HMC287MS8 / 287MS8E

v02.0605

GaAs MMIC LOW NOISE AMPLIFIER with AGC, 2.3 - 2.5 GHz

Typical Applications

LNA for Spread Spectrum Applications:

- BLUETOOTH
- HomeRF
- 802.11 WLAN
- 2.5 GHz Radios

Features

Gain: 21 dB

Noise Figure: 2.5 dB

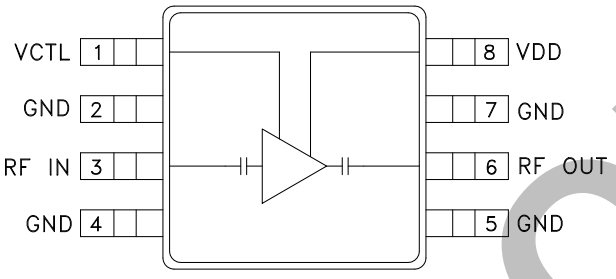
Gain Adjustment: 30 dB

Single Positive Supply: +3V

No External Components

Ultra Small Package: MSOP8G

Functional Diagram



General Description

The HMC287MS8 & HMC287MS8E are low cost Low Noise Amplifiers (LNA) offering 21 dB of gain and a 2.5 dB noise figure from a single positive +3V supply that requires only 9 mA. The HMC287MS8 & HMC287MS8E can be used as variable gain LNAs, offering 30 dB of gain control, which is controlled with 0 to 3V analog voltages. The typical output 1 dB compression point is +3 dBm and OIP3 is +7 dBm when in the maximum gain state. The compact LNA design utilizes on-chip matching for repeatable gain and noise figure performance and eliminates the need for external matching circuitry to reduce the overall size of the LNA function.

Electrical Specifications, T_A = +25° C, Vdd= +3V

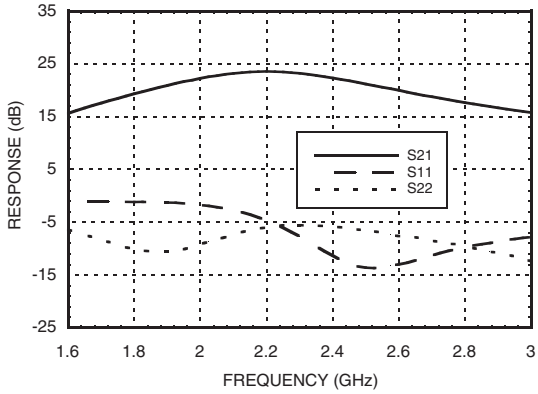
Parameter	Min.	Typ.	Max.	Units
Frequency Range		2.3 - 2.5		GHz
Gain	15	21	27	dB
Gain Variation Over Temperature		0.03	0.04	dB/°C
Gain Adjustment Range (Vctl 0 to +3V)		30		dB
Noise Figure (Vctl = 0V)		2.5	3.0	dB
Input Return Loss	5	10		dB
Output Return Loss	3	6		dB
Output 1 dB Compression (P1dB)	-2	3		dBm
Output Third Order Intercept (IP3)	3	7		dBm
Control Voltage (Vctl)	0		Vdd	Vdc
Supply Current (Idd)(Vdd = +3.0 Vdc)		9	15	mA

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

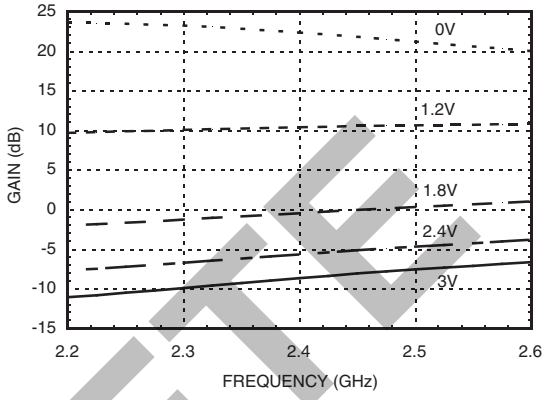
RoHS✓ EARTH FRIENDLY

GaAs MMIC LOW NOISE AMPLIFIER with AGC, 2.3 - 2.5 GHz

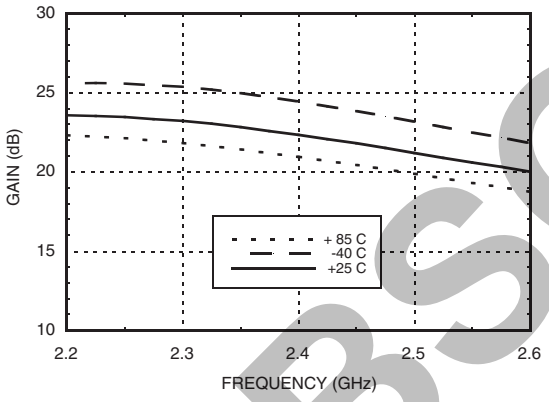
Broadband Gain & Return Loss, Vctl = 0V



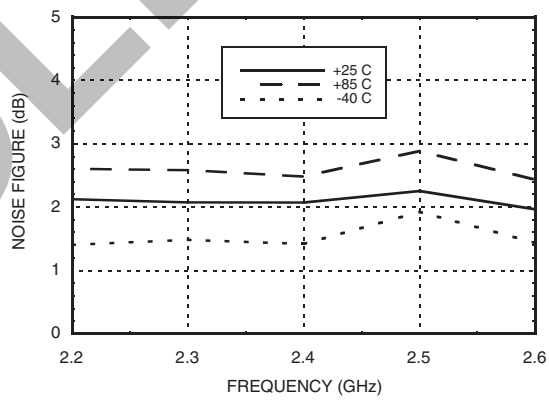
Gain Over Control Voltage Range



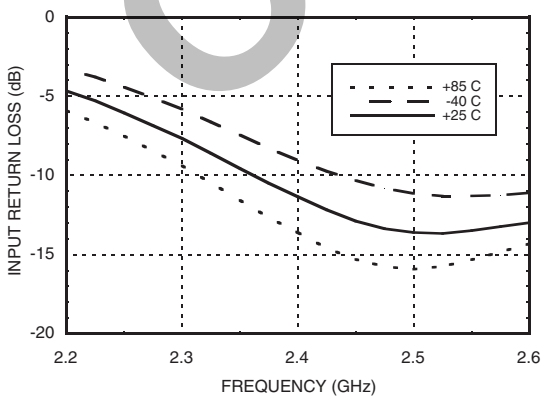
Gain vs. Temperature, Vctl = 0V



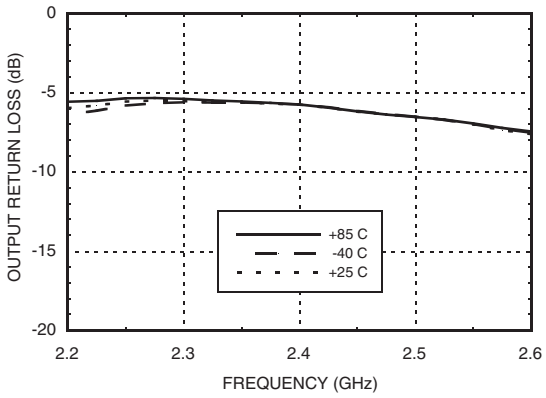
Noise Figure vs. Temperature, Vctl = 0V



Input Return Loss vs. Temperature, Vctl = 0V



Output Return Loss vs. Temperature, Vctl = 0V



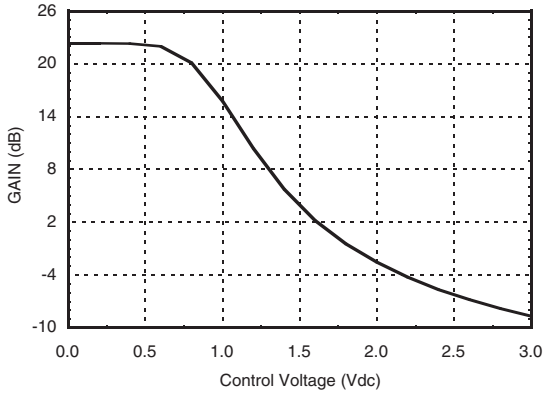
For price, delivery, and to place orders: Analog Devices, Inc., One Technology Way, P.O. Box 9106, Norwood, MA 02062-9106
Phone: 781-329-4700 • Order online at www.analog.com
Application Support: Phone: 1-800-ANALOG-D

HMC287MS8 / 287MS8E

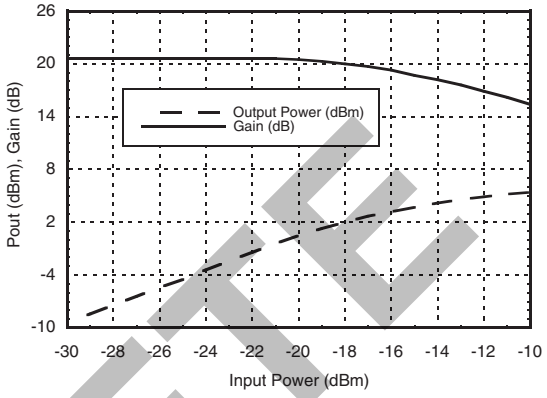
v02.0605

GaAs MMIC LOW NOISE AMPLIFIER with AGC, 2.3 - 2.5 GHz

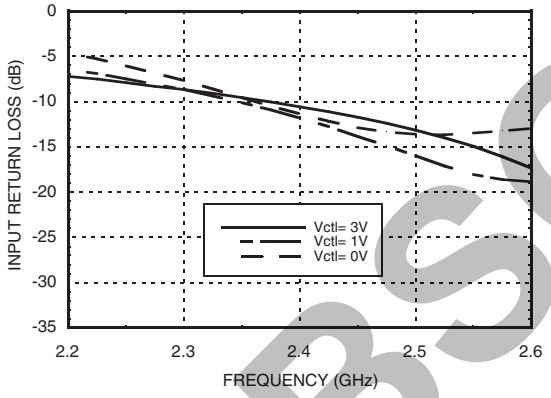
Gain vs. Control Voltage @ 2.4 GHz



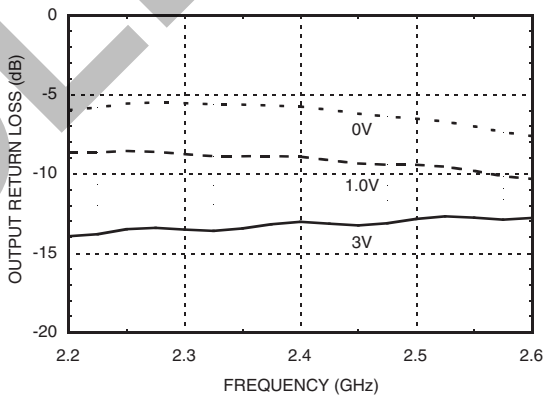
Power Compression @ 2.4 GHz, Vctl = 0V



Input Return Loss Over Control Voltage Range



Output Return Loss Over Control Voltage Range

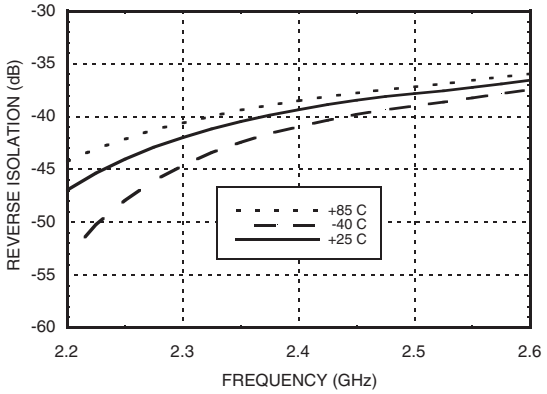


Noise Figure and Output IP3 vs. Control Voltage

	Frequency = 2.4 GHz	
VCTL	Noise Figure	OIP3 (dBm)*
0V	2.5	7.1
1.7V	4.0	-4.4
3.0V	10.0	-12.9

* Two-tone input power = -30 dBm per tone.

Reverse Isolation vs. Temperature, Vctl = 0V



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

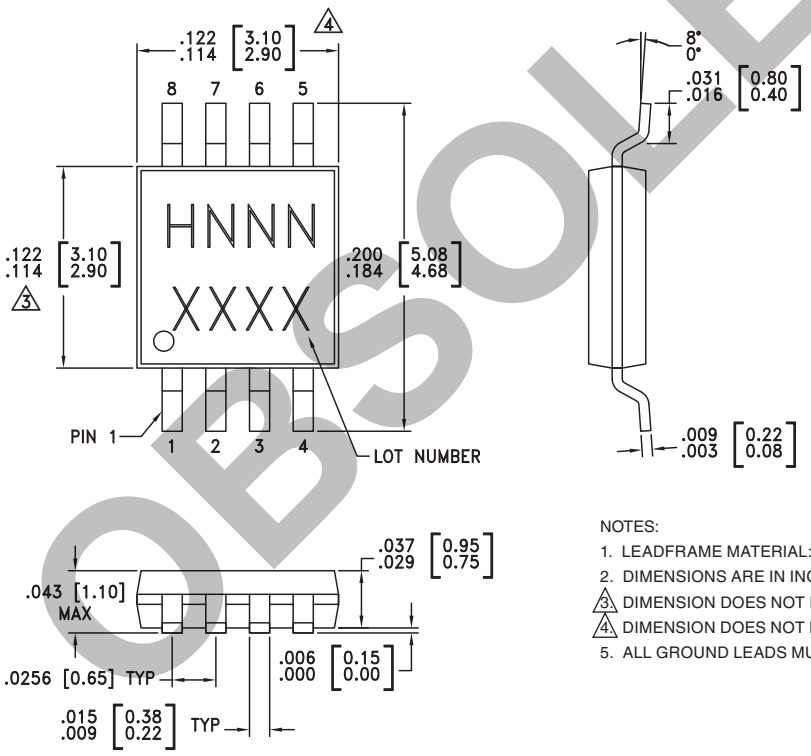
Drain Bias Voltage (Vdd)	+7 Vdc
Control Voltage Range (Vctl)	-0.2V to Vdd
RF Input Power (RFIN)(Vdd = +3 Vdc)	-7 dBm
Channel Temperature	150 °C
Continuous Pdiss (T = 85 °C) (derate 5.62 mW/°C above 85 °C)	0.365 W
Thermal Resistance (channel to lead)	178 °C/W
Storage Temperature	-65 to +150 °C
Operating Temperature	-40 to +85 °C

Gain Control

Vctl (Vdc)	Gain State	Typical Ictl (uA)
0.0	Maximum	25
1.5	Middle	25
Vdd	Minimum	25

ELECTROSTATIC SENSITIVE DEVICE
OBSERVE HANDLING PRECAUTIONS

Outline Drawing



NOTES:

1. LEADFRAME MATERIAL: COPPER ALLOY
2. DIMENSIONS ARE IN INCHES [MILLIMETERS]
3. DIMENSION DOES NOT INCLUDE MOLDFLASH OF 0.15mm PER SIDE.
4. DIMENSION DOES NOT INCLUDE MOLDFLASH OF 0.25mm PER SIDE.
5. ALL GROUND LEADS MUST BE SOLDERED TO PCB RF GROUND.

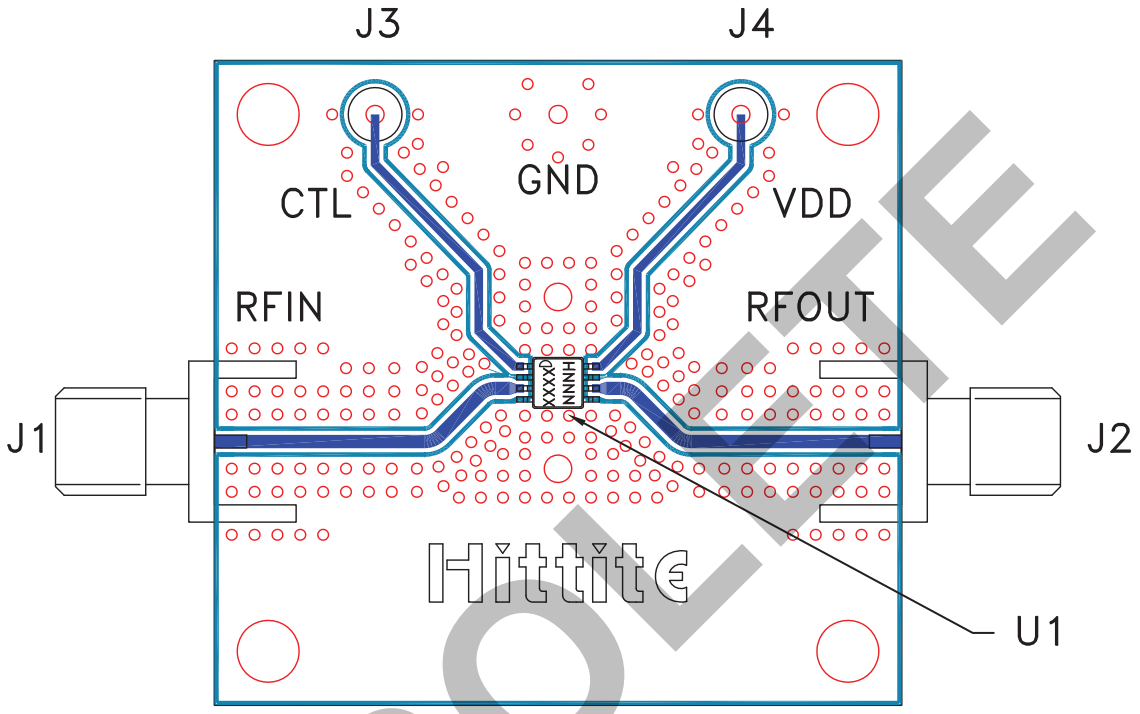
Package Information

Part Number	Package Body Material	Lead Finish	MSL Rating	Package Marking [3]
HMC287MS8	Low Stress Injection Molded Plastic	Sn/Pb Solder	MSL1 [1]	H287 XXXX
HMC287MS8E	RoHS-compliant Low Stress Injection Molded Plastic	100% matte Sn	MSL1 [2]	H287 XXXX

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

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

Evaluation PCB



List of Materials for Evaluation PCB 103739 [1]

Item	Description
J1, J2	PCB Mount SMA Connector
J3, J4	DC Pin
U1	HMC287MS8 / HMC287MS8E Amplifier
PCB [2]	Evaluation Board 1.6" x 1.5"

[1] Reference this number when ordering complete evaluation PCB

[2] Circuit Board Material: Rogers 4350

The circuit board used in the final application should use RF circuit design techniques. Signal lines should have 50 ohm impedance while the package ground leads and exposed paddle should be connected directly to the ground plane similar to that shown. A sufficient number of via holes should be used to connect the top and bottom ground planes. The evaluation circuit board shown is available from Hittite upon request.

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

Notes:

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

X-ON Electronics

Largest Supplier of Electrical and Electronic Components

Click to view similar products for RF Development Tools ***category:***

Click to view products by Analog Devices ***manufacturer:***

Other Similar products are found below :

MAAM-011117 MAAP-015036-DIEEV2 EV1HMC1113LP5 EV1HMC6146BLC5A EV1HMC637ALP5 EVAL-ADG919EBZ ADL5363-EVALZ LMV228SDEVAL SKYA21001-EVB SMP1331-085-EVB EV1HMC618ALP3 EVAL01-HMC1041LC4 MAAL-011111-000SMB MAAM-009633-001SMB 107712-HMC369LP3 107780-HMC322ALP4 SP000416870 EV1HMC470ALP3 EV1HMC520ALC4 EV1HMC244AG16 MAX2614EVKIT# 124694-HMC742ALP5 SC20ASATEA-8GB-STD MAX2837EVKIT+ MAX2612EVKIT# MAX2692EVKIT# SKY12343-364LF-EVB 108703-HMC452QS16G EV1HMC863ALC4 EV1HMC427ALP3E 119197-HMC658LP2 EV1HMC647ALP6 ADL5725-EVALZ 106815-HMC441LM1 EV1HMC1018ALP4 UXN14M9PE MAX2016EVKIT EV1HMC939ALP4 MAX2410EVKIT MAX2204EVKIT+ EV1HMC8073LP3D SIMSA868-DKL SIMSA868C-DKL SKY65806-636EK1 SKY68020-11EK1 SKY67159-396EK1 SKY66181-11-EK1 SKY65804-696EK1 SKY13396-397LF-EVB SKY13380-350LF-EVB