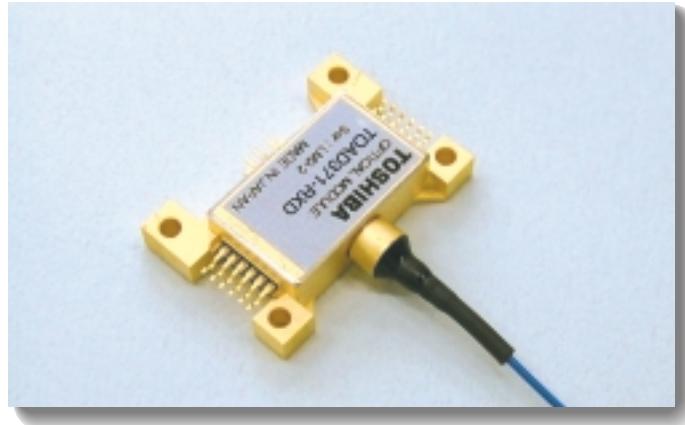
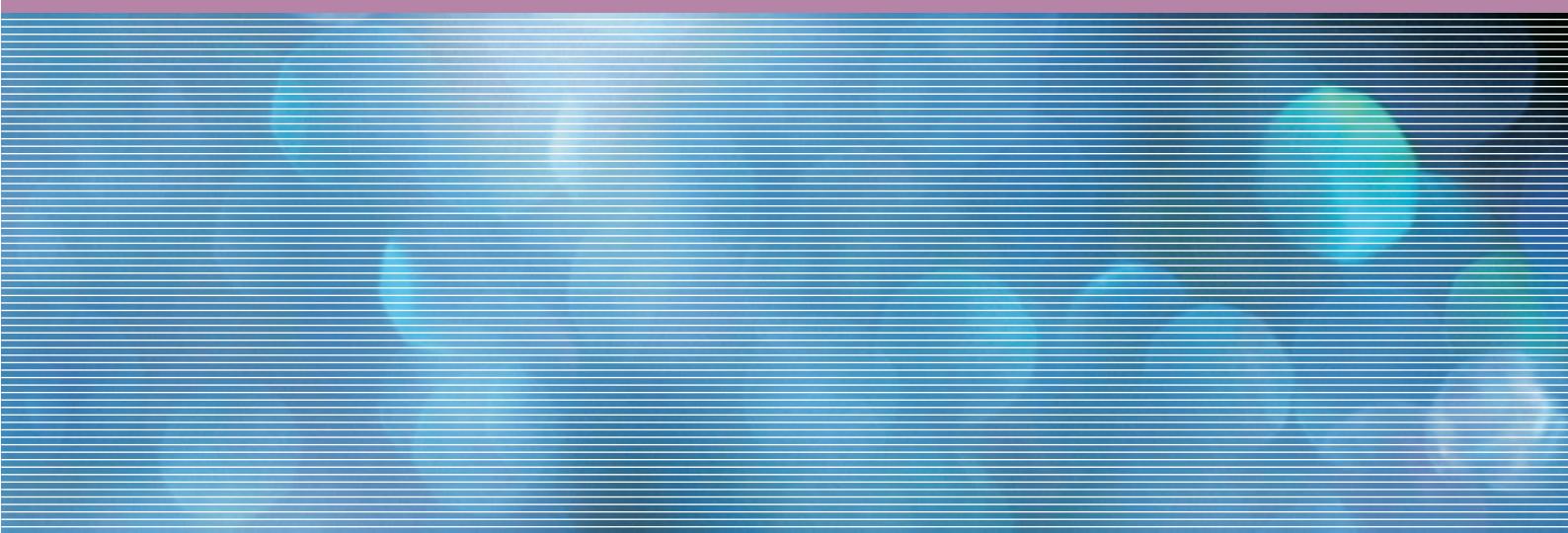


# Optical Communication Devices

## 10 Gb/s Optical Receiver

### TOAD371-RXD Series



#### **APPLICATION**

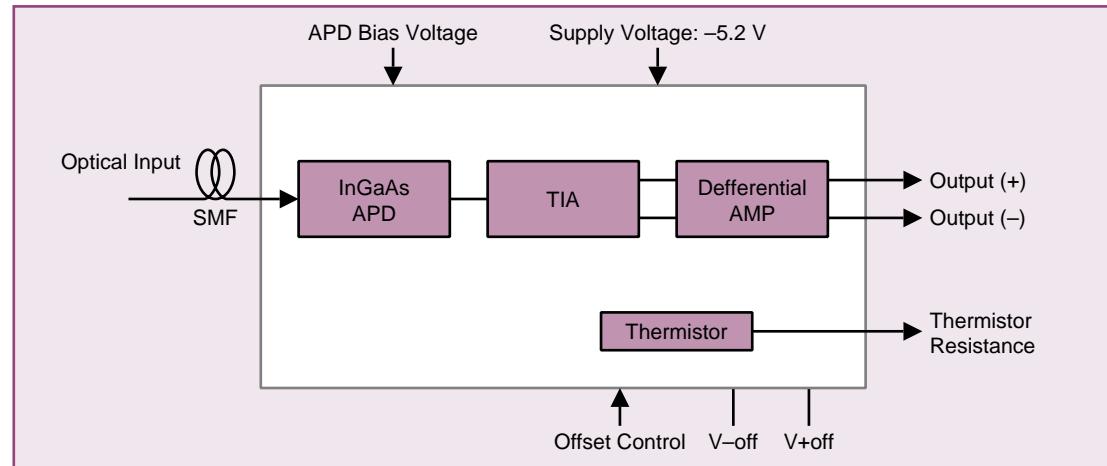
- SONET / SDH (OC-192 / STM-64) applications

#### **FEATURES**

- InGaAs APD and TIA
- Differential output
- Sensitivity:  $-24$  dBm (typ. @ BER =  $1 \times 10^{-10}$ , PRBS  $2^{31}-1$ )
- Overload:  $-7$  dBm (typ. @ BER =  $1 \times 10^{-10}$ , PRBS  $2^{31}-1$ )
- Transimpedance:  $1000 \Omega$  (typ.)
- Wavelength:  $1.3/1.55 \mu\text{m}$
- Optical return loss:  $27$  dB (min)

# TOAD371-RXD Series

## BLOCK DIAGRAM



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

Item	Symbol	Rating	Unit
Storage temperature	Tstg	-40 to +85	°C
Operating case temperature	Tc	0 to +70	°C
APD reverse current	Ir	1	mA
APD reverse voltage	V <sub>R</sub>	0 to V <sub>B</sub>	V
Supply voltage	V <sub>ss</sub>	-6 to 0	V
Soldering temperature / time	Tsol / tsol	260 / 5	°C / s

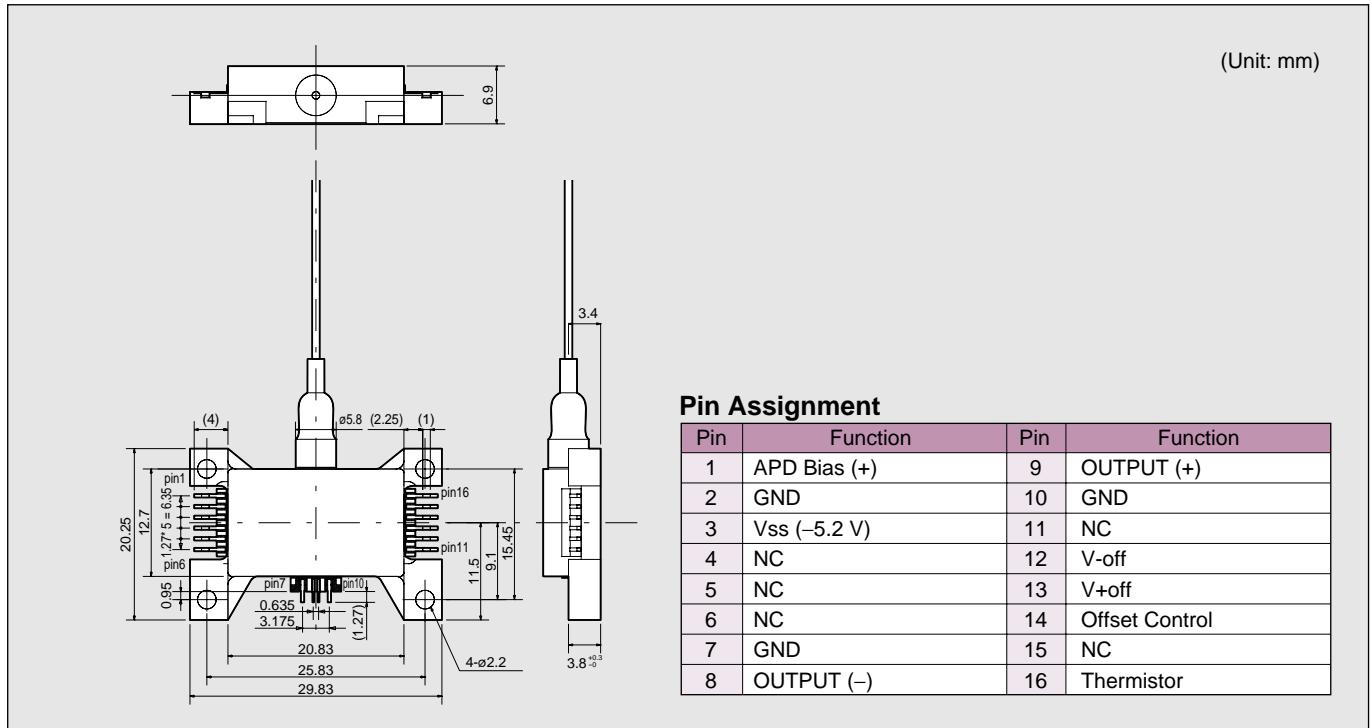
## ELECTRICAL AND OPTICAL CHARACTERISTICS (λ = 1.55 μm, V<sub>ss</sub> = -5.2 V, Tc = 25 °C)

Item	Symbol	Condition	Min	Typ.	Max	Unit
Responsivity	R <sub>1.55</sub>	M = 1	0.65	0.70	—	A/W
APD breakdown voltage	V <sub>B</sub>	I <sub>d</sub> = 10 μA	20	—	60	V
Temperature coefficient of V <sub>B</sub>	γ	Note 1	—	0.05	—	V/°C
Transimpedance (AC)	Z <sub>t</sub>	RL = 50 Ω, f = 200 MHz	700	1000	—	Ω
Cutoff frequency	f <sub>c</sub>	-3 dB from 500 MHz RL = 50 Ω	—	8.0	—	GHz
Sensitivity	P <sub>s</sub>	Note 2	—	-24	-23	dBm
Overload	P <sub>o</sub>	Note 2	-8	-7	—	dBm
Optical return loss	ORL	—	27	—	—	dB
Power supply current	I <sub>ss</sub>	—	—	110	—	mA
Power supply voltage	V <sub>ss</sub>	—	-5.46	-5.2	-4.94	V
Thermistor resistance	R <sub>th</sub>	—	9.5	10	10.5	kΩ
Thermistor B constant	B	—	3800	3900	4000	K

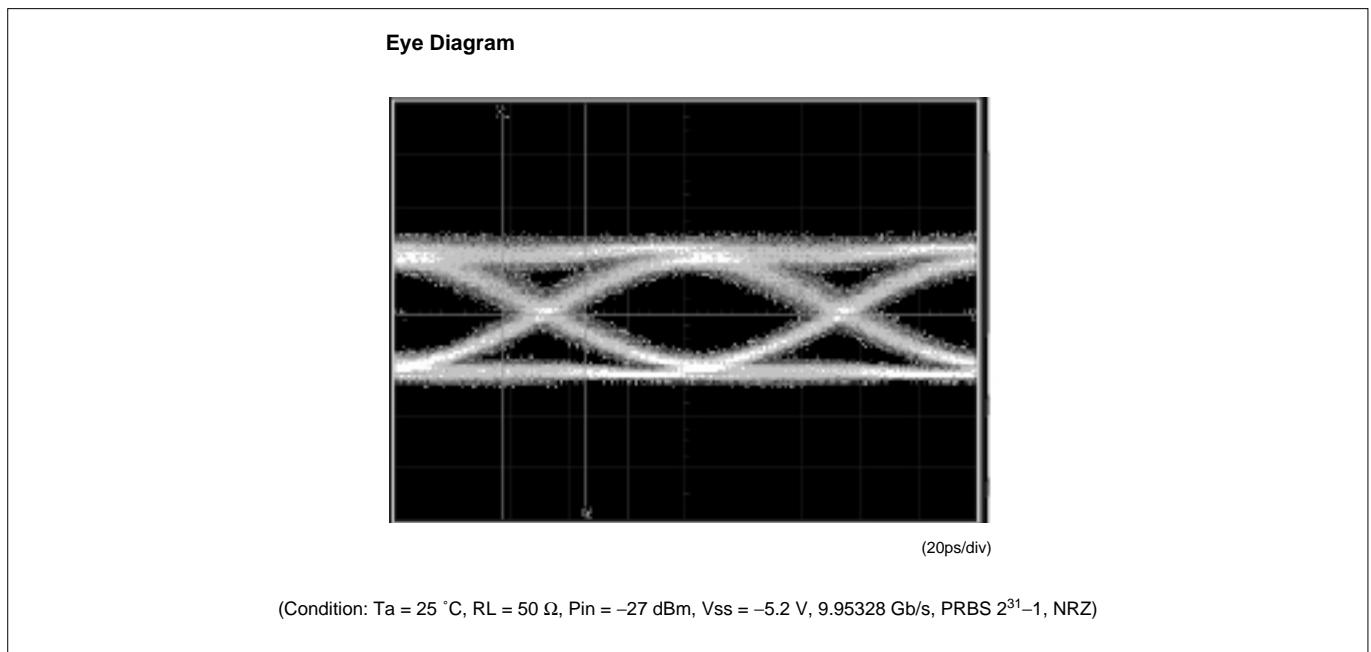
Note 1:  $\gamma = dV_B / dT_c$

Note 2: 9.95328 Gb/s, NRZ, PRBS 2<sup>31</sup>-1, BER = 1 × 10<sup>-10</sup>

## **DIMENSIONAL OUTLINE AND PIN ASSIGNMENT**



## MAJOR CHARACTERISTICS



## PRECAUTIONS

- (a) 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 power off .
  - (b) The product should be grounded for obtaininng the performance.

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