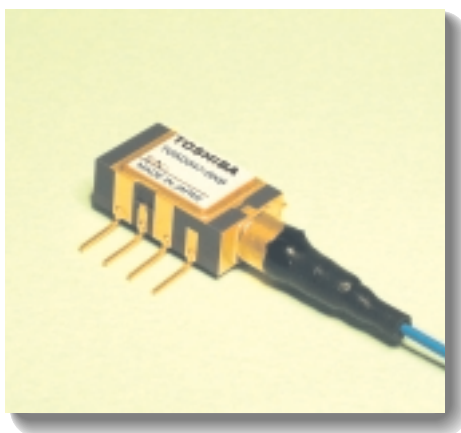


# Optical Communication Devices

## 2.5 Gb/s Optical Receiver

**TOAD347-RXB/TOAD347-RXC Series**



### **APPLICATION**

- SONET / SDH (OC-48 / STM-16) applications

### **FEATURES**

- APD and TIA
- TOAD347-RXB: Mini-DIL package without thermistor
- TOAD347-RXC: Mini-DIL package with thermistor
- Differential data output
- Single power supply voltage: +3.3 V to +5 V
- Sensitivity: -33 dBm (Typ. @ BER =  $1 \times 10^{-10}$ )
- Overload: -8 dBm (Typ. @ BER =  $1 \times 10^{-10}$ )
- Operating case temperature range: -40 to +85 °C
- Package size: 7.4 (W) x 13.2 (D) x 4.6 (H) mm

# TOAD347-RXB/TOAD347-RXC Series

## ABSOLUTE MAXIMUM RATINGS (Tc = 25 °C)

Item	Symbol	Rating	Unit
Storage temperature	Tstg	−40 to +85	°C
Operating case temperature	Tc	−40 to +85	°C
APD forward current	If	1	mA
APD reverse current	Ir	500	μA
Positive supply voltage	Vdd	0 to +6	V
Soldering temperature / time	Tsol / tsol	260 / 5	°C / s

## ELECTRICAL AND OPTICAL CHARACTERISTICS (Tc = −40 to +85 °C, Vdd = +3.3 V to +5 V)

Item	Min	Typ.	Max	Unit	Note
Positive supply current	—	50	—	mA	
Breakdown voltage (Id = 10 μA, Tc = 25°C)	35	—	85	V	
Dark current (M = 12, Tc = 25°C)	—	40	100	nA	
Sensitivity	—	−33	—	dBm	(1)
Overload	—	−8	—	dBm	(1)
Bandwidth (−3 dB)	1.4	2.0	—	GHz	(2)
Logic sense					(3)
Skew, DATA OUT (+) to DATA OUT (−)	−20	—	20	ps	
Optical return loss	—	—	−27	dB	(4)
Output signal amplitude	15	—	500	mVpp	(5)
Electrical return loss	10	—	—	dB	(6)
	9	—	—	dB	(7)
Thermistor resistance (TOAD347-RXC, Tc = 25°C)	9.5	10.0	10.5	kΩ	(8)

Notes:

(1) 2.48832 Gb/s, NRZ, PRBS 2<sup>31</sup>−1, BER = 1 × 10<sup>−10</sup>, λ = 1.55 μm

(2) Pf = −30 dBm, M = 12

(3) DATA OUT (+), Light ON = Vout Logic HIGH  
DATA OUT (−), Light ON = Vout Logic LOW

(4) λ = 1.3/1.55 μm

(5) −10 dBm > Pf > −30 dBm

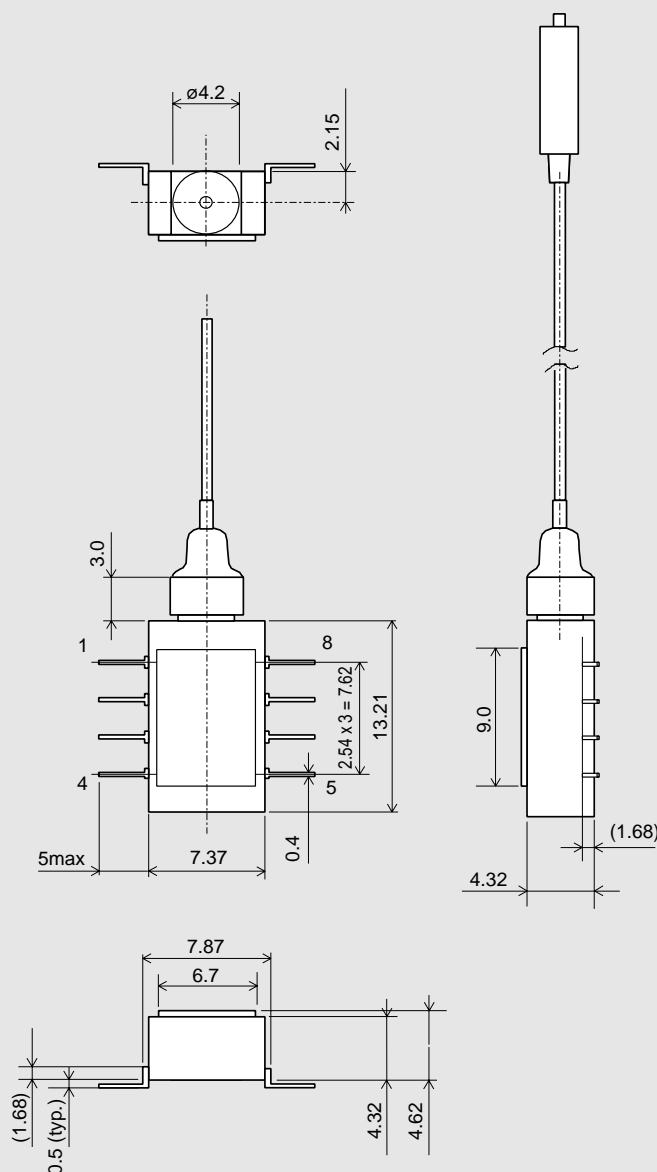
(6) 0.13 GHz < F < 1.75 GHz

(7) 1.75 GHz < F < 2.5 GHz

(8) 3 kΩ (typ.) available

## DIMENSIONAL OUTLINE AND PIN ASSIGNMENT

(Unit: mm)



**Pin Assignment (TOAD347-RXB)**

Pin	Function	Pin	Function
1	Vapd	5	GND
2	GND	6	DATA OUT (-)
3	DATA OUT (+)	7	GND
4	GND	8	Vdd (+3.3 V to +5 V)

**Pin Assignment (TOAD347-RXC)**

Pin	Function	Pin	Function
1	Vapd	5	Thermistor
2	GND	6	DATA OUT (-)
3	DATA OUT (+)	7	GND
4	GND	8	Vdd (+3.3 V to +5 V)

## PRECAUTIONS

- Power supply: Transient electric spike may cause a damage to the photodiode or IC chips.  
A surge-free power supply and a slow starter circuit should be used.  
To avoid causing an electrical surge, pins should not be connected or disconnected on the test fixture before turning the power off.
- The product should be grounded for obtaining the performance.

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