



3.3V 1×9 155M Transceiver Module ***RTXM125&126&&135&136 Series***

Features

- *Duplex SC receptacle or FC pigtailed optical interface*
- *Standard 1×9 package*
- *Single +3.3V power supply*
- *-20 to 70°C operating temperature*
- *range*
- *LVPECL compatible data input/output interface*
- *LVPECL receiver signal-detected indication*

Application

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

Standard

- *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	+4.5
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	3.14	3.3	3.47
Operating Data Rate	-	Mbps	-	155.52	-

Specifications ($T_{op}=-20^{\circ}C$ to $70^{\circ}C$ and $V_{CC}=3.13V$ to $3.47V$)

Parameter	Symbol	Unit	Min	Typ	Max	Note
Electrical Characteristics						
Supply Current	I_{cc}	mA	-	-	250	
Transmitter Differential Input Voltage	V_D	mV	300	-	1860	
Common-mode Input Voltage	$V_{com-VCC}$	V	-1.38	-	-0.47	
LVPECL Output Voltage-Low	V_{OL-VCC}	V	-1.810	-	-1.620	1
LVPECL Output Voltage-High	V_{OH-VCC}	V	-1.025	-	-0.880	1
RTXM125(B),RTXM135(B) 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	tR	ns	-	-	2.0	3
Optical Fall Time	tF	ns	-	-	2.0	3
Eye Diagram	ITU recommendation G.957 STM-1/OC-3					
Optical receiver Characteristics						
Sensitivity	S	dBm	-	-	-35	4
Overload Input Power	P_{in}	dBm	-8	-	-	
Signal Detect-Deasserted	P_D	dBm	-50.0	-	-	
Signal Detect-Asserted	P_A	dBm	-	-	-31.0	

Signal Detect-Hysteresis	P_A-P_D	dB	0.5	-	6
RTXM126(B),RTXM136 (B) 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	tR	ns	-	-	2.0 3
Optical Fall Time	tF	ns	-	-	2.0 3
Eye Diagram	ITU recommendation G.957 STM-1/OC-3				
Optical receiver Characteristics					
Sensitivity	S	dBm	-	-	-35 4
Overload Input Power	P_{in}	dBm	-8	-	-
Signal Detect-Deasserted	P_D	dBm	-50	-	-
Signal Detect-Asserted	P_A	dBm	-	-	-36
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.

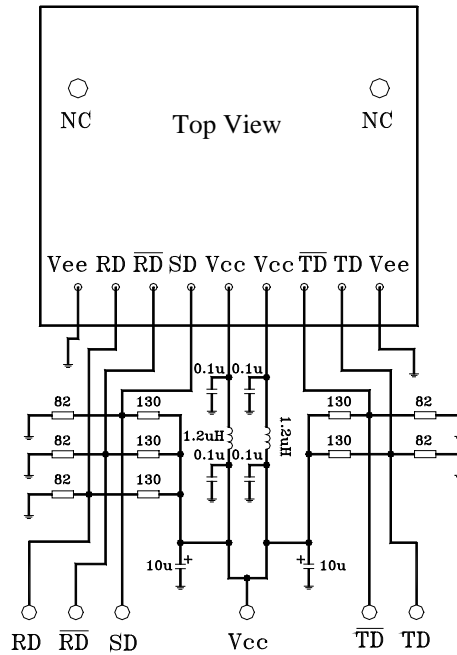
Note3: These are unfiltered 10~90% values.

Note4: Sensitivity and overload for $2^{23}-1$ 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+	LVPECL	Data output of receiver section
3	RD-	LVPECL	Reverse data output of receiver section
4	SD	LVPECL	Optical alarm of receiver section, High level when normal, low level when no light
5	Vcc		Positive power of receiver section, normally +3.3V
6	Vcc		Positive power of transmitter section, normally +3.3V
7	TD-	LVPECL	Reverse data input of transmitter section
8	TD+	LVPECL	Data input of transmitter section
9	Vee		Negative power of transmitter section, normally grounded

Typical application circuit



Package Outline (unit: mm)

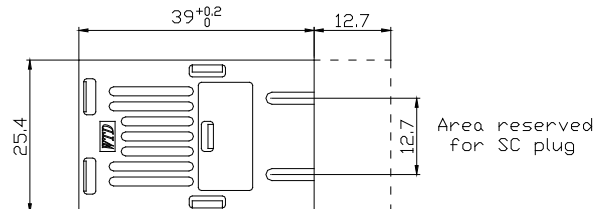
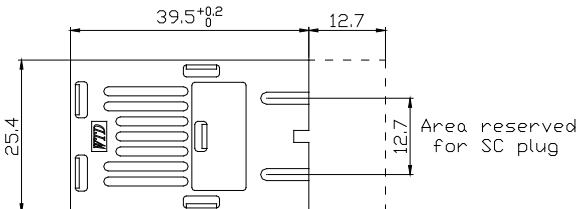
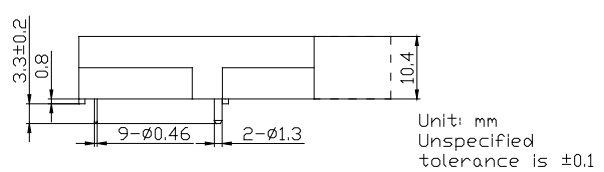
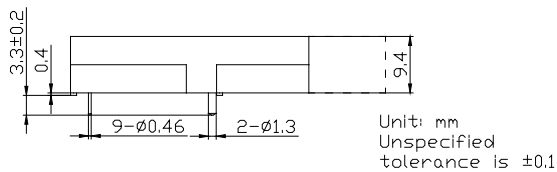
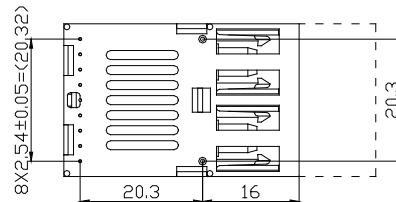
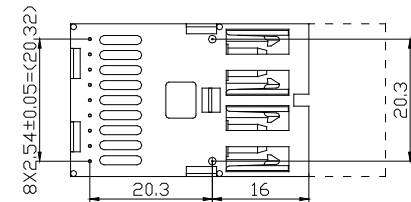
Duplex SC receptacle optical interface

Thin type package

RTXM***B

Thick type package

RTXM***



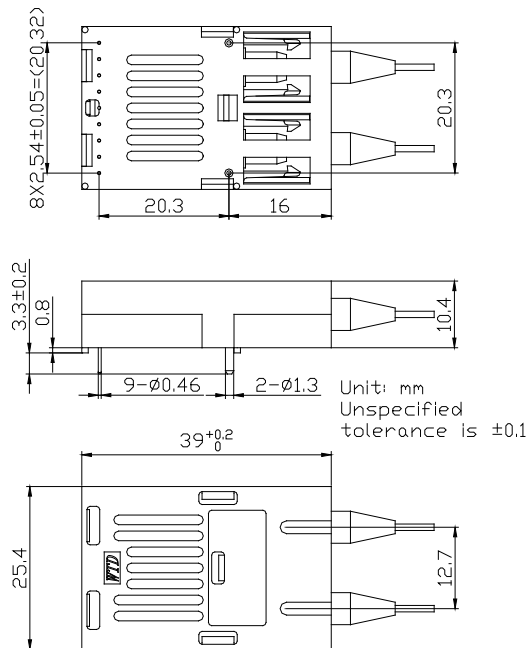
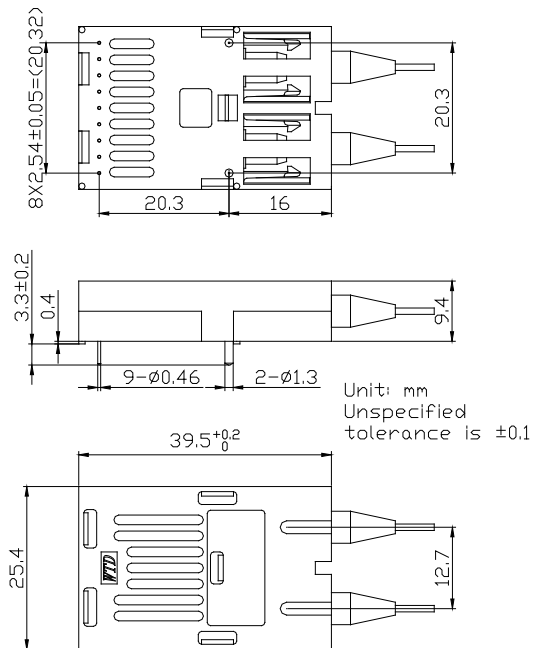
FC pigtailed optical interface

Thin type package

RTXM***B

Thick type package

RTXM***



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

Update Information

From datasheet V3.0 to datasheet V3.1

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

Ordering Information

Part No	Specification									Application
	Package	Data rate	Laser	Optical Power	Detector	Sensitivity	Temp	Reach	Interface	code
RTXM125	1×9 thick	155Mb/s	1310nmFP	-15~-8dBm	PIN+TIA	-35dBm(max)	-20~70°C	15km	FC Pigtail	SDH S-1.1
RTXM125B*	1×9 thin	155Mb/s	1310nmFP	-15~-8dBm	PIN+TIA	-35dBm(max)	-20~70°C	15km	FC Pigtail	SDH S-1.1
RTXM126	1×9 thick	155Mb/s	1310nmFP	-5~0dBm	PIN+TIA	-35dBm(max)	-20~70°C	40km	FC Pigtail	SDH L-1.1
RTXM126B	1×9 thin	155Mb/s	1310nmFP	-5~0dBm	PIN+TIA	-35dBm(max)	-20~70°C	40km	FC Pigtail	SDH L-1.1
RTXM135	1×9 thick	155Mb/s	1310nmFP	-15~-8dBm	PIN+TIA	-35dBm(max)	-20~70°C	15km	Duplex SC	SDH S-1.1
RTXM135B	1×9 thin	155Mb/s	1310nmFP	-15~-8dBm	PIN+TIA	-35dBm(max)	-20~70°C	15km	Duplex SC	SDH S-1.1
RTXM136	1×9 thick	155Mb/s	1310nmFP	-5~0dBm	PIN+TIA	-35dBm(max)	-20~70°C	40km	Duplex SC	SDH L-1.1
RTXM136B	1×9 thin	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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