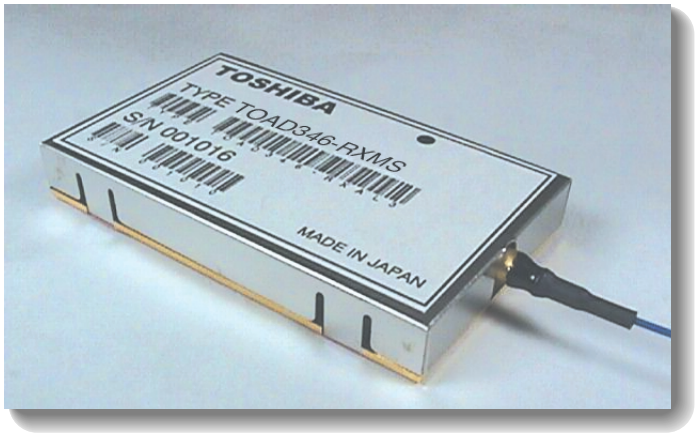
TOSHIBA

March 2002

Optical Communication Devices

2.5 Gb/s Optical Receiver Module

TOAD346-RXMS/TOPD346-RXMS Series



APPLICATION

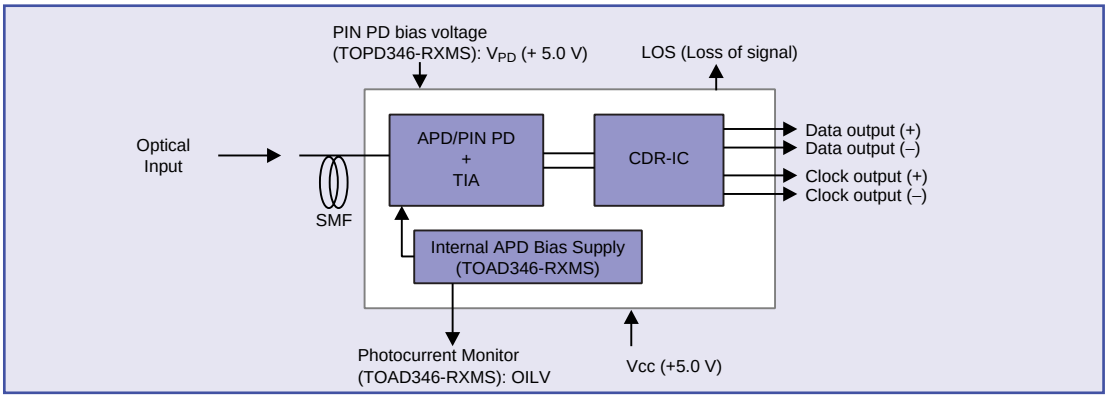
- SONET / SDH (OC-48 / STM-16) applications

FEATURES

- TOAD346-RXMS: APD, TIA and CDR
  Sensitivity: –32 dBm (typ. @ BER = 1 x 10^{-10}, PRBS 2^{23}–1)
  Internal APD bias power supply
- TOPD346-RXMS: PIN-PD, TIA and CDR
  Sensitivity: –24 dBm (typ. @ BER = 1 x 10^{-10}, PRBS 2^{23}–1)
- Tc: –40 to +85 ˚C
- Loss of signal (LOS) output
- SC/PC Optical connector available
- Multi Source Agreement (MSA) compliant
- 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		Tc	–40 to +85	˚C
Positive supply voltage		Vcc	0 to +5.5	V
Maximum optical input power	TOAD346-RXMS	Pom	0	dBm
	TOPD346-RXMS	Pom	+3.0	dBm
Soldering temperature / time		Tsol / tsol	260 / 10	˚C / s

ELECTRICAL AND OPTICAL CHARACTERISTICS (Case temperature: Tc = –40 to +85˚C)

Electrical characteristics

Item	Min	Typ.	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 Telcordia GR-253-CORE compliant				
Jitter tolerance	ITU G958 and Telcordia 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

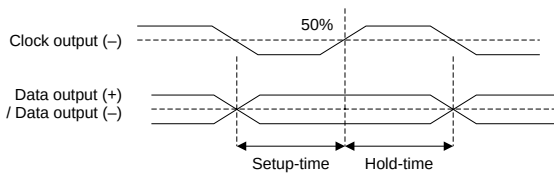


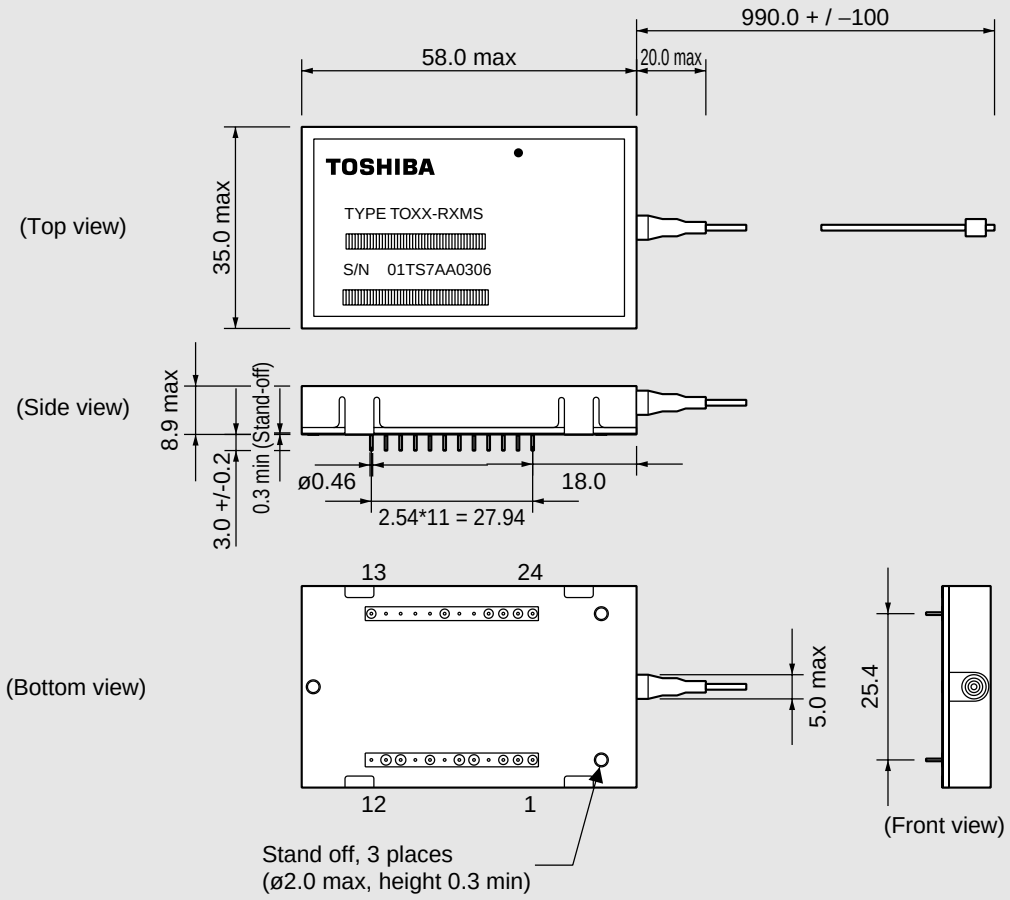
Fig. 1: Setup-Hold time

Optical characteristics

Item	Min	Typ.	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 center of the package top.

Pin Assignment

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

*1: TOAD346-RXMS *2: TOPD346-RXMS.

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 obtaininng the performance.

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