10GHz PIN Preamp Detector/Receiver

two stage amplification, 850-1650nm

DATASHEET

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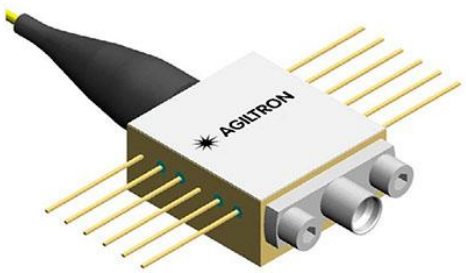

High sensitivity optical receiver module including PIN diode, low noise TIA and limiting amplifier. Low power consumption. Output interface with coaxial connector. Non-inverted, single-end AC-couple output.

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.

Features

- High Sensitivity
- Low Noise TIA and Limiting Amplifier
- Low Power Consumption
- Coaxial Connector or RF Feed
- Coaxial Connector Among: GPO© connector, K©- connector, or SMA connector
- Non-Inverted, Single-End AC-Couple Output. (Package version with differential outputs available)
- Input Optical Connector: SC, FC-PC, etc.
- Case Operational Temperature: -20°C to +70°C

Applications

- Long and Short Reach SONET/SDH Systems
- Optically Preamplified Receivers
- Datacom Systems up to 12.5 Gb/s

Specifications

Parameter	Min	Typical	Max	Unit
Operating Wavelength	850	1550	1650	nm
Dark Current		50		nA
Receiver Sensitivity [1], [2]	-19	-20		dBm
Operational Optical Input Power [1], [3]		0	2	dBm
Responsivity	0.75	0.8	0.9	A/W
Sensitivity @1 nA noise floor	-55			dBm
TIA Transimpedance Gain			450	V/A
TIA 3dB Bandwidth	8	9	10	GHz
Receiver low frequency cutoff (3dB)		< 50	100	kHz
TIA transfer function phase linearity deviation		< 10	20	°
(TIA transfer function group delay deviation)			10	ps
TIA transfer function amplitude peaking		< 1	1.5	dB
Input optical reflectance [1], [3]			-27	dB
Output Rise and Fall Time		< 40		ps
Total Power consumption			750	mW
RF Input Connector		SMA		
Fiber Type		SM28		
PIN diode bias [4]	+3.3	+5	+10	V
Positive receiver module bias (110 mA max.)	+3.0	+3.3	+3.6	V
Negative receiver module bias (160 mA max.)	-2.4	-2.2	-2.0	V
Operating Temperature	-20		70	°C
Storage Temperature	-40		85	°C

Notes:

[1]. Measured on every device

[2]. A BER Plot is provided with every device

[3]. Screened on every device

[4]. All tests were performed with 5V reverse bias for the PIN photo diode. Increasing the PIN reverse bias will, in general, enhance the receiver sensitivity slightly. Higher reverse bias voltage tends to increase the dark current slightly, however, this increase will not cause any receiver sensitivity degradation.

Rev 02/20/26

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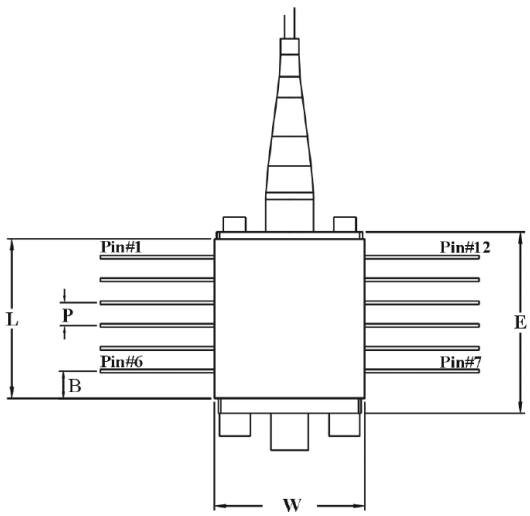
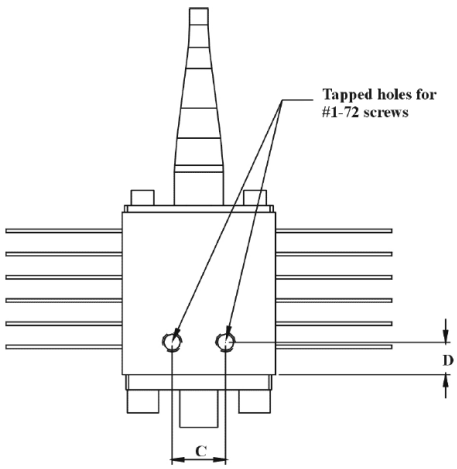
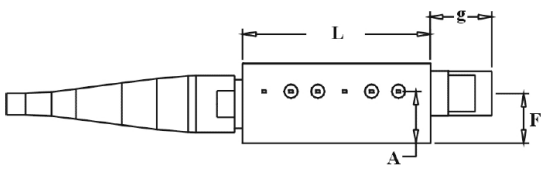
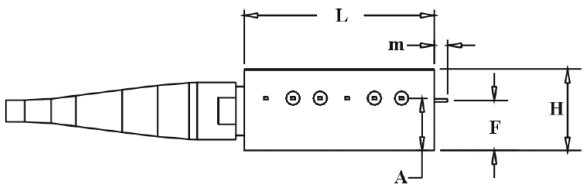
Dimensions (mm)









Pin Definition and Instructions

Pin #	Function
1	GND
2	V_PIN
3	-2.2V
4	GND
5	-2.2V
6	NC
7	V_mon
8	V_ref
9	GND
10	+3.3V
11	NC
12	GND

Dimensions

Pin #	Inch	mm
A	0.192 ± 0.008	4.88 ± 0.20
B	0.120 ± 0.008	3.05 ± 0.20
C	0.230 ± 0.008	5.84 ± 0.20
D	0.140 ± 0.008	3.05 ± 0.20
E	0.795 ± 0.020	3.56 ± 0.50
F	0.184 ± 0.010	4.67 ± 0.26
g	0.229 ± 0.020	5.82 ± 0.50
H	0.300 ± 0.010	7.62 ± 0.26
L	0.700 ± 0.008	17.78 ± 0.20
m	0.050 ± 0.010	1.27 ± 0.26
P	0.100 ± 0.010	2.54 ± 0.26
W	0.660 ± 0.008	16.76 ± 0.20

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

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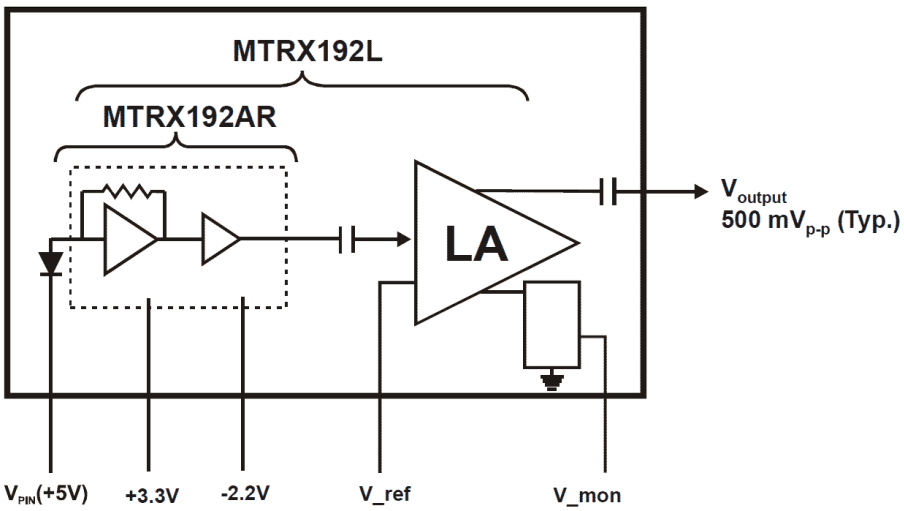
Receiver Schematic



Recommended Circuit Diagram

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Ordering Information (Part Number)

	1	1	10	2	1	11	☐
Prefix	**Detector Type**	**Wavelength Range**	**Bandwidth**	**Amplifier**	**Module***	**Configuration**	**Connector[1]**
AFDT-	PIN = 1	1200-1600nm = 1	10GHz = 10	Single Stage = 1 Dual Stage = 2	Non = 1 Yes = 2	Standard = 11	FC/PC = 2 FC/APC = 3 Special = 0

* Module contains driver and power supply.

[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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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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