HMC-AUH249

GaAs HEMT MMIC MODULATOR DRIVER AMPLIFIER, DC - 43 GHz

Typical Applications

This HMC-ALH249 is ideal for:

- Fiber Optic Modulator Driver
- Gain Block for Test & Measurement Equipment
- Point-to-Point/ Point-to-Multi-Point Radios
- Wideband Communication & Surveillance Systems
- Radar Warning Systems
- Military & Space

Features

Small Signal Gain: 15 dB

Output Voltage: up to 8V pk-pk

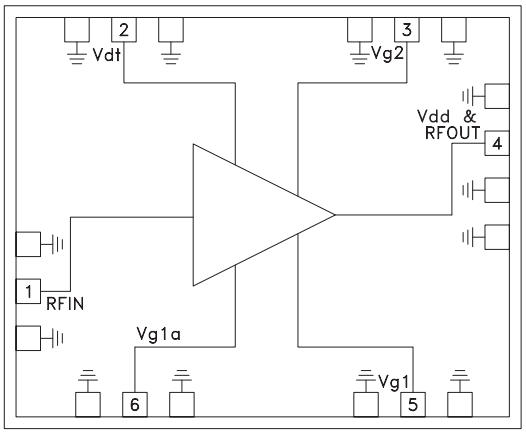
Psat Output Power: +23 dBm

High Speed Performance: >35 GHz 3 dB Bandwidth

Supply Voltage: +5V @ 200 mA

Small Die Size: 2.2 x 1.80 x 0.1 mm

Functional Diagram



General Description

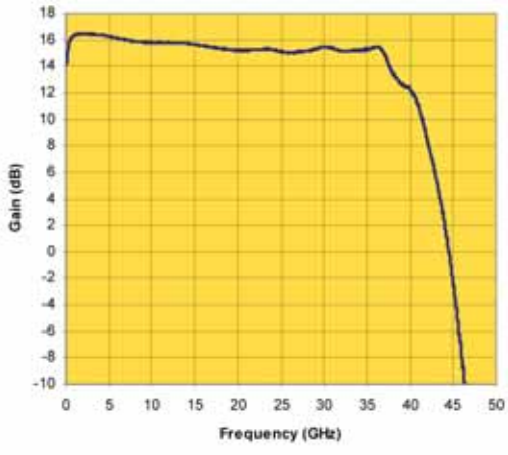
The HMC-AUH249 is a GaAs MMIC HEMT Distributed Driver Amplifier die which operates between DC and 43 GHz and provides a typical 3 dB bandwidth of 35 GHz. The amplifier provides 15 dB of gain and +23 dBm of saturated output power while requiring only 200 mA from a +5V supply voltage. The HMC-AUH256 exhibits very good gain and phase ripple beyond 25 GHz and can output greater than 8V peak-to-peak, making it ideal for for use in broadband wireless, fiber optic communication and test equipment applications. The amplifier die occupies less than 4 mm² which facilitates easy integration into Multi-Chip-Modules (MCMs). The HMC-AUH249 requires a bias-tee as well as off-chip blocking components and bypass capacitors for the DC supply lines. Vg1 adjusts the bias current for the device while Vg2 adjusts the output gain.

Electrical Specifications*, T_A = +25 °C

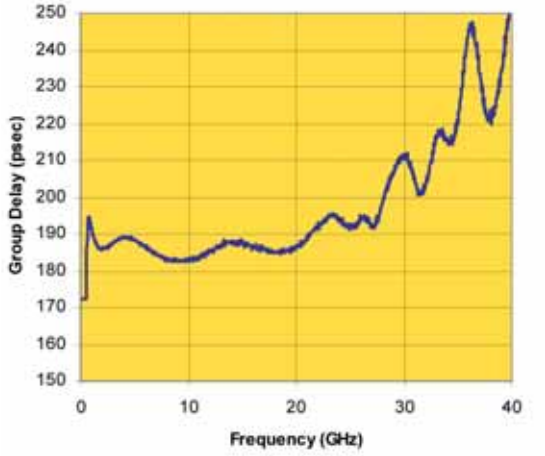
Parameter		Min.	Typ.	Max.	Units
Gain			15		dB
Bandwidth (3 dB)			>35		GHz
Gain Variation	DC - 35 GHz		±1		dB
Group Delay Variation	DC - 25 GHz		±10		ps
Power Output at 1 dB Compression	DC - 5 GHz		21		dBm
Power Output at Saturation	DC - 5 GHz		23		dBm
Maximum Output Amplitude			8		Vpp
Input Return Loss	DC - 20 GHz DC - 35 GHz		15 9		dB dB
Output Return Loss	DC - 20 GHz DC - 35 GHz		13 7		dB dB
Power Dissipation			1		W

* Unless otherwise indicated, all measurements are from die in a test fixture

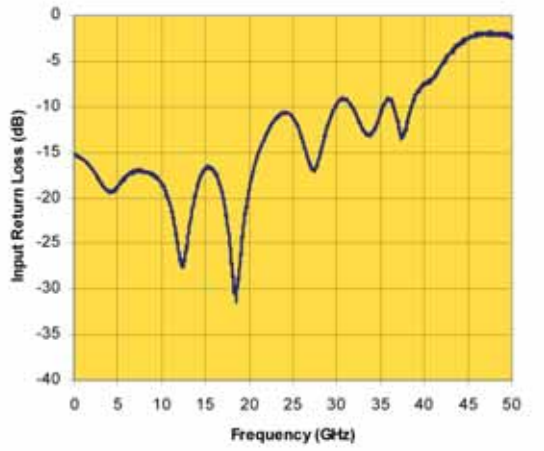
Gain vs. Frequency [1]



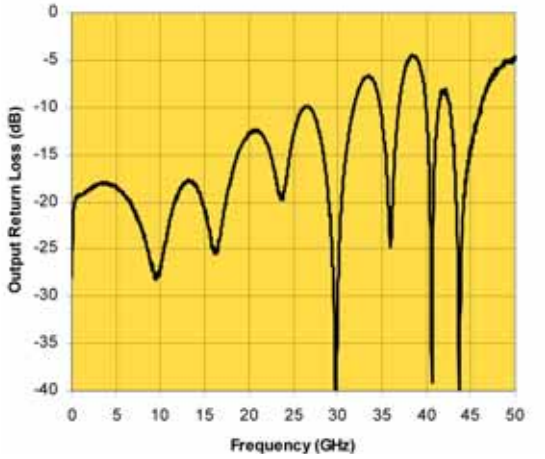
Group Delay vs. Frequency [1]



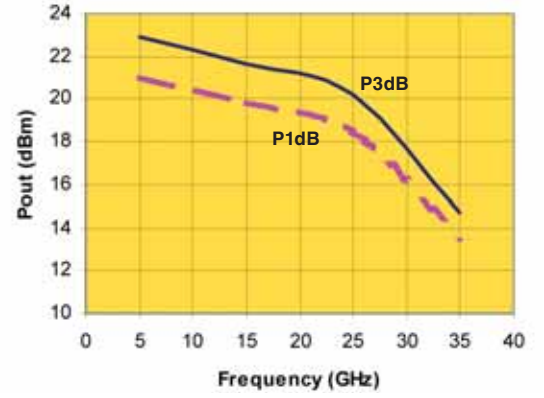
Input Return Loss vs. Frequency [1]



Output Return Loss vs. Frequency [1]

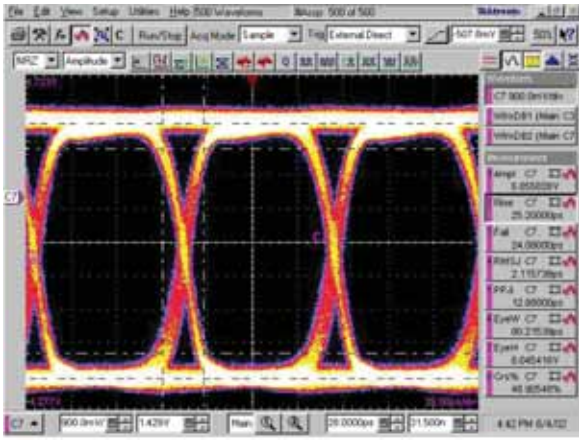


Fixtured Pout vs. Frequency [1]



[1] Measured Performance Characteristics (Typical Performance at 25°C) Vg2 = 1.5V, Vdd = 5V, Idd = 200 mA (Measured data obtained from die in a test fixture unless otherwise stated)

12.5 Gb/s Eye Diagram [1] [2]



Absolute Maximum Ratings

Drain Bias Voltage (Vdd)	+7 Vdc
Gate Bias Voltage (Vg1a)	-1 to 0 Vdc
RF Input Power	+10 dBm
Channel Temperature	180 °C
Storage Temperature	-65 to +150 °C
Operating Temperature	-55 to +110 °C

Recommended Operating Conditions

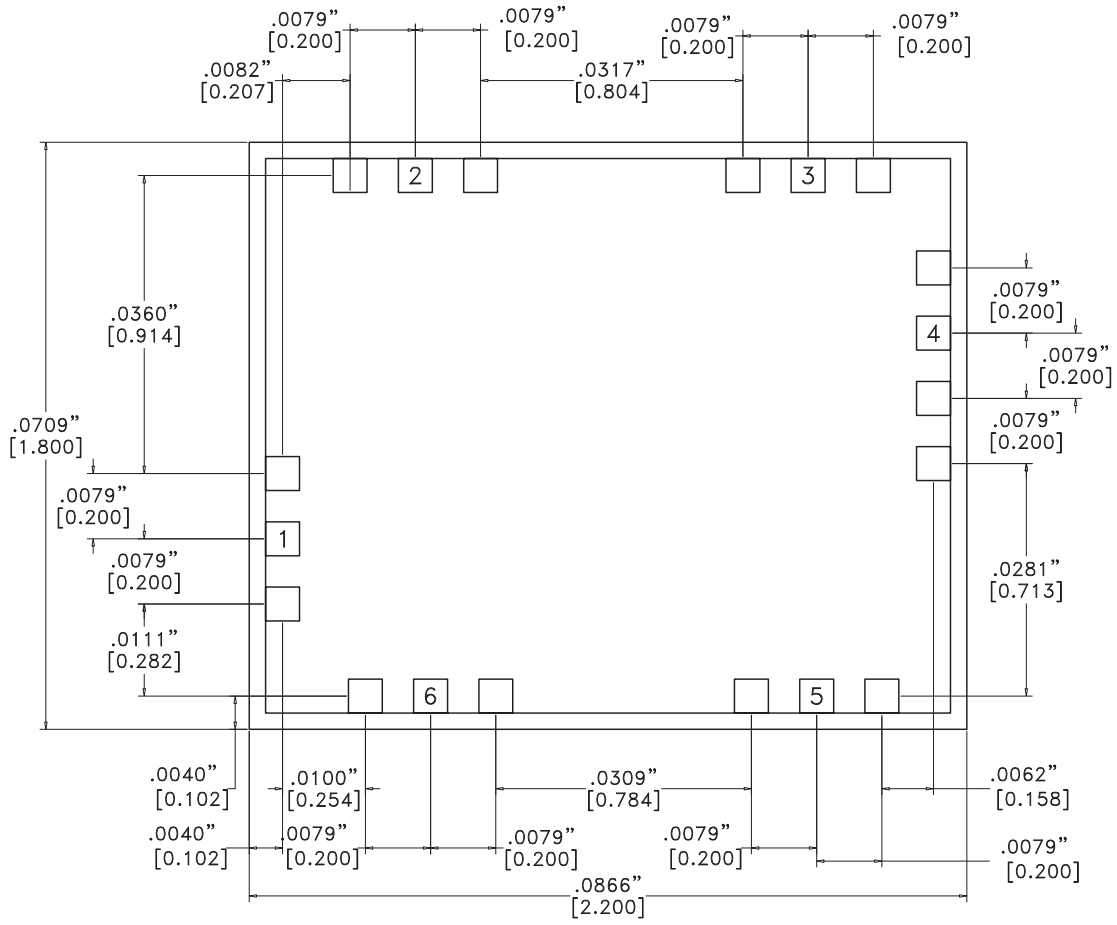
Parameter	Min.	Typ.	Max.	Units
Positive Supply Voltage (Vdd)		5	6	V
Positive Supply Current		200	230	mA
Bias Current Adjust (Vg1a)	-1	-0.5	0	V
Output Voltage Adjust (Vg2)	0.3	1.5	1.5	V
RF Input Power			4	dBm

ELECTROSTATIC SENSITIVE DEVICE
OBSERVE HANDLING PRECAUTIONS

[1] Measured Performance Characteristics (Typical Performance at 25°C) Vg2 = 1.5V, Vdd = 5V, Idd = 200 mA (Measured data obtained from die in a test fixture unless otherwise stated)

[2] Input 12.5 Gb/s data stream, 01.0V, PRBS 2^31-1

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"