

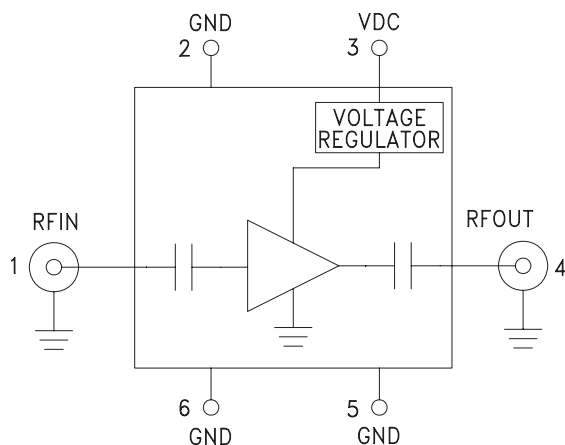


### Typical Applications

The HMC-C045 LNA is ideal for:

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

### Functional Diagram



### Features

Noise Figure: 0.7 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 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-1 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                             |           | 0.7  | 2.0  |           | 0.7  | 1.5  | 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                           |           | 112  | 140  |           | 112  | 140  | mA     |

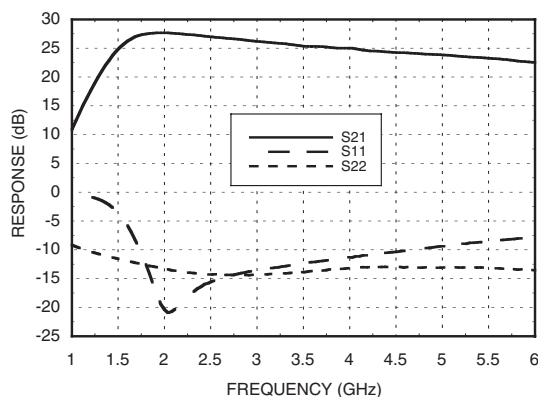
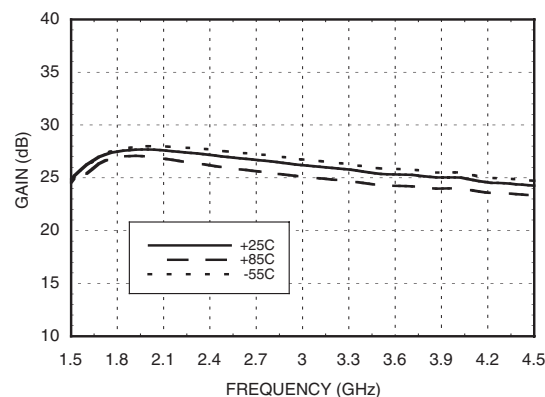
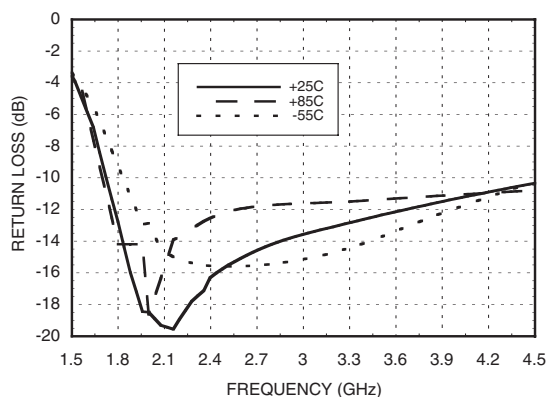
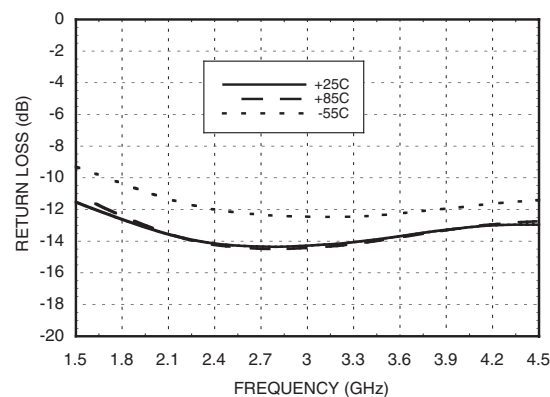
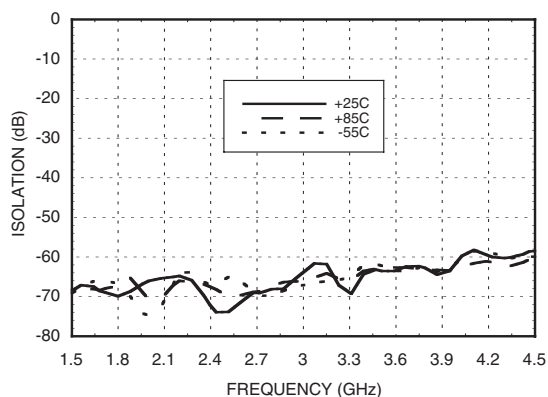
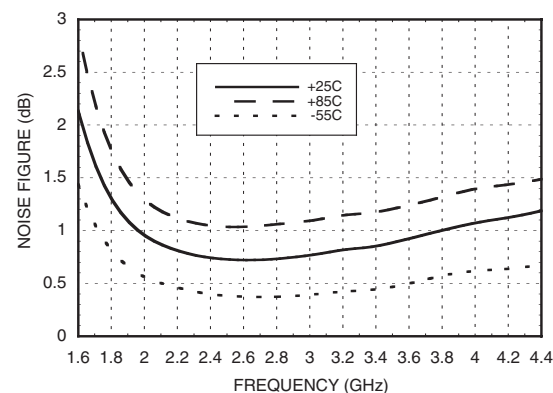


# HMC-C045

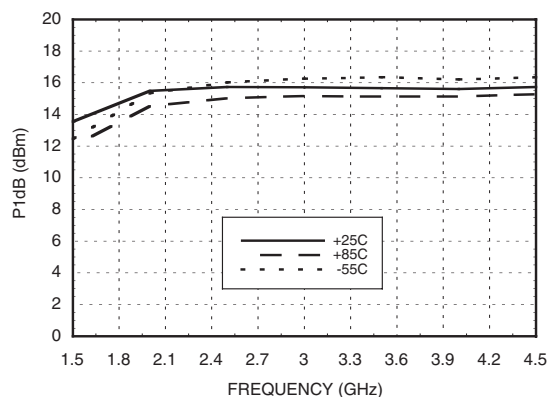
## LOW NOISE AMPLIFIER MODULE, 1.8 - 4.2 GHz

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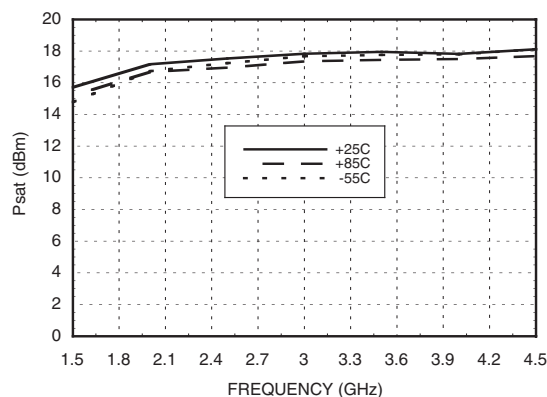
AMPLIFIERS

**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**


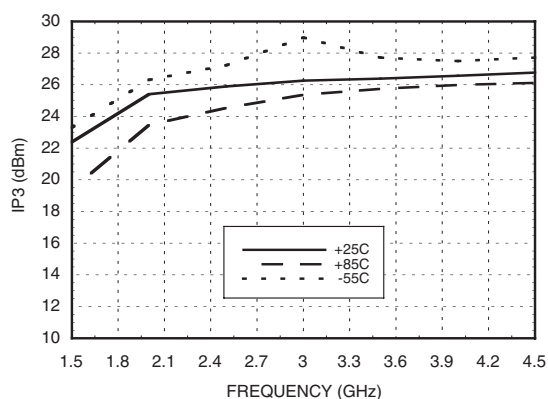
**P1dB vs. Temperature**



**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**

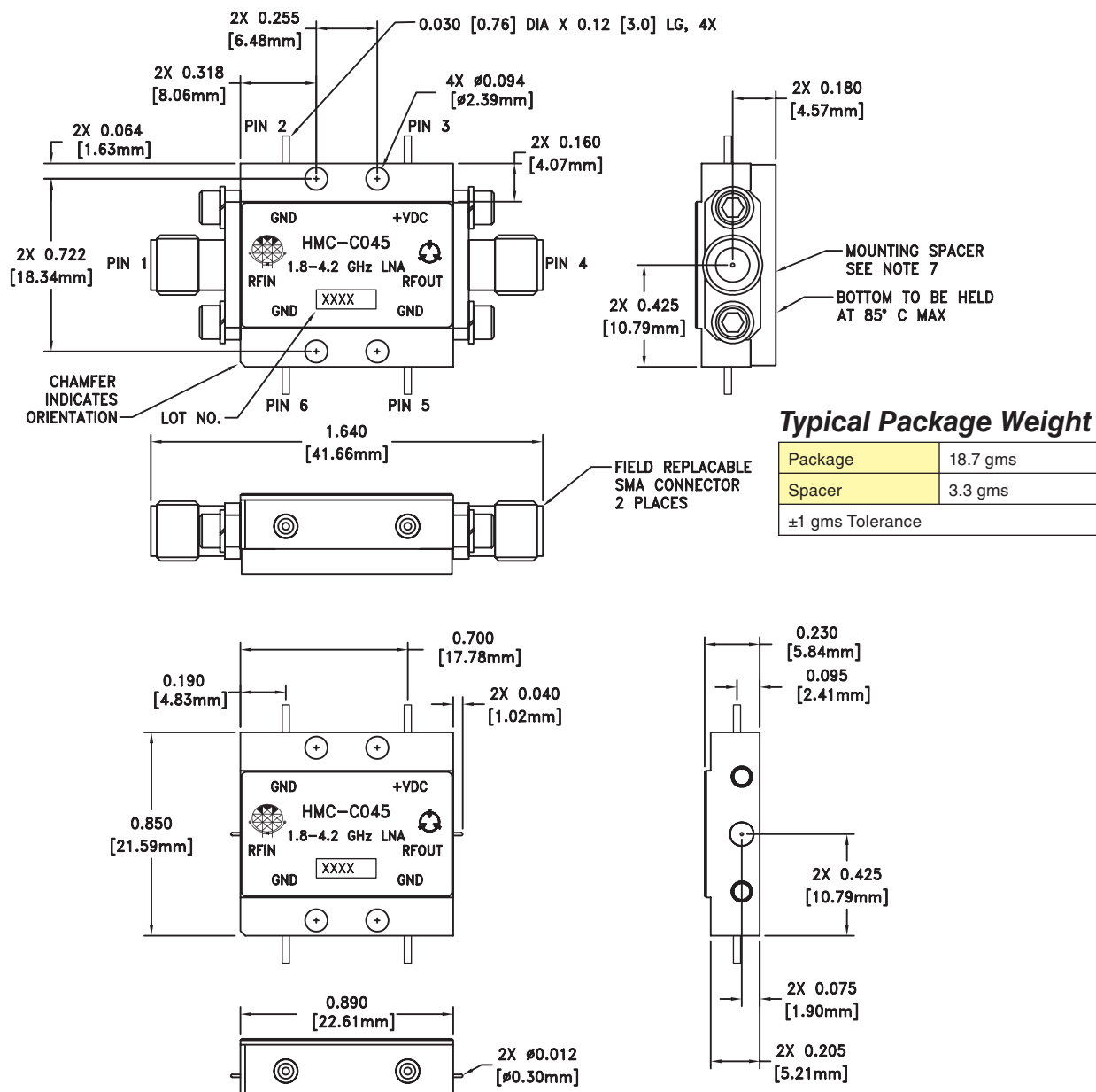


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**HMC-C045****LOW NOISE AMPLIFIER  
MODULE, 1.8 - 4.2 GHz****Pin Descriptions**

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

#### C-10 Outline Drawing



VIEW SHOWN WITH CONNECTORS AND MOUNTING SPACER REMOVED

#### NOTES:

1. PACKAGE, LEADS, COVER MATERIAL: KOVAR™
2. SPACER MATERIAL: NICKEL PLATED ALUMINUM
3. PLATING: ELECTROLYTIC GOLD 50 MICROINCHES MIN.,  
OVER ELECTROLYTIC NICKEL 75 MICROINCHES MIN.
4. ALL DIMENSIONS ARE IN INCHES [MILLIMETERS].
5. TOLERANCES ±.010 [0.25] UNLESS OTHERWISE SPECIFIED.
6. FIELD REPLACEABLE SMA CONNECTORS.  
TENSOLITE 5602-5CCSF OR EQUIVALENT.
7. SPACER DIMENSIONS: 0.88 X 0.84 X 0.105.



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## HMC-C045

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

#### **Notes:**

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AMPLIFIERS