HMC952ALP5GE

v01.1215

GaAs pHEMT MMIC 2 Watt POWER AMPLIFIER WITH POWER DETECTOR 9 - 14 GHz

Typical Applications

The HMC952ALP5GE is ideal for:

- Point-to-Point Radios
- Point-to-Multi-Point Radios
- SATCOM

Features

+35 dBm Pout @ 27% PAE

High P1dB Output Power: +34 dBm

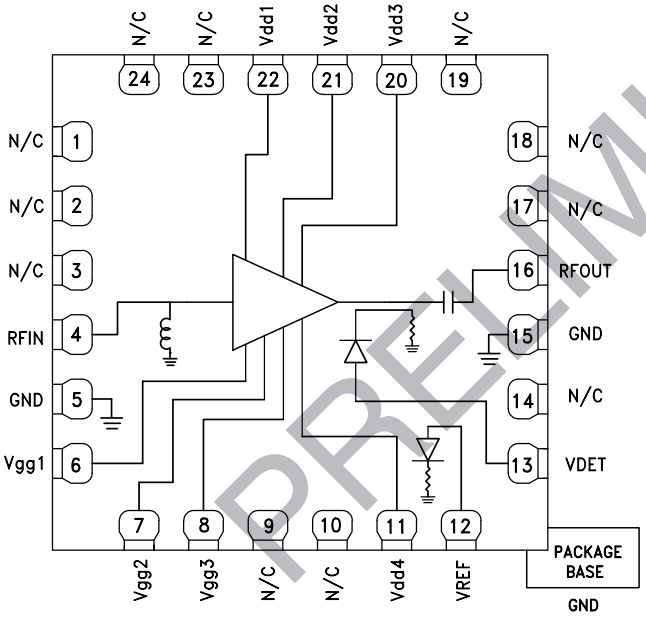
High Gain: 33 dB

High Output IP3: +43 dBm

Supply Voltage: Vdd = +6V @ 1400 mA

50 Ohm Matched Input/Output

Functional Diagram



General Description

The HMC952ALP5GE is a four-stage GaAs pHEMT MMIC Medium Power Amplifier with a temperature compensated on-chip power detector which operates between 9 and 14 GHz. The amplifier provides 33 dB of gain and +35 dBm of saturated output power at 27% PAE from a +6V supply. With up to +43 dBm IP3 the HMC952ALP5GE is ideal for linear applications such as point-to-point and point-to-multi-point radios or SATCOM applications demanding +35 dBm of efficient saturated output power. The RF I/Os are internally matched to 50 Ohms.

Electrical Specifications, T_A = +25° C, Vdd1, Vdd2, Vdd3, Vdd4 = +6V, Idd = 1400 mA [1]

Parameter	Min.	Typ.	Max.	Min.	Typ.	Max.	Units
Frequency Range		9 - 10			10 - 14		GHz
Gain [2]	30	33		30	33		dB
Gain Variation Over Temperature		0.05			0.05		dB/ °C
Input Return Loss		12			15		dB
Output Return Loss		9			12		dB
Output Power for 1 dB Compression (P1dB) [2]	30.5	33		31.5	34		dBm
Saturated Output Power (Psat) [2]		34.5			35		dBm
Output Third Order Intercept (IP3) [2] [3]		42			43		dBm
Total Supply Current		1400			1400		mA

[1] Adjust Vgg between -2 to 0V to achieve Idd = 1400 mA typical.

[2] Board loss subtracted out.

[3] Measurement taken at Pout / tone = +20 dBm.

For price, delivery, and to place orders: Analog Devices, Inc., One Technology Way, P.O. Box 9106, Norwood, MA 02062-9106
Phone: 781-329-4700 • Order online at www.analog.com
Application Support: Phone: 1-800-ANALOG-D

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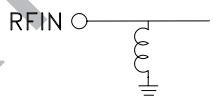
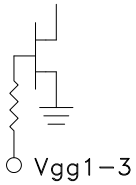
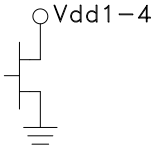
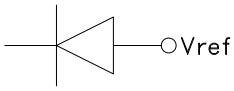
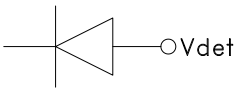
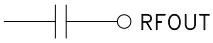
Pin Descriptions

Pin Number	Function	Description	Interface Schematic
1-3, 9, 10, 14, 17-19, 23, 24	N/C	These pins are not connected internally, however all data shown herein was measured with these pins connected to RF/DC ground externally.	
4	RFIN	This pin is DC coupled and matched to 50 Ohms.	
5, 15	GND	These pins and package bottom must be connected to RF/DC ground.	
6-8	Vgg1, Vgg2, Vgg3	Gate control for amplifier External bypass capacitors of 100pF, 10nF and 4.7uF are required.	
11, 20-22	Vdd4, Vdd3, Vdd2, Vdd1	Drain bias voltage for amplifier. external bypass capacitors of 100pF, 10nF and 4.7uF are required.	
12	Vref	DC bias of diode biased through external resistor , used for temperature compensation of Vdet. See application circuit.	
13	Vdet	DC voltage representing RF output power rectified by diode which is biased through an external resistor. See application circut.	
16	RFOUT	This pin is DC coupled and matched to 50 Ohms	

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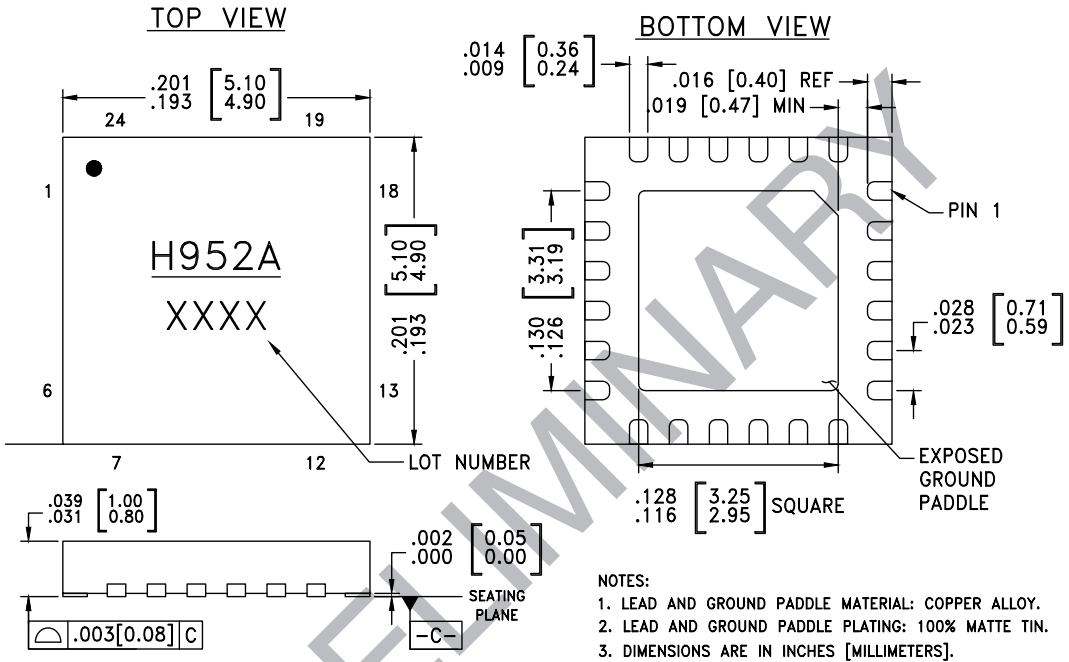
Outline Drawing

ELECTROSTATIC SENSITIVE DEVICE
OBSERVE HANDLING PRECAUTIONS



NOTES:

1. LEAD AND GROUND PADDLE MATERIAL: COPPER ALLOY.
2. LEAD AND GROUND PADDLE PLATING: 100% MATTE TIN.
3. DIMENSIONS ARE IN INCHES [MILLIMETERS].
4. LEAD SPACING TOLERANCE IS NON-CUMULATIVE.
5. PAD BURR LENGTH SHALL BE 0.15mm MAX. PAD BURR HEIGHT SHALL BE 0.25mm MAX.
6. PACKAGE WARP SHALL NOT EXCEED 0.05mm
7. ALL GROUND LEADS AND GROUND PADDLE MUST BE SOLDERED TO PCB RF GROUND.

Package Information

Part Number	Package Body Material	Lead Finish	MSL Rating [2]	Package Marking [1]
HMC952ALP5GE	RoHS-compliant Low Stress Injection Molded Plastic	100% matte Sn	MSL3	H952A XXXX

[1] 4-Digit lot number XXXX
[2] Max peak reflow temperature of 260 °C