Product Specification

10.3125Gb/s SR XFP 850nm 300m
Optical Transceiver

P/N: 10G-XFP-SR

Features

- Hot Pluggable XFP form factor
- Operating data rate 10.3125Gbps
- Single +3.3V power supply
- Duplex LC-UPC connector
- Max power dissipation <1.5W
- Maximum link length of 300m on OM3
- 850nm VCSEL laser
- PIN receivers
- Built-in digital diagnostic function
- Commercial temperature range 0°C to 70°C

Compliance

- Compliant with XFP MSA INF-8077i
- RoHS

Applications

- 10GBASE-SR/SW Ethernet
- 1200-Mx-SN-I 10G Fibre Channel
- SONET OC-192/SDH STM-64
- Other devices with XFP Ports

Description

The 10G-XFP-SR optical module is a high-performance, compact device designed for short-range 10 Gigabit Ethernet applications. It adheres to the XFP MSA, XFI electrical interface specifications, and relevant Ethernet standards, ensuring seamless compatibility with various network equipment. With a data rate of 10Gbps, it enables rapid data transfer, making it suitable for data centers, enterprise networks, and other high-speed communication scenarios.

This module features low power consumption and excellent signal integrity, which can effectively reduce operating costs and ensure reliable data transmission. It uses multi-mode fiber for short-distance connections up to 300 meters, offering a cost-effective solution for short-reach network deployments. The 10G-XFP-SR optical module is a reliable choice for building high-speed, stable short-range networks.

Product performance Specifications

1. Basic Product Characteristics

Parameter	Symbol	Min	Typ.	Max	Unit
Storage Temperature	T_S	-40	-	+85	°C
Supply Voltage	V_{CC}	-0.5	-	4.0	V
Relative Humidity	RH	5	-	85	%
Operating Case Temperature	T_C	0	-	70	°C
Power Supply Voltage	V_{CC}	3.13	3.3	3.45	V
Power Supply Current	I_{CC}			380	mA
Power Dissipation	PD	-	-	1.5	W
Data Rate	DR	-	10.3125	-	Gbps
Transmission Distance(OM3)	-	0.5	-	300	m

2. Product Optical and Electrical Characteristics

Parameter	Symbol	Min	Typ.	Max	Unit	Note
Transmitter						
Input differential impedance	Rin		100		Ω	1
Differential data input swing	Vin,pp	150		820	mV	
Transmit Disable Voltage	V_D	2.0		Vcc	V	
Transmit Enable Voltage	V_{EN}	GND		GND+ 0.8	V	
Transmit Disable Assert Time	T_off			100	ms	

Transmit Enable Assert Time	T_on			100	ms	
Operating Date Rate	BR	9.95		11.3	Gb/s	
Bit Error Rate	BER			10^{-12}		
Launch Power	P_{out}	-3.5		5.3	dBm	5
Optical Wavelength	λ	840	850	860	nm	
Optical Extinction Ratio	ER	3.5			dB	
RMS Spectral Width	λ_{RMS}			0.45	nm	
Sidemode Supression ratio	SSRmin	30			dB	
Rise/Fall Time (20%~80%)	Tr/Tf			35	ps	
Average Launch power of OFF Transmitter	P_{OFF}			-30	dBm	
Tx Jitter	Txj	Compliant with each standard requirements				
Optical Eye Mask		IEEE802.3ae				6
Receiver						
Differential data output swing	Vout,pp	300	500	850	mV	
Data output rise time	tr			35	ps	2
Data output fall time	tf			35	ps	2
LOS Fault	$V_{LOS\ fault}$	Vcc – 0.5		VccHOST	V	3
LOS Normal	$V_{LOS\ norm}$	GND		GND+0.5	V	3
Power Supply Rejection	PSR	See Note 4 below				4
Operating Date Rate	BR	9.95		11.3	Gb/s	
Receiver Sensitivity	Sen			-11.1	dBm	6
Maximum Input Power	P_{MAX}				dBm	6
Optical Center Wavelength	λ_C	780		860	nm	
Receiver Reflectance	Rrx			-13	dB	
LOS De-Assert	LOS_D			-12	dBm	
LOS Assert	LOS_A	-30			dBm	
LOS Hysteresis	LOS_H	0.5		5	dB	

Note1: After internal AC coupling.

Note2: 20 – 80 %.

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.

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

Note5: The optical power is launched into MMF.

Note6: Measured with a PRBS 2^{31}-1 test pattern @ 10.3125Gbps BER<10^{-12}.

Recommended Host Board Power Supply Circuit

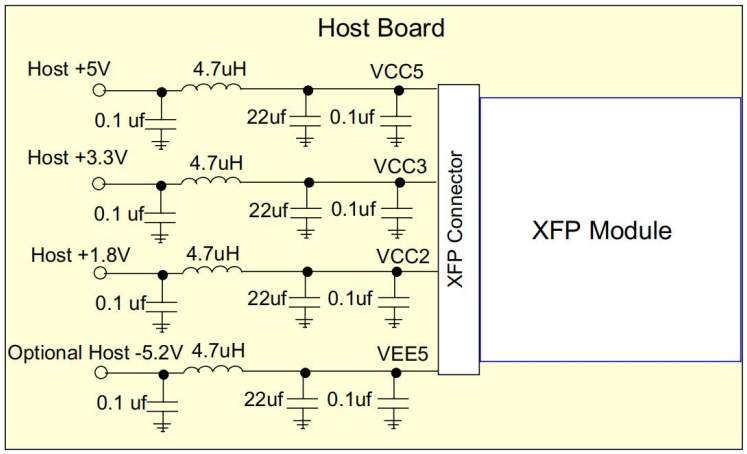


Figure 1: Recommended Host Board Power Supply Circuit

Recommended Interface Circuit

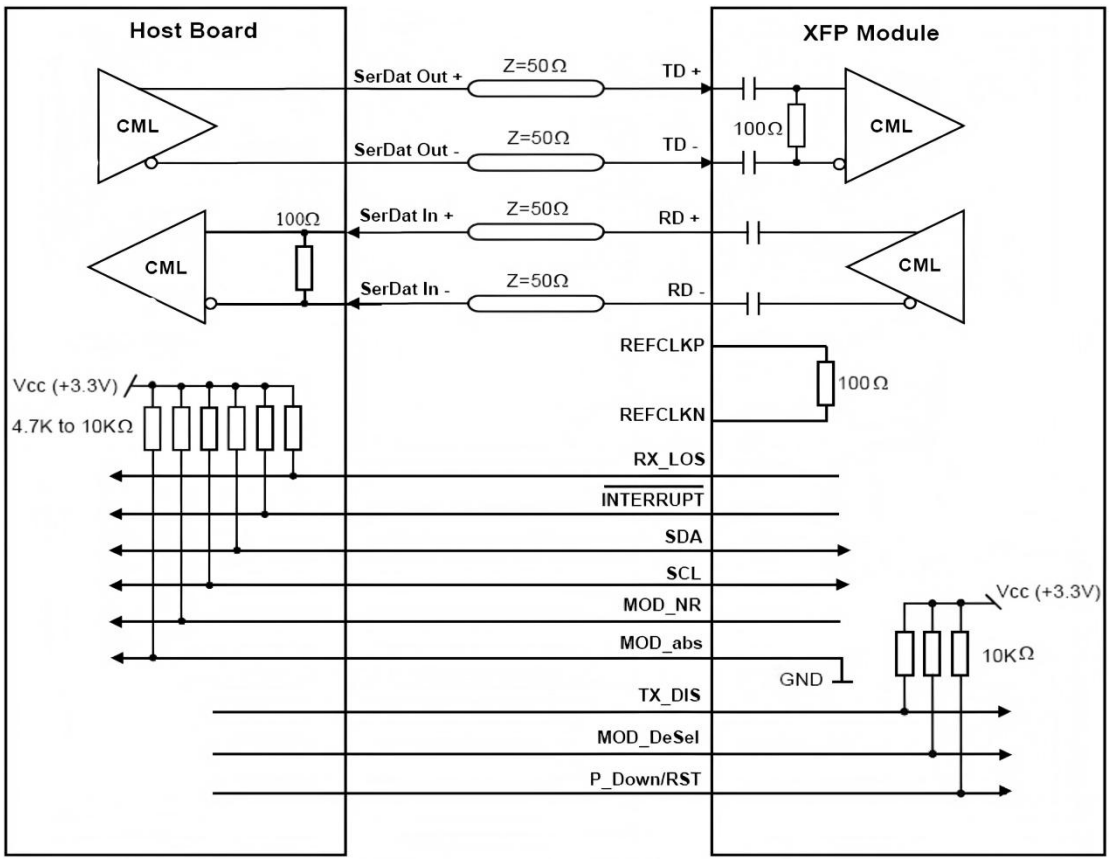


Figure2: Recommended Interface Circuit

Pin-out Definition

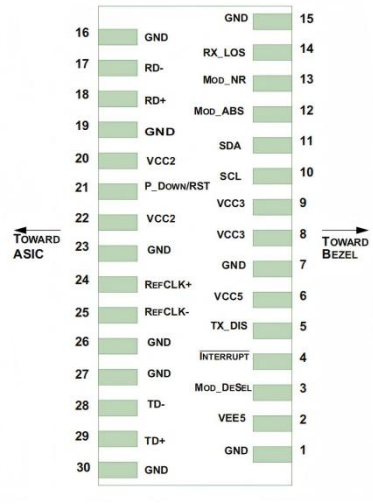


Figure3: Pin view

Pin Function Definitions

Pin	Logic	Symbol	Description	Note
1		GND	Module Ground	1
2		VEE5	Optional -5.2V Power Supply	
3	LVTTL-I	Mod_DeSel	Module De-select; When held low allows module to respond to 2-wire serial interface	
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; Turns off transmitter laser output	
6		VCC5	+5V Power Supply	
7		GND	Module Ground	1
8		VCC3	+3.3V Power Supply	
9		VCC3	+3.3V Power Supply	
10	LVTTL-I/O	SCL	2-Wire Serial Interface Clock	2
11	LVTTL-I/O	SDA	2-Wire Serial Interface Data Line	2
12	LVTTL-O	Mod_Abs	Indicates Module is not present. Grounded in the Module	2
13	LVTTL-O	Mod_NR	Module Not Ready; Indicating Module Operational Fault	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	3
21	LVTTL-I	P_Down/RST	Power down; When high, requires the module to limit power consumption to 1.5W or below. 2-Wire serial interface must be functional in the low power mode. 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	3
23		GND	Module Ground	1
24	PECL-I	RefCLK+	Reference Clock Non-Inverted Input, AC coupled on the host board	
25	PECL-I	RefCLK-	Reference Clock Inverted Input, AC coupled on the host board	
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

Note1: Module ground pins Gnd are isolated from the module case and chassis ground within the module.

Note2: Shall be pulled up with 4.7K-10Kohms to a voltage between 3.15V and 3.45V on the host board.

Note3: The 1.8 V power supply can be optionally programmed to voltages lower than 1.8 V in modules supporting the variable power supply.

Monitoring Specification

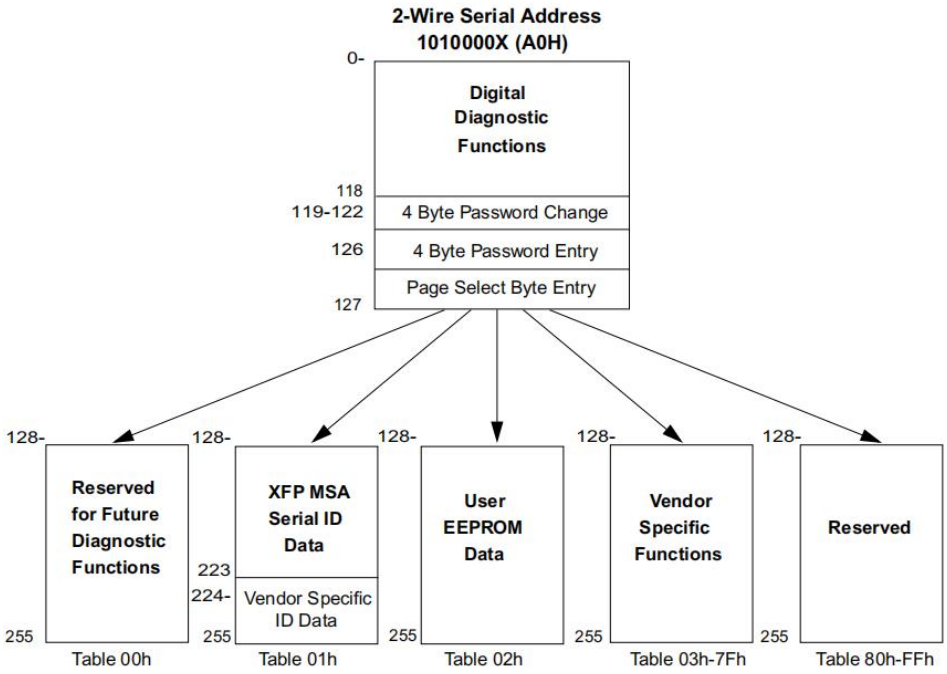
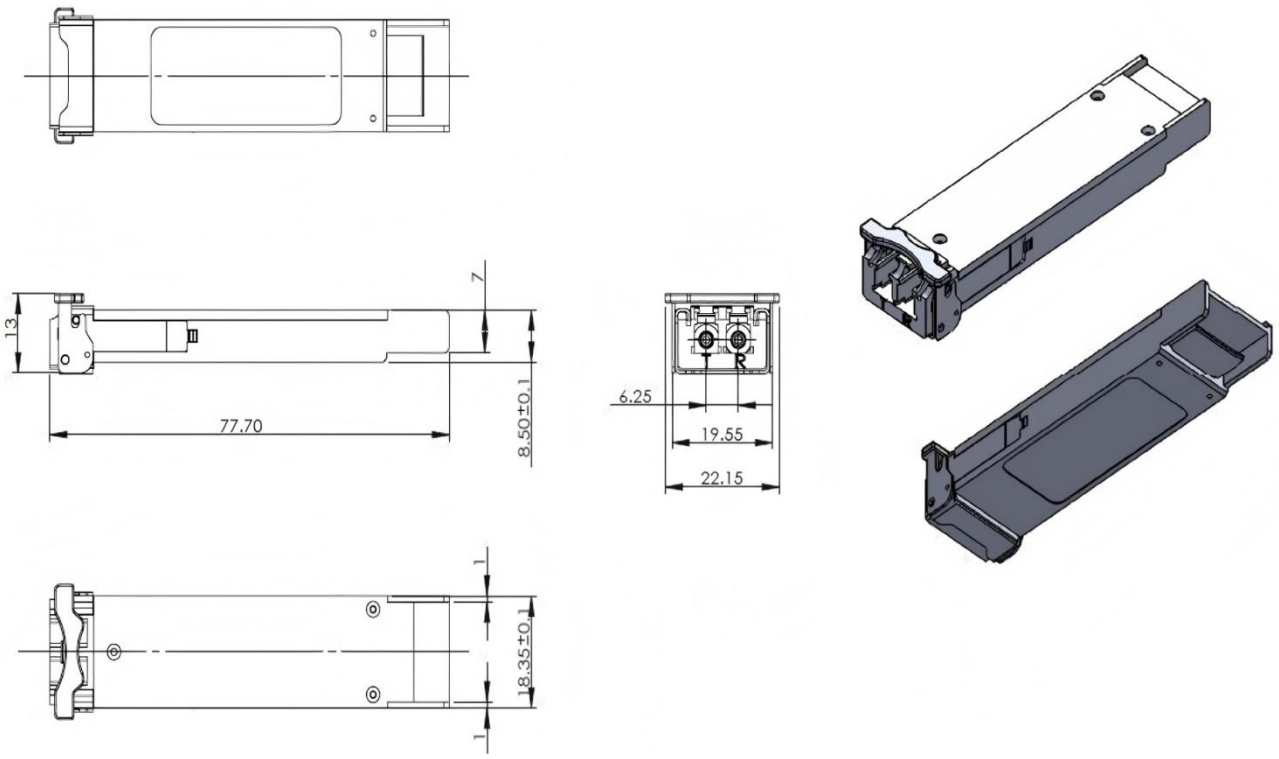


Figure4: Memory map

Memory map Table

A0h	Bytes	Description
0	1	Identifier
1	1	Signal Conditioner Control
2-57	56	Threshold Values used for Alarm and Warning Flags
58-59	2	Optional VPS Control Registers
60-69	10	Reserved
70-71	2	BER Reporting
72-75	4	Wavelength Control Registers
76-79	4	FEC control Registers
80-95	16	Flags and Interrupt Control
96-109	14	A/D readout
110-111	2	General Control/Status bits
112-117	6	Reserved
118	1	Serial Interface Read/Write Error Checking
119-122	4	Password Change Entry Area (Optional)
123-126	4	Password Entry Area (optional)
127	1	Page Select Byte

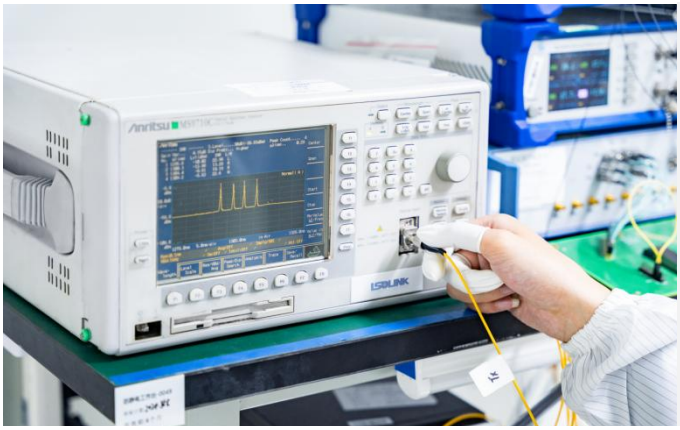
Mechanical Dimension



Test Center

1. Performance Testing

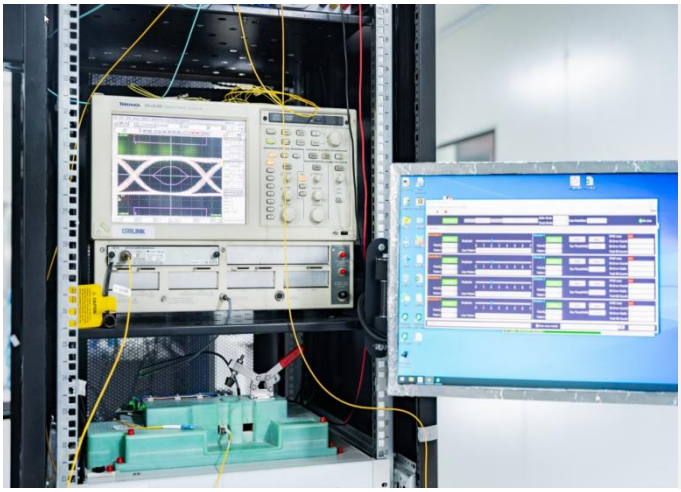
Every fiber optic transceiver is thoroughly tested by the LSOLINK Assurance Program, which is equipped with the world's most advanced analytical equipment to ensure that our transceivers meet the industry's international public protocol standards while still functioning flawlessly in your facility.



Optical Spectrum Inspection

Using the industry's leading optical spectrum analyser to check in real time that the parameters of the optical transceiver's laser comply with industry standards.

- **Peak:** Peak wavelength and peak level
- **2nd Peak:** Side-mode wavelength and level
- **Mean WI:** Center wavelength
- **Total Power:** Total power of spectrum
- **SMSR:** Side-Mode Suppression Ratio



Optical Signal Quality Inspection

Using highly efficient sampling oscilloscopes and BERT testers, equipped with an automated test platform to accurately test the signal quality of the transceiver, test records are kept for up to 5 years to ensure the traceability of each transceiver.

- **Eye Mask Margin(NRZ)**
- **TDECQ(PAM4):**transmitter dispersion eye closure
- **OMA:** Optical modulation amplitude
- **BER:** Bit error rate
- **ER:** Extinction Ratio

Flow Pressure Test

Using multi-protocol network traffic analyser with various brands of switches to test the transceiver's ability to transmit at full speed.

- **Bandwidth:** Actual transceiver bandwidth on the port
- **Packet Loss**
- **Packet Errors:**CRC Errors/PCS Errors/Symbol Errors
- **LinkDown Counts**
- **latency**

Aboveis part of our test bed network equipment. For more information, Please click download for optical transceiver performance test report.

2. Quality Control

We adopt advanced quality management solutions. Each transceiver is self-inspected, including:20x microscope inspection, 200x microscope inspection, and QC process inspection.

visual inspection

Microscopic inspection: 20X

Microscopic inspection: 200X

Reliability Verification

Optical endface inspection

OQC Inspection

Order Information

Part Number	Description
10G-XFP-SR	10GBASE-SR XFP 850nm 300m DOM LC MMF Transceiver Module
10G-XFP-LR	10GBASE-LR XFP 1310nm 10km DOM LC SMF Transceiver Module
10G-XFP-ER	10GBASE-ER XFP 1550nm 40km DOM LC SMF Transceiver Module

Further Information

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Disclaimer

1. We are committed to continuous product improvement and feature upgrades, and the contents con t ained in this manual are subject to change without notice.

2. Nothing herein should be construed as constituting an additional warranty.

3. LSOLINK assumes no responsibility for the use or reliability of equipment or software not provided by LSOLINK.