

10GBASE-ZRC XFP 1550nm 100km Transceiver

EX-XFP-10GE-ZR100-LL



Application

- 10GBASE-ZR/ZW Ethernet
- SONET OC-192/SDH STM-64
- 100km10G FC

Standards

- IEEE 802.3ae 10GBASE-ZRC
- XFP MSA

Features

- Support Multi Protocol from 9.95Gb/s to 11.3Gb/s
- Hot Pluggable 30 Pin Connector
- Compliant with XFP MSA
- Transmission Distance of 100km Over Single Mode Fiber
- 1550nm EML Laser Transmitter with Isolator
- Low Power Consumption <3.5W
- APD Receiver
- Duplex LC Connector
- Temperature Range: 0~70°C
- 2-Wire Interface for Management and Diagnostic Monitor
- XFI Electrical Interface with AC Coupling
- Power Supply Voltages :+3.3V,+5V
- RoHS Compliant Part

Description

Longline Small Form Factor 10Gb/s (XFP) transceivers are compliant with the current XFP Multi-Source Agreement (MSA) Specification. The high performance cooled EML transmitter and high sensitivity APD receiver provide superior performance for SONET /SDH and Ethernet applications up to 100km optical links.

Products Specifications

I. Absolute Maximum Ratings

Parameter	Symbol	Min.	Max.	Unit
Storage Temperature Range	T_{ST}	-40	85	°C
Supply Voltage 1	V_{CC3}	-0.5	4.0	V
Supply Voltage 2	V_{CC5}	-0.5	6.0	V

II. Recommended Operating Conditions

Parameter	Symbol	Min.	Typical	Max.	Unit
Operating Temperature Range	T_{IP}	0		70	°C
Power Supply Voltage	V_{CC}	3.14	3.3	3.46	V
Bit Rate	BR	9.95		11.3	Gb/s
Bit Error Rate	BER			10^{-12}	
Max. Supported Link Length	L			100	km

III. Optical Characteristics

Parameter	Symbol	Min.	Typical	Max.	Unit	Notes
Transmitter						
Data Rate	B	9.95		11.3	Gbps	
Bit Error Rate	BER			10 ⁻¹²		
Center Wavelength	λ	1530	1550	1565	nm	
Spectral Width	$\Delta\lambda$			1	nm	
Side Mode Suppression Ratio	SMSR _{min}	30			dB	
Optical Output Power	P _O	0		5	dBm	1
Average Launch Power of OFF Transmitter	P _{OFF}			-30	dBm	
Extinction Ratio	ER	8.2			dB	
Rise/Fall Time (20%~80%)	T _r /T _f			35	ps	
Tx Jitter	T _{xj}	Compliant with each standard requirements				
Optical Eye Mask			IEEE802.3ae			2
Receiver						
Data Rate	BR	9.95		11.3	Gbps	
Center Wavelength	λ_C	1260		1600	nm	
Receiver Sensitivity	R _{SEN}			-24.5	dBm	2
Maximum Input Power	P _{MAX}	-7			dBm	2
Receiver Reflectance	R _{rx}			-27	dB	

Parameter	Symbol	Min.	Typical	Max.	Unit	Notes
LOS	Optical Assert	LOS _A	-35			dBm
	Optical Dessert	LOS _D		-25		dBm
LOS Hysteresis	LOS _H	0.5		5	dB	

Notes

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

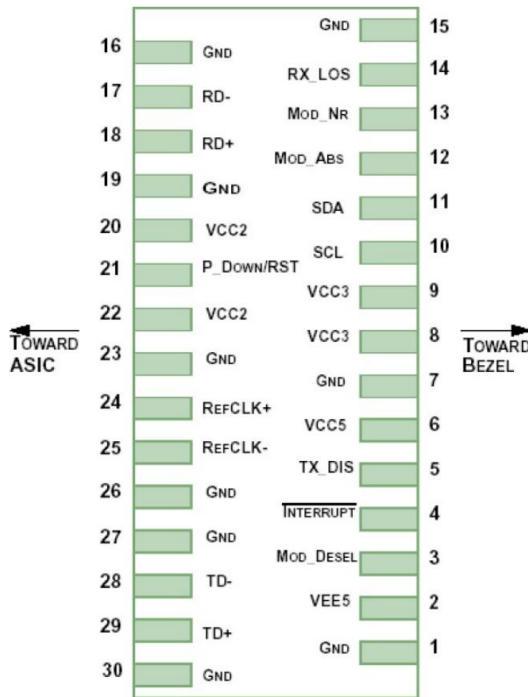
IV. Electrical Characteristics

Parameter	Symbol	Min.	Typical	Max.	Unit	Notes
Supply Voltage 1	V_{CC5}	4.75		5.25	V	
Supply Voltage 2	V_{CC3}	3.13		3.45	V	
Supply Current – Vcc5 supply	I_{CC5}			250	mA	
Supply Current – Vcc3 supply	I_{CC3}			500	mA	
Module Total Power	P			3.5	W	
Transmitter						
Input Differential Impedance	R_{IN}		100		Ω	1
Differential Data Input Swing	$V_{IN,pp}$	150		820	mV	
Transmit Disable Voltage	V_D	2		V_{CC}	V	
Transmit Enable Voltage	V_{EN}	G_{ND}		$G_{ND}+0.8$	V	
Transmit Disable Assert Time	T_{off}			100	us	
Tx Enable Assert Time	T_{on}			100	ms	
Receiver						
Differential Data Output Swing	$V_{out,pp}$	300	500	850	mV	
Output Rise Time	t_{RISE}			35	ps	2
Output Fall Time	t_{FALL}			35	ps	2
LOS Fault	V_{LOSFT}	$V_{CC} - 0.5$		V_{CCHOST}	V	3
LOS Normal	V_{LOSNR}	G_{ND}		$G_{ND}+0.5$	V	3
Power Supply Rejection	PSR		See Note 4 below			4

Notes

1. After internal AC coupling.
2. 20 – 80 %
3. Loss Of Signal is open collector to be pulled up with a 4.7k – 10kohm resistor to 3.15 – 3.6V. Logic 0 indicates normal operation; logic 1 indicates no signal detected.
4. Per Section 2.7.1. in the XFP MSA Specification.

V. Pin Description



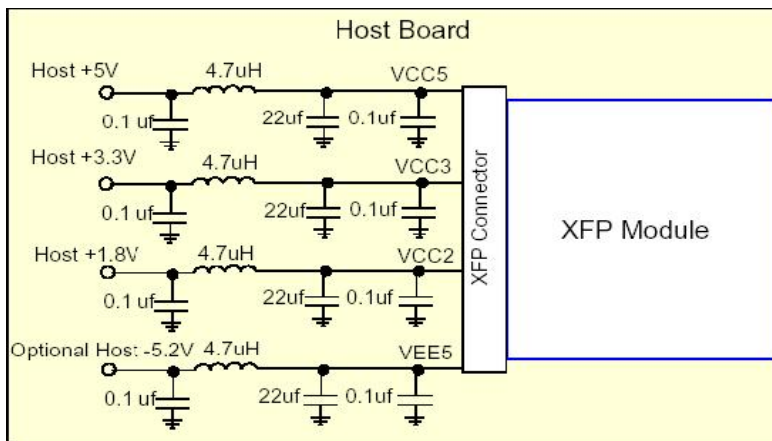
Pin Number	Logic	Symbol	Name/Description	Notes
1		G _{ND}	Module Ground	1
2		V _{EE5}	Optional -5.2 Power Supply – Not required	
3	LVTTTL-I	Mod-Desel	Module De-select; When held low allows the module to respond to 2-wire serial interface commands	
4	LVTTTL-O	Interrupt	Interrupt (bar); Indicates presence of an important condition which can be read over the serial 2-wire interface	2
5	LVTTTL-I	TX_DIS	Transmitter Disable; Transmitter laser source turned off	
6		V _{CC5}	+5 Power Supply	
7		G _{ND}	Module Ground	1
8		V _{CC3}	+3.3V Power Supply	
9		V _{CC3}	+3.3V Power Supply	
10	LVTTTL-I	SCL	Serial 2-wire interface clock	2
11	LVTTTL-I/O	SDA	Serial 2-wire interface data line	2
12	LVTTTL-O	Mod_Abs	Module Absent; Indicates module is not present. Grounded in the module	2
13	LVTTTL-O	Mod_NR	Module Not Ready	2
14	LVTTTL-O	RX_LOS	Receiver Loss of Signal indicator	2
15		G _{ND}	Module Ground	1

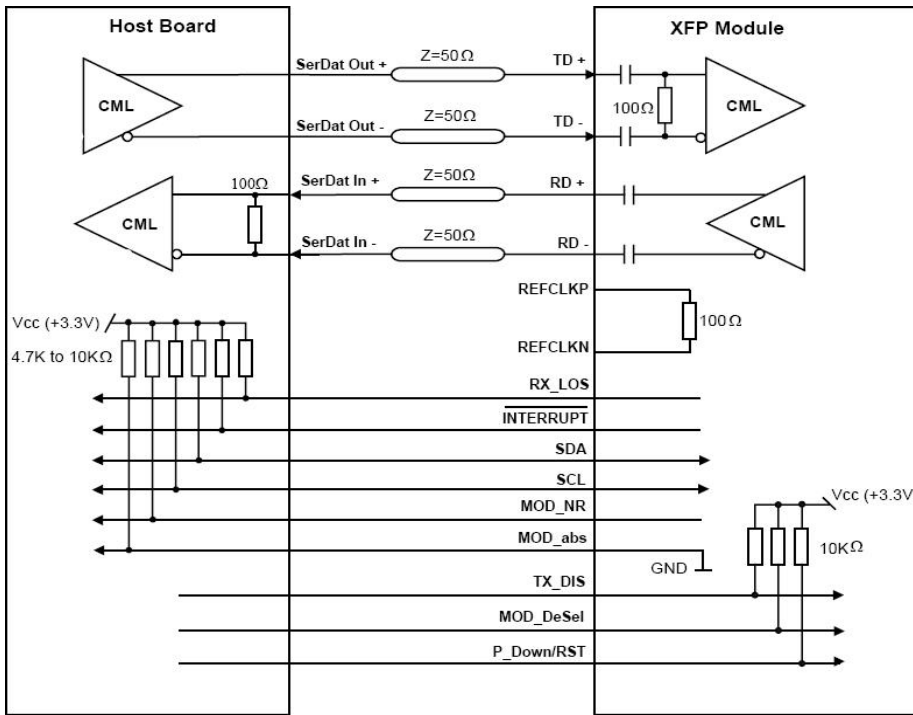
Pin Number	Logic	Symbol	Name/Description	Notes
16		G_{ND}	Module Ground	1
17	CML-O	RD-	Receiver inverted data output	
18	CML-O	RD+	Receiver non-inverted data output	
19		G_{ND}	Module Ground	1
20		V_{CC2}	+1.8V Power Supply – Not required	
21	LVTTTL-I	P_Down/RST	Power Down; When high, places the module in the low power stand-by mode and on the falling edge of P_Down initiates a module reset Reset; The falling edge initiates a complete reset of the module including the 2-wire serial interface, equivalent to a power cycle	
22		V_{CC2}	+1.8V Power Supply – Not required	
23		G_{ND}	Module Ground	1
24	PECL-I	RefCLK+	Reference Clock non-inverted input, AC coupled on the host board – Not required	3
25	PECL-I	RefCLK-	Reference Clock inverted input, AC coupled on the host board –Not required	3
26		G_{ND}	Module Ground	1
27		G_{ND}	Module Ground	1
28	CML-I	TD-	Transmitter inverted data input	
29	CML-I	TD+	Transmitter non-inverted data input	
30		G_{ND}	Module Ground	1

Notes

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

VI. Typical Application Circuit





VII. Diagram Mechanical Drawing

