

# Fiber Coupled 2 $\mu\text{m}$ InGaAs PIN Photodiode

(900 to 2380nm)



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## Applications

- Channel Monitoring
- Power Monitoring in Optical
- Interface Modules
- Gain Monitoring for Amplifier
- Instruments

## Features

- Low Cost
- Large Bandwidth
- ns Fast Response
- High Reliability

The Fiber Coupled Extended InGaAs PIN Photodiode is based on a unique package that features high speed fast rise and fall response. The component integrates a fiber with a high sensitivity/small area photodiode for signal detection. The response is analog without TIAC. Our design minimizes component assembly costs and module footprint while increasing stability over a wide temperature and wavelength ranges.

Associated sensor electronic amplifier is also available.

## Specifications

| Parameter                                    | Min                     | Typical | Max  | Unit          |
|--|-------------------------|---------|------|---------------|
| Central Wavelength                           | 900                     | 2300    | 2380 | nm            |
| Responsivity @2300nm <sup>[2]</sup>          | 0.5                     | 1       | 1.3  | A/W           |
| Input Power                                  | -45                     |         | 27   | dBm           |
| PDL <sup>[3]</sup>                           |                         | 0.03    | 0.05 | dB            |
| Polarization Extinction Ratio <sup>[4]</sup> | 18                      | 23      |      | dB            |
| Dark Current at 23°C/0.5V                    |                         | 0.4     | 1    | $\mu\text{A}$ |
| Capacitance                                  |                         | 140     |      | pF            |
| Bias Voltage                                 |                         |         | 1.8  | V             |
| Rise/Fall Time @0V                           |                         | 17      |      | ns            |
| Operating Temperature                        | -5                      |         | 75   | °C            |
| Storage Temperature                          | -40                     |         | 85   | °C            |
| Reliability                                  | Telcordia 1209 and 1221 |         |      |               |

### Notes:

- [1]. Insertion Loss excluding connectors.
- [2]. The net responsivity is defined as the ratio of the PD current output and optical power measured at output fiber
- [3]. Single Mode Fiber version only.
- [4]. PM Fiber version only.

**Note:** The specifications provided are for general applications with a cost-effective approach. If you need to narrow or expand the tolerance, coverage, limit, or qualifications, please [\[click this link\]](#):

**Warning:** The device is extremely ESD-sensitive. Its dark current increases by unprotected handling. It is recommended to be handled under a certified ion fan once the package is removed.

**Legal notices:** All product information is believed to be accurate and is subject to change without notice. Information contained herein shall legally bind Agiltron only if it is specifically incorporated into the terms and conditions of a sales agreement. Some specific combinations of options may not be available. The user assumes all risks and liability whatsoever in connection with the use of a product or its application.

Rev 07/31/24

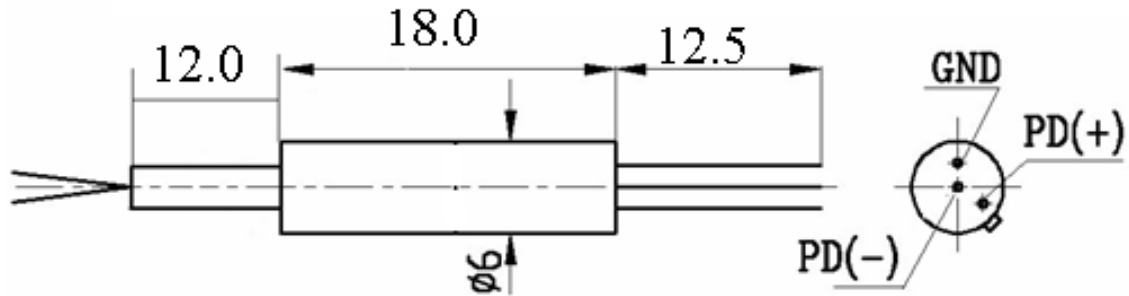
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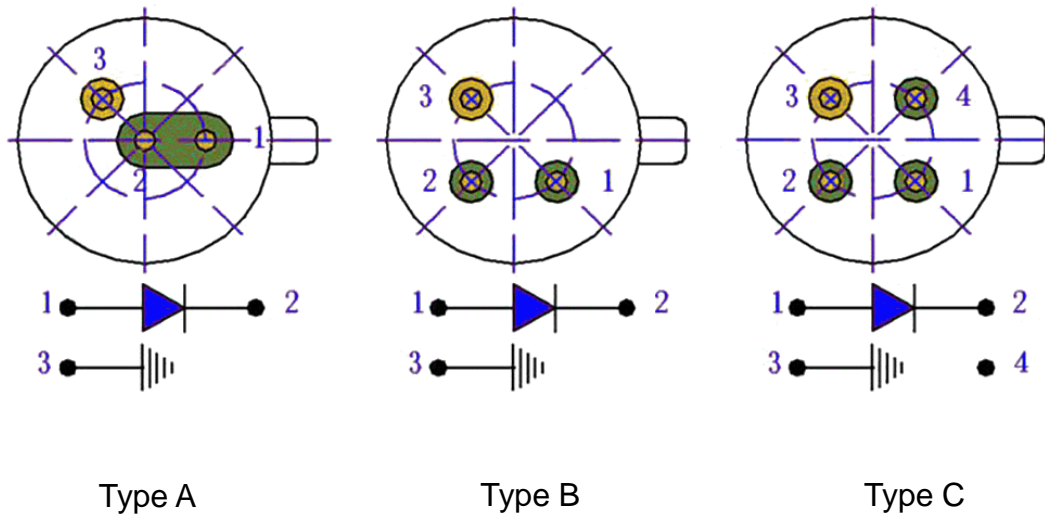
### Mechanical Footprint Dimensions (mm)



Standard Package for Infrared Band. For other wavelength band, size may vary due to special detector configurations.

\*Product dimensions may change without notice. This is sometimes required for non-standard specifications.

### PD PIN Assignments



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### Ordering Information

| Prefix                   | Wavelength                                     | AR Coating | TEC Cooling                                  | Package                     | Fiber Type  | Fiber Cover                                    | Fiber Length   | Connector   |
|--------------------------|--|------------|--|-----------------------------|---|--|--|---|
| <input type="checkbox"/> | <input type="checkbox"/>                       | 2          | <input type="checkbox"/>                     | 1                           | <input type="checkbox"/>  | <input type="checkbox"/>                       | <input type="checkbox"/>                                     | <input type="checkbox"/>  |
| <b>FCHI-</b>             | 900-2000 = 24<br>1000-2380 = 25<br>Special = 0 | Yes = 2    | No = 1<br>Single Stage = 2<br>Dual Stage = 3 | Standard = 1<br>Special = 0 | SM28 = 1<br>SM1950 = 2<br>PM1550 = 3<br>PM1950 = 4<br>50/125 = 5<br>Special = 0 | 900umTube = 3<br>Bare fiber = 1<br>Special = 0 | 0.25m = 1<br>0.5m = 2<br>1.0m = 3<br>1.5m = 5<br>Special = 0 | None = 1<br>FC/PC = 2<br>FC/APC = 3<br>SC/PC = 4<br>SC/APC = 5<br>ST/PC = 6<br>LC/PC = 7<br>LC/APC = A<br>LC/UPC = U<br>Special = 0 |

### Application Notes

#### Fiber Core Alignment

Note that the minimum attenuation for these devices depends on excellent core-to-core alignment when the connectors are mated. This is crucial for shorter wavelengths with smaller fiber core diameters that can increase the loss of many decibels above the specification if they are not perfectly aligned. Different vendors' connectors may not mate well with each other, especially for angled APC.

#### Fiber Cleanliness

Fibers with smaller core diameters (<5  $\mu\text{m}$ ) must be kept extremely clean, contamination at fiber-fiber interfaces, combined with the high optical power density, can lead to significant optical damage. This type of damage usually requires re-polishing or replacement of the connector.

#### Maximum Optical Input Power

Due to their small fiber core diameters for short wavelength and high photon energies, the damage thresholds for device is substantially reduced than the common 1550nm fiber. To avoid damage to the exposed fiber end faces and internal components, the optical input power should never exceed 20 mW for wavelengths shorter 650nm. We produce a special version to increase the how handling by expanding the core side at the fiber ends.

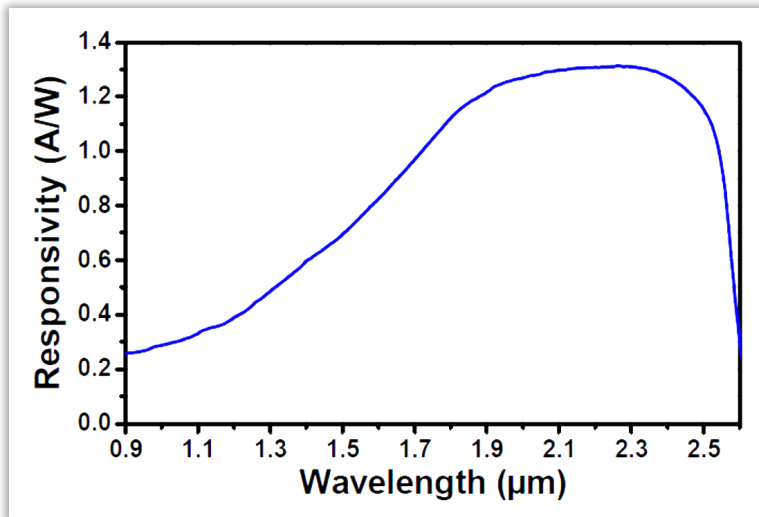
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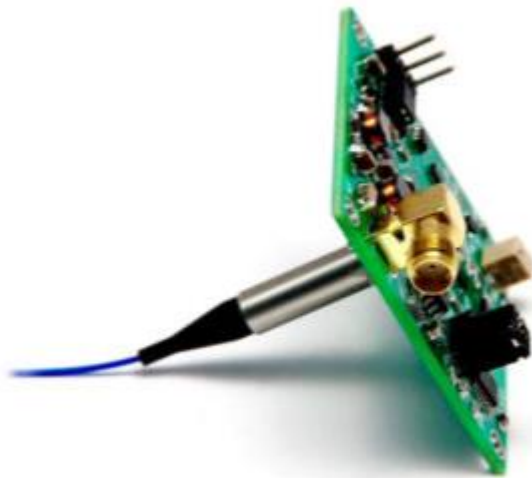


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## Spectral Response



## Amplifier Mounted Option



### Low-Noise Optical Detector Amplifier

DETA-11A221111

\$165

<https://agiltron.com/product/precision-optical-detector-amplifier/>