

10G CWDM XFP 1470-1610nm 80km Optical Transceiver

Features

- Support multi protocol from 9.95Gb/s to 11.3Gb/s
- Hot pluggable 30 pin connector
- Compliant with XFP MSA
- Transmission distance of 80km over single mode fiber
- CWDM EML laser transmitter
- APD Receiver
- Duplex LC connector
- 2-wire interface for management and diagnostic monitor
- XFI electrical interface with AC coupling
- Power supply voltages : +3.3V, +5V
- Temperature range: 0°C to 70°C
- Power dissipation: <1.5W
- ROHS Compliant

Applications

- CWDM Networks
- OC-192/STM-64 with FEC
- SONET OC-192/SDH STM-64
- 10GBASE-ZR/ZW Ethernet
- 80km 10G Fiber Channel

Compliance

- IEEE 802.3ae 10GBASE-ZR
- XFP MSA

Description

The XFP-10G-CW80 transceivers are compliant with the current XFP Multi-Source Agreement (MSA) Specification. The high performance cooled CWDM EML transmitter and high sensitivity APD receiver provide superior performance for SONET/SDH and Ethernet applications up to 80km optical links.

Absolute Maximum Ratings

Table1-Absolute Maximum Ratings				
Parameter	Symbol	Min.	Max.	Unit
Storage Temperature Range	T _{ST}	-40	85	°C
Supply Voltage 1	VCC3	-0.5	4.0	V
Supply Voltage 2	VCC5	-0.5	6.0	V

Recommended Operating Environment

Table2-Recommended Operating Environment					
Parameter	Symbol	Min.	Typical	Max.	Unit
Operating Temperature Range	T _{ip}	0		70	°C
Power Supply Voltage	VCC	3.13	3.3	3.45	V
Bit Rate	BR	9.95		11.3	Gb/s
Bit Error Rate	BER			10 ⁻¹²	
Max. Supported Link Length	L			80	km

Optical Characteristics

Table3-Optical Characteristics						
Parameter	Symbol	Min.	Typical	Max.	Unit	Notes
Transmitter						
Data Rate	B	9.95		11.3	Gbps	
Maximum Launch Power	P _{max}	0		4	dBm	1
Center Wavelength	λ	λ -6.5		λ +6.5	nm	
Spectral Width	Δ λ			1	nm	
Side Mode Suppression Ratio	SMSR _{min}	30			dB	
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		RSEN			-23	dBm	2
Maximum Input Power		P _{MAX}	-7			dBm	2
Receiver Reflectance		R _{rx}			-27	dB	
LOS	Optical Assert	LOS _A	-34			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 @10.3125Gbps BER<10⁻¹².

Electrical Characteristics

Table4-Electrical Characteristics

Parameter	Symbol	Min.	Typical	Max.	Unit	Notes
Supply Voltage 1	VCC5	4.75		5.25	V	
Supply Voltage 2	VCC3	3.13		3.45	V	
Supply Current – Vcc5 supply	I _{CC5}			200	mA	
Supply Current – Vcc3 supply	I _{CC3}			550	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		VCC	V	
Transmit Enable Voltage	V _{EN}	GND		GND+0.8	V	
Transmit Disable Assert Time	T _{off}			100	ms	
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}	VCC – 0.5		V _{CCHOST}	V	3
LOS Normal	V _{LOSNR}	GND		GND+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.

Pin Function Definitions

Table5-Pin Function Definitions

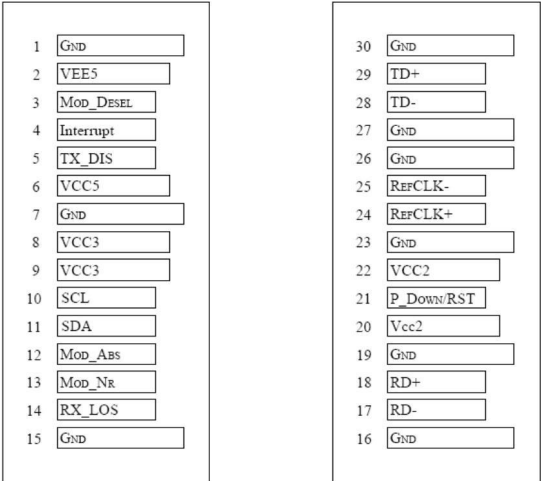
Pin Number	Logic	Symbol	Name/Description	Notes
1		GND	Module Ground	1
2		VEE5	Optional -5.2 Power Supply – Not required	
3	LVTTL-I	Mod-Desel	Module De-select; When held low allows the module to respond to 2-wire serial interface commands	
4	LVTTL-O	Interrupt	Interrupt (bar); Indicates presence of an important condition which can be read over the serial 2-wire interface	2
5	LVTTL-I	TX_DIS	Transmitter Disable; Transmitter laser source turned off	
6		VCC5	+5 Power Supply	
7		GND	Module Ground	1
8		VCC3	+3.3V Power Supply	
9		VCC3	+3.3V Power Supply	
10	LVTTL-I	SCL	Serial 2-wire interface clock	2
11	LVTTL-I/O	SDA	Serial 2-wire interface data line	2
12	LVTTL-O	Mod_Abs	Module Absent; Indicates module is not present. Grounded in the module	2
13	LVTTL-O	Mod_NR	Module Not Ready	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	RD-	Receiver inverted data output	
18	CML-O	RD+	Receiver non-inverted data output	
19		GND	Module Ground	1
20		VCC2	+1.8V Power Supply – Not required	
21	LVTTL-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		VCC2	+1.8V Power Supply – Not required	
23		GND	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		GND	Module Ground	1
27		GND	Module Ground	1
28	CML-I	TD-	Transmitter inverted data input	
29	CML-I	TD+	Transmitter non-inverted data input	

30	GND	Module Ground	1
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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.

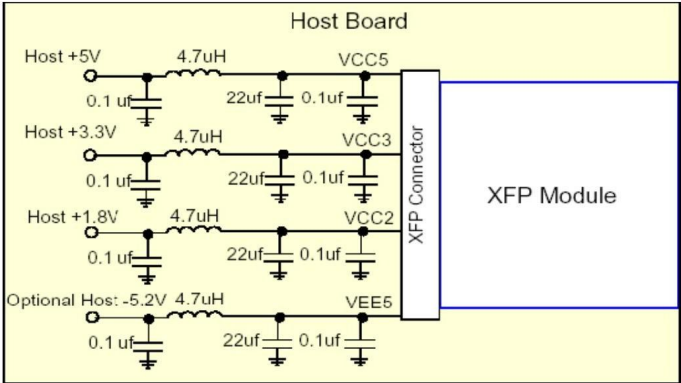
Pin Description



Bottom of Board
(As view through top of board)

Top of Board

Typical Application Circuit



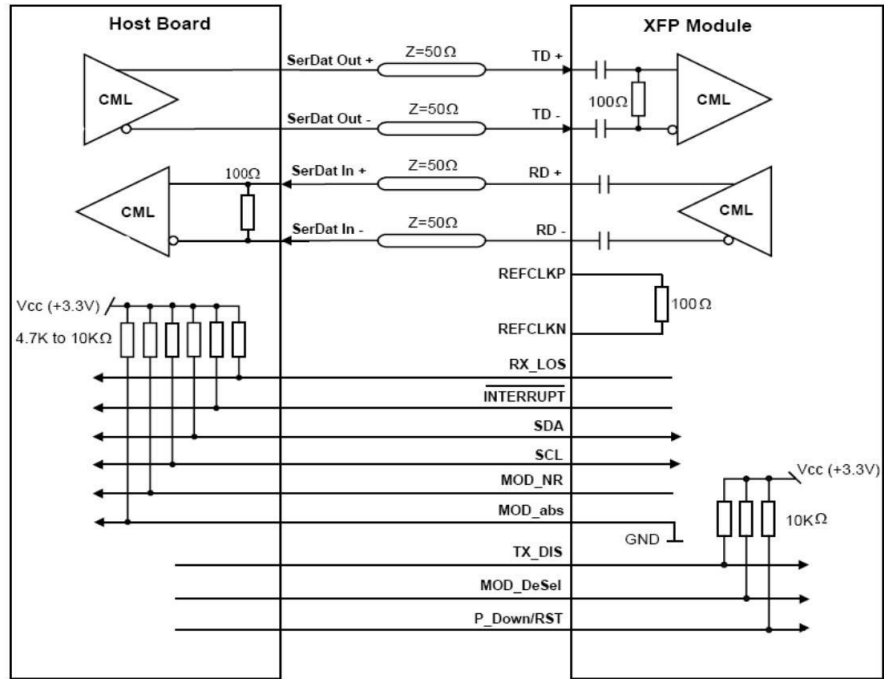


Diagram Mechanical Drawing

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