

Analog Devices Welcomes Hittite Microwave Corporation

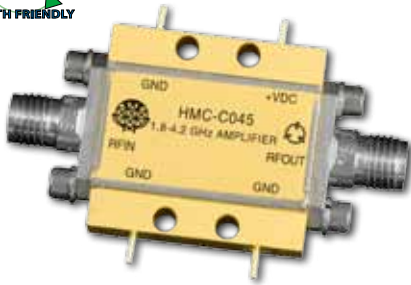
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LOW NOISE AMPLIFIER MODULE, 1.8 - 4.2 GHz

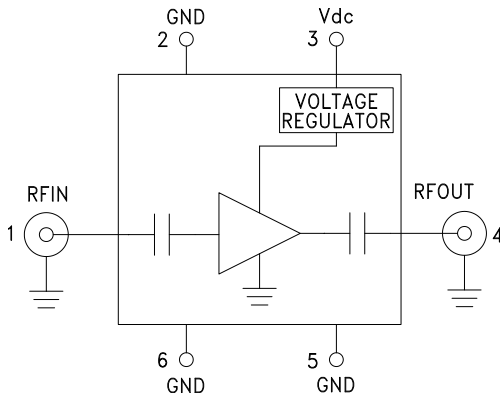


Typical Applications

The HMC-C045 LNA is ideal for:

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

Functional Diagram



Features

Noise Figure: 1.2 dB @ 2.4 GHz

Gain: 26 dB

OIP3: +26 dBm

P1dB Output Power: +15.5 dBm

50 Ohm Matched Input/Output

Hermetically Sealed Module

Field Replaceable SMA Connectors

-55 °C to +85 °C Operating Temperature

General Description

The HMC-C045 is a GaAs MMIC pHEMT Low Noise Amplifier in a miniature, hermetic module which operates between 1.8 and 4.2 GHz. This high dynamic range low noise amplifier module provides 26 dB of gain, sub-2 dB noise figure and up to +26 dBm of output IP3 while operating from a single positive supply between +8V and +15V. The amplifier I/Os are internally matched to 50 Ohms and DC blocked for robust performance. The module features removable coaxial connectors which can be detached to allow direct connection of the I/O pins to a microstrip or coplanar circuit.

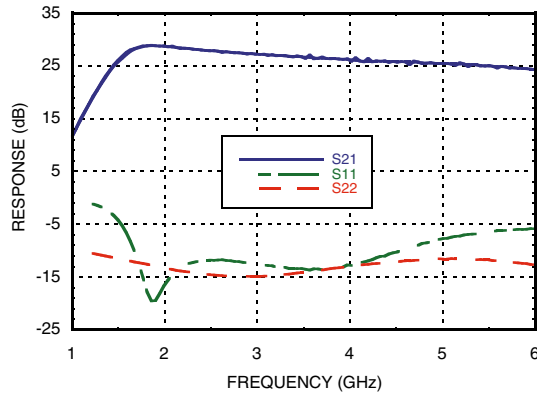
Electrical Specifications, $T_A = +25^\circ\text{C}$, $V_{dc} = +12\text{V}$

Parameter	Min.	Typ.	Max.	Min.	Typ.	Max.	Units
Frequency Range	1.8 - 4.2			2.0 - 3.8			GHz
Gain	23	26		23	26		dB
Gain Variation Over Temperature		0.03	0.05		0.03	0.05	dB/ °C
Noise Figure		1.2	2.5		1.2	2.0	dB
Input Return Loss		13			13		dB
Output Return Loss		13			13		dB
Output Power for 1 dB Compression (P1dB)	12.5	15.5		12.5	15.5		dBm
Saturated Output Power (Psat)		17.5			17.5		dBm
Output Third Order Intercept (IP3)		26			26		dBm
Supply Current		105	140		105	140	mA

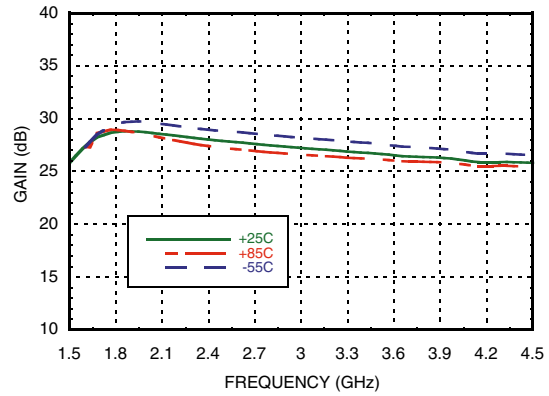


**LOW NOISE AMPLIFIER
MODULE, 1.8 - 4.2 GHz**

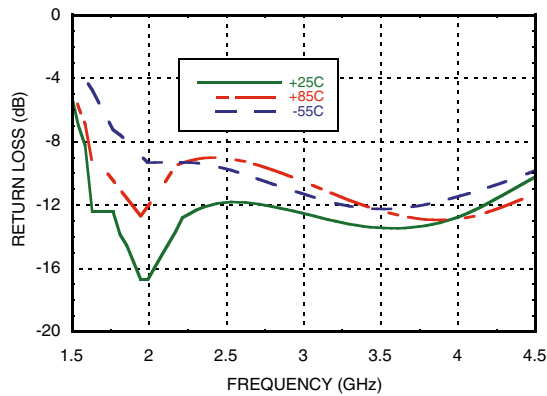
Broadband Gain & Return Loss



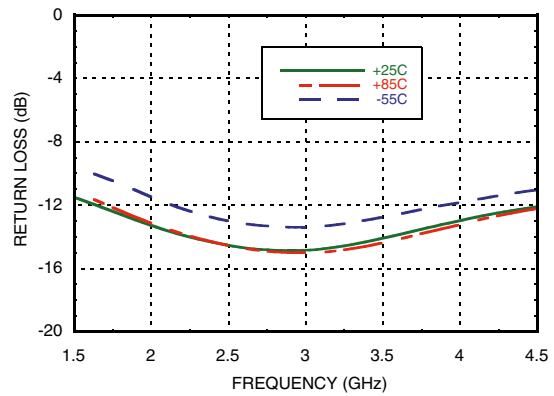
Gain vs. Temperature



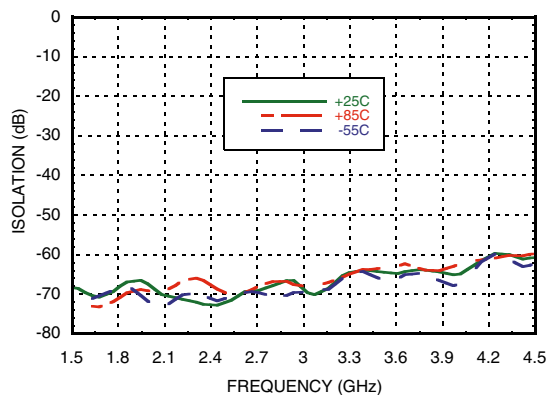
Input Return Loss vs. Temperature



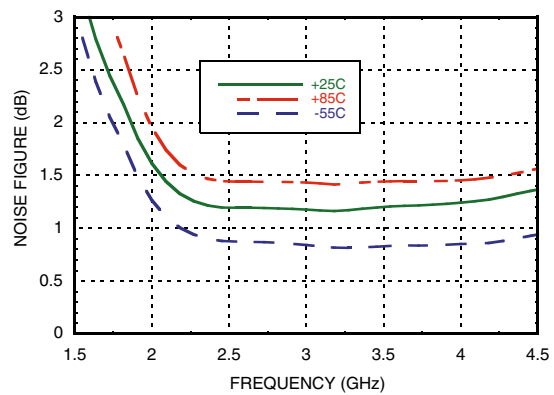
Output Return Loss vs. Temperature



Reverse Isolation vs. Temperature



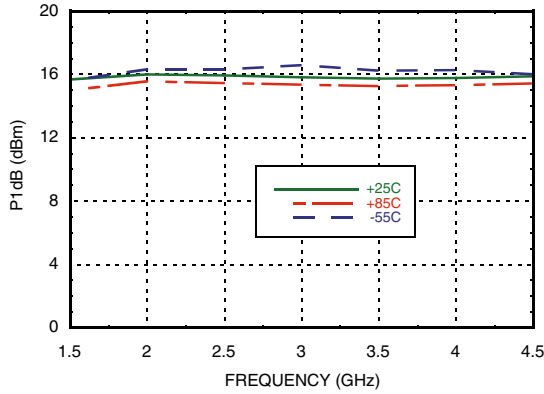
Noise Figure vs. Temperature



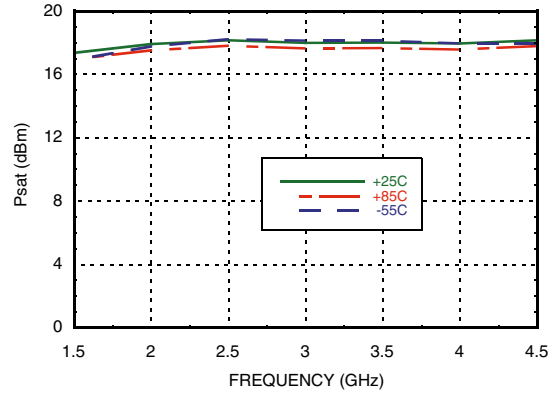


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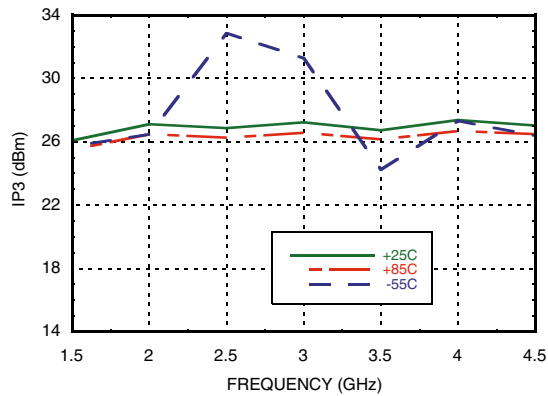
Output P1dB vs. Temperature



Output Psat vs. Temperature



Output IP3 vs. Temperature



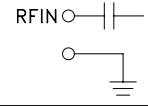

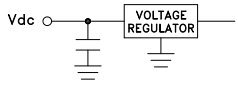
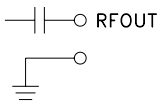
Absolute Maximum Ratings

Bias Supply Voltage (Vdc)	+15 Vdc
RF Input Power (RFIN)	+0 dBm
Storage Temperature	-65 to +150 °C
Operating Temperature	-55 to +85 °C

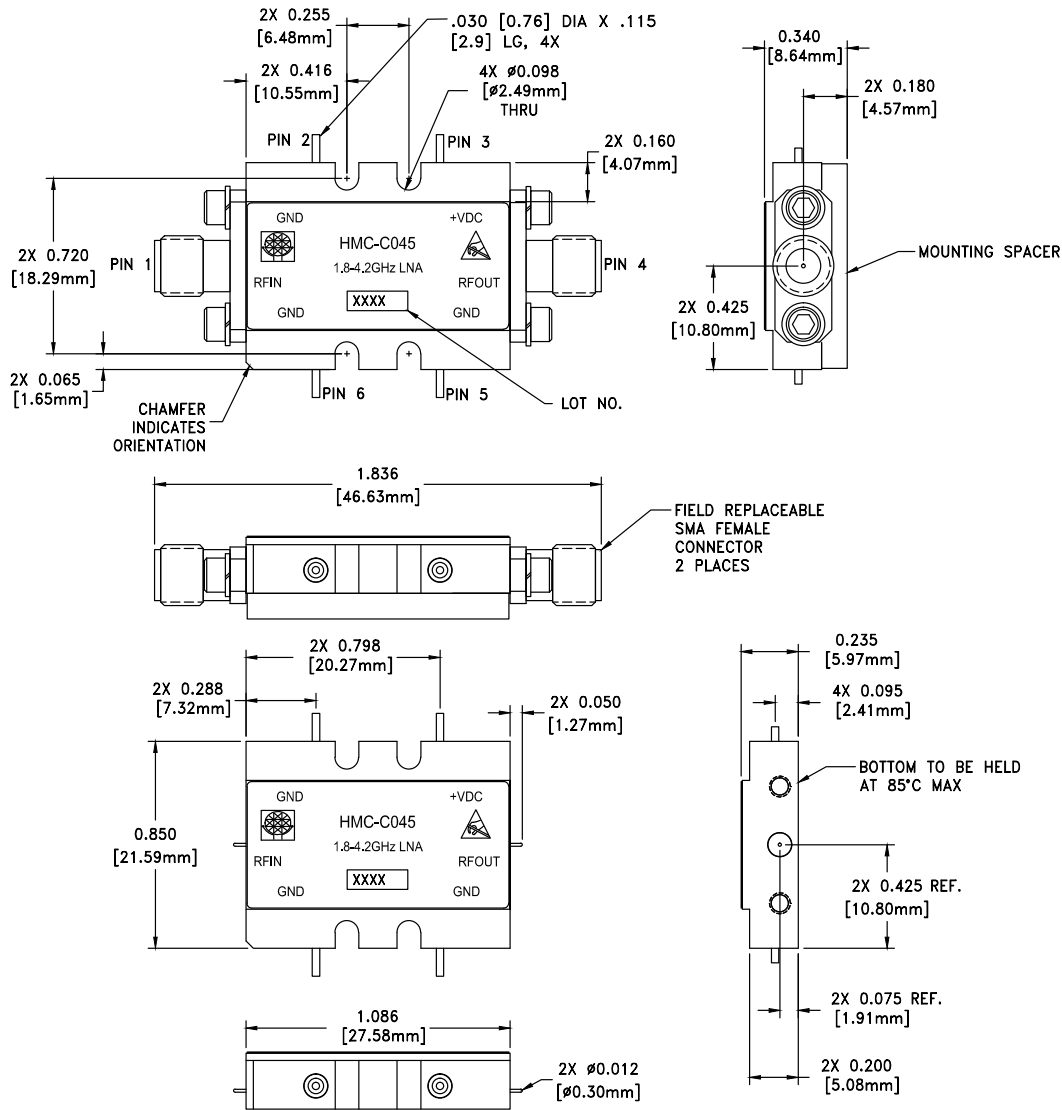


**ELECTROSTATIC SENSITIVE DEVICE
OBSERVE HANDLING PRECAUTIONS**


Pin Descriptions

Pin Number	Function	Description	Interface Schematic
1	RFIN & RF Ground	RF input connector, 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.	
4	RFOUT & RF Ground	RF output connector, coaxial female, field replaceable. This pin is AC coupled and matched to 50 Ohms.	

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 SMA CONNECTORS



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Notes: