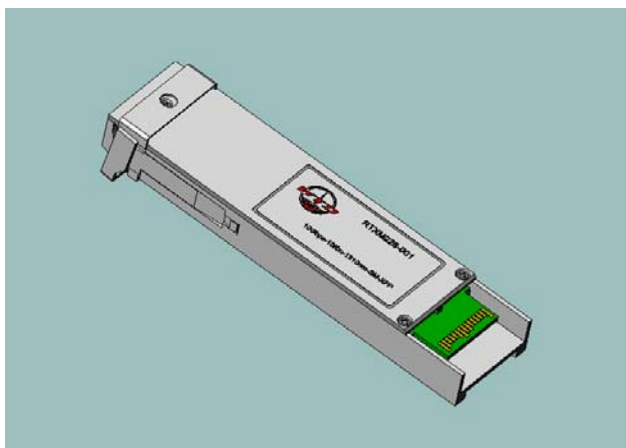




10Gigabit XFP Optical Transceiver (Preliminary)

RTXM226-001



RTXM226-001

Features

- Compliant with XFP MSA
- Data Rate from 9.95 Gbps to 10.71Gbps
- 1310nm DFB TOSA and PIN ROSA
- Industry-standard, protocol-independent XFI interface
- Transmission distance up to 10km
- LC duplex receptacle package
- Low power dissipation
- Hot Pluggable
- Built in digital diagnostic Functions
- Operating case temperature range: 0°C~70°C

Applications

- SONET OC-192 SR-1&SDH STM I-64.1
- 10GBASE-LR/LW 10Gigabit Ethernet
- 1200-SM-LL-L 10Gigabit Fiber Channel

Standards

- XFP MSA
- IEEE 802.3ae
- ITU-T G.691

Absolute Maximum Ratings

Parameter	Symbol	Unit	Min	Max
Storage Temperature Range	T _s	°C	-40	85
Supply Voltage 1	VCC2	V	-0.5	2.0
Supply Voltage 2	VCC3	V	-0.5	4.0
Supply Voltage 3	VCC5	V	-0.5	6.0



Recommended Operating Conditions

Parameter	Symbol	Unit	Min	Typ	Max
Case Operating Temperature Range	T _C	°C	0	-	70
Supply Voltage 1	VCC2	V	1.71	1.8	1.89
Supply Voltage 2	VCC3	V	3.13	3.3	3.45
Supply Voltage 2	VCC5	V	4.75	5.0	5.25

Electrical Characteristics

(Tested under recommended operating conditions, unless otherwise noted)

Parameter	Symbol	Unit	Min	Typ	Max	Test condition
Transmitter						
Input differential impedance	R _{in}	Ω	-	100	-	
Differential data input swing	V _{in,pp}	mV	120	-	820	
Transmit Disable Voltage	VD	V	2.0	-	VCC3	
Transmit Enable Voltage	VEN	V	0	-	+0.8	
Transmit Disable Assert Time	-	us	-	-	10	
Receiver						
Differential data output swing	V _{out,pp}	mV	340	650	850	
Data output rise time	T _r	ps	-	-	38	
Data output fall time	T _f	ps	-	-	38	
LOS Fault	-	V	V _{cc} -0.5	-	V _{cc} HOST	
LOS Normal	-	V	0	-	+0.5	
Reference Clock						
Differential input resistance	Z _D	Ω	80	100	120	
Reference Clock frequency	f _{REFCLK}	MHz	-	Baud/64	-	
Differential clock input swing	ΔV _{REFCLK}	mVp-p	300	-	1000	
Clock output rise/fall time	t _R , t _F	ps	200	-	1250	
Clock frequency tolerance	Δf _{REFCLK}	ppm	-125	-	+125	

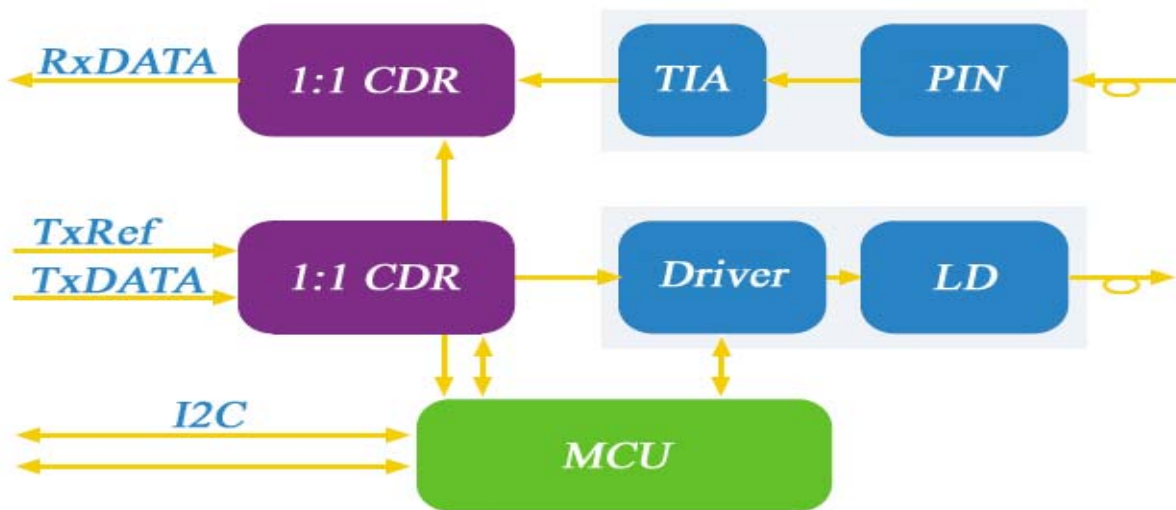


Optical Characteristics

(Tested under recommended operating conditions, unless otherwise noted)

Parameter	Symbol	Unit	Min	Typ	Max	Test condition
Optical transmitter Characteristics						
Data rate	-	Gbps	9.95	-	10.71	
Launch Optical Power	Po	dBm	-6	-	-1	
Center Wavelength range	λ	nm	1290	-	1330	
Extinction ratio	Er	dB	6	-	-	
Spectral width	-	nm	-	-	1	
SMSR	-	dB	30	-	-	
Eye diagram	Compliant with ITU-T G.691 eye mask and IEEE802.3ae eye mask					
Dispersion penalty		dB	-	-	1	
Optical receive Characteristics						
Data rate	-	Gbps	9.953	-	10.71	
Receiver Sensitivity	-	dBm	-	-	-14	Ber<10 ⁻¹² , 2 ³¹ -1PRBS
Overload input optical Power	-	dBm	0.5	-	-	Ber<10 ⁻¹² , 2 ³¹ -1PRBS

Block Diagram





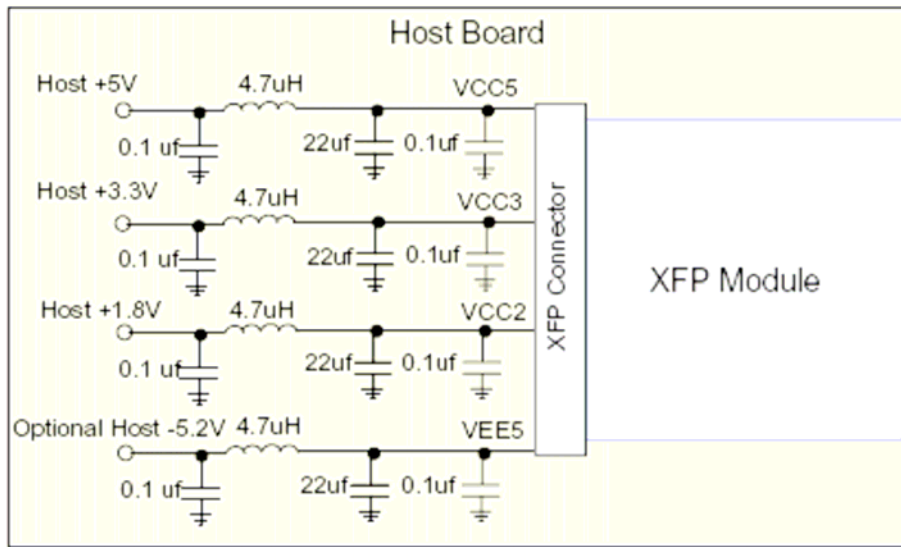
Pin Description

Pin	Logic	Symbol	Name/Description	Note
1		GND	Module Ground	1
2		VEE5	Optional -5.2V Power Supply (Not Required)	
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; Indicates presence of an important condition which can be read over the 2-wire serial 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	
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	
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

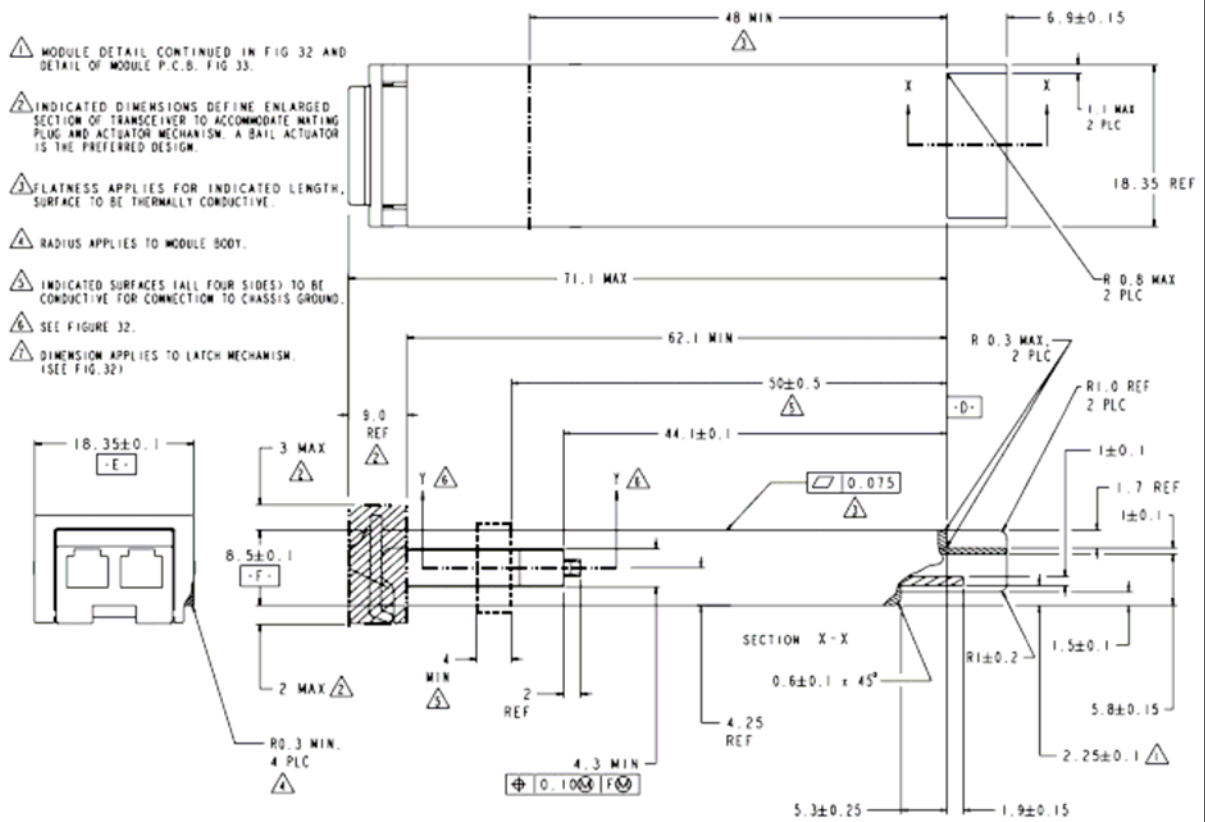
Note1: Module ground pins GND are isolated from the module case and chassis ground within the module.

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

Typical Application Circuit



Package Outline



**Regulatory Compliance**

Feature	Test method	Performance
Laser Eye Safety	U.S. 21 CFR (J) 1040.10 and 1040.11, IEC ® 60825-1 1988, IEC 60825-2 1997	CDRH compliant and Class 1 laser safe
Electrostatic Discharge (ESD) to Electrical Pins	MIL-STD 883C, Method 3015.4 Human Body Model	TBD ¹
Electrostatic Discharge (ESD) to Optical Connector	IEC 61000-4-2; 1999	TBD ¹
Electromagnetic Interference (EMI)	FCC Part 15 Subpart J Class B, CISPR 22: 1997; EN 55022: 1998 Class B, VCCI Class I	Compliant with standards

NOTE 1: TBD: to be determined**Ordering Information**

Part No	Specification									Application
	Package	Data rate	Laser	Optical Power	Detector	Sensitivity	Temp	Reach	Other	
RTXM226-001	XFP	10G	1310nm DFB	-6 ~-1dBm	PIN	-14dBm(Max)	0~70°C	10km	DDM	SDH I-64.1, 10GBASE-LR/LW



Consultation

Product Purchasing

China: Domestic Sales Dept.

Tel: (86)27-8769 1746

Fax: (86)27-8780 3010

E-mail: sales-domestic@wtd.com.cn

Elsewhere: International Sales Dept.

Tel: (86)27-8769 1194

Fax: (86)27-8780 3010

E-mail: sales-intl@wtd.com.cn

Applications Technical Support

Marketing Dept.

Tel: (86)27-8769 1435

Fax: (86)27-8780 3010

E-mail: info@wtd.com.cn

WTD CO., LTD reserves the right to make changes to the product(s) or information contained herein without notice. No liability is assumed as a result of their use or application. No rights under any patent accompany the sale of any such product(s) or information.

Edition 2005-08-14

Published by Wuhan Telecommunication Devices Co., Ltd.

Copyright © WTD CO., LTD

All Rights Reserved.