



TOPSTAR TECHNOLOGY INDUSTRIAL CO., LIMITED

产 品 规 格 书

Product Specification Sheet

TOP-XFP-10G-SR

RoHS Compliant 10Gb/s XFP 850nm 300m Optical Transceiver



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威星科技實業有限公司

<http://www.opticalmodulemanufacturers.com>



PRODUCT FEATURES

- Hot pluggable
- Support 9.95Gb/s to 11.1Gb/s bit rates
- Below <1W power consumption
- XFP MSA package with duplex LC connector
- Digital Diagnostic Monitor Interface
- Very low EMI and excellent ESD protection
- Un-cooled 850nm VCSEL laser
- +3.3V single power supply
- operating temperature range 0°C to 70°C
- No reference clock requirement

APPLICATIONS

- 10GBASE-SR/SW Ethernet
- SONET OC-192/SDH STM-64
- Other optical links

STANDARD

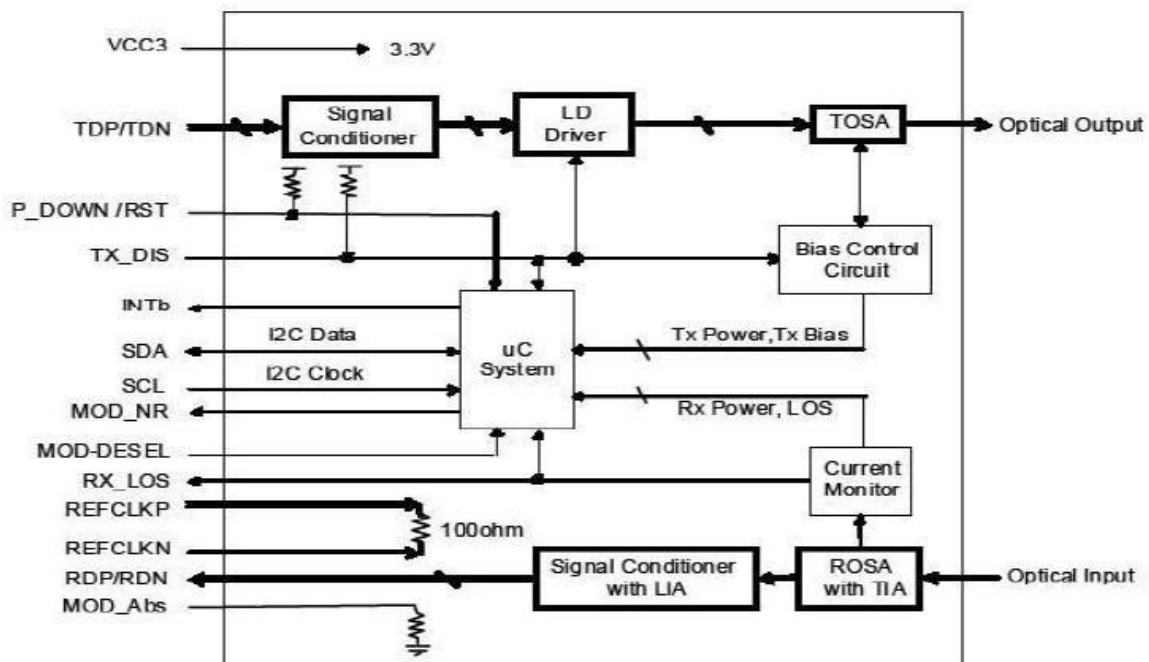
- XFP MSA Compliant
- SFF-8472 revision 9.5 compliant
- IEEE 802.3-2005 compliant
- Telcordia GR-468-CORE compliant
- FCC 47 CFR Part 15, Class B compliant
- FDA 21 CFR 1040.10 and 1040.11, class 1 compliant
- RoHS compliant



PRODUCT DESCRIPTIONS

TOP-XFP-10G-SR transceivers are designed for 10G Ethernet 10G BASE-SR/SW per 802.3ae and 10GSOIOC-192/SDH STM-64, and it can support data-rate from 9.953Gb/s to 11.1Gb/s. Digital diagnostic sare available via I2C interface as specified in the XFP MSA. The transceiver design sare optimized for high per-formance and cost effective to supply customers the best solutions for data com and telecom applications.

FUNCTION ALDIAGRAM



ABSOLUTE MAXIMUM RATINGS

Parameter	Symbol	Min	Max	Unit	Note
Supply Voltage	Vc	-0.5	4.0	V	
Storage Temperature		-40	85	°C	
Relative Humidity			85	%	

Note: Stress in excess of the maximum absolute ratings can cause permanent damage to the module



GERERAL OPERATING CHARACTERISTICS

Paramet	Symbol	Min.	Typ	Max.	Unit	Note
DataRate	Ethernet		10.3125		Gb/s	
	FiberChannel		9.953			
SupplyVoltage	Vc	4.75	5	5.25	V	
	Vc	3.14	3.3	3.46	V	
SupplyCurrent	Icc _s				mA	
	Icc			450	mA	
OperatingCaseTemp.	T	0		70	°C	

ELECTRICAL INPUT/OUTPUT CHARACTERISTICS

Transmitter

Paramet	Symbol	Min.	Typ	Max.	Unit	Note
Diff.inputvoltageswing		120		820	mVpp	1
TxDisableinput	H	V _{IH}	2.0	V _{CC} +0.3	V	
	L	V _{IL}	0	0.8		
TxFaultoutput	H	V _{OH}	2.0	V _{CC} +0.3	V	2
	L	V _{OL}	0	0.8		
InputDiff.Impedance	Z _{in}		100		Ω	

Receiver

Paramet	Symbol	Min.	Typ	Max.	Unit	Note
Diff.outputvoltageswing		340	650	800	mVpp	3
RxLOSOutput	H	V _{OH}	2.0	V _{CC} +0.3	V	2
	L	V _{OL}	0	0.8		

Note1)TD+/-areinternallyACcoupledwith100Ω differentialterminationinsidethemodule.

Note2)TxFaultand RxLOSareopen collector outputs,which shouldbepulledupwith4.7kto10kΩ resistorson thehostboard.Pullupvoltage between2.0VandV_{CC}+0.3V.

Note3)RD+/- outputs areinternallyACcoupled,and shouldbeterminated with100Ω(differential)at theuser SERDES.



OPTICAL CHARACTERISTICS

Transmitter(0~70 @10.3125Gb/s)

Paramete	Symbol	Min.	Typ	Max.	Unit	Note
OperatingWavelength			850		nm	
Ave.outputpower(Enabled)	Po	-8.2		-1	dBm	1
ExtinctionRatio	ER	3.0			dB	1
RMS spectralwidth	$\Delta\lambda$			1	nm	
Rise/Falltime(20%~80%)	Tr/Tf			50	ps	2
Opticalmodulationamplitude	OMA			-2.8	dBm	
Dispersionpenalty				3.9	dB	
OutputOpticalEye	IEEE802.3-2005Compliant					

Receiver(0~70 @10.3125Gb/s)

Paramete	Symbol	Min.	Typ	Max.	Unit	Note
OperatingWavelength		840		860	nm	
Sensitivity	Psen			-10	dBm	3
Min.overload	Pimax	0.5			dBm	
LOSAssert	Pa	-24			dBm	
LOSDe-assert	Pd			-12	dBm	
LOSHysteresis	Pd-Pa	0.5		4	dB	

Note1)Measuredat10.3125b/swithPRBS2³¹-1NRZ test pattern

Note2)20%~80%

Note3)Under theERworstcase,measuredat10.3125Gb/swithPRBS2³¹-1NRZ testpatternforBER< 1x10⁻¹²



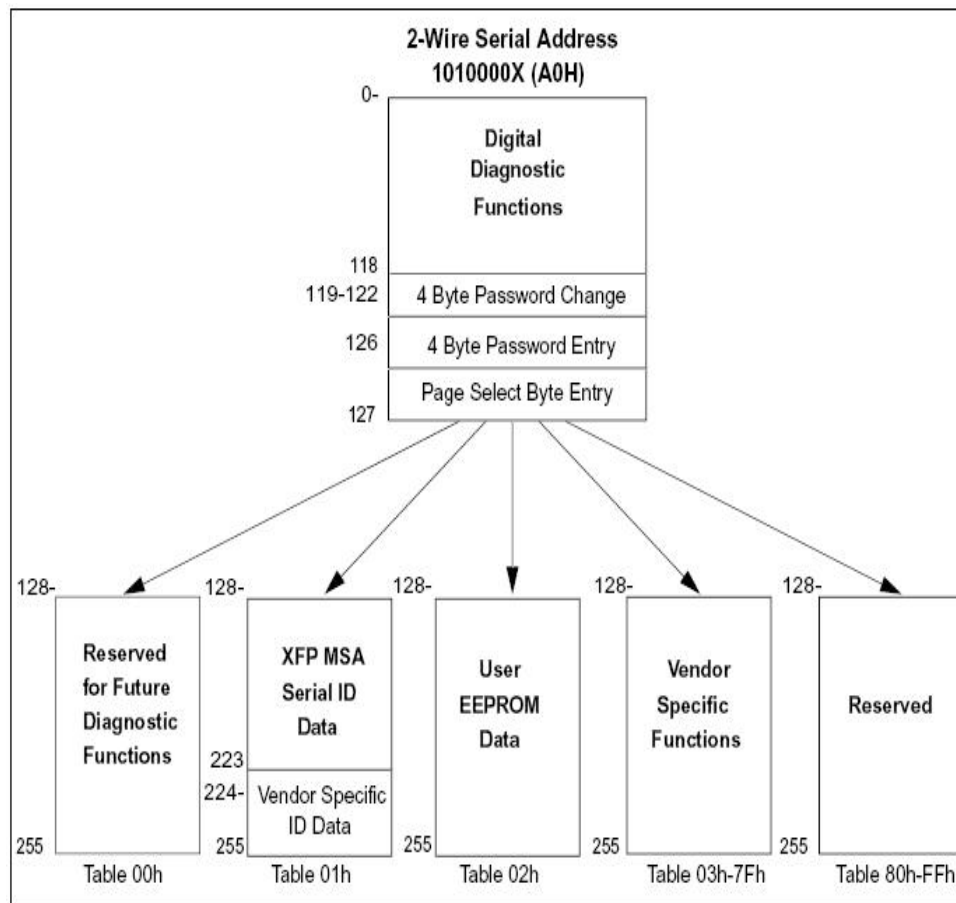
SERIAL INTERFACE FOR ID AND DDM

The XFP module implements the 2-wire serial communication protocols defined in the XFPMSA.

The serial ID information of the XFP modules and Digital Diagnostic Monitor parameters can be accessed through the I2C interface at address A0h and A2h. The memory is mapped in Table 1. Detailed ID information (A0h) is listed in Table 2. And the DDM specification (A2h) is described in Table 3. For more details of the memory map and byte definitions, please refer to the SFF-8472 (Rev 9.3, Aug. 2002), "Digital Diagnostic Monitoring Interface for Optical Transceivers".

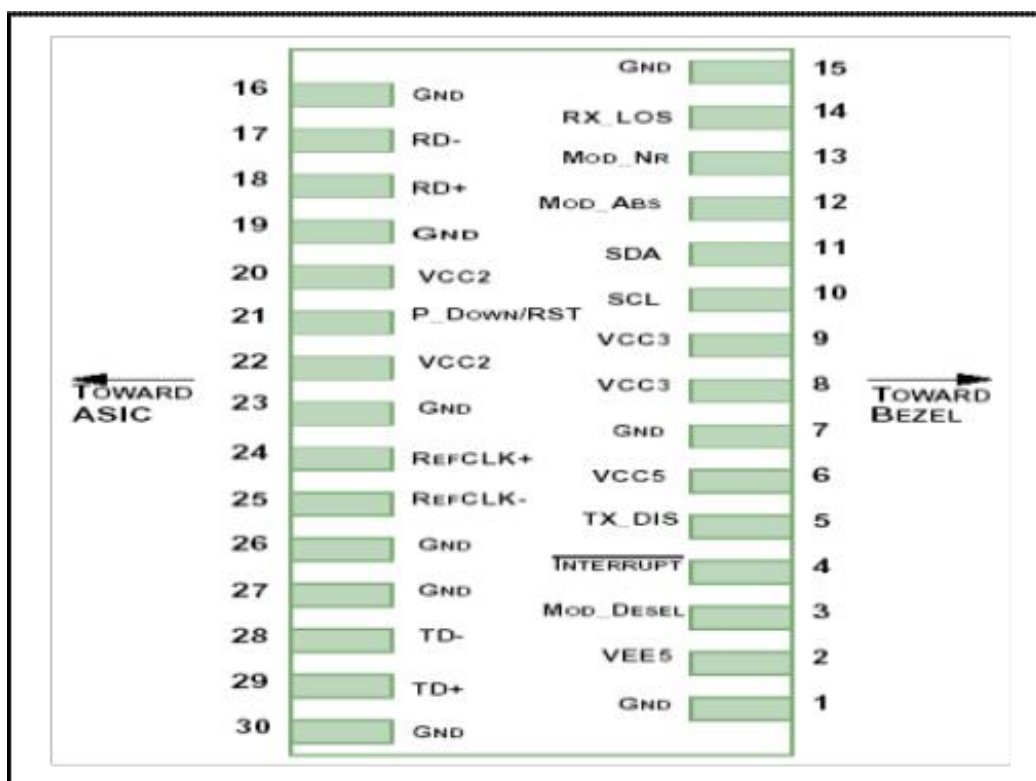
The DDM parameters have been internally calibrated.

Table 1. Digital Diagnostic Memory Map (Specific Data Field Descriptions)





PIN DEFINITIONS AND FUNCTIONS



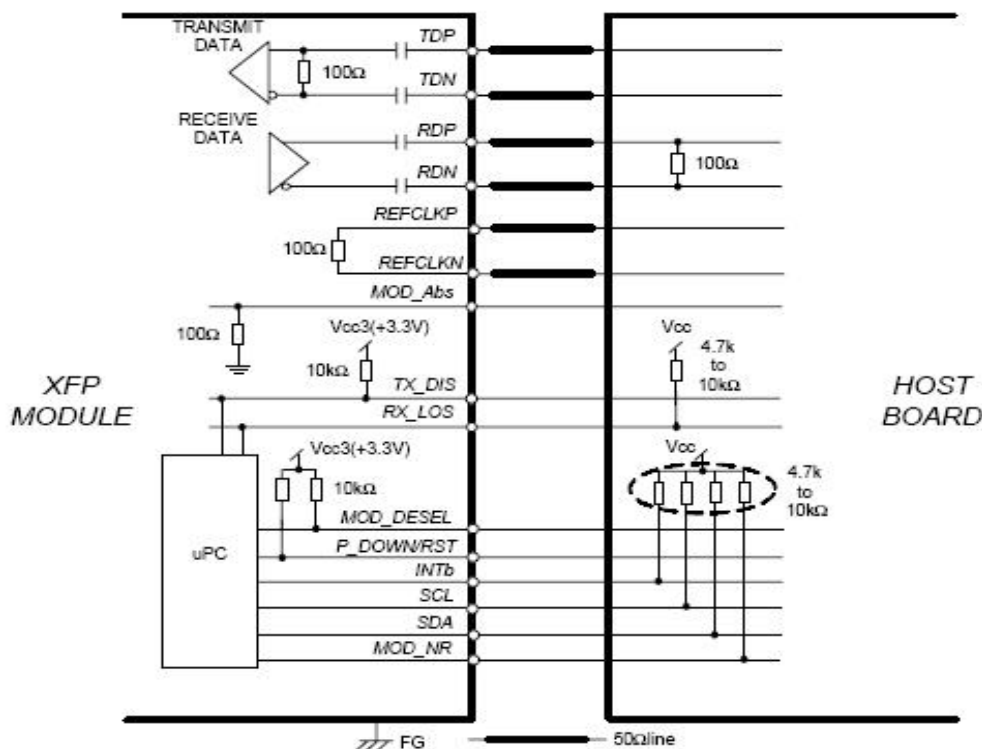
PIN#	Nam	Function	Name/Descri	Notes
1		GN	ModuleGround	1
2		VEE	Optional-5.2VPowerSupply (Notrequired)	
3	LVTTL-I	MOD_DESEL	ModuleDe-select;Whenheldlowallowsthemoduletorespond to2-wire serialinterface	
4	LVTTL-O	INT	Interrupt;Indicatespresenceofanimportantconditionwhichcan bereadviathe2-wireserialinterface	2
5	LVTTL-	TX_DIS	Transmitter Disable;Turns off transmitterlaseroutput	
6		VCC	+5VPowerSupply(Notrequired)	
7		GN	ModuleGround	1
8		VCC	+3.3VPowerSupply	
9		VCC	+3.3VPowerSupply	
1	LVTTL-I/O	SC	2-WireSerialInterface Clock	2
1	LVTTL-I/O	SD	2-WireSerialInterface DataLine	2
1	LVTTL-O	MOD_Abs	Indicates Moduleis not present.Groundedin the Module	2
1	LVTTL-O	MOD_NR	Module Not Ready; IndicatingModuleOperationalFault	2
1	LVTTL-O	RX_LOS	ReceiverLoss Of SignalIndicator	2
1		GN	ModuleGround	1
1		GN	ModuleGround	1
1	CML-	RD	ReceiverInverted DataOutput	
1	CML-	RD	Receiver Non-InvertedDataOutput	
1		GN	ModuleGround	1
2		VCC	+1.8VPowerSupply(Not required).	3



2	LVTTL-	P_DOWN/RST	Powerdown; 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.	
1	LVTTL-	P_DOWN/RST	Reset; The falling edge initiates a complete reset of the module including the 2-wire serial interface, equivalent to a power	
2		VCC	+1.8V Power Supply (Not required)	3
2		GN	Module Ground	1
2	PECL-I	REFCLKP	Not used, internally terminated to 50ohm (100ohm diff).	4
2	PECL-I	REFCLKN	Not used, internally terminated to 50ohm (100ohm diff).	4
2		GN	Module Ground	1
2		GN	Module Ground	1
2	CML	TD	Transmitter Inverted Data Input	
2	CML	TD	Transmitter Non-Inverted Data Input	
3		GN	Module Ground	1

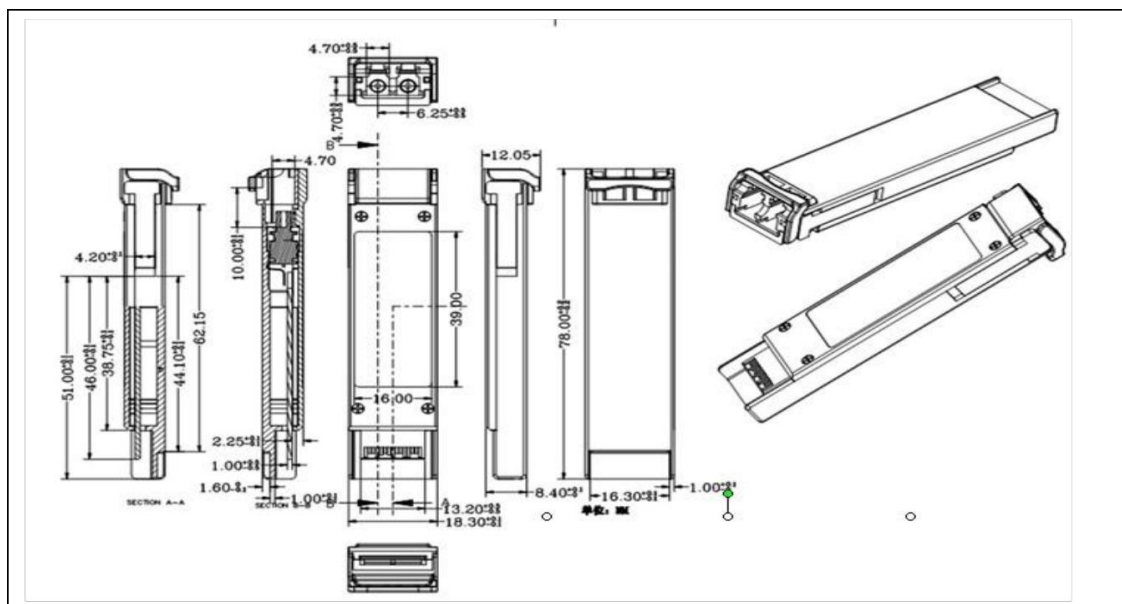
Note: 1. Module ground pins GND are isolated from the module case and chassis ground within the module.
 2. Open collector; Shall be pulled up with 4.7K-10Kohms to a voltage between 3.15V and 3.6V on the host board.
 3. The pins are open within module.
 4. Reference C lock is not required.

TYPICAL INTERFACE CIRCUIT





PACKAGE DIMENSIONS



ORDERING INFORMATION

ArtNumber	Description
TOP-XFP-10G-SR	XFP , 10.3125Gbps, 850nm, 300m, 0~70°C, withDDM
TOP-XFP-10G-LR	XFP , 10.3125Gbps, 1310nm, 10km, 0~70°C, with DDM
TOP-XFP-10G-ER	XFP , 10.3125Gbps, 1550nm, 40KM, 0~70°C, withDDM
TOP-XFP-10G-ZR	XFP , 10.3125Gbps, 1550nm, 80KM, 0~70°C, withDDM



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