

LOW NOISE AMPLIFIER MODULE, 1.8 - 4.2 GHz

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

Typical Applications

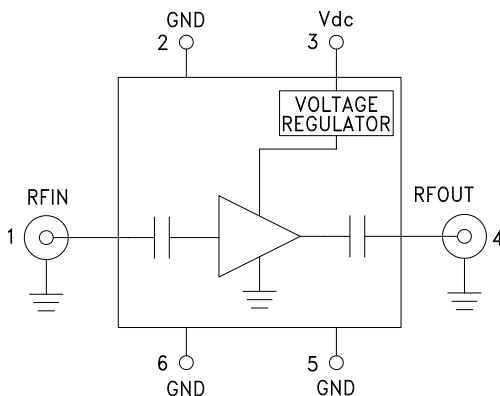
The HMC-C045 LNA is ideal for:

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

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.

Functional Diagram



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 |

HMC-C045* PRODUCT PAGE QUICK LINKS

Last Content Update: 02/23/2017

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-C045 Data Sheet

TOOLS AND SIMULATIONS

- HMC-C045 S-Parameter

DESIGN RESOURCES

- HMC-C045 Material Declaration
- PCN-PDN Information
- Quality And Reliability
- Symbols and Footprints

DISCUSSIONS

View all HMC-C045 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.

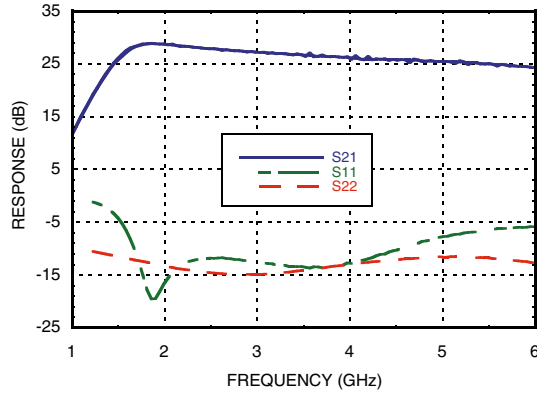
DOCUMENT FEEDBACK

Submit feedback for this data sheet.

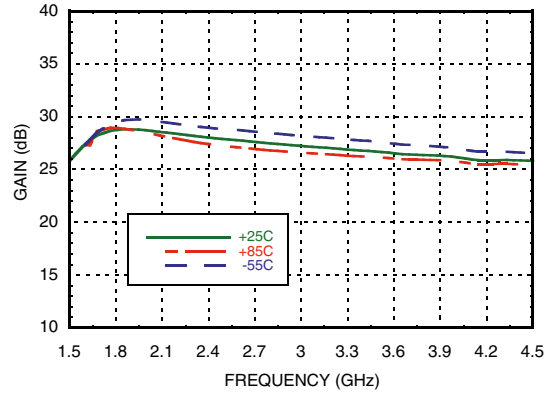


**LOW NOISE AMPLIFIER
MODULE, 1.8 - 4.2 GHz**

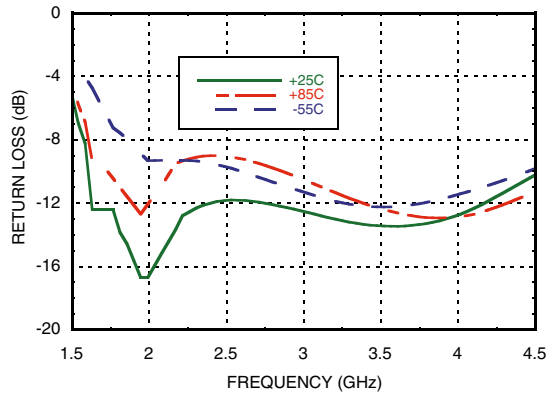
Broadband Gain & Return Loss



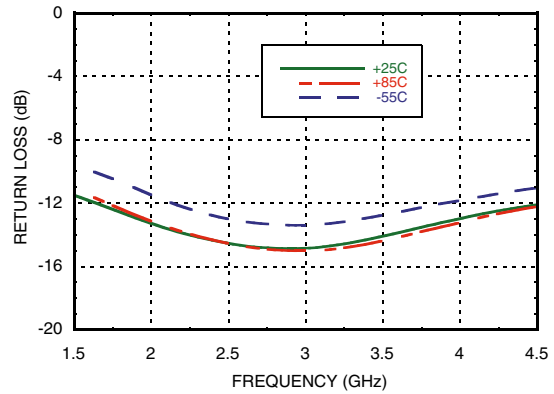
Gain vs. Temperature



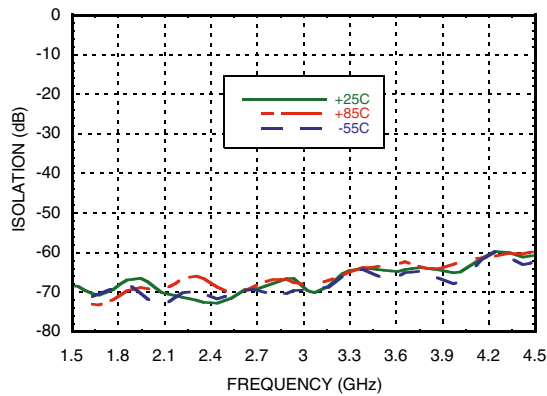
Input Return Loss vs. Temperature



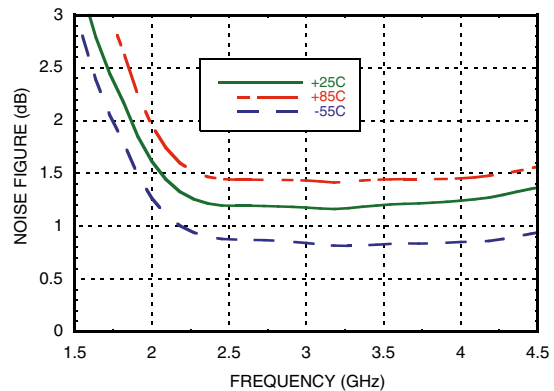
Output Return Loss vs. Temperature



Reverse Isolation vs. Temperature



Noise Figure vs. Temperature



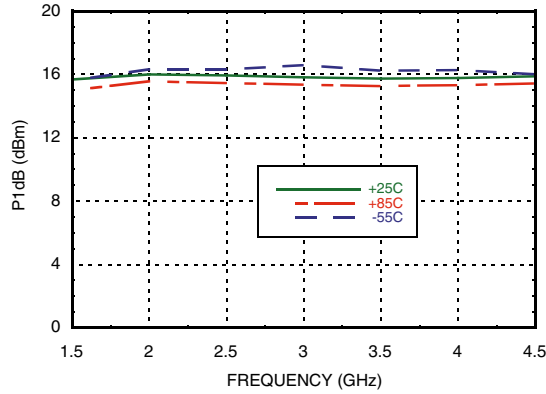
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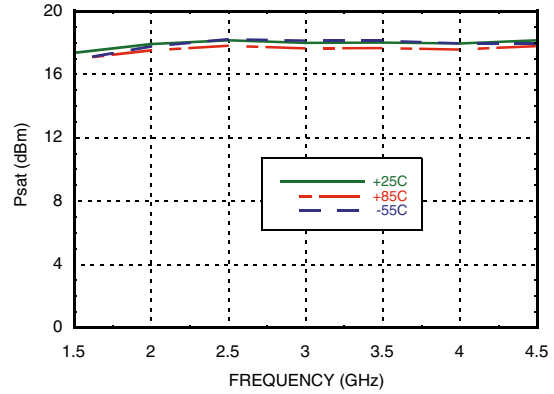


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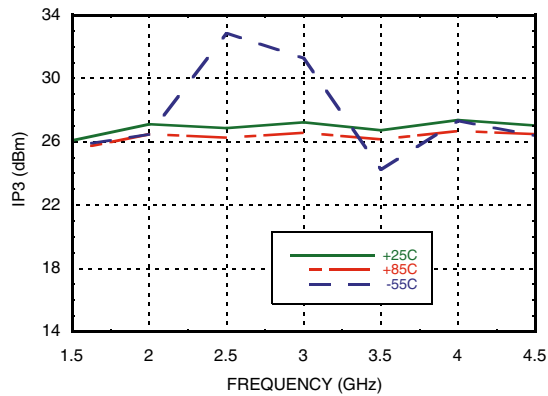
Output P1dB vs. Temperature



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 |

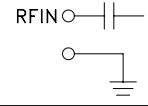

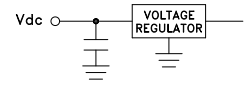
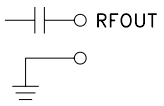


**ELECTROSTATIC SENSITIVE DEVICE
OBSERVE HANDLING PRECAUTIONS**



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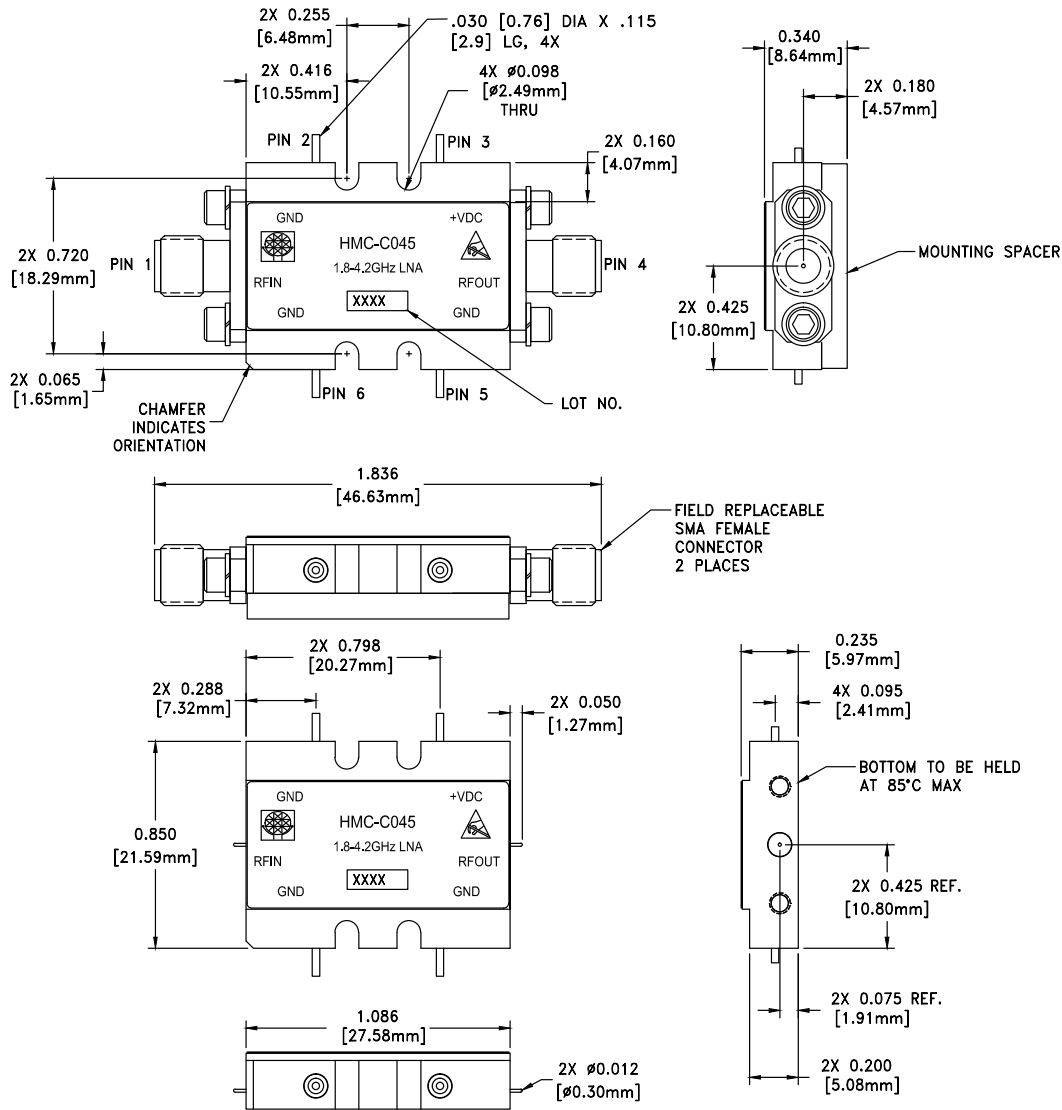
Pin Descriptions

| 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. |  |



**LOW NOISE AMPLIFIER
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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

**LOW NOISE AMPLIFIER
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