Fiber Coupled 6 GHz High Sensitive PIN Photoreceiver

DATASHEET

Return to the Webpage

The FORX Linear Photoreceiver is designed for high-speed and high sensitivity analog and digital applications, featuring a surface-coupled coplanar waveguide APD photodiode and a linear transimpedance amplifier within a hermetically sealed package. Its high conversion gain and 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.

Features

- 6 GHz Bandwidth
- -25dBm High Sensitivity
- Hermetically Sealed Package
- Linear TIA Integrated

Applications

- High Sensitivity Analog Heterodyne Detection
- Transponder and Line Card Designs
- Linear Receiver up to 10 GHz
- Analog RFoF Link

Specifications

Parameter	Min	Typical	Max	Unit
Wavelength Range	1200		1650	nm
Optical Input Power		-1	0	dBm
Bandwidth (-3 dB Vpd=8V)		6.5		GHz
Dark Current @ 30 °C, 3.3 V		100		nA
Sensitivity @ 1550 nm *	-20		-28	dBm
Optical Return Loss	-30		-27	dB
Deviation From Linear Phase (DC=6GHz)	-10		10	°
Transimpedance Differential Gain	1.6		2.7	kΩ
Polarization Dependent Loss		0.1		dB
PD Reverse Bias Voltage	3	30	35	V
Amplifier Supply Voltage	3.1	3.3	5	V
Amplifier Bias Current		45	65	mA
Electrical Return Loss (0.1 to 25 GHz)		< -15		dB
Impedance		50		Ω
Output Coupling	DC (external AC coupling required)			
Thermistor Resistance (@ 25 °C)		10		kΩ
Thermistor Beta Value	3910	3950	3990	K
Operating Temperature	-30		+75	°C
Storage Temperature	-50		+85	°C
Operating Humidity		85		%
ESD, Input and Output Pins	1000			V
ESD, All Other Pins	2000			V

* 10^{-12} BER, PRBS 2^{31}-1

Rev 01/15/25

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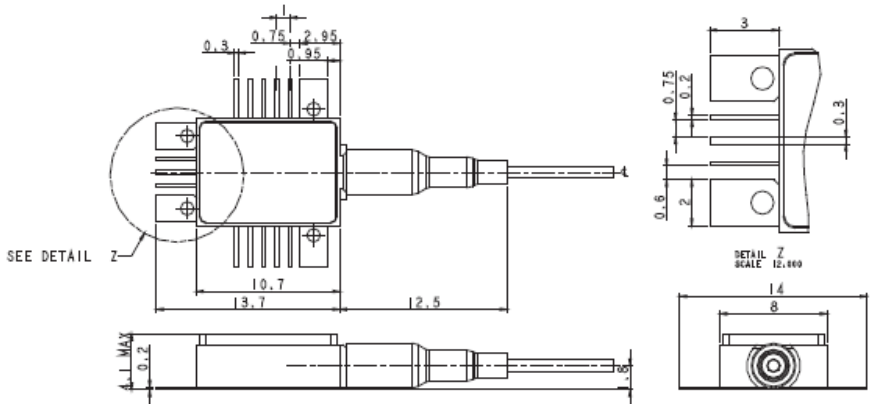
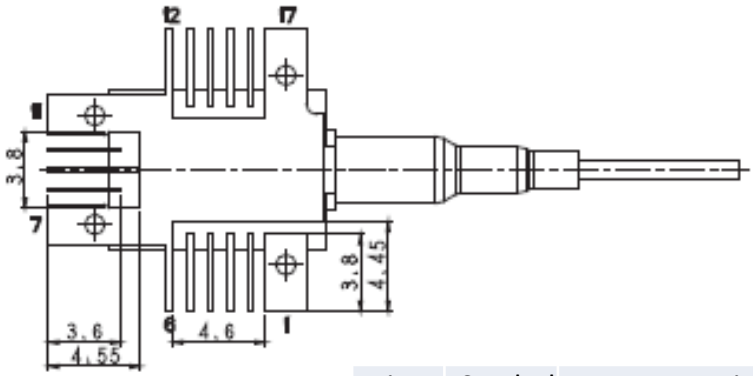
DATASHEET

Dimensions (mm)



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

Pin Definition



Pin #	Symbol	Function	Pin #	Symbol	Function
1	NC	Case ground	10	Out_P	Positive output
2	V_{pd}	APD bias voltage	11	GND	Case ground
3	NC	No connection	12	GND	Case ground
4	NC	No connection	13	NC	No connection
5	NC	No connection	14	Vcc	TIA supply (+3.3V)
6	GND	Case ground	15	NC	No connection
7	GND	Case RF ground	16	R_{th}	Thermistor
8	Out_N	Negative RF data output	17	GND	Case ground
9	GND	Case ground			

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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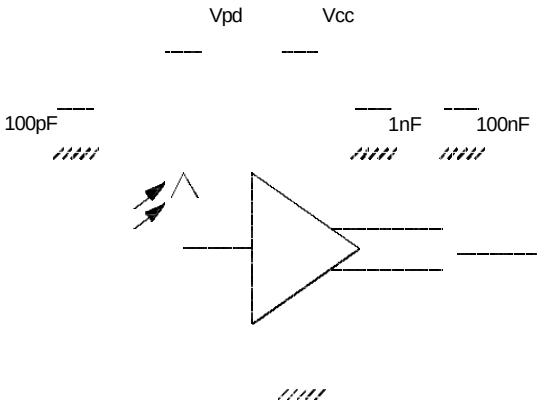
Functional Diagram



S21 Frequency Response

Ordering Information

	2	☐	06	2	☐	11	☐
Prefix	**Detector Type**	**Wavelength Range**	**Bandwidth**	**TEC**	**Module***	**Configuration**	**Connector**
FORX-	PIN = 1 APD = 2	1300-1600nm = 1	6GHz = 06	Yes = 2	Non = 1 Yes = 2	Standard = 11	FC/PC = 2 FC/APC = 3 Special = 0

* Module contains driver and power supply.

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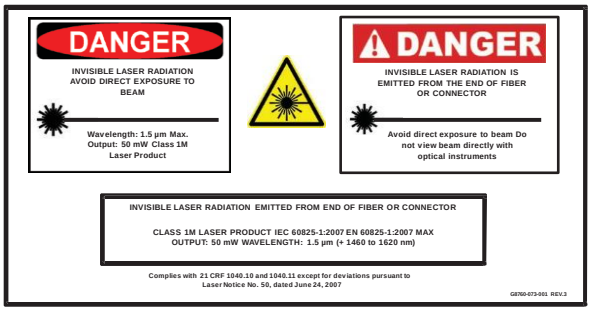
Laser Safety

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.



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