

## WIDEBAND LNA MODULE 2 - 20 GHz

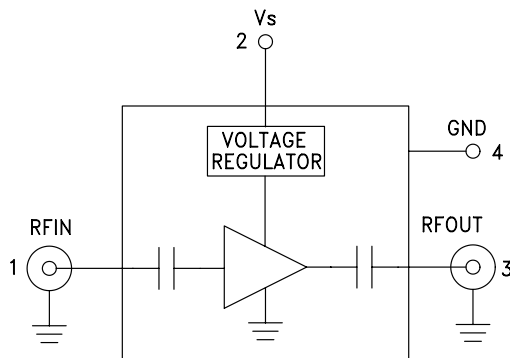


### Typical Applications

The HMC-C002 Wideband LNA is ideal for:

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

### Functional Diagram



### Features

- Noise Figure: 2 dB @ 8 GHz
- Flat Gain: 13 dB  $\pm$  0.5 dB
- P1dB Output Power: +18 dBm @ 8 GHz
- 50 Ohm Matched Input/Output
- Regulated Supply and Bias Sequencing
- Hermetically Sealed Module
- Field Replaceable SMA connectors
- 55 °C to +85 °C Operating Temperature

### General Description

The HMC-C002 is a GaAs MMIC pHEMT Low Noise Distributed Amplifier in a miniature, hermetic module with replaceable SMA connectors which operates between 2 and 20 GHz. The self-biased amplifier provides 13 dB of gain, 2 to 3 dB noise figure and up to +18 dBm of output power at 1 dB gain compression while requiring a single +12V supply. Gain flatness is excellent from 2 - 18 GHz making the HMC-C002 ideal for EW, ECM RADAR and test equipment applications. The wideband amplifier I/Os are internally matched to 50 Ohms and are internally DC blocked.

### Electrical Specifications, $T_A = +25^\circ\text{C}$ , $V_s = +11.6\text{V}$ to $+12.4\text{V}$

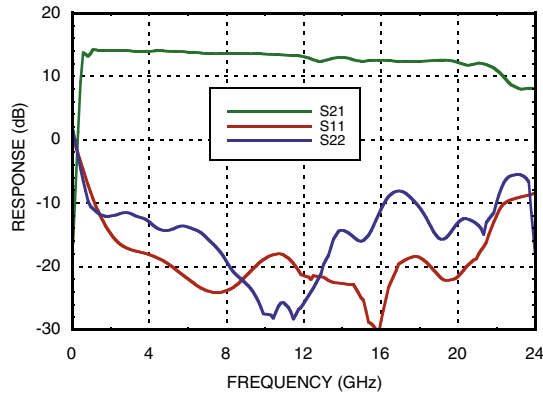
Parameter	Min.	Typ.	Max.	Min.	Typ.	Max.	Min.	Typ.	Max.	Units
Frequency Range	2.0 - 6.0			6.0 - 12.0			12.0 - 20.0			GHz
Gain	12	14		11	13		10	12		dB
Gain Flatness		$\pm 0.25$			$\pm 0.5$			$\pm 0.5$		dB
Gain Variation Over Temperature		0.008	0.015		0.008	0.015		0.008	0.015	dB/ °C
Noise Figure		2.5	4.5		2.0	3.0		3.0	5.0	dB
Input Return Loss		17			18			18		dB
Output Return Loss		12			15			8		dB
Output Power for 1 dB Compression (P1dB)	15	18		13	16		9	12		dBm
Saturated Output Power (Psat)		21.5			21			19		dBm
Output Third Order Intercept (IP3)		26.5			26			23		dBm
Spurious Response		-50			-60			-60		dBc
Supply Current		93			93			93		mA

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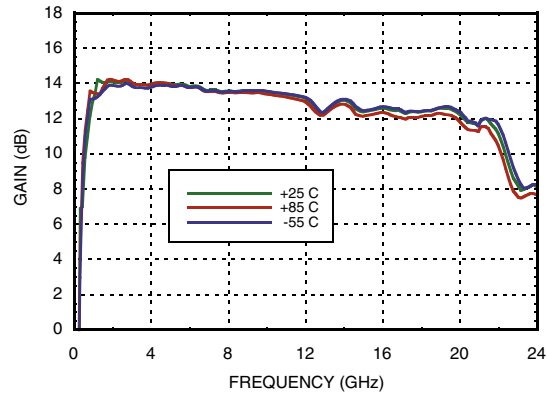
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Application Support: Phone: 1-800-ANALOG-D

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2 - 20 GHz**

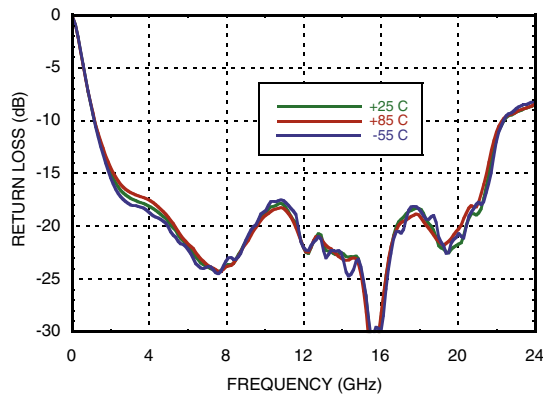
**Gain & Return Loss**



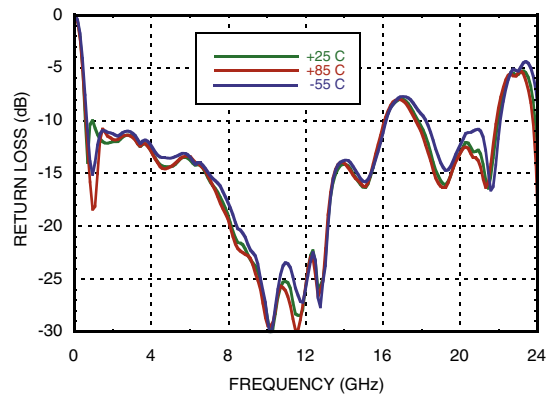
**Gain vs. Temperature**



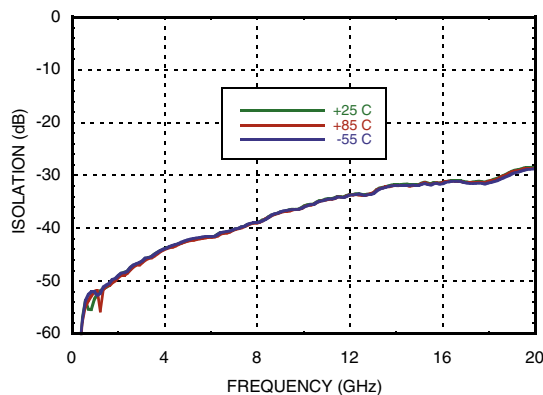
**Input Return Loss vs. Temperature**



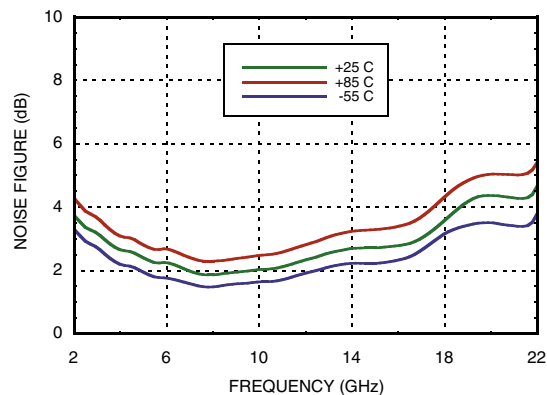
**Output Return Loss vs. Temperature**



**Reverse Isolation vs. Temperature**



**Noise Figure vs. Temperature**

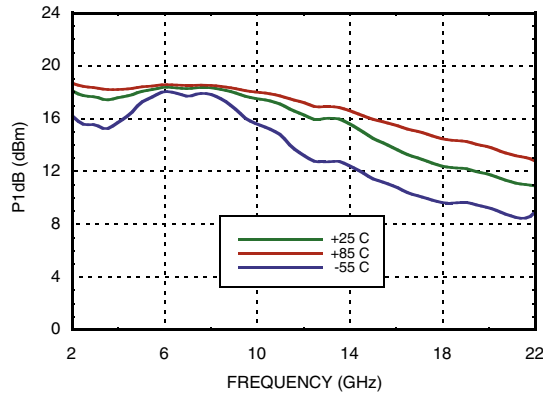


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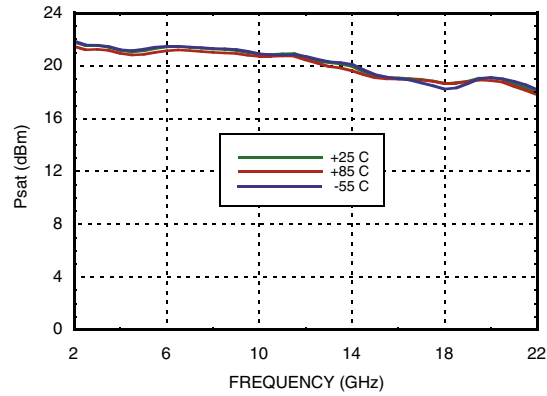
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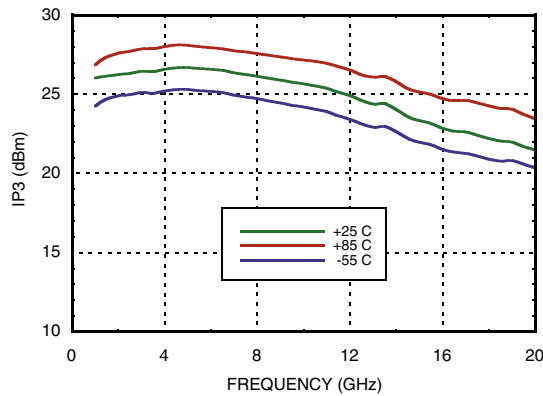
**P1dB vs. Temperature**



**Psat vs. Temperature**



**Output IP3 vs. Temperature**



**Absolute Maximum Ratings**

Bias Supply Voltage (Vs)	+11 Vdc to +13 Vdc
RF Input Power (RFIN)	+18 dBm
Storage Temperature	-65 to +150 °C
Operating Temperature	-55 to +85 °C



**ELECTROSTATIC SENSITIVE DEVICE  
OBSERVE HANDLING PRECAUTIONS**

**Pin Descriptions**

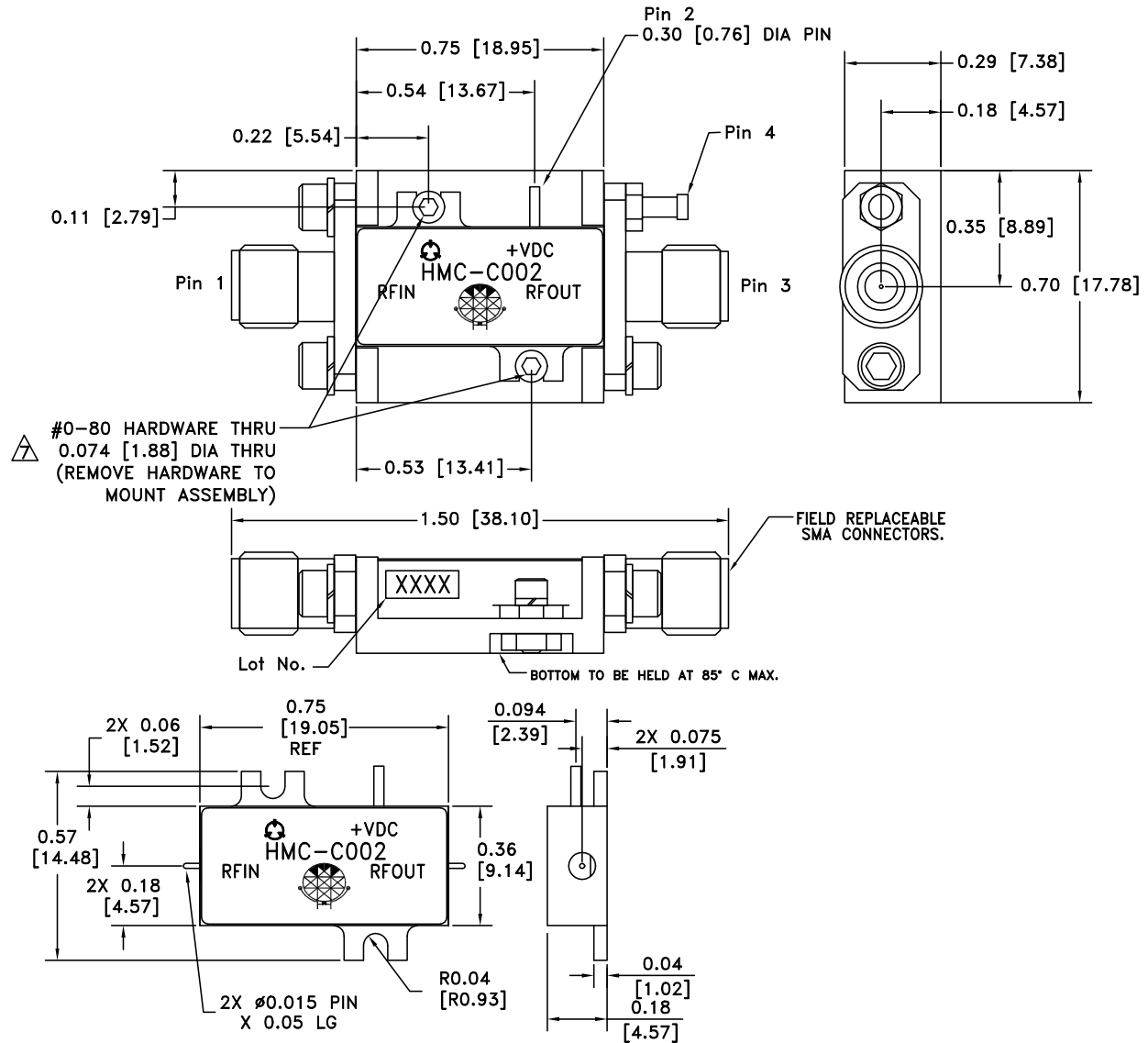
Pin Number	Function	Description	Interface Schematic
1	RFIN & RF Ground	RF input connector, SMA female, field replaceable. This pin is AC coupled and matched to 50 Ohms.	
2	Vs	Power supply voltage for the amplifier.	
3	RFOUT & RF Ground	RF output connector, SMA female. This pin is AC coupled and matched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

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**Outline Drawing**



**Package Information**

Package Type	C-2
Package Weight [1]	11.2 gms [2]
Spacer Weight	N/A

[1] Includes the connectors

[2] ±1 gms Tolerance

**NOTES:**

1. PACKAGE, LEADS, COVER MATERIAL: KOVAR™
  2. BRACKET MATERIAL: ALUMINUM
  3. PLATING: ELECTROLYTIC GOLD 50 MICROINCHES MIN., OVER ELECTROLYTIC NICKEL 75 MICROINCHES MIN.
  4. ALL DIMENSIONS ARE IN INCHES [MILLIMETERS].
  5. TOLERANCES ±.005 [0.13] UNLESS OTHERWISE SPECIFIED.
  6. FIELD REPLACEABLE SMA CONNECTORS. TENSOLITE 5602 - 5CCSF OR EQUIVALENT.
- ⚠ TO MOUNT MODULE TO SYSTEM PLATFORM REPLACE 0 - 80 HARDWARE WITH DESIRED MOUNTING SCREWS.

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