The MPS-1820A9-85 is a low noise, high dynamic range amplifier designed for PCS-1900 receiver applications. 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, +36 dBm. Typical applications are PCS base station receivers and Tower mounted LNA's.

**Features**

- Very Low Noise 1.1 dB Typ.
- High +36 dBm Typ. IP3
- 15.5 dB Typical Gain
- 6.0 Volt Bias
- 26% High Power Added Efficiency

**Specifications**

**Electrical at 25°C, Vdd= 6.0 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>
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<tbody>
<tr>
<td>Freq</td>
<td>Frequency Range</td>
<td>1850</td>
<td></td>
<td>1910</td>
<td>MHz</td>
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<tr>
<td>SSG</td>
<td>Small Signal Gain</td>
<td>14</td>
<td>15.5</td>
<td></td>
<td>dB</td>
</tr>
<tr>
<td>P1dB</td>
<td>P out at 1 dB Compression</td>
<td>+33</td>
<td>+22.0</td>
<td>+36.0</td>
<td>dBm</td>
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<tr>
<td>IP3</td>
<td>Third-order Intercept</td>
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<td></td>
<td></td>
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<tr>
<td>NF</td>
<td>Noise Figure</td>
<td>1.1</td>
<td>1.5</td>
<td></td>
<td>dB</td>
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<tr>
<td>VSWR</td>
<td>Input VSWR</td>
<td>2.0:1</td>
<td>2.5:1</td>
<td></td>
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<tr>
<td>ΔGOF</td>
<td>Gain Variation over Freq.</td>
<td>+/-0.2</td>
<td>+/-.5</td>
<td></td>
<td>dB</td>
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<tr>
<td>ΔGOT</td>
<td>Gain Variation over Temp.</td>
<td>-.015</td>
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<td></td>
<td>dB/°C</td>
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<tr>
<td>Idd</td>
<td>DC Current</td>
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<td>137</td>
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<td>mA</td>
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<tr>
<td>PAE</td>
<td>Power Added Efficiency</td>
<td>26</td>
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<td></td>
<td>%</td>
</tr>
</tbody>
</table>

**Absolute Maximum Ratings**

- Maximum Bias Voltage: 7.0 V
- Maximum Continuous RF Input Power: 240 mW
- Maximum Peak Input Power: 360 mW
- Maximum Case Operating Temperature: +85°C
- Maximum Storage Temperature: -65°C to +150°C
**MPS-1820A9-85**

1850 to 1910 MHz Low Noise Receiver Amplifier

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**Application Circuit**

- **RF IN**
- **RF OUT**
- **C1** 100 pF
- **C2** 22 uF
- **L1** 160 nH
- **CR1** 8.0 V

**Outline Diagrams**

- **Pin Connection**
  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

**Return Loss vs. Frequency**

**INPUT**

- Frequency (MHz): 1750, 1800, 1850, 1900, 1950, 2000
- Return Loss (dB): -15, -20, -25

**OUTPUT**

- Frequency (MHz): 1750, 1800, 1850, 1900, 1950, 2000
- Return Loss (dB): -15, -20, -25

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