2.5Gb/s High Sensitivity coplanar APD preamp receiver

AT3SGCC

The AT3SGCC is an optical receiver offering optimum sensitivity and overload performance for OC-48 optical transport systems. The hermetic packaged fiber pigtailed receiver contains an avalanche photodiode, an AGC low noise pre-amp and a precision thermistor.

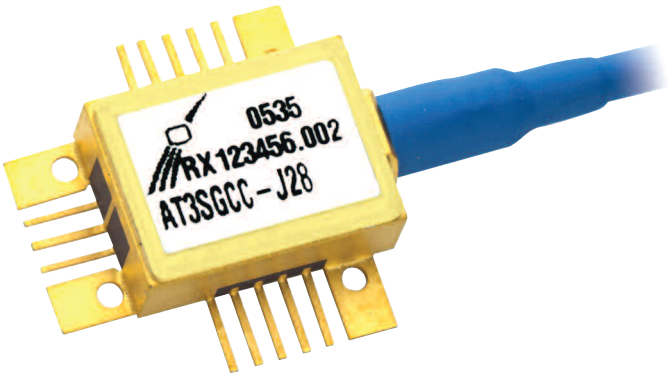
The RF coplanar data outputs from the package provide differential noise rejection for improved sensitivity. The product has been optimized for use in metro applications, either as a discrete device or within a transceiver, using NRZ modulation, with or without FEC, at data rates up to 2.7Gb/s.
The combination of a high performance avalanche photodiode, (APD), low noise AGC pre-amp and RF coplanar package provides unmatched performance for maximising transmission distance. The AGC low noise pre-amp is well suited to dynamic threshold level decision circuitry often used to maximise overall receiver chain performance.

Features:

- High sensitivity, -35.0dBm typical
- Wide dynamic range performance to -3dBm
- MSA coplanar receiver package
- Differential data outputs
- +3.3V operation
- RoHS 5/6 compliant

Applications:

- OC-48 DWDM optical transport systems
- OC-48 DWDM metro and long haul systems
- STM-16 SDH or OC-48 SONET systems



Characteristics

On all parameters listed below case temperature = 25°C unless otherwise stated.
Operating temperature -5°C to +70°C.
Optical wavelength between 1525-1575nm. Data 1575nm to 1610nm available on request.
(Operating temperature range of -20°C to +85°C is optional - details available upon request).

Parameter	Symbol	Measurement Conditions	Min	Typ	Max	Unit
APD breakdown voltage	V_{br}	-5°C to 70°C	40		65	V
APD temperature coefficient of breakdown voltage	T_{vbr}	-5°C to 70°C	0.09	0.1	0.12	V/°C
Transimpedance gain	Zt	-5°C to 70°C	2.3	3.6	4.7	kΩ
Bandwidth[1]	s_{21}	M = 10, small signal	1.8	2.2	3.0	GHz
Lower cut-off frequency[1]	s_{21} cut-off	M = 10, small signal			50	kHz
APD sensitivity	Sens.	2.5Gb/s, 2^{23}-1 PRBS @ 25°C. M=optimal ER = 10dB, BER=1x10^{-10}		-35.0	-33.5	dBm
APD overload	Psat	2.5Gb/s, 2^{23}-1 PRBS @ 25°C. M=3, ER = 10dB BER=1x10^{-10}	-3			dBm
Output voltage swing	Vout	Differential	18		300	mV pk-pk
Optical return loss	ORL		30			dB
Power supply current	I_{cc}			44	65	mA
Power supply voltage	V_{cc}		3.0	3.3	3.6	V
Output return loss	s_{22}	DC – 3.0 GHz	10			dB
Thermistor resistance	R_{TH}		9.5		10.5	kΩ

Notes:
[1] Load impedance is 50Ω AC-coupled.

Absolute Maximum Ratings

Parameter	Symbol	Min	Max	`Unit
Operating case temperature	T_{op}	-40	+85	°C
Storage temperature	T_{stg}	-40	+85	°C
Optical input power			+3	dBm
Power supply voltage		-0.5	3.6	V
APD supply voltage[1]		M3	V_{br}	V
Fiber bend radius		25		mm
Lead soldering time at 260°C		10		s

Notes:

[1] The breakdown voltage and APD bias data will vary from device to device. Each modulae will be supplied with deliverable data, in the form of V_{br} and APD bias voltages relative to a 10kV thermistor resistance.

Schematic Diagram

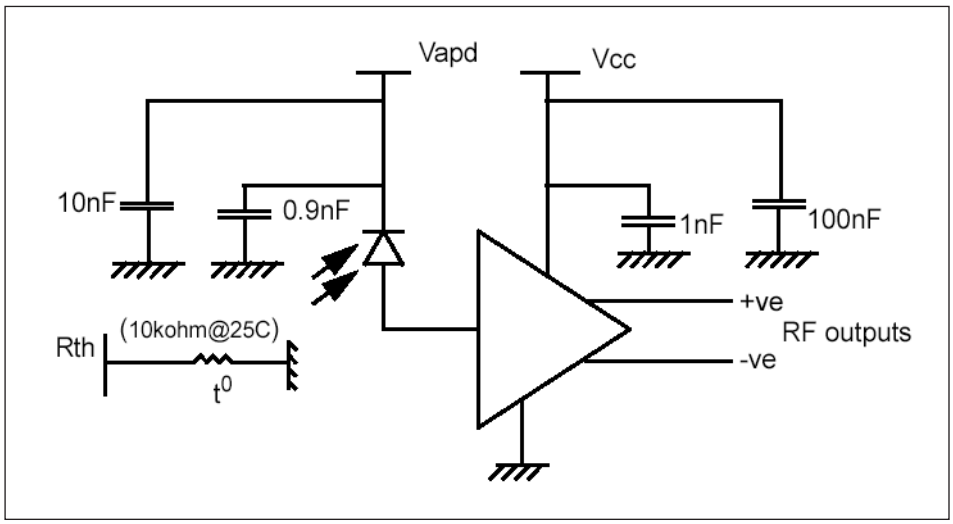
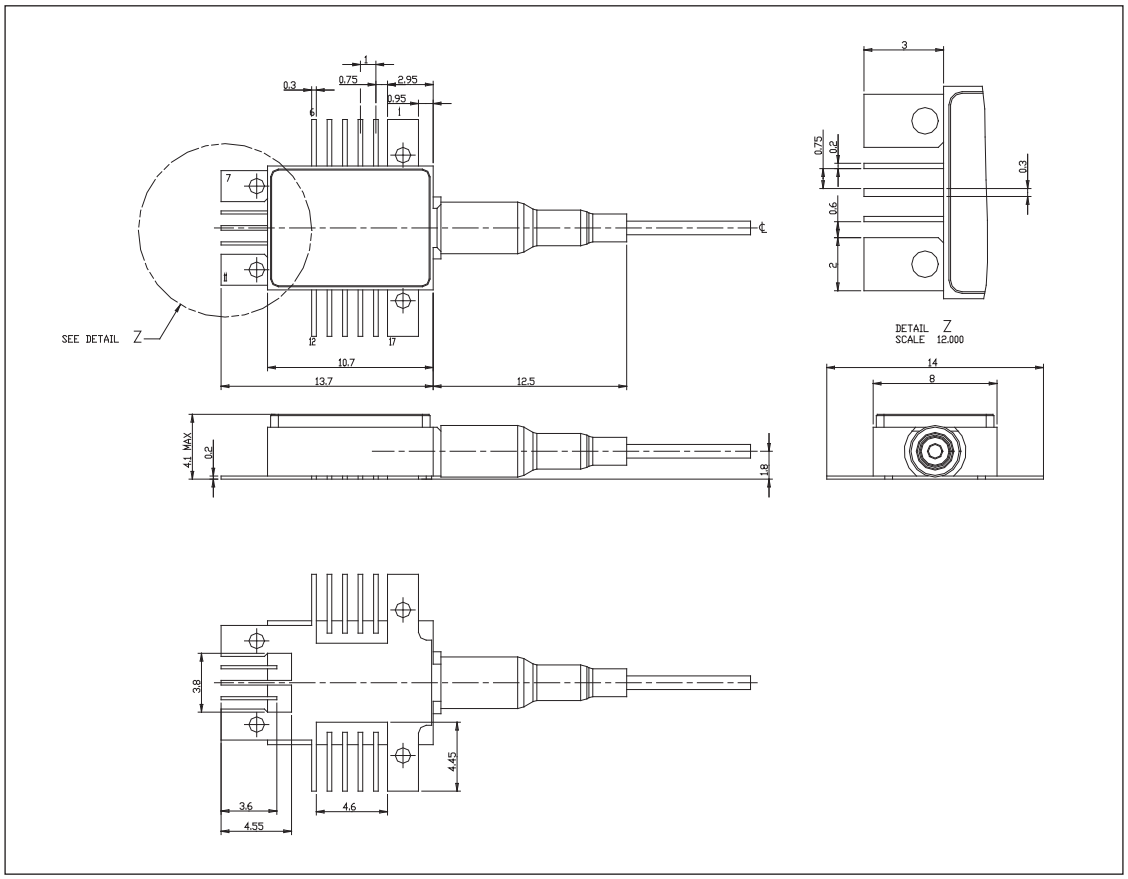


Figure [1] AT3SGCC schematic diagram

Pin Out

Pin #	Function	Pin #	Function
1	Case ground	10	+ve RF output
2	APD photodiode bias	11	Case RF ground
3	No connection	12	Case ground
4	No connection	13	No connection
5	No connection	14	Amplifier bias (3.3 Volts)
6	Case ground	15	No connection
7	Case RF ground	16	Thermistor
8	-ve RF output	17	Case ground
9	Case RF ground		

Schematic Diagram



Fiber is 900um secondary coated single-mode fiber, length = 900 - 1100mm

RoHS Compliance

Bookham is fully committed to environment protection and sustainable development and has set in place a comprehensive program for removing polluting and hazardous substances from all of its products. The relevant evidence of RoHS compliance is held as part of our controlled documentation for each of our compliant products. RoHS compliance parts are available to order, please refer to the ordering information section for further details.

Ordering Information:

AT3SGCC	- (Connector) J28 = SC/PC J34 = FC/PC J57 = LC J59 = MU

e.g. AT3SGCC-J28 is an AT3SGCC with an SC/PC connector

Other options available on request.

Contact Information

North America
Bookham Worldwide Headquarters
2584 Junction Ave.
San Jose
CA 95134
USA
• **Tel: +1 408 919 1500**
• **Fax: +1 408 919 6083**
www.bookham.com
sales@bookham.com

Europe
Paignton Office
Brixham Road
Paignton
Devon
TQ4 7BE
United Kingdom
• **Tel: +44 (0) 1803 66 2000**
• **Fax: +44 (0) 1803 66 2801**

Asia
Shenzhen Office
2 Phoenix Road
Futian Free Trade Zone
Shenzhen 518038
China
• **Tel: +86 755 33305888**
• **Fax: +86 755 33305805**
+86 755 33305807

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EMS 504193
TL9000 Rev 3.0 (ISO9001:2000)
FM15040

CAUTION
STATIC SENSITIVE DEVICE
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