MMA703
DC to 6 GHz Amplifier

2012 PACKAGE

Description:
The MMA703 is a fully matched amplifier fabricated in Aeroflex / Metelics reliable InGap HBT technology. The economical, low parasitic molded package provides state-of-the-art wideband performance.

Features:
- DC - 6 GHz Broadband Gain Block
- ± 0.5 dB Typical Gain Flatness
- 50 Ohms Input/Output Impedances

RF Specifications:

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Term</th>
<th>Minimum</th>
<th>Typical</th>
<th>Maximum</th>
<th>Units</th>
</tr>
</thead>
<tbody>
<tr>
<td>3dB Bandwidth</td>
<td>BW</td>
<td>DC</td>
<td>- - -</td>
<td>9</td>
<td>GHz</td>
</tr>
<tr>
<td>Frequency Range</td>
<td>f₀</td>
<td>DC</td>
<td>- - -</td>
<td>6</td>
<td>GHz</td>
</tr>
<tr>
<td>Gain</td>
<td>Gₚ</td>
<td>17</td>
<td>18</td>
<td>- -</td>
<td>dB</td>
</tr>
<tr>
<td>Output Power</td>
<td>P₁dB</td>
<td>+16</td>
<td>+17</td>
<td>- -</td>
<td>dBm</td>
</tr>
<tr>
<td>Standing Wave Ratio</td>
<td>VSWR</td>
<td>1.5:1</td>
<td>2.0:1</td>
<td>- -</td>
<td>-</td>
</tr>
<tr>
<td>3rd Order Intercept Point</td>
<td>IP3</td>
<td>+23</td>
<td>+25</td>
<td>- -</td>
<td>dBm</td>
</tr>
<tr>
<td>Noise Figure</td>
<td>NF</td>
<td>- -</td>
<td>3.8</td>
<td>4.2</td>
<td>dB</td>
</tr>
<tr>
<td>Device current</td>
<td>Iₖ</td>
<td>42</td>
<td>48</td>
<td>55</td>
<td>mA</td>
</tr>
</tbody>
</table>

NOTES:
1. T₀ = +25 ºC.
2. V₁ = 6.0 Vdc, Rₘₐₛ = 22 Ω
3. IP3 measured with two tones offset 10 MHz at 0 dBm per tone.

Absolute Maximum Ratings:

<table>
<thead>
<tr>
<th>Parameters</th>
<th>Rating</th>
</tr>
</thead>
<tbody>
<tr>
<td>Device Current ( Iₖ )</td>
<td>80 mA</td>
</tr>
<tr>
<td>RF Input Power, continuous</td>
<td>+10 dBm</td>
</tr>
<tr>
<td>Operating Temperature</td>
<td>-40 to +85 ºC</td>
</tr>
<tr>
<td>Storage Temperature</td>
<td>-55 to +125 ºC</td>
</tr>
<tr>
<td>Thermal Resistance ( θₑₖ )</td>
<td>125 ºC/W</td>
</tr>
</tbody>
</table>
Typical RF Performance:

Figure 1. **Gain vs Frequency**

Figure 2. **Output Power vs Frequency**

Figure 3. **Input VSWR vs Frequency**

Figure 4. **Output VSWR vs Frequency**

Figure 5. **3rd Order Intercept vs Frequency**

Figure 6. **Noise Figure vs Frequency**
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2012 Package Dimensions:

Recommended PCB Layout:
Application Circuit:

\[ V_S (V) \quad 6.0 \quad 8.0 \quad 10.0 \quad 12.0 \quad 15.0 \]

\[ R_{BIAS} (\Omega) \quad 22 \quad 43 \quad 86 \quad 130 \quad 200 \]

\[ \text{Power Dissipation (W)} \quad 0.10 \quad 0.2 \quad 0.5 \quad 1 \quad 2 \]

C1, C2, L1: \( X_L \gg 50\Omega, X_C \ll 50\Omega \)

Aeroflex / Metelics Inc.
Aeroflex Microelectronic Solutions
975 Stewart Drive, Sunnyvale, CA 94085
TEL: 408-737-8181
Fax: 408-733-7645

www.aeroflex-metelics.com sales@aeroflex-metelics.com

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