

## GaAs pHEMT MMIC ½ WATT POWER AMPLIFIER, 22 - 26.5 GHz

### Typical Applications

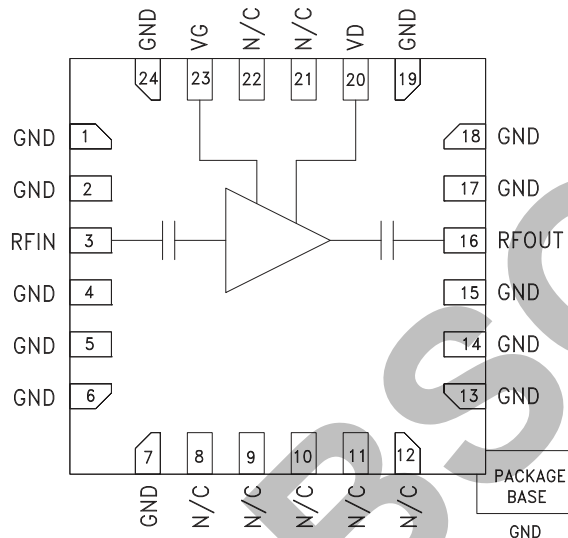
The HMC863ALP4E is ideal for:

- 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 mm<sup>2</sup>

### Functional Diagram



### General Description

The HMC863ALP4E is a three stage GaAs pHEMT MMIC ½ 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, $T_A = +25^\circ\text{C}$ , $V_{dd} = V_{dd1} = V_{dd2} = +6\text{V}$ , $I_{dd} = 350\text{mA}$ [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 <sub>sat</sub> )		27		dBm
Output Third Order Intercept (IP3) <sup>[2]</sup>		33		dBm
Total Supply Current (I <sub>dd</sub> )		350	380	mA

[1] Adjust V<sub>gg</sub> between -2 to 0V to achieve I<sub>dd</sub> = 350mA typical.

[2] Measurement taken at +6V @ 350mA, P<sub>out</sub> / Tone = +14 dBm

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

### Absolute Maximum Ratings

Drain Bias Voltage (Vd)	6.3V
RF Input Power (RFIN)	+26 dBm
Channel Temperature	150 °C
Continuous P <sub>diss</sub> (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. V<sub>dd</sub>

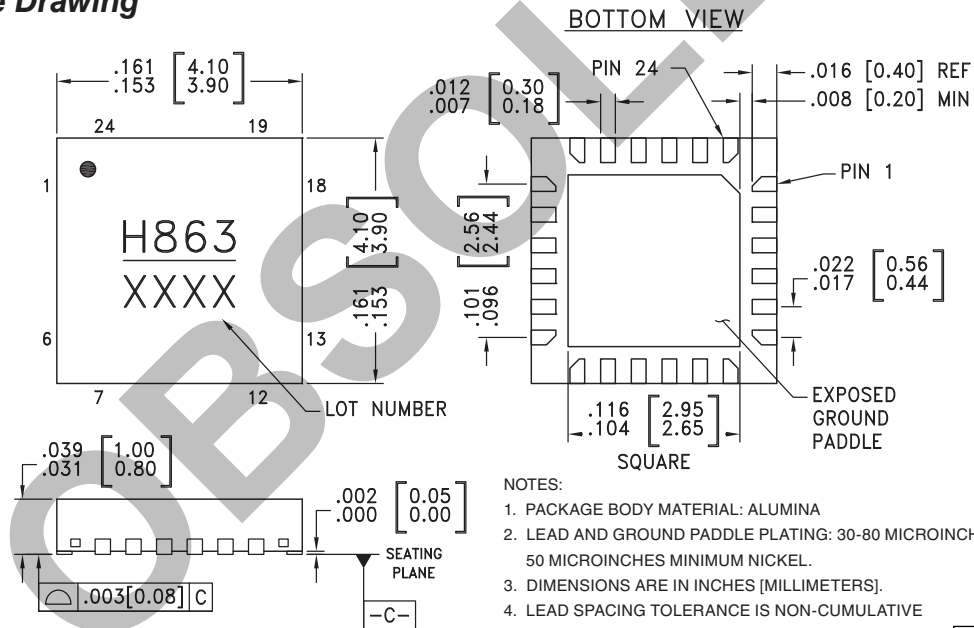
V <sub>dd</sub> (V)	I <sub>dd</sub> (mA)
+5.0	350
+5.5	350
+6.0	350

Note: Amplifier will operate over full voltage ranges shown above V<sub>gg</sub> adjusted to achieve I<sub>dd</sub> = 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.