TOSHIBA

Optical Communication Devices 2.5 Gb/s Optical Receiver

TOAD345-RX/TOPD345-RX Series





APPLICATION

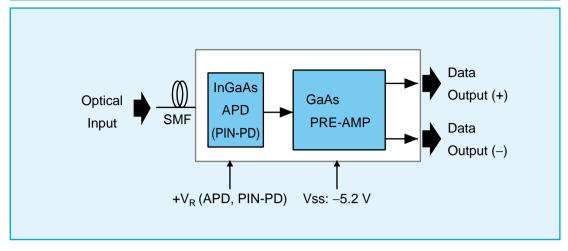
● SONET / SDH (OC-48 / STM-16) applications

FEATURES

- TOAD345-RX: APD and TIA
 - Sensitivity –33 dBm (Typ. @ BER = 1 x 10^{-10})
 - Overload $-7.5 \text{ dBm (Typ. @ BER} = 1 \times 10^{-10})$
- TOPD345-RX: PIN-PD and TIA
 - Sensitivity $-25 \text{ dBm (Typ. @ BER} = 1 \times 10^{-10})$
 - Overload $-0.0 \text{ dBm (Typ. @ BER = 1 x } 10^{-10})$
- Wavelength: 1.3/1.55 μm
- Differential output
- Package size: 19.2 mm (W) x 20.2 mm (D) x 8.1 mm (H)

TOAD345-RX/TOPD345-RX Series

BLOCK DIAGRAM



ABSOLUTE MAXIMUM RATINGS

Item	Symbol	Rating	Unit	Note
Storage temperature	Tstg	-40 to +85	°C	
Operating case temperature	Тс	0 to +70	°C	
Optical input power	Pr	-4	dBm	(1)
		3	dBm	(2)
Voltage supply	Vss	–6 to 0	V	
Soldering temperature / time	Tsol / tsol	260 / 5	°C/s	

Note: (1) TOAD345-RX, (2) TOPD345-RX

ELECTRICAL AND OPTICAL CHARACTERISTICS (2.48832 Gb/s, NRZ, PRBS 2^{23} –1, λ = 1.55 μ m, Tc = 25 °C)

TOAD345-RX

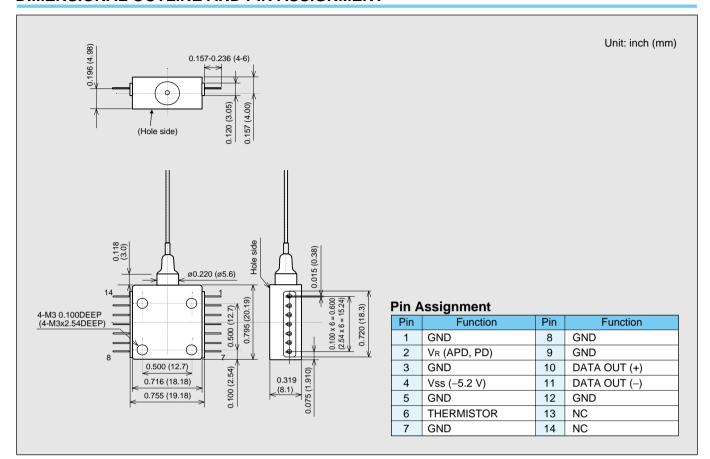
Item	Symbol	Min	Тур.	Max	Unit	Note
Supply current	Iss	_	-130	_	mA	(1)
Sensitivity	Ps	_	-33.0	-31.5	dBm	(2)
Overload	Pol	-8.5	-7.5	_	dBm	(2)
Cut-off frequency	fc	1.25	1.6	3.0	GHz	
Output data voltage	Vpp	30		1000	mVpp	

TOPD345-RX

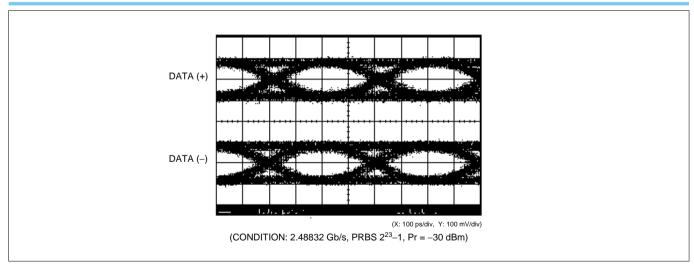
Item	Symbol	Min	Тур.	Max	Unit	Note
Supply current	Iss	_	-130	_	mA	(1)
Sensitivity	Ps	_	-25.0	-23.5	dBm	(2)
Overload	Pol	-1.0	-0.0		dBm	(2)
Cut-off frequency	fc	1.25	1.7	3.3	GHz	
Output data voltage	Vpp	30		1000	mVpp	

Note: (1) Vss = -5.2 V, (2) at BER = 1 x 10^{-10}

DIMENSIONAL OUTLINE AND PIN ASSIGNMENT



EYE DIAGRAM



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

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, IL60015-2547, U.S.A. Tel: (847)945-1500 Fax: (847)945-1044

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

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 (initended 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 dequent shell be made at the custome? Court field.

In Touch with Tomorrow OSHIBA

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

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 documents. 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.

in this document shall be made at the customer's own risk.