# 10G InGaAs Pin Photodiode

## Description

The P10-TO is a 10G InGaAs Pin Photodiode in a pigtailed TO can. The device features customizable optical connector and fiber length. Featuring low dark current and high sensitivity in a hermetic package.

## Features

- Dark Current ~ 1 nA (typical)
- High Sensitivity ~ -16 dBm
- Terminal Capacitance 1 pF at $VBR_{90\%}$
- 8 GHz Cutoff Frequency
- Ability to choose desired optical connector.
- Ability to choose desired fiber length.

## Applications

- 10G RFoF
- 10G Base-L Ethernet
- Fiber Optic Sensors

**Electro-Optical Characteristics ($T_{op}$ 23 ± 3°c, unless otherwise specified)**

| Parameter | Symbol | Min. | Typ. | Max. | Unit | Test Conditions |
|---|---|---|---|---|---|---|
| Response Spectrum | λ | 1100 | | 1650 | nm | |
| Dark Current | $I_d$ | | 0.1 | 1 | nA | Vr = 5.0 V |
| Reverse Breakdown Voltage | $V_{BR}$ | | 5 | | V | I = 10 µA |
| Responsivity | Re | | 0.8 | | A/W | λ = 1310 $P_{in}$ 0.5 mW V = 1.0v |
| Bandwidth | BW | | 10 | | GHz | λ = 1310 $P_{in}$ 0.5 mW V = 3.0v |
| Capacitance | $C_p$ | | 200 | | fF | F = 1 MHz V = 5.0 v |
| Saturation power | P | | | 10 | dBm | Vr = 5V |
| Sensitivity | | | -16 | | dBm | |
| Optical Return Loss | ORL | | 40 | | dB | 1310 nm |

**Absolute Maximum Ratings**

| Parameter | Symbol | Condition | Min. | Max. | Unit |
|---|---|---|---|---|---|
| Reverse Voltage | $V_r$ | | | 15 | V |
| Forward Current | $I_F$ | | | 8 | mA |
| Reverse Current | $I_R$ | | | 0.5 | mA |
| Optical Input power | $P_{in}$ | | | 10 | mW |
| Storage Temperature | $T_{stg}$ | | -25 | 90 | °C |
| Storage Humidity | $H_{stg}$ | | | 85 | % r.H. |
| Operating Temperature | $T_{op}$ | | -10 | 80 | °C |
| Soldering Temperature | $T_{st}$ | 60 sec | | 200 | °C |
| ESD Susceptibility | | HBM | 100 | | V |

**Operating at maximum ratings for a prolonged period will cause damage to the device.**

## Pin Configuration

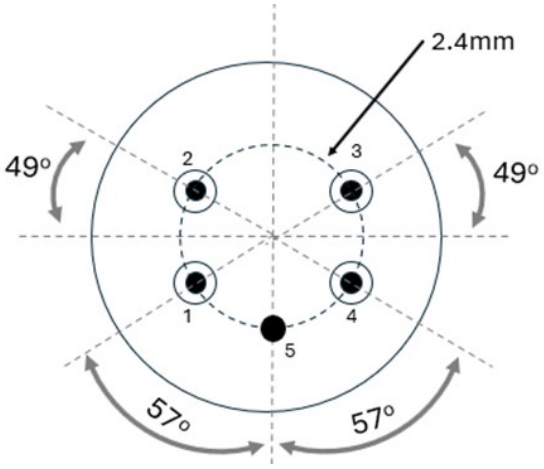



Fig 1A: Bottom View

| Pin Number | Function |
|---|---|
| 1 | PD Anode (+) |
| 2 | No Connection (NC) |
| 3 | No Connection (NC) |
| 4 | Photodiode Cathode (+) |
| 5 | Case Ground (GND) |

Table 1: Device Pin out

## Device Dimensions

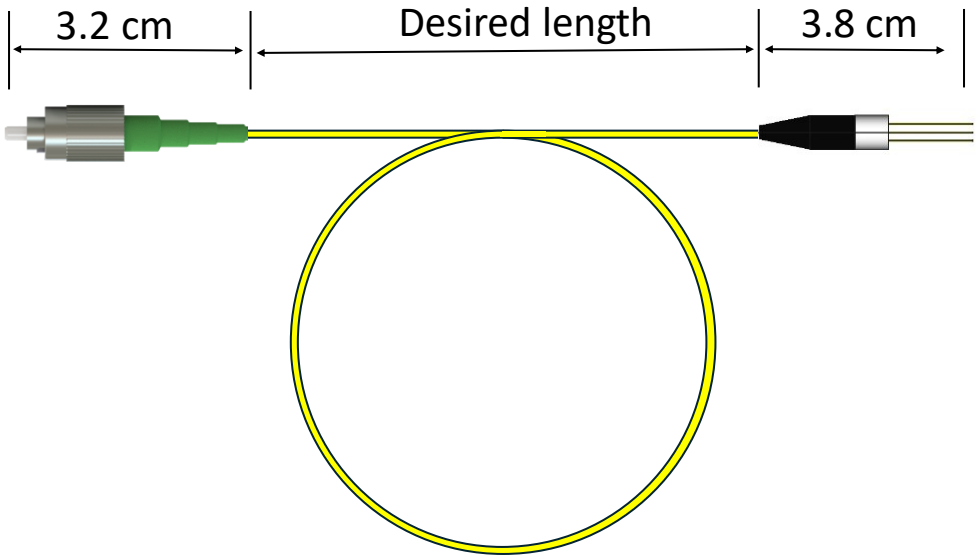
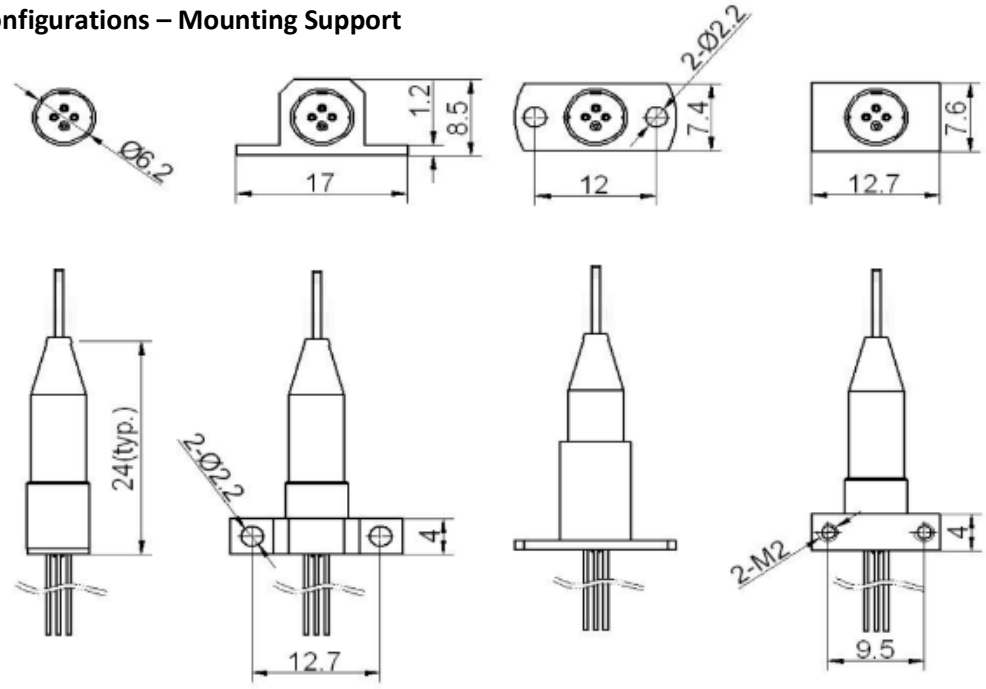



Fig 2: Device mechanical drawing. (All units in mm). Fiber and connector size differs based on build configuration.

**Build Configurations – Mounting Support**




(a) (b) (c) (d)

**Device Nomenclature**

**P10-TO-X-XX**

**Product Line – 10G Pin Photodiode**

**Device body style – TO-CAN**

**Device Mounting Support**

- **(a)** No Mount
- **(b)** Horizontal Mount
- **(c)** Vertical Mount
- **(d)** Horizontal threaded

**Optical Connector**

(00) No Connector
(FA) FC/APC
(FP) FC/PC
(CA) LC/APC
(CP) LC/PC

**Inquiry Information**

**Sales:** All inquiries regarding sales please contact Sales@NuPhotonics.com

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