

# Analog Devices Welcomes Hittite Microwave Corporation

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## WIDEBAND POWER AMPLIFIER MODULE, 2 - 20 GHz

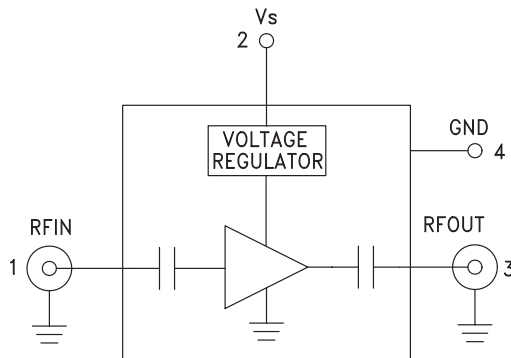


### Typical Applications

The HMC-C003 Wideband PA is ideal for:

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

### Functional Diagram



### Features

P1dB Output Power: +26 dBm @ 10 GHz

Output IP3: +34 dBm

Gain: 15 dB

50 Ohm Matched Input/Output

Regulated Supply and Bias Sequencing

Hermetically Sealed Module

Field Replaceable SMA connectors

-55 to +85°C Operating Temperature

### General Description

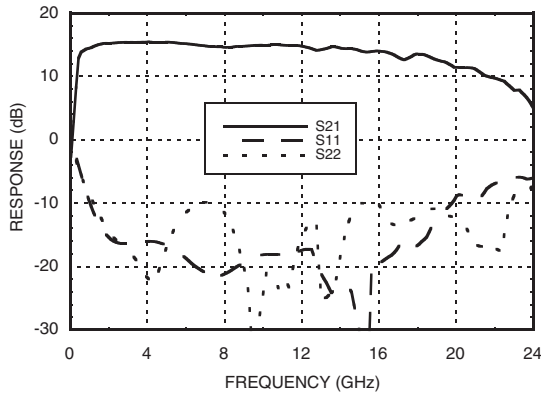
The HMC-C003 is a GaAs MMIC PHEMT Distributed Power Amplifier in a miniature, hermetic module with replaceable SMA connectors which operates between 2 and 20 GHz. The self-biased amplifier provides 15 dB of gain, +34 dBm output IP3 and up to +26 dBm of output power at 1 dB gain compression while requiring a single +12V supply. Gain flatness is excellent from 2 - 18 GHz making the HMC-C003 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 $+12.4\text{V}$

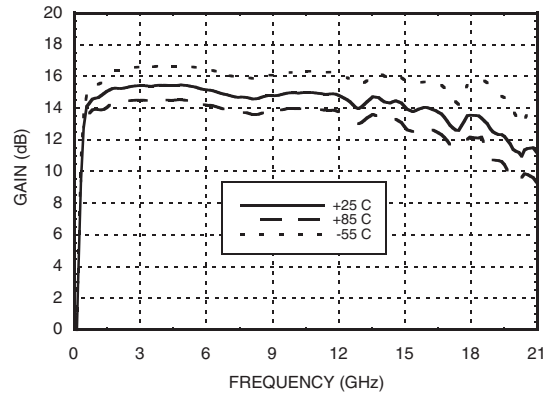
Parameter	Min.	Typ.	Max.	Min.	Typ.	Max.	Min.	Typ.	Max.	Units
Frequency Range	2.0 - 6.0			6.0 - 18.0			18.0 - 20.0			GHz
Gain	13	15		11	14		9	12		dB
Gain Flatness		$\pm 0.25$			$\pm 0.75$			$\pm 1.0$		dB
Gain Variation Over Temperature		0.02	0.03		0.02	0.03		0.02	0.03	dB/°C
Noise Figure		4.0			4.0			6.0		dB
Input Return Loss		17			18			10		dB
Output Return Loss		12			10			12		dB
Output Power for 1 dB Compression (P1dB)	23	26		20	24		19	22		dBm
Saturated Output Power (Psat)		27			25			23		dBm
Output Third Order Intercept (IP3)		34			30			25		dBm
Spurious Response		-50			-60			-60		dBc
Supply Current		310	350		310	350		310	350	mA

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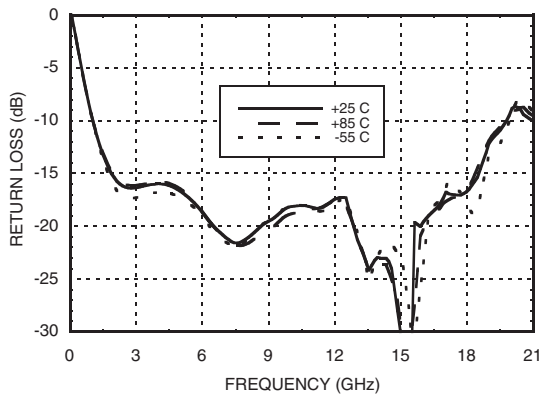
**Gain & Return Loss**



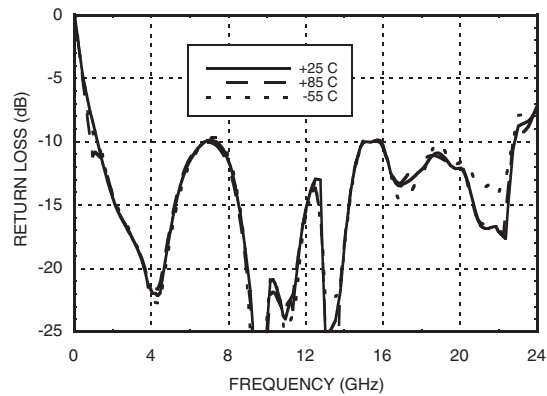
**Gain vs. Temperature**



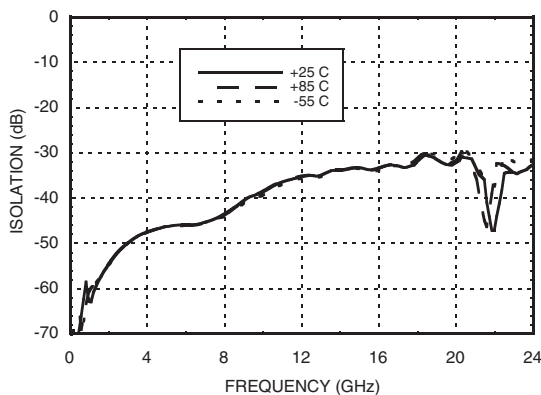
**Input Return Loss vs. Temperature**



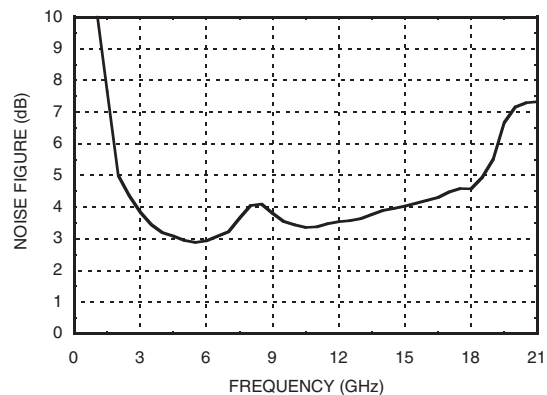
**Output Return Loss vs. Temperature**



**Reverse Isolation vs. Temperature**



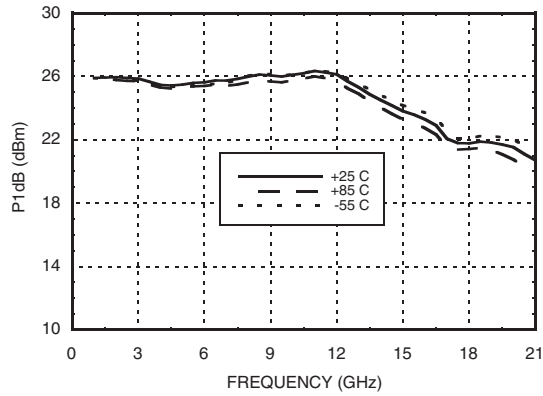
**Noise Figure**



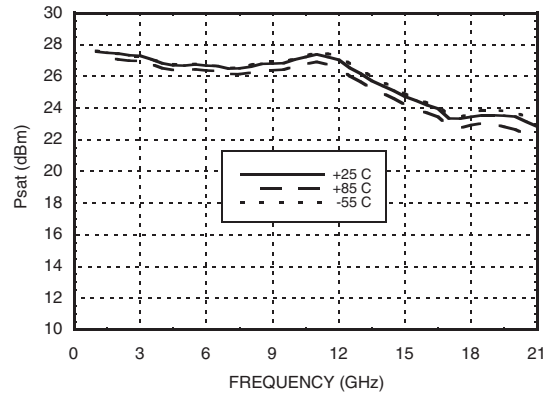


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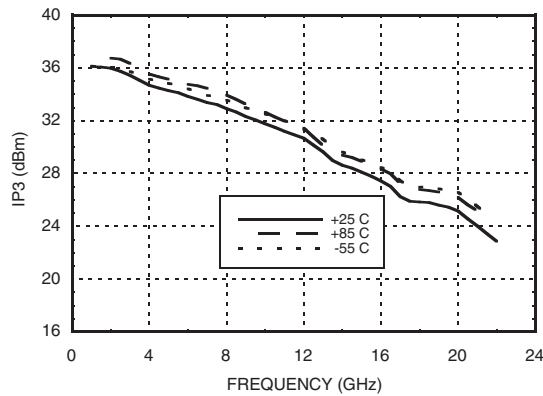
**P1dB vs. Temperature**



**Psat vs. Temperature**



**Output IP3 vs. Temperature**



**Absolute Maximum Ratings**

Bias Supply Voltage (Vs)	+11 Vdc to +13 Vdc
RF Input Power (RFIN)	+23 dBm
Storage Temperature	-65 to +150 °C
Operating Temperature	-55 to +85 °C



ELECTROSTATIC SENSITIVE DEVICE  
OBSERVE HANDLING PRECAUTIONS

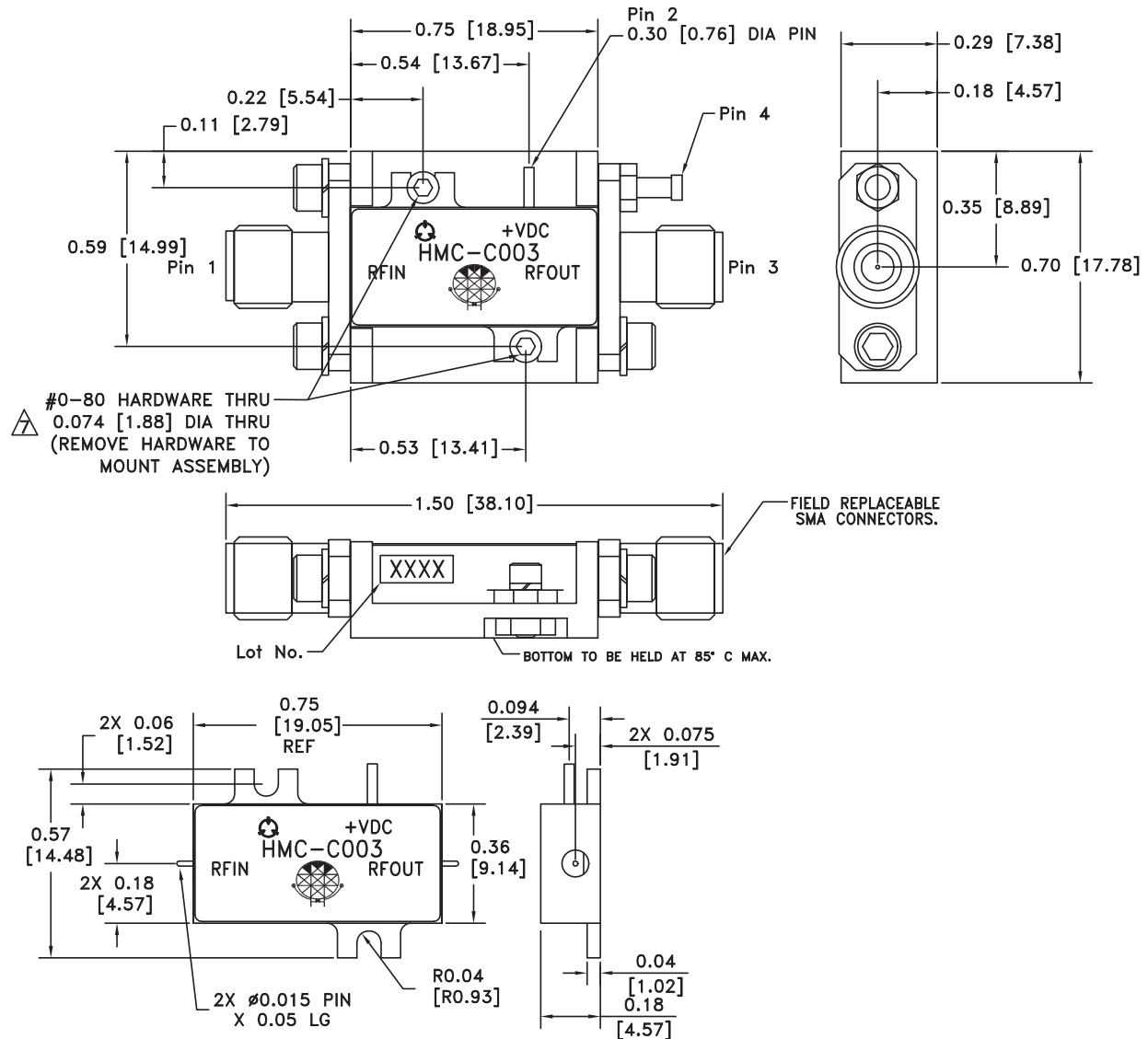
**Pin Descriptions**

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.	

For price, delivery, and to place orders, please contact Hittite Microwave Corporation:  
20 Alpha Road Chelmsford, MA 01824 Phone: 978-250-3343 Fax: 978-250-3373  
Order Online at [www.hittite.com](http://www.hittite.com)



### Outline Drawing



### Package Information

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

[1] Includes the connectors

[2]  $\pm$ 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  $\pm$ .005 [0.13] UNLESS OTHERWISE SPECIFIED.
  6. FIELD REPLACEABLE SMA CONNECTORS. TENSOLITE 5602 - 5CCSF OR EQUIVALENT.
- $\Delta$  TO MOUNT MODULE TO SYSTEM PLATFORM REPLACE 0 - 80 HARDWARE WITH DESIRED MOUNTING SCREWS.