XTE10-D0X-T1

Features

- Up to 9.95 Gbps to 11.3Gbps
- 1310nm DFB Laser and PIN photo detector
- Duplex LC receptacle optical interface compliant
- Single +3.3V power supply
- Hot-pluggable
- AC coupling of CML signals
- International Class1 laser safety certified
- Operating temperature range:
  Commercial: 0℃~+70℃
  Industrial: -40℃~+85℃
- RoHS Compliant
- DDMI function available with internally calibrated mode

Application

- 10GBASE-LR/LW 10Gigabit Ethernet
- 1200-SM-LL-L 10Gigabit Fiber Channel

Standard

- Compliant with IEEE802.3ae
- Compliant with INF-8077

Specification:

Absolute Maximum Ratings				
Parameter	**Symbol**	**Min**	**Max**	**Unit**
Storage temperature	TS	-40	85	℃
Power Supply Voltage	Vcc3	-0.5	+4	V
Relative Humidity	RH	5	95	%

Recommended Operating Conditions					
Parameter	**Symbol**	**Min**	**Typical**	**Max**	**Unit**
Operating Case Temperature (Commercial)	Tc	0		70	℃
Operating Case Temperature (Industrial)		-40		85	
Power Supply Voltage	Vcc3	3.13	3.3	3.47	V
Supply Current	Icc3			500	mA
Data Rate		9.95		11.3	Gbps
Fiber Length 9/125μm core SMF			10		km

Electrical Characteristics						
Parameter	**Symbol**	**Min**	**Typical**	**Max**	**Unit**	**Notes**
Power dissipation	P			1.5	W	
Transmitter differential input voltage		120		820	mV	
Receiver differential output Voltage		300	650	850	mV	
Transmit disable voltage	V_{IH}	2.0		Vcc+0.3	V	LVTTL
Transmit enable voltage	V_{IL}	-0.3		0.8	V	LVTTL
Transmit disable assert time				10	US	
Loss of Signal (LOS)	V_{OH}	2.4		Vcc+0.3	V	LVTTL
	V_{OL}	-0.3		0.4	V	LVTTL
Leakage Current	IL	-10		10	μA	
I2C Clock Rate				400	KHz	

Optical transmitter Characteristics						
Parameter	**Symbol**	**Min**	**Typical**	**Max**	**Unit**	**Notes**
Launched Power	Pout	-6		0.5	dBm	
Operating Wavelength Range	λc	1290	1310	1330	nm	
Spectral Width (-20dB)	Δλ			1	nm	DFB
Side Mode Suppression Ratio	SMSR	30			dB	
Extinction Ratio	ER	3.5			dB	2
Relative Intensity Noise	RIN			-128	dB/Hz	
Return Loss		12			dB	
Optical Rise/Fall Time	Tris/Tfall	28			Ps	3
Transmitter and Dispersion Penalty	TDP			3.2	dB	
Optical Tx Output disable	P_{off}			-45	dBm	
Output Eye Diagram	IEEE802.3ae eye mask					

Optical receiver Characteristics							
Parameter		**Symbol**	**Min**	**Typical**	**Max**	**Unit**	**Notes**
Receiver Sensitivity		S			-14	dBm	4
Wavelength Range		λc	1290		1330	nm	
Receiver Reflectance					-12	dB	
Optical Power Input Overload		P_{in-max}	-1			dBm	4
LOS	Optical Dessert	Pd			-15	dBm	4
	Optical Assert	Pa	-30				
LOS hysteresis			0.5		5	dB	5

Note1. The supply current is XFP module's working current.

Note2: For the measurements, the device was driven with 10.3125Gbps data pattern with 2^{31}-1 PRBS payload

Note3. Optical transition time is the time interval required for the rising or falling edge of an optical pulse to transition between the 20% and 80% amplitudes relative to the logical 1 and 0 levels

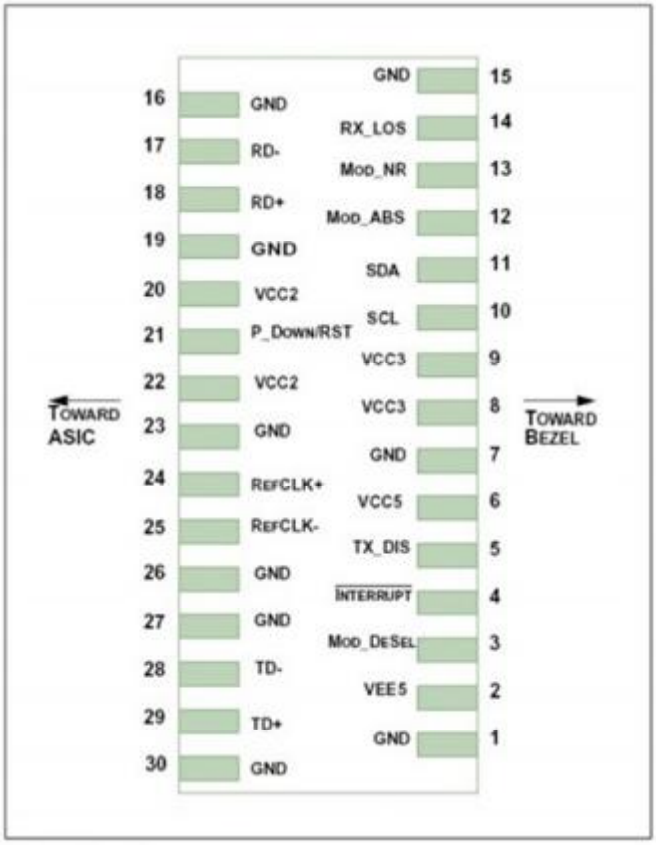
Note4. Measured with a PRBS 2^{31}-1 test pattern, @10.3125Gbps, ER=4dB, BER<10^{-12}

Note5. The LOS Hysteresis minimizes 'chatter' on the output line. In principle, Hysteresis alone does not guarantee chatter-free operation.

Digital Diagnostic Monitoring Information

Parameter	Accuracy	Calibration	Note
Temperature	±3°C	internal	0~70°C
Voltage	±3%	internal	3.1~3.5V
Bias Current	±10%	internal	Specified by normal value
TX Power	±2dB	internal	-6~0.5dBm
RX Power	±2dB	internal	-14~0.5dBm

Pin Description



Pin Assignment

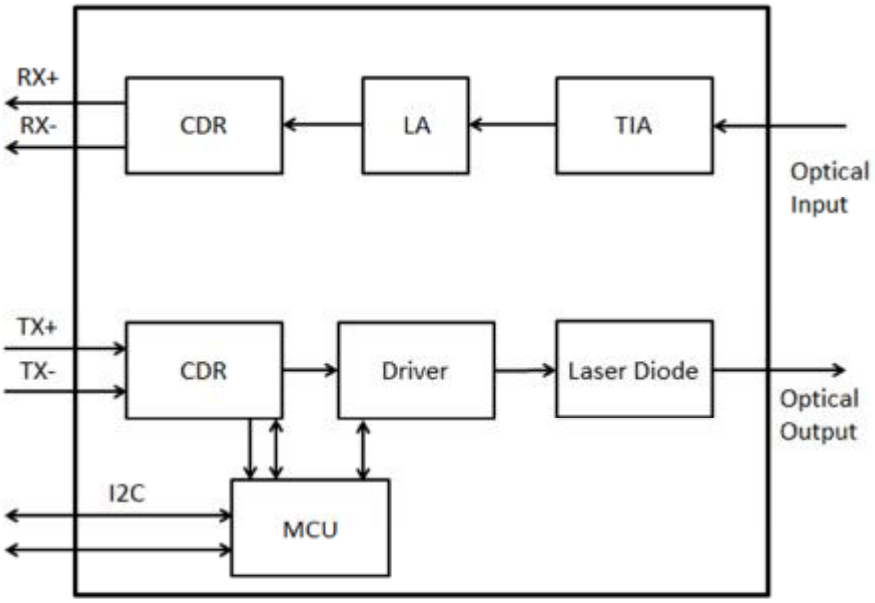
Pin	Logic	Symbol	Description	Note
1		GND	Module Ground	1
2		VEES	Optional -5.2V Power Supply(Not Required)	
3	LVTTL-I	Mod DeSel	Reverse data output of receiver section	
4	LVTTL-O	PECL	Optical alarm of receiver section, High level when normal, low level when no light	2

5	LVTTL-I	Interrupt	Interrupt; Indicates presence of an important condition of an important condition which can be read over the 2-wire serial interface	
6		Vcc	+5V Power Supply (Not Required)	
7		GND	Module Ground	1
8		VCC3	+3V Power Supply	
9		VCC3	+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 Operating Faulty	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, 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 (Not Required)	
23		GND	Module Ground	
24	PECL-I	RefCLK+	Reference Clock Non-Inverted Input, AC coupled on the host board (Not Required)	
25	PECL-I	RefCLK-	Reference Clock Inverted Input, AC coupled on the host board (Not Required)	
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

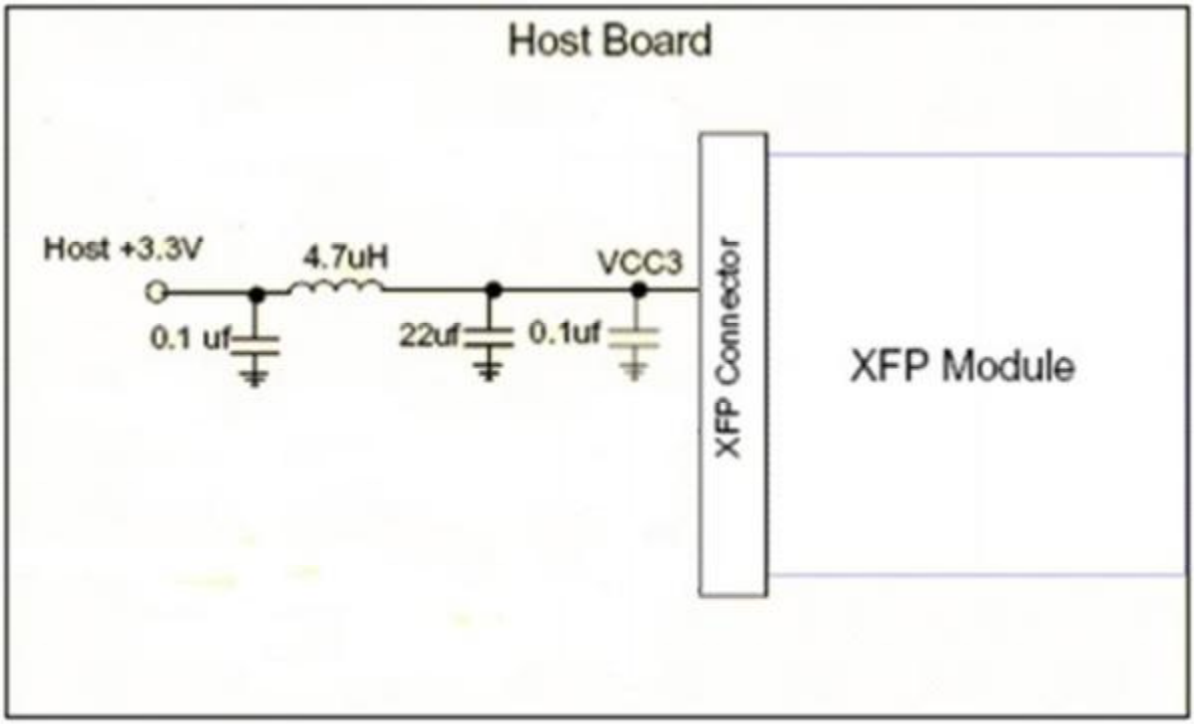
Note1: Module ground pins GND are isolated from the module case and chassis ground within the module.

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

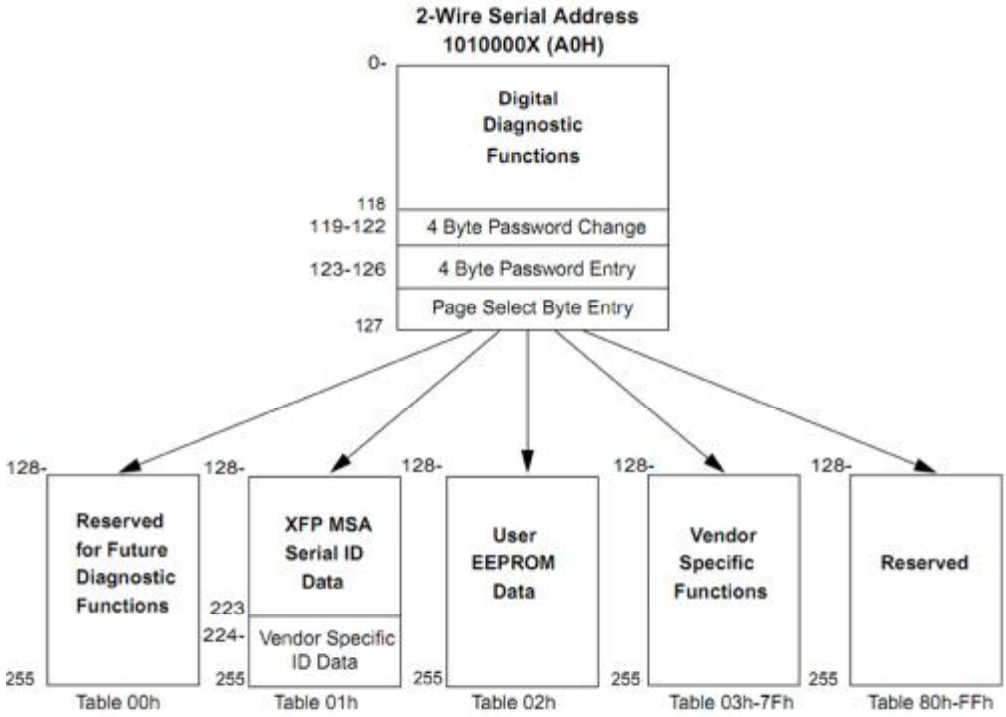
Block Diagram



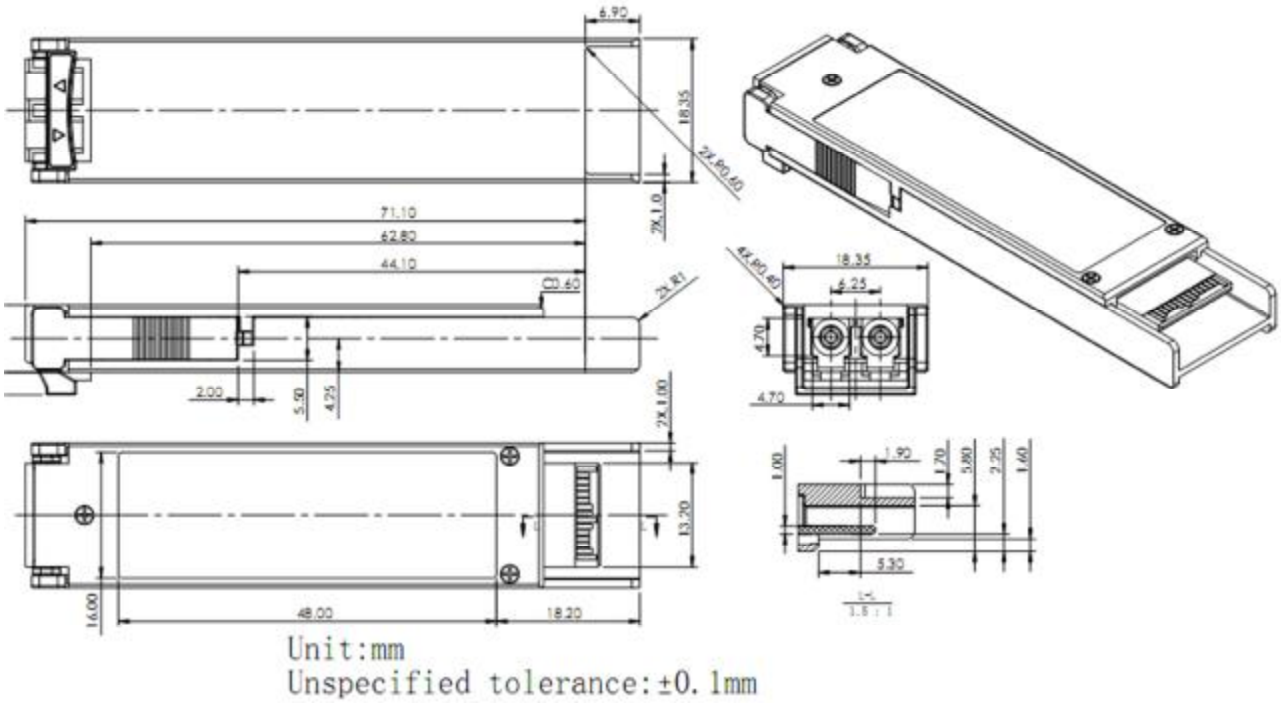
Typical Application Circuit For Power Supply



Digital Diagnostic Memory Map



Package Outline



Regulatory Compliance

Feature	Test	Method
Electrostatic Discharge (ESD) to the Electrical Pins	MIL-STD-883E Method 3015.7	Class 1(>1000V for SFI pins, >2000V for other pins.)
Electrostatic Discharge (ESD) Immunity	IEC61000-4-2	Class 2(>4.0kV)
Electromagnetic Interference (EMI)	CISPR22 ITE Class B FCC Class B CENELEC EN55022 VCCI Class 1	Comply with standard
Immunity	IEC61000-4-3	Comply with standard
Eye Safety	FDA 21CFR 1040.10 and 1040.11 EN (IEC) 60825-1,2	Compatible with Class I laser Product

Ordering information

Part. No	Specifications								
	Pack	Rate (Gbps)	Tx (nm)	Po (dBm)	RX	Sen (dBm)	Temp (℃)	Reach (km)	DDM
XTE10-D0C-T1	XFP	10.3125	1310 DFB	-6~0.5	PIN	<-14	0~+70	10	Y
XTE10-D0I-T1	XFP	10.3125	1310 DFB	-6~0.5	PIN	<-14	-40~+85	10	Y