

GaAs HEMT MMIC LOW NOISE AMPLIFIER, 24 - 40 GHz

Typical Applications

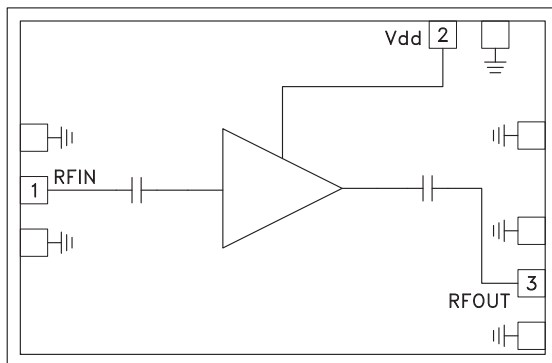
This HMC-ALH369 is ideal for:

- Point-to-Point Radios
- Point-to-Multi-Point Radios
- Phased Arrays
- VSAT
- SATCOM

Features

- Excellent Noise Figure: 2.0 dB
- Gain: 22 dB
- P1dB Output Power: +11 dBm
- Supply Voltage: +5V @ 66 mA
- Die Size: 2.10 x 1.37 x 0.1 mm

Functional Diagram



General Description

The HMC-ALH369 is a GaAs MMIC HEMT three stage, self-biased Low Noise Amplifier die which operates between 24 and 40 GHz. The amplifier provides 22 dB of gain, from a single bias supply of +5V @ 66 mA with a noise figure of 2 dB. The HMC-ALH369 amplifier die is ideal for integration into Multi-Chip-Modules (MCMs) due to its small size (2.88 mm²).

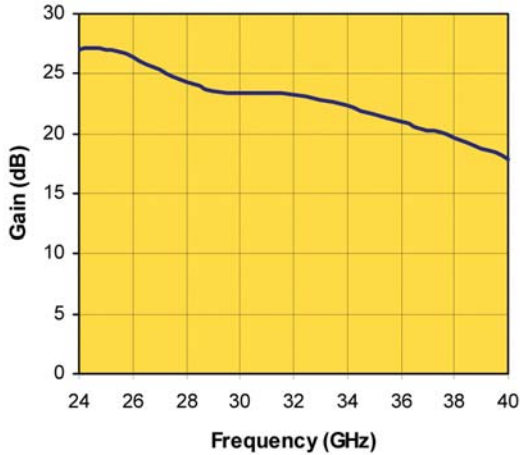
Electrical Specifications ^[1], $T_A = +25^\circ\text{C}$, $V_{dd} = +5\text{V}$, $I_{dd} = 66\text{mA}$

| Parameter | Min. | Typ. | Max. | Min. | Typ. | Max. | Units |
|-----------------------------------|---------|------|---------|------|------|------|-------|
| Frequency Range | 24 - 32 | | 32 - 40 | | | | GHz |
| Gain | 20 | 22 | | 15 | 17 | | dB |
| Noise Figure | | 2 | 2.5 | | 2.1 | 2.5 | dB |
| Input Return Loss | | 12 | | | 8 | | dB |
| Output Return Loss | | 12 | | | 12 | | dB |
| Output Power for 1 dB Compression | 9 | 11 | | 9 | 11 | | dBm |
| Supply Current (I _{dd}) | | 66 | | | 66 | | mA |

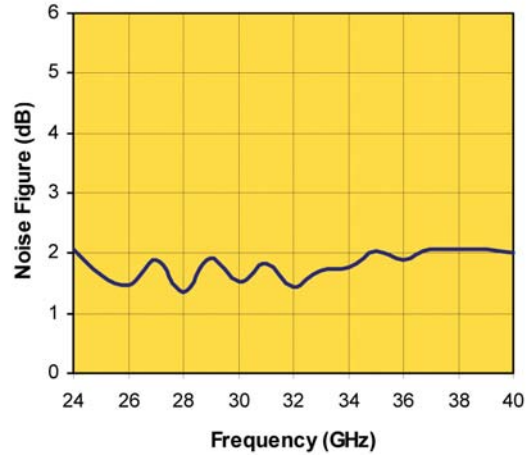
[1] Unless otherwise indicated, all measurements are from probed die

**GaAs HEMT MMIC LOW NOISE
AMPLIFIER, 24 - 40 GHz**

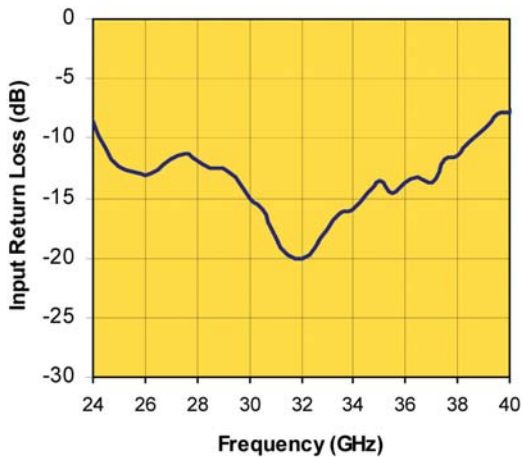
Linear Gain vs. Frequency



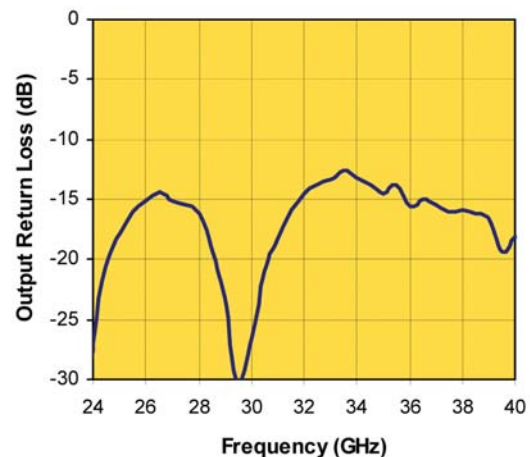
Noise Figure vs. Frequency



Input Return Loss vs. Frequency



Output Return Loss vs. Frequency



Note: Measured Performance Characteristics (Typical Performance at 25°C) Vd= 5V, Id = 66 mA

GaAs HEMT MMIC LOW NOISE AMPLIFIER, 24 - 40 GHz

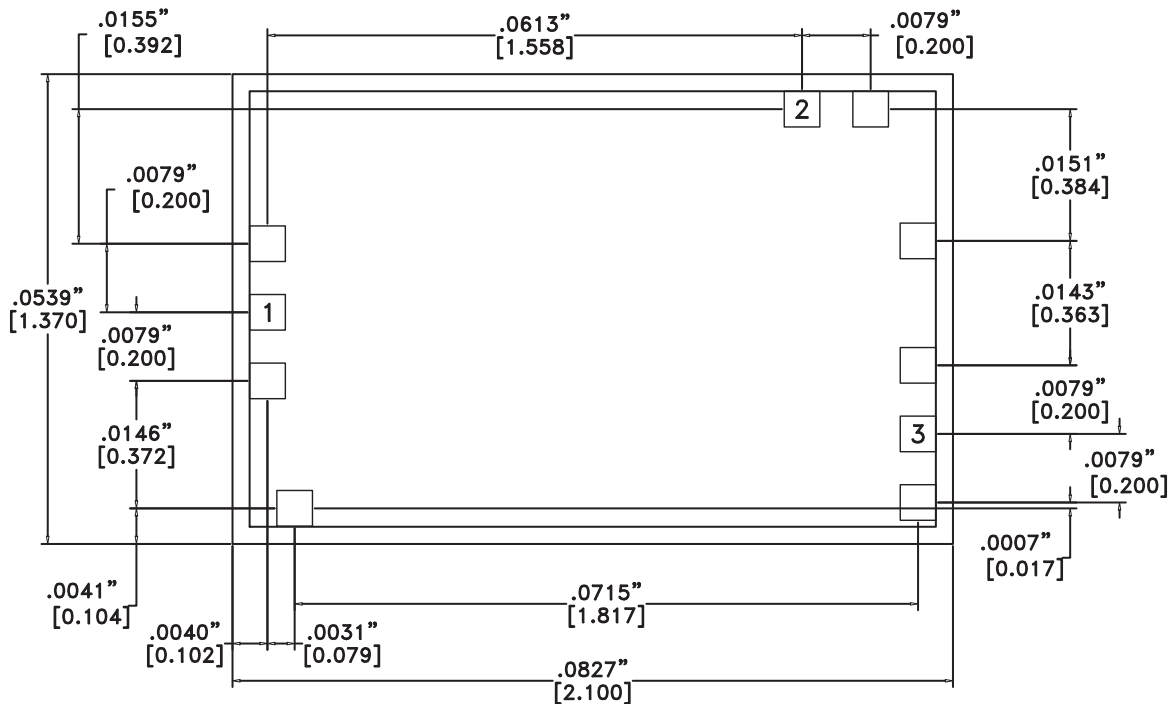
Absolute Maximum Ratings

| | |
|------------------------------|----------------|
| Drain Bias Voltage | +5.5 Vdc |
| RF Input Power (24 - 32 GHz) | 5 dBm |
| RF Input Power (32 - 40 GHz) | -1 dBm |
| Channel Temperature | 180 °C |
| Storage Temperature | -65 to +150 °C |
| Operating Temperature | -55 to +85 °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"