



5V 2×9 622Mbps Transceiver Module RTXM107&107-5&108&117&117-5&118

Features

- *Duplex SC receptacle or FC pigtailed optical interface*
- *Standard 2×9 package*
- *Single +5V power supply*
- *-20 to 70°C operating temperature*
- *range*
- *PECL compatible data input/output interface*
- *TTL transmitter laser shutdown*
- *PECL receiver signal-detected*

Application

- *SDH STM-4 S4.1 and L4.1*

Standards

- *Reference to ITU-T G.957*

Absolute Maximum Ratings

Parameter	Symbol	Unit	Min	Max
Storage Temperature Range	Ts	oC	-40	85
Relative Humidity	RH	%	0	95
Power Supply Voltage	Vcc	V	-0.5	+6
Lead Solder Temperature	-	oC	-	260
Lead Solder Duration	-	S	-	10
Voltage on any input/output pin	VI	V	0	Vcc

Recommended Operating Conditions

Parameter	Symbol	Unit	Min	Typ	Max
Operating Temperature Range	Top	°C	-20	-	70
Power Supply Voltage	Vcc	V	4.75	5.0	5.25
Operating Data Rate	-	Mbps	-	622.08	-

Specifications (Top= -20°C to 70°C and VCC=4.75V to 5.25V)

Parameter	Symbol	Units	Min	Typ	Max	Notes
Electrical Characteristics						
Supply Current	Icc	mA	-	-	250	
Transmitter Differential Input Voltage	VD	mV	500	-	1800	
Common-mode Input Voltage	Vcom-VCC	V	-1.4	-	-1.19	
PECL Output Voltage-Low	VOL-VCC	V	-1.89	-	-1.6	1
PECL Output Voltage-High	VOH-VCC	V	-1.1	-	-0.9	1
Bias current monitor voltage	BM	mV		10*Ib	-	
Back facet monitor voltage	PM	V	0.6	1.2	2.0	
Transmitter disable voltage	-	V	2.0	-	-	
Transmitter enable voltage	-	V	-	-	0.8	
RTXM107;RTXM117						
Optical transmitter Characteristics						
Mean Launched power(avg.)	Po	dBm	-15	-	-8	2
Center wavelength		nm	1274	1310	1356	
Spectrum width(RMS)	Δλ	nm	-	-	2.5	
Extinction ratio	ER	dB	8.2	-	-	
Optical Rise Time	tR	ns	-	-	0.5	3
Optical Fall Time	tF	ns	-	-	0.5	3
Eye Diagram	ITU recommendation G.957 STM-4/OC-12					
Optical receiver Characteristics						
Receiver Sensitivity	S	dBm	-	-	-28	4

Overload Input Power	Pin	dBm	-8	-	-	4
Signal Detect-Deasserted	PD	dBm	-42	-	-	
Signal Detect-Asserted	PA	dBm	-	-	-31	
Signal Detect-Hysteresis	PA – PD	dB	0.5	-	6.0	
RTXM107-5;RTXM117-5						
Optical transmitter Characteristics						
Mean Launched power(avg.)	Po	dBm	-15	-	-8	2
Center wavelength	λ_C	nm	1430	1550	1580	
Spectrum width(RMS)	$\Delta\lambda$	nm	-	-	2.5	
Extinction ratio	ER	dB	8.2	-	-	
Optical Rise Time	tR	ns	-	-	0.5	3
Optical Fall Time	tF	ns	-	-	0.5	3
Eye Diagram	ITU recommendation G.957 STM-4/OC-12					
Optical receiver Characteristics						
Receiver Sensitivity	S	dBm	-	-	-28	4
Overload Input Power	Pin	dBm	-8	-	-	
Signal Detect-Deasserted	PD	dBm	-42	-	-	
Signal Detect-Asserted	PA	dBm	-	-	-31	
Signal Detect-Hysteresis	PA – PD	dB	0.5	-	6.0	
RTXM108;RTXM118						
Optical transmitter Characteristics						
Mean Launched power(avg.)	Po	dBm	-3	-	+2	2
Center wavelength	λ_C	nm	1280	1310	1330	
Spectrum width(RMS)	$\Delta\lambda$	nm		-	2.5	
Extinction ratio	ER	dB	10	-		
Optical Rise Time	tR	ns	-	-	0.5	3
Optical Fall Time	tF	ns	-	-	0.5	3
Eye Diagram	ITU recommendation G.957 STM-4/OC-12					
Optical receiver Characteristics						
Receiver Sensitivity	S	dBm	-	-	-28.0	4
Overload Input Power	Pin	dBm	-8	-	-	4
Signal Detect-Deasserted	PD	dBm	-42.0	-	-	
Signal Detect-Asserted	PA	dBm	-	-	-31	
Signal Detect-Hysteresis	PA – PD	dB	0.5	-	6	

Note1: Terminated with 50 Ω to VCC -2V.

Note2: Minimum output optical level is at end of life.

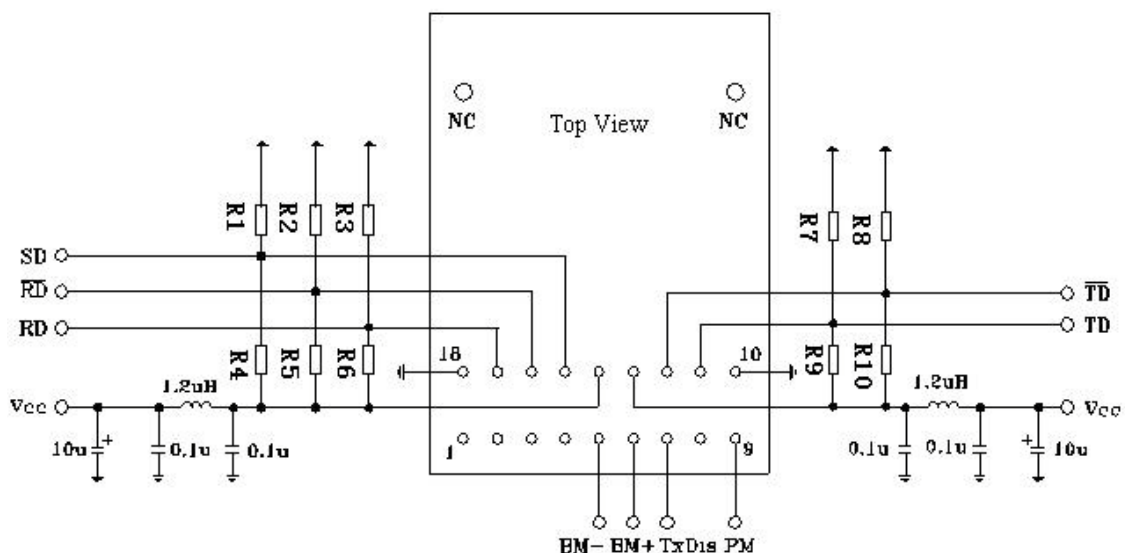
Note3: These are unfiltered 10~90% values.

Note4: Sensitivity and overload for 223-1 PRBS and Bit Error Rate better than or equal to 10E-10.

Pin Description

Pin Name	Level	Description
1	NC	Pin not connected
2	NC	Pin not connected
3	NC	Pin not connected
4	NC	Pin not connected
5	BM-	Negative bias current monitor voltage
6	BM+	Positive bias current monitor voltage
7	TxDis TTL	Transmitter disable input. A low level switches laser on, a high level switches laser off
8	NC	Pin not connected
9	PM	Back facet monitor voltage. Normally 1.2V
10	VEE	Negative power of transmitter section, normally grounded
11	TD+ PECL	Data input of transmitter section
12	TD- PECL	Reverse data input of transmitter section
13	VCC	Positive power of transmitter section
14	VCC	Positive power of receiver section
15	SD PECL	Optical alarm of receiver section, High level when normal, low level when no light
16	RD- PECL	Reverse data output of receiver section
17	RD+ PECL	Data output of receiver section
18	VEE	Negative power of receiver section, normally grounded

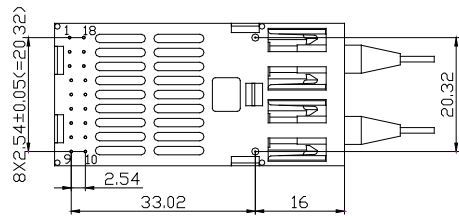
Typical application circuit



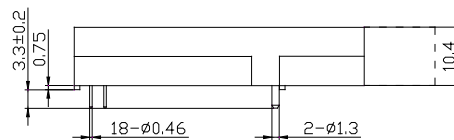
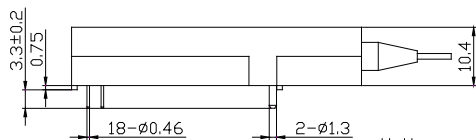
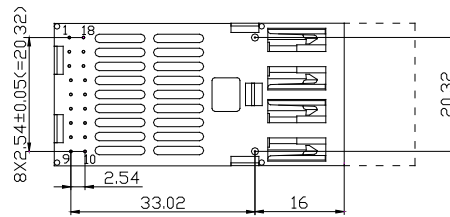
Note: R1=R2=R3=R7=R8=130Ω ; R4=R5=R6=R9=R10=82;

Package outline (unit: mm)

FC pigtail optical interface

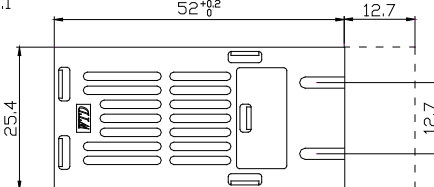
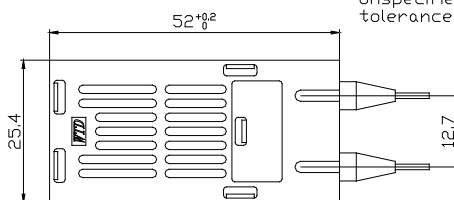


Duplex SC receptacle optical interface



Unit: mm
Unspecified tolerance is ±0.1

Unit: mm
Unspecified tolerance is ±0.1



Area reserved for SC plug

Regulatory Compliance

Feature	Test Method	Performance
Electrostatic Discharge (ESD) to the Electrical Pins	MIL-STD-883E Method 3015.7	Class 1 (>1.5kV) – Human Body Model
Electrostatic Discharge (ESD) Immunity	IEC61000-4-2	Class 2(>4.0kV)
Electromagnetic Interference (EMI)	CISPR22 ITE Class B EN55022 Class B	Compliant with standards
Immunity	IEC61000-4-3 Class 2 EN55024	Typically show no measurable effect from a 3V/m field swept from 80 to 1000MHz applied to the transceiver without a chassis enclosure.
Eye Safety	FDA 21 CFR 1040.10 and 1040.11 UL TUV EN 60825-1	Compliant with Class 1 laser product UL No. E239070

Ordering Information

Part No	Specification							
	Package	Data rate	Laser	Optical Power	Detector	Sensitivity	Temp	Reach Interface
RTXM107*	2X9	622Mb/s	1310nm FP-LD	-15~-8dBm	PIN	--28dBm(max)	-20~70°C	15km FC pigtail
RTXM107-5*	2X9	622Mb/s	1550nm FP-LD	-15~-8dBm	PIN	-28dBm(max)	-20~70°C	15km FC pigtail
RTXM108*	2X9	622Mb/s	1310nm FP-LD	-3~+2dBm	PIN	-28dBm(max)	-20~70°C	40km FC pigtail
RTXM117	2X9	622Mb/s	1310nm FP-LD	-15~-8dBm	PIN	-28dBm(max)	-20~70°C	15km Duplex SC
RTXM117-5*	2X9	622Mb/s	1550nm FP-LD	-15~-8dBm	PIN	-28dBm(max)	-20~70°C	15km Duplex SC
RTXM118	2X9	622Mb/s	1310nm FP-LD	-3~+2dBm	PIN	-28dBm(max)	-20~70°C	40km Duplex SC

*: The product marked with * is not available at present.

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