



GaAs pHEMT MMIC LOW NOISE AMPLIFIER, 4.8 - 6.0 GHz

Typical Applications

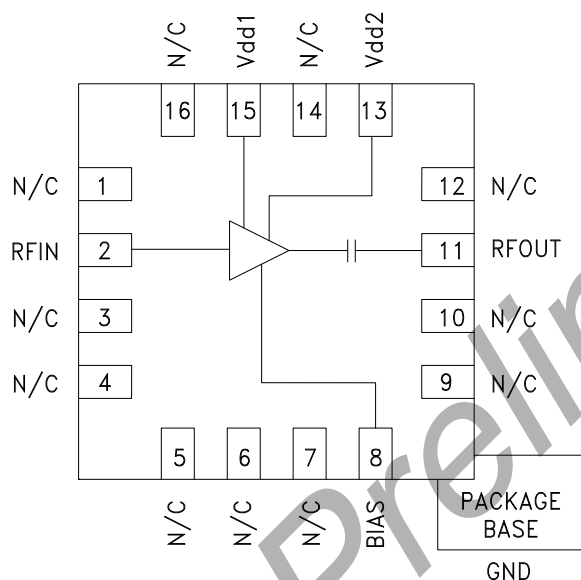
The HMC717ALP3E is ideal for:

- Fixed Wireless and LTE/WiMAX/4G
- BTS & Infrastructure
- Repeaters and Femtocells
- Public Safety Radio
- Access Points

Features

- Noise Figure: 1.1 dB
- Gain: 16.5 dB
- Output IP3: +31.5 dBm
- Single Supply: +3V to +5V
- 16 Lead 3x3mm QFN Package: 9 mm²

Functional Diagram



General Description

The HMC717ALP3E is a GaAs pHEMT MMIC Low Noise Amplifier that is ideal for fixed wireless and LTE/WiMAX/4G basestation front-end receivers operating between 4.8 and 6.0 GHz. The amplifier has been optimized to provide 1.1 dB noise figure, 16.5 dB gain and +31.5 dBm output IP3 from a single supply of +5V. Input and output return losses are excellent and the LNA requires minimal external matching and bias decoupling components. The HMC717ALP3E can be biased with +3V to +5V and features an externally adjustable supply current which allows the designer to tailor the linearity performance of the LNA for each application.

Electrical Specifications

$T_A = +25^\circ\text{C}$, $R_{bias} = 2k\text{ Ohms}$ for $V_{dd} = 5V$, $R_{bias} = 20k\text{ Ohms}$ for $V_{dd} = 3V$ [1] [2]

Parameter	Vdd = +3V			Vdd = +5V			Units
	Min.	Typ.	Max.	Min.	Typ.	Max.	
Frequency Range	4.8 - 6.0			4.8 - 6.0			GHz
Gain	12	14.3	21	13.5	16.5	21	dB
Gain Variation Over Temperature		0.01			0.01		dB/°C
Noise Figure		1.25	1.5		1.1	1.4	dB
Input Return Loss		13			13		dB
Output Return Loss		13			18		dB
Output Power for 1 dB Compression (P1dB)	12	14		15	18.5		dBm
Saturated Output Power (P _{sat})		15			19.5		dBm
Output Third Order Intercept (IP3)		25.5		27 [3]	31.5		dBm
Total Supply Current (I _{dd})		31	40		73	100	mA

[1] R_{bias} resistor sets current, see application circuit herein

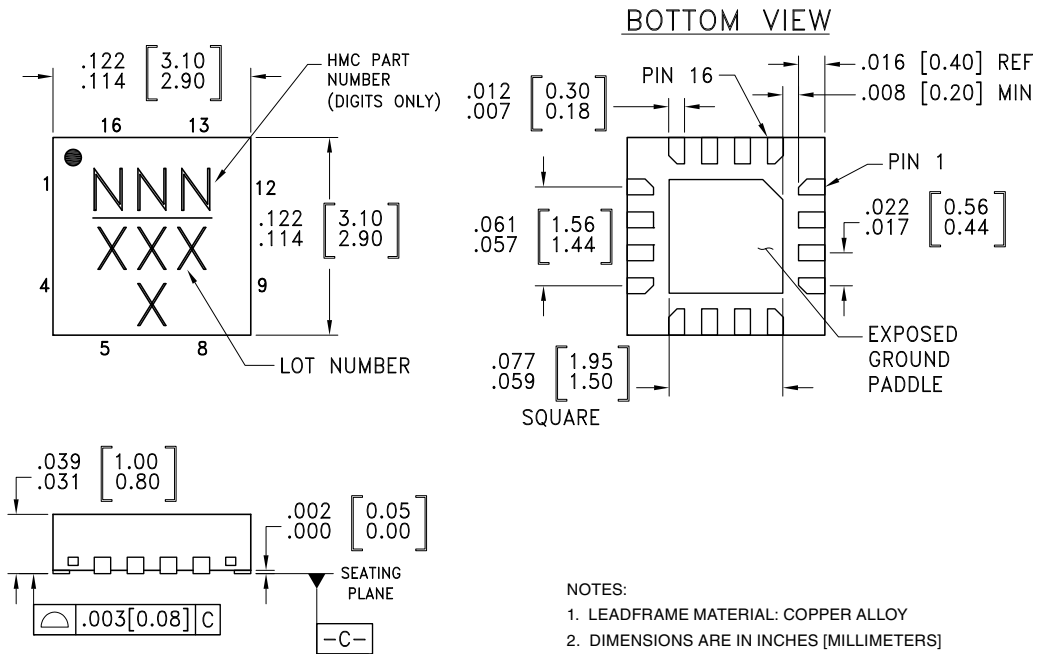
[2] V_{dd} = V_{dd1} = V_{dd2}

[3] Guaranteed by Design at 5GHz.



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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.

Package Information

Part Number	Package Body Material	Lead Finish	MSL Rating	Package Marking ^[3]
HMC717LP3E	RoHS-compliant Low Stress Injection Molded Plastic	100% matte Sn	MSL1 ^[2]	717 XXXX

[1] Max peak reflow temperature of 235 °C
 [2] Max peak reflow temperature of 260 °C
 [3] 4-Digit lot number XXXX

AMPLIFIER - LOW NOISE - SMT