

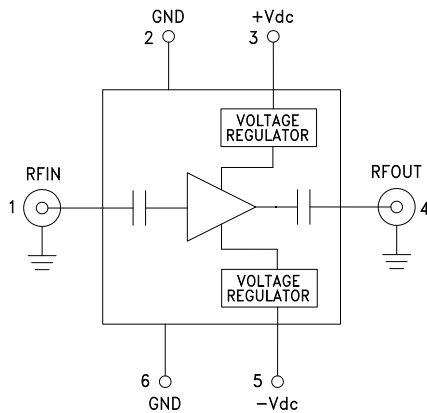


### Typical Applications

The HMC-C059 Wideband LNA is ideal for:

- Telecom Infrastructure
- Microwave Radio & VSAT
- Military & Space
- Test Instrumentation
- Industrial Sensors

### Functional Diagram



### Features

- Noise Figure: 1.8 dB @ 8 GHz
- High Gain: 16 dB @ 8 GHz
- P1dB Output Power: +16 dBm @ 8 GHz
- Spurious-Free Operation
- Regulated Supply and Bias Sequencing
- Hermetically Sealed Module
- Field Replaceable SMA connectors
- 55 °C to +85 °C Operating Temperature

### General Description

The HMC-C059 is a GaAs MMIC pHEMT Low Noise Distributed Amplifier in a miniature, hermetic module with replaceable SMA connectors which operates between 1 and 12 GHz. The amplifier provides 16 dB of gain, 1.8 dB noise figure, and up to +17 dBm of output power at 1 dB gain compression. The wideband amplifier I/Os are internally matched to 50 Ohms and are internally DC blocked. Integrated voltage regulators allow for flexible biasing of both the negative and positive supply pins, while internal bias sequencing circuitry assures robust operation.

### Electrical Specifications, $T_A = +25^\circ\text{C}$ , $+V_{dc} = +6\text{V}$ , $-V_{dc} = -5\text{V}$

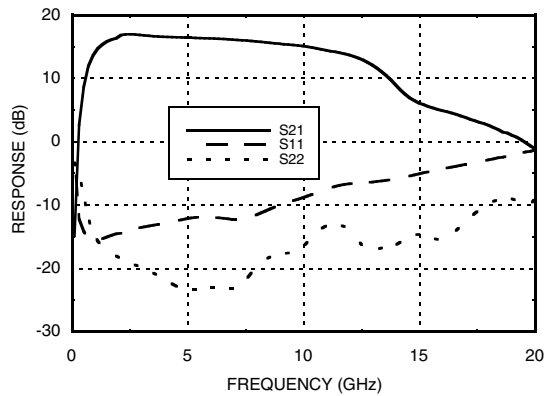
Parameter	Min.	Typ.	Max.	Min.	Typ.	Max.	Units
Frequency Range		1 - 8		8 - 12			GHz
Gain	14	16		12	14		dB
Gain Flatness		$\pm 1$			$\pm 1.25$		dB
Gain Variation Over Temperature		0.005			0.005		dB/°C
Noise Figure		1.75	2.25		2.5	3	dB
Input Return Loss		-12			-7		dB
Output Return Loss		-17			-15		dB
Output Power for 1 dB Compression (P1dB)		17			14		dBm
Saturated Output Power (Psat)		19			17		dBm
Output Third Order Intercept (IP3)		31			29		dBm
Positive Supply Current (+IDC)		60	70		60	70	mA
Negative Supply Current (-IDC)		1.5			1.5		mA

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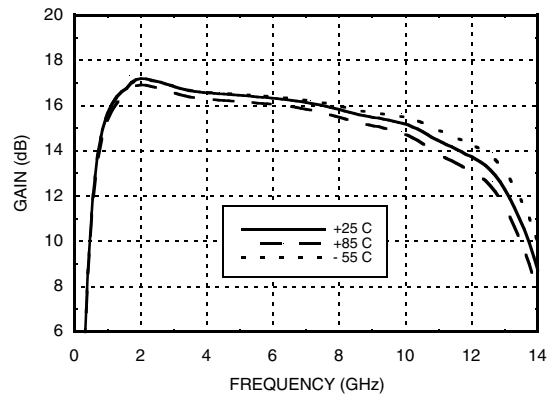
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 Phone: 781-329-4700 • Order online at [www.analog.com](http://www.analog.com)  
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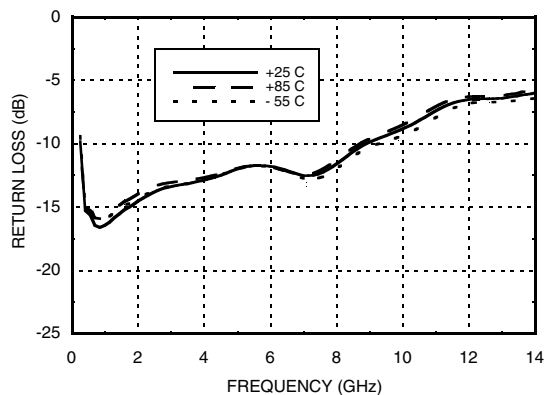
**Broadband Gain & Return Loss**



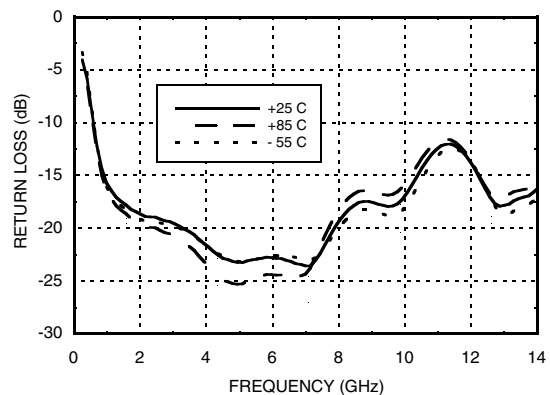
**Gain vs. Temperature**



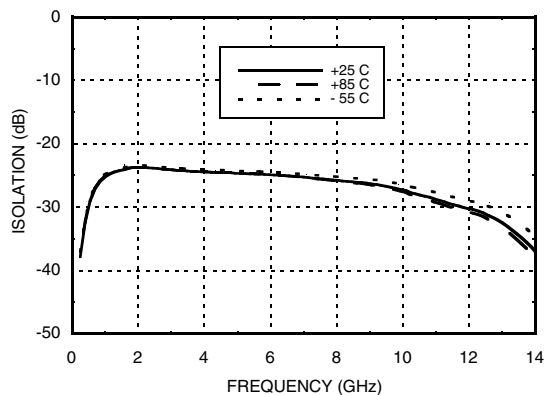
**Input Return Loss vs. Temperature**



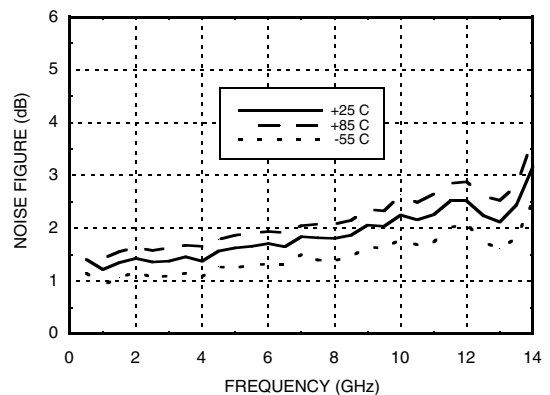
**Output Return Loss vs. Temperature**



**Reverse Isolation vs. Temperature**



**Noise Figure vs. Temperature**

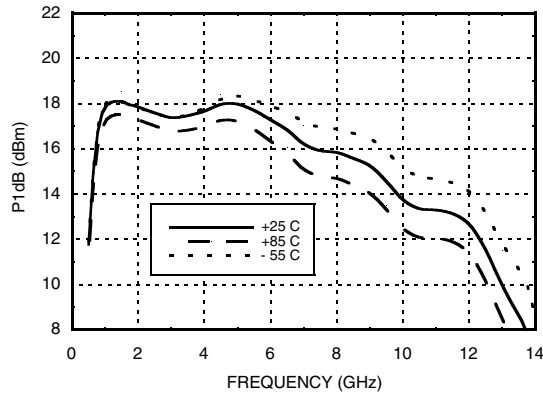


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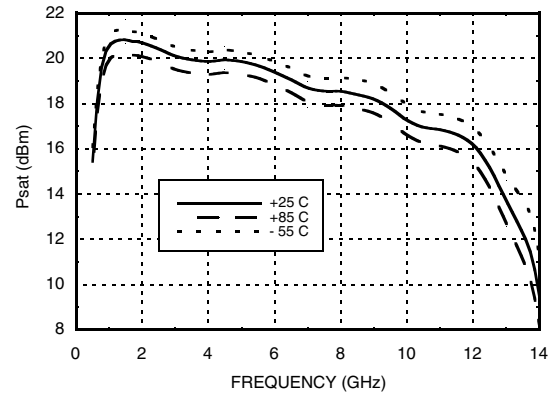
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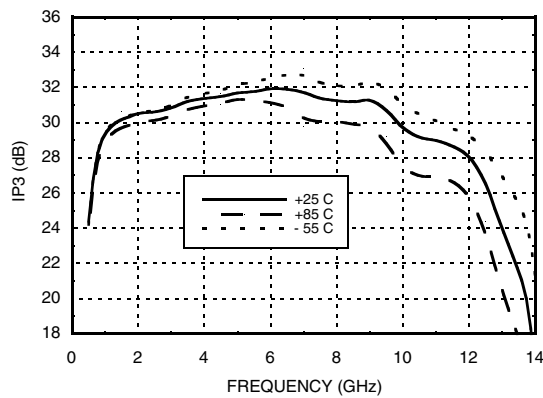
**P1dB vs. Temperature**



**Psat vs. Temperature**



**Output IP3 vs. Temperature**



**Absolute Maximum Ratings**

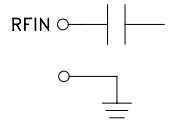

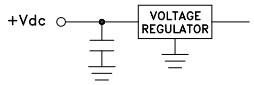
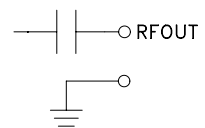
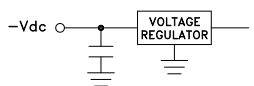
Positive Bias Supply Voltage (+Vdc)	+16V
Negative Bias Supply (-Vdc)	-12V
RF Input Power (RFIN)	+10 dBm
Storage Temperature	-65 to +150 °C
Operating Temperature	-55 to +85 °C



**ELECTROSTATIC SENSITIVE DEVICE  
OBSERVE HANDLING PRECAUTIONS**

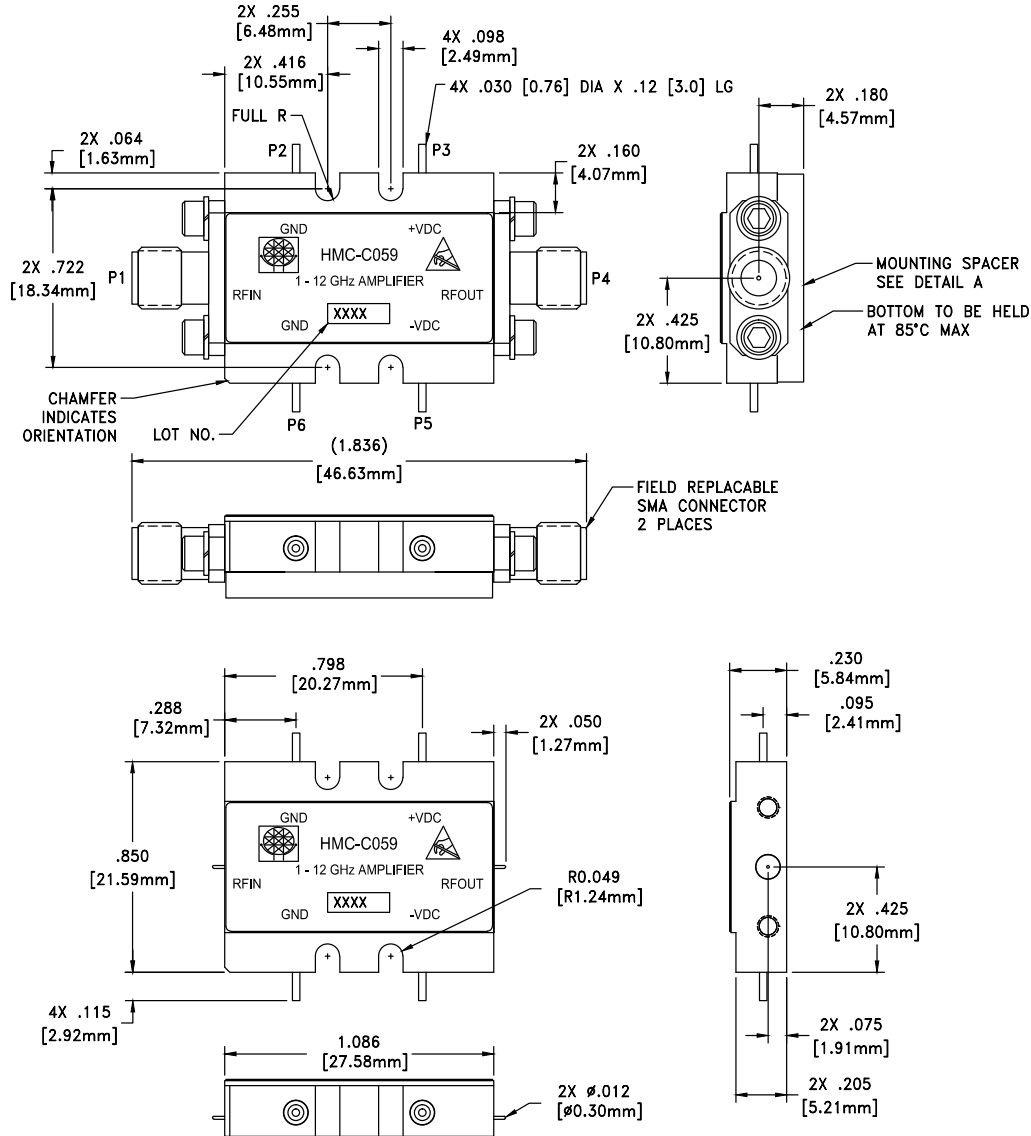


### Pin Descriptions

Pin Number	Function	Description	Interface Schematic
1	RFIN & RF Ground	RF input connector, SMA female, field replaceable. This pin is AC coupled and matched to 50 Ohms.	
2, 6	GND	Power supply ground.	
3	+Vdc	Positive power supply voltage for the amplifier.	
4	RFOUT & RF Ground	RF output connector, SMA female. This pin is AC coupled and matched to 50 Ohms.	
5	-Vdc	Negative power supply voltage for the amplifier	



**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

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**Notes:**