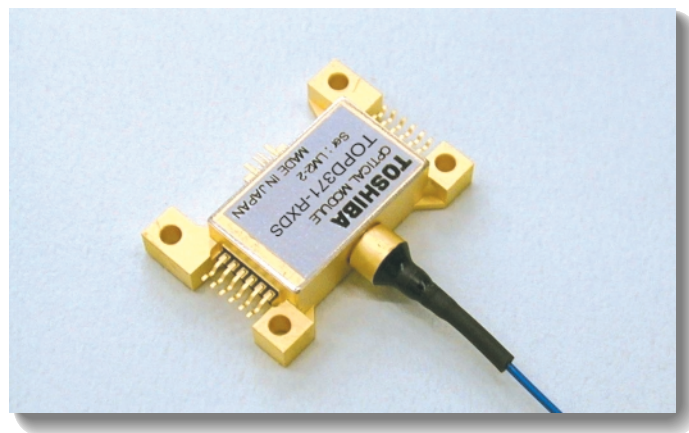


Optical Communication Devices

10 Gb/s Optical Receiver

TOPD371-RXDS Series



APPLICATION

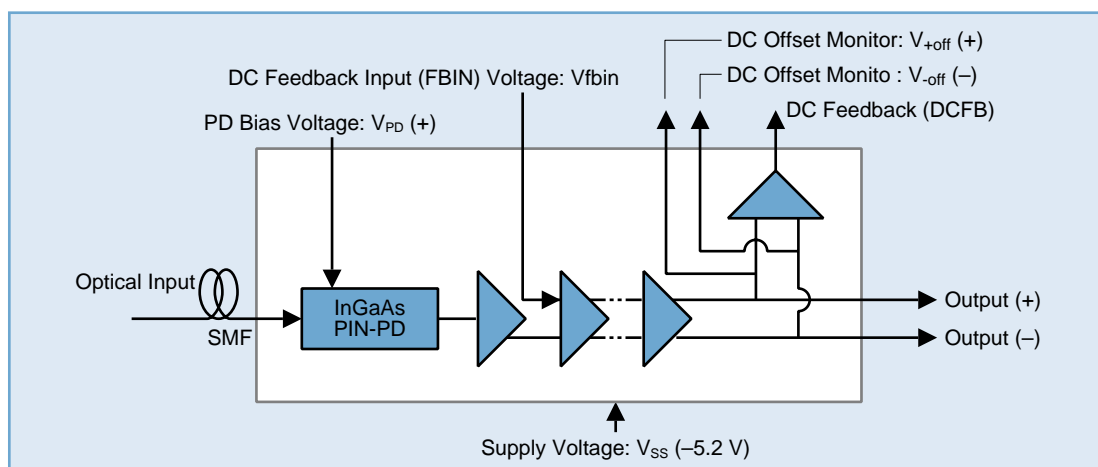
- SONET / SDH (OC-192 / STM-64) applications

FEATURES

- InGaAs PIN-PD and TIA
- Differential output
- Sensitivity: -19 dBm (typ. @ BER = 1×10^{-12} , PRBS $2^{31}-1$)
- Overload : $+1$ dBm (typ. @ BER = 1×10^{-12} , PRBS $2^{31}-1$)
- Transimpedance: 1200Ω (typ.)
- Cutoff frequency: 8.0 GHz (typ.)

TOPD371-RXDS Series

BLOCK DIAGRAM



ABSOLUTE MAXIMUM RATINGS ($T_c = 25\text{ }^\circ\text{C}$)

Item	Symbol	Rating	Unit
Storage temperature	T_{stg}	-40 to +85	$^\circ\text{C}$
Operating case temperature	T_c	0 to +70	$^\circ\text{C}$
PD reverse current	I_r	2	mA
PD reverse voltage	V_{PD}	0 to +20	V
Supply voltage	V_{SS}	-6 to 0	V
DC feedback input (FBIN) voltage	V_{fbin}	-3 to +0.3	V
Optical input power (Peak)	P_{in}	+4	dBm
Soldering temperature / time	T_{sol} / t_{sol}	260 / 5	$^\circ\text{C} / \text{s}$

ELECTRICAL AND OPTICAL CHARACTERISTICS

($V_{SS} = -5.2\text{ V}$, $V_{PD} = +10\text{ V}$, Output load resistance = $50\text{ }\Omega$, $\lambda = 1.55\text{ }\mu\text{m}$, $T_c = 25\text{ }^\circ\text{C}$)

Item	Symbol	Condition	Min	Typ.	Max	Unit
Responsivity	$R_{1.55}$	—	0.75	0.85	—	A/W
Transimpedance (AC)	Z_t	$f = 200\text{ MHz}$	800	1200	—	Ω
Cutoff frequency	f_c	$P_{in} = -14\text{ dBm}$ 3 dB down from 130 MHz	7.5	8.0	—	GHz
Sensitivity	P_s	(Note 1)	—	-19	-18	dBm
Overload	P_o	(Note 1)	0	+1	—	dBm
Optical return loss	ORL	—	27	—	—	dB
Power supply current	I_{SS}	—	—	115	150	mA
Power supply voltage	V_{SS}	—	-5.46	-5.2	-4.94	V

Note 1: 10 Gb/s, NRZ, PRBS $2^{31}-1$, BER = 1×10^{-12}

OVERSEAS SUBSIDIARIES AND AFFILIATES

011025 (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, U.S.A.
Tel: (847)945-1500 Fax: (847)945-1044

Edison, NJ
2035 Lincoln Hwy. #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., #650, Richardson,
TX 75081, U.S.A.
Tel: (972)480-0470 Fax: (972)235-4114

Wakefield, MA(Boston)
401 Edgewater Place, #360, Wakefield,
MA 01880, 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 3,
1-20041 Agrate Brianza, (Milan), Italy
Tel: (039)68701 Fax:(039)6870205

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

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

**Toshiba Electronics Asia
(Singapore) Pte. Ltd.**

Singapore Head Office
438B Alexandra Road, #06-08/12 Alexandra
Technopark, Singapore 119968
Tel: (278)5252 Fax: (271)5155

Toshiba Electronics Asia, Ltd.

Hong Kong Head Office
Level 11, Tower 2, 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)6590-8796 Fax: (010)6590-8791

**Toshiba Electronics Korea
Corporation**

Seoul Head Office
14/F, KEC B/D, 275-7 Yangjae-dong,
Seocho-ku, Seoul, Korea
Tel: (02)589-4300 Fax: (02)589-4302

**Toshiba Technology Development
(Shanghai) Co., Ltd.**
23F, HSBC Tower, 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, 10446 Taipei, Taiwan
Tel: (02)2514-9988 Fax: (02)2514-7892

(As of August, 2001)

The information contained herein is subject to change without notice.

The information contained herein is presented only as a guide for the applications of our products. No responsibility is assumed by TOSHIBA for any infringements of patents or other rights of the third parties which may result from its use. No license is granted by implication or otherwise under any patent or patent rights of TOSHIBA or others.

TOSHIBA is continually working to improve the quality and reliability of its products. Nevertheless, semiconductor devices in general can malfunction or fail due to their inherent electrical sensitivity and vulnerability to physical stress. It is the responsibility of the buyer, when utilizing TOSHIBA products, to comply with the standards of safety in making a safe design for the entire system, and to avoid situations in which a malfunction or failure of such TOSHIBA products could cause loss of human life, bodily injury or damage to property. In developing your designs, please ensure that TOSHIBA products are used within specified operating ranges as set forth in the most recent TOSHIBA products specifications. Also, please keep in mind the precautions and conditions set forth in the "Handling Guide for Semiconductor Devices," or "TOSHIBA Semiconductor Reliability Handbook" etc..

The Toshiba products listed in this document are intended for usage in general electronics applications (computer, personal equipment, office equipment, measuring equipment, industrial robotics, domestic appliances, etc.). These Toshiba products are neither intended nor warranted for usage in equipment that requires extraordinarily high quality and/or reliability or a malfunction or failure of which may cause loss of human life or bodily injury ("Unintended Usage"). Unintended Usage include atomic energy control instruments, airplane or spaceship instruments, transportation instruments, traffic signal instruments, combustion control instruments, medical instruments, all types of safety devices, etc.. Unintended Usage of Toshiba products listed in this document shall be made at the customer's own risk.

The products described in this document are subject to the foreign exchange and foreign trade laws. Gallium arsenide (GaAs) is a substance used in some of the products described in this document. GaAs dust and fumes are toxic. Do not break, cut or pulverize the products, or use chemicals to dissolve them. When disposing of the products, follow the appropriate regulations. Do not dispose of the products with other industrial waste or with domestic garbage.

Website: <http://www.semicon.toshiba.co.jp/eng/index.html>

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

©2002 TOSHIBA CORPORATION
Printed in Japan