

XFP 10G DWDM C17-C61 40km Transceiver

Hot Pluggable, Duplex LC, 100GHz,DWDM EML, Single mode

RXPD-10GD40-CXX

Features:

- ◆ Support multi protocol from 9.95Gb/s to 11.3Gb/s
- ◆ Hot pluggable 30 pin connector
- ◆ Compliant with XFP MSA
- ◆ Transmission distance of 40km over single mode fiber
- ◆ DWDM EML laser transmitter
- ◆ 100GHz ITU Grid, C Band
- ◆ 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: <3.5W
- ◆ RoHS Compliant Part



Applications:

- ◆ 10GBASE-ER/EW Ethernet
- ◆ SONET OC-192 /SDH
- ◆ 40km 10G FC
- ◆ DWDM Networks

Description:

FIBERWDM's RXPD-10GD40-CXX Small Form Factor 10Gb/s (XFP) transceivers are compliant with the current XFP Multi-Source Agreement (MSA) Specification. The high performance cooled DWDM EML transmitter and high sensitivity PIN receiver provides superior performance for SONET/SDH, 10G FC and Ethernet applications up to 40km optical links.

Absolute Maximum Ratings

Parameter	Symbol	Min	Max	Unit
Storage Temperature	TST	-40	+85	°C
Case Operating Temperature	TIP	0	+70	°C
Supply Voltage 1	VCC3	-0.5	+4.0	V
Supply Voltage 2	VCC5	-0.5	+6.0	V

Electrical Characteristics (T_{OP} = 0 to 70 °C)

Parameter	Symbol	Min	Typ	Max	Unit	Note
Supply Voltage 1	Vcc5	4.75		5.25	V	
Supply Voltage 2	Vcc3	3.13		3.45	V	
Supply Current – Vcc5 supply	Icc5			250	mA	
Supply Current – Vcc3 supply	Icc3			500	mA	
Module total power	P			3.5	W	
Transmitter						
Input differential impedance	Rin		100		Ω	1
Differential data input swing	V _{in,pp}	150		820	mV	
Transmit Disable Voltage	V _D	2.0		V _{cc}	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		
Data output rise time	t _r			35	ps	2	
Data output fall time	t _f			35	ps	2	
LOS Fault	V _{LOS fault}	V _{CC} – 0.5		V _{CCHOST}	V	3	
LOS Normal	V _{LOS norm}	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.

Optical Parameters (T_{OP} = 0 to 70°C)

Parameter	Symbol	Min	Typ	Max	Unit	Ref.
Transmitter						
Operating Data Rate	BR	9.95		11.3	Gb/s	
Bit Error Rate	BER			10 ⁻¹²		
Maximum Launch Power	P _{MAX}	-1		+4	dBm	1
Optical Wavelength-End of Life	λ	X-100	X	X+100	pm	
Optical Wavelength-Beginning of Life	λ	X-25	X	X+25	pm	
Optical Extinction Ratio	ER	8.2			dB	
Spectral Width@-20dB	Δλ			1	nm	

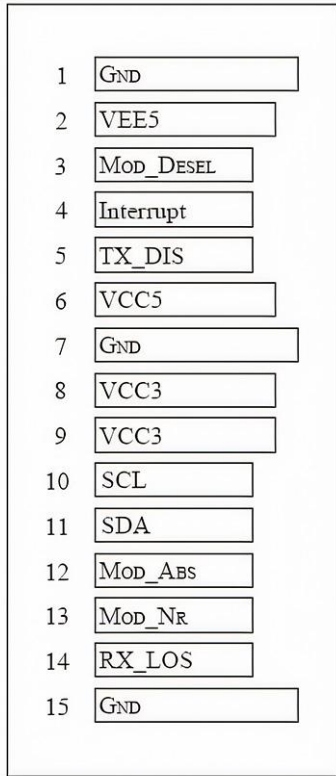
Sidemode Supression ratio	SSR _{min}	30			dB	
Rise/Fall Time (20%~80%)	Tr/Tf			35	ps	
Average Launch power of OFF Transmitter	P _{OFF}			-30	dBm	
Tx Jitter	T _{xj}	Compliant with each standard requirement				
Optical Eye Mask		IEEE802.3ae				2
Receiver						
Operating Date Rate	BR	9.95		11.3	Gb/s	
Receiver Sensitivity	Sen			-16	dBm	2
Maximum Input Power	P _{MAX}	0			dBm	2
Optical Center Wavelength	λ _C	1260		1600	nm	
Receiver Reflectance	R _{rx}			-27	dB	
LOS De-Assert	LOS _D			-17	dBm	
LOS Assert	LOS _A	-27			dBm	
LOS Hysteresis	LOS _H	0.5		5	dB	

Notes:

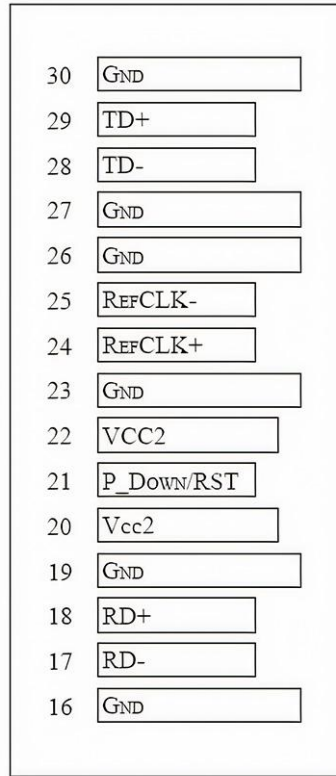
1. The optical power is launched into SMF.
2. Measured with a PRBS 2³¹-1 test pattern @10.3125Gbps BER<10⁻¹².

Pin Assignment

Diagram of Host Board Connector Block Pin Numbers and Name



Bottom of Board
(As view through top of board)



Top of Board

Pin Function Definitions

Pin	Logic	Symbol	Name/Description	Ref.
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/RS T	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

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 ohms on host board to a voltage between 3.15V and 3.45V.
3. A Reference Clock input is not required.

Digital Diagnostic Functions

As defined by the XFP MSA 1, FIBERWDM's XFP transceivers provide digital diagnostic functions via a 2-wire serial interface, which allows real-time access to the following operating parameters:

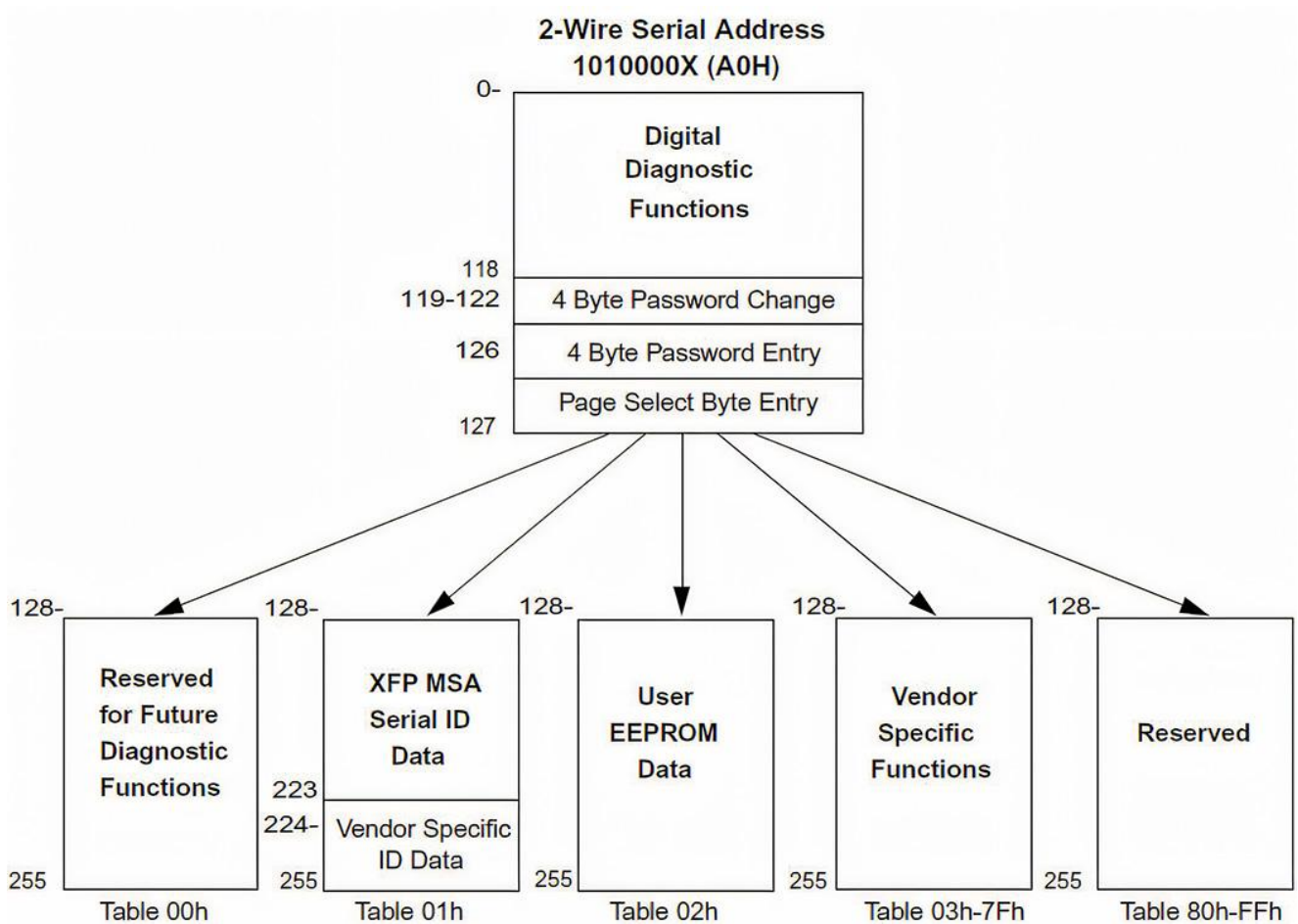
- ✧ Transceiver temperature
- ✧ Laser bias current
- ✧ Transmitted optical power
- ✧ Received optical power
- ✧ Transceiver supply voltage

It also provides a sophisticated system of alarm and warning flags, which may be used to alert end-users when particular operating parameters are outside of a factory-set normal range.

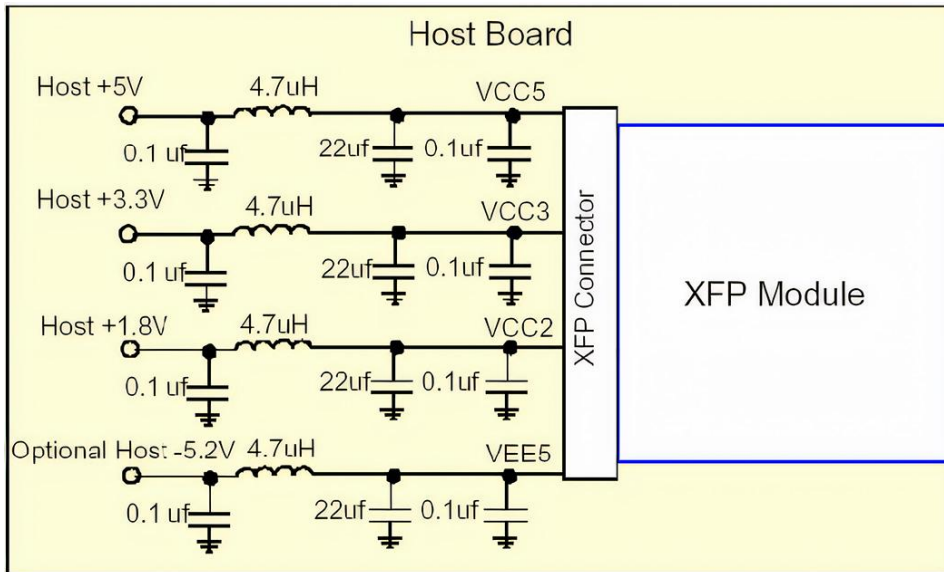
The operating and diagnostics information is monitored and reported by a Digital Diagnostics Transceiver Controller (DDTC) inside the transceiver, which is accessed through the 2-wire serial interface. When the serial protocol is activated, the serial clock signal (SCL pin) is generated by the host. The positive edge

clocks data into the XFP transceiver into those segments of its memory map that are not write-protected. The negative edge clocks data from the XFP transceiver. The serial data signal (SDA pin) is bi-directional for serial data transfer. The host uses SDA in conjunction with SCL to mark the start and end of serial protocol activation. The memories are organized as a series of 8-bit data words that can be addressed individually or sequentially. The 2-wire serial interface provides sequential or random access to the 8 bit parameters, addressed from 000h to the maximum address of the memory.

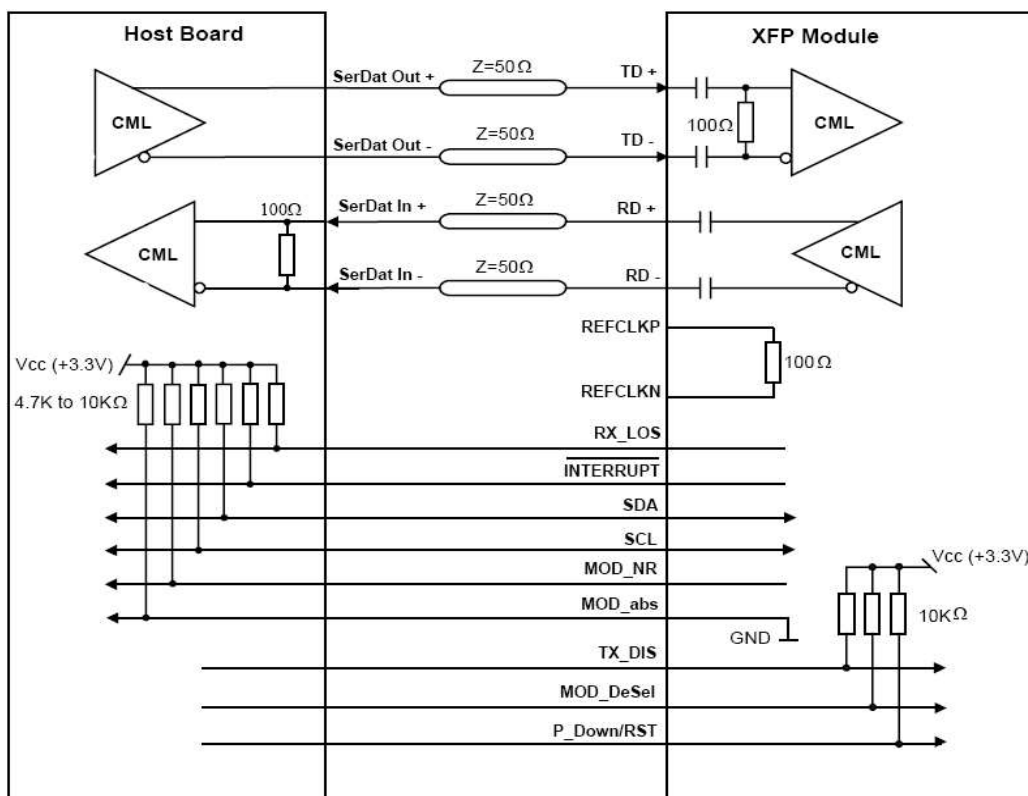
For more detailed information including memory map definitions, please see the XFP MSA Specification.



Recommended Circuit

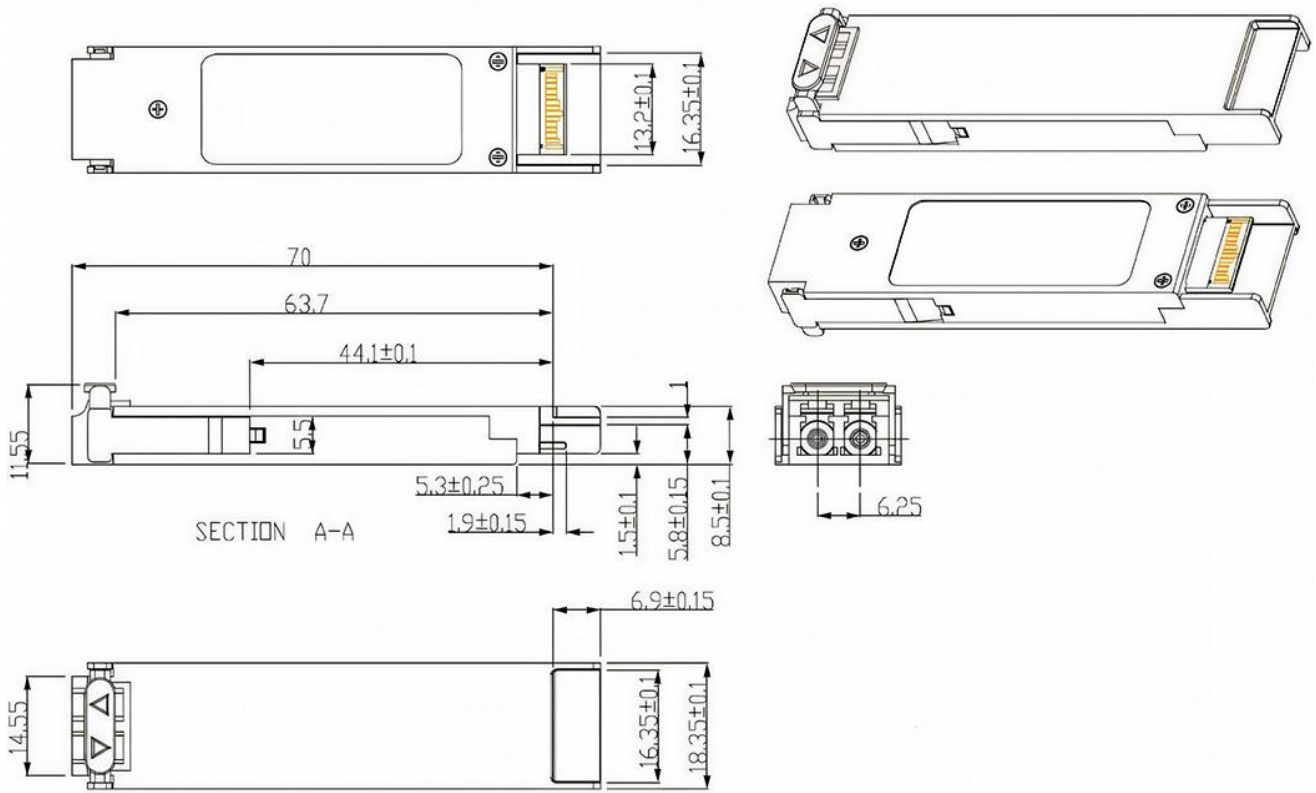


Recommended Host Board Power Supply Circuit



Recommended High-speed Interface Circuit

Mechanical Dimensions



Order Information:

RXPD-10GD40-CXX

XX: 100GHZ ITU Grid Wavelength

Part No.	Central Wavelength(nm)	Frequency (THZ)
RXPD-10GD40-C61	1528.77	196.1
RXPD-10GD40-C60	1529.55	196.0
RXPD-10GD40-C59	1530.33	195.9
RXPD-10GD40-C58	1531.12	195.8
RXPD-10GD40-C57	1531.90	195.7
RXPD-10GD40-C56	1532.68	195.6
RXPD-10GD40-C55	1533.47	195.5

RXPD-10GD40-C54	1534.25	195.4
RXPD-10GD40-C53	1535.04	195.3
RXPD-10GD40-C52	1535.82	195.2
RXPD-10GD40-C51	1536.61	195.1
RXPD-10GD40-C50	1537.40	195.0
RXPD-10GD40-C49	1538.19	194.9
RXPD-10GD40-C48	1538.98	194.8
RXPD-10GD40-C47	1539.77	194.7
RXPD-10GD40-C46	1540.56	194.6
RXPD-10GD40-C45	1541.35	194.5
RXPD-10GD40-C44	1542.14	194.4
RXPD-10GD40-C43	1542.94	194.3
RXPD-10GD40-C42	1543.73	194.2
RXPD-10GD40-C41	1544.53	194.1
RXPD-10GD40-C40	1545.32	194.0
RXPD-10GD40-C39	1546.12	193.9
RXPD-10GD40-C38	1546.92	193.8
RXPD-10GD40-C37	1547.72	193.7
RXPD-10GD40-C36	1548.51	193.6
RXPD-10GD40-C35	1549.32	193.5
RXPD-10GD40-C34	1550.12	193.4
RXPD-10GD40-C33	1550.92	193.3
RXPD-10GD40-C32	1551.72	193.2
RXPD-10GD40-C31	1552.52	193.1
RXPD-10GD40-C30	1553.33	193.0
RXPD-10GD40-C29	1554.13	192.9

RXPD-10GD40-C28	1554.94	192.8
RXPD-10GD40-C27	1555.75	192.7
RXPD-10GD40-C26	1556.55	192.6
RXPD-10GD40-C25	1557.36	192.5
RXPD-10GD40-C24	1558.17	192.4
RXPD-10GD40-C23	1558.98	192.3
RXPD-10GD40-C22	1559.79	192.2
RXPD-10GD40-C21	1560.61	192.1
RXPD-10GD40-C20	1561.42	192.0
RXPD-10GD40-C19	1562.23	191.9
RXPD-10GD40-C18	1563.05	191.8
RXPD-10GD40-C17	1563.86	191.7

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