

High Speed Digital Fiber Coupled InGaAs APD Photodiode

(1260 to 1600 nm, SM, MM, 5, 12, 25 Gbps, TIA integrated, differential output)



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Features

- 25 Gbps
- Wide Temperature Operating Range
- Received Signal Strength Indicator
- TIA Built-in
- 1K Ohm Transimpedance Gain

Applications

- Communication
- RF over Fiber (RFoF)



The APID is a fiber-coupled InGaAs APD photodiode integrated with a high-speed transimpedance amplifier (TIA), supporting data rates up to 25 Gb/s with differential output. It offers a flat response across a wide operating temperature range and is available with single-mode and multimode fiber coupling options, making it versatile for various high-speed optical communication applications. The multimode fiber coupling uses fiber tip lens technology for high efficiency. A matching evaluation PCB is available, featuring up to 8 GHz 3 dB analog bandwidth and SMA RF interfaces, with a single connector for single-ended output and dual connectors for differential outputs, enabling convenient testing and system integration.

Due to their high sensitivity to electrostatic discharge, warranty coverage applies only to fully metal-covered modules on 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
Bias Voltage		5	12	V
Supply Current		26	35	mA
Response Spectrum	1260		1600	nm
Bandwidth		21		GHz
Overload	2.2			dBm
Sensitivity	-26	-30	-40	dBm
Optical Return Loss			-27	dB
RSSI Offset Current			100	nA
Responsivity	0.7	0.8		A/W
Dark Current		150		nA
Output Impedance		50		
Max. Output Voltage		300		mV _{p-p}
Low Frequency Cutoff	25	100		kHz

Photodiode Absolute Maximum Ratings

Parameter	Min	Typical	Max	Unit	Condition
Voltage			3.6	V	
Input Optical Power			5	dBm	
Storage Temperature		-40	90	°C	
Storage Humidity			85	% r.H.	
Operating Temperature		-40	85	°C	
Soldering Temperature			260	°C	10 sec
ESD Susceptibility		100		V	HBM

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 [\[click this link\]](#):

Operating at maximum operating specs for prolong periods of time will damage the device.

Rev 04/17/26

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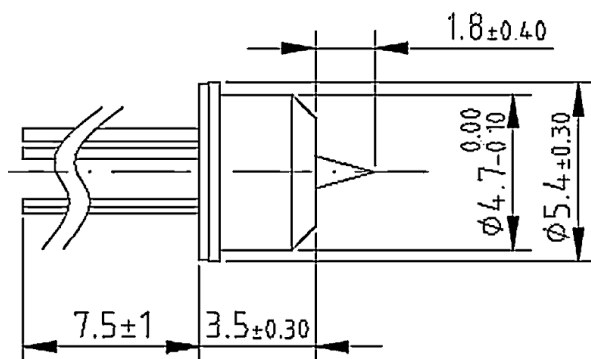
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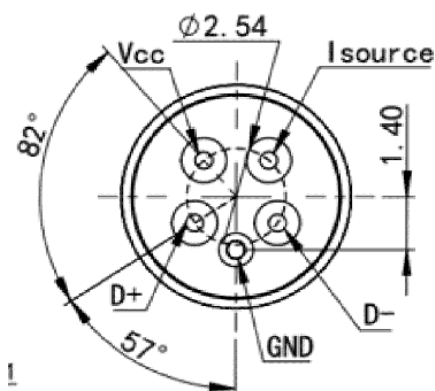
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Mechanical Dimensions (mm)



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

PIN Configuration (Bottom View)



Pin	Function
Vcc (3.3V)	DC Power
GND	Ground
Dout(-)	Detector Signal Output Negative
Dout(+)	Detector Signal Output Positive
I source	Readout photodiode current

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Ordering Part Number

	1	☐	☐	☐	☐	☐	☐	☐
Prefix	Wavelength	Speed	Driver PCB	Package	Fiber Type	Fiber Cover	Fiber Length	Connector ^[1]
APID-	1230 - 1620 = 1	25 GHz = H 12 GHz = 1 5 GHz = 5	Non = 1 Single Output = 2 Differential = 3	Standard = 1 Special = 0	SM28 = 1 50/125 = 2	0.9mm tube = 3 Bare fiber = 1 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 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.

Detector Mounted on Driver



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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High Speed Digital Fiber Coupled InGaAs PIN Photodiode

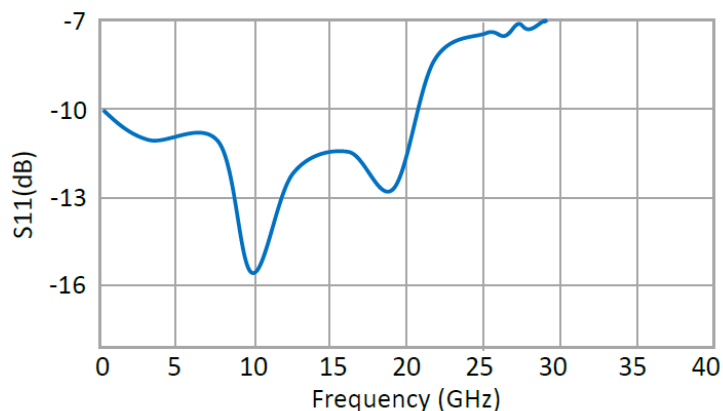
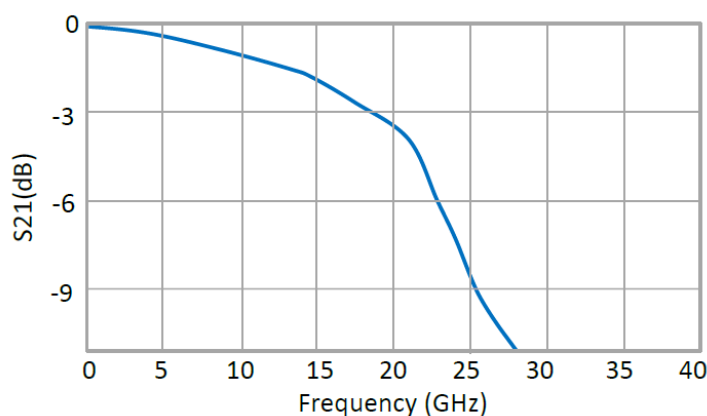
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Typical Performance Curves (Top 23°C, 801 PTs, 16 AVGs, 1.5% smoothing)

RF performance dependent on PCB design and optimization. Data shown with Ground-backed Co-planar waveguide. Single ended measurement, port two is terminated with 50 Ohm load.



Caution Electrostatic Sensitivity



- Never touch laser diode and the module using hands
- Always use protections when handle a laser diode
- Recommend mounting the laser diode using an ionic gun and ESD finger cots



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