

Surface Mount

Monolithic Amplifier

DC-2 GHz

Product Features

- Wideband, DC to 2 GHz
- Cascadable ceramic package
- Low noise figure, 6.0 dB typ.
- Excellent repeatability
- Aqueous washable
- Protected under US Patent 6,943,629



RAM-3+

CASE STYLE: AF190
PRICE: \$4.60 ea. QTY. (30)

+ RoHS compliant in accordance with EU Directive (2002/95/EC)

The +Suffix has been added in order to identify RoHS Compliance. See our web site for RoHS Compliance methodologies and qualifications.

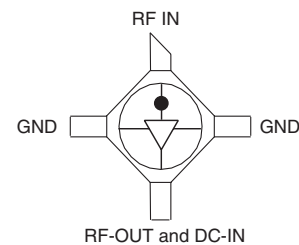
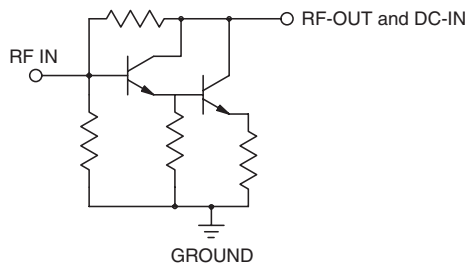
Typical Applications

- Cellular
- UHF/VHF
- Communication system
- Transmission receivers

General Description

RAM-3+ (RoHS compliant) is a wideband amplifier offering high dynamic range. It has repeatable performance from lot to lot. It is enclosed in a ceramic surface-mount package. RAM-3+ uses Darlington configuration and is fabricated using InGaP HBT technology. Expected MTBF is 900 years at 100°C case temperature.

simplified schematic and pin description



Function	Pin Number	Description
RF IN	1	RF input pin. This pin requires the use of an external DC blocking capacitor chosen for the frequency of operation.
RF-OUT and DC-IN	3	RF output and bias pin. DC voltage is present on this pin; therefore a DC blocking capacitor is necessary for proper operation. An RF choke is needed to feed DC bias without loss of RF signal due to the bias connection, as shown in "Recommended Application Circuit".
GND	2,4	Connections to ground. Use via holes as shown in "Suggested Layout for PCB Design" to reduce ground path inductance for best performance.

Mini-Circuits
ISO 9001 ISO 14001 AS 9100 CERTIFIED

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IF/RF MICROWAVE COMPONENTS

REV. B
M120653
RAM-3+
081216
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Electrical Specifications at 25°C and 35mA, unless noted

Parameter	Min.	Typ.	Max.	Units
Frequency Range*	DC		2	GHz
Gain				dB
	f=0.1 GHz	12.5		
	f=1 GHz	12		
	f=2 GHz	8.0 ²	10.5	
Input Return Loss	f=DC to 2 GHz		12.5	dB
Output Return Loss	f=DC to 2 GHz		11.5	dB
Output Power @ 1 dB compression	f=1 GHz		+10	dBm
Output IP3	f=1 GHz		+23	dBm
Noise Figure	f=1 GHz		6.0	dB
Recommended Device Operating Current		35		mA
Device Operating Voltage		5.0		V
Device Voltage Variation vs. Temperature at 35 mA		-2.6		mV/°C
Device Voltage Variation vs. Current at 25°C		15.5		mV/mA
Thermal Resistance, junction-to-case ¹		150		°C/W

*Guaranteed specification DC-2 GHz. Low frequency cut off determined by external coupling capacitors.

Absolute Maximum Ratings

Parameter	Ratings
Operating Temperature	-54°C to 100°C
Storage Temperature	-65°C to 150°C
Operating Current	80mA
Power Dissipation	425mW
Input Power	13dBm

Note: Permanent damage may occur if any of these limits are exceeded.

These ratings are not intended for continuous normal operation.

¹Case is defined as ground leads.

²Full temperature range.

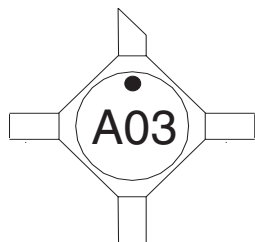


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Product Marking



Additional Detailed Technical Information

Additional information is available on our web site. To access this information enter the model number on our web site home page.

Performance data, graphs, s-parameter data set (.zip file)

Case Style: AF190

Ceramic surface-mount, .083 body diameter, lead finish: tin/silver/nickel

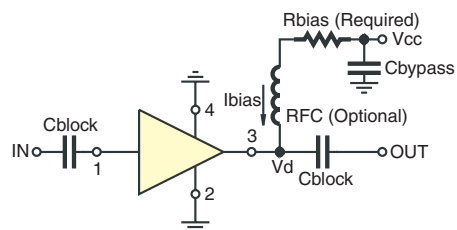
Tape & Reel: F14

Suggested Layout for PCB Design: PL-254

Evaluation Board: TB-414-3+

Environmental Ratings: ENV08T6

Recommended Application Circuit



Test Board includes case, connectors, and components (in bold) soldered to PCB

R BIAS	
Vcc	"1%" Res. Values (ohms) for Optimum Biasing
7	57.6
8	86.6
9	115
10	143
11	169
12	200
13	226
14	255
15	287

ESD Rating

Human Body Model (HBM): Class 1B (500 v to < 1000 v) in accordance with ANSI/ESD STM 5.1 - 2001

Machine Model (MM): Class M1 (<100 v) in accordance with ANSI/ESD STM 5.2 - 1999



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