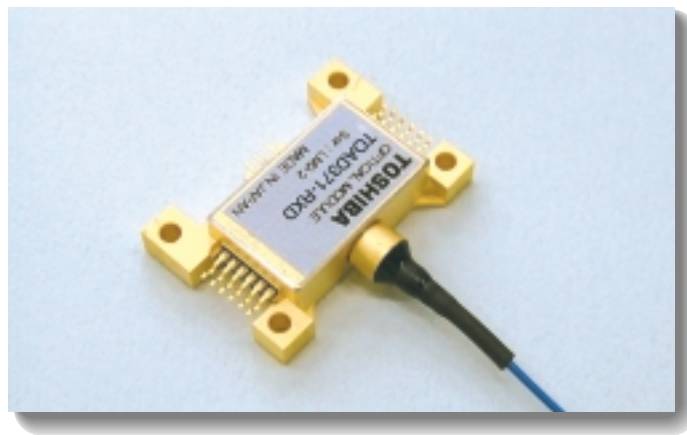


Optical Communication Devices

10 Gb/s Optical Receiver

TOAD371-RXD Series



APPLICATION

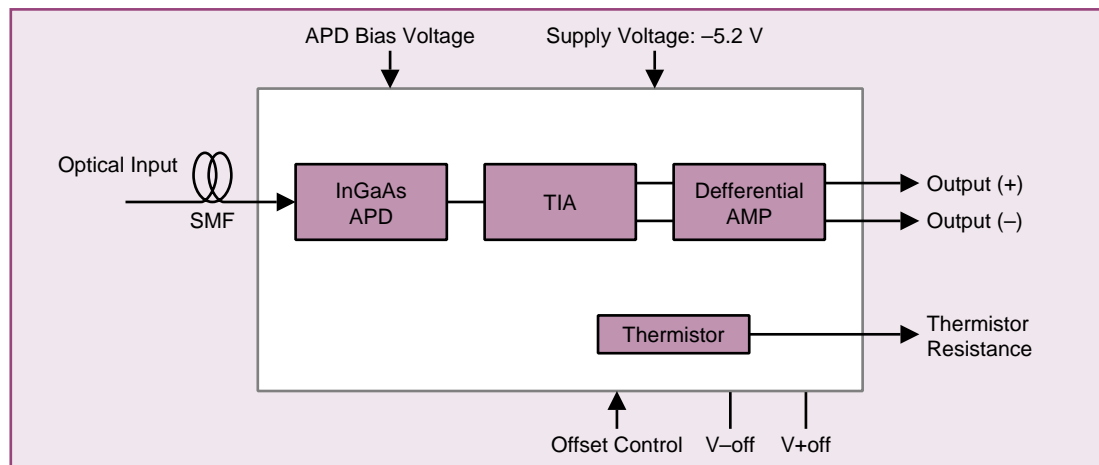
- SONET / SDH (OC-192 / STM-64) applications

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

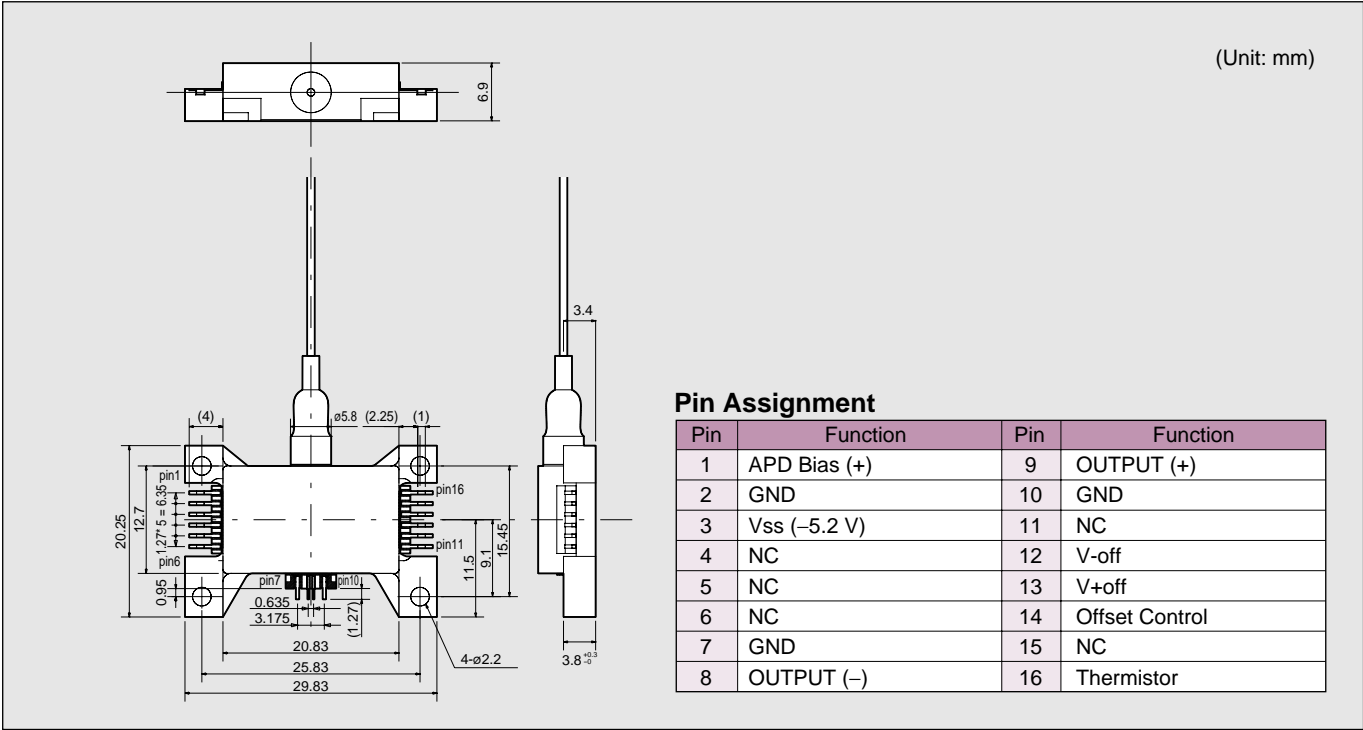
(λ = 1.55 μm, V_{ss} = -5.2 V, Tc = 25 °C)

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	RL = 50 Ω, f = 200 MHz	700	1000	—	Ω
Cutoff frequency	f _c	-3 dB from 500 MHz RL = 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	kΩ
Thermistor B constant	B	—	3800	3900	4000	K

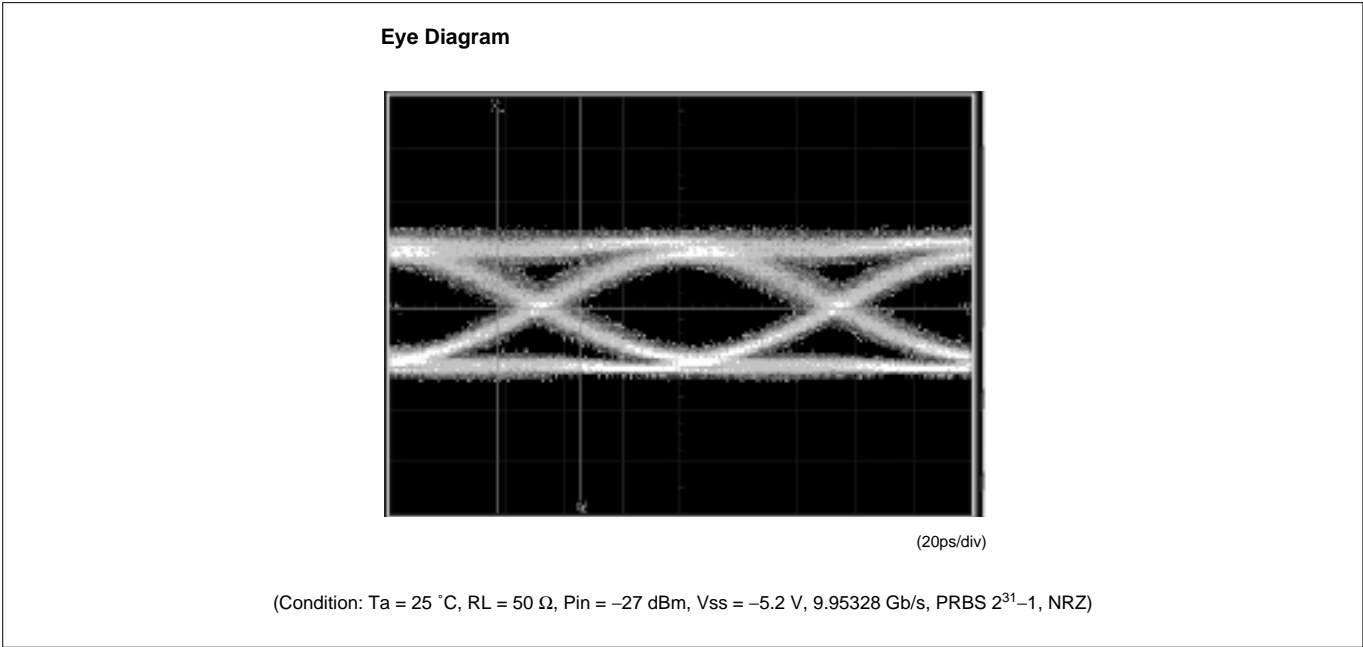
Note 1: γ = dV_B / dTc

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

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 obtaining the performance.

OVERSEAS SUBSIDIARIES AND AFFILIATES

010126(X)

Toshiba America Electronic Components, Inc.

Headquarters-Irvine, CA
9775 Toledo Way, Irvine, CA 92618, U.S.A.
Tel: (949)455-2000 Fax: (949)859-3963

Deerfield, IL(Chicago)
One Pkwy., North, Suite 500, Deerfield,
IL 60015-2547, U.S.A.
Tel: (847)945-1500 Fax: (847)945-1044

Edison, NJ
2035 Lincoln Hwy. Ste. #3000, Edison
NJ 08817, U.S.A.
Tel: (732)248-8070 Fax: (732)248-8030

Raleigh, NC
5511 Capitol Center Dr., #114,
Raleigh, NC 27606, U.S.A.
Tel: (919)859-2800 Fax: (919)859-2898

Richardson, TX(Dallas)
777 East Campbell Rd., Suite 650, Richardson,
TX 75081, U.S.A.
Tel: (972)480-0470 Fax: (972)235-4114

Wakefield, MA(Boston)
401 Edgewater Place, Suite #360, Wakefield,
MA 01880-6229, U.S.A.
Tel: (781)224-0074 Fax: (781)224-1095

Toshiba Electronics Europe GmbH

Düsseldorf Head Office
Hansaallee 181, D-40549 Düsseldorf
Germany
Tel: (0211)5296-0 Fax: (0211)5296-400

Toshiba Electronics Italiana S.R.L.
Centro Direzionale Colleoni
Palazzo Perseo Ingr. 2-Piano 6,
Via Paracelso n.12,
1-20041 Agrate Brianza Milan, Italy
Tel: (039)68701 Fax: (039)6870205

Toshiba Electronics(UK) Limited
Riverside Way, Camberley Surrey,
GU15 3YA, U.K.
Tel: (01276)69-4600 Fax: (01276)69-4800

Toshiba Electronics Scandinavia AB
Gustavslundsvägen 12, 2nd Floor
S-161 15 Bromma, Sweden
Tel: (08)704-0900 Fax: (08)80-8459

Toshiba Electronics Asia, Ltd.

Hong Kong Head Office
Level 11, Top Glory Insurance Building, Grand Century
Place, No.193, Prince Edward Road West,
Mong Kok, Kowloon, Hong Kong
Tel: 2375-6111 Fax: 2375-0969

Beijing Office
Rm 714, Beijing Fortune Building,
No.5 Dong San Huan Bei-Lu, Chao Yang District,
Beijing, 100004, China
Tel: (010)6590-8795 Fax: (010)6590-8791

Toshiba Electronics Korea Corporation

Seoul Head Office
14/F, KEC B/D, 257-7 Yangjae-Dong,
Seocho-ku, Seoul, Korea
Tel: (02)589-4334 Fax: (02)589-4302

Toshiba Technology Development (Shanghai) Co., Ltd.

23F, Shanghai Senmao International Building, 101
Yin Cheng East Road, Pudong New Area, Shanghai,
200120, China
Tel: (021)6841-0666 Fax: (021)6841-5002

Toshiba Electronics Taiwan Corporation

Taipei Head Office
17F, Union Enterprise Plaza Bldg. 109
Min Sheng East Rd., Section 3, 0446 Taipei,
Taiwan
Tel: (02)514-9988 Fax: (02)514-7892

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In Touch with Tomorrow
TOSHIBA

TOSHIBA CORPORATION

Electronic Devices Sales & Marketing Division

1-1, Shibaura 1-chome, Minato-ku, Tokyo, 105-8001, Japan
Tel: +81-3-3457-3405 Fax: +81-3-5444-9431