



## 5V 2×9 17~25 Mbps Transceiver Module

### ***RTXM106-405***

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#### **Features**

- *1510nm DFB Laser diode transmitter*
- *PIN photodiode receiver*
- *Duplex SC receptacle*
- *+5V Single power supply*
- *Data rate 16.896Mbps(NRZ)*
- *TTL logic interface*
- *TTL Loss of Optical Power Alarm*
- *With Rx Power Monitor, using Log Amplifier*
- *RoHS Compliant*

#### **Application**

- *DWDM supervisory channel*

## Absolute Maximum Ratings

Parameter	Symbol	Unit	Min	Max
Storage Temperature Range	$T_s$	°C	-40	+85
Relative Humidity	RH	%	5	85
Power Supply Voltage	$V_{cc}$	V	0	+6
Lead Solder Temperature	$T_w$	°C	-	380
Lead Solder Duration	$W_T$	s	-	5
Fiber Yield Strength	-	kgf	-	1
Fiber Bend Radius	-	mm	30	-

## Recommended Operating Conditions

Parameter	Symbol	Unit	Min	Typ	Max
Ambient Operating Temperature Range	$T_c$	°C	0	-	+70
Power Supply Voltage	$V_{cc}$	V	+4.75	+5.0	+5.25

## Specifications

*(tested under recommended operating conditions, unless otherwise noted)*

Parameter	Symbol	Min	Typ	Max	Units	Notes
Electrical Characteristics						
Operating Voltage	$V_{op}$	+4.75	+5	+5.25	V	-
Supply Current	$I_{cc}$	-	-	300	mA	-
Signal Low level	-	-	-	0.8	V	-
Signal High level	-	2.0	-	-	V	-
Bias current monitor voltage	$V_{BM+} - V_{BM-}$	-	$10 \times I_b$	-	mV	-
Transmitter disable voltage	-	2.0	-	$V_{cc}$	V	-
Transmitter enable voltage	-	0	-	0.8	V	-
Monitor Output Voltage	$V_{rpm}$	0.1	-	1.5	V	1, 2
Monitor Output Voltage Swing	$\Delta V_{rpm}$	-	-	0.02	V	3
Optical transmitter Characteristics						
Data Rate	-	-	16.896	-	Mbps	-
Launched Power(avg.)	$P_o$	-4	-2	0	dBm	-
Center Wavelength	$\lambda$	1500	1510	1520	nm	-
spectrum width	$\Delta\lambda$	-	-	1.0	nm	4
Extinction ratio	Ex	10	-	-	dB	-
Side mode Suppression Ratio	SMSR	30	-	-	dB	-

Optical receive Characteristics

Sensitivity	S	-	-48	-47	dBm	5
Overload	$P_{in}$	-3	-	-	dBm	
LOS	Optical decreased	$P_D$	-60	-	dBm	
	Optical increased	$P_A$	-	-50	dBm	
LOS hysteresis	$P_D - P_A$	-	2	-	dB	

**Note 1:** The monitor voltage output at PIN8 provides an indication of the input optical power of the receiver. The voltage output at pin 8 is:  $VRPM = 0.02P_i + 1.39$ . The unit of the VRPM is Volt.  $P_i$  is the input optical power of the receiver, and the unit is dBm.

**Note 2:** The input optical power is between -48dBm and -3dBm.

**Note 3:** The max monitor output voltage swing is 20mV when input optical power is constant at 0°C to 70°C circumstance temperature. The input optical power range is from -48dBm to -3dBm.

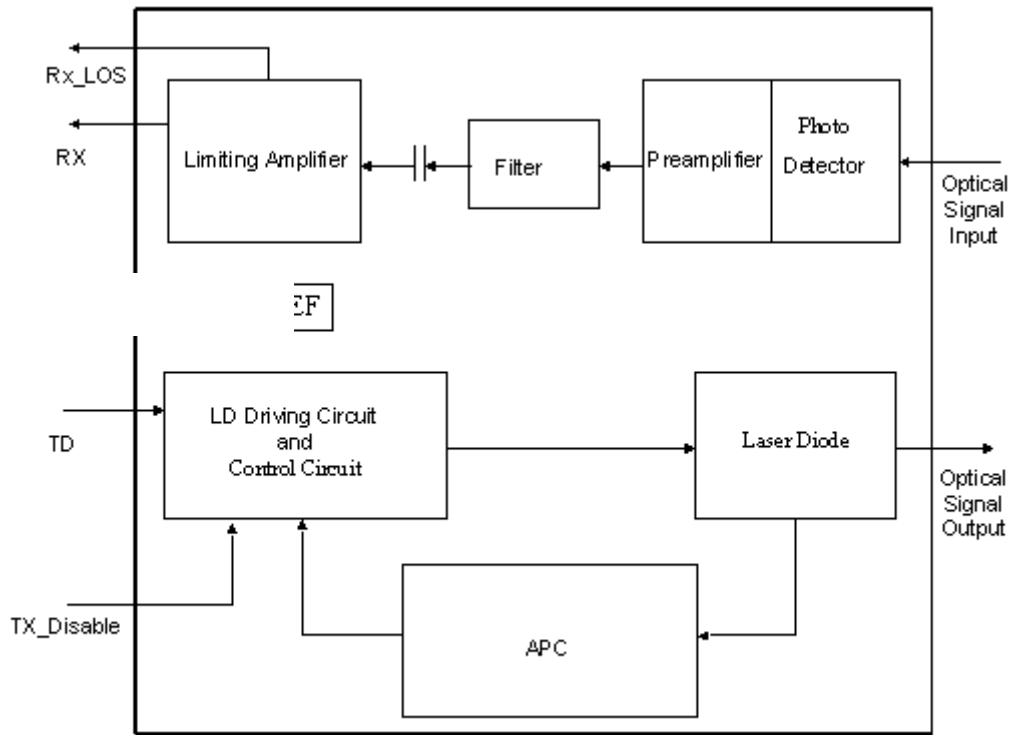
**Note 4:** The test condition is PRBS  $2^{15}-1$ , 16.896Mbps.

**Note 5:** The test condition is PRBS  $2^{15}-1$ , BER= $1 \times 10^{-10}$ , 16.896Mbps, 1510nm.

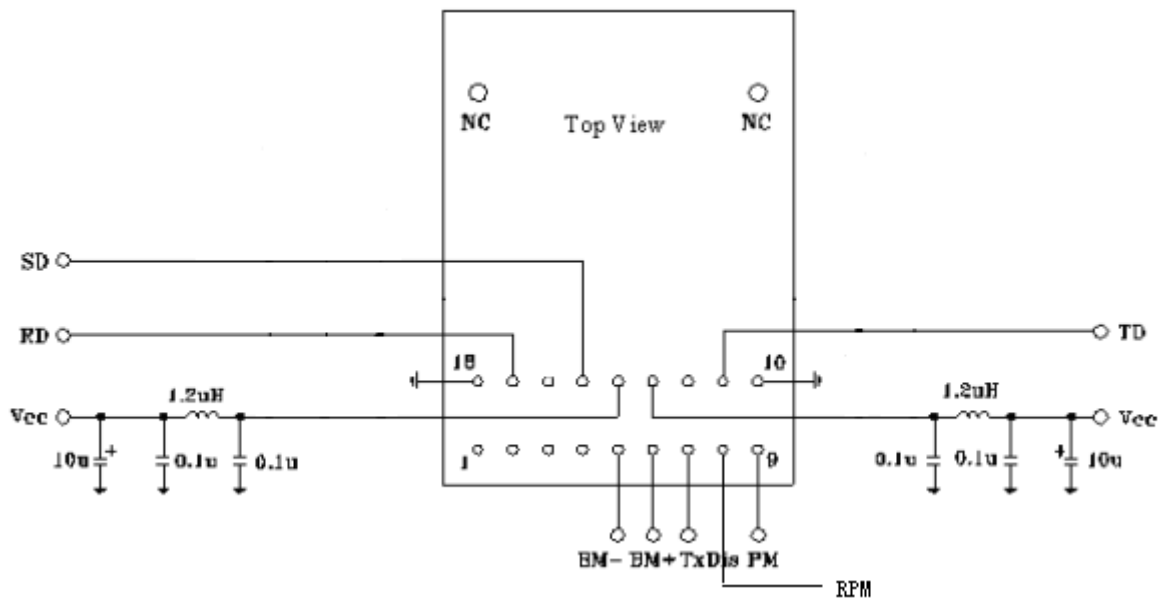
## Pin Description

Pin	Name	Level	Description
1,2,3,4	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	RxP Mon	-	Using Log Amplifier
9	TxP Mon	-	Transmitter back facet monitor voltage
10	Vee	-	Negative power of transmitter section, normally grounded
11	TD	TTL	Data input of transmitter section
12	NC	-	Pin not connected
13	Vcc	-	Positive power of transmitter section
14	Vcc	-	Positive power of receiver section
15	SD	TTL	Optical alarm of receiver section High level when normal, low level when no light
16	NC	-	Pin not connected
17	RD	TTL	Data output of receiver section
18	Vee	-	Negative power of receiver section, normally grounded

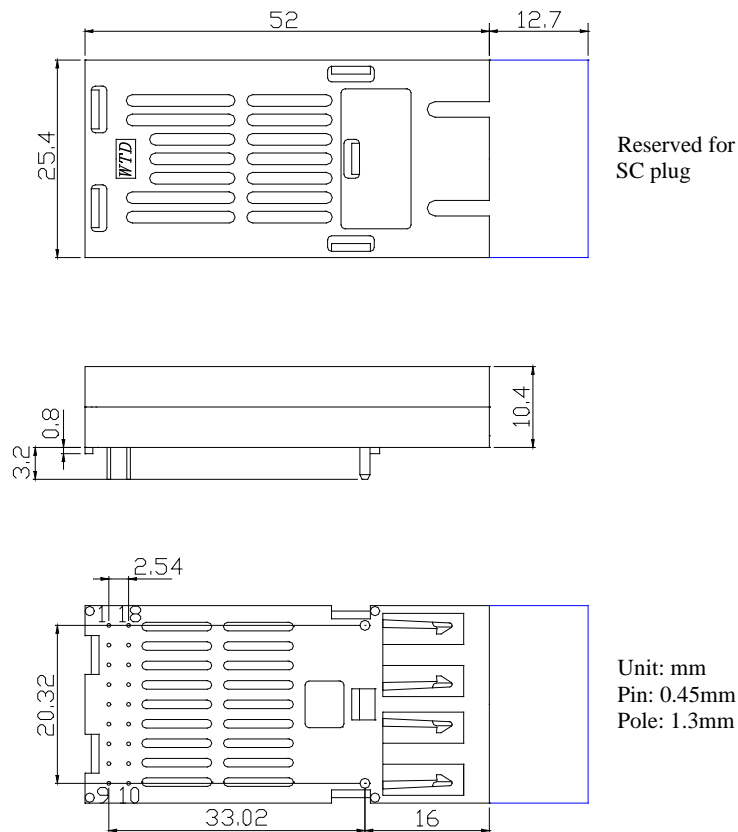
## Block diagram



## Typical application circuit



**Package outline** (unit: mm)



**Qualification tests**

Feature	Test Method	Performance
Electrostatic Discharge (ESD) to the Electrical Pins	MIL-STD-883D 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 FCC Class B CENELEC EN55022 VCCI Class 1	Compliant with standard
Immunity	IEC61000-4-3 Class 2	Typically show no measurable effect from a 10 V/m field swept from 80 to 1000MHz applied to the transceiver without a chassis enclosure.
Eye Safety		FDA CDRH 21-CFR 1040 Class 1  UL

## Ordering information

Part No.	Specifications									Application
	Package	Datarate	Tx	Pout	Rx	Sensitivity	Top	Reach	Others	
RTXM106-405	2×9	16.896Mbps	1510nmDFB	-4 ~ 0dBm	PIN	< -47dBm	0~70 °C	160km	RoHS	DWDM; supervisory

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