FEATURES
- BROAD BAND INTERNALLY MATCHED HEMT
- HIGH POWER
  Pout= 44.5dBm at Pin= 35dBm
- HIGH GAIN
  GL= 13.5dB at Pin= 20dBm
- LOW INTERMODULATION DISTORTION
  IM3= -40dBc(Min.) at Pout= 29dBm (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</td>
<td>Pout</td>
<td>VDS= 24V, IDSS= 1.75A, f= 5.85 to 6.75 GHz</td>
<td>dBm</td>
<td>44.0</td>
<td>44.5</td>
<td></td>
</tr>
<tr>
<td>Drain Current</td>
<td>IDS1</td>
<td>@Pin= 35dBm</td>
<td>A</td>
<td></td>
<td>2.7</td>
<td>3.2</td>
</tr>
<tr>
<td>Power Added Efficiency</td>
<td>ηadd</td>
<td>@Pin= 20dBm</td>
<td>%</td>
<td></td>
<td>39</td>
<td></td>
</tr>
<tr>
<td>Linear Gain</td>
<td>GL</td>
<td>@Pin= 20dBm</td>
<td>dB</td>
<td>12.5</td>
<td>13.5</td>
<td></td>
</tr>
<tr>
<td>Gain Flatness</td>
<td>ΔG</td>
<td></td>
<td>dB</td>
<td></td>
<td>12.5</td>
<td>±0.8</td>
</tr>
<tr>
<td>3rd Order Intermodulation</td>
<td>IM3</td>
<td>Two-Tone Test, Po= 29dBm, ΔF= 5MHz (Single Carrier Level)</td>
<td>dBc</td>
<td>-40</td>
<td>-42</td>
<td></td>
</tr>
<tr>
<td>Drain Current</td>
<td>IDS2</td>
<td></td>
<td>A</td>
<td></td>
<td>2.0</td>
<td></td>
</tr>
<tr>
<td>Channel Temperature Rise</td>
<td>ΔTch</td>
<td>(VDS x IDS + Pin − Pout) x Rth(c-c)</td>
<td>°C</td>
<td>130</td>
<td>150</td>
<td></td>
</tr>
</tbody>
</table>

Recommended Gate Resistance (Rg): 60 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= 5V, IDS= 2.5A</td>
<td>S</td>
<td>1.2</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pinch-off Voltage</td>
<td>VGSoff</td>
<td>VDS= 5V, IDS= 12mA</td>
<td>V</td>
<td>-2.6</td>
<td>-4.0</td>
<td>-6.0</td>
</tr>
<tr>
<td>Saturated Drain Current</td>
<td>IDSS</td>
<td>VDS= 5V, VGS= 0V</td>
<td>A</td>
<td></td>
<td>7.5</td>
<td></td>
</tr>
<tr>
<td>Gate-Source Breakdown Voltage</td>
<td>VGSO</td>
<td>IGS= -5mA</td>
<td>V</td>
<td>-10</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Thermal Resistance</td>
<td>Rth(c-c)</td>
<td>Channel to Case</td>
<td>°C/W</td>
<td>2.8</td>
<td>3.2</td>
<td></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>50</td>
</tr>
<tr>
<td>Gate-Source Voltage</td>
<td>VGS</td>
<td>V</td>
<td>-10</td>
</tr>
<tr>
<td>Drain Current</td>
<td>IDS</td>
<td>A</td>
<td>7.5</td>
</tr>
<tr>
<td>Total Power Dissipation (Tc= 25°C)</td>
<td>PT</td>
<td>W</td>
<td>70</td>
</tr>
<tr>
<td>Channel Temperature</td>
<td>Tch</td>
<td>°C</td>
<td>250</td>
</tr>
<tr>
<td>Storage Temperature</td>
<td>Tstg</td>
<td>°C</td>
<td>-65 to +175</td>
</tr>
</tbody>
</table>

PACKAGE OUTLINE (7-AA04A)

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

VDS = 24 V, IDS$_{set}$ = 1.75 A, f = 5.85, 6.3, 6.75 GHz, Ta = +25 °C
IM3, IM5 vs. Pout

\(V_{DS} = 24\, V,\, \text{IDSset} = 1.75\, A,\, f = 5.85,\, 6.3,\, 6.75\, \text{GHz},\, \Delta f = 5\, \text{MHz},\, T_a = +25\, ^\circ\, C\)

\(\text{IM3 vs Pout}
\)

\(V_{DS} = 24\, V,\, \text{IDS} = 1.75\, A\)

\(f = 5.85,\, 6.3,\, 6.75\, \text{GHz}\)

\(\text{IM3 (dBc)}\)

\(\text{Pout (dBm) @ S.C.L}\)

\(\text{IM5 vs Pout}
\)

\(V_{DS} = 24\, V,\, \text{IDS} = 1.75\, A\)

\(f = 5.85,\, 6.3,\, 6.75\, \text{GHz}\)

\(\text{IM5 (dBc)}\)

\(\text{Pout (dBm) @ S.C.L}\)

- IM3, IM5 vs. Pout

\(V_{DS} = 24\, V,\, \text{IDSset} = 1.5,\, 1.75,\, 2.0\, A,\, f = 6.3\, \text{GHz},\, T_a = +25\, ^\circ\, C\)

\(\text{IM3 vs Pout}
\)

\(V_{DS} = 24\, V,\, f = 6.3\, \text{GHz}\)

\(\text{IM3 (dBc)}\)

\(\text{Pout (dBm) @ S.C.L}\)

\(\text{IM5 vs Pout}
\)

\(V_{DS} = 24\, V,\, f = 6.3\, \text{GHz}\)

\(\text{IM5 (dBc)}\)

\(\text{Pout (dBm) @ S.C.L}\)
- $P_{out}$, Gain, PAE, $I_{DS}$ vs. $P_{in}$ vs. $I_{DSset}$

$V_{DS} = 24$ V, $I_{DSset} = 1.5, 1.75, 2.0$ A, $f = 6.3$ GHz, $T_a = +25$ °C

- $P_{out}$ vs $P_{in}$
  - $V_{DS} = 24$ V, $f = 6.3$ GHz
  - $1.5$ A set
  - $1.75$ A set
  - $2.0$ A set

- Gain vs $P_{in}$
  - $V_{DS} = 24$ V, $f = 6.3$ GHz
  - $1.5$ A set
  - $1.75$ A set
  - $2.0$ A set

- PAE vs $P_{in}$
  - $V_{DS} = 24$ V, $f = 6.3$ GHz
  - $1.5$ A set
  - $1.75$ A set
  - $2.0$ A set

- $I_{DS}$ vs $P_{in}$
  - $V_{DS} = 24$ V, $f = 6.3$ GHz
  - $1.5$ A set
  - $1.75$ A set
  - $2.0$ A set
Pout, Gain, PAE, IDS vs. Pin vs. Temperature

VDS = 24 V, IDSset = 1.75 A, f = 6.3 GHz, Ta = -25, +25, +75 °C
- S-Parameters

VDS = 24 V, IDS = 1.75 A, f = 4.0 to 8.0 GHz, Ta = +25 °C

[Graphs showing S11 and S22 with frequency ranges and corresponding values]
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