# **TOSHIBA**

# Optical Communication Devices 2.5 Gb/s Optical Receiver Module

TOAD346-RXMS/TOPD346-RXMS Series



# **APPLICATIONS**

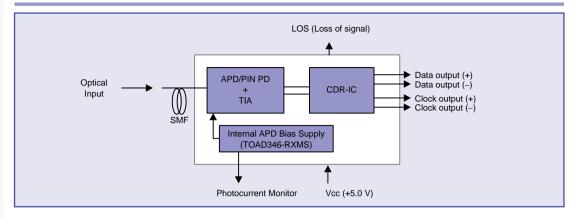
● SONET / SDH (OC-48 / STM-16) applications

# **FEATURES**

- TOAD346-RXMS: APD, TIA and CDR Sensitivity: –32 dBm (typ. @ BER = 1 x 10<sup>-10</sup>, PRBS 2<sup>23</sup>–1) Internal APD bias power supply
- ◆ TOPD346-RXMS: PIN-PD, TIA and CDR Sensitivity: -24 dBm (typ. @ BER = 1 x 10<sup>-10</sup>, PRBS 2<sup>23</sup>-1)
- Tc: -40 to +85 °C
- Loss of signal (LOS) output
- SC/PC Optical connector available
- Accordance with Multi Source Agreement (MSA)
- Package size: 35 x 58 x 8.9 (max) mm

# TOAD346-RXMS/TOPD346-RXMS Series

# **BLOCK DIAGRAM**



# **ABSOLUTE MAXIMUM RATINGS**

Item	Symbol	Rating	Unit
Storage temperature	Tstg	-40 to +85	°C
Operating case temperature	Topr	-40 to +85	°C
Positive supply voltage	Vcc	0.0 to +5.5	V
Maximum optical input power	Pom (TOAD346-RXMS)	+0.0	dBm
	Pom (TOPD346-RXMS)	+3.0	dBm
Soldering temperature / time	Tsol / tsol	260 / 10	°C/s

# ELECTRICAL AND OPTICAL CHARACTERISTICS (Tc = -40 to +85°C)

#### **ELECTRICAL CHARACTERISTICS**

Item	Min	Тур.	Max	Unit	Note	
Bit rate	2488.07	2488.32	2488.57	Mb/s		
Positive power supply voltage	4.75	5.00	5.25	V		
Positive power supply current		300	380	mA		
Total power dissipation	_	1.5	2	W		
Data / Clock single output voltage	300	_	1000	mVp-p		
Jitter generation (rms)			10	mUI		
Jitter transfer	ITU G958 and bellcore GR-253-CORE compliant					
Jitter tolerance	ITU G958 and bellcore GR-253-CORE compliant					
Loss of signal (LOS) alarm output voltage (normal)	0.0	_	0.4	V		
Loss of signal (LOS) alarm output voltage (alarm active)	2.4		Vcc	V		
Loss assert time		_	1	ms		
Loss de-assert time		_	1	ms		
Setup / Hold time	100	_	_	ps	Fig. 1	

Notes

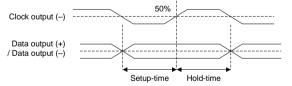


Fig. 1: Setup-Hold time

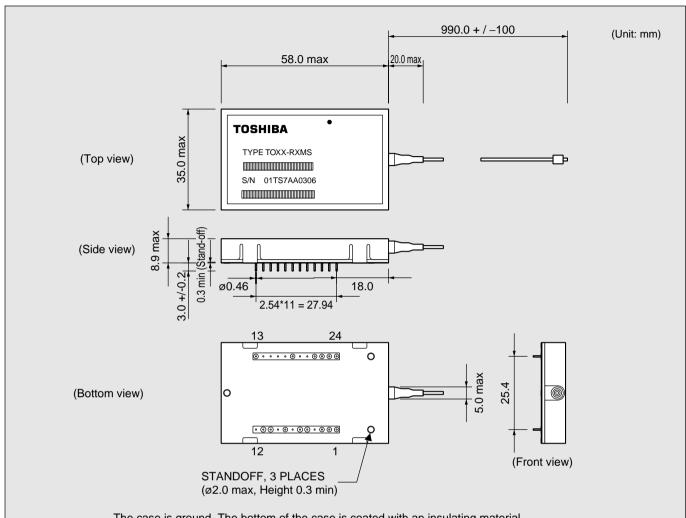
#### **OPTICAL CHARACTERISTICS**

Item	Min	Тур.	Max	Unit	Note
Input wave length	1260	_	1620	nm	
Sensitivity (WL = 1550 nm, TOAD346-RXMS)	_	-32.0	-30.0	dBm	(1), (2)
Sensitivity (WL = 1300 nm, TOPD346-RXMS)	_	-24.0	-22.0	dBm	(1)
Overload (TOAD346-RXMS)	-7	_	_	dBm	(1)
Overload (TOPD346-RXMS)	-2	_	_	dBm	(1)
LOS alarm for decreasing light input (TOAD346-RXMS)	-45	_	-35	dBm	
LOS alarm for decreasing light input (TOPD346-RXMS)	-38	_	-27	dBm	
Optical return loss	_	_	-27	dB	

Notes: (1) Bit rate = 2488.32 Mb/s, PRBS  $2^{23}$ –1, measured at BER  $10^{-10}$ 

(2) -31 dBm (Max. @Tc = -10 to +70 °C) available

# **DIMENSIONAL OUTLINE AND PIN ASSIGNMENT**



The case is ground. The bottom of the case is coated with an insulating material. The case temperature shall be measured at the top and the center of module.

### **Pin Assignment**

Pin	Symbol	Function	Pin	Symbol	Function	Pin	Symbol	Function
1	NIC	No internal connection	9	GND	GND	17	GND	Ground
2	NUC	No user connection	10	DATA+	Data output (+)	18	NUC	No user connection
3	LOS	Loss of alram	11	DATA-	Data output (–)	19	GND	Ground
4	GND	Ground	12	GND	Ground	20	GND	Ground
5	CLK-	Clock output (-)	13	NIC	No internal connection	21	NUC	No user connection
6	CLK+	Clock output (+)	14	GND	Ground	22	Vcc	Positive power supply (+5.0 V)
7	GND	Ground	15	GND	Ground	23	OILV	Optical Input light Voltage
8	Vcc	Positive power supply (+5.0 V)	16	GND	Ground	24	NUC	No user connection

# **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.

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

#### Edison, NJ

2035 Lincoln Hwv. 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 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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#### **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

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