**MECWideX**

**X-Ku-Band 0.5 Watt Wideband Power Amplifier**

**Main Features**

- 0.25µm GaAs pHEMT Technology
- 8.0 – 14.0 GHz full performance Frequency Range
- Small Signal Gain > 18 dB
- Input Return Loss > 10 dB
- P1dB > 27 dBm
- Psat > 29 dBm
- PAE > 35 %

- Bias: Vd = 6V, Id = 190mA, Vg = -0.5 V (Typ.)

- Chip Size: 2.31 x 2.00 x 0.07 mm³

**Typical Applications**

- Point-to-Point Radio
- X- to Ku-Band Driver

**Measured Data**

MECWideX is a 0.25µm GaAs pHEMT based wideband Power Amplifier designed by MEC for X- to Ku-Band applications.

In the frequency range from 8.0 GHz to 14 GHz it provides more than 18 dB of linear gain and input return loss better than 10 dB.

When driven at 1 dB of Gain compression it gives an output power greater than 27 dBm which increase to 29 dBm at saturation. It is also designed to be very efficient in the whole wide frequency band: PAE is above 35% at 1 dB of gain compression and reaches nearly 40% at saturation.
**Main Characteristics**

Test Conditions: $T_{\text{base, plate}} = 25^\circ \text{C}$, $V_d = 6 \text{ V}$, $I_{dq} = 190 \text{ mA}$

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Min</th>
<th>Typ</th>
<th>Max</th>
<th>Unit</th>
</tr>
</thead>
<tbody>
<tr>
<td>Operating frequency</td>
<td>8.0</td>
<td></td>
<td>14.0</td>
<td>GHz</td>
</tr>
<tr>
<td>Small Signal Gain</td>
<td>18</td>
<td></td>
<td></td>
<td>dB</td>
</tr>
<tr>
<td>Input Return Loss</td>
<td></td>
<td>-10</td>
<td></td>
<td>dB</td>
</tr>
<tr>
<td>Output Return Loss</td>
<td></td>
<td>-5</td>
<td></td>
<td>dB</td>
</tr>
<tr>
<td>Output Power at 1 dB of Gain Compression</td>
<td>27</td>
<td></td>
<td></td>
<td>dBm</td>
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<tr>
<td>Saturated Output Power (3 dB of Gain Compr.)</td>
<td>29</td>
<td></td>
<td></td>
<td>dBm</td>
</tr>
<tr>
<td>PAE at 1 dB of Gain Compression</td>
<td>35</td>
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<td></td>
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<tr>
<td>PAE at 3 dB of Gain Compression</td>
<td>38</td>
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<td></td>
<td></td>
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<tr>
<td>Drain Supply Voltage</td>
<td>6</td>
<td></td>
<td></td>
<td>V</td>
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<tr>
<td>Supply Quiescent Drain Current</td>
<td>190</td>
<td></td>
<td></td>
<td>mA</td>
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</tbody>
</table>
MECWideX - Selected Measurements

Test Conditions: $T_{\text{base, plate}} = 25^\circ \text{C}$, $V_d = 6 \, \text{V}$, $I_{dq} = 190 \, \text{mA}$
**Bond Pad Configuration & Assembly Recommendations**

Eutectic Die bond using AuSn (80/20) solder is recommended.

The backside of the die is the Source (ground) contact.

Thermosonic ball or wedge bonding are the preferred connection methods.

Gold wire must be used for connections.

**Bias Procedure**

**Bias-Up**
1. Vg set to -1.5 V.
2. Vd set to +6 V.
3. Adjust Vg until quiescent Id is 190 mA (Vg = -0.5 V Typical).
4. Apply RF signal.

**Bias-Down**
1. Turn off RF signal.
2. Reduce Vg to -1.5 V (Id0 ≈ 0 mA).
3. Set Vd to 0 V.
4. Turn off Vd.
5. Turn off Vg.
Contact Information

For additional technical Information and Requirements:
Email: contact.mec@mec-mmic.com  
Tel: +39 0516333403

For sales Information and Requirements:
Email: sales@mec-mmic.com  
Tel: +39 0637511124

Notice

The furnished information is believed to be reliable. However, performances and specifications contained herein are based on preliminary characterizations and then susceptible to possible variations. On the basis of customer requirements the product can be tested and characterized in specific operating conditions and, if needed, tuned to meet custom specifications.

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