FEATURES

- **BROAD BAND INTERNALLY MATCHED FET**
- **HIGH POWER**
  \( P_{1dB} = 45.0\text{dBm} \) at 5.85GHz to 6.75GHz
- **HIGH GAIN**
  \( G_{1dB} = 10.0\text{dB} \) at 5.85GHz to 6.75GHz
- **LOW INTERMODULATION DISTORTION**
  \( IM3 = -44\text{dBc (Min.)} \) at \( P_{out} = 34\text{dBm} \) (Single Carrier Level)
- **HERMETICALLY SEALED PACKAGE**

RF PERFORMANCE SPECIFICATIONS \((Ta = 25°C)\)

<table>
<thead>
<tr>
<th>CHARACTERISTICS</th>
<th>SYMBOL</th>
<th>CONDITIONS</th>
<th>UNIT</th>
<th>MIN.</th>
<th>TYP.</th>
<th>MAX.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Output Power at 1dB</td>
<td>P1dB</td>
<td>VDS= 10V, f= 5.85 to 6.75GHz</td>
<td>dBm</td>
<td>44.0</td>
<td>45.0</td>
<td>—</td>
</tr>
<tr>
<td>Gain Compression Point</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Power Gain at 1dB</td>
<td>G1dB</td>
<td>VDS= 10V, IDSset= 6.4A</td>
<td>dB</td>
<td>9.0</td>
<td>10.0</td>
<td>—</td>
</tr>
<tr>
<td>Gain Compression Point</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Drain Current</td>
<td>IDS1</td>
<td></td>
<td>A</td>
<td>—</td>
<td>7.0</td>
<td>8.0</td>
</tr>
<tr>
<td>Gain Flatness</td>
<td>ΔG</td>
<td></td>
<td>dB</td>
<td>—</td>
<td>—</td>
<td>—</td>
</tr>
<tr>
<td>Power Added Efficiency</td>
<td>ηadd</td>
<td></td>
<td>%</td>
<td>—</td>
<td>41</td>
<td>—</td>
</tr>
<tr>
<td>3rd Order Intermodulation Distortion</td>
<td>IM3</td>
<td>Two-Tone Test Po= 34dBm, Δf= 5MHz</td>
<td>dBc</td>
<td>-44</td>
<td>-47</td>
<td>—</td>
</tr>
<tr>
<td>Drain Current</td>
<td>IDS2</td>
<td>(VDS × IDS + Pin – P1dB) × Rth(c-c)</td>
<td>A</td>
<td>7.0</td>
<td>8.0</td>
<td>—</td>
</tr>
<tr>
<td>Channel Temperature Rise</td>
<td>ΔTch</td>
<td></td>
<td>°C</td>
<td>—</td>
<td>—</td>
<td>100</td>
</tr>
</tbody>
</table>

Recommended Gate Resistance(Rg): 28 Ω

ELECTRICAL CHARACTERISTICS \((Ta = 25°C)\)

<table>
<thead>
<tr>
<th>CHARACTERISTICS</th>
<th>SYMBOL</th>
<th>CONDITIONS</th>
<th>UNIT</th>
<th>MIN.</th>
<th>TYP.</th>
<th>MAX.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Transconductance</td>
<td>gm</td>
<td>VDS= 3V, IDS= 10.0A</td>
<td>S</td>
<td>—</td>
<td>8.0</td>
<td>—</td>
</tr>
<tr>
<td>Pinch-off Voltage</td>
<td>VGSO</td>
<td>VDS= 3V, IDS= 80mA</td>
<td>V</td>
<td>-0.5</td>
<td>-2.0</td>
<td>-3.0</td>
</tr>
<tr>
<td>Saturated Drain Current</td>
<td>IDSS</td>
<td>VDS= 3V, VGS= 0V</td>
<td>A</td>
<td>—</td>
<td>16.0</td>
<td>—</td>
</tr>
<tr>
<td>Gate-Source Breakdown Voltage</td>
<td>VGSO</td>
<td>IGS= -240μA</td>
<td>V</td>
<td>-5</td>
<td>—</td>
<td>—</td>
</tr>
<tr>
<td>Thermal Resistance</td>
<td>Rth(c-c)</td>
<td>Channel to Case</td>
<td>°CW</td>
<td>—</td>
<td>1.0</td>
<td>1.5</td>
</tr>
</tbody>
</table>

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### Absolute Maximum Ratings (Ta = 25°C)

<table>
<thead>
<tr>
<th>Characteristics</th>
<th>Symbol</th>
<th>Unit</th>
<th>Rating</th>
</tr>
</thead>
<tbody>
<tr>
<td>Drain-Source Voltage</td>
<td>VDS</td>
<td>V</td>
<td>15</td>
</tr>
<tr>
<td>Gate-Source Voltage</td>
<td>VGS</td>
<td>V</td>
<td>-5</td>
</tr>
<tr>
<td>Drain Current</td>
<td>IDS</td>
<td>A</td>
<td>18.0</td>
</tr>
<tr>
<td>Total Power Dissipation (Tc= 25°C)</td>
<td>PT</td>
<td>W</td>
<td>100</td>
</tr>
<tr>
<td>Channel Temperature</td>
<td>Tch</td>
<td>°C</td>
<td>175</td>
</tr>
<tr>
<td>Storage</td>
<td>Tstg</td>
<td>°C</td>
<td>-65 to +175</td>
</tr>
</tbody>
</table>

### Package Outline (7-AA05A)

Unit in mm

1. Gate
2. Source
3. Drain

### Handling Precautions for Package Model

Soldering iron should be grounded and the operating time should not exceed 10 seconds at 260°C or 3 seconds at 350°C.
TYPICAL RF PERFORMANCE

- $P_{out}$, Gain, PAE, IDS vs. Pin

$V_{DS} = 10 \, V$, $IDS_{set} = 6.4 \, A$, $f = 5.85, 6.3, 6.75 \, GHz$, $Ta = +25 \, ^{\circ}C$

\begin{align*}
\text{Pout vs Pin} \\
V_{DS} &= 10V, IDS_{set} = 6.4A_{set} \\
\begin{array}{c}
5.85GHz \\
6.3GHz \\
6.75GHz
\end{array}
\end{align*}

\begin{align*}
\text{Gain vs Pin} \\
V_{DS} &= 10V, IDS_{set} = 6.4A_{set} \\
\begin{array}{c}
5.85GHz \\
6.3GHz \\
6.75GHz
\end{array}
\end{align*}

\begin{align*}
\text{PAE vs Pin} \\
V_{DS} &= 10V, IDS_{set} = 6.4A_{set} \\
\begin{array}{c}
5.85GHz \\
6.3GHz \\
6.75GHz
\end{array}
\end{align*}

\begin{align*}
\text{IDS vs Pin} \\
V_{DS} &= 10V, IDS_{set} = 6.4A_{set} \\
\begin{array}{c}
5.85GHz \\
6.3GHz \\
6.75GHz
\end{array}
\end{align*}
Pout vs Frequency

VDS= 10 V, IDSset= 6.4 A, Ta= +25 °C
- Pout, Gain, PAE, IDS vs. Pin vs. IDSset

VDS = 10 V, IDSset = 5.4, 6.4, 7.4 A, f = 6.3 GHz, Ta = +25 °C
Pout, Gain, PAE, IDS vs. Pin vs. Temperature

VDS = 10 V, IDSset = 6.4 A, f = 6.3 GHz, Ta = -25, +25, +75 °C
- S-Parameters

VDS= 10 V, IDSset= 6.4 A, f= 4.5 to 8.0 GHz, Ta= +25 °C

S11, S22

S21, S12
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