FiberStore

Datasheet

NEW Cisco XFP-10GER-192IR+ Compatible 10GBase-ER XFP Transceiver Module XFP-10G55-40A-CO

Features

- Supports 9.95Gb/s to 11.3Gb/s date rates
- Hot-pluggable XFP Footprint
- Maximum Link Length up to 40km
- Temperature-Stabilized EML transmitter
- Duplex LC Connector
- Power Dissipation <3.5W
- Built-in Digital Diagnostic Functions
- Case Operating Temperature
  Standard: 0°C to 70°C

Applications

- 10GBASE-ER/EW 10G Ethernet
- OC-192/STM-64 intermediate reach (IR-2) POS

Description

XFP-10G55-40A-CO offers the same function with Cisco XFP-10GER-192IR-L and it is fully compatible with Cisco devices, The series single mode transceiver is small form factor pluggable module for duplex optical data communications such as 10GBASE-ER/EW defined by IEEE 802.3ae. It is with the XFP 30-pin connector to allow hot plug capability.

This module is designed for single mode fiber and operates at a nominal wavelength of 1550 nm. The transmitter section uses a 1550nm EML, which is class 1 laser compliant according to International Safety Standard IEC-60825. The receiver section uses an integrated InGaAs detector preamplifier (IDP) mounted in an optical header and a limiting post-amplifier IC.

Specifications

Table 1 - Absolute Maximum Ratings

Parameter	Symbol	Min	Typ	Max	Unit
Maximum Supply Voltage 1	V_{CC3}	-0.5		4.0	V
Maximum Supply Voltage 2	V_{CC5}	-0.5		6.0	V

Table 2 - Recommend operating condition

Parameter	Symbol	Min	Typ	Max	Unit
Case Operating Temperature	TOP	40	85	70	℃
Supply Voltage 1	V_{CC3}	3.13	3.3	3.45	V
Supply Voltage 2	V_{CC5}	4.75	5	5.25	V

Table 3 - Electrical Characteristics

(TOP = -40 to 85°C, VCC5 = 4.75 to 5.25 Volts

Parameter	Symbol	Min	Typ	Max	Unit	Note
Main Supply Voltage	V_{CC5}	4.75		5.25	V	
Supply Voltage #2	V_{CC3}	3.13		3.45	V	
Supply Current – Vcc5 supply	Icc5			370	mA	
Supply Current – Vcc3 supply	Icc3			500	mA	
Module total power	P			3.5	W	
Transmitter						
Input Differential Impedance *Note2	Rin		100		Ω	1
Differential Data Input Swing	Vin,pp	120		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				10	US	
Receiver						
Differential Data Output Swing	Vout,pp	340	650	850	mV	

Rise Time (20 – 80%) *Note3	tr			38	PS	2
Fall Time (20 – 80%) *Note3	tf			39	PS	2
LOS Fault	VLOS fault	Vcc – 0.5		VccHOST	V	3
LOS Normal	VLOS norm	GND		GND+0.5	V	3
Power Supply Rejection	PSR	See Note 4 below				4

Note2: After internal AC coupling

Note3: Loss Of Signal is open collector to be pulled up with a 4.7k – 10k ohm resistor to 3.15 – 3.6V. Logic 0 indicates normal operation; logic 1 indicates no signal detected.

Note4: Per Section 2.7.1. in the XFP MSA Specification.

Table 4 - Optical Characteristics

Parameter	Symbol	Min	Typ	Max	Unit	Ref.
Transmitter						
Optical Modulation Amplitude	P	-2.1			dBm	
Output Opt. Pwr: 9/125 SMF	Pout	0		+4	dBm	
Optical Wavelength	λ_c	1530		1565	nm	
Optical Extinction Ratio@10.3Gb/s	ER	8.2			dB	
Transmitter and Dispersion Penalty	TDP			2	dB	
Average Launch power of OFF transmitter	P_{OFF}			-30	dBm	
TX Jitter Generation (Peak-to-Peak)	Txj			0.1	UI	
TX Jitter Generation (RMS)	TXjRMS			0.01	UI	
Receiver						
Receiver Sensitivity @ 10.7Gb/s	Pmin			-16	dBm	
Maximum Input Power	Pmax	0			dBm	
Optical Center Wavelength	λ_C	1270	1550	1600	nm	
Receiver Reflectance	Rrx			-27	dB	
LOS De-Assert	LOSD			-18	dBm	

LOS Assert	LOSA	-30			dBm	
LOS Hysteresis		1			dB	

Table 5 - Pin Descriptions

PIN	Logic	Symbol	Name/ Description	Note
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-Not Required	
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	LVTTLI/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

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 3.6V.
3. A Reference Clock input is not required.

Host Board Connector Pinout

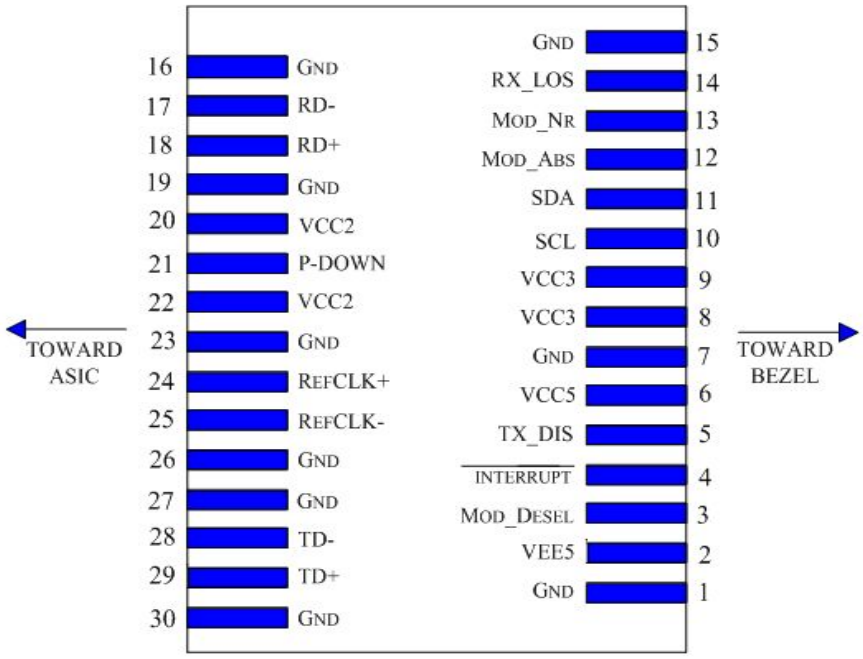


Table 6- General Specifications

parameter	Symbol	Min	Typ	Max	Units
Bit Rate	BR	9.95		11.3	Gb/s
Bit Error Ratio	BER			10^{-12}	
Max. Supported Link Length	LMAX		70		km

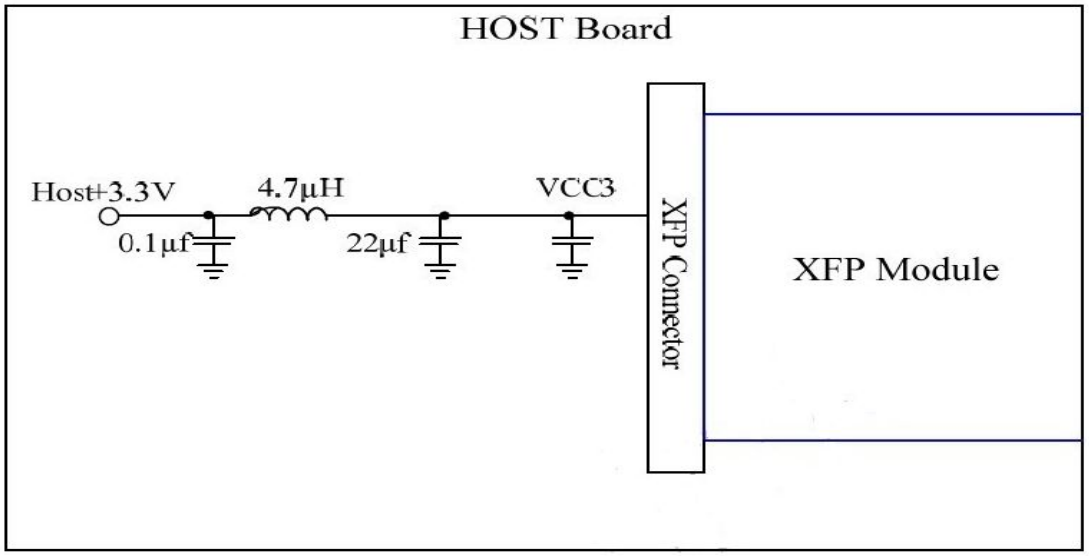
Digital Diagnostic Functions

FiberStore 's Small Form Factor 10Gb/s (XFP) transceivers are 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:

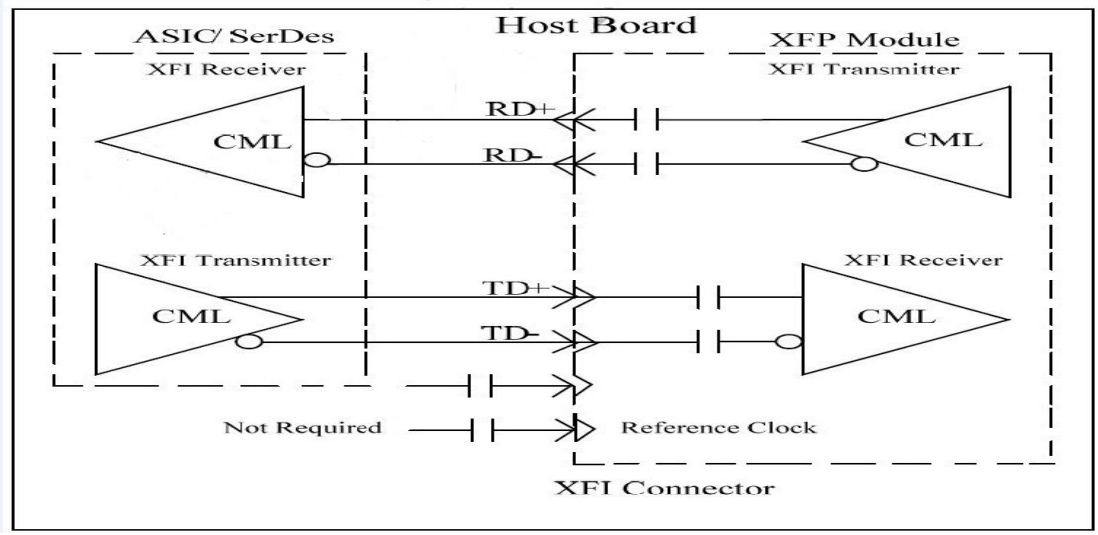
- ✧ Transceiver temperature
- ✧ Laser bias current
- ✧ Transmitted optical power
- ✧ Received optical power
- ✧ Transceiver supply voltage

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 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.

Recommended Host Board Power Supply Circuit

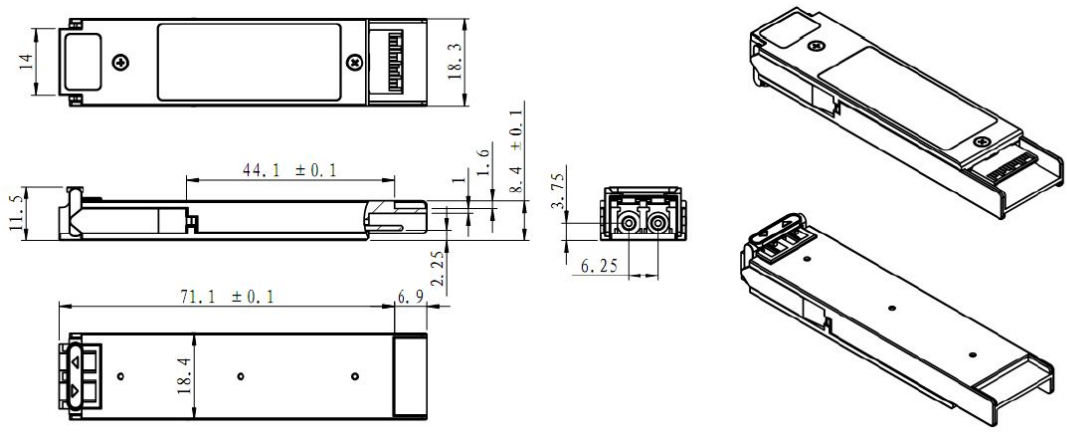


Recommended High-speed Interface Circuit



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-10G55-40A-CO	10	1550	LC	40	0 to +70	Yes

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