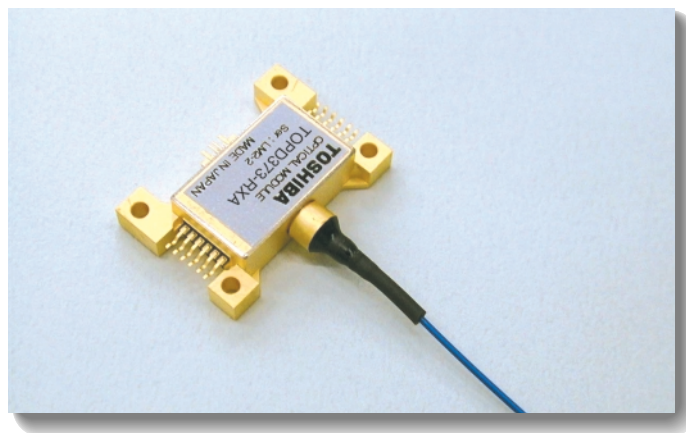


Optical Communication Devices

10 Gb/s Optical Receiver

TOPD373-RXA Series (PRELIMINARY)



APPLICATION

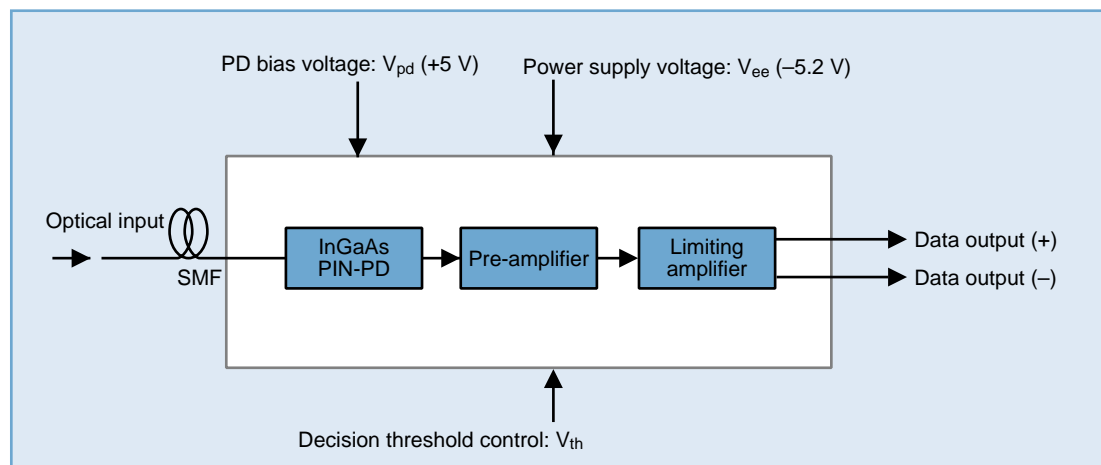
- SONET / SDH (OC-192 / STM-64) applications

FEATURES

- InGaAs PIN-PD and TIA with Limiting Amplifier
- 2R function included
- Decision threshold control
- Differential output
- Sensitivity: -17 dBm (typ. @ BER = 1×10^{-12} , PRBS $2^{23}-1$)
- Overload : 0 dBm (min @ BER = 1×10^{-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 forward current | I_f | — | 3 | mA |
| PD reverse current | I_r | — | 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 | t_{sol} | — | 5 | s |

ELECTRICAL AND OPTICAL CHARACTERISTICS

(Case temperature: $T_c = 0\text{ °C}$ to 70 °C , $\lambda = 1.55\text{ }\mu\text{m}$, $V_{ee} = -5.2\text{ V}$)

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 | I_d | Note 1 | — | — | 10 | nA |

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

Electrical characteristics

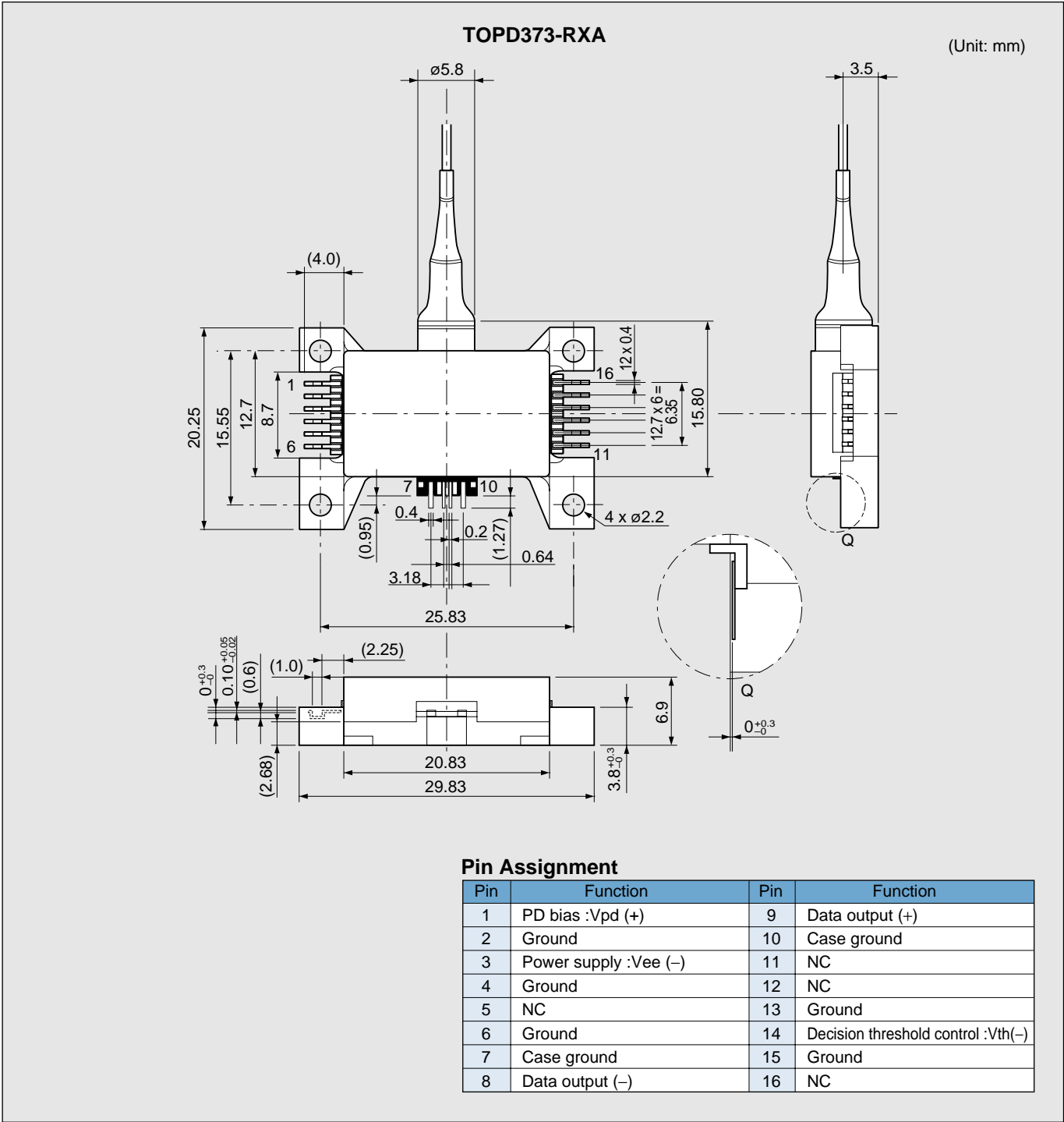
| Item | Symbol | Condition | Min | Typ. | Max | Unit |
|---|-----------|-----------|-------|------|-------|------|
| Power supply | V_{ee} | — | -5.46 | -5.2 | -4.94 | V |
| Bias | V_{pd} | — | — | 5 | — | V |
| Power supply current | I_{ee} | — | — | — | 200 | mA |
| Cutoff frequency (Low) | f_{cl} | Note 1 | — | — | 30 | kHz |
| Cutoff frequency | f_c | Note 1 | — | 9 | — | GHz |
| Output return loss | S_{22} | Note 2 | — | 10 | — | dB |
| Output voltage amplitude (single ended) | V_{out} | Note 3 | 200 | — | 800 | mVpp |
| Decision threshold control voltage | V_{th} | — | — | -2 | — | V |

Note 1: At 3 dB down from 130 MHz

Note 2: At Over band width of 0.13 to f_c

Note 3: At Input power = -18 dBm to 0 dBm

DIMENSIONAL OUTLINES AND PIN ASSIGNMENT



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 obtaining the performance.

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