

Fiber Coupled High-Speed Si PIN Photodiode

(450 to 900nm, high speed 0.3ns, all fiber types)



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BUY NOW



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 High-Speed Si PIN Photodiode is based on a unique package that features a 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 with linearity. Our design minimizes component assembly costs and footprint while increasing stability over a wide temperature and wavelength ranges.

The response linearity is significantly enhanced by the associated linearization amplifier in which the sensor is mounted having a 5V DC input and an SMA signal output.

Specifications

Parameter	Min	Typical	Max	Unit
Wavelength	450		900	nm
Responsivity ^[2] (860nm, VR=5V)	0.45		0.55	A/W
Input Power	-45		27	dBm
Polarization extinction ratio ^[4]	18	23		dB
Dark Current at 23°C, VR=5V		0.1	1.0	nA
Capacitance		1.5		pF
Reverse Voltage		5	20	V
Rise/Fall Time		0.6		ns
Cut-Off Frequency		1		GHz
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 the output fiber. For multimode detection, the standard version is for detecting light intensity with a fixed coupled power ratio (CPR) which is a metric for mode spreading. If the light CPR varies, a larger area detector needs to be used, which can be produced as a special order
- [3]. Single Mode Fiber version only
- [4]. PM Fiber version only

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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Rev 05/04/24

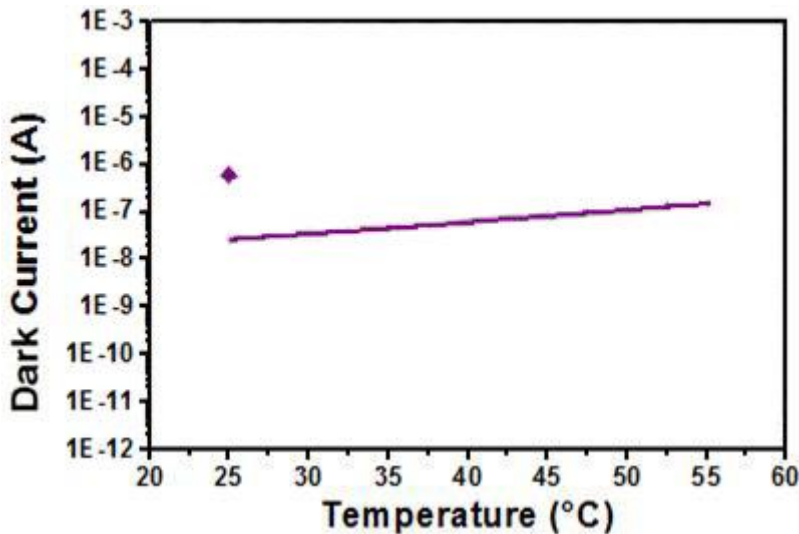
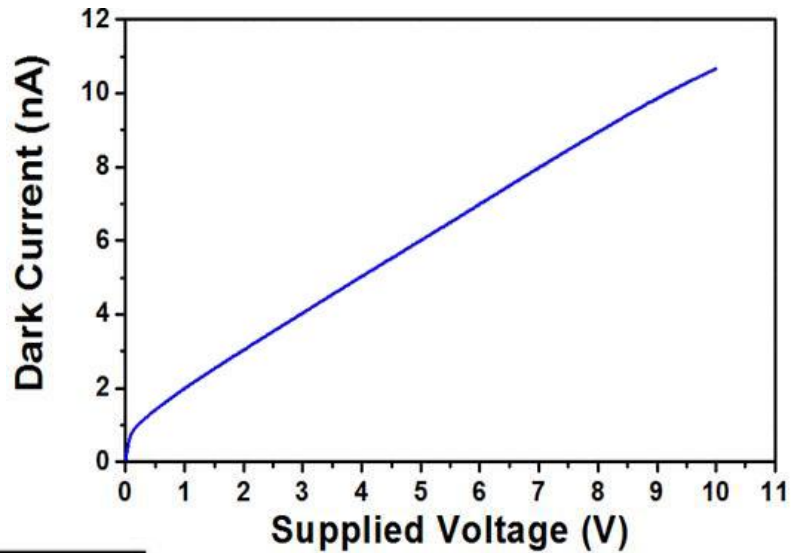
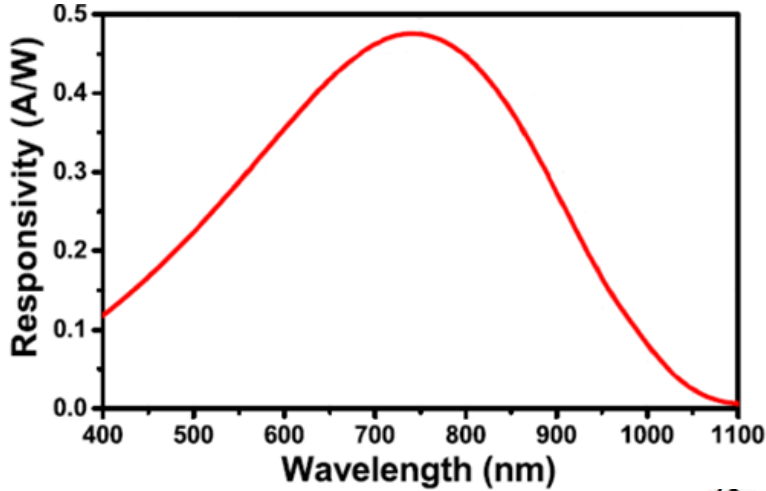
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Typical Characters



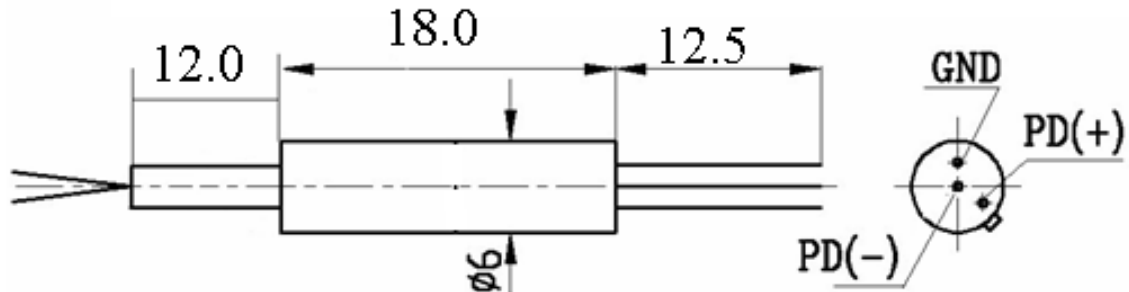
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Mechanical Footprint Dimensions (mm)



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.

Ordering Information

Prefix	Wavelength	Linear Driver	TEC Cooling	Package	Fiber Type	Fiber Cover	Fiber Length	Connector
FCSP-	450-900 = S Special = 0	Yes = L None = N	No = 1 Yes = 2	Standard = 1 Special = 0	Choose from table below	0.9mm Tube = 3 Special = 0	0.25m = 1 0.5m = 2 1.0m = 3 1.5m = 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

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	Hi780	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			

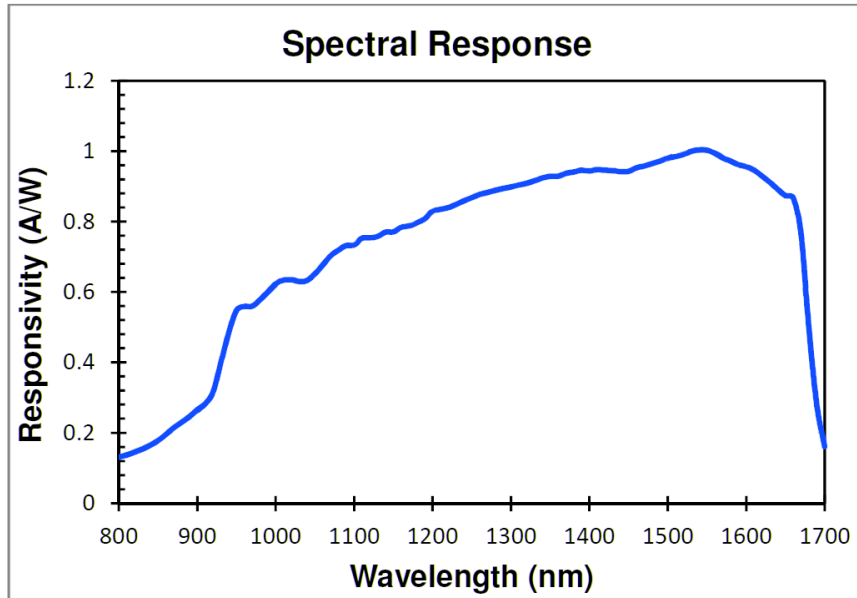
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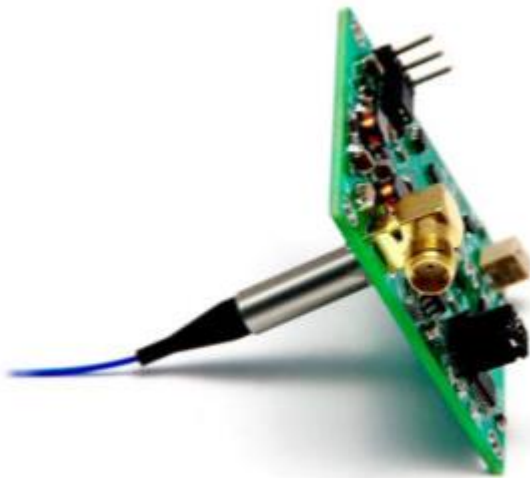


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Spectral Response



Amplifier Mounted Option



Low-Noise Optical Detector Amplifier

DETA-11A221111

\$165

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

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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 handling by expanding the core side at the fiber ends.