HMC-AUH312

GaAs HEMT MMIC MODULATOR DRIVER AMPLIFIER, 0.5 - 65 GHz

Typical Applications

This HMC-ALH312 is ideal for:

- Fiber Optic Modulator Driver
- Fiber Optic Photoreceiver Post Amplifier
- Gain Block for Test & Measurement Equipment
- Point-to-Point/Point-to-Multi-Point Radio
- Wideband Communication & Surveillance Systems
- Radar Warning Receivers

Features

Small Signal Gain: >8 dB

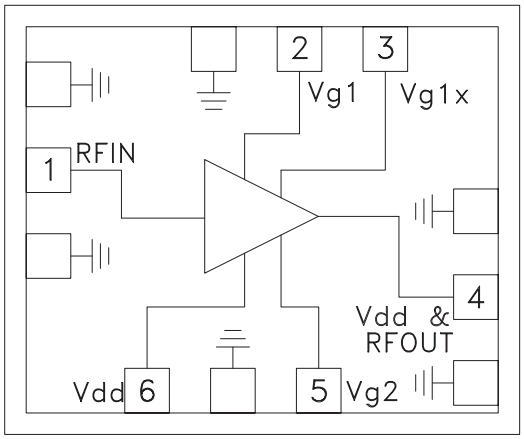
65 GHz Distributed Amplifier

Can be configured with and
w/o Bias-Tees for Vd and Vg1 bias

Low Power Dissipation:
300 mW with Bias Tee @ Vdd = 5V
360 mW w/o Bias Tee @ Vdd = 6V
480 mW w/o Bias Tee @ Vdd = 8V

Small Die Size: 1.2 x 1.0 x 0.1 mm

Functional Diagram



General Description

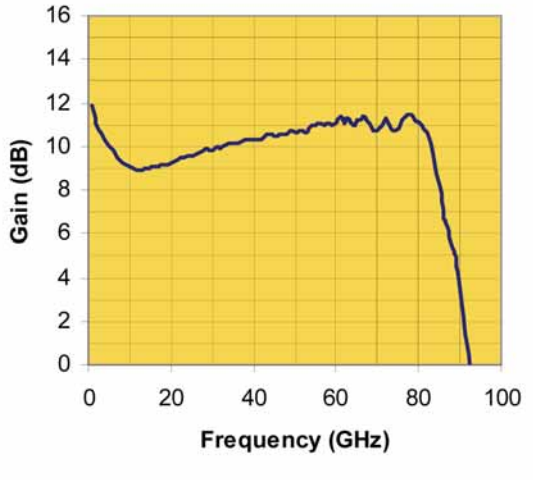
The HMC-AUH312 is a GaAs MMIC HEMT low power Distributed Driver Amplifier die which operates between 500 MHz and 65 GHz and provides a typical 3 dB bandwidth in excess of 65 GHz. The amplifier provides 10 dB of small signal gain and a maximum output amplitude of 2.5V peak to peak, which makes it ideal for use in broadband wireless, fiber optic communication and test equipment applications. The amplifier die occupies 1.2 mm² which facilitates easy integration into Multi-Chip-Modules (MCMs). The HMC-AUH312 can be used with or without a bias-tee and requires off-chip blocking components and bypass capacitors for the DC supply lines. Adjustable gate voltages allow for gain adjustment.

Electrical Specifications, T_A = +25° C, Vdd= +8V *

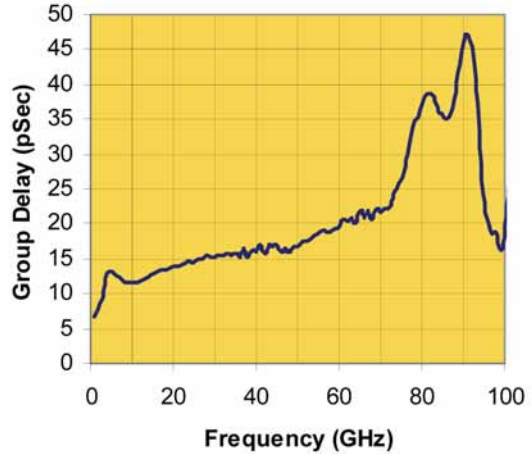
Parameter	Min.	Typ.	Max.	Units
Frequency Range		0.05 - 65		GHz
Gain	8	10		dB
Input Return Loss		12		dB
Output Return Loss		15		dB
Supply Current (Idd) (Vdd= 8V)		60		mA

*Unless otherwise indicated, all measurements are from probed die

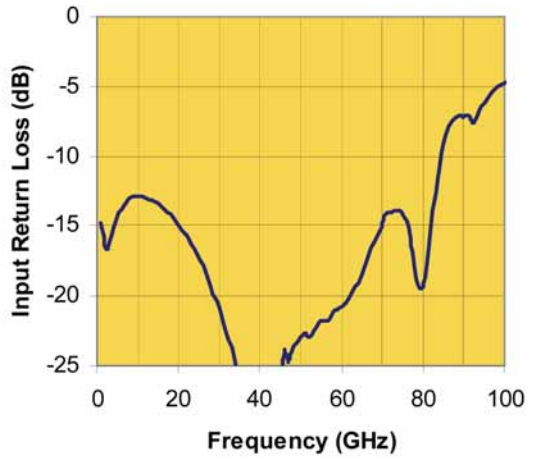
On-Wafer Gain vs. Frequency



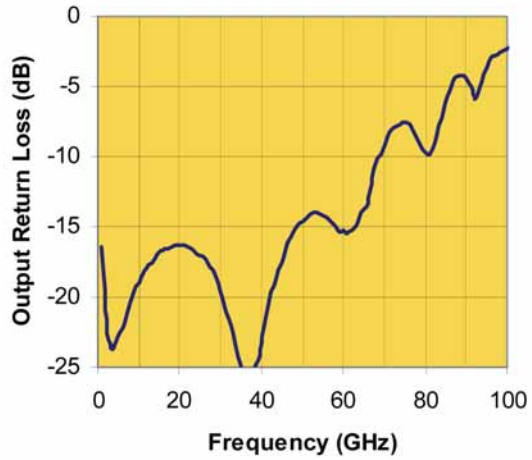
On-Wafer Group Delay vs. Frequency



On-Wafer Input Return Loss vs. Frequency



On-Wafer Output Return Loss vs. Frequency



Note: Measured Performance Characteristics (Operating Temperature TA=25ºC) Vdd = 6V, Vgg2 = 1.8V Idd = 60mA (On-Wafer)

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Absolute Maximum Ratings

Drain Bias Voltage w/ Bias Tee (Vdd)	+7 Vdc
Drain Bias Voltage w/out Bias Tee (Vdd)	+8.25 Vdc
Gain Bias Voltage (Vg1)	0.5V
Gain Bias Voltage (Vg2)	1.8V
RF Input Power	+10 dBm
Channel Temperature	180 °C
Storage Temperature	-40 to +85 °C
Operating Temperature	-0 to +70 °C

ELECTROSTATIC SENSITIVE DEVICE
OBSERVE HANDLING PRECAUTIONS

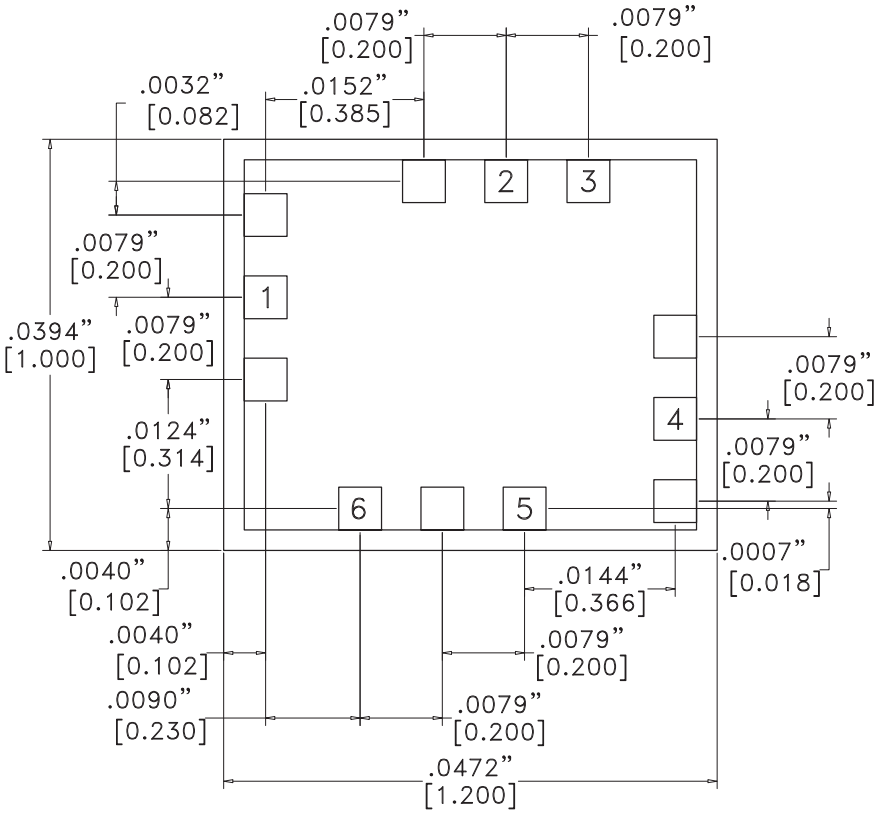
Recommended Operating Conditions w/ Bias Tee

Parameter	Min.	Typ.	Max.	Units
Positive Supply Voltage	3	5	6	V
Positive Supply Current		60	80	mA
Gate Voltage (Vg1)	-1		0.3	V
Gate Voltage (Vg2)		1.8		V
RF Input Power			4	dBm
Operating Temperature	0	25	70	°C

Recommended Operating Conditions w/out Bias Tee

Parameter	Min.	Typ.	Max.	Units
Positive Supply Voltage	5	8	8.25	V
Positive Supply Current		60	65	mA
Gate Voltage (Vg1)	-1		0.5	V
Gate Voltage (Vg2)	1	1.8		V
RF Input Power			4	dBm
Operating Temperature	0	25	70	°C

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"