

Description



MTRX-02X13-G is a high performance, cost effective modules, which is optimized for 10G SONET/SDH and WAN applications, supporting data-rate of 9.953Gbps to 11.1Gbps, and transmission distance up to 10km.

The transceiver consists of two sections: The transmitter section incorporates a 1310nm uncooled DML, driver and CDR. The receiver section consists of a PIN photodiode integrated with a transimpedance preamplifier (TIA) , LA and CDR. The module is hot pluggable into the 30-pin connector. The high-speed electrical interface is base on low voltage logic, with nominal 100 Ohms differential impedance and AC coupled in the module. The optical output can be disabled by LVTTTL logic high-level input of TX_DIS. Loss of signal (RX_LOS) output is provided to indicate the loss of an input optical signal of receiver.

A serial EEPROM in the transceiver allows the user to access transceiver monitoring and configuration data via the 2-wire XFP Management Interface. This interface uses a single address, A0h, with a memory map divided into a lower and upper area. Basic digital diagnostic (DD) data is held in the lower area while specific data is held in a series of tables in the high memory area.

Features

- Support 10GE application at the data-rate of 9.953Gbps to 11.1Gbps
- Up to 10km transmission
- 1310nm uncooled DML and PIN receiver
- XFI electrical interface
- 2-wire interface for integrated Digital Diagnostic monitoring
- XFP MSA package with duplex LC connector
- Hot pluggable
- Very low EMI and excellent ESD protection

- +3.3V power supply
- Power consumption less than 2 W
- Operating Case Temperature:0~+70°C

Application

- SONET(OC-192)/SDH(STM64) line card
- 10GBASE-LR at 10.3125Gbps
- 10GBASE-LW at 9.953Gbps
- 10GE Ethernet switches and routers

Standard

- Compliant with SFF-INF-8077i
- RoHS compliance
- GR-468-CORE
- MIL-STD-883

Specification

Absolute Maximum Ratings				
Parameter	Symbol	Min.	Max.	Unit
Storage Temperature	T _s	-40	+85	°C
Supply Voltage	V _{CC3}	-0.5	3.6	V
Relative Humidity	RH	-5	+95	%
RX Input Average Power	P _{max}	-	0	dBm

Recommended Operating Conditions					
Parameter	Symbol	Min.	Typical	Max.	Unit
Operating Case Temperature	T _c	0	-	+70	°C
Power Supply Voltage	V _{CC3}	3.135	3.3	3.475	V
Power Supply Current	I _{CC3}	-	-	575	mA
Power Dissipation	P _D	-	-	2	W
Data Rate		9.953	-	11.1	Gbps
Transmission Distance		-		10	Km

Transmitter Operating Characteristic-Optical						
Parameter	Symbol	Min.	Typical	Max.	Unit	Note
Center Wavelength	λ_c	1290	1310	1330	nm	Note1
Spectral Width(-20dB)	Pm	-	-	1	nm	
Side Mode Suppression Ratio	SMSR	30	-	-	dB	
Laser Off Power	Poff	-	-	-30	dBm	
Average Optical Power	Pavg	-6	-	-1	dBm	Note1
Extinction Ratio	ER	6	-	-	dB	
Transmitter and Dispersion Penalty	TDP	-	-	1	dB	
Relative Intensity Noise	Rin	-	-	-128	dB/Hz	
Operating Data Rate		9.953	-	11.1	Gbps	
Optical Eye Mask		5%				

Notes:

[1] Average optical power shall be measured using the methods specified in TIA/EIA-455-95.

Receiver Operating Characteristic-Optical						
Parameter	Symbol	Min.	Typical	Max.	Unit	Note
Center Wavelength	λ_r	1270		1600	nm	
Receiver Sensitivity (Average Power)	Psens	-		-14.4	dBm	Note1
Stressed Sensitivity		-	-	-10.3	dBm	Note1
Los Assert	LosA	-32	-	-	dBm	
Los Dessert	LosD	-	-	-15.4	dBm	
Los Hysteresis	LosH	0.5	-	6	dB	
Overload	Pin	0.5	-	-	dBm	
Optical Return Loss	ORL			14	dB	
Receiver reflectance	Rr			-14	dB	
Operating Data Rate		9.953	-	11.1	Gbps	
Sensitivity in OMA				-12.6	dBm	

Max Input power		0.5	-	-	dBm	
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Notes:

[1] Receiver sensitivity is informative. Stressed receiver sensitivity shall be measured with conformance test signal for BER = 1×10^{-12} .

Low Speed Control and Alarm Signals Electrical Interface					
Parameter	Symbol	Min	Max	Units	Note
Differential data input swing	Vin	120	820	mVpp	
Differential data output swing	Vout	340	850	mVpp	
XFP Interrupt, Mod_NR, RX_LOS	Vol	0.0	0.4	V	Note1
	Voh	V _{CC3} -0.5	V _{CC3} +0.3		Note2
XFP TX_DIS, P_DOWN/RST	Vil	-0.3	0.8	V	Note3
	Vih	2.0	V _{CC3} +0.3		Note4
XFP SCL and SDA Output	Vol	0.0	0.4	V	Note1
	Voh	V _{CC3} -0.5	V _{CC3} +0.3		Note2
XFP SCL and SDA Input	Vil	-0.3	V _{CC3} *0.3	V	Note5
	Vih	V _{CC3} *0.7	V _{CC3} +0.5		Note6
Capacitance for XFP SCL and SDA I/O pin	Ci	-	14	Pf	
Total bus capacitive load for SCL and SDA	Cb	-	100	Pf	Note7
		-	400	Pf	Note8

Notes:

[1] Pull-up resistor must be connected to host_Vcc on the host board. Iol(max)=3mA

[2] Pull-up resistor must be connected to host_Vcc on the host board.

[3] Pull-up resistor connected to VCC3 within XFP module. Iil(max)= -10 uA

[4] Pull-up resistor connected to VCC3 within XFP module. Iih(max)= 10 uA

[5] Pull-up resistor must be connected to host_Vcc on the host board. Iol(max)= -10 uA

[6] Pull-up resistor must be connected to host_Vcc on the host board. Iol(max)= 10 uA.

[7] At 400KHz, 3.0kohms, at 100kHz 8.0kohms max.

[8] At 400KHz, 0.8kohms, at 100kHz 2.0kohms max.