

Gain Block MMIC Amplifier, DC to 6GHz

FEATURES

- ▶ P1dB output power: 15.5dBm
- ▶ Output IP3: 32dBm
- ▶ Gain: 14.5dB
- ▶ 50Ω inputs and outputs
- ▶ 16-lead, 3mm × 3mm body, 0.85 mm package height, LFCSP

APPLICATIONS

- ▶ Cellular/PCS/3G
- ▶ Fixed wireless and WLAN
- ▶ CATV and cable modems
- ▶ Microwave radios

FUNCTIONAL BLOCK DIAGRAM

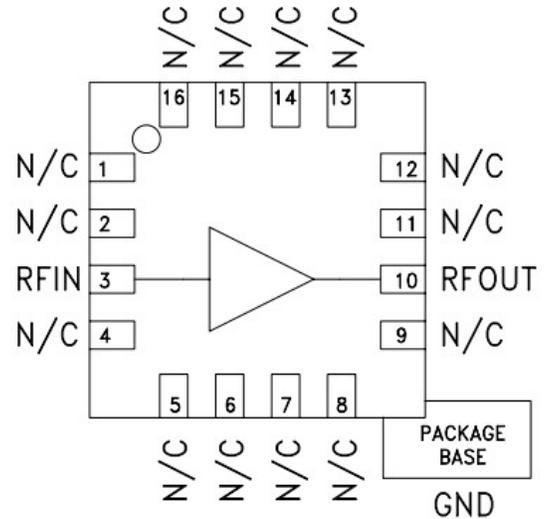


Figure 1. Functional Block Diagram

GENERAL DESCRIPTION

The HMC311ALP3E is a gain block, monolithic microwave IC (MMIC), surface-mounted technology (SMT), DC to 6GHz amplifiers. This 16-lead, 3mm × 3mm LFCSP packaged amplifier can be used as either a cascadable 50Ω gain stage or to drive the LO of Analog Devices, Inc., mixers with up to 17dBm of output power. The HMC311ALP3E offers 14.5dB of gain and an output IP3 of 32dBm while requiring only 56mA from a 5V supply. The Darlington feedback pair used results in reduced sensitivity to normal process variations and yields excellent gain stability over temperature while requiring a minimal number of external bias components.

SPECIFICATIONS

ELECTRICAL SPECIFICATIONS

$V_S = 5V$, $R_{BIAS} = 22\Omega$, $T_A = 25^\circ C$, unless otherwise noted.

Data taken with broadband bias tee on device output.

Table 1. Electrical Specifications

Parameter	Test Conditions/Comments	Min	Typ	Max	Unit
GAIN	DC to 1.0 GHz	13.0	14.5		dB
	1.0GHz to 4.0GHz	12.5	14.3		dB
	4.0GHz to 6.0GHz	12.0	14.0		dB
GAIN VARIATION OVER TEMPERATURE	DC to 2.0GHz		0.005	0.008	dB/°C
	2.0GHz to 4.0GHz		0.008	0.012	dB/°C
	4.0GHz to 6.0GHz		0.012	0.016	dB/°C
RETURN LOSS INPUT AND OUTPUT	DC to 1.0GHz		13		dB
	1.0GHz to 3.0GHz		11		dB
	3.0GHz to 6.0GHz		15		dB
REVERSE ISOLATION	DC to 6GHz		18		dB
OUTPUT POWER FOR 1dB COMPRESSION (P1dB)	DC to 2.0GHz	13.5	15.5		dBm
	2.0GHz to 4.0GHz	12.0	15.0		dBm
	4.0GHz to 6.0GHz	10.0	13.0		dBm
OUTPUT THIRD-ORDER INTERCEPT (IP3)	DC to 1.0GHz		32		dBm
	1.0GHz to 2.0GHz		30		dBm
	2.0GHz to 4.0GHz		28		dBm
	4.0GHz to 6.0GHz		24		dBm
NOISE FIGURE	DC to 6GHz		4.5		dB
SUPPLY CURRENT (I_{CQ})		55		74	mA

PIN CONFIGURATION AND FUNCTION DESCRIPTIONS

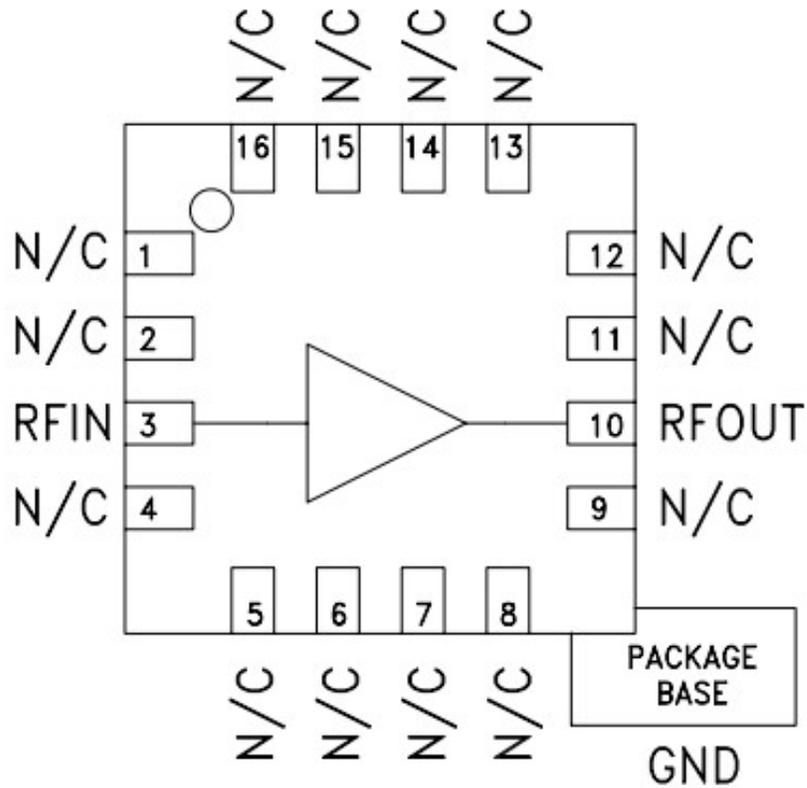


Figure 2. Pin Configuration

Table 2. Pin Function Descriptions

Pin Number	Mnemonic	Description
1, 2, 4 to 9, 11 to 16	N/C	No Connect. The N/C pin may be connected to RF ground.
3	RFIN	RF Input. The RFIN pin is DC-coupled. An off-chip DC blocking capacitor is required.
10	RFOUT	RF Output and DC Bias for the Output Stage.
	GND	Package bottom must be connected to RF and DC ground.

OUTLINE DIMENSIONS

Package Drawing Option	Package Type	Package Description
CP-16-50	LFCSP	16-Lead Lead Frame Chip Scale Package

For the latest package outline information and land patterns (footprints), go to [Package Index](#).

Legal Terms and Conditions

Information furnished by Analog Devices is believed to be accurate and reliable "as is". However, no responsibility is assumed by Analog Devices for its use, nor for any infringements of patents or other rights of third parties that may result from its use. Specifications subject to change without notice. No license is granted by implication or otherwise under any patent or patent rights of Analog Devices. Trademarks and registered trademarks are the property of their respective owners. All Analog Devices products contained herein are subject to release and availability.