5V 2×9 155Mbps Transceiver Module

RTXM106I&116I Series

Features

- *Duplex SC receptacle or FC pigtailed optical interface*
- *1310nm or 1550nm DFB laser*
- *Standard 2×9 package*
- *Single +5V power supply*
- *0 to 70°C operating temperature range*
- *Receiver optical input power monitor*
- *PECL compatible data input/output interface*
- *TTL transmitter laser shutdown*
- *PECL receiver signal-detected indication*

Application

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

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	0	-	70
Power Supply Voltage	V_{cc}	V	4.75	5.0	5.25
Operating Data Rate		Mbps	-	155.52	-

Specifications *(Top= 0 oC to 70oC and VCC=4.75V 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}-VCC	V	-1.4		-1.19	
PECL Output Voltage-Low	VOL-VCC	V	-1.8	-	-1.6	1
PECL Output Voltage-High	VOH-VCC	V	-1.0	-	-0.8	1
Bias current monitor voltage	B_M	mV		$10*I_b$	-	
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	
RTXM106I-D, RTXM116I-D Optical transmitter Characteristics						
Mean Launched power(avg.)	Po	dBm	-5	-	0	2
Center wavelength	λ_C	nm	1263	1310	1360	
Spectral Width (-20dB)	$\Delta\lambda$	nm	-	-	1	
Side Mode Suppression Ratio	SMSR	dB	30	-	-	
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	-50.0	-	-	
Signal Detect-Asserted	P_A	dBm	-	-	-36.0	
Signal Detect-Hysteresis	$P_A - P_D$	dB	0.5	-	6	
RTXM106I-DFB,RTXM116I-DFB Optical transmitter Characteristics						
Mean Launched power(avg.)	Po	dBm	-5	-	0	2
Center wavelength	λ_C	nm	1480	1550	1580	
Spectral Width (-20dB)	$\Delta\lambda$	nm	-	-	1	
Side Mode Suppression Ratio	SMSR	dB	30	-	-	
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	-50.0	-	-	
Signal Detect-Asserted	P_A	dBm	-	-	-36.0	
Signal Detect-Hysteresis	$P_A - P_D$	dB	0.5	-	6	

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

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

Note3: These are unfiltered 10~90% values.

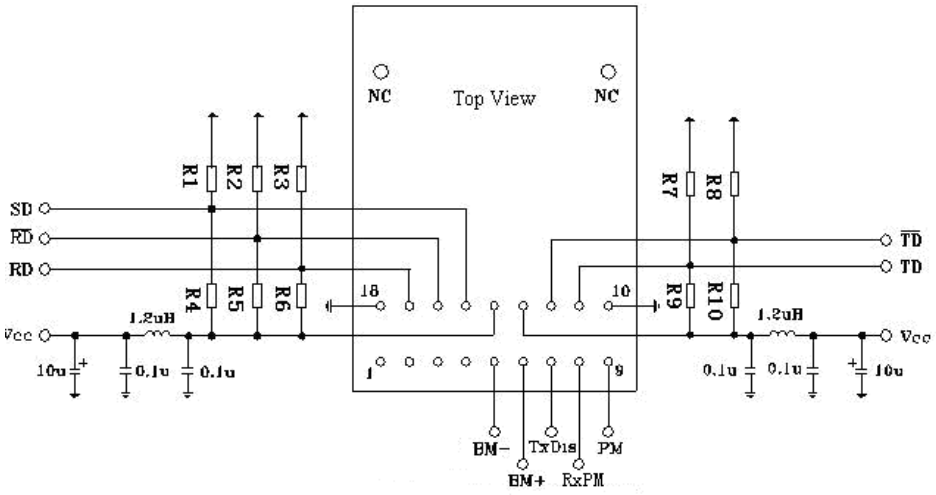
Note4: Sensitivity and overload for 2^{23}-1 PRBS and Bit Error Rate better than or equal to 10E-10.

Pin Description

Pin	Name	Level	Description
1	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	RxPM		Receiver optical input power monitor. It's proportional to the optical input. It outputs about 2.7V@-20dBm and 2.0V@-40dBm
9	PM		Back facet monitor voltage. Normally 1.2V

10	V_{EET}		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	V_{CCT}		Positive power of transmitter section
14	V_{CCR}		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	V_{EER}		Negative power of receiver section, normally grounded

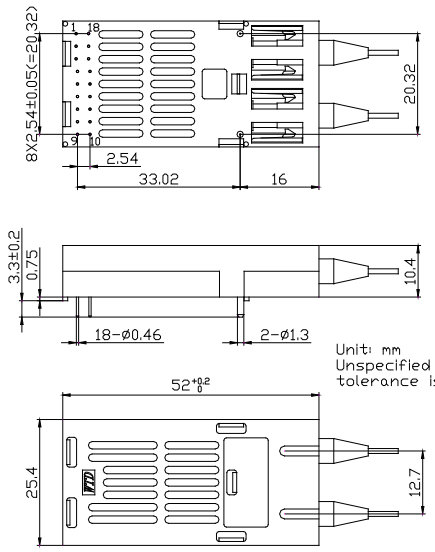
Typical Application Circuit



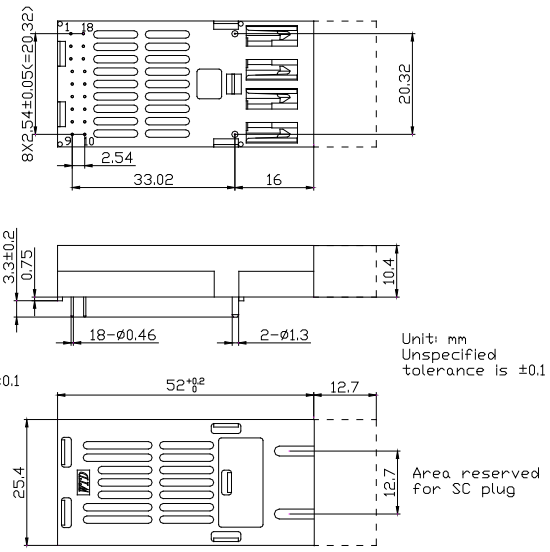
Note: R1=R2=R3=R7=R8=130Ω;R4=R5=R6=R9=R10=82Ω;

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

From datasheet V3.0 to datasheet V3.1

- Revise the parameter “sensitivity” (in “Specifications” table, page2) from “-36dBm” to “-35dBm”.

Ordering Information

Part No.	Specification									Application code
	Package	Data rate	Laser	Optical Power	Detector	Sensitivity	Temp	Reach	Interface	
RTXM106I-D*	2X9	155Mb/s	1310nm DFB-LD	-5~0dBm	PIN	-35dBm(max)	0~70°C	40km	FC pigtail	SDH L-1.1
RTXM106I-DFB*	2X9	155Mb/s	1550nm DFB-LD	-5~0dBm	PIN	-35dBm(max)	0~70°C	80km	FC pigtail	SDH L-1.2
RTXM116I-D*	2X9	155Mb/s	1310nm DFB-LD	-5~0dBm	PIN	-35dBm(max)	0~70°C	40km	Duplex SC	SDH L-1.1
RTXM116I-DFB	2X9	155Mb/s	1550nm DFB-LD	-5~0dBm	PIN	-35dBm(max)	0~70°C	80km	Duplex SC	SDH L-1.2

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

Edition 2009-12-1

Published by Wuhan Telecommunication Devices Co.,Ltd.