



5.0V 1×9 155M Transceiver Module

RTXM145-2&146-2&155-2&156-2

Features

- *Duplex SC receptacle or FC pigtailed optical interface*
- *Standard 1x9 package*
- *Single +5.0V power supply*
- *-20 to 70°C operating temperature range*
- *PECL compatible data input/output interface*
- *PECL receiver signal-detected indication*

Application

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

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Standard

- *Compliant with ITU-T G.957*

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	VI	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 ($T_{op} = 0^{\circ}\text{C}$ to 70°C and $V_{cc} = 4.75\text{V}$ to 5.25V)

Parameter	Symbol	Unit	Min	Typ	Max	Note
Electrical Characteristics						
Supply Current	I_{cc}	mA	-	-	250	
Transmitter Differential Input Voltage	V_D	mV	500	-	1800	
Common-mode Input Voltage	$V_{com}-V_{cc}$	V	-1.4		-1.19	
PECL Output Voltage-Low	$V_{OL}-V_{cc}$	V	-1.8	-	-1.6	1
PECL Output Voltage-High	$V_{OH}-V_{cc}$	V	-1.0	-	-0.8	1
RTXM145-2,RTXM155-2,RTXM155B						
Optical transmitter Characteristics						
Center Wavelength Range	λ_c	nm	1261	1310	1360	
Launch Optical Power	P_o	dBm	-15	-	-8	2
Extinction Ratio	EX	dB	8.2	-	-	
Spectral Width	$\Delta\lambda$	nm	-	-	7.7	
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						

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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	-	-	-37.5	
Signal Detect-Hysteresis	P _A -P _D	dB	0.5	-	6	

RTXM146-2,RTXM156-2,RTXM156B

Optical transmitter Characteristics

Center Wavelength Range	λ_c	nm	1263	1310	1360	
Launch Optical Power	P _o	dBm	-5	-	0	2
Extinction Ratio	EX	dB	10	-	-	
Spectral Width	$\Delta\lambda$	nm	-	-	3.0	
Optical Rise Time	t _R	ns	-	-	2.0	
Optical Fall Time	t _F	ns	-	-	2.0	
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	-	-	-36.0	
Signal Detect-Hysteresis	P _A -P _D	dB	0.5	-	6	

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.

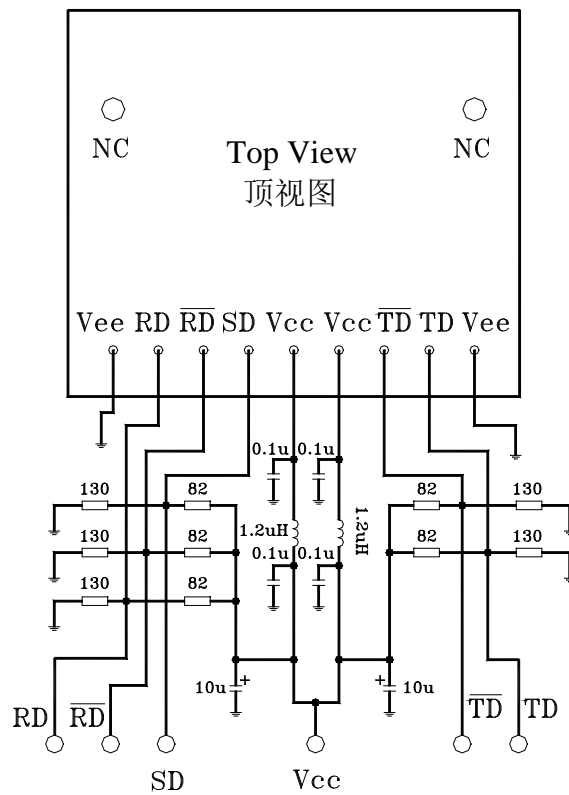
Note4: Sensitivity and overload for 2²³-1 PRBS and Bit Error Rate better than or equal to 10E-10.

Pin Description

Pin	Name	Level	Description
1	Vee		Negative power of receiver section, normally grounded
2	RD+	PECL	Data output of receiver section
3	RD-	PECL	Reverse data output of receiver section
4	SD	PECL	Optical alarm of receiver section, High level when normal, low level when no light
5	Vcc		Positive power of receiver section, normally +5.0V
6	Vcc		Positive power of transmitter section, normally +5.0V
7	TD-	PECL	Reverse data input of transmitter section
8	TD+	PECL	Data input of transmitter section
9	Vee		Negative power of transmitter section, normally grounded

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Typical application circuit



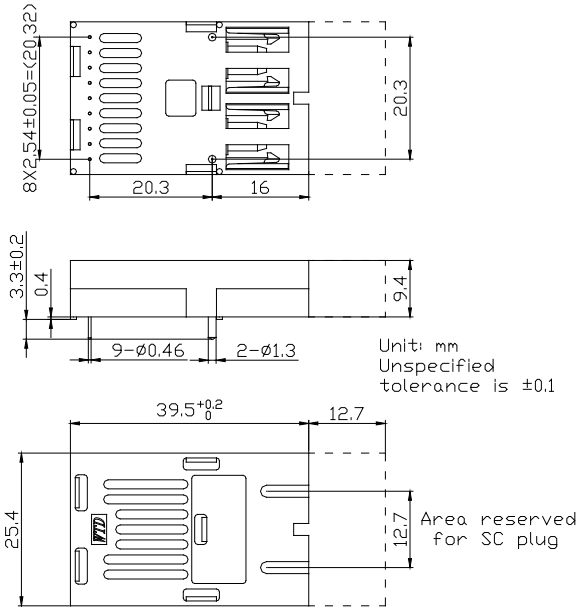
RTXM145-2&146-2&155-2&156-2

Package outline (unit: mm)

Duplex SC receptacle optical interface

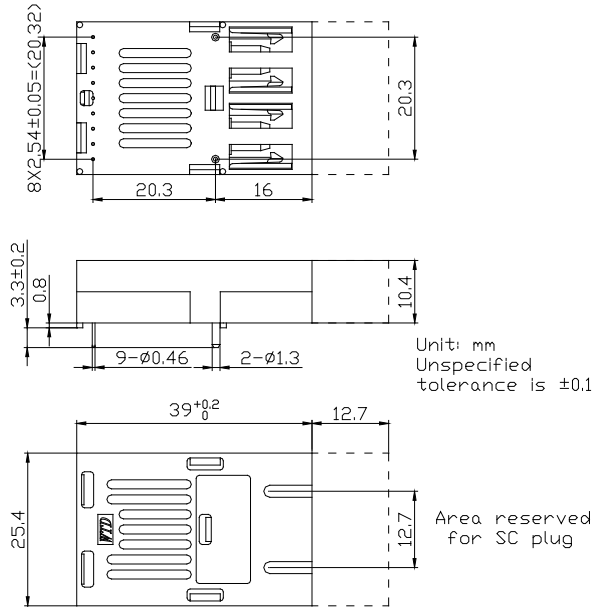
Thin type package

RTXM***B



Thick type package

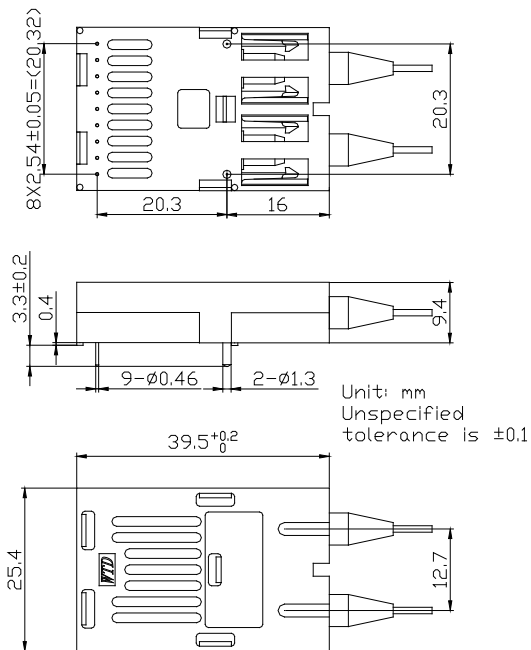
RTXM***



FC pigtailed optical interface

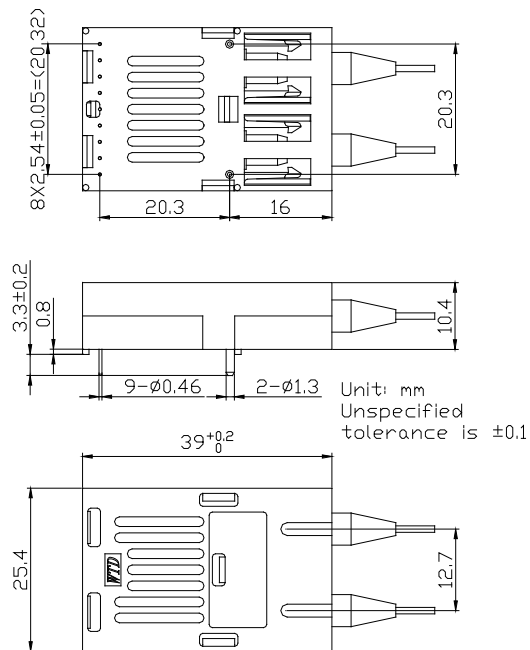
Thin type package

RTXM***B



Thick type package

RTXM***



RTXM145-2&146-2&155-2&156-2

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								Application	
	Package	Data rate	Laser	Optical Power	Detector	Sensitivity	Temp	Reach	Interface	code
RTXM145-2	1×9 thick type	155Mb/s	1310nmFP	-15~-8dBm	PIN+TIA	-35dBm(max)	-20~70°C	15km	FC Pigtail	SDH S-1.1
RTXM155-2	1×9 thick type	155Mb/s	1310nmFP	-15~-8dBm	PIN+TIA	-35dBm(max)	-20~70°C	15km	Duplex SC	SDH S-1.1
RTXM146-2	1×9 thick type	155Mb/s	1310nmFP	-5~0dBm	PIN+TIA	-35dBm(max)	-20~70°C	40km	FC Pigtail	SDH L-1.1
RTXM156-2	1×9 thick type	155Mb/s	1310nmFP	-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.

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