

RTXM105&105-5&106&115&115-5&116



5V 2×9 155Mbps Transceiver Module

RTXM105&105-5&106&115&115-5&116

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 indication

Application

- SDH STM-1 S1.1 S1.2 and L1.1
- 100M Fast Ethernet

Standard

- Compliant with ITU-T G.957

RTXM105&105-5&106&115&115-5&116

Absolute Maximum Ratings

Parameter	Symbol	Unit	Min	Max
Storage Temperature Range	T_s	°C	-40	85
Relative Humidity	RH	%	0	95
Power Supply Voltage	V_{cc}	V	-0.5	+6
Lead Solder Temperature	-	°C	-	260
Lead Solder Duration	-	S	-	10
Voltage on any input/output pin	V_I	V	0	V_{cc}

Recommended Operating Conditions

Parameter	Symbol	Unit	Min	Typ	Max
Operating Temperature Range	T_{op}	°C	-20	-	70
Power Supply Voltage	V_{cc}	V	4.75	5.0	5.25
Operating Data Rate	-	Mbps	-	155.52	-

Specifications ($T_{op} = -20^{\circ}C$ to $70^{\circ}C$ and $V_{CC} = 4.75V$ to $5.25V$)

Parameter	Symbol	Units	Min	Typ	Max	Notes
Electrical Characteristics						
Supply Current	I_{cc}	mA	-	-	250	
Transmitter Differential Input Voltage	V_D	mV	500	-	1800	
Common-mode Input Voltage	$V_{com-VCC}$	V	-1.4	-	-1.19	
PECL Output Voltage-Low	V_{OL-VCC}	V	-1.8	-	-1.6	1
PECL Output Voltage-High	V_{OH-VCC}	V	-1.0	-	-0.8	1
Bias current monitor voltage	B_M	mV		$10 \cdot I_b$	-	
Back facet monitor voltage	P_M	V	0.6	1.2	2.0	
Transmitter disable voltage	-	V	2.0	-	-	
Transmitter enable voltage	-	V	-	-	0.8	
RTXM105,RTXM115						
Optical transmitter Characteristics						
Mean Launched power(avg.)	P_o	dBm	-15	-	-8	2
Center wavelength	λ_c	nm	1261	1310	1360	
Spectrum width(RMS)	$\Delta\lambda$	nm	-	-	7.7	
Extinction ratio	E_R	dB	8.2	-	-	
Optical Rise Time	t_R	ns	-	-	2.0	3
Optical Fall Time	t_F	ns	-	-	2.0	3
Eye Diagram	ITU recommendation G.957 STM-1/OC-3					

RTXM105&105-5&106&115&115-5&116

Optical receiver Characteristics						
Receiver Sensitivity	S	dBm	-	-	-35	4
Overload Input Power	P _{in}	dBm	-8	-	-	4
Signal Detect-Deasserted	P _D	dBm	-46	-	-	
Signal Detect-Asserted	P _A	dBm	-	-	-37	
Signal Detect-Hysteresis	P _A – P _D	dB	0.5	-	6.0	
RTXM105-5,RTXM115-5						
Optical transmitter Characteristics						
Mean Launched power(avg.)	P _o	dBm	-15	-	-8	2
Center wavelength	λ _c	nm	1430	1550	1576	
Spectrum width(RMS)		nm	-	-	2.5	
Extinction ratio	E _R	dB	8.2	-	-	
Optical Rise Time	t _R	ns	-	-	2.0	3
Optical Fall Time	t _F	ns	-	-	2.0	3
Eye Diagram	ITU recommendation G.957 STM-1/OC-3					
Optical receiver Characteristics						
Receiver Sensitivity	S	dBm	-	-	-35	4
Overload Input Power	P _{in}	dBm	-8	-	-	4
Signal Detect-Deasserted	P _D	dBm	-46	-	-	
Signal Detect-Asserted	P _A	dBm	-	-	-37	
Signal Detect-Hysteresis	P _A – P _D	dB	0.5	-	6.0	
RTXM106, RTXM116						
Optical transmitter Characteristics						
Mean Launched power(avg.)	P _o	dBm	-5	-	0	2
Center wavelength	λ _c	nm	1263	1310	1360	
Spectrum width(RMS)	Δλ	nm	-	-	3	
Extinction ratio	E _R	dB	10	-	-	
Optical Rise Time	t _R	ns	-	-	2.0	3
Optical Fall Time	t _F	ns	-	-	2.0	3
Eye Diagram	ITU recommendation G.957 STM-1/OC-3					
Optical receiver Characteristics						
Receiver Sensitivity	S	dBm	-	-	-35	4
Overload Input Power	P _{in}	dBm	-8	-	-	4
Signal Detect-Deasserted	P _D	dBm	-46	-	-	
Signal Detect-Asserted	P _A	dBm	-	-	-37	
Signal Detect-Hysteresis	P _A – P _D	dB	0.5	-	6.0	

Note1: Terminated with 50Ω to V_{CC} -2V.

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

Note3: These are unfiltered 10~90% values.

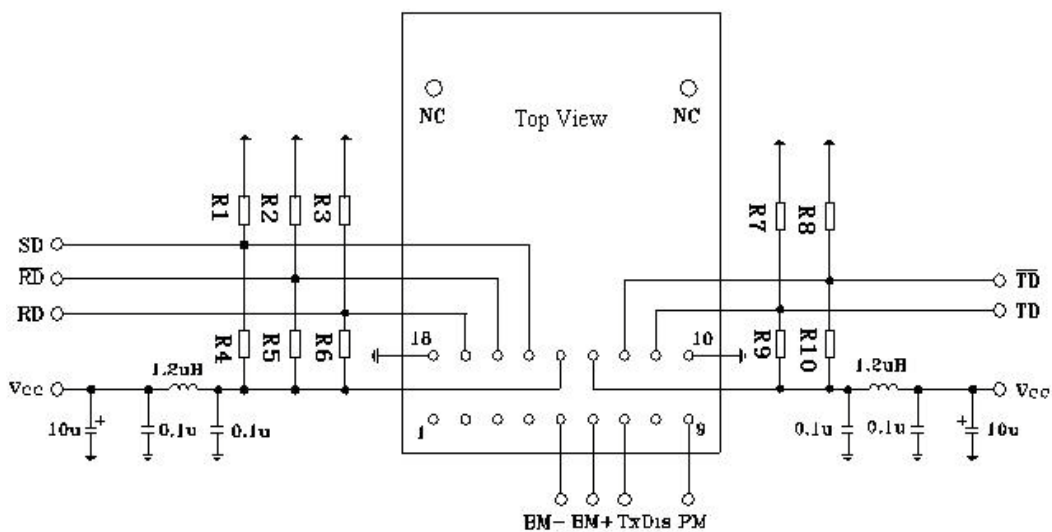
Note4: Sensitivity and overload for 223-1 PRBS and Bit Error Rate better than or equal to 10E-10.

RTXM105&105-5&106&115&115-5&116

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	V _{EE}		Negative power of transmitter section, normally grounded
11	TD	PECL	Data input of transmitter section
12	TDn	PECL	Reverse data input of transmitter section
13	V _{CC}		Positive power of transmitter section
14	V _{CC}		Positive power of receiver section
15	SD	PECL	Optical alarm of receiver section, High level when normal, low level when no light
16	RDn	PECL	Reverse data output of receiver section
17	RD	PECL	Data output of receiver section
18	V _{EE}		Negative power of receiver section, normally grounded

Typical application circuit

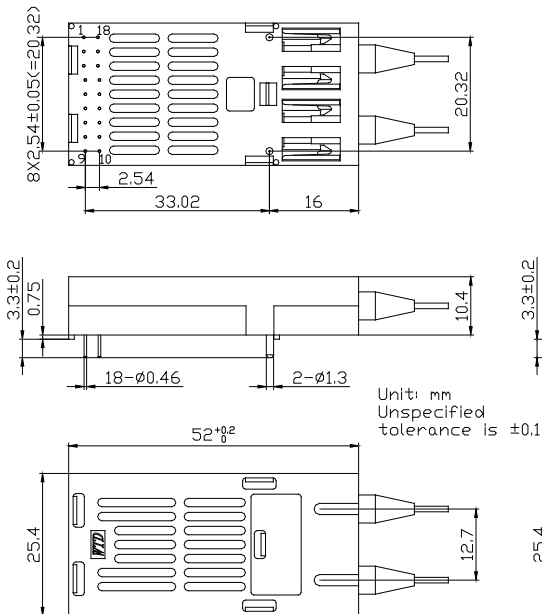


Note: R1=R2=R3=R7=R8=130Ω;R4=R5=R6=R9=R10=82Ω;

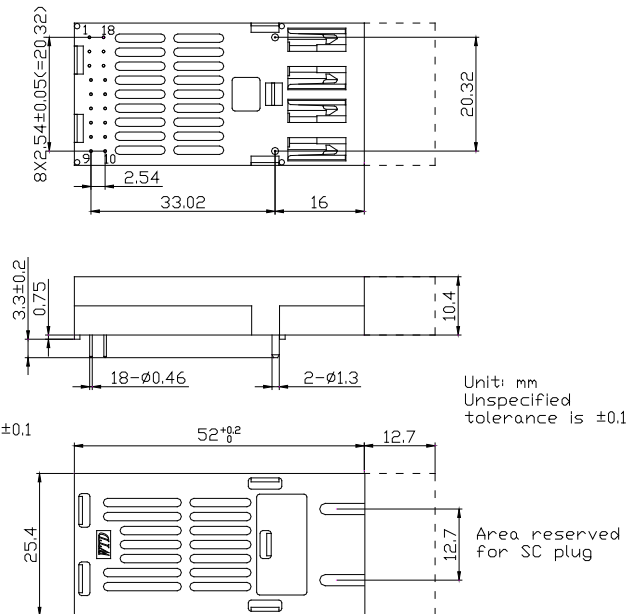
RTXM105&105-5&106&115&115-5&116

Package outline (unit: mm)

FC pigtail optical interface



Duplex SC receptacle optical interface



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

RTXM105&105-5&106&115&115-5&116

Update Information

From datasheet V3.0 to datasheet V3.1

- Revise the parameter "sensitivity" (in "Specifications" table, page2) from "-31dBm" or "-36dBm" to "-35dBm".
- Revise the parameter "Signal Detect-Asserted" (in "Specifications" table, page2) from "-31dBm" to "-36dBm".

Ordering Information

Part No.	Specifications									Application
	Package	Data rate	Laser	Optical Power	Detector	Sensitivity	Temp	Reach	Interface	code
RTXM105	2X9	155Mb/s	1310nm FP-LD	-15~-8dBm	PIN+TIA	-35dBm(max)	-20~70°C	15km	FC pigtail	SDH S-1.1
RTXM105-5*	2X9	155Mb/s	1550nm FP-LD	-15~-8dBm	PIN+TIA	-35dBm(max)	-20~70°C	15km	FC pigtail	SDH S-1.2
RTXM106	2X9	155Mb/s	1310nm FP-LD	-5~0dBm	PIN+TIA	-35dBm(max)	-20~70°C	40km	FC pigtail	SDH L-1.1
RTXM115	2X9	155Mb/s	1310nm FP-LD	-15~-8dBm	PIN+TIA	-35dBm(max)	-20~70°C	15km	Duplex SC	SDH S-1.1
RTXM115-5	2X9	155Mb/s	1550nm FP-LD	-15~-8dBm	PIN+TIA	-35dBm(max)	-20~70°C	15km	Duplex SC	SDH S-1.2
RTXM116	2X9	155Mb/s	1310nm FP-LD	-5~0dBm	PIN+TIA	-35dBm(max)	-20~70°C	40km	Duplex SC	SDH L-1.1

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

WTD 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 2009-12-01

Published by Wuhan Telecommunication Devices Co.,Ltd.

Copyright © WTD

All Rights Reserved.