

GaAs pHEMT MMIC 1/2 WATT POWER AMPLIFIER, 22 - 26.5 GHz

Typical Applications

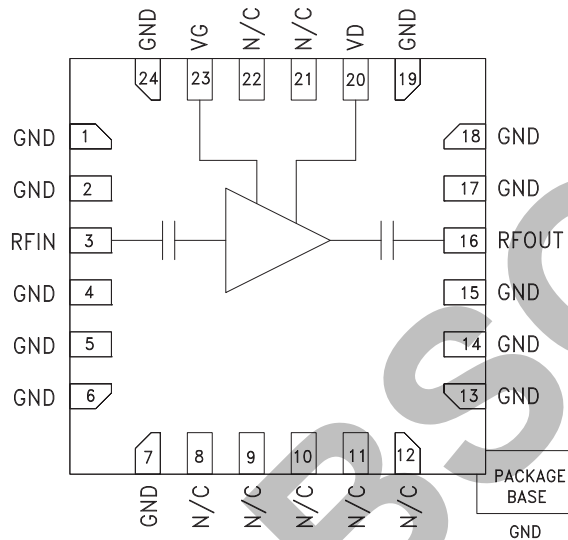
The HMC863ALP4E is ideal for:

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

Features

- Saturated Output Power:
up to +27.5 dBm @ 15% PAE
- High Output IP3: +33 dBm
- High Gain: 21.5 dB
- DC Supply: +6V @ 350mA
- No External Matching Required
- 24 Lead 4x4 mm SMT Package: 16 mm²

Functional Diagram



General Description

The HMC863ALP4E is a three stage GaAs pHEMT MMIC 1/2 Watt Power Amplifier which operates between 22 and 26.5 GHz. The HMC863ALP4E provides 21.5 dB of gain, +27.5 dBm of saturated output power and 15% PAE from a +6V supply. High output IP3 makes the HMC863ALP4E ideal for point-to-point and point-to-multi-point radio systems as well as VSAT applications. The RF I/Os are DC blocked and matched to 50 Ohms for ease of integration into higher level assemblies. The HMC863ALP4E can also be operated from a 5V supply with only a slight decrease in output power & IP3.

Electrical Specifications, $T_A = +25^\circ C$, $V_{dd} = V_{dd1} = V_{dd2} = +6V$, $I_{dd} = 350mA$ [1]

| Parameter | Min. | Typ. | Max. | Units |
|---|-----------|-------|------|-------|
| Frequency Range | 22 - 26.5 | | | GHz |
| Gain | 19 | 21.5 | | dB |
| Gain Variation Over Temperature | | 0.032 | | dB/°C |
| Input Return Loss | | 11 | | dB |
| Output Return Loss | | 15 | | dB |
| Output Power for 1 dB Compression (P1dB) | 22 | 24.5 | | dBm |
| Saturated Output Power (P _{sat}) | | 27 | | dBm |
| Output Third Order Intercept (IP3) ^[2] | | 33 | | dBm |
| Total Supply Current (I _{dd}) | | 350 | 380 | mA |

[1] Adjust V_{gg} between -2 to 0V to achieve I_{dd} = 350mA typical.

[2] Measurement taken at +6V @ 350mA, P_{out} / Tone = +14 dBm

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Absolute Maximum Ratings

| | |
|--|----------------|
| Drain Bias Voltage (Vd) | 6.3V |
| RF Input Power (RFIN) | +26 dBm |
| Channel Temperature | 150 °C |
| Continuous Pdiss (T= 85 °C) (derate 37 mW/°C above 85 °C) | 2.52 W |
| Thermal Resistance (channel to ground paddle) | 26.9 C/W |
| Storage Temperature | -65 to +150 °C |
| Operating Temperature | -55 to +85 °C |
| ESD Sensitivity (HBM) | Class 0, 150V |

Typical Supply Current vs. Vdd

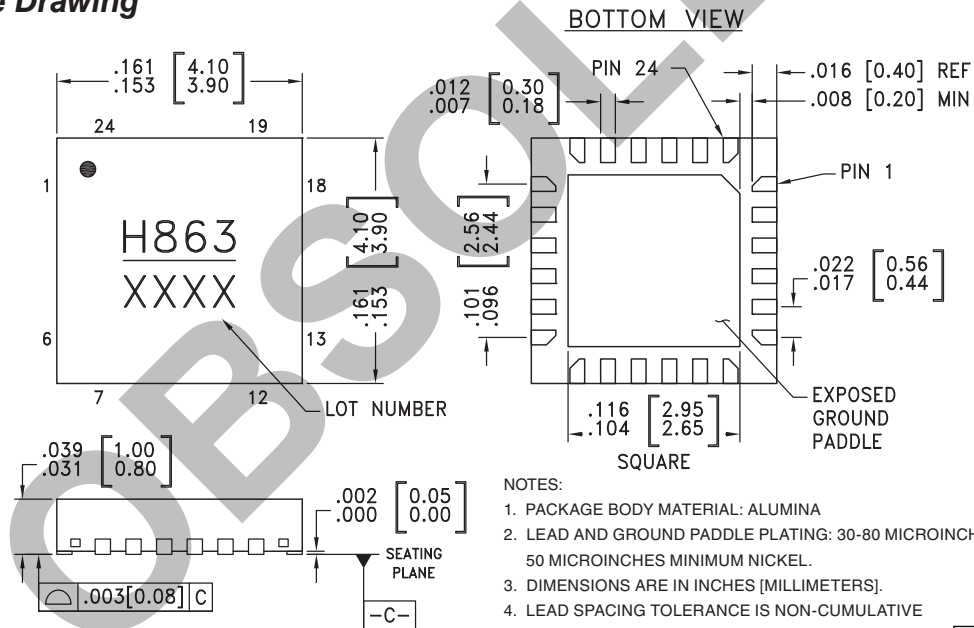
| Vdd (V) | Idd (mA) |
|---------|----------|
| +5.0 | 350 |
| +5.5 | 350 |
| +6.0 | 350 |

Note: Amplifier will operate over full voltage ranges shown above Vgg adjusted to achieve Idd = 350mA at +5.5V



**ELECTROSTATIC SENSITIVE DEVICE
OBSERVE HANDLING PRECAUTIONS**

Outline Drawing



NOTES:

1. PACKAGE BODY MATERIAL: ALUMINA
2. LEAD AND GROUND PADDLE PLATING: 30-80 MICROINCHES GOLD OVER 50 MICROINCHES MINIMUM NICKEL.
3. DIMENSIONS ARE IN INCHES [MILLIMETERS].
4. LEAD SPACING TOLERANCE IS NON-CUMULATIVE
5. PACKAGE WARP SHALL NOT EXCEED 0.05mm DATUM [-C-]
6. ALL GROUND LEADS AND GROUND PADDLE MUST BE SOLDERED TO PCB RF GROUND.
7. CLASSIFIED AS MOISTURE SENSITIVITY LEVEL (MSL) 1.