High-Speed Fiber Coupled InGaAs PIN Photodiode

(1000 to 1600nm, 10, 20, 32GHz)

DATASHEET

Return to the Webpage

The Fiber Coupled High-Speed InGaAs PIN Photodiode is based on a unique package featuring a high-speed, fast rise and fall response. The component integrates a fiber with a high-sensitivity photodiode for signal detection. The response is analog without TIAC. Our design minimizes component assembly costs and module footprint while increasing stability over wide temperature and wavelength ranges. We offer three analog response speeds of 10GHz, 20GHz, and 32GHz. Detector integrated with bias and SMA RF connector is also available online.

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.

Applications

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

Features

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

Specifications

Parameter	Min	Typical	Max	Unit
Central Wavelength	1000		1600	nm
Responsivity [1]	0.7	0.9		A/W
Input Power	-30		10	mW
Saturation Power			10	dBm
Polarization Extinction Ratio [3]	18	23		dB
Dark Current at 23°C	0.05	0.1	4	nA
Capacitance		60	70	fF
Reverse Voltage			10	V
Reverse Breakdown Voltage			20	V
Response Frequency	10	30	40	GHz
Forward Current			10	mA
Reverse Current			5	mA
ESD Susceptibility (HBM)			100	V
Soldering Temperature (60 sec)			200	°C
Operating Temperature	-40		75	°C
Storage Temperature	-40		85	°C
Reliability	Telcordia 1209 and 1221			

Notes:

[1]. The net responsivity is defined as the ratio of the PD current output and optical power measured at output fiber

[2]. Single Mode Fiber version only.

[3]. 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.**

RoHS COMPLIANT

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Rev 08/27/26

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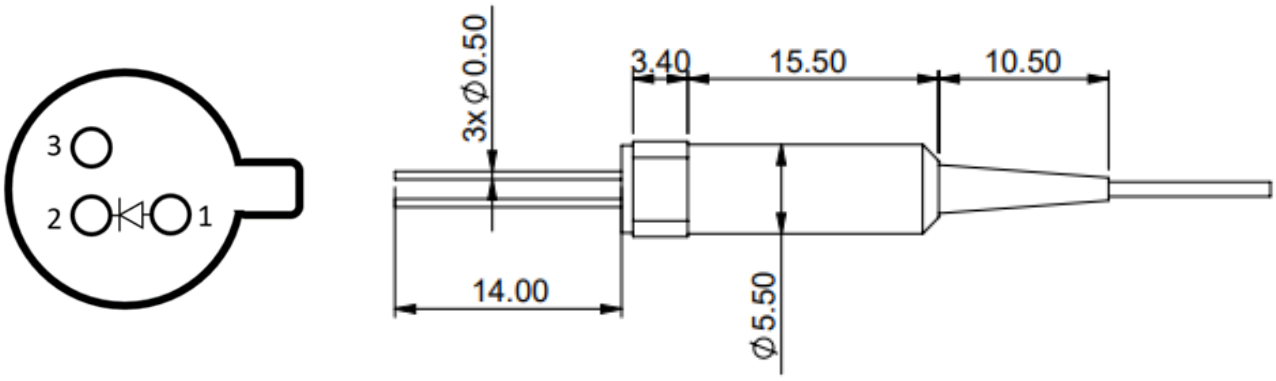
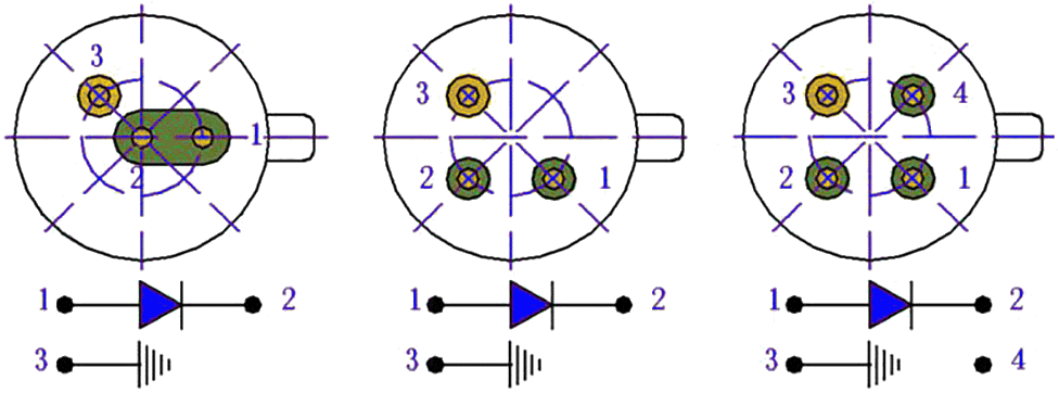
Mechanical Footprint Dimensions (mm)



*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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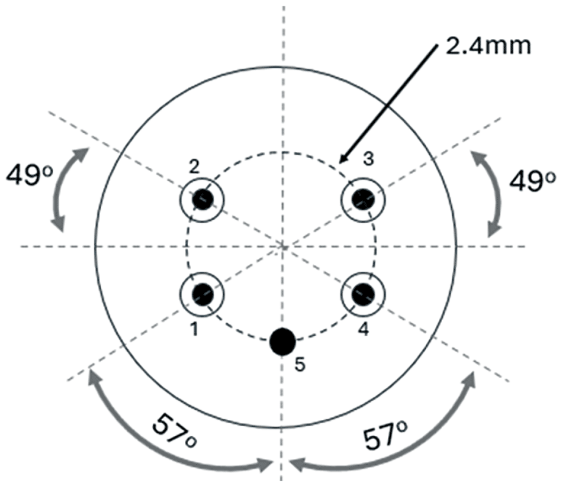
PIN Configuration – 33 GHz

Bottom View



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PIN Assignments

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

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Ordering Information (Part Number)

	1	☐	☐	☐	☐☐	☐	☐	☐	☐
Prefix	**Wavelength**	**Speed**	**PCB**	**Package**	**Fiber Type**	**Fiber Cover**	**Fiber Length**	**Connector [1]**	**Driver**
FCHD-	1000 - 1620 = 1 Special = 0	10GHz = 1 25GHz = 2 8GHz = 3	None = 1 Yes = 2 Special = 0	Standard = 1 Special = 0	SM28 = 11 PM1550 = 55 50/125 = MM	0.9mm tube = 3 Bare Fiber = 1 Special = 0	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	Non = N PCB = P Benchtop = B

[1]. The default connector configuration uses fiber with 0.9 mm buffer protection. The connector cannot be installed directly onto bare fiber because the bare fiber 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 may remove this protective tube after testing. The optical power handling of a standard connector is less than 0.5 W for SMF-28 fiber and decreases further for smaller-core fibers.

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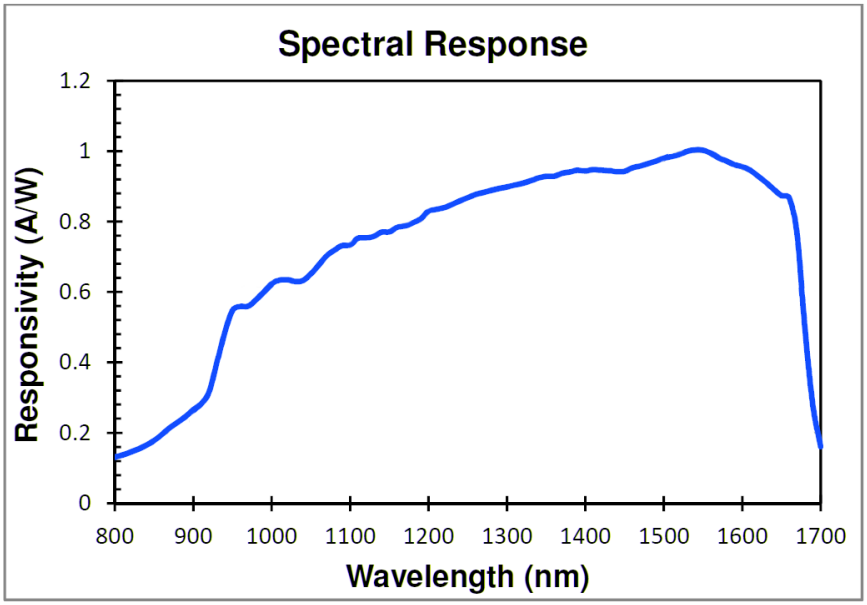
Spectral Response



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 how handling by expanding the core side at the fiber ends.

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Typical Response @ 1550nm

Amplifier Mounted Option

DETA-11A221111
$165

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

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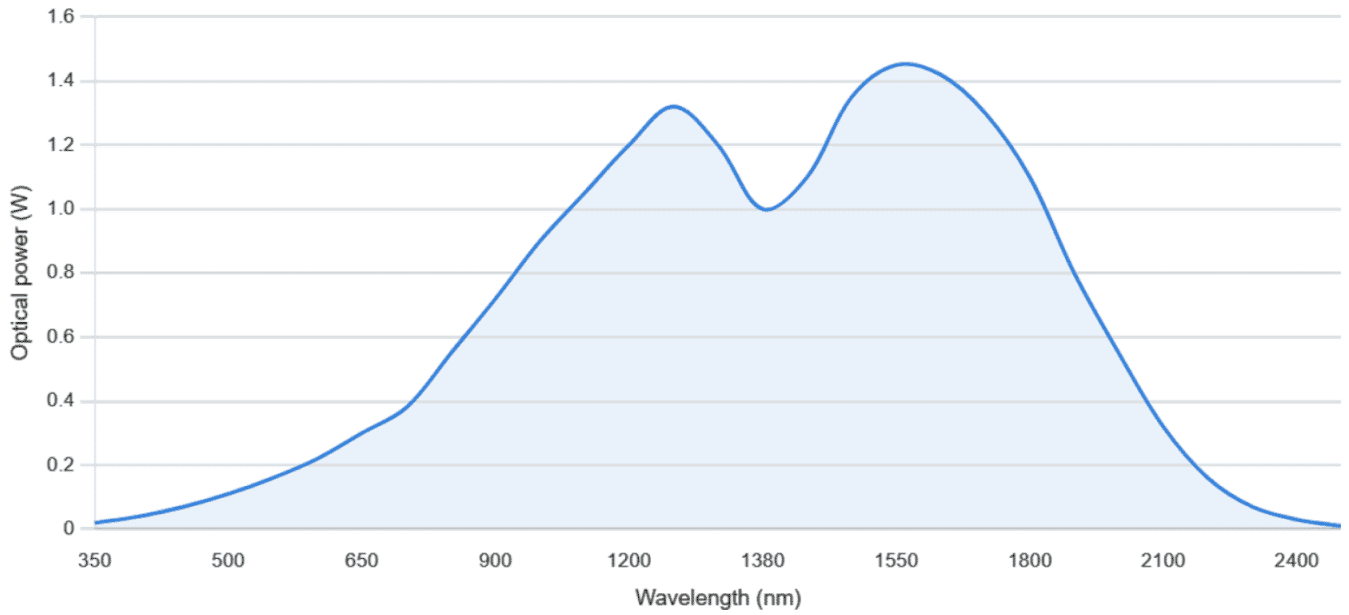
Regular Single Mode / Polarization Maintaining Fiber Optical Power Handing vs Wavelength



Single mode fiber optical power is limited by nonlinear effects in addition to absorption that increase loss and generate heat. The curve shows the approximate safe CW power envelope for standard single-mode fiber. Actual limits depend on fiber design, core size, length, and laser characteristics. Specialty fibers can significantly increase the power limit.

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