FiberStore

Datasheet

8G XFP 1310nm 10km single-Mode Optical Transceiver
XFP-8G31-10-xx

Features

- Supports Up to 8.5Gb/s bit rates
- Hot-Pluggable XFP Footprint
- Link length up to 10km
- Uncooled 1310nm DFB laser
- Built-in digital diagnostic functions
- Duplex LC Connector
- Power Dissipation < 2.5W
- Complaint with XFP MSA
- Complaint with 8GFC 800-SM-LL-L
- Case Operation Temperature

  Standard: 0°C to 70°C

Applications

- 800-SM-LC-L 8G Fiber Channel
- Other Optical Links

Description

Fiberstore's Small Form Factor 8.5Gb/s (XFP) transceivers are compliant with the current XFP Multi-Source Agreement (MSA) Specification1. They comply with 8.5-Gigabit Ethernet 8.5GBASE-ER/EW per IEEE 802.3ae. Digital diagnostics functions are available via a 2-wire serial interface, as specified in the XFP MSA. The transceiver is RoHS compliant and leads free per Directive 2002/95/EC3

Specifications

Table1 - Absolute Maximum Ratings

Parameter	Symbol	Min	Typical	Max	Unit
Maximum Supply Voltage 1	Vcc3	-0.5		4.0	V
Maximum Supply Voltage 2	Vcc5	-0.5		6.0	V
Storage Temperature	TS	-40		85	℃
Case Operating Temperature	TOP	0		70	℃
	TOP	-40		85	

Table2-Recommend Operating Condition

Parameter	Symbol	Min	Typical	Max	Unit
Supply Voltage 1	Vcc3	3.13	3.3	3.45	V
Supply Voltage 2	Vcc5	4.75	5	5.25	V

Table3-Electrical Characteristics

(TC = -40 to 85℃， VCC = 4.75to 5.25V)

Parameter	Symbol	Min	Typ.	Typ. Max	Unit
Main Supply Voltage	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		2.5		W
Transmitter					
Input Differential Impedance	Rin		100		Ω
Differential Data Input Swing*2	Vin, pp	120		820	mV
Transmit Disable Voltage	VD	2.0		Vcc	V
Transmit Enable Voltage	VEN	GND		GND+0.8	V
Transmit Disable Assert Time				10	μs
Receiver					
Differential Data Output Swing*2	Vout,pp	340	650	850	mV
Data Output Rise Time	Tr			38	ps
Data Output Fall Time	Tf			39	ps
LOS Fault*3	VLOS Fault	Vcc – 0.5		VccHOST	V
LOS Normal*3	VLOS Normal	GND		GND+0.5	V
Power Supply Noise Rejection	PSNR	Compliant to Section 2.7.1 of XFP MSA			

Note2. After internal AC coupling.

Note3. 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.

Table 4 - Optical Characteristics

(T_{OP} = -40to 85℃, VCC3 = 4.75to 5.25 Volts)

Parameter	Symbol	Min	Typical	Max	Unit
Transmitter					
Optical output Power	Pout	-5		0	dBm
Optical Extinction Ratio	ER	3.5			dB
Optical Wavelength	λc	1290		1330	nm
Side Mode Suppression Ratio	SMSR			30	dB
Path Penalty	Pp-5			2	dB
TX Jitter	TXj	Compliant with each standard requirements			
Receiver					
Receiver Sensitivity @ 10.7Gb/s	Pmin			-13	dBm
Maximum Input Power	Pmax	+0.5			dBm
Optical Center Wavelength	λ	1270		1600	nm
Receiver Reflectance	Rrf			-14	dB
LOS De-Assert	LOSD			-14	dBm
LOS Assert	LOSA	-32			dBm
LOS Hysteresis		1			dB

Table 6 -Regulatory Compliance

Feature	Standard	Performance
Electrostatic Discharge (ESD) to the Electrical Pins	MIL-STD-883G Method 3015.7	Class 1C (>1000 V)
Electrostatic Discharge to the Enclosure	EN 55024:1998+A1+A2 IEC-61000-4-2 GR-1089-CORE	Compliant with standards
Electromagnetic Interference (EMI)	FCC Part 15 Class B EN55022: 2006 CISPR 22B: 2006 VCCI Class B	Compliant with standards Noise frequency range: 30MHz to 6GHz. Good system EMI design practice required to achieve Class B margins. System margins are dependent on customer host board and chassis design.
Immunity	EN 55024:1998+A1+A2 IEC 61000-4-3	Compliant with standards. 1KHz sine-wave, 80% AM, from 80MHz to 1GHz. No effect on transmitter/receiver performance is detectable between these limits.

Laser Eye Safety	FDA 21CFR 1040.10 and 1040.11 EN (IEC) 60825-1: 2007 EN (IEC) 60825-2: 2004+A1	CDRH compliant and Class I laser product. TüV Certificate No. 50135086
Component Recognition	UL and CUL EN60950-1: 2006	UL file E317337 TüV Certificate No. 50135086 (CB scheme)
RoHS6	2002/95/EC 4.1&4.2 2005/747/EC 5&7&13	Compliant with standards*note3

Note2: For update of the equipments and strict control of raw materials, fiberstore has the ability to supply the customized products since Jan 1st, 2007, which meet the requirements of RoHS6 (Restrictions on use of certain Hazardous Substances) of European Union.

In light of item 5 in RoHS exemption list of RoHS Directive 2002/95/EC, Item 5: Lead in glass of cathode ray tubes, electronic components and fluorescent tubes.

In light of item 13 in RoHS exemption list of RoHS Directive 2005/747/EC, Item 13: Lead and cadmium in optical and filter glass. The three exemptions are being concerned for fiberstore's transceivers, because fiberstore's transceivers use glass, which may contain Pb, for components such as lenses, solators, and other components.

Table 7 – Pin Descriptions

Pin	Symbol	Name/Description	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	
4	/Interrupt	/Interrupt; Indicates presence of an important condition which can be read over the serial 2-wire interface	2
5	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	SCL	Serial 2-wire interface clock	2
11	SDA	Serial 2-wire interface data line	2
12	Mod_Abs	Module Absent; Indicates module is not present. Grounded in the module.	2

13	Mod_NR	Module Not Ready;	2
14	RX_LOS	Receiver Loss of Signal indicator	2
15	GND	Module Ground	1
16	GND	Module Ground	1
17	RD-	Receiver inverted data output	
18	RD+	Receiver non-inverted data output	
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 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	Ref CLK+	Reference Clock non-inverted input, AC coupled on the host board – Not required	3
25	Ref CLK	Reference Clock inverted input, AC coupled on the host board – Not required	3
26	GND	Module Ground	1
27	GND	Module Ground	1
28	TD-	Transmitter inverted data input	
29	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 connect should be pulled up with 4.7k – 10k ohm on host board to a voltage between 3.15V and 3.6V.
3. A Reference Clock input is not required.

Pin arrangement

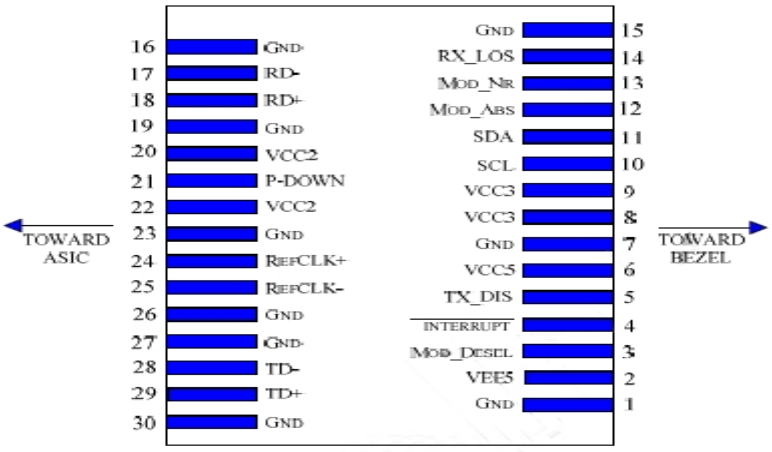


Diagram of Host Board Connector Block Pin Numbers and Name

Digital Diagnostic Functions

FiberStore's Small Form Factor 10Gbps (XFP) transceiver is compliant with the current XFP Multi-Source Agreement (MSA) Specification Rev 4.5.

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

A Transceiver temperature

B Laser bias current

C Transmitted optical power

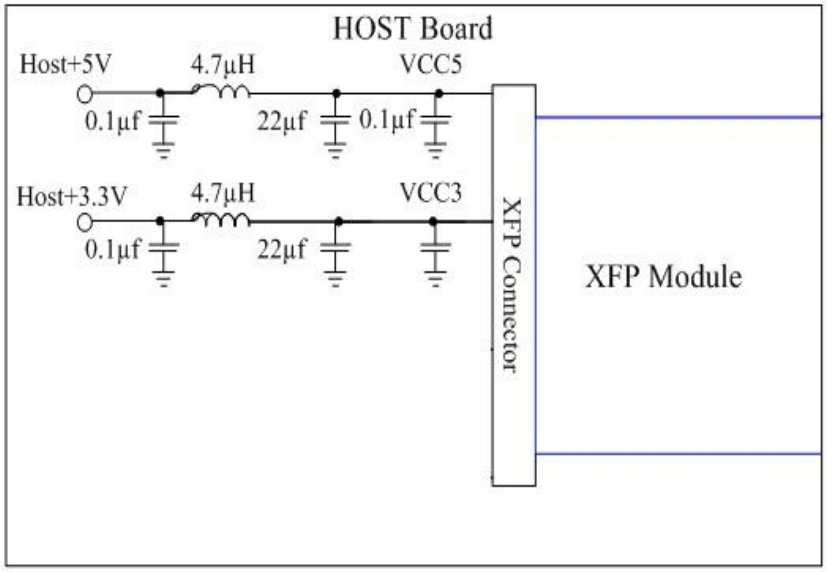
D Received optical power

E Aux Monitoring

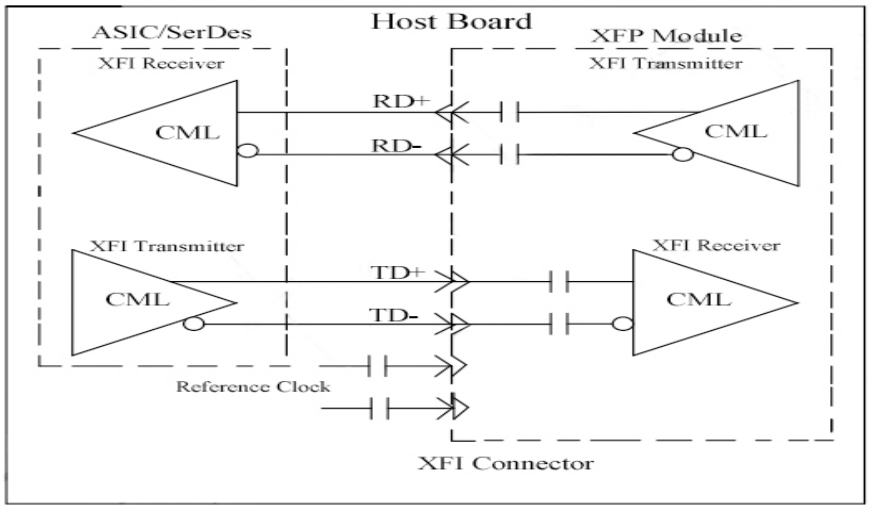
It also provides a sophisticated system of alarm and warning flags, which may be used to alert end-users when particular operating parameters are outside of a factory-set normal range.

The operating and diagnostics information is monitored and reported by a Digital Diagnostics Transceiver Controller inside the transceiver, which is accessed through the 2-wire serial interface. 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 00h to the maximum address of the memory.

Recommended Host Board Power Supply Circuit

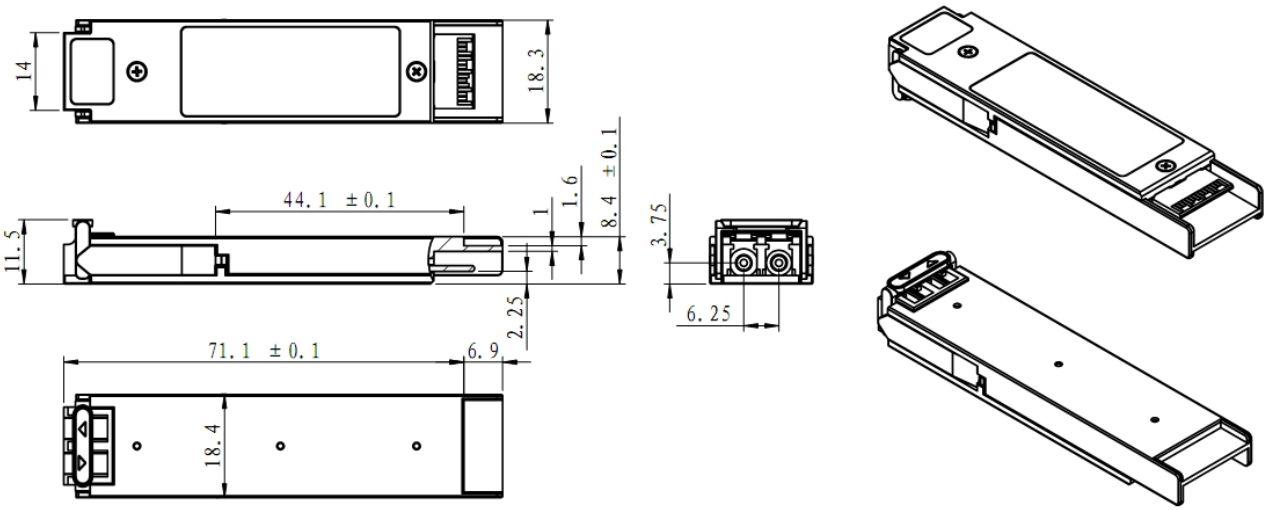


Recommended High-speed Interface Circuit



Mechanical Specifications

Fiberstore's XFP transceivers are compliant with the dimensions defined by the XFP Multi-Sourcing Agreement (MSA).



Ordering Information

Part No.	Data Rate (Gbps)	Wavelength (nm)	Connector Type	Transmission Distance (km)	Operating case temperature (°C)	Digital Diagnostics
XFP-8XX-10-xx	8	1310	LC	10	0 to +70	Yes

Notes:

xx means compatible brand. (For example: CO= Cisco, JU=Juniper, FD=Foundry, EX=Extreme, NE=Netgear.)

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