Hittite MICROWAVE PRODUCTS FROM ANALOG DEVICES

RoHS✓ EARTH FRIENDLY

HMC943ALP5E

v03.0815

GaAs pHEMT MMIC 1.5 WATT POWER AMPLIFIER, 24 - 31.5 GHz

Typical Applications

The HMC943ALP5E is ideal for:

- Point-to-Point Radios
- Point-to-Multi-Point Radios
- VSAT
- Military & Space

Features

Saturated Output Power: +34 dBm @ 24% PAE

High Output IP3: +41 dBm

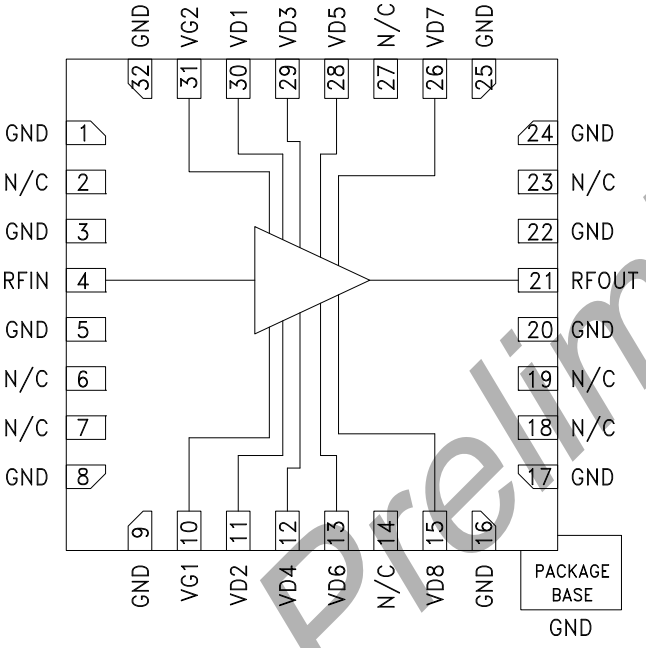
High Gain: 21 dB

DC Supply: +5.5V @ 1200 mA

No External Matching Required

32 Lead 5 x 5 mm SMT Package: 25 mm²

Functional Diagram



General Description

The HMC943ALP5E is a four stage GaAs pHEMT MMIC 1.5 Watt Power Amplifier which operates between 24 and 31.5 GHz. The HMC943ALP5E provides 21 dB of gain, and +34 dBm of saturated output power and 24% PAE from a +5.5V supply. The high output IP3 of +41 dBm makes the HMC943ALP5E ideal for microwave radio applications. The HMC943ALP5E amplifier I/Os are internally matched to 50 Ohms and is packaged in a leadless QFN 5 x 5 mm surface mount package and requires no external matching components.

Electrical Specifications, T_A = +25° C, Vd1 = Vd8 = +5.5V, Idd = 1200 mA [1]

Parameter	Min.	Typ.	Max.	Min.	Typ.	Max.	Units
Frequency Range		24 - 26.5			26.5 - 31.5		GHz
Gain	18	21		16	19		dB
Gain Variation Over Temperature		0.03			0.028		dB/ °C
Input Return Loss		9			9.5		dB
Output Return Loss		12			12		dB
Output Power for 1 dB Compression (P1dB)	29	32		27	31		dBm
Saturated Output Power (Psat)		33			33		dBm
Output Third Order Intercept (IP3)[2]		41			39		dBm
Total Supply Current (Idd)		1200			1200		mA

[1] Adjust Vg1 and Vg2 between -2 to 0V to achieve Idd = 1200 mA typical.

[2] Measurement taken at +5.5V @ 1200 mA, Pout / Tone = +22 dBm

Absolute Maximum Ratings

Drain Bias Voltage (Vd)	+7V
RF Input Power (RFIN)	+20 dBm
Channel Temperature	150 °C
Continuous Pdiss (T= 85 °C) (derate 135 mW/°C above 85 °C)	8.8 W
Thermal Resistance (channel to package bottom)	7.4 °C/W
Storage Temperature	-65 to +150 °C
Operating Temperature	-55 to +85 °C
ESD Sensitivity (HBM)	Class 0, 150V

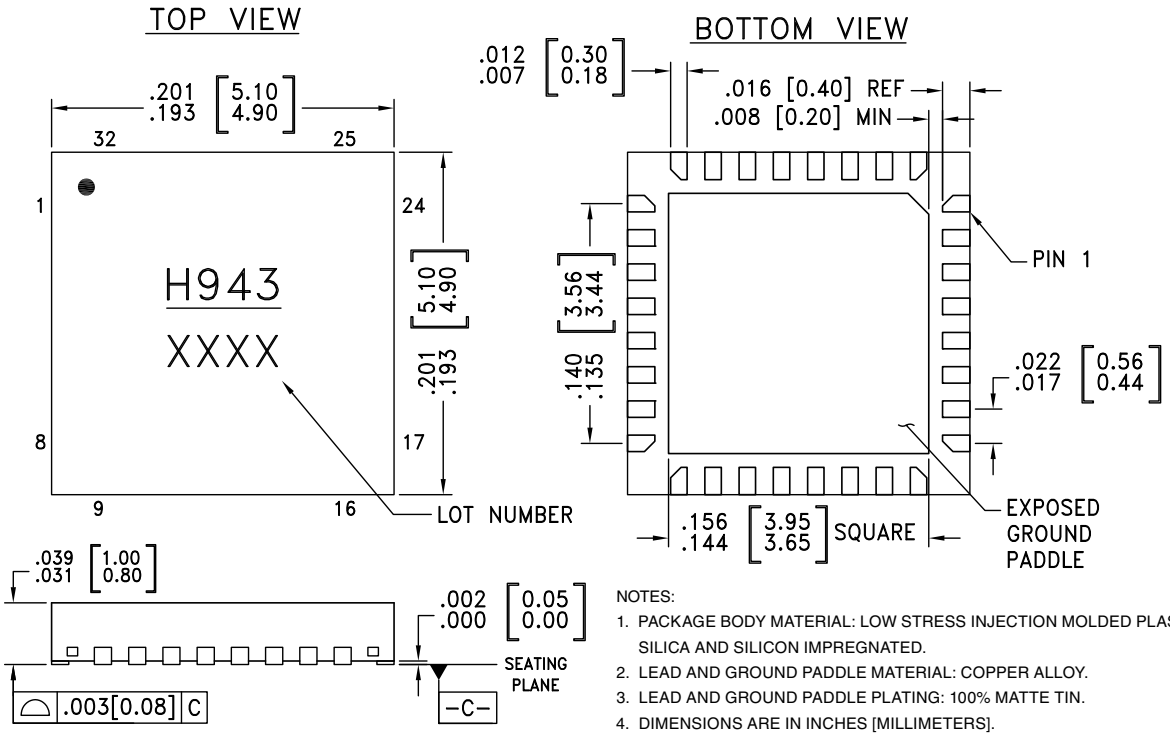
Typical Supply Current vs. Vdd

Vdd (V)	Idd (mA)
+5.0	1200
+5.5	1200
+6.0	1200

Note: Amplifier will operate over full voltage ranges shown above Vgg adjusted to achieve Idd = 1200 mA

ELECTROSTATIC SENSITIVE DEVICE
OBSERVE HANDLING PRECAUTIONS

Outline Drawing



NOTES:

1. PACKAGE BODY MATERIAL: LOW STRESS INJECTION MOLDED PLASTIC SILICA AND SILICON IMPREGNATED.
2. LEAD AND GROUND PADDLE MATERIAL: COPPER ALLOY.
3. LEAD AND GROUND PADDLE PLATING: 100% MATTE TIN.
4. DIMENSIONS ARE IN INCHES [MILLIMETERS].
5. LEAD SPACING TOLERANCE IS NON-CUMULATIVE.
6. PAD BURR LENGTHSHALL BE 0.15mm MAX. PAD BURR HIEGHT SHALL BE 0.25mm MAX.
7. PACKAGE WARP SHALL NOT EXCEED 0.05mm.
8. ALL GROUND LEADS AND GROUND PADDLE MUST BE SOLDERED TO PCB RF GROUND.

Package Information

Part Number	Package Body Material	Lead Finish	MSL Rating	Package Marking [1]
HMC943LP5E	RoHS-compliant Low Stress Injection Molded Plastic	100% matte Sn	MSL1 [2]	H943 XXXX

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