The MPS-080817P-85 is a low noise, high dynamic range amplifier designed for ultralinear receiver applications in the 806 to 849 MHz frequency range. The circuit is matched to 50 ohm and employs a single stage GaAs FET with internal matching to provide exceptional noise figure, 1.1 dB combined with extremely high IP3, +44 dBm. Typical applications are cellular base station receivers, Tower mounted LNA’s, smart antenna systems, picocell repeaters and receiver multi-couplers.

### Features
- **Very Low Noise** 1.1 dB Typ.
- **7.5 Volt Bias**
- **High +44 dBm Typ. IP3**
- **26% High Power Added Efficiency**
- **14.5 dB Typical Gain**

### 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>806</td>
<td></td>
<td>849</td>
<td>MHz</td>
</tr>
<tr>
<td>SSG</td>
<td>Small Signal Gain</td>
<td>13</td>
<td>14.5</td>
<td></td>
<td>dB</td>
</tr>
<tr>
<td>P1dB</td>
<td>P out at 1 dB Compression</td>
<td>+28.0</td>
<td>+44.0</td>
<td></td>
<td>dBm</td>
</tr>
<tr>
<td>IP3</td>
<td>Third-order Intercept</td>
<td>+42</td>
<td></td>
<td></td>
<td>dBm</td>
</tr>
<tr>
<td>NF</td>
<td>Noise Figure</td>
<td>1.1</td>
<td>1.5</td>
<td></td>
<td>dB</td>
</tr>
<tr>
<td>VSWR</td>
<td>Input VSWR</td>
<td>2.0:1</td>
<td>2.5:1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>ΔGOF</td>
<td>Gain Variation over Freq.</td>
<td>+/-0.2</td>
<td>+/-0.5</td>
<td></td>
<td>dB</td>
</tr>
<tr>
<td>ΔGOT</td>
<td>Gain Variation over Temp.</td>
<td>-.015</td>
<td></td>
<td></td>
<td>dB/C</td>
</tr>
<tr>
<td>Idd</td>
<td>DC Current</td>
<td>330</td>
<td>400</td>
<td></td>
<td>mA</td>
</tr>
<tr>
<td>PAE</td>
<td>Power Added Efficiency</td>
<td>26</td>
<td></td>
<td></td>
<td>%</td>
</tr>
</tbody>
</table>

### Noise Figure vs. Frequency

<table>
<thead>
<tr>
<th>Frequency (MHz)</th>
<th>Noise Figure (dB)</th>
</tr>
</thead>
<tbody>
<tr>
<td>810</td>
<td>1.0</td>
</tr>
<tr>
<td>820</td>
<td>1.5</td>
</tr>
<tr>
<td>830</td>
<td>2.0</td>
</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
**MPS-080817P-85**

806 to 849 MHz Low Noise Receiver Amplifier

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**Return Loss vs. Frequency**

**INPUT**

- **Return Loss (dB)**
  - Frequency (MHz): 810, 820, 830, 840, 850, 860
  - Return Loss vs. Frequency graph

**OUTPUT**

- **Return Loss (dB)**
  - Frequency (MHz): 810, 820, 830, 840, 850, 860
  - Return Loss vs. Frequency graph

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**Outline Diagrams**

- **PIN**
  - Connection
  - 1: N/C
  - 2: N/C
  - 3: RF Input
  - 4: N/C
  - 5: N/C
  - 6: N/C
  - 7: N/C
  - 8: RF Output, Vdd
  - 9: N/C
  - 10: N/C
  - Case: Ground

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**Application Circuit**

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

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**Return Loss vs. Frequency**

- **INPUT**
  - Frequency (MHz): 810, 820, 830, 840, 850, 860
  - Return Loss (dB): -5, -10, -15, -20, -25, -30

- **OUTPUT**
  - Frequency (MHz): 810, 820, 830, 840, 850, 860
  - Return Loss (dB): -5, -10, -15, -20, -25, -30