Features
- Noise Figure: 2.7 dB Typical
- Gain: 15.5 dB Typical
- Single Bias Supply
- Low Current Consumption
- DC Decoupled RF Input and Output
- Ceramic Package

Description
The MAAM71200-H1 is a wide band, low noise GaAs MMIC amplifier enclosed in a leadless ceramic package. The MAAM71200-H1 is a packaged version of the MAAM71200 low noise MMIC amplifier chip. The fully monolithic design operates in 50 Ω without the need for external components.

The MAAM71200-H1 is ideally suited for microstrip assemblies where wire or ribbon bonds are used for interconnects. Typical applications include radar, EW and communication systems.

The MAAM71200-H1 is fabricated using a mature 0.5-micron gate length GaAs process for increased reliability and performance repeatability.

Ordering Information

<table>
<thead>
<tr>
<th>Part Number</th>
<th>Package</th>
</tr>
</thead>
<tbody>
<tr>
<td>MAAM71200-H1</td>
<td>Bulk Packaging</td>
</tr>
</tbody>
</table>

Functional Diagram

1. Case must be electrically connected to RF and DC ground.
2. The RF bond inductance from the transmission line to the package is assumed to be 0.25 nH. Variations in bond inductance will result in variations in VSWR and gain slope. A small capacitive stub may be needed depending on the inductance realized in the final assembly.
3. Nominal bias is obtained by setting \( V_{DD} = 4 \) V.
4. Increasing \( V_{DD} \) from 4 volts to 6 volts increases output power and high frequency bandwidth.

Absolute Maximum Ratings

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Absolute Maximum</th>
</tr>
</thead>
<tbody>
<tr>
<td>Input Power</td>
<td>+20 dBm</td>
</tr>
<tr>
<td>( V_{DD} )</td>
<td>+7 V</td>
</tr>
<tr>
<td>Junction Temperature</td>
<td>+150°C</td>
</tr>
<tr>
<td>Thermal Resistance</td>
<td>+175°C/W</td>
</tr>
<tr>
<td>Storage Temperature</td>
<td>-65°C to +150°C</td>
</tr>
</tbody>
</table>

5. Exceeding any one or combination of these limits may cause permanent damage to this device.
6. M/A-COM Technology does not recommend sustained operation near these survivability limits.
Low Noise GaAs MMIC Power Amplifier
7.5 - 12.0 GHz

Electrical Specifications:  $T_A = 25°C$, $V_{DD} = 4$ V

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Test Conditions</th>
<th>Units</th>
<th>Min.</th>
<th>Typ.</th>
<th>Max.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gain</td>
<td>—</td>
<td>dB</td>
<td>14.5</td>
<td>15.5</td>
<td>—</td>
</tr>
<tr>
<td>Noise Figure</td>
<td>—</td>
<td>dB</td>
<td>—</td>
<td>2.7</td>
<td>3.5</td>
</tr>
<tr>
<td>Input VSWR</td>
<td>—</td>
<td>Ratio</td>
<td>—</td>
<td>2.0:1</td>
<td>—</td>
</tr>
<tr>
<td>Output VSWR</td>
<td>—</td>
<td>Ratio</td>
<td>1.8:1</td>
<td>—</td>
<td>—</td>
</tr>
<tr>
<td>Output 1 dB Compression Point</td>
<td>—</td>
<td>dBm</td>
<td>—</td>
<td>11</td>
<td>—</td>
</tr>
<tr>
<td>Third Order Intercept Point</td>
<td>—</td>
<td>dBm</td>
<td>—</td>
<td>21</td>
<td>—</td>
</tr>
<tr>
<td>Reverse Isolation</td>
<td>—</td>
<td>dB</td>
<td>—</td>
<td>30</td>
<td>—</td>
</tr>
<tr>
<td>Bias Current ($I_{DD}$)</td>
<td>—</td>
<td>mA</td>
<td>40</td>
<td>55</td>
<td>—</td>
</tr>
</tbody>
</table>

Typical Performance Curves

**Gain**

![Gain Graph](image1)

**Noise Figure**

![Noise Figure Graph](image2)

**Input and Output VSWR**

![Input and Output VSWR Graph](image3)

**Output Power @ 1 dB Compression**

![Output Power Graph](image4)
Handling Procedures
Please observe the following precautions to avoid damage:

Static Sensitivity
Gallium Arsenide Integrated Circuits are sensitive to electrostatic discharge (ESD) and can be damaged by static electricity. Proper ESD control techniques should be used when handling these devices.
Low Noise GaAs MMIC Power Amplifier
7.5 - 12.0 GHz

M/A-COM Technology Solutions Inc. All rights reserved.

Information in this document is provided in connection with M/A-COM Technology Solutions Inc ("MACOM") products. These materials are provided by MACOM as a service to its customers and may be used for informational purposes only. Except as provided in MACOM's Terms and Conditions of Sale for such products or in any separate agreement related to this document, MACOM assumes no liability whatsoever. MACOM assumes no responsibility for errors or omissions in these materials. MACOM may make changes to specifications and product descriptions at any time, without notice. MACOM makes no commitment to update the information and shall have no responsibility whatsoever for conflicts or incompatibilities arising from future changes to its specifications and product descriptions. No license, express or implied, by estoppels or otherwise, to any intellectual property rights is granted by this document.

THESE MATERIALS ARE PROVIDED "AS IS" WITHOUT WARRANTY OF ANY KIND, EITHER EXPRESS OR IMPLIED, RELATING TO SALE AND/OR USE OF MACOM PRODUCTS INCLUDING LIABILITY OR WARRANTIES RELATING TO FITNESS FOR A PARTICULAR PURPOSE, CONSEQUENTIAL OR INCIDENTAL DAMAGES, MERCHANTABILITY, OR INFRINGEMENT OF ANY PATENT, COPYRIGHT OR OTHER INTELLECTUAL PROPERTY RIGHT. MACOM FURTHER DOES NOT WARRANT THE ACCURACY OR COMPLETENESS OF THE INFORMATION, TEXT, GRAPHICS OR OTHER ITEMS CONTAINED WITHIN THESE MATERIALS. MACOM SHALL NOT BE LIABLE FOR ANY SPECIAL, INDIRECT, INCIDENTAL OR CONSEQUENTIAL DAMAGES, INCLUDING WITHOUT LIMITATION, LOST REVENUES OR LOST PROFITS, WHICH MAY RESULT FROM THE USE OF THESE MATERIALS.

MACOM products are not intended for use in medical, lifesaving or life sustaining applications. MACOM customers using or selling MACOM products for use in such applications do so at their own risk and agree to fully indemnify MACOM for any damages resulting from such improper use or sale.

Visit www.macom.com for additional data sheets and product information.

For further information and support please visit: https://www.macom.com/support