MAAM26100-P1

GaAs MMIC Power Amplifier
2 - 6 GHz

Features
- Saturated Output Power: 30.5 dBm Typical
- Gain: 20 dB Typical
- Power Added Efficiency: 30% Typical
- On-Chip Bias Network
- DC Decoupled RF Input and Output
- Lead-Free High Performance Ceramic Package
- RoHS* Compliant and 260°C Reflow Compatible

Description
The MAAM26100-P1 is a GaAs MMIC two stage high efficiency power amplifier in a lead-free high performance bolt down ceramic package. The MAAM26100-P1 is a fully monolithic design which eliminates the need for external circuitry in 50-ohm systems.

The MAAM26100-P1 is ideally suited for driver amplifiers and transmitter outputs in UMTS applications, test equipment, electronic warfare jammers, missile subsystems and phased array radars.

The MAAM26100-P1 is fabricated using a mature 0.5-micron gate length GaAs process. The process features full passivation for increased performance reliability.

Ordering Information
<table>
<thead>
<tr>
<th>Part Number</th>
<th>Package</th>
</tr>
</thead>
<tbody>
<tr>
<td>MAAM26100-P1</td>
<td>Ceramic Bolt Down</td>
</tr>
</tbody>
</table>

Functional Diagram

Pin Configuration

<table>
<thead>
<tr>
<th>Pin No.</th>
<th>Function</th>
<th>Pin No.</th>
<th>Function</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>GND</td>
<td>6</td>
<td>VGG</td>
</tr>
<tr>
<td>2</td>
<td>GND</td>
<td>7</td>
<td>GND</td>
</tr>
<tr>
<td>3</td>
<td>RF&lt;sub&gt;IN&lt;/sub&gt;</td>
<td>8</td>
<td>RF&lt;sub&gt;OUT&lt;/sub&gt;</td>
</tr>
<tr>
<td>4</td>
<td>GND</td>
<td>9</td>
<td>GND</td>
</tr>
<tr>
<td>5</td>
<td>GND</td>
<td>10</td>
<td>V&lt;sub&gt;DD&lt;/sub&gt;</td>
</tr>
</tbody>
</table>

Absolute Maximum Ratings

1. Exceeding any one or combination of these limits may cause permanent damage to this device and will void product warranty.
2. M/A-COM does not recommend sustained operation near these survivability limits.

GaAs MMIC Power Amplifier

2 - 6 GHz

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Lead-Free CR-15†

Functional Schematic

3. Nominal bias is obtained by first connecting –5 volts to pin 6 (VGG), followed by connecting +8 volts to pin 10 (VDD). Note sequence.

4. RF ground and thermal interface is the flange (case bottom). Adequate heat sinking is required.

Electrical Specifications:  \( T_A = 25°C, V_{DD} = +8 \text{ V}, V_{GG} = -5 \text{ V} \)

<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>Small Signal Gain</td>
<td>Pin ( \leq -10 \text{ dBm}, 2\text{-}6 \text{ GHz} )</td>
<td>dB</td>
<td>—</td>
<td>20</td>
<td>—</td>
</tr>
<tr>
<td>Input VSWR</td>
<td>Pin ( \leq -10 \text{ dBm}, 2\text{-}6 \text{ GHz} )</td>
<td>Ratio</td>
<td>—</td>
<td>1.8:1</td>
<td>2.1:1</td>
</tr>
<tr>
<td>Output VSWR</td>
<td>Pin ( \leq -10 \text{ dBm}, 2\text{-}6 \text{ GHz} )</td>
<td>Ratio</td>
<td>—</td>
<td>2.2:1</td>
<td>—</td>
</tr>
<tr>
<td>Output Power</td>
<td>Pin = +14 dBm, 2\text{-}6 GHz</td>
<td>dBm</td>
<td>29</td>
<td>30.5</td>
<td>—</td>
</tr>
<tr>
<td>P1dB</td>
<td>2\text{-}6 GHz</td>
<td>dBm</td>
<td>—</td>
<td>28</td>
<td>—</td>
</tr>
<tr>
<td>Power Added Efficiency</td>
<td>Pin = +14 dBm, 2\text{-}6 GHz</td>
<td>%</td>
<td>—</td>
<td>30</td>
<td>—</td>
</tr>
<tr>
<td>Output IP3</td>
<td>2\text{-}6 GHz</td>
<td>dBm</td>
<td>—</td>
<td>40</td>
<td>—</td>
</tr>
<tr>
<td>IDS</td>
<td>Pin = +14 dBm, 2\text{-}6 GHz</td>
<td>mA</td>
<td>—</td>
<td>475</td>
<td>650</td>
</tr>
</tbody>
</table>

† Reference Application Note M538 for lead-free solder reflow recommendations.
Meets JEDEC moisture sensitivity level 1 requirements.
Typical Performance Curves

**Gain**

- Gain vs. Frequency (GHz) for different temperatures: +25°C, -40°C, +85°C.

**Pout**

- Power Output (Pout) vs. Frequency (GHz) for different temperatures: +25°C, -40°C, +85°C.

**Input Return Loss**

- S11 (dB) vs. Frequency (GHz) for different temperatures: +25°C, -40°C, +85°C.

**Output Return Loss**

- S21 (dB) vs. Frequency (GHz) for different temperatures: +25°C, -40°C, +85°C.

**Power Added Efficiency**

- PAE (%) vs. Frequency (GHz) for different temperatures: +25°C, -40°C, +85°C.

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