HMC-APH518

GaAs HEMT MMIC 1 WATT POWER AMPLIFIER, 21 - 24 GHz

Typical Applications

This HMC-APH518 is ideal for:

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

Features

Output IP3: +39 dBm

P1dB: +30.5 dBm

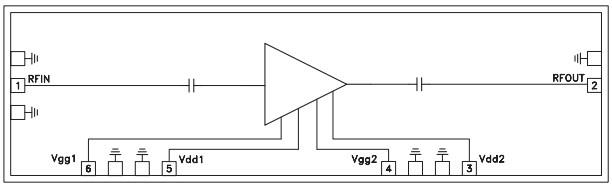
Gain: 17 dB

Supply Voltage: +5V

50 Ohm Matched Input/Output

Die Size: 4.49 x 1.31 x 0.1 mm

Functional Diagram



General Description

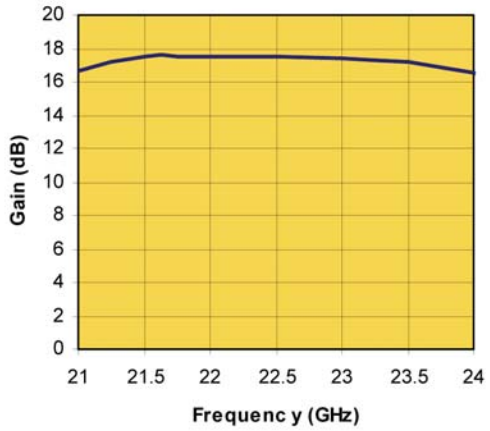
The HMC-APH518 is a two stage GaAs HEMT MMIC 1 Watt Power Amplifier which operates between 21 and 24 GHz. The HMC-APH518 provides 17 dB of gain, and an output power of +30.5 dBm at 1 dB compression from a +5V supply voltage. All bond pads and the die backside are Ti/Au metallized and the amplifier device is fully passivated for reliable operation. The HMC-APH518 GaAs HEMT MMIC 1 Watt 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= 5V, Idd1+Idd2= 950 mA [2]

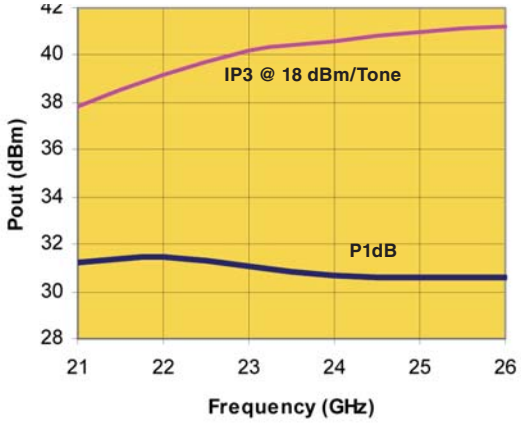
Parameter	Min.	Typ.	Max.	Units
Frequency Range		21 - 24		GHz
Gain	16	17		dB
Input Return Loss		8		dB
Output Return Loss		8		dB
Output power for 1dB Compression (P1dB)	28	30.5		dBm
Output Third Order Intercept (IP3)	37	39		dBm
Supply Current (Idd1+Idd2)		950		mA

[1] Unless otherwise indicated, all measurements are from probed die
[2] Adjust Vgg1=Vgg2 between -1V to +0.3V (typ. -0.5V).

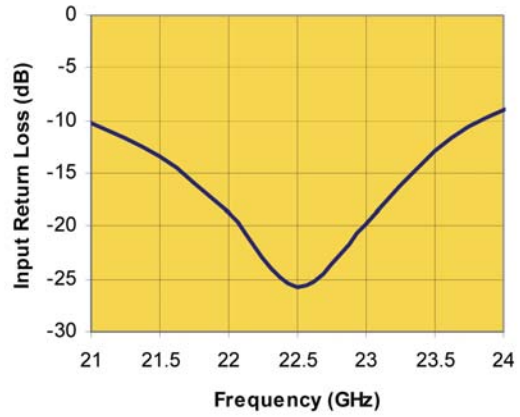
Linear Gain vs. Frequency



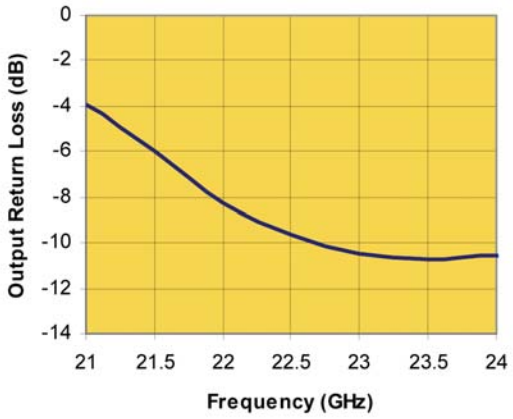
Fixtured Pout vs. Frequency



Input Return Loss vs. Frequency



Output Return Loss vs. Frequency



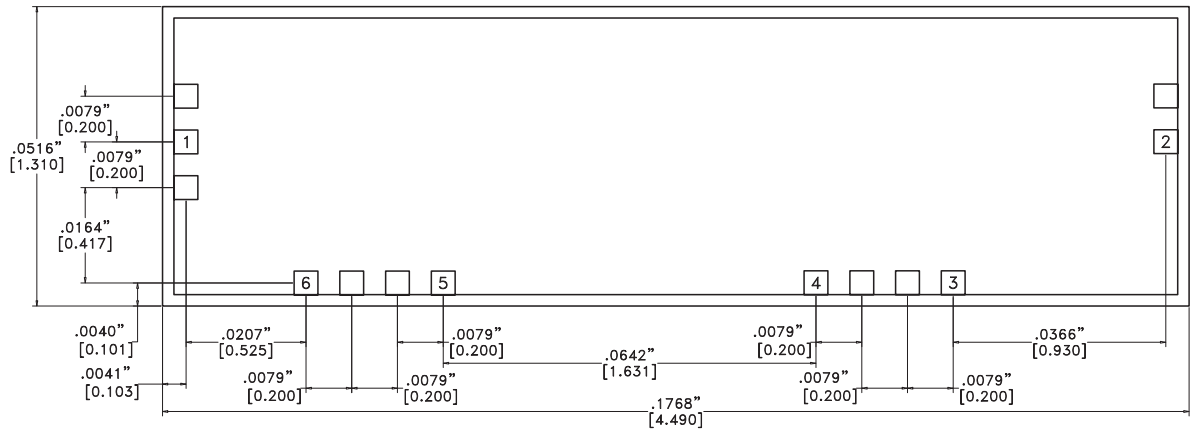
Note: Measured Performance Characteristics (Typical Performance at 25°C) Vdd1 = Vdd2 = 5.0V, Idd1 = 350 mA, Idd2 = 600mA

Absolute Maximum Ratings

Drain Bias Voltage	+5.5 Vdc
Gate Bias Voltage	-1 to +0.3 Vdc
RF Input Power	15 dBm
Thermal Resistance (Channel to die bottom)	23.9 °C/W
Channel Temperature	180 °C
Storage Temperature	-65 °C to +150 °C
Drain Bias Current (stage 1)	600 mA
Drain Bias Current (stage 2)	670 mA

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"