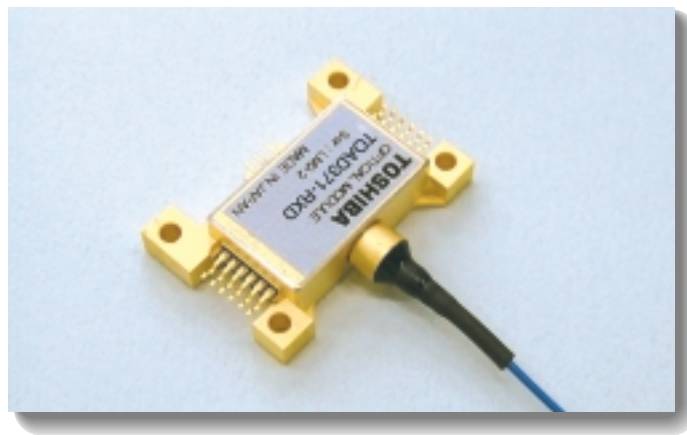


Optical Communication Devices

10 Gb/s Optical Receiver

TOAD371-RXD Series



APPLICATION

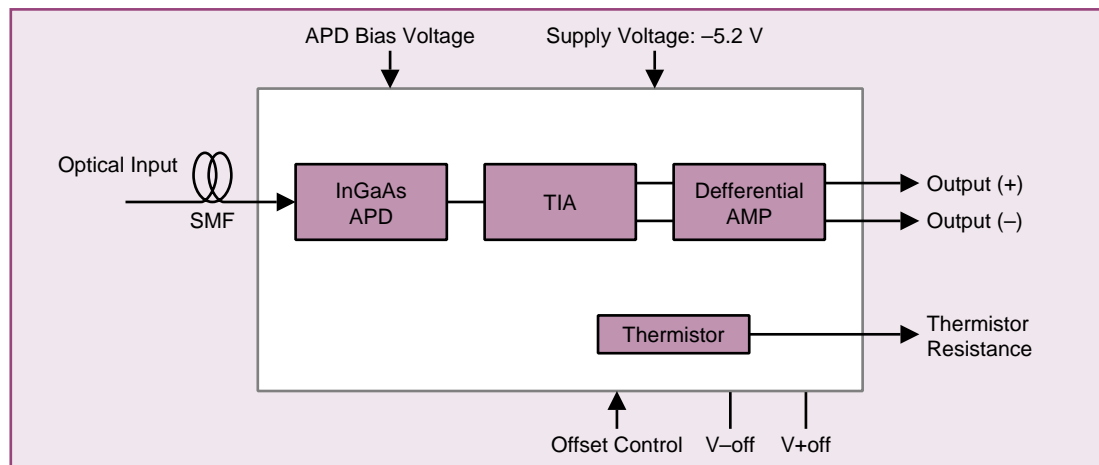
- SONET / SDH (OC-192 / STM-64) applications

FEATURES

- InGaAs APD and TIA
- Differential output
- Sensitivity: -24 dBm (typ. @ BER = 1×10^{-10} , PRBS $2^{31}-1$)
- Overload: -7 dBm (typ. @ BER = 1×10^{-10} , PRBS $2^{31}-1$)
- Transimpedance: 1000 Ω (typ.)
- Wavelength: 1.3/1.55 μm
- 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	I _r	1	mA
APD reverse voltage	V _R	0 to V _B	V
Supply voltage	V _{ss}	-6 to 0	V
Soldering temperature / time	Tsol / tsol	260 / 5	°C / s

ELECTRICAL AND OPTICAL CHARACTERISTICS

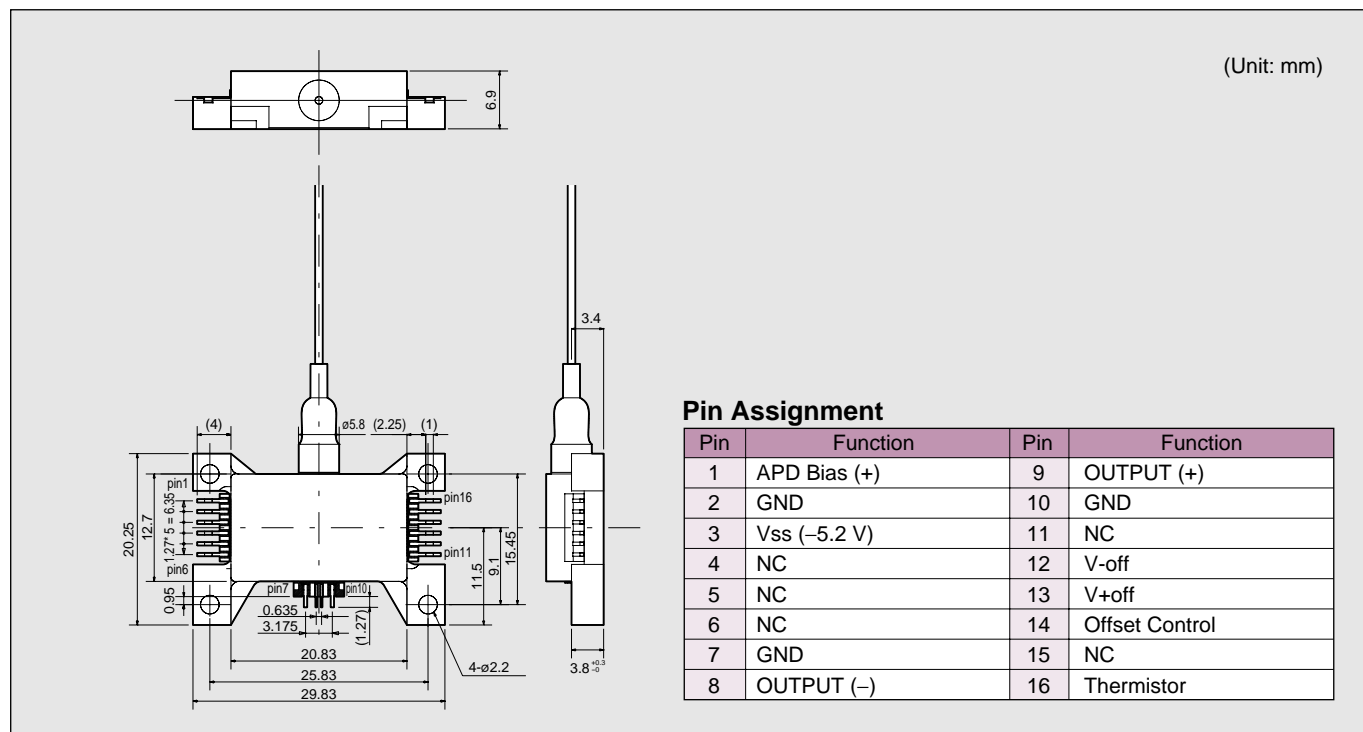
($\lambda = 1.55 \mu\text{m}$, V_{ss} = -5.2 V, T_c = 25 °C)

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

Note 1: $\gamma = dV_B / dT_C$

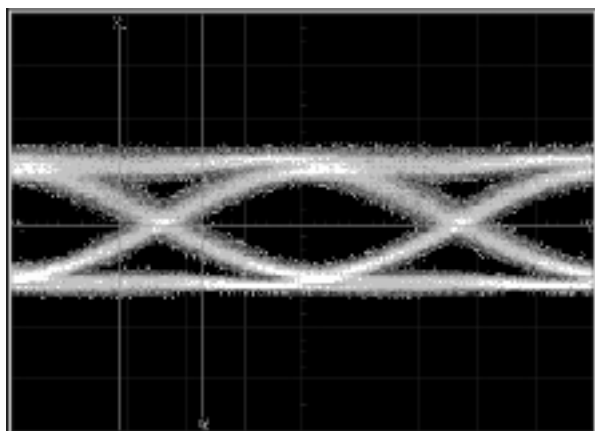
Note 2: 9.95328 Gb/s, NRZ, PRBS 2³¹-1, BER = 1 x 10⁻¹⁰

DIMENSIONAL OUTLINE AND PIN ASSIGNMENT



MAJOR CHARACTERISTICS

Eye Diagram



(20ps/div)

(Condition: Ta = 25 °C, RL = 50 Ω, Pin = -27 dBm, Vss = -5.2 V, 9.95328 Gb/s, PRBS 2³¹-1, NRZ)

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 power off .
- The product should be grounded for obtaining the performance.

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In Touch with Tomorrow
TOSHIBA

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