

OXF10G-3120DxR

10GBASE-LR XFP Transceiver Module, Single Mode, 1310nm, 20km Reach

Features

- Supports 8.0Gb/s to 11.1Gb/s bit rates
- Maximum link length of 20km (SMF)
- 1310nm DFB laser and PIN receiver
- Low power consumption <1.5W
- +3.3V power supply
- XFP MSA package with duplex LC connector
- XFI electrical interface
- No reference clock required
- Compatible with RoHS
- Excellent EMI performance
- Built-in digital diagnostic functions
- Operating Temperature: Standard 0~70°C, Industrial -40~85°C



Applications

- 10GBASE-LR/10GBASE-LW 10G Ethernet
- 1200-SM-LL-L 10G Fibre Channel
- SONET OC-192&SDH STM-64 at 9.953Gbps
- 10GE over G.709 at 11.09Gbps
- OC192 over FEC at 10.709Gbps
- Other optical links, up to 11.1Gbps

Description

Optcore's OXF10G-3120DxR is a high performance and cost-effective XFP transceiver module for 10 Gigabit Ethernet links up to 20km over Single Mode fiber. This 10GBASE-LR XFP module features a highly reliable 1310nm DFB transmitter and PIN photo-detector into duplex LC optical connector. The transceiver module complies with XFP MSA specifications, 10 Gigabit Ethernet specifications (10GBASE-LR/LW per IEEE 802.3ae), and 10G Fibre Channel (1200-SM-LL-L). It's suitable for use with 10G Ethernet switches, routers, network interface cards (NICs), fiber media converters and storage networking equipment. They are available with Commercial Temperature Range of Operation (0 °C to 70°C) and Industrial Temperature Range of Operation (-40°C to +85°C). Digital diagnostics functions are available via a 2-wire serial interface, as specified in the XFP MSA.

Absolute Maximum Ratings

Parameter	Symbol	Min	Max	Unit
Supply Voltage	Vcc	-0.5	4.5	V
Storage Temperature	Ts	-40	+85	°C
Operating Humidity	-	5	85	%

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

Recommended Operating Conditions

Parameter	Symbol	Min.	Typ.	Max.	Unit	Notes
Power Supply Voltage	V _{cc}	3.13	3.3	3.47	V	
Power Supply Current	I _{cc}			500	mA	
Case Operating Temperature	T _c	0		70	°C	Standard
		-40		85	°C	Industrial
Data Rate		8.0		11.1	Gbps	
Maximum supported distance	L _{max}			20	km	

Optical and Electrical Characteristics

Parameter	Symbol	Min	Typical	Max	Unit	Notes
Transmitter						
Centre Wavelength	λ _c	1270	1310	1350	nm	
Spectral Width (-20dB)	Δλ			1	nm	
Side-Mode Suppression Ratio	SMSR	30			dB	
Average Output Power	P _{out}	-3.0		3.0	dBm	1
Extinction Ratio	ER	3.5			dB	
Data Input Swing Differential	V _{IN}	180		950	mV	2
Input Differential Impedance	Z _{IN}	90	100	110	Ω	
TX Disable	Disable	2.0		V _{cc}	V	
	Enable	0		0.8	V	
Receiver						
Centre Wavelength	λ _c	1260		1600	nm	
Receiver Sensitivity				-14.4	dBm	3
Receiver Overload		0.5			dBm	3
LOS De-Assert	LOS _D			-15.5	dBm	
LOS Assert	LOS _A	-26			dBm	
LOS Hysteresis		0.5		4	dB	
Data Output Swing Differential	V _{out}	400	600	800	mV	2
LOS	High	2.0		V _{cc}	V	
	Low			0.8	V	

Notes:

1. The optical power is launched into SMF.
2. Internally AC-coupled.
3. Measured with a PRBS 2³¹-1 test pattern @9953Mbps, BER ≤1×10⁻¹².

Pin Descriptions

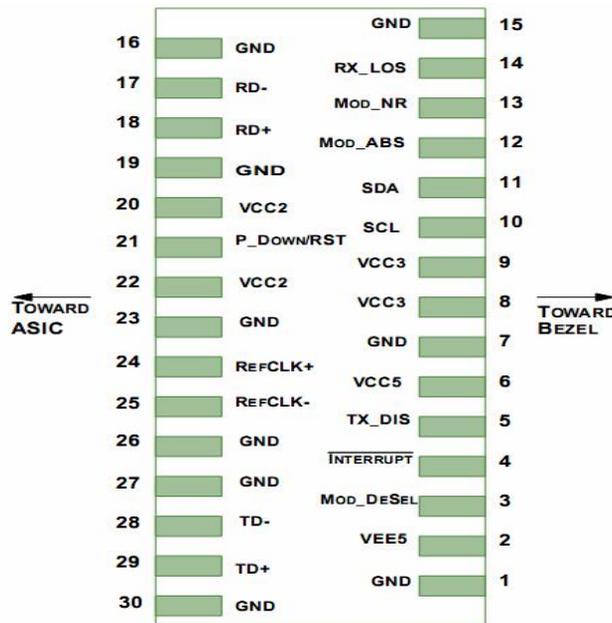
Pin	Logic	Symbol	Name/Description	Ref
1		GND	Module Ground	1
2		VEE5	Optional -5.2 Power Supply – Not required	

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		VCC5	+5 Power Supply – Not required	
7		GND	Module Ground	1
8		VCC3	+3.3V Power Supply	
9		VCC3	+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		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	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		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

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 Definitions

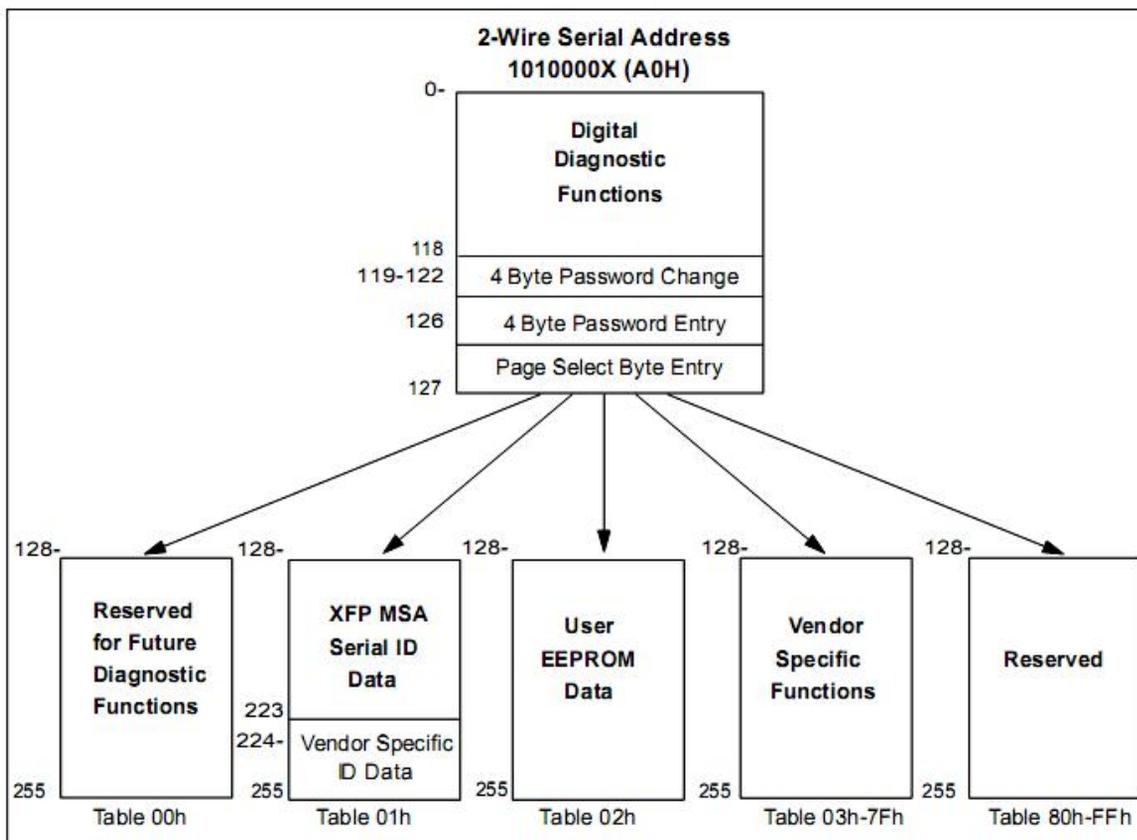


Management Interface

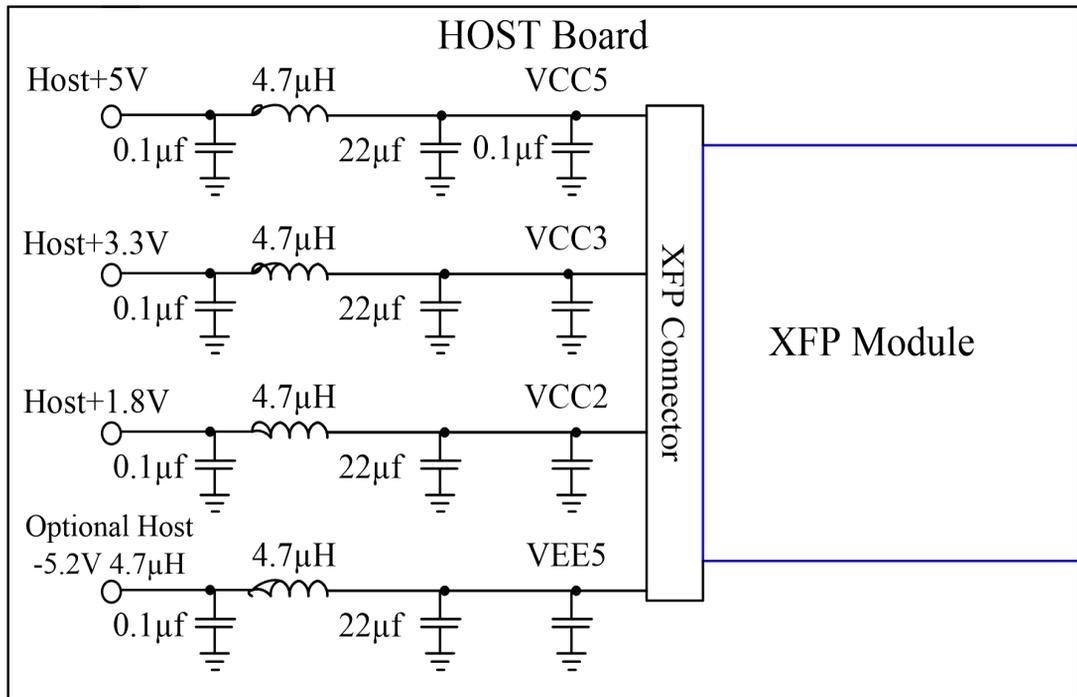
The transceivers provide serial ID memory contents and diagnostic information about the present operating conditions by the 2-wire serial interface (SCL, SDA).

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.

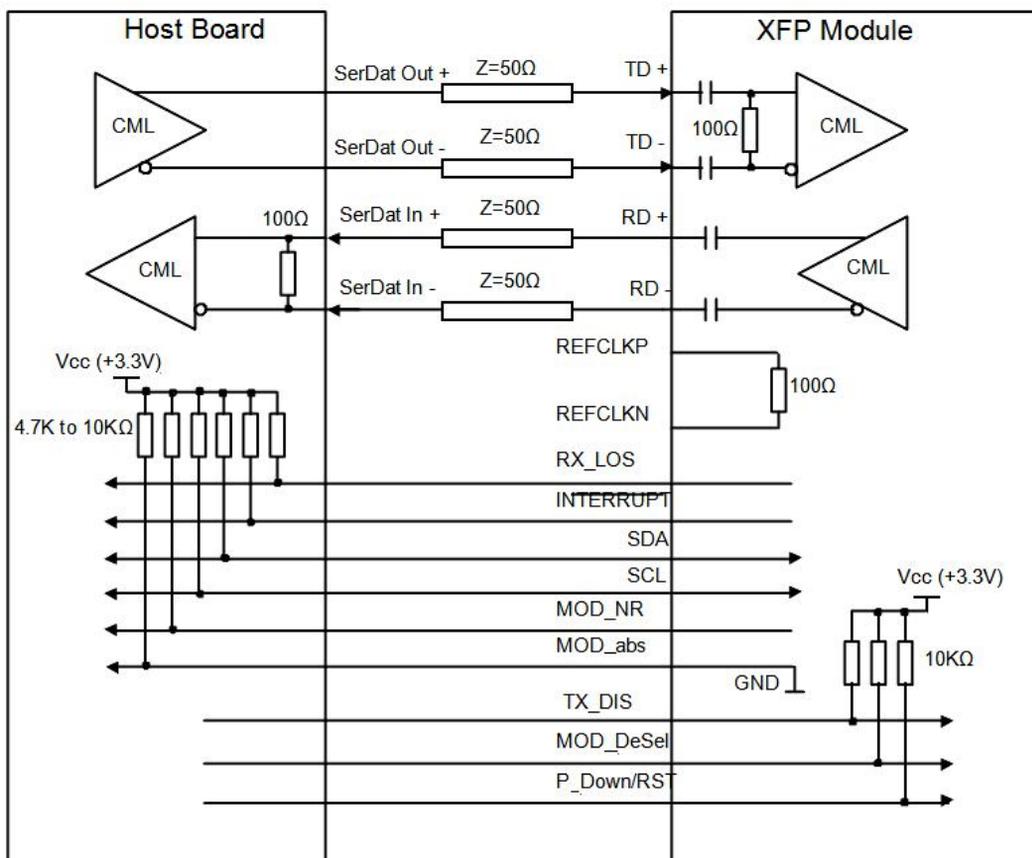
The digital diagnostic memory map specific data field defines as following.



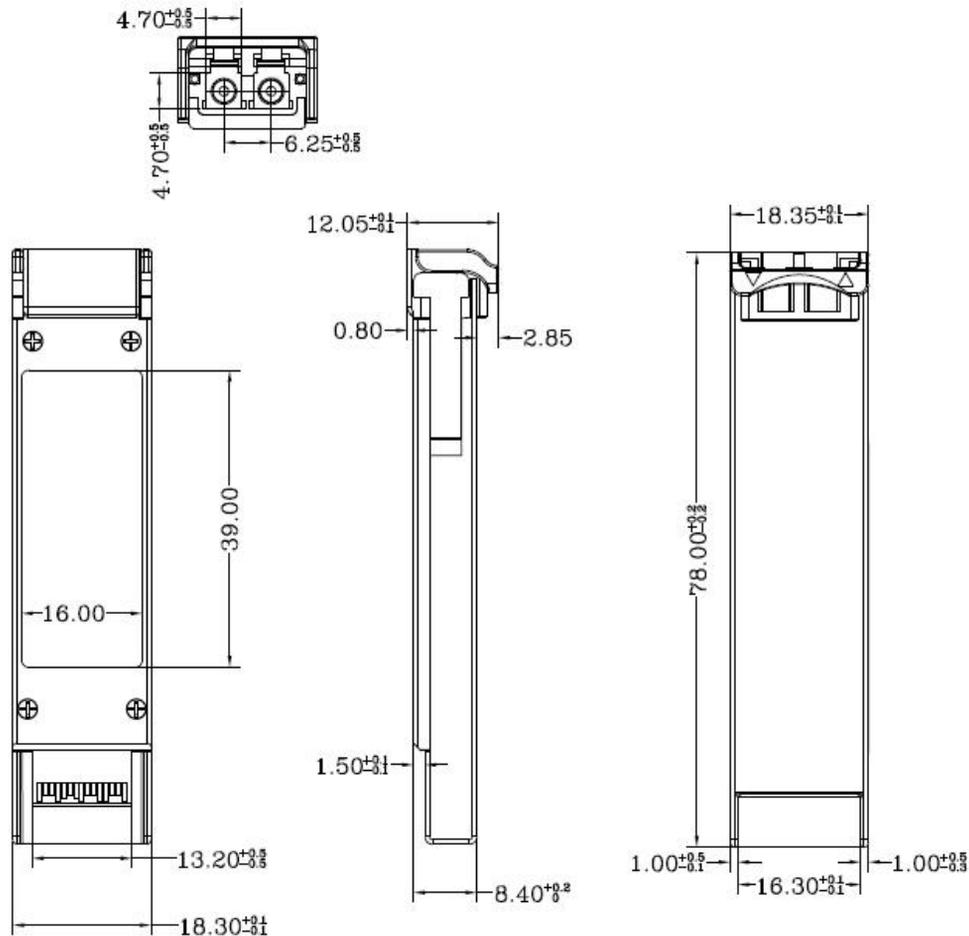
Recommended Host Board Power Supply Circuit



Recommended High-speed Interface Circuit



Mechanical Specifications



Ordering information

Part number	Description
OXF10G-3120DCR	10GBASE-LR XFP Transceiver, SMF, 1310nm, 10km, LC, DDM, 0°C~+70°C
OXF10G-3120DTR	10GBASE-LR XFP Industrial Transceiver, SMF, 1310nm, 10km, LC, DDM, -40°C~+85°C

Warnings

Process plug

The transceiver optics is supplied with a dust cover. This plug protects the transceiver optics during standard manufacturing processes by preventing contamination from air borne particles. It is recommended that the dust cover remain in the transceiver whenever an optical fiber connector is not inserted.

Handling Precautions

The transceiver optics is susceptible to damage as a result of electrostatic discharge (ESD). A static free environment is highly recommended. Follow guidelines according to proper ESD procedures.

Laser Safety

The transceiver optics is a Class 1 laser product per international standard IEC 60825-1. Radiation emitted by laser devices can be dangerous to human eyes. Avoid eye exposure to direct or indirect radiation.

For more product information, visit us on the web at www.optcore.net



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