by the 2-wire serial interface (SCL, SDA).
- The Module provides diagnostic information about the present operating conditions. The transceiver generates this diagnostic data by digitization of internal analog signals. Alarm/warning threshold data is written during device manufacture. Received power monitoring, transmitted power monitoring, bias current monitoring, supply voltage monitoring and temperature monitoring all are implemented.
- The digital diagnostic memory map specific data field defines as following.



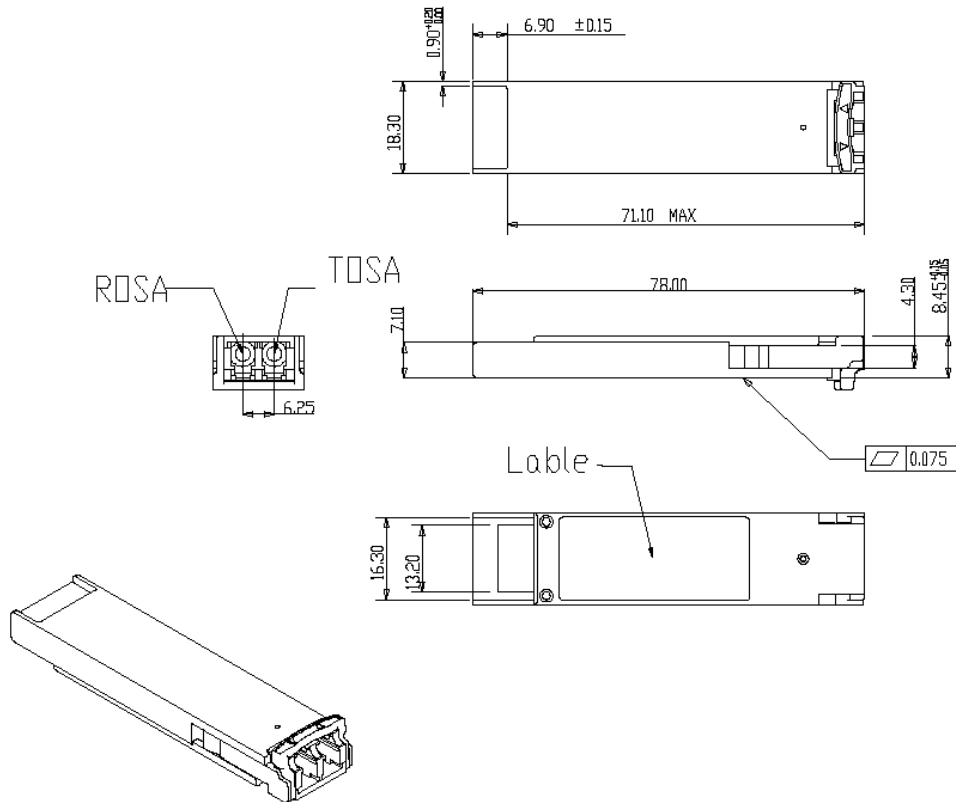
## 7. Recommended Host Board Power Supply Circuit



## 8. Recommended High-speed Interface Circuit



## 9. Package Dimensions



## 10. Ordering information

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