

# Fiber Coupled UV/Visible Photodiode

(200 to 900nm, high efficiency>90%, all fiber types)



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## Features

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

## Applications

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

The Fiber Coupled Si Photodiode is based on a unique configuration that features high sensitivity, low noise, and high optical coupling efficiency. The component integrates a fiber with a silicon PIN photodiode for signal detection with little optical loss. The response is analog. Our design minimizes component assembly costs and module footprint while increasing stability over a wide temperature and wavelength ranges.

Associated sensor electronic driver or amplifier is also available.

Due to their high sensitivity to electrostatic discharge, warranty coverage applies only to fully metal covered modules the benchtops, which include proper protection. Other versions of the lasers and photodetectors are not covered by any warranty. Please use them with great caution.

## Specifications

Parameter	Min	Typical	Max	Unit
Wavelength	200		900	nm
Optical Coupling Efficiency		90		%
Responsivity <sup>[2]</sup> (600nm, oe=1mW, 100V)	0.2		1	A/W
Input Power			50	mW
Polarization extinction ratio <sup>[4]</sup>	18	23		dB
Dark Current at 23°C, 600nm, 10V		0.3	1	nA
Reverse Voltage		5	10	V
Rise/Fall Time		1		ns
Capacitance		6		pF
Operating Temperature	-20		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.

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[+1 781-935-1200](tel:+17819351200)

[sales@agiltron.com](mailto:sales@agiltron.com)

[www.agiltron.com](http://www.agiltron.com)

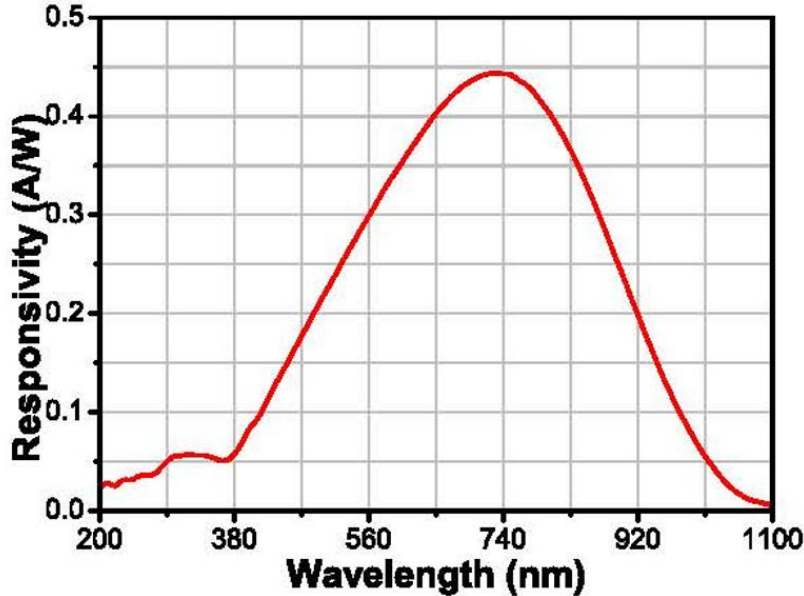
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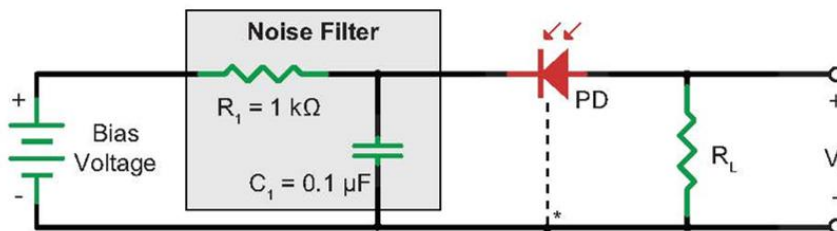
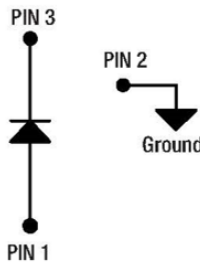
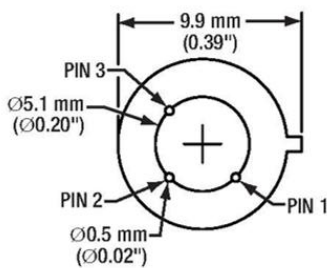
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### Typical Characters



The responsivity of a photodiode is a measure of its sensitivity to light and is defined as the ratio of the photocurrent to the incident light power at a given wavelength: In other words, it is a measure of the effectiveness of the conversion of light power into electrical current. Responsivity varies from lot to lot and with the wavelength of the incident light, applied reverse bias, and temperature. It increases slightly with applied reverse bias due to improved charge collection efficiency in the photodiode. The change in temperature increases or decreases the width of the band gap and varies inversely with the temperature.

### Electrical Connection/ Recommended Circuit



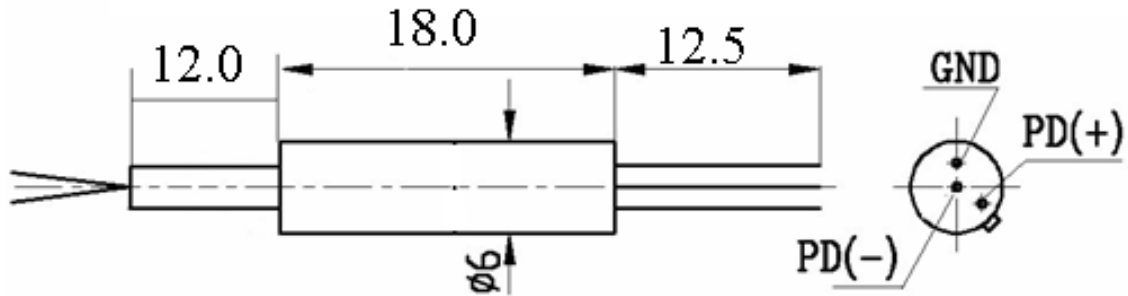
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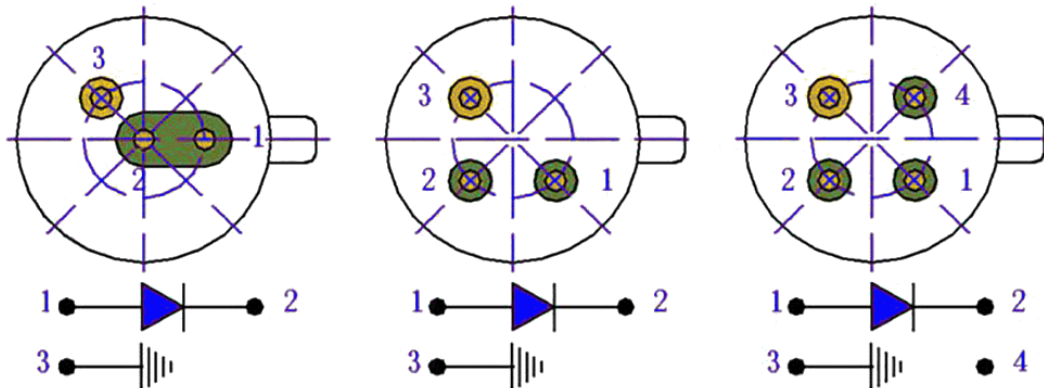
### Mechanical Footprint Dimensions (mm)



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



Type A

Type B

Type C

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## Ordering Information (Part Number)

Prefix	Wavelength	AR Coating	TEC Cooling	Package	Fiber Type	Fiber Cover	Fiber Length	Connector <sup>[1]</sup>
FCES-	450-900 = S 980 = 9 1060 = 3 Special = 0	Yes = 2	No = 1 Yes = 2	Standard = 1 Special = 0	Choose from table below	900um Tube = 3 Special = 0	0.25m = 1 0.5m = 2 1.0 m = 3 1.5 m = 5 Special = 0	None = 1 FC/PC = 2 FC/APC = 3 SC/PC = 4 SC/APC = 5 ST/PC = 6 LC/PC = 7 LC/APC = A LC/UPC = U Special = 0

[1]. The connector cannot be installed directly onto bare fiber, as it is prone to damage during shipping. However, the connector can be assembled on bare fiber if a 3 cm protective loose tube is added for reinforcement. The customer can remove this protective tube after testing. The optical power handling of a standard connector is less than 0.5 W for SM28 fiber and decreases further with smaller core fibers.

**Fiber Type Selection Table:**

01	SMF-28	34	PM1550	67	STP 50/125µm
02	SMF-28e	35	PM1950	68	
03	Corning XB	36	PM1310	69	
04	SM450	37	PM400	70	
05	SM1950	38	PM480	71	MM 50/125µm
06	SM600	39	PM630	72	MM 62.5µm
07	780HP	40	PM850	73	105/125µm
08	SM800	41	PM980	74	FG105LCA
09	SM980	42	PM460	75	FG50LGA
10	Hi1060	43	PM780	76	200 µm
11	Draka BBE	44		77	400 µm
12	SM400	45		78	800 µm
13		46			

## 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 µm) 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 handling by expanding the core side at the fiber ends.

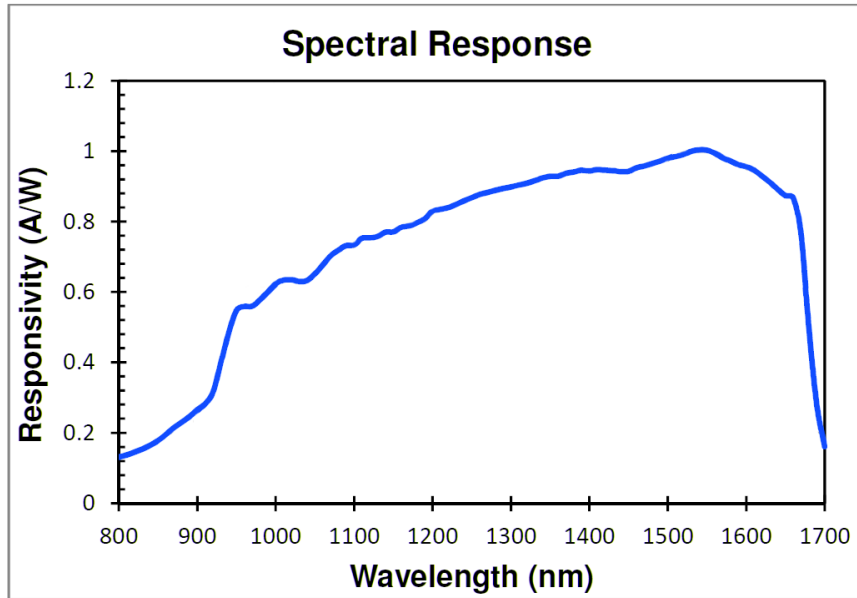
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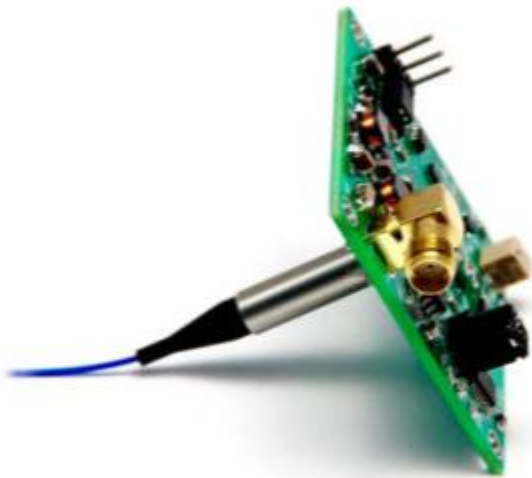


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## Spectral Response



## Amplifier Mounted Option



### Low-Noise Optical Detector Amplifier

DETA-11A221111

\$165

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