产 品 规 格 书

Product Specification Sheet

TOP-BIDI-XFP-ER-40A

RoHS Compliant 10Gb/s Tx1270nm/Rx1330nm 40km Optical Transceiver

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PRODUCT FEATURES

- Hot pluggable
- Support 9.95Gb/s to 11.1Gb/s bit rates
- Below<1.5w power consumption
- XFPMSA package with LC connector
- Digital Diagnostic Monitor Interface
- Very low EMI and excellent ESD protection
- Un-cooled 1270nm DFB laser
- +3.3V single power supply
- operating temperature range 0°C to 70°C
- No reference clock requirement

APPLICATIONS

- 10GBASE-BX10.3125Gb/s Ethernet
- 10GBASE-BX9.953Gb/s Ethernet
- SONETOC-192 &SDHSTM I-64.1

STANDARD

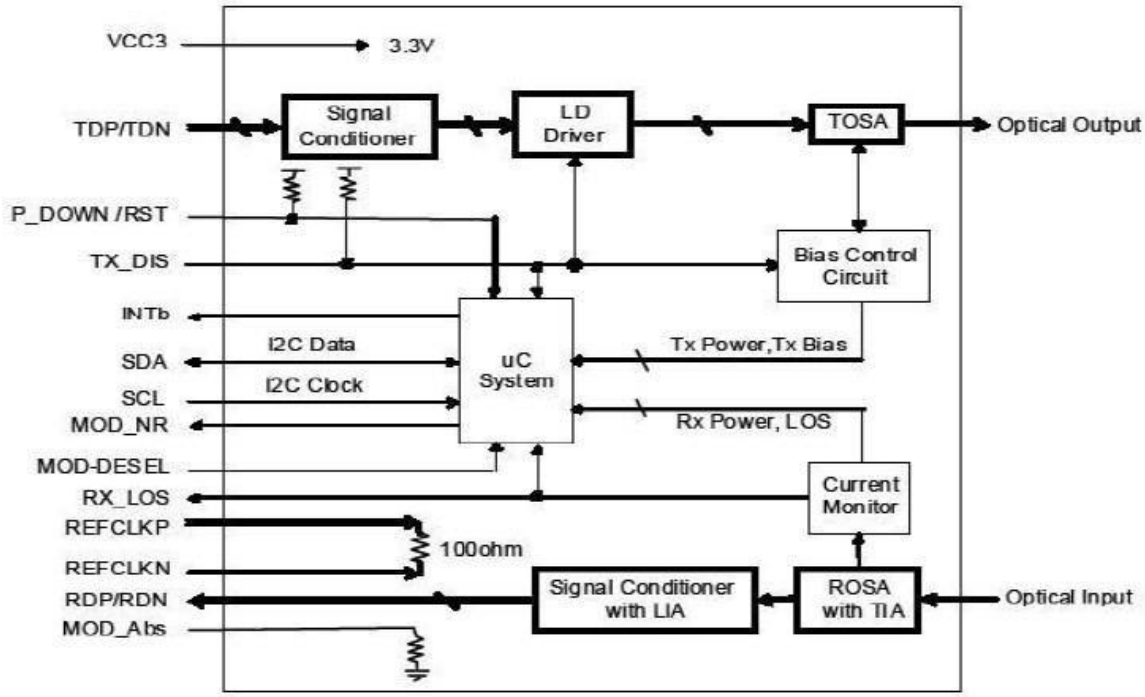
- XFPMSA Compliant
- SFF-8472 reversion 9.5 compliant
- IEEE802.3-2005 compliant
- Telcordia GR-468-CORE compliant
- FCC47CFR Part15,ClassB compliant
- FDA21CFR1040.10 and 1040.11,class1 compliant
- RoHS compliant

PRODUCT DESCRIPTIONS

XFP 10G 40KM 1270 transceivers are designed for 10G Ethernet 10GBASE-ER/EWper802.3 ae and 10GSOIOC-192/SDHSTM-64,and it can support data-rate from

9.953Gb/s to 11.1Gb/s. Digital diagnostics are available via I2C interface as specified in the XFPMSA. The transceiver designs are optimized for high performance and cost effective to supply customers the best solutions for data-comand telecom applications.

FUNCTIONAL DIAGRAM



ABSOLUTE MAXIMUM RATINGS

Parameter	Symbol	Mi	Max	Unit	Note
Supply Voltage	Vcc	-	4.	V	
Storage Temperature		-	8	°	
Relative Humidity			8	%	

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

GERERAL OPERATING CHARACTERISTICS

Parameter		Symbol	Min.	Typ	Max.	Unit	Note
Data Rate	Ethernet			10.3125		Gb/s	

	Fiber Channel			9.953			
Supply Voltage		Vcc	3.14	3.3	3.46	V	
		Vcc				V	
Supply Current		Icc_5				mA	
		Icc_3			400	mA	
Operating Case Temp.		Tc	0		70	°C	

ELECTRICAL INPUT/OUTPUT CHARACTERISTICS

Transmitter

Parameter		**Symbol**	**Min.**	**Typ**	**Max.**	**Unit**	**Note**
Diff. input voltage swing			120		820	mVpp	1
Tx Disable input	H	VIH	2.0		Vcc+0.3	V	
	L	VIL	0		0.8		
Tx Fault output	H	VOH	2.0		Vcc+0.3	V	2
	L	VOL	0		0.8		
Input Diff. Impedance		Zin		100		Ω	

Receiver

Parameter		**Symbol**	**Min.**	**Typ**	**Max.**	**Unit**	**Note**
Diff. output voltage swing			340	650	800	mVpp	3
Rx LOS Output	H	VOH	2.0		Vcc+0.3	V	2
	L	VOL	0		0.8		

Note1)TD+/-are internally AC coupled with 100Ω differential termination inside the module.
Note2)Tx Fault and Rx LOS are open collector outputs, which should be pulled up with 4.7kto10kΩ resistors on the host board. Pull up voltage between2.0VandVcc+0.3V.
Note3)RD+/- outputs are internally AC coupled, and should be terminated with100Ω(differential)at the user SERDES.

OPTICAL CHARACTERISTICS

Transmitter(0~70 @10.3125Gb/s)

Parameter	Symbol	Min.	Typ	Max.	Unit	Note
Operating Wavelength		1260	1270	1280	nm	
Ave. output power(Enabled)	Po	-1		3	dBm	1
Extinction Ratio	ER	3.5			dB	1
RMS spectral width	Δλ			1	nm	
Rise/Fall time(20%~80%)	Tr/Tf			50	ps	2
Optical modulation amplitude	OMA	-5.1			dBm	
Dispersion penalty				2	dB	
Output Optical Eye	IEEE802.3-2005Compliant					

Receiver(0~70 @10.3125Gb/s)

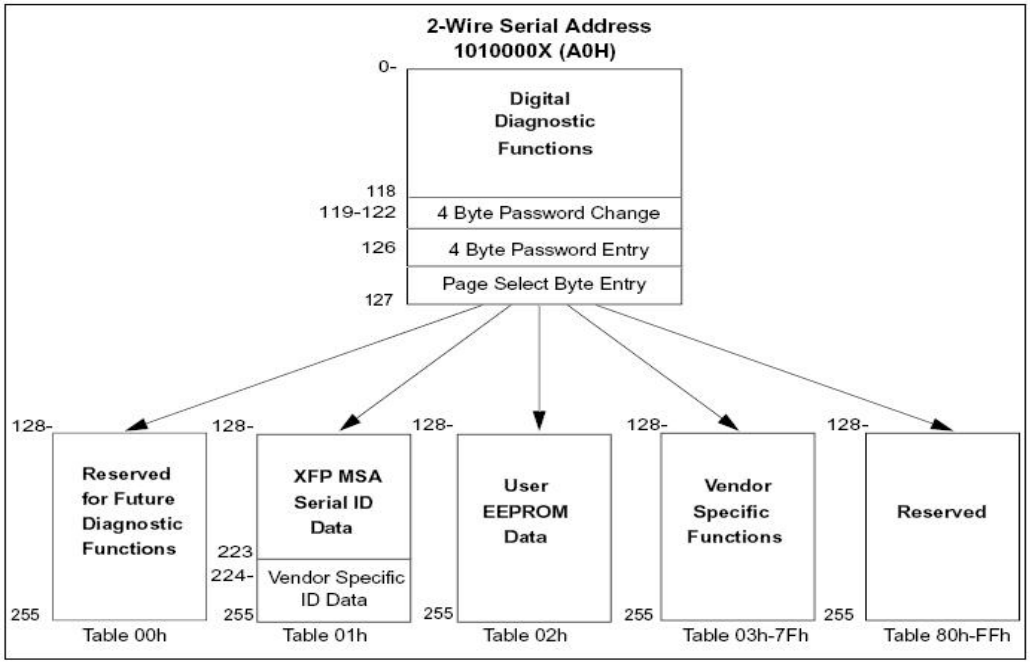
Parameter	Symbol	Min.	Typ	Max.	Unit	Note
Operating Wave length		1320	1330	1340	nm	
Sensitivity	Psen			-16	dBm	3
Min. overload	Pimax	0			dBm	
LOS Assert	Pa	-30			dBm	
LOS De-assert	Pd			-18	dBm	
LOS Hysteresis	Pd-Pa	0.5		4	dB	

Note1)Measured at10.3125b/s with PRBS231–1NRZ test pattern.
Note2)20%~80%
Note3)Under the ER worst case, measured at10.3125Gb/s with PRBS231 -1NRZ test pattern for BER<1x10-12

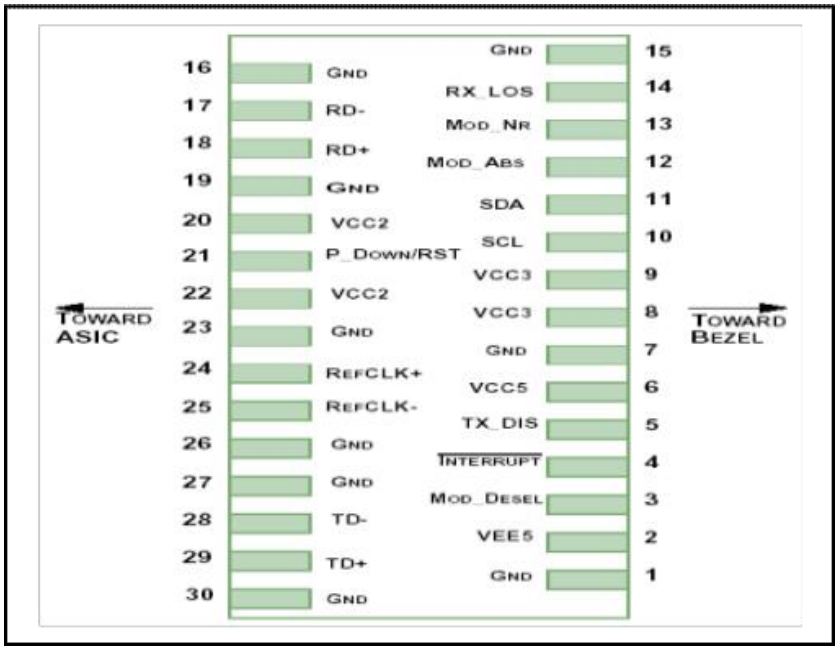
SERIAL INTERFACE FOR ID AND DDM

The XFP modules implement the 2-wire serial communication protocol as 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 A0handA2h. The memory is mapped in Table1. Detailed ID information(A0h) is listed in Ta-ble2.And the DDM specification(A2h) is described in Table3. For more details of the memory map and byte definitions, please refer to the SFF-8472(Rev9.3,Aug.2002), “Digital Diagnostic Monitoring Interface for Optical Transceivers”. The DDM parameters have been internally calibrated.

Table1.DigitalDiagnosticMemoryMap(Specific Data Field Descriptions)



PIN DEFINITIONS AND FUNCTIONS

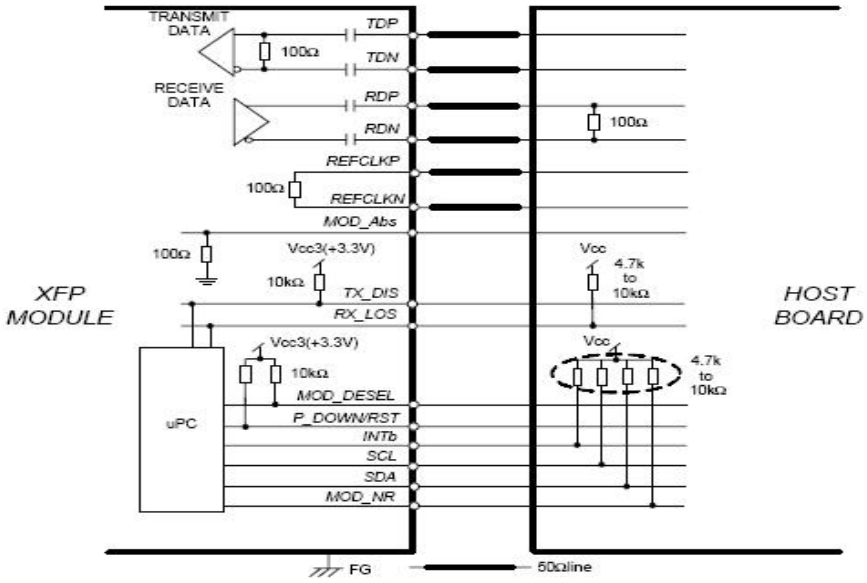


PIN#	Na	Function	Name/Descri	Notes
1		GND	Module Ground	1
2		VEE5	Optional-5.2VPowerSupply (Not required)	
3	LVTT L-I	MOD_DESEL	Module De-select;When held low allows the module to respond to2-wire serial interface	
4	LVTTL-O	INTb	Interrupt; Indicates presence of an important condition which can bereadviathe2-wireserialinterface	2
5	LVTT L-I	TX_DIS	Transmitter Disable; Turns off transmitter laser output	
6		VCC5	+5VPowerSupply(Not required)	
7		GND	Module Ground	1
8		VCC3	+3.3VPowerSupply	
9		VCC3	+3.3VPowerSupply	
1	LVTTL-I/O	SCL	2-WireSerialInterface Clock	2
1	LVTTL-I/O	SDA	2-WireSerialInterface Data Line	2
1 2	LVTTL-O	MOD_ Abs	Indicates Module is not present. Grounded in the Module	2
1 3	LVTTL-O	MOD_NR	Module Not Ready; Indicating Module Operational Fault	2
1 4	LVTTL-O	RX_LOS	Receiver Loss Of Signal Indicator	2
1		GND	Module Ground	1
1		GND	Module Ground	1
1	CML-	RDN	ReceiverInverted DataOutput	

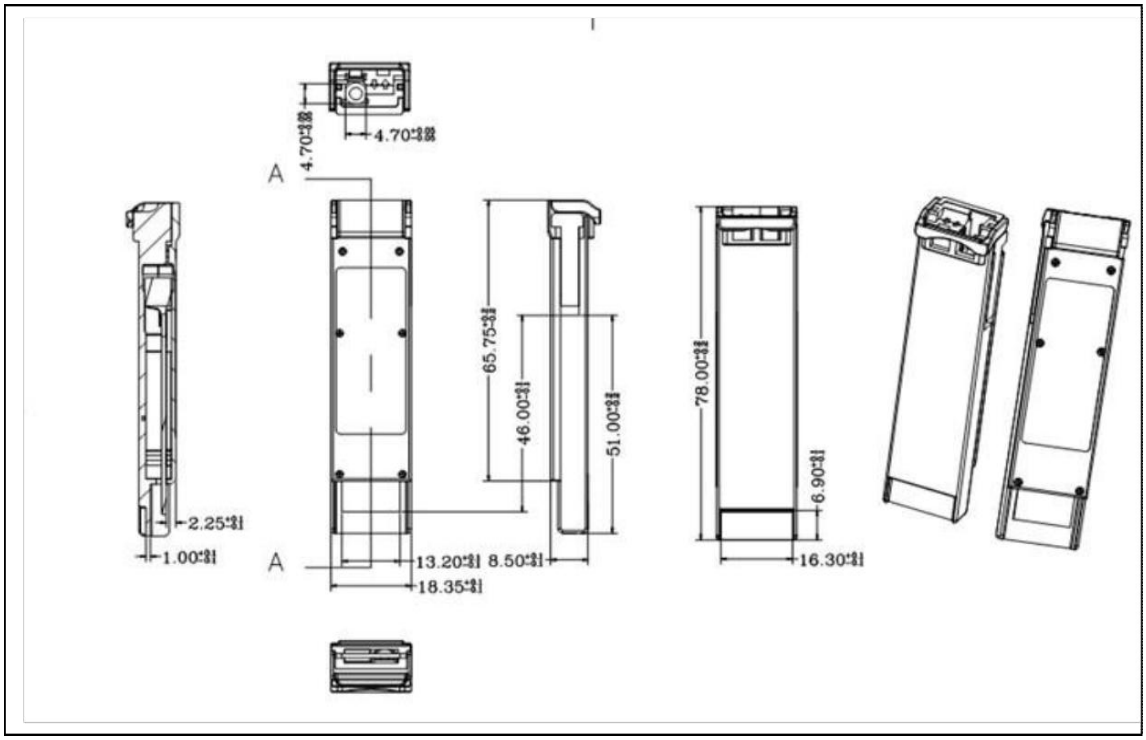
1	CML-	RDP	Receiver Non-InvertedDataOutput	
1		GND	Module Ground	1
2		VCC2	+1.8VPowerSupply(Not required).	3
2 1	LVTTL-I	P_DOWN/RST	Power down; When high, requires the module to limit power consumptionto1.5Worbelow.2-Wireserialinterfacemustbe functional in the low power mode.	
2 1	LVTTL-I	P_DOWN/RST	Reset; The falling edge initiates a complete reset of the module includingthe2-wire serial interface, equivalent toapower cycle.	
2		VCC2	+1.8VPowerSupply(Not required)	3
2		GND	Module Ground	1
2 4	PECL-I	REFCLKP	Not used, internallyterminatedto50ohm (100ohm diff).	4
2 5	PECL-I	REFCLKN	Not used, internallyterminatedto50ohm (100ohm diff).	4
2		GND	Module Ground	1
2		GND	Module Ground	1
2	CML-I	TDN	Transmitter Inverted Data Input	
2	CML-I	TDP	Transmitter Non-Inverted Data Input	
3		GND	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 with4.7K-10Kohms to a voltage between3.15Vand3.6V on the host board.
3.The pins are open within module.
4.Reference Clock is not required.

TYPICAL INTERFACE CIRCUIT



PACKAGE DIMENSIONS



ORDERING INFORMATION

Part Number	Description
TOP-BIDI-XFP-20A	XFP BiDi,10.3125Gbps,1270nm,20KM,0~70℃,with DDM
TOP-BIDI-XFP-20B	XFP BiDi,10.3125Gbps,1330nm,20KM,0~70℃,with DDM
TOP-BIDI-XFP-ER-40A	XFP BiDi,10.3125Gbps,1270nm,40KM,0~70℃,with DDM
TOP-BIDI-XFP-ER-40B	XFP BiDi,10.3125Gbps,1330nm,40KM,-5~70℃,with DDM
TOP-BIDI-XFP-ZR-80A	XFP BiDi,10.3125Gbps,1270nm,80KM,-5~70℃,with DDM
TOP-BIDI-XFP-ZR-80B	XFP BiDi,10.3125Gbps,1330nm,80KM,-5~70℃,with DDM

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