HMC-ALH140

GaAs HEMT MMIC LOW NOISE AMPLIFIER, 24 - 40 GHz

Typical Applications

This HMC-ALH140 is ideal for:

- Point-to-Point Radios
- Point-to-Multi-Point Radios
- VSAT
- SATCOM

Features

Noise Figure: 4 dB

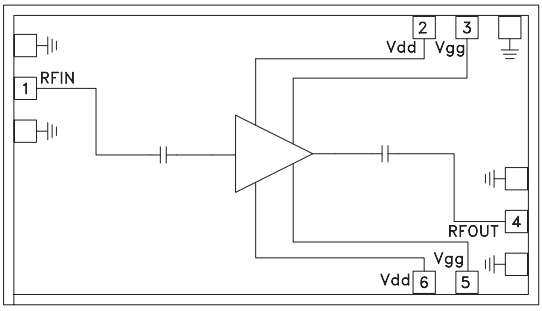
Gain: 11.5 dB

P1dB Output Power: +15 dBm

Supply Voltage: +4V @ 60 mA

Die Size: 2.5 x 1.4 x 0.1 mm

Functional Diagram



General Description

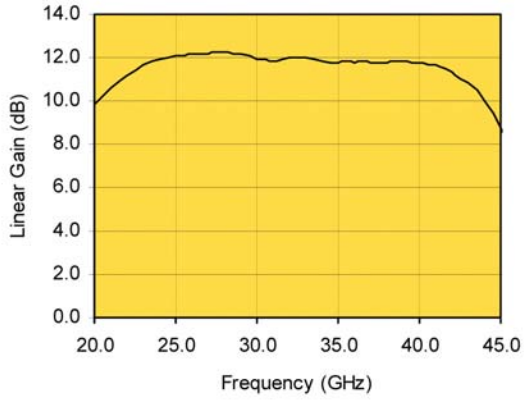
The HMC-ALH140 is a two Stage GaAs MMIC HEMT Low Noise Amplifier die which operates between 24 and 40 GHz. The amplifier provides 11.5 dB of gain, from a bias supply of +4V @ 66 mA with a noise figure of 4 dB. The HMC-ALH140 amplifier die is ideal for integration into Multi-Chip-Modules (MCMs) due to its small size (2.10 mm²).

Electrical Specifications, T_A = +25° C, Vdd= 4V [1], Idd = 60mA [2]

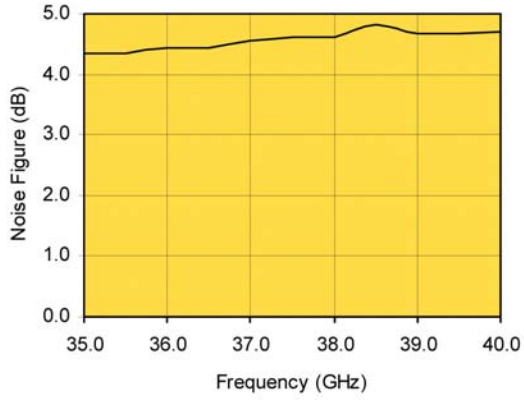
Parameter	Min.	Typ.	Max.	Min.	Typ.	Max.	Min.	Typ.	Max.	Units
Frequency Range		24 - 30			24 - 40			35 - 40		GHz
Gain	10	12		10	11.5		10	11.5		dB
Noise Figure		4			4			4		
Input Return Loss		13			13			20		dB
Output Return Loss		15			15			20		dB
Output Power for 1 dB Compression		15			15			15		dBm
Supply Current (Idd)		60	100		60	100		60	100	mA

[1] Unless otherwise indicated, all measurements are from probed die
[2] Adjust Vgg between -1V to +0.3V (Typ. -0.2V)

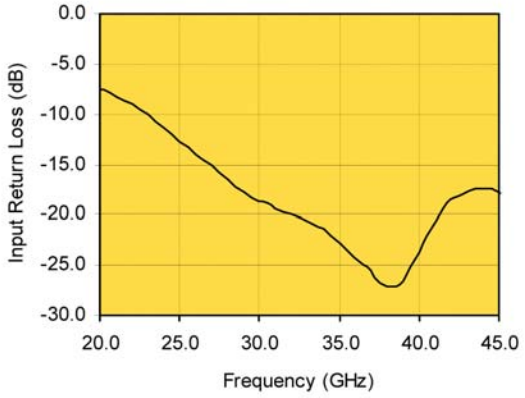
Linear Gain vs. Frequency



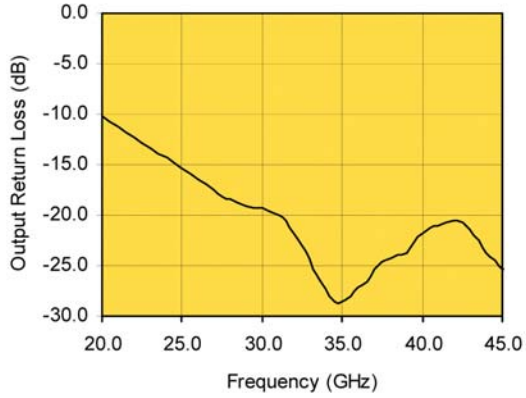
Noise Figure vs. Frequency



Input Return Loss vs. Frequency



Output Return Loss vs. Frequency



Note: Measured Performance Characteristics (Typical Performance at 25°C) Vd= 2 V, Id = 55 mA

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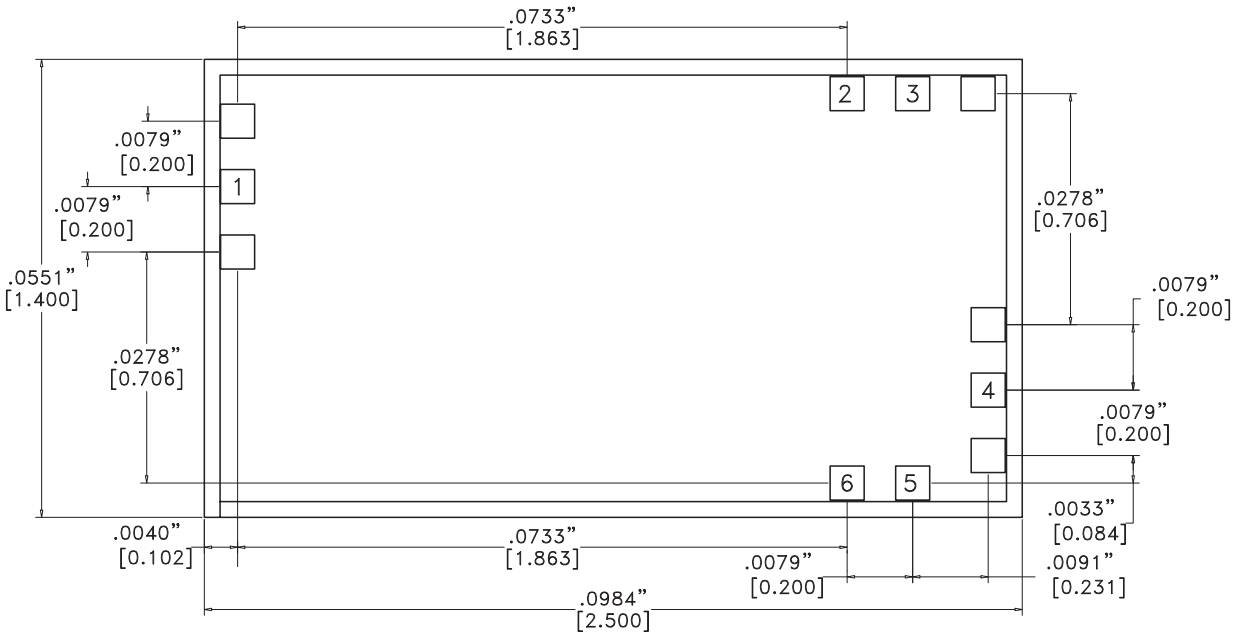
Absolute Maximum Ratings

Drain Bias Voltage	+5.5 Vdc
Gate Bias Voltage	-1 to +0.3 Vdc
RF Input Power	6 dBm
Channel Temperature	180 °C
Storage Temperature	-65 to +150 °C

ELECTROSTATIC SENSITIVE DEVICE
OBSERVE HANDLING PRECAUTIONS

Outline Drawing



NOTES:

1. ALL DIMENSIONS ARE IN INCHES [MM].
2. TYPICAL BOND PAD IS .004" SQUARE.
3. BACKSIDE METALLIZATION: GOLD.
4. BACKSIDE METAL IS GROUND.
5. BOND PAD METALLIZATION: GOLD.
6. CONNECTION NOT REQUIRED FOR UNLABELED BOND PADS.
7. OVERALL DIE SIZE ±.002"