

Fiber Coupled 8 GHz PIN Photoreceiver

850-1650 nm



DATASHEET

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Features

- 7-pin Coaxial Package
- InGaAs-PIN with 3.3V Pre-Amplifier
- Differential Output

Applications

- RF Over Fiber
- Analog and Digital Link
- Other Optical Fiber Systems



The FORX Photoreceiver is designed for high-speed and high sensitivity analog and digital applications, featuring a high bandwidth PIN photodiode and a linear preamplifier within a hermetically sealed coaxial package. The module incorporates a highly stable optical coupling system. Its low input-referred noise ensure exceptional linearity and precision.

For added convenience, Agiltron offers a driving PCB for easy integration and a metal box protective package to safeguard against ESD in laboratory environments, both come with a specially designed low noise power supply.

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
PIN Responsivity		0.7	0.9		A/W
Conversion Gain				450	V/W
Operating Wavelength		850		1650	nm
AC Transimpedance		2000	2500		Ω
Maximum Output Voltage Swing			250		mV
Bandwidth		0.05	8		GHz
Output Return Loss		7	8.0		dB
Minimum Sensitivity	25°C, Rext=13dB		-19	-17	dBm
	25°C, Rext=8.2dB		-17.5		
	25°C, Rext=6.0dB		(16.0		
	-5 to 70°C, Rext=13dB		-18.0	-16	
Maximum Overload			2.0	6	dBm
Optical Return Loss	$\lambda = 1,310\text{nm}$	27			dB
	$\lambda = 1,550\text{nm}$	27			
Preamp Supply Current			40	50	mA
Preamp Supply Voltage		3.13	3.3	3.47	V
PIN Supply Voltage		4.5	5.0	12	V
Storage Temperature		-40		85	°C
Operating Temperature		-5		70	°C
Supply Voltage		-0.5		4	V
PIN Reverse Voltage		0		+20	V
PIN Reverse Current				4 (peak)	mA

* Ta=25°C, $\lambda=1,550\text{nm}$, Vcc=3.3V, Vr=5V, unless otherwise specified

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

sales@agiltron.com

www.agiltron.com

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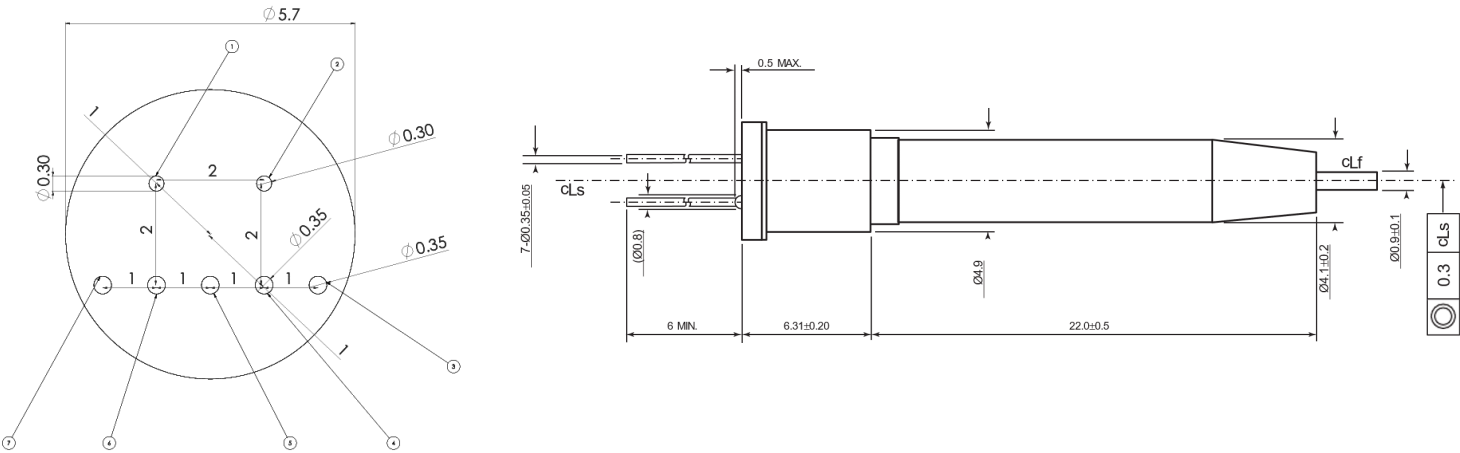
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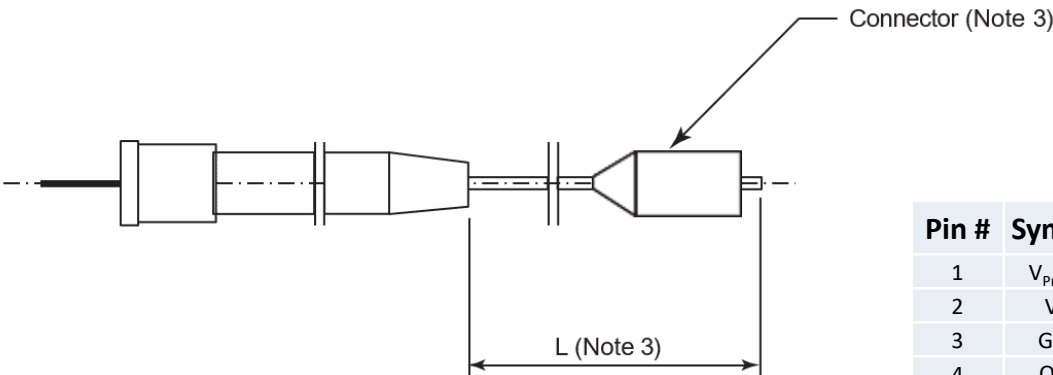
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Dimensions (mm)



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

Pin Definition



Pin #	Symbol	Function
1	V_{Preamp}	Preamp Bias
2	V_{PD}	PD Bias
3	GND	Case Ground
4	OUT	Output (-)
5	GND	Case Ground
6	OUT	Output (+)
7	GND	Case Ground

Note 1: cLf: Fiber center line
Note 2: cLs: Stem center line Neither cLf not cLs are necessarily corresponding
Note 3: The fiber length and connector shall be specified in the detail (individual) specification.

Application Notes

Electrostatic discharge (ESD) will cause permanent damage to the product. Please avoid any ESD to the input pins or output connector. Use standard ESD protective equipment when handling this product.

Temperature and fiber restrictions are as follows: Lead soldering: 250°C for no more than 10 seconds Fiber feed-through tube:

- 120°C
- Fiber pull force: 4.9 N
- Fiber bending radius: 1 inch or less

Exceeding these conditions can cause permanent damage to the device.

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Detector Mounted on Driver



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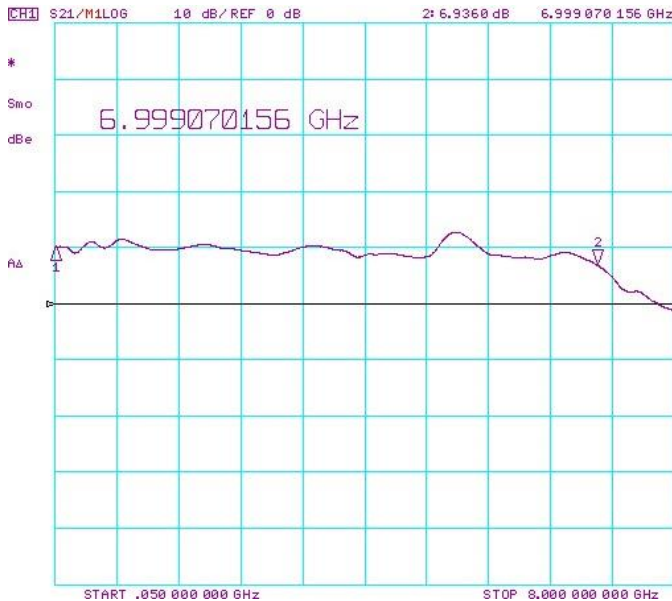
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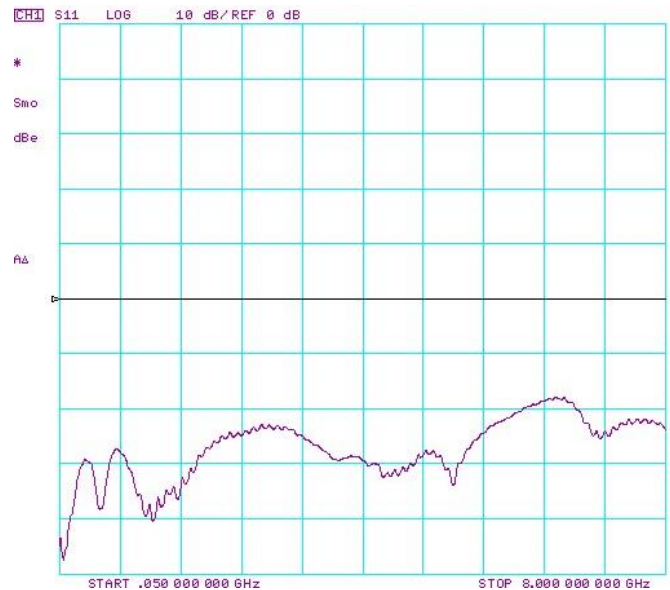


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S21 Frequency Response (without driver)



S11 Frequency Response (without driver)



Ordering Information (Part Number)

	1	☐	10	1	☐	11	☐
Prefix	Detector Type	Wavelength Range	Bandwidth	Package ^[1]		Configuration	Connector ^[2]
FORX-	PIN = 1	1300-1600nm = 1	8GHz = 10	Device = 1 Mounted on PCB = 2 Module ^[3] = 3		Standard = 11	Non = 9 FC/PC = 2 FC/APC = 3 Special = 0

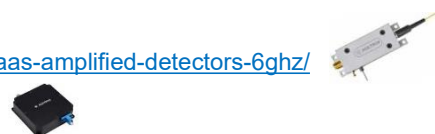
[1]. Our driver achieve only S21 3dB at ~ 5GHz. Module is a plug-play unit, that contains driver metal enclosure, SMA RF connectors, and power supply.

[2]. 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.

[3]. Two Modules available:

6 GHz Module: <https://agiltron.com/product/high-speed-fiber-coupled-ingaas-amplified-detectors-6ghz/>

8 GHz Module: <https://agiltron.com/product/8-ghz-photoreceiver-module/>



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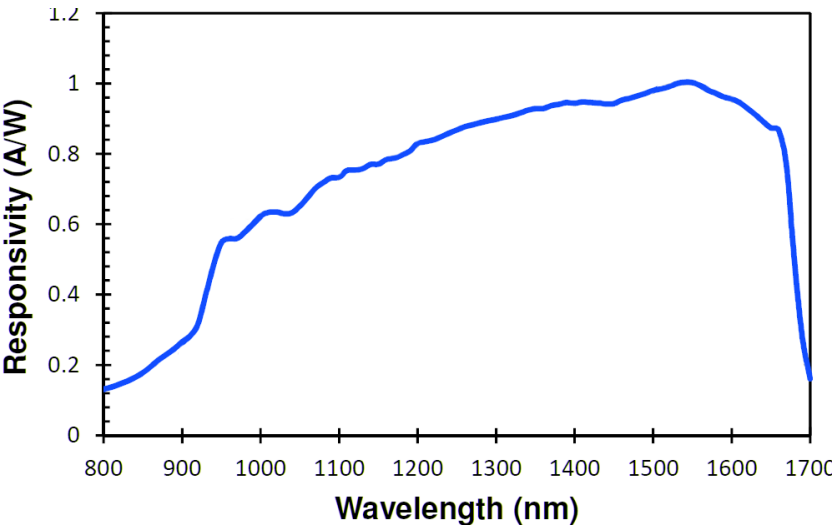
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Driver

Spectral Response



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Laser Safety

This product meets the appropriate standard in Title 21 of the Code of Federal Regulations (CFR). FDA/CDRH Class 1M laser product. This device has been classified with the FDA/CDRH under accession number 0220191. All versions of this laser are Class 1M laser products, tested according to IEC 60825-1:2007 / EN 60825-1:2007. An additional warning for Class 1M laser products. For diverging beams, this warning shall state that viewing the laser output with certain optical instruments (for example eye loupes, magnifiers, and microscopes) within a distance of 100 mm may pose an eye hazard. For collimated beams, this warning shall state that viewing the laser output with certain instruments designed for use at a distance (for example telescopes and binoculars) may pose an eye hazard.

Wavelength = 1.3/1.5 μm .

Maximum power = 30 mW.



Caution Electrostatic Sensitivity



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



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