MPS-173011-82
1400 to 1700 MHz Linear Amplifier

Features
- +45 dBm Typical IP3
- 1 W Typical Output Power
- 14 dB Typical Gain
- Single Positive Bias
- Surface Mount Package

The MPS-173011-82 is a modular amplifier designed to meet the ultralinear transmitter output requirements of worldwide PDC systems. The amplifier is a class A, single stage amplifier based on a GaAs MESFET transistor. The amplifier exhibits an extremely high IP3 (+45 dBm) relative to the DC power consumed (3 W). The device is self contained with all matching and bias circuitry included. The device has a P1dB of +30.0 dBm at a supply voltage of 7.5 Vdc. The unit has a total gain of 14 dB and is extremely flat (less than .5 dB gain variation) from 1.4 GHz to 1.7 GHz.

Specifications

- **Electrical at 25°C, Vdd= 7.5 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>
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<tbody>
<tr>
<td>Freq</td>
<td>Frequency Range</td>
<td>1400</td>
<td>1700</td>
<td>MHz</td>
<td></td>
</tr>
<tr>
<td>SSG</td>
<td>Small Signal Gain</td>
<td>13</td>
<td>14</td>
<td>dB</td>
<td></td>
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<tr>
<td>P1dB</td>
<td>P out at 1 dB Compression</td>
<td>+30.0</td>
<td>+45.0</td>
<td>dBm</td>
<td></td>
</tr>
<tr>
<td>IP3</td>
<td>Third-order Intercept</td>
<td>+42.0</td>
<td>dBm</td>
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<td>VSWR</td>
<td>Input VSWR</td>
<td>1.5:1/2.2:1</td>
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<td></td>
<td></td>
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<tr>
<td>ΔGOF</td>
<td>Gain Variation over Freq.</td>
<td>+/- 0.25</td>
<td>+/- 0.5</td>
<td>dB</td>
<td></td>
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<tr>
<td>ΔGOT</td>
<td>Gain Variation over Temp.</td>
<td>-0.01</td>
<td>420</td>
<td>mA</td>
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<td>Idd</td>
<td>DC Current</td>
<td>350</td>
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</tr>
</tbody>
</table>

- **Absolute Maximum Ratings**

  - Maximum Bias Voltage: 8.0 V
  - Maximum Continuous RF Input Power: 950 mW
  - Maximum Peak Input Power: 1400 mW
  - Maximum Case Operating Temperature: +85°C
  - Maximum Storage Temperature: -65°C to +150°C
Return Loss vs. Frequency

**INPUT**

- Frequency (MHz): 1300 to 1800
- Return Loss (dB): -30 to 0

**OUTPUT**

- Frequency (MHz): 1300 to 1800
- Return Loss (dB): -30 to 0

Outline Diagrams

Application Circuit

- **Pin**
  - 1: N/C
  - 2: N/C
  - 3: RF Input
  - 4: NC
  - 5: N/C
  - 6: N/C
  - 7: N/C
  - 8: RF Output, Vdd
  - 9: N/C
  - 10: N/C

- **Case**: Ground

- **Components**
  - **C1**: 100 pF Chip Capacitor
  - **C2**: .22 µF Capacitor
  - **L1**: 160 nH Printer or Wound Coil
  - **CR1**: 8.0 V Zener Diode
  - **Microstrip Line**: 50 µm

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