Typical Applications
The HMC-C001 Wideband LNA is ideal for:
- Telecom Infrastructure
- Microwave Radio & VSAT
- Military & Space
- Test Instrumentation
- Fiber Optics

Functional Diagram

Features
Noise Figure: 2 dB @ 10 GHz
Flat Gain: 15 dB ± 0 dB
P1dB Output Power: +14 dBm @ 10 GHz
50 Ohm Matched Input/Output
Regulated Supply + 9V to +15V @ 65mA
Hermetically Sealed Module
Field Replaceable SMA connectors
-55 to +85°C Operating Temperature

General Description
The HMC-C001 is a GaAs MMIC PHEMT Low Noise Distributed 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, 2 to 3 dB noise figure and +14 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-C001 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, $T_A = +25^\circ$ C, $V_s = +9V$ to $+15V$

<table>
<thead>
<tr>
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<tr>
<td>Frequency Range</td>
<td>2.0</td>
<td>6.0</td>
<td>16.0</td>
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<td></td>
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<td>GHz</td>
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<td>Gain</td>
<td>13</td>
<td>15</td>
<td>12</td>
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<td>13</td>
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<td></td>
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<td>dB</td>
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<tr>
<td>Gain Flatness</td>
<td>±0.25</td>
<td>±0.5</td>
<td>±0.5</td>
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<td>dB</td>
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<td>Gain Variation Over Temperature</td>
<td>0.015</td>
<td>0.025</td>
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<td>Noise Figure</td>
<td>3.5</td>
<td>4.5</td>
<td>2.5</td>
<td>3.5</td>
<td>4.0</td>
<td>5.0</td>
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<td></td>
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<td>dB</td>
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<tr>
<td>Input Return Loss</td>
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<td>20</td>
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<td>10</td>
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<td></td>
<td>dB</td>
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<tr>
<td>Output Return Loss</td>
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<td>15</td>
<td>8</td>
<td></td>
<td>10</td>
<td></td>
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<td>dB</td>
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<tr>
<td>Output Power for 1 dB Compression</td>
<td>14</td>
<td>10</td>
<td>13</td>
<td>8.5</td>
<td>11.5</td>
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<td>dBm</td>
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<td>Saturated Output Power (Psat)</td>
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<td>Output Third Order Intercept (IP3)</td>
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<td>23</td>
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<td>dBm</td>
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<td>mA</td>
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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 vs. Temperature

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**HMC-C001**

**WIDEBAND LNA MODULE, 2 - 20 GHz**

### Pin Descriptions

<table>
<thead>
<tr>
<th>Pin Number</th>
<th>Function</th>
<th>Description</th>
<th>Interface Schematic</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>RFIN &amp; RF Ground</td>
<td>RF input connector, SMA female, field replaceable. This pin is AC coupled and matched to 50 Ohms.</td>
<td>![Interface Diagram]</td>
</tr>
<tr>
<td>2</td>
<td>Vs</td>
<td>Power supply voltage for the amplifier.</td>
<td>![Interface Diagram]</td>
</tr>
<tr>
<td>3</td>
<td>RFOUT &amp; RF Ground</td>
<td>RF output connector, SMA female, field replaceable. This pin is AC coupled and matched to 50 Ohms.</td>
<td>![Interface Diagram]</td>
</tr>
<tr>
<td>4</td>
<td>GND</td>
<td>Power supply ground.</td>
<td>![Interface Diagram]</td>
</tr>
</tbody>
</table>

### Electrical Specifications

- **Bias Supply Voltage (Vs):** -0.3 Vdc to +25 Vdc
- **RF Input Power (RFIN):** +23 dBm
- **Storage Temperature:** -65 to +150 °C
- **Operating Temperature:** -55 to +85 °C

### Absolute Maximum Ratings

#### Electrical Characteristics

**P1dB vs. Temperature**

- **Psat vs. Temperature**

**Output IP3 vs. Temperature**

- **Rs vs. Temperature**

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**ELECTROSTATIC SENSITIVE DEVICE**

OBSERVE HANDLING PRECAUTIONS

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Outline Drawing

HMC-C001
WIDEBAND LNA MODULE, 2 - 20 GHz

Package Information

<table>
<thead>
<tr>
<th>Package Type</th>
<th>C-1</th>
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<tbody>
<tr>
<td>Package Weight</td>
<td>10.2 gms</td>
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<tr>
<td>Spacer Weight</td>
<td>N/A</td>
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</table>

[1] Includes the connectors
[2] ±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 ±0.005 [0.13] UNLESS OTHERWISE SPECIFIED.
6. FIELD REPLACEABLE SMA CONNECTORS: TENSOLOTE 5602 - 5CCSF OR EQUIVALENT.

△ TO MOUNT MODULE TO SYSTEM PLATFORM REPLACE 0-80 HARDWARE WITH DESIRED MOUNTING SCREWS.

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