TOSHIBA

March 2001

Optical Communication Devices

2.5 Gb/s Optical Receiver

TOAD345-RX/TOPD345-RX Series

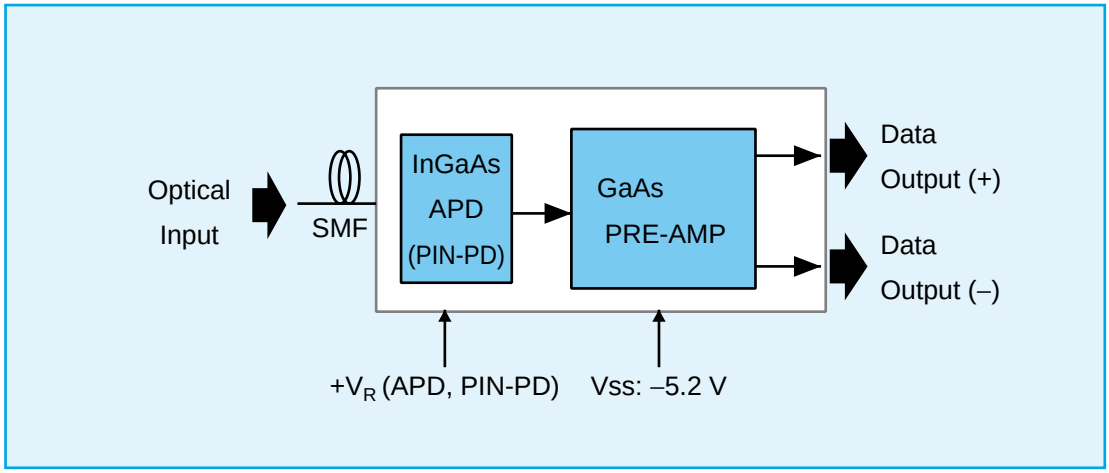
APPLICATION

- 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 dBm (Typ. @ BER = 1 x 10^{-10})
- TOPD345-RX: PIN-PD and TIA
  - Sensitivity –25 dBm (Typ. @ BER = 1 x 10^{-10})
  - Overload –0.0 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)

BLOCK DIAGRAM



ABSOLUTE MAXIMUM RATINGS

Item	Symbol	Rating	Unit	Note
Storage temperature	Tstg	–40 to +85	˚C	
Operating case temperature	Tc	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 μm, Tc = 25 ˚C)

TOAD345-RX

Item	Symbol	Min	Typ.	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

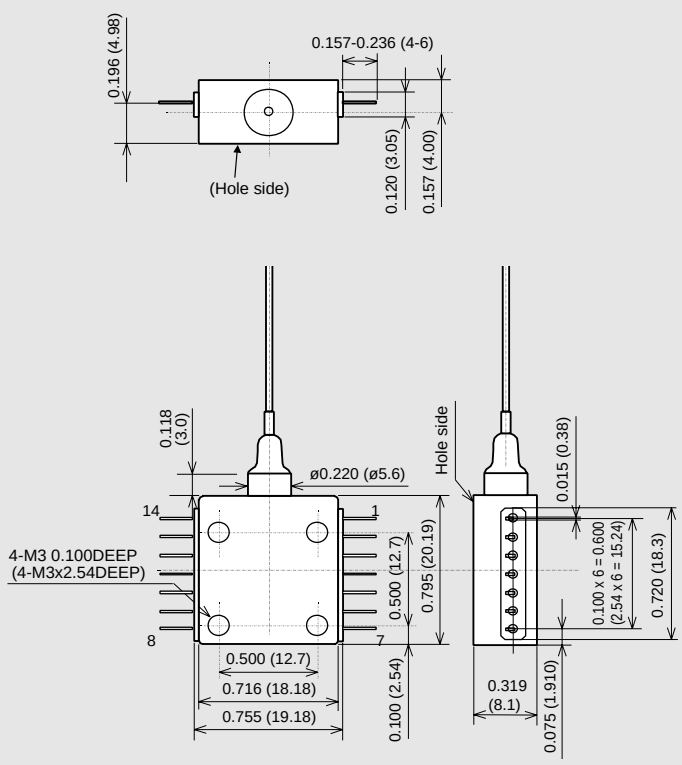
Item	Symbol	Min	Typ.	Max	Unit	Note
Supply current	Iss	—	–130	—	mA	(1)
Sensitivity	Ps	—	–25.0	–23.5	dBm	(2)
Overload	Pol	–1.0	–0.0		dBm	(2)
Cut-off frequency	fc	1.25	1.7	3.3	GHz	
Output data voltage	Vpp	30		1000	mVpp	

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

TOAD345-RX/TOPD345-RX Series

DIMENSIONAL OUTLINE AND PIN ASSIGNMENT

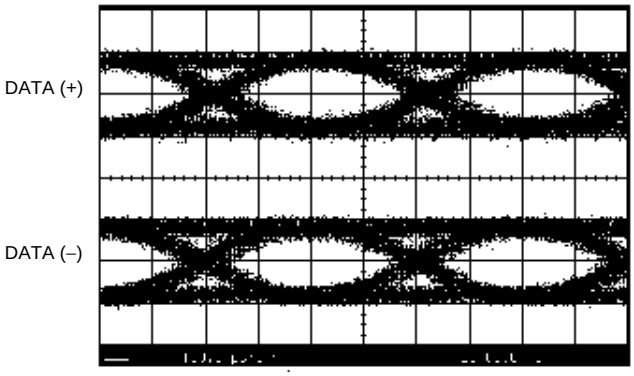
Unit: inch (mm)



Pin Assignment

Pin	Function	Pin	Function
1	GND	8	GND
2	V_R (APD, PD)	9	GND
3	GND	10	DATA OUT (+)
4	Vss (–5.2 V)	11	DATA OUT (–)
5	GND	12	GND
6	THERMISTOR	13	NC
7	GND	14	NC

EYE DIAGRAM



(X: 100 ps/div, Y: 100 mV/div)

(CONDITION: 2.48832 Gb/s, PRBS 2^{23}–1, Pr = –30 dBm)

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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