

Gain Block MMIC Amplifier, DC to 8GHz

FEATURES

- ▶ P1dB output power: 15dBm
- ▶ Output IP3: 30dBm
- ▶ Gain: 15dB
- ▶ Cascadable, 50Ω inputs and outputs
- ▶ Single supply: 5V
- ▶ Industry standard, 6-lead SC70 package

APPLICATIONS

- ▶ Cellular/PCS/3G
- ▶ WiBro/WiMAX/4G
- ▶ Fixed wireless and WLAN
- ▶ CATV and cable modems
- ▶ Microwave radios and test equipment

FUNCTIONAL BLOCK DIAGRAM

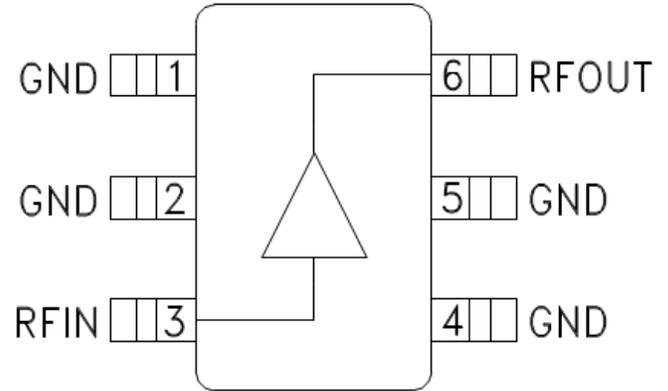


Figure 1. Functional Block Diagram

GENERAL DESCRIPTION

The HMC311ASC70 is a monolithic microwave IC (MMIC), surface-mounted technology (SMT), DC to 8GHz amplifier. Packaged in an industry standard SC70, the amplifier can be used as either a cascadable 50Ω gain stage or to drive the LO port of Analog Devices, Inc., mixers with up to 15dBm of output power. The HMC311ASC70 offers 15dB of gain and an output IP3 of 30dBm while requiring only 54mA from a 5V supply. The Darlington topology 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 1.0GHz	14.0	15.0		dB
	1.0GHz to 4.0GHz	13.0	15.0		dB
	4.0GHz to 6.0GHz	12.5	14.5		dB
	6.0GHz to 8.0GHz	11.0	13.0		dB
GAIN VARIATION OVER TEMPERATURE	DC to 1.0GHz		0.004	0.007	dB/°C
	1.0GHz to 4.0GHz		0.007	0.012	dB/°C
	4.0GHz to 6.0GHz		0.012	0.016	dB/°C
	6.0GHz to 8.0GHz		0.018	0.022	dB/°C
RETURN LOSS INPUT AND OUTPUT	DC to 8.0GHz		15		dB
REVERSE ISOLATION	DC to 8.0GHz		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
	6.0GHz to 8.0GHz	8.0	11.0		dBm
OUTPUT THIRD-ORDER INTERCEPT (IP3)	DC to 2.0GHz		30		dBm
	2.0GHz to 6.0GHz		27		dBm
	6.0GHz to 8.0GHz		24		dBm
NOISE FIGURE	DC to 8.0GHz		5		dB
SUPPLY CURRENT (I_{CQ})			55	74	mA

PIN CONFIGURATION AND FUNCTION DESCRIPTIONS

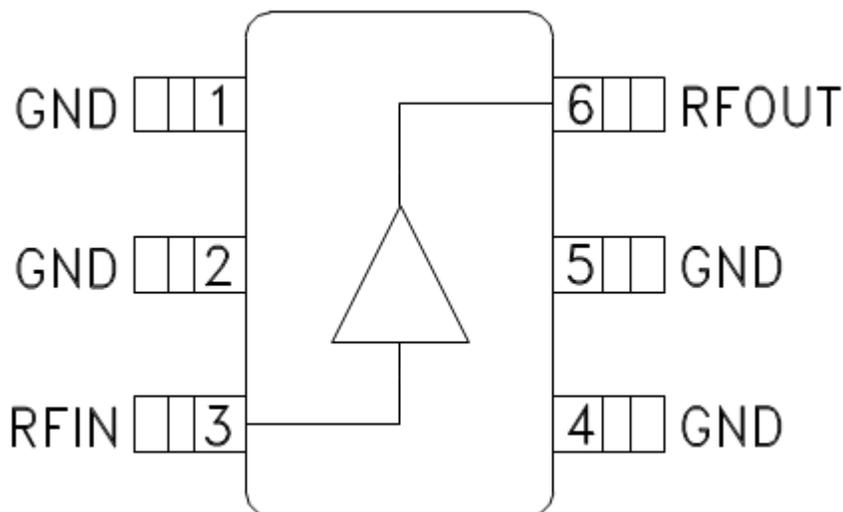


Figure 2. Pin Configuration

Table 2. Pin Function Descriptions

Pin No.	Mnemonic	Description
1, 2, 4, 5	GND	Ground. The GND pins must be connected to RF and DC ground.
3	RFIN	RF Input. The RFIN pin is DC-coupled. An off-chip DC blocking capacitor is required.
6	RFOUT	RF Output and DC Bias for the Output Stage.

OUTLINE DIMENSIONS

Package Drawing Option	Package Type	Package Description
KS-6	SC70	6-Lead Thin Shrink Small Outline Transistor Package

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

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