10Gb/s 300Pin MSA Transponders – Small Form Factor

RTXM225C-020 (IR-2/S-64.2, 40Km)

Features

- *Small Form Factor Package*
- *IR2/S64.2 SONET/SDH Application*
- *Microprocessor controls to support I2C*
- *Optical Rate from 9.9 Gb/s to 11.3 Gb/s*
- *Full Performance with operating case temperature from 0 to + 65°C*
- *Power Supplies: +5.0V,-5.2V,+3.3V and +1.8V(opt.)*
- *Typical Power Dissipation 5W*
- *SFF for Easy Application on Line Cards*
- *MSA Compliant for Interoperability*
- *Multi-Rate for OC192/STM64, 10GbE and FEC Rate Applicability*

Application

- *Subscriber Loop*
- *Metropolitan area networks*
- *Optical add-/drop-multiplexing*
- *10Gb/s Ethernet*

Standard

- *300 Pin MSA Compliant*
- *OIF-SF14-01.0 compliant SERDES's I/O timing*
- *I2C Reference Document for 300PIN 10G and 40G Transponder (Edition 4). Compatible*

Absolute Maximum Ratings

Parameter	Symbol	Unit	Min	Max
Storage Temperature Range	T_s	°C	-40	85
Relative Humidity	RH	%		85
Voltage on LVDS pin		V	0	Vdd1
Static Discharge Voltage	ESD	V		500
Supply Voltages	Vcc	V	-0.5	6.0
	Vdd1	V	-0.5	2
	Vdd2	V	-0.5	3.6
	Vee	V	-5.6	0.5

Recommended Operating Conditions

Parameter	Symbol	Unit	Min	Typ	Max
Case Operating Temperature Range	T_c	°C	0		65
Power Supply Voltage	V_{CC}	V	4.75	5.0	5.25
	V_{DD1}	V	1.71	1.8	1.89
	V_{DD2}	V	3.13	3.3	3.47
	V_{EE}	V	-4.94	-5.2	-5.45

Specifications *(T=25℃, BOL, unless otherwise noted)*

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Parameter	Symbol	Unit	Min	Typ	Max	Test condition
Electrical Characteristics						
-5.2V Supply Current	I_{EE}	mA		400	500	
+1.8V Supply Current	I_{DD1}	mA		1000	1200	

+3.3V Supply Current	I_{DD2}	mA		200	1500	
+5.0V Supply Current	I_{CC}	mA		100	200	
Power Dissipation		W		5	9	
Optical transmitter Characteristics						
Data rate		Gbps	9.9		11.3	
Average Output Power	Po	dBm	-1		+2	
Center Wavelength range	λ	nm	1530		1565	
Extinction ratio	EX	dB	8.2	10		
Dispersion Penalty		dB			2	BER=10^{-12}, 2^{31}-1PRBS 9.953Gb/s
Spectral width(-20dBm)		nm			0.3	
SMSR		dB	35			
Eye diagram	Compliant with ITU-TG.691 STM-64 Eye diagram Mask or IEEE802.3ae Eye diagram Mask					
Optical receive Characteristics						
Data rate		Mbps	9.9		11.3	
Receiver Sensitivity	S	dBm		-18	-17	BER=10^{-12},2^{31}-1PRBS 9.953Gb/s
Receiver Overload		dBm	0			
Jitter Performance	Compliant with ITU-T G.783, G.825					
Loss of Power		dBm			-20	
Optical return loss		dB	-27			

Pin Description

	K	J	H	G	F	E	D	C	B	A
1	+5.0V	NC	GND	RxDout12P	+1.8V	RxDout8P	GND	RxDout4P	GND	RxDout0P
2	+5.0V	FFU	GND	RxDout12N	+1.8V	RxDout8N	GND	RxDout4N	GND	RxDout0N
3	NC	NC	NC	GND	RxPOWMON	GND	I2CAD0[1]	GND	NC	GND
4	+3.3V	NC	GND	RxDout13P	+3.3V	RxDout9P	GND	RxDout5P	GND	RxDout1P
5	+3.3V	NC	GND	RxDout13N	+3.3V	RxDout9N	GND	RxDout5N	GND	RxDout1N
6	NC	NC	NC	GND	RxPOWALM	GND	I2CAD1[1]	GND	RxMUTEDOUT	GND
7	+3.3V	FFU	GND	RxDout14P	+3.3V	RxDout10P	GND	RxDout6P	GND	RxDout2P
8	+3.3V	FFU	GND	RxDout14N	+3.3V	RxDout10N	GND	RxDout6N	GND	RxDout2N
9	RxMUTEPOCLK	NC	FFU	GND	NC	GND	I2CAD2[1]	GND	RxLCKREF	GND
10	-5.2V	NC	GND	RxDout15P	-5.2V	RxDout11P	GND	RxDout7P	GND	RxDout3P
11	-5.2V	NC	GND	RxDout15N	-5.2V	RxDout11N	GND	RxDout7N	GND	RxDout3N

12	RxMUTEMCLK	FFU	FFU	GND	NC	GND	MOD_RESET	GND	RxMCLKSEL	GND
13	-5.2V	FFU	GND	NC	-5.2V	RxPOCLKP	GND	RxMCLKP	GND	RxREFCLKP
14	-5.2V	NC	GND	NC	-5.2V	RxPOCLKN	GND	RxMCLKN	GND	RxREFCLKN
15	I2CCLOCK[1]	NC	ALM-INT[1]	GND	RxREFSEL	GND	FFU	GND	RxLOCKERR	GND
16	+5.0V	NC	GND	TxDin12P	+1.8V	TxDin8P	GND	TxDin4P	GND	TxDin0P
17	+5.0V	FFU	GND	TxDin12N	+1.8V	TxDin8N	GND	TxDin4N	GND	TxDin0N
18	I2CDATA[1]	NC	NC	GND	LsBIASMON	GND	LsPOWMON	GND	NC	GND
19	+3.3V	NC	GND	TxDin13P	+3.3V	TxDin9P	GND	TxDin5P	GND	TxDin1P
20	+3.3V	NC	GND	TxDin13N	+3.3V	TxDin9N	GND	TxDin5N	GND	TxDin1N
21	NC	NC	NC	GND	LsENABLE	GND	LsTEMPMON	GND	NC	GND
22	+3.3V	FFU	GND	TxDin14P	+3.3V	TxDin10P	GND	TxDin6P	GND	TxDin2P
23	+3.3V	FFU	GND	TxDin14N	+3.3V	TxDin10N	GND	TxDin6N	GND	TxDin2N
24	*TxRESET*	NC	NC	GND	LsBIASALM	GND	TxPHSADJ0	GND	NC	GND
25	-5.2V	NC	GND	TxDin15P	-5.2V	TxDin11P	GND	TxDin7P	GND	TxDin3P
26	-5.2V	NC	GND	TxDin15N	-5.2V	TxDin11N	GND	TxDin7N	GND	TxDin3N
27	TxFIFORES	NC	NC	GND	TxTEMPALM	GND	TxPHSADJ1	GND	NC	GND
28	-5.2V	NC	GND	TxPICLKP	-5.2V	TxPCLKP	GND	TxMCKP	GND	TxREFCLKP
29	-5.2V	NC	GND	TxPICLKN	-5.2V	TxPCLKN	GND	TxMCKN	GND	TxREFCLKN
30	TxFIFOERR	NC	TxLINETIMSEL	GND	TxREFSEL	GND	LsPOWALM	GND	TxLOCKERR	GND

Receiver power & GND supplies

Receiver d.c. signals

622 differential signals

Transmitter power & GND supplies

Transmitter d.c. signals

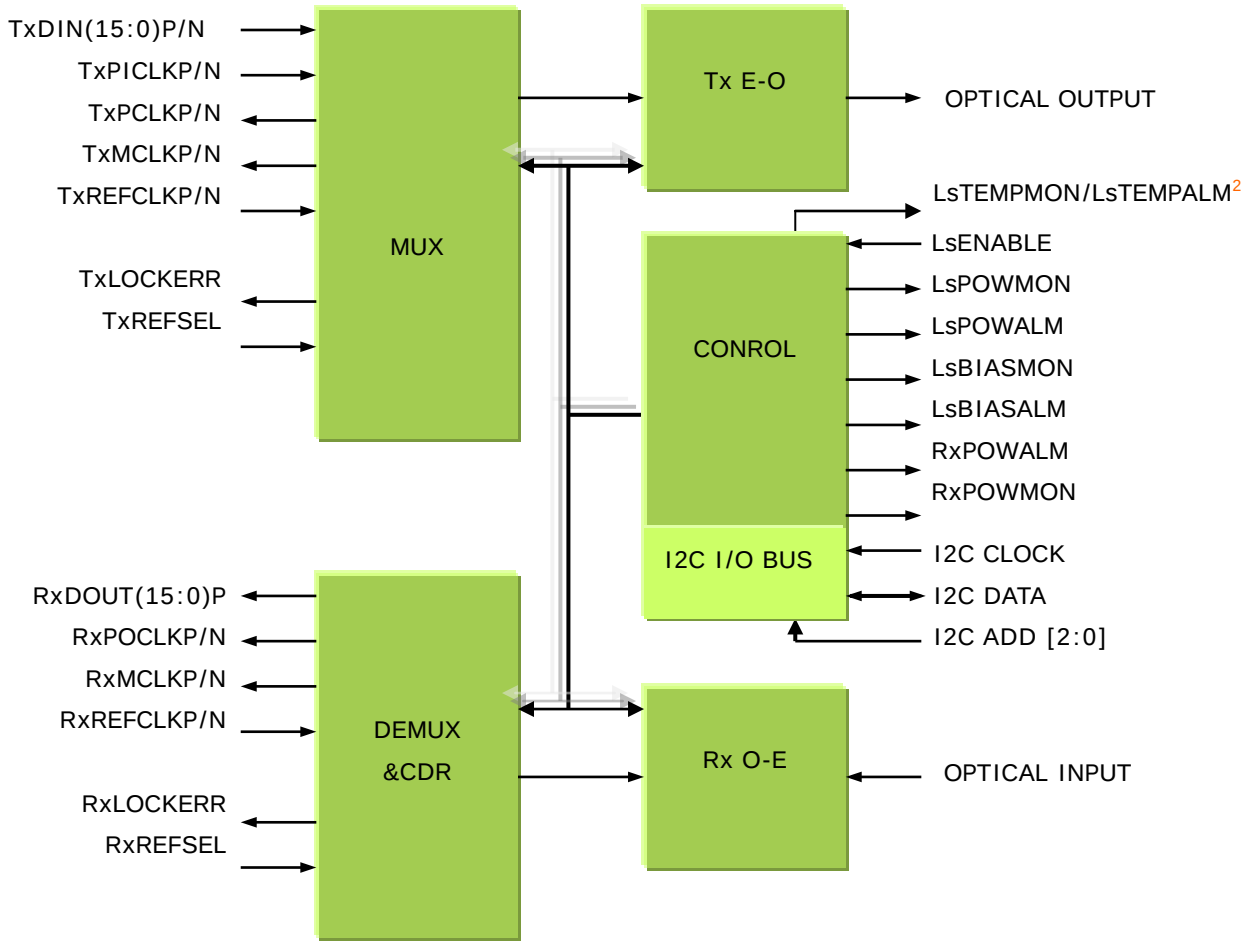
622 differential signals

NC: no user connection

FFU: reserved for future use

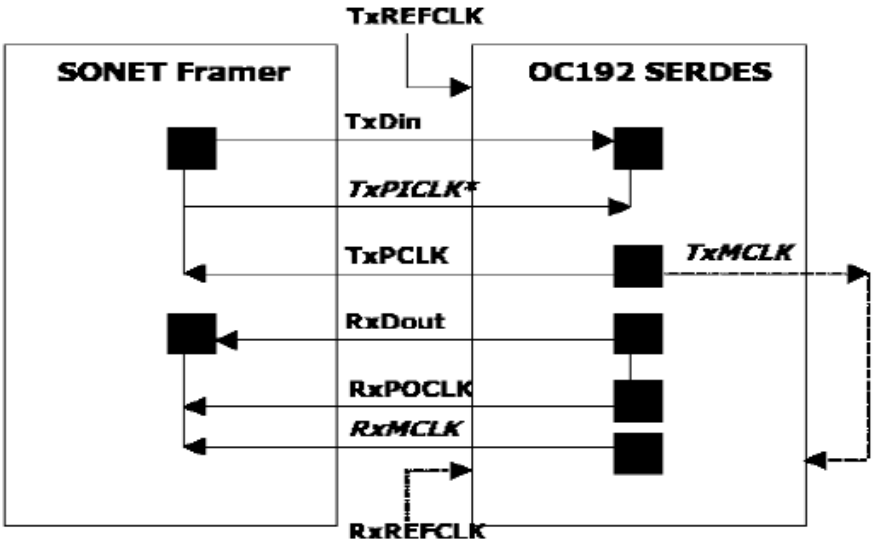
NOTE1: for soft control mode version only

Block Diagram



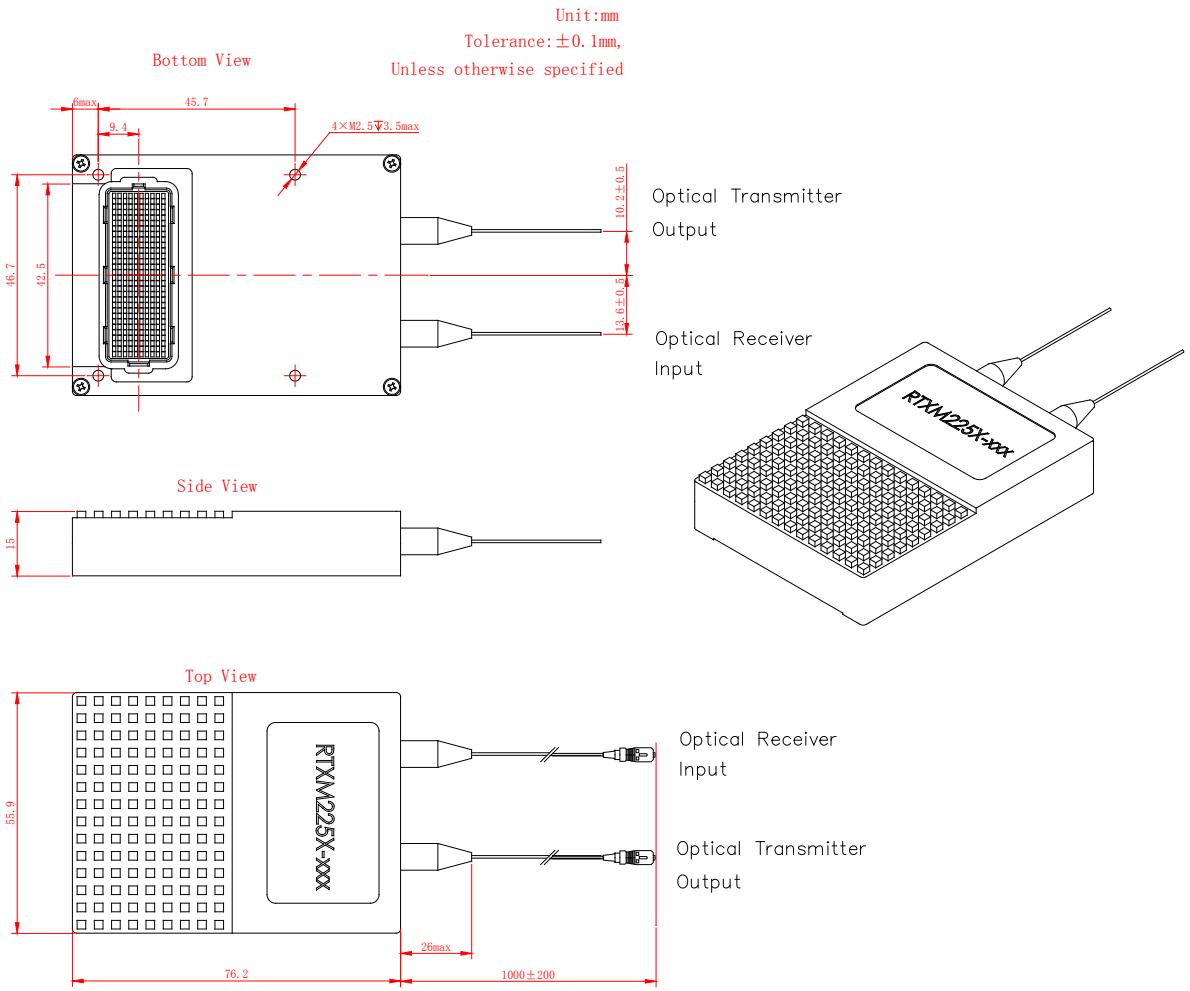
Note2: for Cooled Version only

Typical Application Circuit



Package Outline *(Unit: mm)*

Package with Heat Sink



Ordering Information

Part No.	Specifications									Application
	Pack	Rate	Tx	Pout	Rx	S	Top	Reach	others	
RTXM225C-020	SFF	10G	1550nm EML	-1~+2dBm	PIN	-17dBm	0~65°C	40km	Note1 LC/PC	IR-2/S-64.2

Note 1: Soft control mode

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