

**LOW NOISE AMPLIFIER  
MODULE, 29 - 36 GHz**

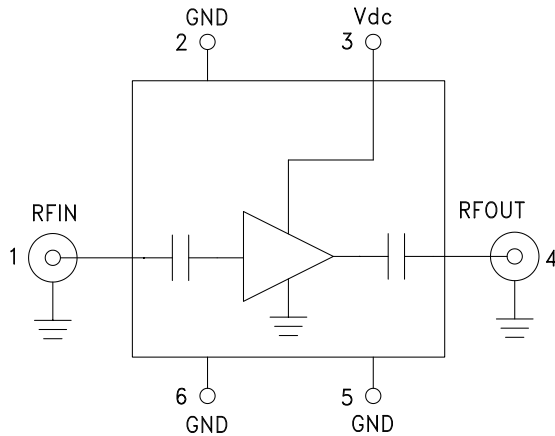


**Typical Applications**

The HMC-C027 Wideband LNA is ideal for:

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

**Functional Diagram**



**Features**

- Noise Figure: 2.9 dB
- Gain: 20 dB
- OIP3: 22 dBm
- P1dB Output Power: +11 dBm
- 50 Ohm Matched Input/Output
- Hermetically Sealed Module
- Field Replaceable 2.92 mm Connectors
- 55 °C to +85 °C Operating Temperature

**General Description**

The HMC-C027 is a GaAs MMIC pHEMT Low Noise Amplifier in a miniature, hermetic module which operates between 29 and 36 GHz. This high dynamic range amplifier module provides 20 dB of gain, 2.9 dB noise figure and up to +22 dBm of output IP3 from a single +3V supply. The wideband amplifier I/Os are internally matched to 50 Ohms and DC blocked for robust performance. The module features positive gain slope, and consistent noise figure and output power performance across its operating band.

**Electrical Specifications,  $T_A = +25^\circ\text{C}$ ,  $V_{dc} = +3\text{V}$**

Parameter	Min.	Typ.	Max.	Units
Frequency Range	29 - 36			GHz
Gain	17	20		dB
Gain Variation Over Temperature		0.03	0.05	dB/ °C
Noise Figure		2.9	3.5	dB
Input Return Loss		14		dB
Output Return Loss		8		dB
Output Power for 1 dB Compression (P1dB)	8	11		dBm
Saturated Output Power (Psat)		13		dBm
Output Third Order Intercept (IP3)		22		dBm
Supply Current		80		mA

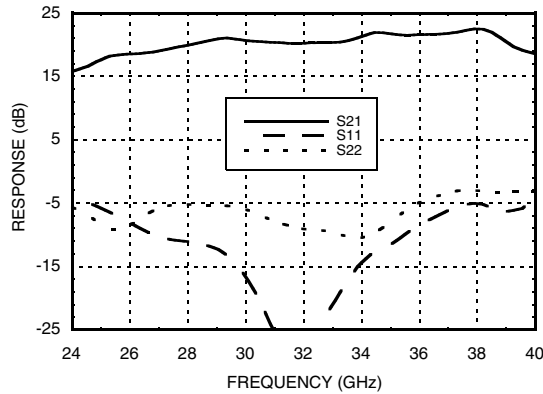
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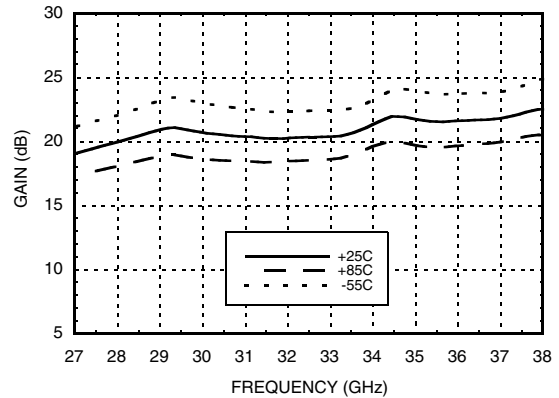
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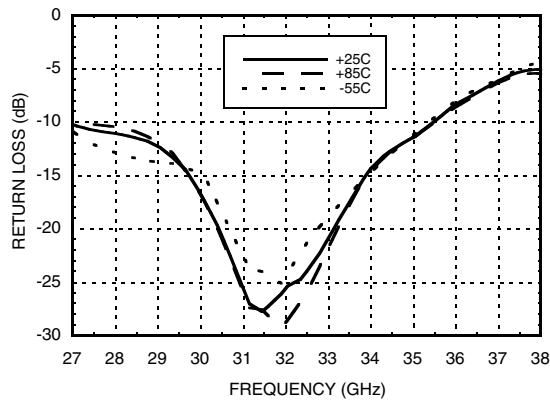
**Broadband Gain & Return Loss**



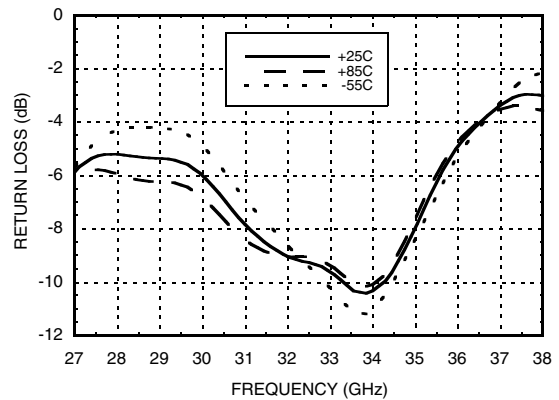
**Gain vs. Temperature**



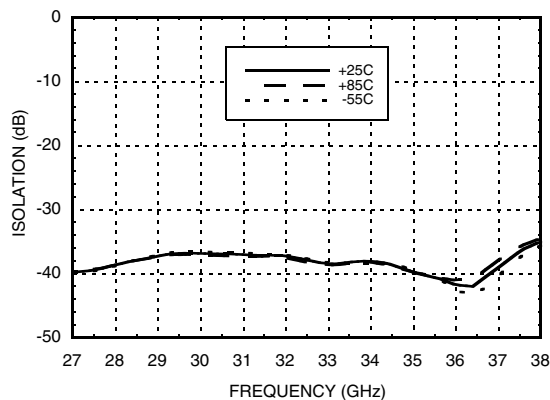
**Input Return Loss vs. Temperature**



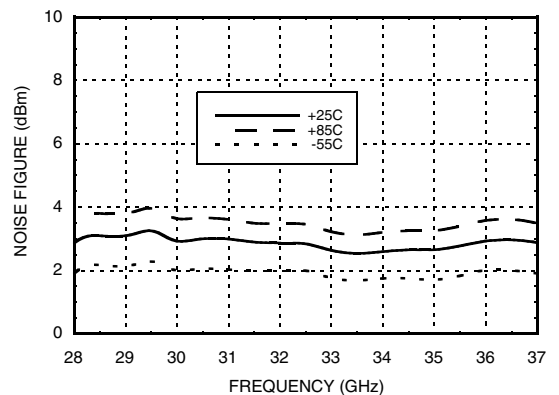
**Output Return Loss vs. Temperature**



**Reverse Isolation vs. Temperature**



**Noise Figure vs. Temperature**



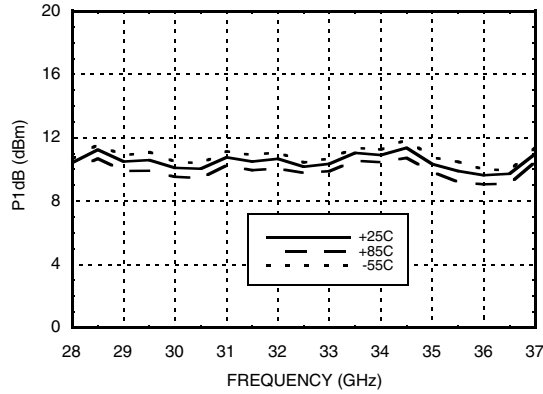
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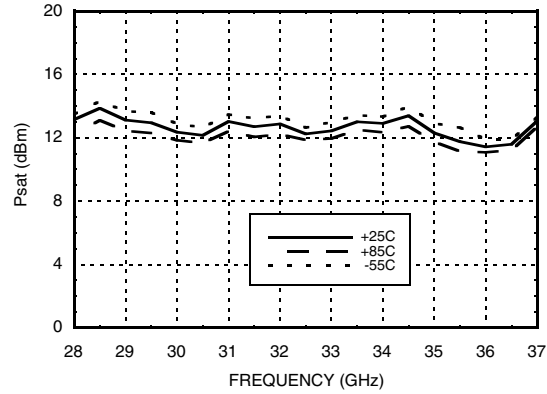


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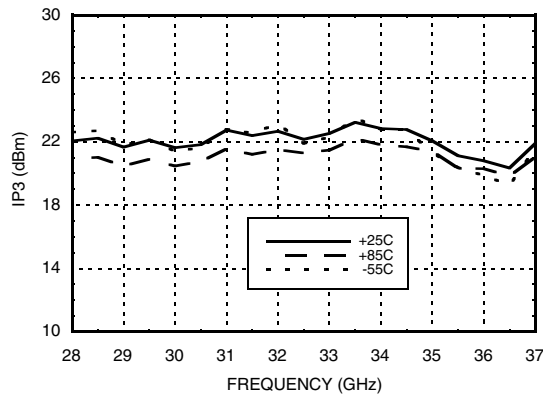
**P1dB vs. Temperature**



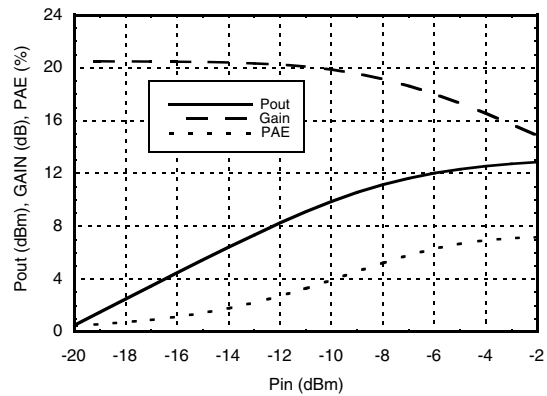
**Psat vs. Temperature**



**Output IP3 vs. Temperature**



**Power Compression @ 32 GHz**



**Absolute Maximum Ratings**

Bias Supply Voltage (Vdc)	+3.5 Vdc
RF Input Power (RFIN)	+5 dBm
Storage Temperature	-65 to +150 °C
Operating Temperature	-55 to +85 °C

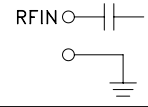

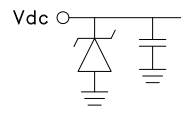
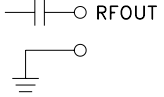


**ELECTROSTATIC SENSITIVE DEVICE  
OBSERVE HANDLING PRECAUTIONS**

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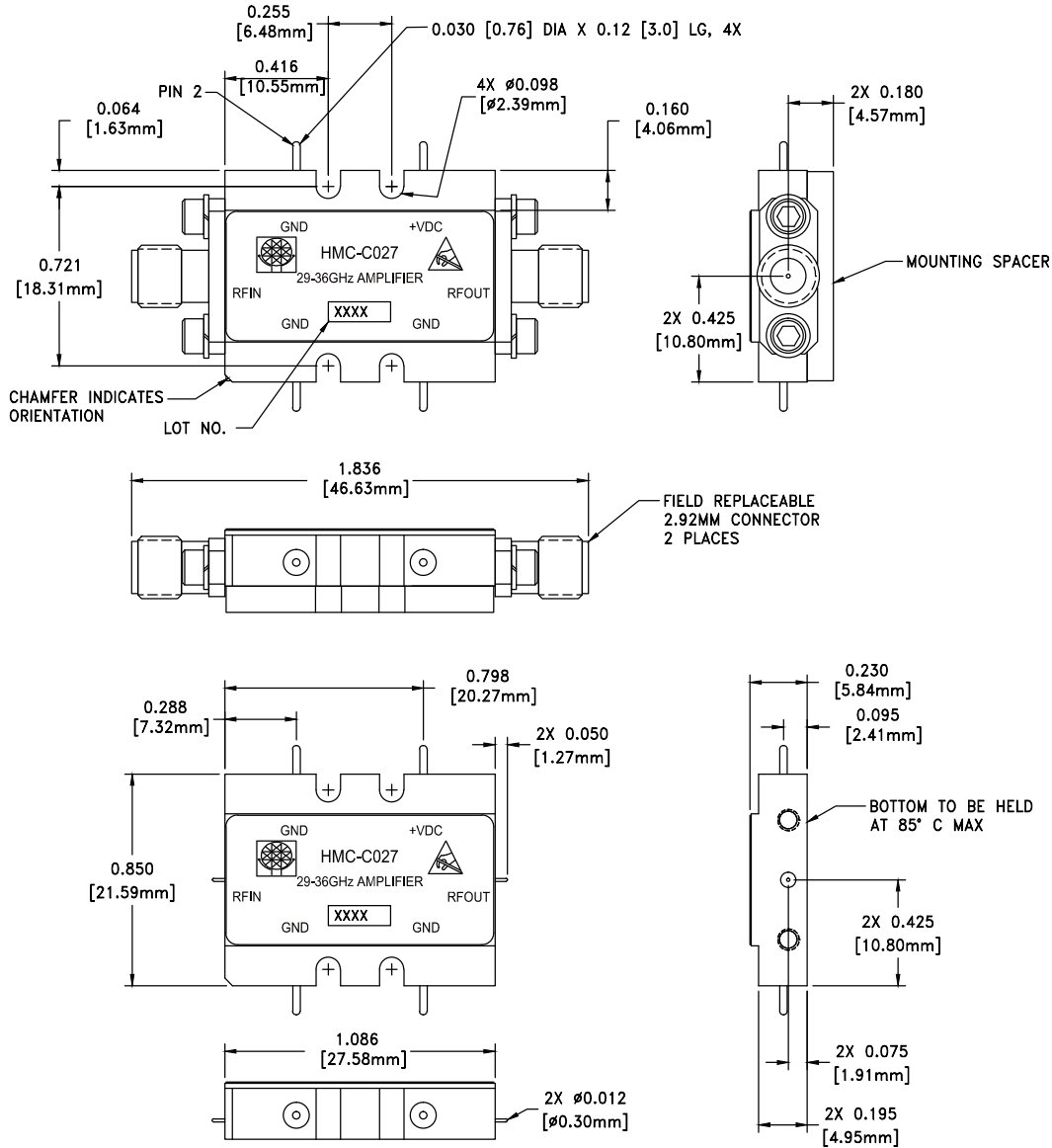

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**Pin Descriptions**

Pin Number	Function	Description	Interface Schematic
1	RFIN & RF Ground	RF input connector, coaxial female, field replaceable. This pin is AC coupled and matched to 50 Ohms.	
2, 5, 6	GND	One of these pins must be connected to power supply ground.	
3	Vdc	Power supply voltage for the amplifier. Includes zener diode for over voltage and negative voltage protection.	
4	RFOUT & RF Ground	RF output connector, coaxial female, field replaceable. This pin is AC coupled and matched to 50 Ohms.	



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**Outline Drawing**



VIEW SHOWN WITH CONNECTORS AND MOUNTING SPACER REMOVED

**Package Information**

Package Type	C-10
Package Weight [1]	18.7 gms [2]
Spacer Weight	3.3 gms [2]

[1] Includes the connectors

[2] ±1 gms Tolerance

**NOTES:**

1. PACKAGE, LEADS, COVER MATERIAL: KOVAR™
2. FINISH: GOLD PLATE OVER NICKEL PLATE
3. ALL DIMENSIONS ARE IN INCHES [MILLIMETERS]
4. TOLERANCES:
  - 4.1 .XX = ±0.02
  - 4.2 .XXX = ±0.010
5. FIELD REPLACEABLE 2.92mm CONNECTORS TENSOLITE 231CCSF OR EQUIVALENT

**LOW NOISE AMPLIFIER  
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