HMC797ALP5E

v00.1115

GaAs pHEMT MMIC
1 WATT POWER AMPLIFIER, DC - 22 GHz

Typical Applications

The HMC797ALP5E is ideal for:

- Test Instrumentation
- Microwave Radio & VSAT
- Military & Space
- Telecom Infrastructure
- Fiber Optics

Features

High P1dB Output Power: 28 dBm

High Psat Output Power: 29.5 dBm

High Gain: 13.5 dB

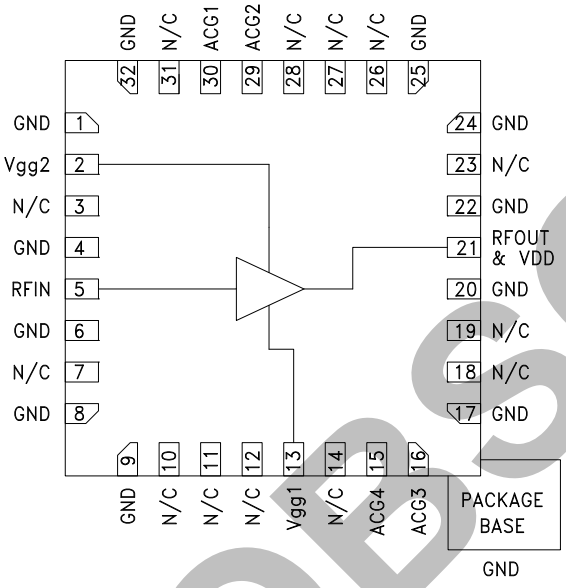
High Output IP3: 39 dBm

Supply Voltage: +10 V @ 400 mA

50 Ohm Matched Input/Output

32 Lead 5x5 mm SMT Package: 25 mm²

Functional Diagram



General Description

The HMC797ALP5E is a GaAs MMIC pHEMT Distributed Power Amplifier which operates between DC and 22 GHz. The amplifier provides 13.5 dB of gain, 39 dBm output IP3 and +28 dBm of output power at 1 dB gain compression while requiring 400 mA from a +10 V supply. This versatile PA exhibits a positive gain slope from 4 to 20 GHz making it ideal for EW, ECM, Radar and test equipment applications. The HMC797ALP5E amplifier I/Os are internally matched to 50 Ohms facilitating integration into mutli-chip-modules (MCMs), is packaged in a leadless QFN 5x5 mm surface mount package, and requires no external matching components.

Electrical Specifications, T_A = +25° C, Vdd = +10 V, Vgg2 = +3.5 V, Idd = 400 mA*

Parameter	Min.	Typ.	Max.	Min.	Typ.	Max.	Min.	Typ.	Max.	Units
Frequency Range		DC - 12			12 - 18			18 - 22		GHz
Gain	11	12.5		11	13.5		11	13.5		dB
Gain Flatness		±0.7			±0.5			±0.5		dB
Gain Variation Over Temperature		0.012			0.008			0.008		dB/ °C
Input Return Loss		13			15			15		dB
Output Return Loss		12			16			13		dB
Output Power for 1 dB Compression (P1dB)	26	28		25	27		23.5	25.5		dBm
Saturated Output Power (Psat)		29.5			29			27		dBm
Output Third Order Intercept (IP3)		39			37			35		dBm
Noise Figure		3.5			4			6		dB
Supply Current (Idd) (Vdd= 10V, Vgg1= -0.8V Typ.)		400	440		400	440		400	440	mA

** Adjust Vgg1 between -2 to 0 V to achieve Idd = 400 mA typical.*

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

Absolute Maximum Ratings

Nominal Drain Supply to GND	+12.0 V
Gate Bias Voltage (Vgg1)	-3.0 to 0 Vdc
Gate Bias Current (Igg1)	< +10 mA
Gate Bias Voltage (Vgg2)	+2.0 V to (Vdd - 6.5 V)
Gate Bias Current (Igg2)	< +10 mA
Continuous Pdiss (T= 85 °C) (derate 69 mW/°C above 85 °C)	4.5 W
RF Input Power	+27 dBm
Output Power into VSWR >7:1	+29 dBm
Storage Temperature	-65 to 150 °C
Max Peak Reflow Temperature	260 °C
ESD Sensitivity (HBM)	Class 1A

ELECTROSTATIC SENSITIVE DEVICE
OBSERVE HANDLING PRECAUTIONS

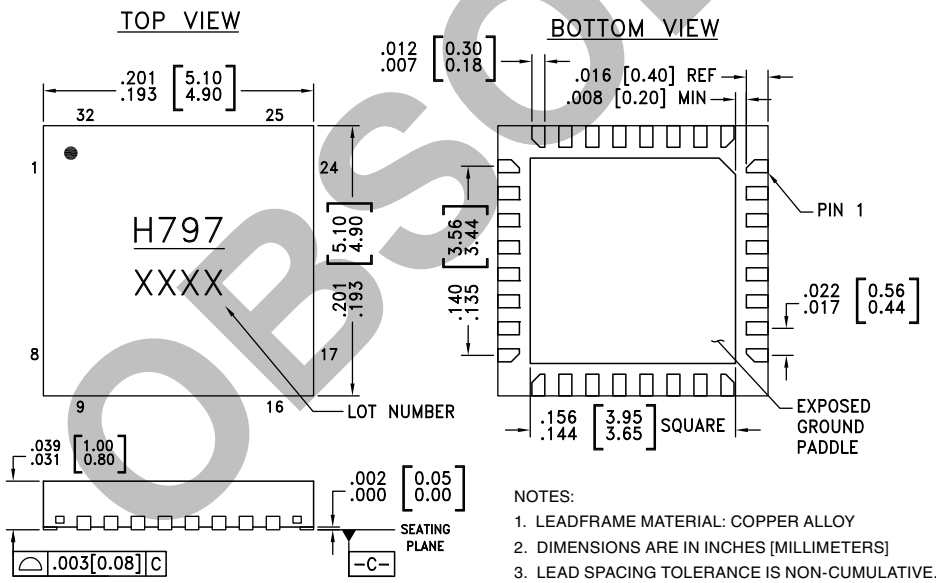
Reliability Information

Junction Temperature to Maintain 1 Million Hour MTTF	150 °C
Nominal Junction Temperature (T=85 °C, Vdd = 10 V)	144 °C
Thermal Resistance (channel to ground paddle)	14.6 °C/W
Operating Temperature	-40 to +85 °C

Typical Supply Current vs. Vdd

Vdd (V)	Idd (mA)
+9	400
+10	400
+11	400

Outline Drawing



NOTES:

1. LEADFRAME MATERIAL: COPPER ALLOY
2. DIMENSIONS ARE IN INCHES [MILLIMETERS]
3. LEAD SPACING TOLERANCE IS NON-CUMULATIVE.
4. PAD BURR LENGTH SHALL BE 0.15mm MAXIMUM. PAD BURR HEIGHT SHALL BE 0.05mm MAXIMUM.
5. PACKAGE WARP SHALL NOT EXCEED 0.05mm.
6. ALL GROUND LEADS AND GROUND PADDLE MUST BE SOLDERED TO PCB RF GROUND.
7. REFER TO HITTITE APPLICATION NOTE FOR SUGGESTED LAND PATTERN.