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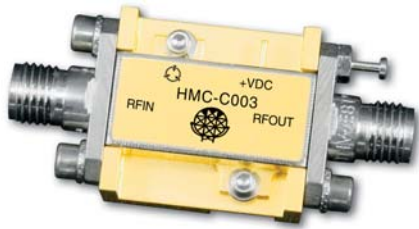
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## WIDEBAND POWER AMPLIFIER MODULE, 2 - 20 GHz

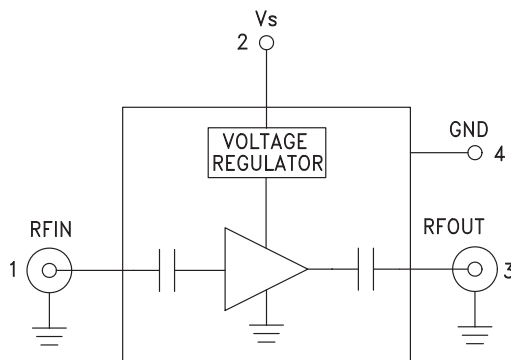


### Typical Applications

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					
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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# HMC-C003\* PRODUCT PAGE QUICK LINKS

Last Content Update: 02/23/2017

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## COMPARABLE PARTS

View a parametric search of comparable parts.

## DOCUMENTATION

### Application Notes

- AN-1363: Meeting Biasing Requirements of Externally Biased RF/Microwave Amplifiers with Active Bias Controllers

### Data Sheet

- HMC-C003 Data Sheet

## TOOLS AND SIMULATIONS

- HMC-C003 S-Parameter

## REFERENCE MATERIALS

### Technical Articles

- Wideband Amplifier and Prescaler Modules Cover DC to 20 GHz

## DESIGN RESOURCES

- HMC-C003 Material Declaration
- PCN-PDN Information
- Quality And Reliability
- Symbols and Footprints

## DISCUSSIONS

View all HMC-C003 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.

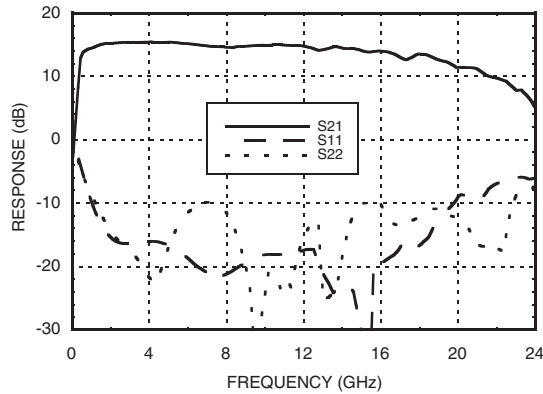
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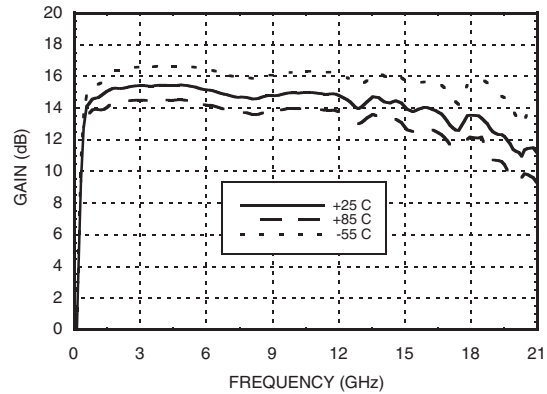


**WIDEBAND POWER AMPLIFIER  
MODULE, 2 - 20 GHz**

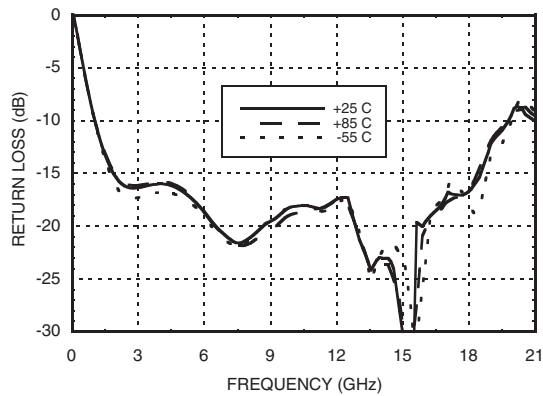
**Gain & Return Loss**



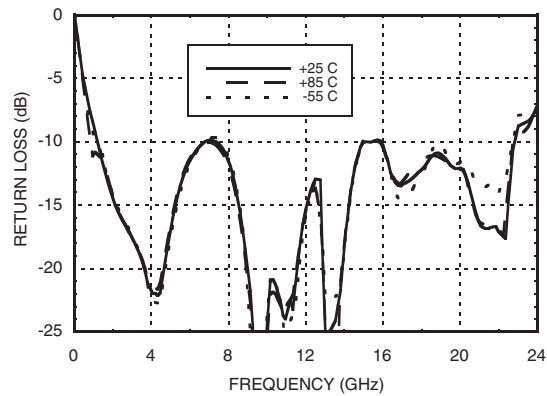
**Gain vs. Temperature**



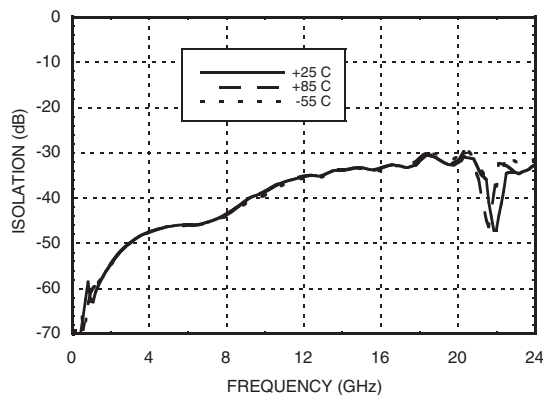
**Input Return Loss vs. Temperature**



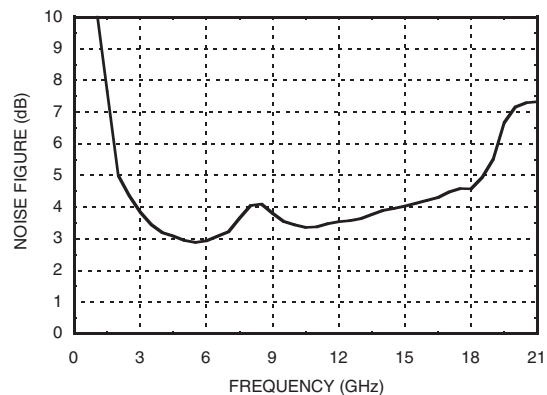
**Output Return Loss vs. Temperature**



**Reverse Isolation vs. Temperature**



**Noise Figure**



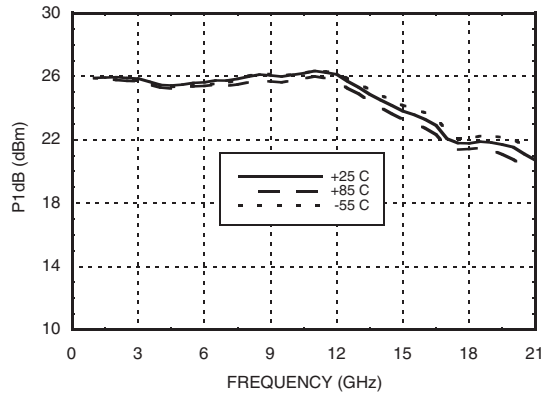
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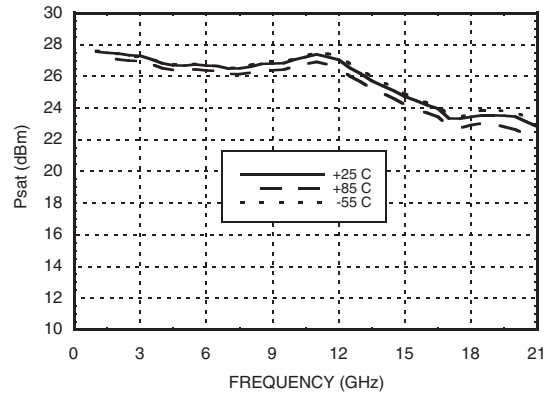


**WIDEBAND POWER AMPLIFIER  
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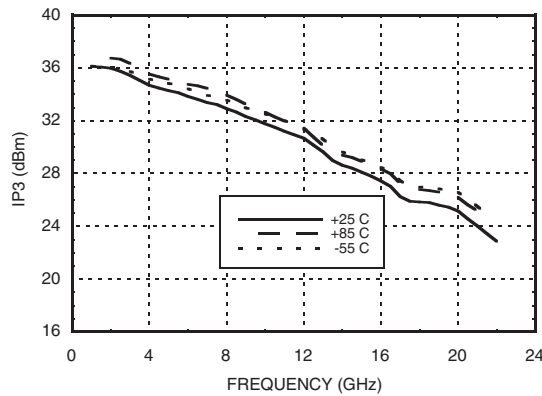
**P1dB vs. Temperature**



**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.	

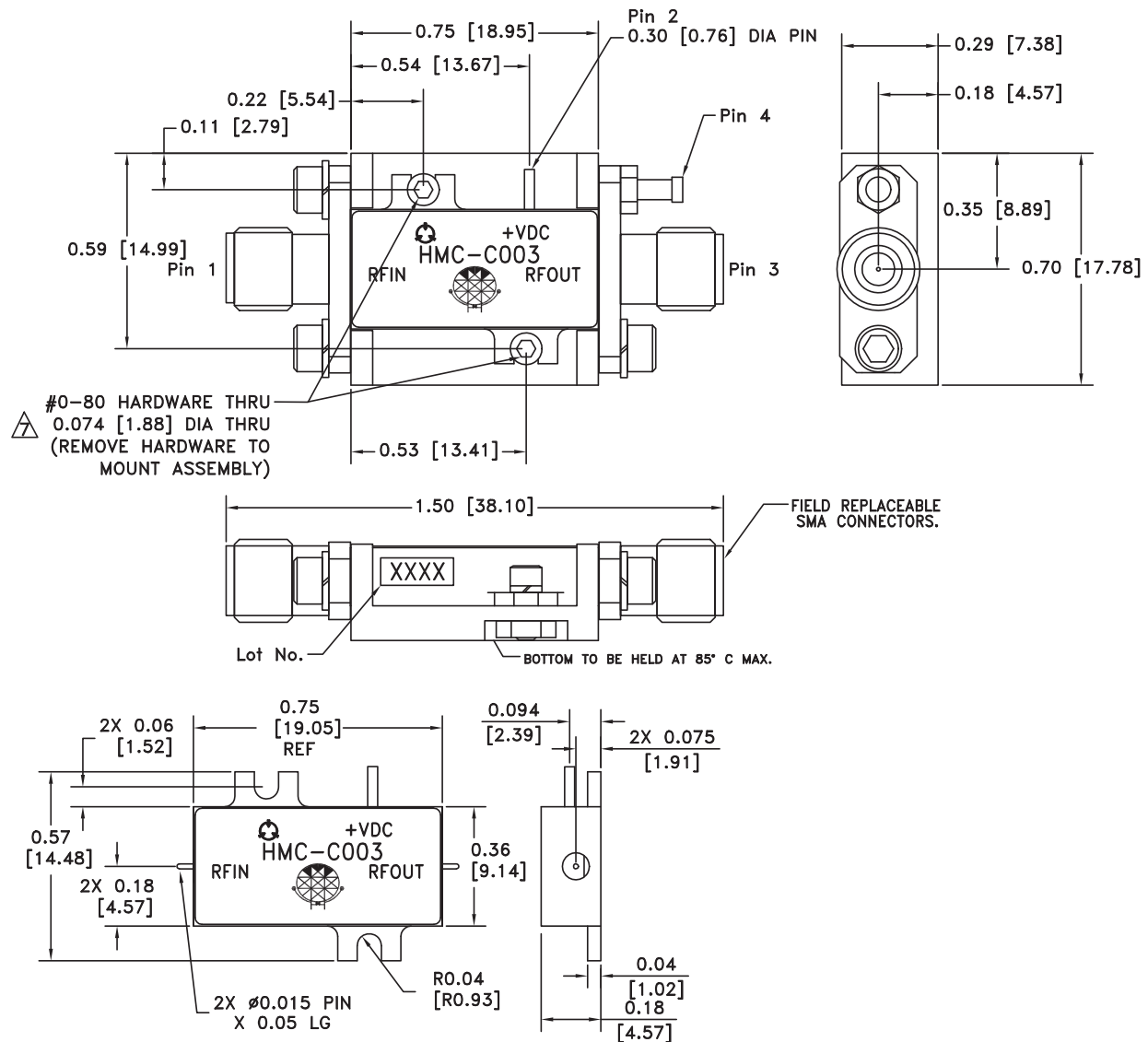
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**WIDEBAND POWER AMPLIFIER  
MODULE, 2 - 20 GHz**



**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.