

XFP-M1085L-03

Optical XFP Module

10Gbps XFP SR Transceiver MM 850nm 300M LC



Features

- Supports 9.95Gb/s to 11.3Gb/s bit rates
- Uncooled 850nm VCSEL laser
- Maximum link length 300m over OM3 MM Fiber
- XFP MSA package with duplex LC connector
- Hot-pluggable XFP footprint, Built-in digital diagnose
- No reference clock required
- Single +3.3V power supply
- Power dissipation <1.5W
- Compatible with RoHS
- Operating case temperature:
Standard: 0 to +70° C
Industrial: -40 to +85° C

Application

- 10GBASE-SR/SW 10G Ethernet
- 1200-Mx-SN-I 10G Fiber Channel

Standard

- Compliant with XFP MSA
- Compliant with SFF-8472
- Compliant with IEEE 802.3ae

Description

The XFP module is compliant with the 10G Small Form-Factor Pluggable (XFP) Multi-Source Agreement (MSA), supporting data-rate of 9.95~11.3Gbps, and transmission distance up to 300m on OM3 MMF.

The transceiver module comprises a transmitter with 850nm VCSEL laser and a receiver with a PIN photodiode. Transmitter and receiver are separate within a wide temperature range and offers optimum heat dissipation and excellent electromagnetic shielding thus enabling high port densities for 10 GbE systems.

Absolute Maximum Ratings

Parameter	Symbol	Min	Max	Unit
Supply Voltage	Vcc	-0.4	+4	V
Storage Temperature	Ts	-40	+85	°C
Operating Humidity	-	5	85	%

Recommended Operating Conditions

Parameter	Symbol	Min	Typical	Max	Unit
Operating Case Temperature	Standard	0		+70	°C
	Industrial	-40		+85	°C
Power Supply Voltage	Vcc	3.13	3.3	3.47	V
Power Supply Current	Icc			640	mA
Data Rate			10.3	11.3	Gbps
Fiber Length 50µm core MMF		-	300	-	m

Optical and Electrical Characteristics

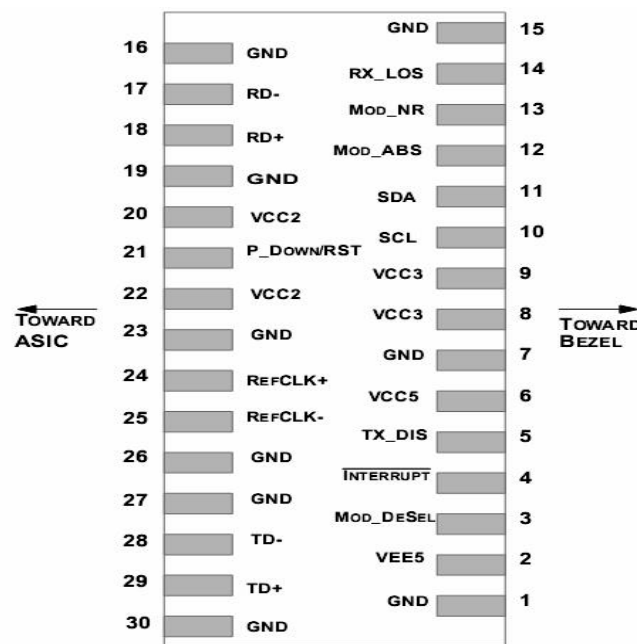
Electrical Characteristics						
Parameter	Symbol	Min	Typical	Max	Unit	Notes
Transmitter differential input voltage		120		1000	mV	
Receiver differential output Voltage		600	650	800	mV	
Input differential impedance	R		100		Ω	
Transmit Disable Assert Time			10		us	
Transmit Fault (TX_Fault)	Voh	2		Vcc	V	LVTTTL
	Vol	0		0.8	V	LVTTTL
Loss of Signal (LOS)	Voh	Vcc-0.5		Vcc	V	LVTTTL
	Vol	0		0.5	V	LVTTTL
TX Disable	Vih	2		Vcc	V	LVTTTL
	Vil	0		0.8	V	LVTTTL

Optical Transmitter Characteristics						
Parameter	Symbol	Min	Typical	Max	Unit	Notes
Launched Power (avg.)	Pout	-6		-1	dBm	
Operating Wavelength Range	λ_c	840	850	860	nm	
Spectral Width (RMS)	$\Delta\lambda$			0.45	nm	
Extinction Ratio	ER	3	5		dB	2
Relative Intensity Noise	RIN			-128	dB/Hz	
Optical Rise/Fall Time	Tris/Tfall		40		PS	3
Transmitter and Dispersion Penalty	TDP			3.9	dBm	
Output Eye Diagram	Complies with IEEE802.3z eye masks when filtered					
Optical Receiver Characteristics						
Parameter	Symbol	Min	Typical	Max	Unit	Notes
Receiver Sensitivity	S			-10	dBm	4
Wavelength Range	λ_c	840		860	nm	
Optical Power Input Overload	P _{in-max}	+0.5			dBm	4
Receiver Reflectance	R			-12	dB	
LOS	Optical De-assert	Pd		-12	dBm	4
	Optical Assert	Pa	-30			
LOS hysteresis		0.5		5	dB	5

Notes:

- 1) The supply current is XFP module’s working current.
- 2) For the measurements, the device was driven with 10Gbps data pattern with 2³¹-1 PRBS payload.
- 3) Optical transition time is the time interval required for the rising or falling edge of an optical pulse to transition between the 20% and 80% amplitudes relative to the logical 1 and 0 levels
- 4) Measured with a PRBS 2³¹-1 test pattern, @10Gbps, ER=3dB, BER<10⁻¹²
- 5) The LOS Hysteresis minimizes ‘chatter’ on the output line. In principle, Hysteresis alone does not guarantee chatter-free operation.

Pin Description



Pin	Signal Name	Description	Plug Seq.	Notes
1	GND	Module Ground		1
2	VEE5	Optional –5.2 Power Supply – Not required		
3	Mod-Desel	Module De-select; When held low allows the module to respond to 2-wire serial interface commands	LVTTTL-I	
4	Interrupt	Interrupt (bar); Indicates presence of an important condition which can be read over the serial 2-wire interface	LVTTTL-O	2
5	TX_DIS	Transmitter Disable; Transmitter laser source turned off	LVTTTL-I	
6	VCC5	+5 Power Supply		
7	GND	Module Ground		1
8	VCC3	+3.3V Power Supply		

9	VCC3	+3.3V Power Supply		
10	SCL	Serial 2-wire interface clock	LVTTL-I	2
11	SDA	Serial 2-wire interface data line	LVTTL-I/ O	2
12	Mod_Abs	Module Absent; Indicates module is not present. Grounded in the module.	LVTTL-I	2
13	Mod_NR	Module Not Ready; XGIGA defines it as a logical OR between RX_LOS and Loss of Lock in TX/RX.	LVTTL-I	2
14	RX_LOS	Receiver Loss of Signal indicator	LVTTL-I	2
15	GND	Module Ground		1
16	GND	Module Ground		1
17	RD-	Receiver inverted data output	CML-O	
18	RD+	Receiver non-inverted data output	CML-O	
19	GND	Module Ground		1
20	VCC2	+1.8V Power Supply – Not required		
21	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	LVTTL-I	
22	VCC2	including the 2-wire serial interface, equivalent to a power cycle. +1.8V Power Supply – Not required		
23	GND	Module Ground		1
24	RefCLK+	Reference Clock non-inverted input, AC coupled on the host board – Not required	PECL-I	3
25	RefCLK-	Reference Clock inverted input, AC coupled on the host board – Not required	PECL-I	3
26	GND	Module Ground		1
27	GND	Module Ground		1
28	TD-	Transmitter inverted data input	CML-I	
29	TD+	Transmitter non-inverted data input	CML-I	
30	GND	Module Ground		1

Notes:

Plug Seq.: Pin engagement sequence during hot plugging.

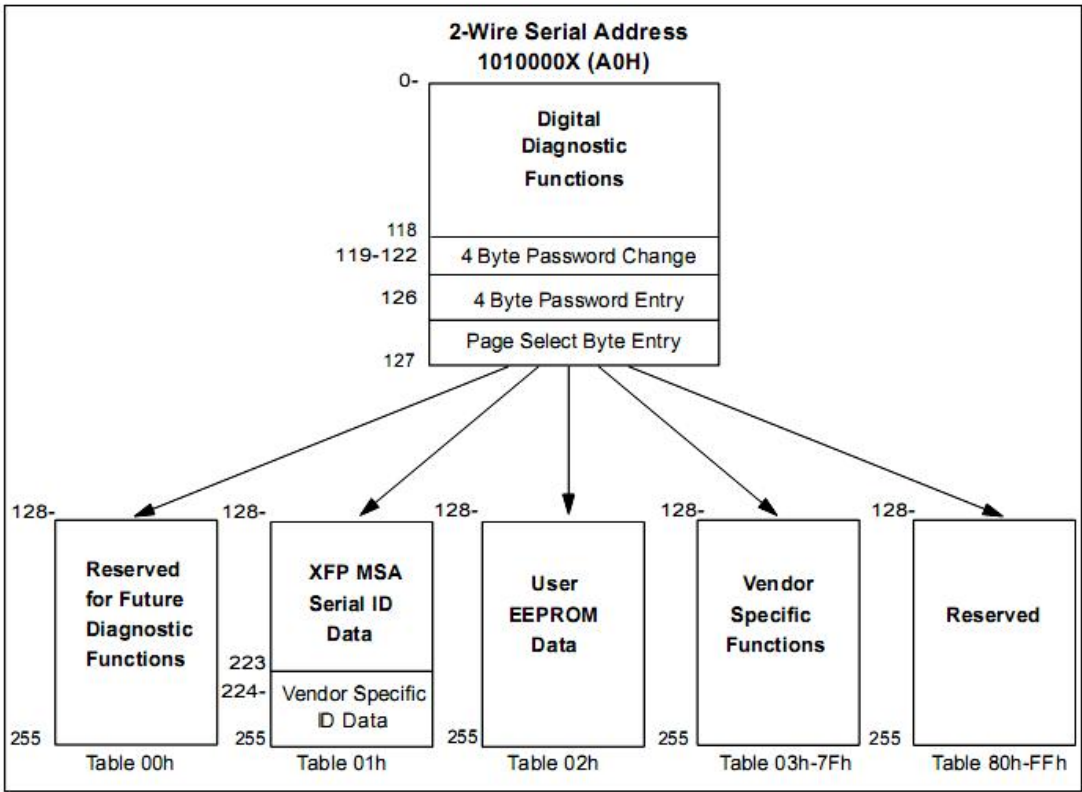
1. Module circuit ground is isolated from module chassis ground within the module.
2. Open collector, should be pulled up with 4.7k – 10k ohms on host board to a voltage between 3.15V and 3.6V.
3. A Reference Clock input is not required.

Management Interface

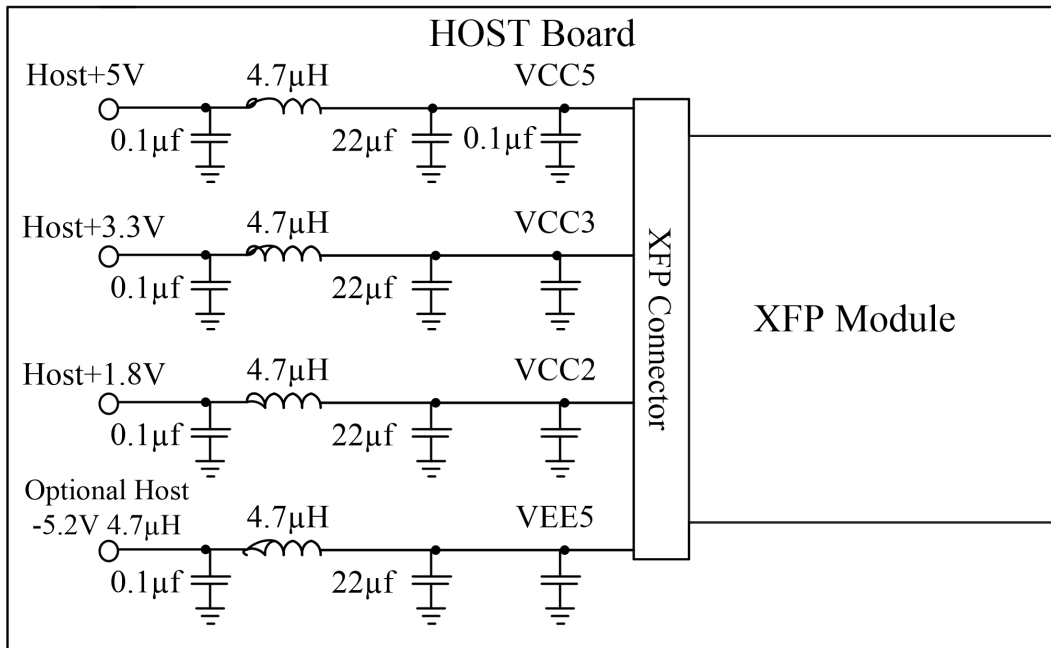
The transceivers provide serial ID memory contents and diagnostic information about the present operating conditions by the 2-wire serial interface (SCL, SDA).

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.

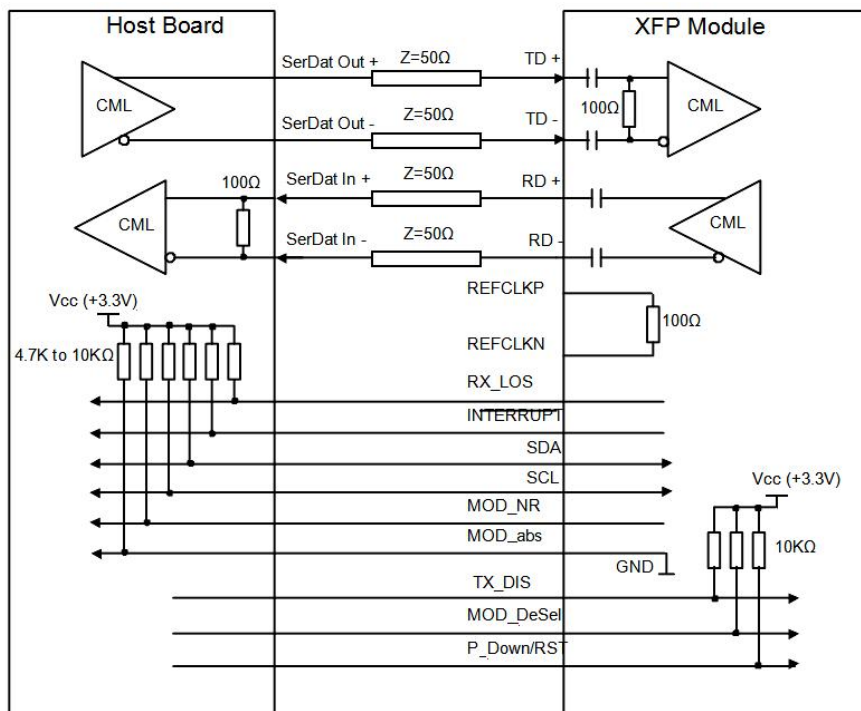
The digital diagnostic memory map specific data field defines as following.



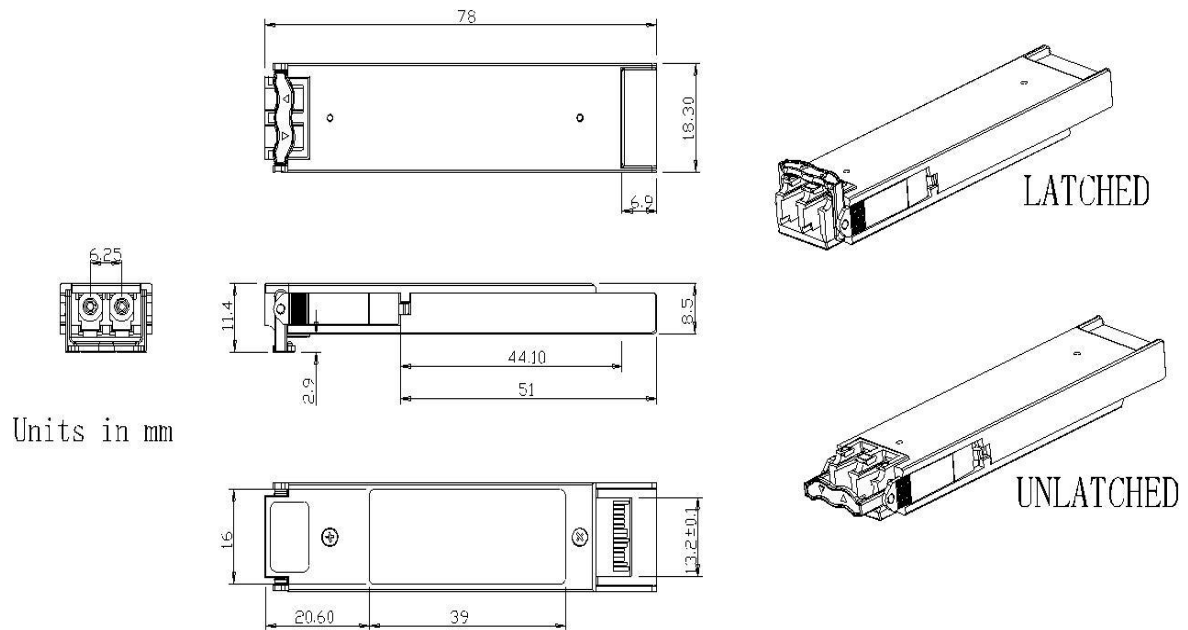
Recommended Host Board Power Supply Circuit



Recommended High-speed Interface Circuit



Mechanical Dimensions



Ordering information

Model No.	Product Description
XFP-M1085L-03	10Gbps, 850nm, MMF, 300m, 0°C ~ +70°C, with DDM
XFP-M1085L-03I	10Gbps, 850nm, MMF, 300m, -40°C~+85°C, with DDM



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