TOSHIBA

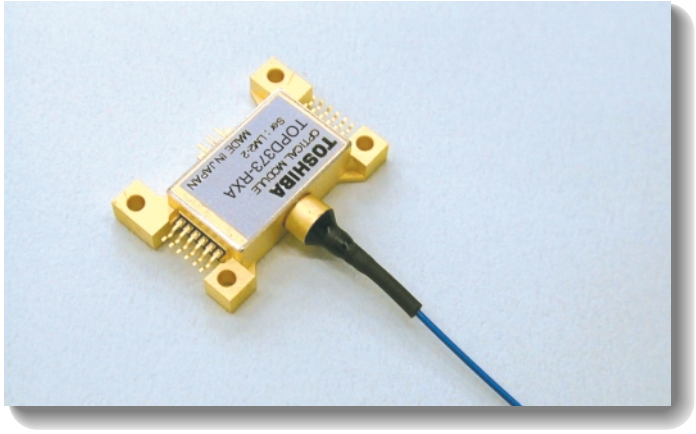
March 2002

Optical Communication Devices

10 Gb/s Optical Receiver

TOPD373-RXA Series

(PRELIMINARY)



APPLICATION

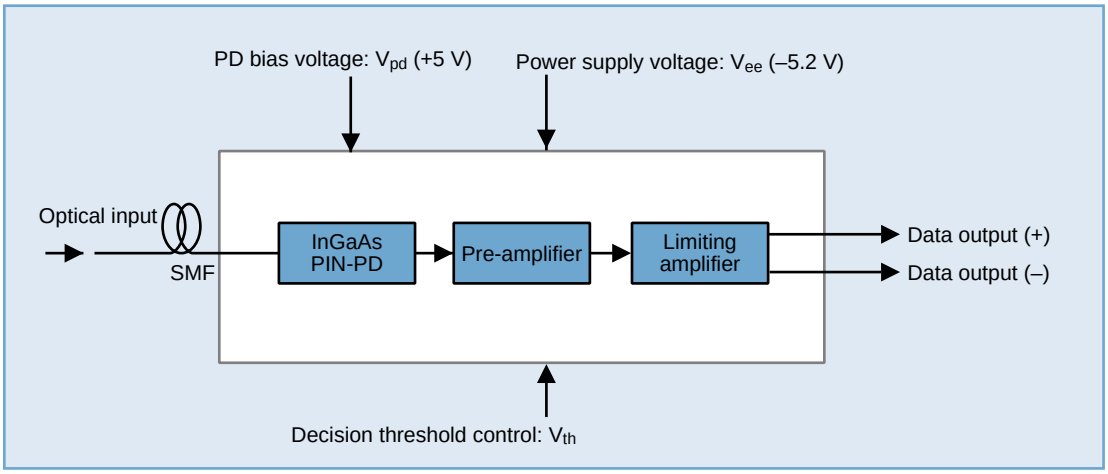
- SONET / SDH (OC-192 / STM-64) applications

FEATURES

- InGaAs PIN-PD and TIA with Limiting Amplifier
- 2R function included
- Decision threshold control
- Differential output
- Sensitivity: –17 dBm (typ. @ BER = 1 x 10^{-12}, PRBS 2^{23}–1)
- Overload : 0 dBm (min @ BER = 1 x 10^{-12}, PRBS 2^{23}–1)
- Data output: 200 mVpp to 800 mVpp (@ input power –18 dBm to 0 dBm)

TOPD373-RXA Series

BLOCK DIAGRAM



ABSOLUTE MAXIMUM RATINGS

Item	Symbol	Min	Max	Unit
Supply voltage	V_{ee}	–6	0	V
PD bias	V_{pd}	0	12	V
PD foward current	If	–	3	mA
PD reverse current	Ir	–	2	mA
Maximum optical input power	P_{in}	–	+3	dBm
Operating case temperature	T_c	–5	70	˚C
Storage temperature	T_{stg}	–40	85	˚C
Lead soldering temperature	T_{sol}	–	260	˚C
Lead soldering time	tsol	–	5	s

ELECTRICAL AND OPTICAL CHARACTERISTICS
(Case temperature: Tc = 0 ˚C to 70 ˚C, λ = 1.55 μm, Vee = -5.2 V)

Optical characteristics

Item	Symbol	Condition	Min	Typ.	Max	Unit
Sensitivity	P_s	Note 1	–	–17	–	dBm
Overload	P_o	Note 1	0	–	–	dBm
Optical return loss	ORL	–	27	–	–	dB
Responsivity	$R_{1.55}$	–	–	0.75	–	A/W
PD dark current	Id	Note 1	–	–	10	nA

Note 1: 10 Gb/s, 2^{23}–1, PRBS, 1 x 10^{-12} BER.

Electrical charcteristics

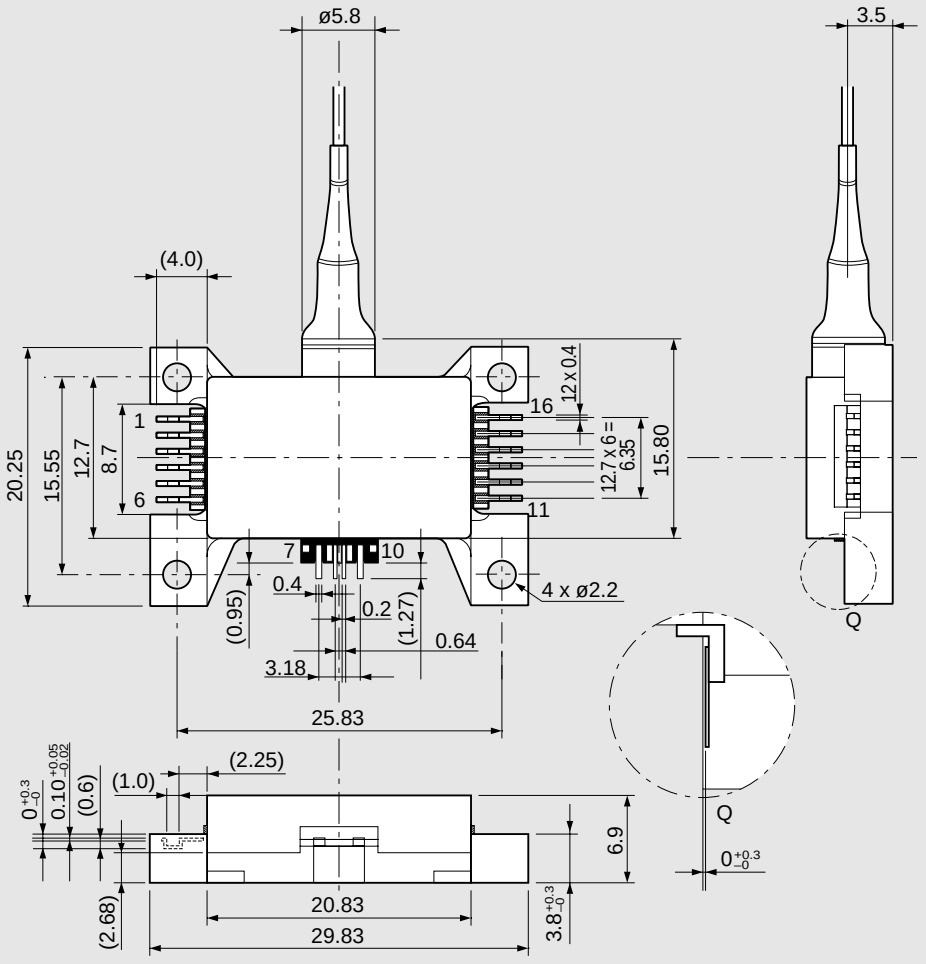
Item	Symbol	Condition	Min	Typ.	Max	Unit
Power supply	V_{ee}	–	–5.46	–5.2	–4.94	V
Bias	V_{pd}	–	–	5	–	V
Power supply current	Iee	–	–	–	200	mA
Cutoff freguency (Low)	$f_{c\ell}$	Note 1	–	–	30	kHz
Cutoff freguency	f_c	Note 1	–	9	–	GHz
Output retum loss	S_{22}	Note 2	–	10	–	dB
Output voltage amplitude (single ended)	Vout	Note 3	200	–	800	mVpp
Decision threshold control voltage	Vth	–	–	–2	–	V

Note 1: At 3 dB down from 130 MHz
Note 2: At Over band width of 0.13 to fc
Note 3: At Input power = –18 dBm to 0 dBm

DIMENSIONAL OUTLINES AND PIN ASSIGNMENT

TOPD373-RXA

(Unit: mm)



Pin Assignment

Pin	Function	Pin	Function
1	PD bias :Vpd (+)	9	Data output (+)
2	Ground	10	Case ground
3	Power supply :Vee (–)	11	NC
4	Ground	12	NC
5	NC	13	Ground
6	Ground	14	Decision threshold control :Vth(–)
7	Case ground	15	Ground
8	Data output (–)	16	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 power off .

(b) The product should be grounded for obtaininng the performance.

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(As of August, 2001)

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36116C-0203 PC-D5