TOSHIBA

March 2001

Optical Communication Devices

2.5 Gb/s Optical Receiver

TOAD345-RX5 Series

APPLICATION

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

FEATURES

- APD and TIA
- Sensitivity: –33 dBm (Typ. @ BER = 1 x 10^{-10})
- Overload: –8 dBm (Typ. @ BER = 1 x 10^{-10})
- High Transimpedance: 1.5 kΩ
- Wavelength: 1.3/1.55 μm
- Operating case temperature range: 0 ˚C to 70 ˚C
- Package size: 19.2 (W) x 20.2 (D) x 8.1 (H) mm

TOAD345-RX5 Series

ABSOLUTE MAXIMUM RATINGS

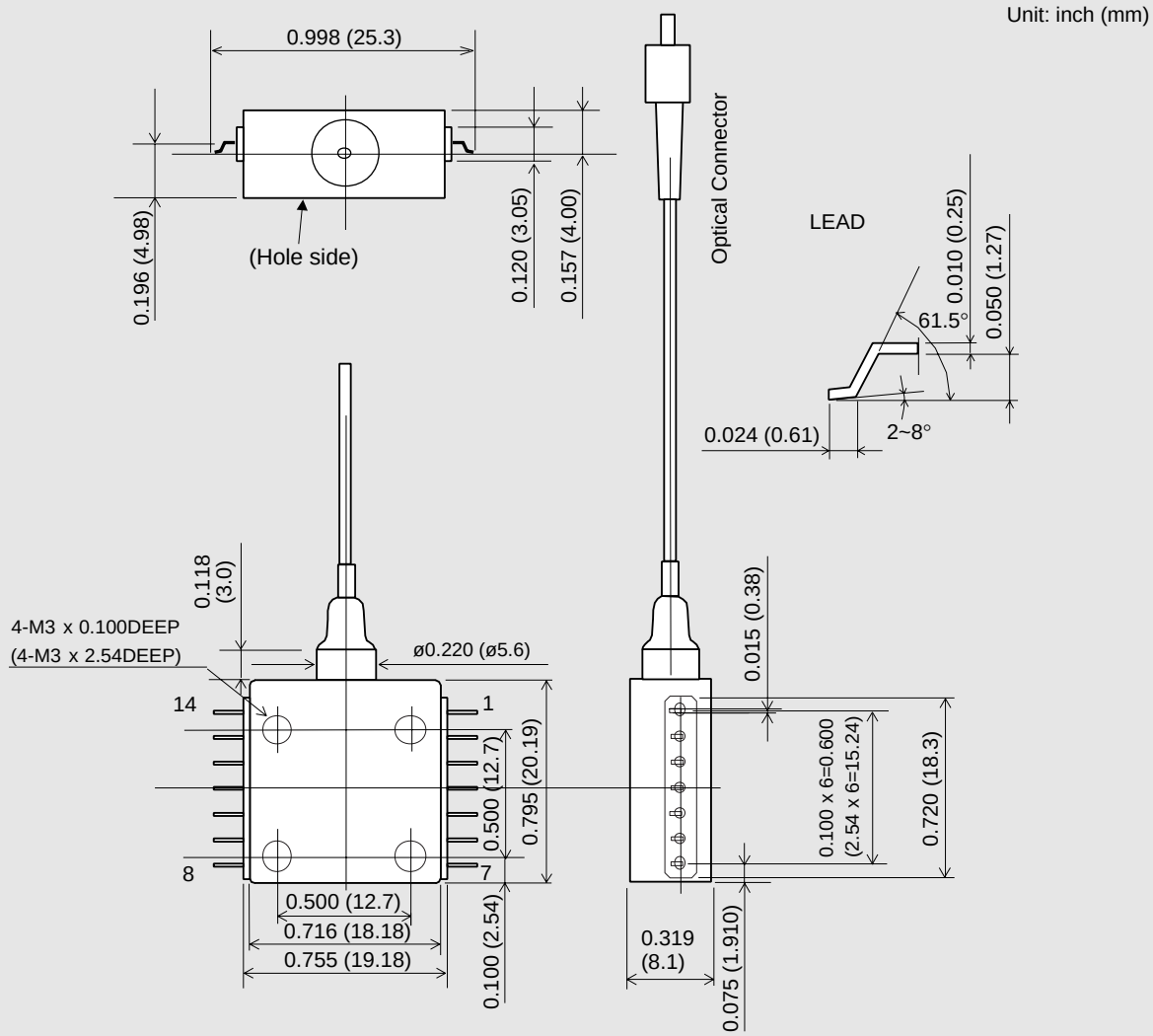
Item	Symbol	Rating	Unit
Storage temperature	Tstg	–40 to +85	˚C
Operating case temperature	Tc	0 to +70	˚C
APD forward current	If	1	mA
APD reverse current	Ir	500	µA
Positive supply voltage	Vdd	0 to +6	V
Negative supply voltage	Vss	–6 to 0	V
Soldering temperature / time	Tsol / tsol	260 / 5	˚C / s

ELECTRICAL AND OPTICAL CHARACTERISTICS (Tc = 25 ˚C, Vdd = +5 V, Vss = –5.2 V)

Item	Min	Typ.	Max	Unit	Note
Negative supply current	—	80	100	mA	
Positive supply current	—	100	150	mA	
Breakdown voltage (Id = 10 µA)			85	V	
Dark current (M = 12)	—	—	100	nA	
Sensitivity	—	–33	–31.5	dBm	(1)
Overload	–10	–8		dBm	(1)
Bandwidth (–3 dB)	1.3	1.5		GHz	(2)
Logic sense					(3)
Optical return loss	—	—	–27	dB	(4)
Output signal amplitude	25	—	1000	mVpp	(5)
Electrical return Loss	8	—	—	dB	(6)
Thermistor resistance		3	—	KΩ	

Notes (1) 2.48832 Gb/s, NRZ, PRBS 2^{23}–1, BER = 1 x 10^{-10}, λ = 1.55 µm
(2) Pf = –30 dBm, M = 12
(3) DATA, Light ON = Vout Logic LOW
(4) λ = 1.3/1.55 µm
(5) –10 dBm > Pf > –30 dBm
(6) 0.3 GHz < F < 2.5 GHz

DIMENSIONAL OUTLINE AND PIN ASSIGNMENT



Pin Assignment

Pin	Function	Pin	Function
1	GND	8	GND
2	Vapd	9	GND
3	GND	10	DATA OUT
4	Vss (–5.2 V)	11	NC
5	GND	12	GND
6	THERMISTOR	13	Vdd (+5.0 V)
7	GND	14	NC

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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