The MPS-013001-84 is an internally matched GaAs FET amplifier in a surface mount ceramic package. It is ideal for digital communications applications where excellent gain linearity and high efficiency at 5 Volt bias is required. The device may be directly soldered to a 50 ohm microstrip circuit without additional matching elements. Independent biasing of the gate allows external gain control or the amplifier may be operated with no gate bias.

### Features
- High IP3 +34 dBm Typical
- High P1dB +21 dBm Typical
- 30% High Power Added Efficiency
- +5 Volt Bias

### Specifications

#### Electrical at 25°C, Vdd= 5.0 V, Zo= 50 Ω

<table>
<thead>
<tr>
<th>Symbol</th>
<th>Parameter</th>
<th>Min.</th>
<th>Typical</th>
<th>Max.</th>
<th>Unit</th>
</tr>
</thead>
<tbody>
<tr>
<td>Freq</td>
<td>Frequency Range</td>
<td>100</td>
<td>19.0</td>
<td>3000</td>
<td>MHz</td>
</tr>
<tr>
<td>SSG</td>
<td>Small Signal Gain</td>
<td>10.5</td>
<td>11.5</td>
<td>21.0</td>
<td>dB</td>
</tr>
<tr>
<td>P1dB</td>
<td>P out at 1 dB Compression</td>
<td>11.5</td>
<td>21.0</td>
<td>34.0</td>
<td>dBm</td>
</tr>
<tr>
<td>IP3</td>
<td>Third-order Intercept</td>
<td>1.6:1</td>
<td>2.5:1</td>
<td>1.6:1</td>
<td>dBm</td>
</tr>
<tr>
<td>VSWR</td>
<td>Input VSWR</td>
<td>+/- 0.5</td>
<td>+/- 0.5</td>
<td>1.6:1</td>
<td>dB</td>
</tr>
<tr>
<td>ΔGOF</td>
<td>Gain Variation over Freq.</td>
<td>+/- 0.5</td>
<td>+/- 0.8</td>
<td>0.08</td>
<td>dB/C</td>
</tr>
<tr>
<td>ΔGOT</td>
<td>Gain Variation over Temp.</td>
<td>-0.08</td>
<td>160</td>
<td>30</td>
<td>mA</td>
</tr>
<tr>
<td>Idd</td>
<td>DC Current</td>
<td>90</td>
<td>160</td>
<td>90</td>
<td>mA</td>
</tr>
<tr>
<td>PAE</td>
<td>Power Added Efficiency</td>
<td>30</td>
<td>30</td>
<td>30</td>
<td>%</td>
</tr>
<tr>
<td>NF</td>
<td>Noise Figure(&gt;500MHz/≤500MHz)</td>
<td>3.5/4.5</td>
<td>5.0/6.5</td>
<td>3.5/4.5</td>
<td>dB</td>
</tr>
</tbody>
</table>

#### Power Output at P1dB

- Absolute Maximum Ratings
  - Maximum Bias Voltage: 6.0 V
  - Maximum Continuous RF Input Power: 200 mW
  - Maximum Peak Input Power: 300 mW
  - Maximum Case Operating Temperature: +85°C
  - Maximum Storage Temperature: -65°C to +150°C
Gain vs. Control Voltage

Control Voltage $V_{gs}$ (-V)

Gain (dB)

0  3  6  9  12  15
0  0.5  1.0  1.5

$V_{dd}$

C3

LEAD 1

LEAD 4

LEAD 5

LEAD 8

Outline Diagrams

Application Circuit

C1, C2  100 pF  Chip Capacitor
C3, C4  1000 pF  Capacitor
L1, L2  500 nH  Printer or Wound Coil
CR1  5.5 V  Zener Diode

50 (4) Microstrip Line, .074" Wide