

### Typical Applications

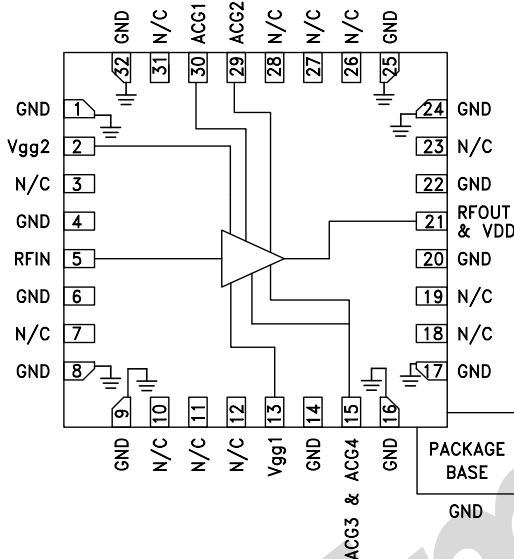
The HMC797APM5E is ideal for:

- Test Instrumentation
- Microwave Radio & VSAT
- Military & Space
- Telecom Infrastructure
- Fiber Optics

### Features

- High P1dB Output Power: 28 dBm
- High Psat Output Power: 29.5 dBm
- High Gain: 13.5 dB
- High Output IP3: 39 dBm
- Supply Voltage: +10 V @ 400 mA
- 50 Ohm Matched Input/Output
- 32 Lead 5x5 mm SMT Package: 25 mm<sup>2</sup>

### Functional Diagram



### General Description

The HMC797APM5E is a GaAs MMIC pHEMT Distributed Power Amplifier which operates between DC and 22 GHz. The amplifier provides 13.5 dB of gain, 39 dBm output IP3 and +28 dBm of output power at 1 dB gain compression while requiring 400 mA from a +10 V supply. This versatile PA exhibits a positive gain slope from 4 to 20 GHz making it ideal for EW, ECM, Radar and test equipment applications. The HMC797APM5E amplifier I/Os are internally matched to 50 Ohms facilitating integration into multi-chip-modules (MCMs), is packaged in a leadless QFN 5x5 mm surface mount package, and requires no external matching components.

### Electrical Specifications, $T_A = +25^\circ\text{C}$ , $V_{dd} = +10\text{V}$ , $V_{gg2} = +3.5\text{V}$ , $I_{dd} = 400\text{mA}^*$

Parameter	Min.	Typ.	Max.	Min.	Typ.	Max.	Min.	Typ.	Max.	Units
Frequency Range	DC - 12			12 - 18			18 - 22			GHz
Gain	11	12.5		11	13.5		11	13.5		dB
Gain Flatness		±0.7			±0.5			±0.5		dB
Gain Variation Over Temperature		0.012			0.008			0.008		dB/°C
Input Return Loss		13			15			15		dB
Output Return Loss		12			16			13		dB
Output Power for 1 dB Compression (P1dB)	26	28		25	27		23.5	25.5		dBm
Saturated Output Power (Psat)		29.5			29			27		dBm
Output Third Order Intercept (IP3)		39			37			35		dBm
Noise Figure		3.5			4			6		dB
Supply Current (I <sub>dd</sub> ) (V <sub>dd</sub> = 10V, V <sub>gg1</sub> = -0.8V Typ.)		400	440		400	440		400	440	mA

\* Adjust V<sub>gg1</sub> between -2 to 0 V to achieve I<sub>dd</sub> = 400 mA typical.

# HMC797APM5E\* PRODUCT PAGE QUICK LINKS

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## COMPARABLE PARTS

View a parametric search of comparable parts.

## EVALUATION KITS

- HMC797APM5 Evaluation Board

## DOCUMENTATION

### Data Sheet

- HMC797APM5E: GaAs pHEMT MMIC 1 Watt Power Amplifier, DC - 22 GHz Preliminary Data Sheet

## DESIGN RESOURCES

- HMC797APM5E Material Declaration
- PCN-PDN Information
- Quality And Reliability
- Symbols and Footprints

## DISCUSSIONS

View all HMC797APM5E EngineerZone Discussions.

## SAMPLE AND BUY

Visit the product page to see pricing options.

## TECHNICAL SUPPORT

Submit a technical question or find your regional support number.

## DOCUMENT FEEDBACK

Submit feedback for this data sheet.

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**GaAs pHEMT MMIC  
1 WATT POWER AMPLIFIER, DC - 22 GHz**
**Absolute Maximum Ratings**

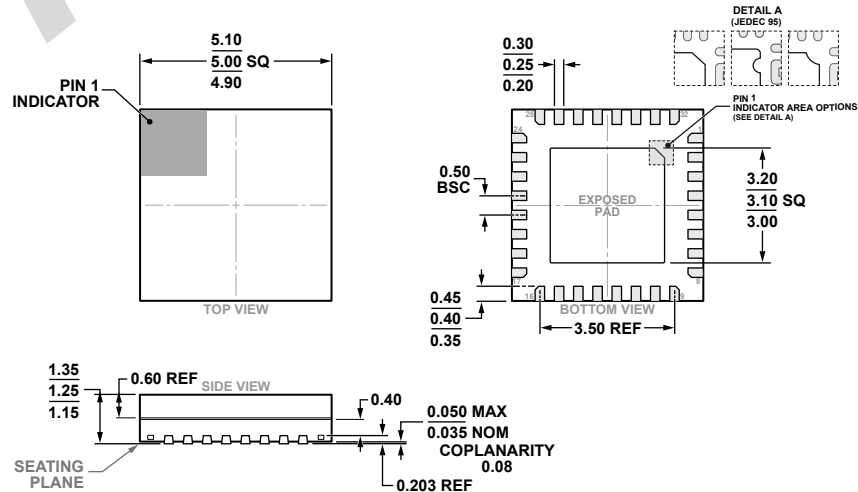
Nominal Drain Supply to GND	+12.0 V
Gate Bias Voltage (V <sub>gg1</sub> )	-3.0 to 0 Vdc
Gate Bias Current (I <sub>gg1</sub> )	< +10 mA
Gate Bias Voltage (V <sub>gg2</sub> )	+2.0 V to (V <sub>dd</sub> - 6.5 V)
Gate Bias Current (I <sub>gg2</sub> )	< +10 mA
Continuous P <sub>diss</sub> (T= 85 °C) (derate 69 mW/°C above 85 °C)	4.5 W
RF Input Power	+27 dBm
Output Power into VSWR >7:1	+29 dBm
Storage Temperature	-65 to 150 °C
Max Peak Reflow Temperature	260 °C
ESD Sensitivity (HBM)	Class 1A

**Reliability Information**

Junction Temperature to Maintain 1 Million Hour MTTF	150 °C
Nominal Junction Temperature (T=85 °C, V <sub>dd</sub> = 10 V)	144 °C
Thermal Resistance (channel to ground paddle)	14.6 °C/W
Operating Temperature	-40 to +85 °C



ELECTROSTATIC SENSITIVE DEVICE  
OBSERVE HANDLING PRECAUTIONS

**Outline Drawing**

**Typical Supply Current vs. V<sub>dd</sub>**

V <sub>dd</sub> (V)	I <sub>dd</sub> (mA)
+9	400
+10	400
+11	400