HMC-APH403

GaAs HEMT MMIC MEDIUM POWER AMPLIFIER, 37 - 45 GHz

Typical Applications

This HMC-APH403 is ideal for:

- Point-to-Point Radios
- Point-to-Multi-Point Radios
- Military & Space

Features

Output IP3: +32 dBm

P1dB: +23 dBm

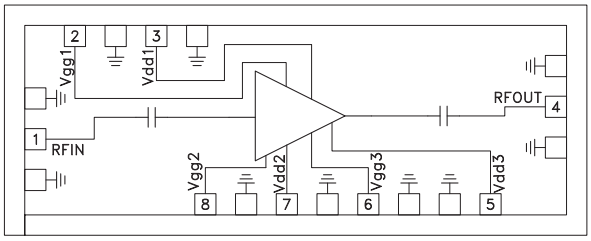
Gain: 21 dB

Supply Voltage: +5V

50 Ohm Matched Input/Output

Die Size: 2.76 x 1.03 x 0.1 mm

Functional Diagram



General Description

The HMC-APH403 is a three stage GaAs HEMT MMIC Medium Power Amplifier which operates between 37 and 45 GHz. The HMC-APH403 provides 21 dB of gain, and an output power of +23 dBm at 1 dB compression from a +5 V supply voltage. All bond pads and the die backside are Ti/Au metallized and the amplifier device is fully passivated for reliable operation. The HMC-APH403 GaAs HEMT MMIC Medium Power Amplifier is compatible with conventional die attach methods, as well as thermocompression and thermosonic wire bonding, making it ideal for MCM and hybrid microcircuit applications. All data Shown herein is measured with the chip in a 50 Ohm environment and contacted with RF probes.

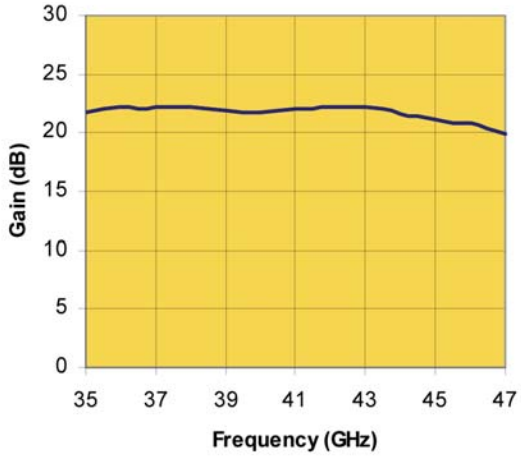
Electrical Specifications [1], T_A = +25° C, Vdd1=Vdd2=Vdd3= 5V Idd1+ Idd2 + Idd3= 475 mA [2]

Parameter	Min	Typ	Max	Units
Frequency Range		37 - 45		GHz
Gain	19	21		dB
Input Return Loss		6		dB
Output Return Loss		7		dB
Output Power for 1 dB Compression (P1dB)	22	23		dBm
Output Third Order Intercept (IP3)		32		dBm
Supply Current (Idd1 + Idd2 + Idd3)		475		dBm

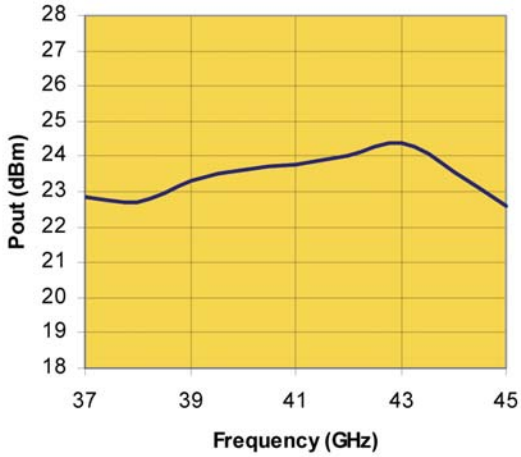
[1] Unless otherwise indicated, all measurements are from probed die

[2] Adjust Vgg1=Vgg2=Vgg3 between -1V to +0.3V (typ -0.5V).

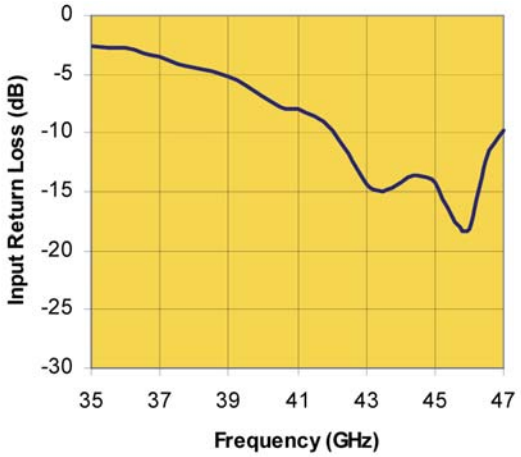
Pulsed Gain vs. Frequency



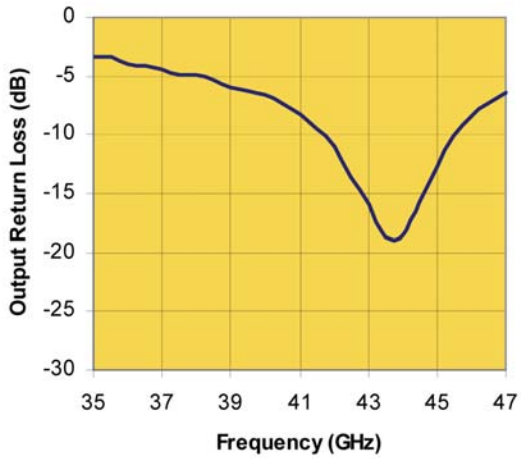
Fixtured P1dB vs. Frequency



Input Return Loss vs. Frequency



Output Return Loss vs. Frequency



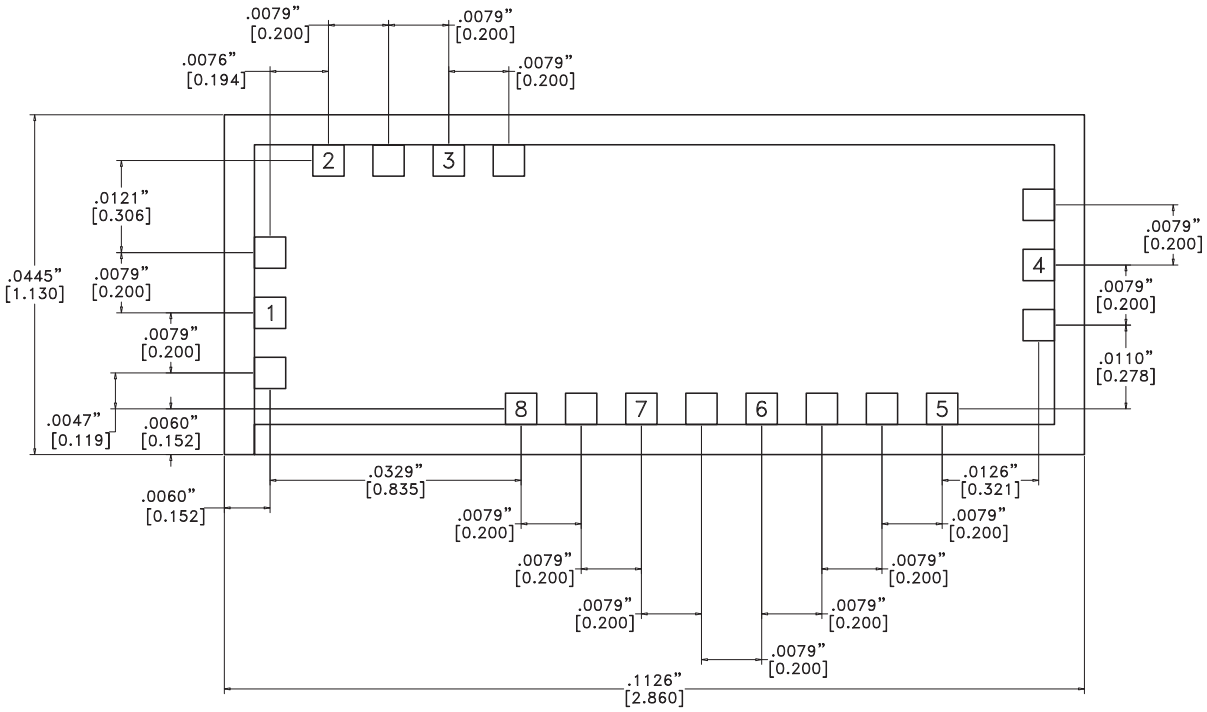
Note: Measured Performance Characteristics (Typical Performance at 25°C) Vdd = 5V, Idd = 475 mA

Absolute Maximum Ratings

Drain Bias Voltage	+5.5 Vdc
Gate Bias Voltage	-1 to +0.3 Vdc
RF Input Power	10 dBm
Thermal Resistance (Channel to die bottom)	49.7 °C/W
Storage Temperature	-65 °C to + 125 °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"