

10Gb/s Coplanar APD Preamp Receiver

for low OSNR applications



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The AT10GC receiver consists of an avalanche photodiode, a low-noise preamplifier and a precision NTC thermistor in a hermetic coplanar package with a connectorized single-mode fiber pigtail. Differential outputs are provided to improve noise rejection for enhanced sensitivity. It has been optimized for use in 10Gb/s metro applications, either as a discrete device or within a transponder, using NRZ modulation, with or without FEC, at data rates up to 10.709 Gb/s.

Features

- Sensitivity, -26.5 dBm Typical
- Low Capacitance High Speed InGaAs APD Photodetector
- Supports FEC Rates up to 10.709 Gb/s
- Designed to Exceed the Environmental Requirements of Telcordia GR-468-CORE
- RoHS 5/6 Compliant

Applications

- Client or Line Side Links
- 300 pin LR Transponder Applications



Specifications

Parameter	Min	Typical	Max	Unit
Optical sensitivity BOL ^{[1], [2]}		-26.5	-24.5	dBm
Sensitivity penalty EOL over temperature ^{[1], [2]}		0.75	1.0	dB
Oeviation from linear phase	-10		+10	°C
High frequency -3dB corner	7			GHz
Low frequency -3dB corner			40	kHz
Transimpedance gain ^{[3], [4], [5]}	1.1	1.4	2.5	kΩ
Maximum output voltage ^[6]		500	700	mW
Return loss			-8	dB
Optical overload ^[2]	-3	-1		dBm
APO breakdown voltage	20		40	V
APO breakdown voltage temperature coefficient	0.030		0.061	V/°C
Dark current			100	nA
Amplifier bias current		75	90	mA
Input current for output limiting		1000		μA
Transimpedance amp supply voltage		-5.2		V
Thermistor resistance		10		kΩ
Amplifier bias voltage	-6.0		0.5	V
Operating temperature ^[7]	-40		85	°C
Storage temperature ^[8]	-40		85	°C
Input photocurrent			3	mA
APD bias voltage	0		Vbr	V
Fiber bend radius	20			Mm

Notes:

- [1]. Optical Wavelength between 1525-1575nm. Data to 1610nm available on request.
- [2]. Measured with 9.95 Gb/s, extinction ratio > 12dB, Q factor > 30, 50% crossing level, 1550nm.
- [3]. Load impedance is 50Ω AC-coupled with a return loss > 20dB, up to 20GHz.
- [4]. Excludes APD responsivity.
- [5]. Differential.
- [6]. Single ended.
- [7]. The operating temperature is defined as the temperature of the module case.
- [8]. The rating is referred to the ambient temperature.

* Case Temperature = 25°C unless otherwise specified

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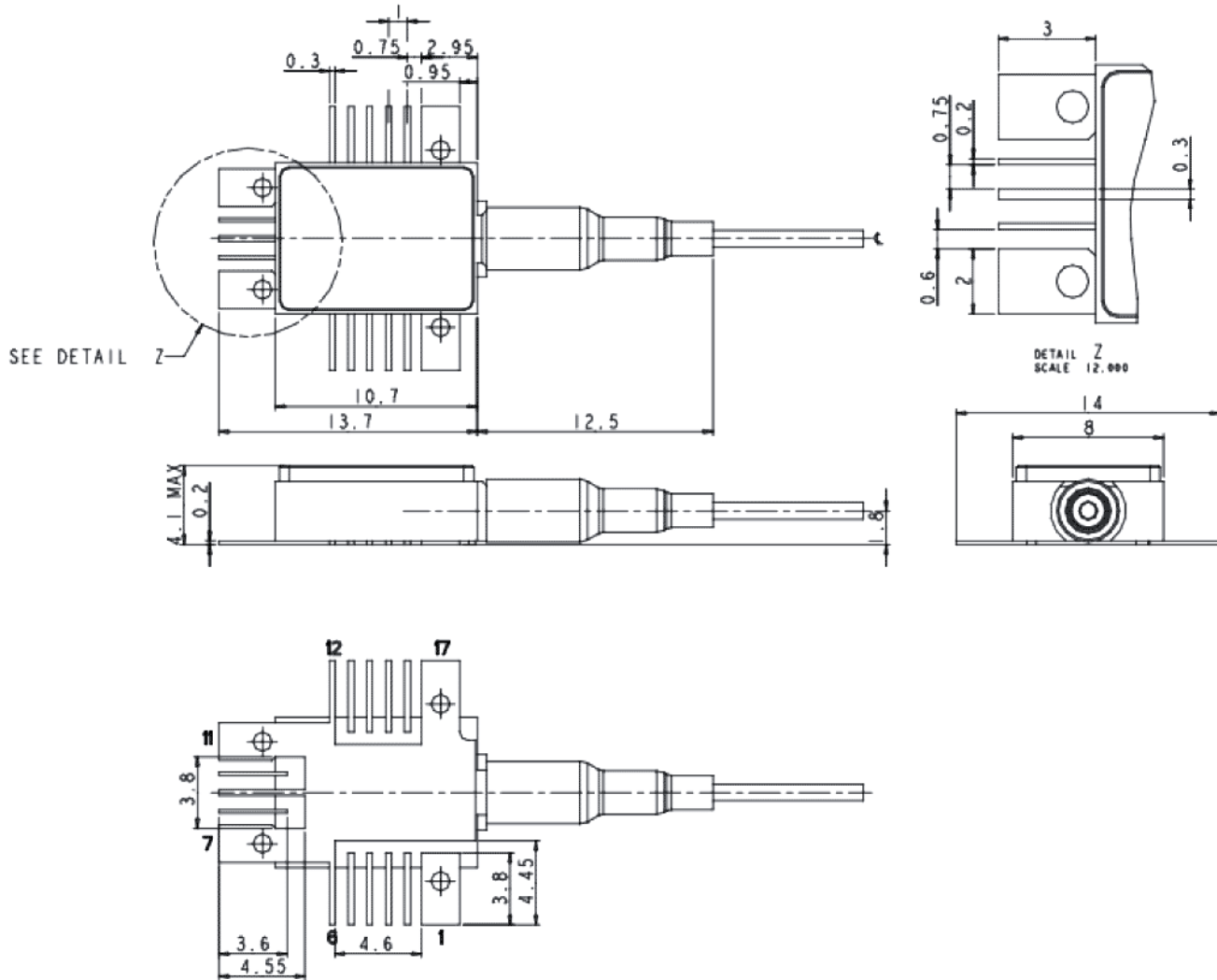
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Dimensions (mm)



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

Pin Definition

Pin #	Symbol	Function	Pin #	Symbol	Function
1	NC	Case ground	10	Out_P	Positive output
2	Vpd	APD bias voltage	11	GND	Case ground
3	NC	No connection	12	GND	Case ground
4	NC	Amplifier bias	13	FBIN	Offset feedback
5	NC	No connection	14	NC	No connection
6	GND	Case ground	15	NC	No connection
7	GND	Case RF ground	16	Rth	Thermistor
8	Out_N	Negative RF data output	17	GND	Case ground
9	GND	Case ground			

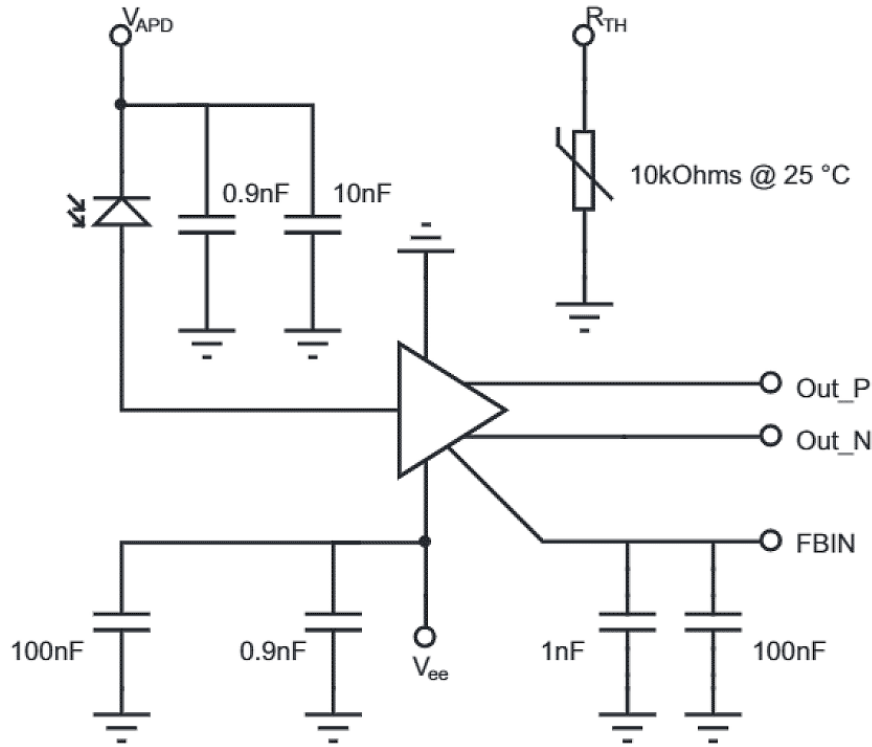
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Receiver Schematic



Recommended Circuit Diagram

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Ordering Information

Prefix	Detector Type	Wavelength Range	Bandwidth	TEC	Module*	Configuration	Connector
FORX-	PIN = 1 APD = 2	1200-1600nm = 1	10GHz = 10	Non = 1	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.

