FEATURES
- BROAD BAND INTERNALLY MATCHED HEMT
- HIGH POWER
  Pout= 51.0dBm at Pin= 42.0dBm
- HIGH GAIN
  GL= 13.5dB at Pin= 20.0dBm
- LOW INTERMODULATION DISTORTION
  IM3(Min.)= -25dBc at Pout= 44.0dBm
  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, IDS= 4.0A, f = 5.0 to 5.9GHz</td>
<td>dBm</td>
<td>50.0</td>
<td>51.0</td>
<td></td>
</tr>
<tr>
<td>Drain Current</td>
<td>IDS1</td>
<td>@Pin= 42dBm</td>
<td>A</td>
<td>11.0</td>
<td>12.0</td>
<td></td>
</tr>
<tr>
<td>Power Added Efficiency</td>
<td>ηadd</td>
<td></td>
<td>%</td>
<td>40</td>
<td></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></td>
<td>±0.8</td>
</tr>
<tr>
<td>3rd Order Intermodulation</td>
<td>IM3</td>
<td>Two-Tone Test</td>
<td>dBc</td>
<td>-25</td>
<td>-27</td>
<td></td>
</tr>
<tr>
<td>Distortion</td>
<td></td>
<td>(Pin= 20dBm, Δf= 5MHz, Single Carrier Level)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Drain Current</td>
<td>IDS2</td>
<td></td>
<td>A</td>
<td></td>
<td></td>
<td>8.0</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>120</td>
<td>140</td>
<td></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= 5V, IDS= 10.0A</td>
<td>S</td>
<td></td>
<td>8.0</td>
<td></td>
</tr>
<tr>
<td>Pinch-off Voltage</td>
<td>VGSoff</td>
<td>VDS= 5V, IDS= 46mA</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>28</td>
<td></td>
</tr>
<tr>
<td>Gate-Source Breakdown Voltage</td>
<td>VGSO</td>
<td>IGS= -20mA</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>0.6</td>
<td>0.8</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>18.0</td>
</tr>
<tr>
<td>Total Power Dissipation (Tc= 25°C)</td>
<td>PT</td>
<td>W</td>
<td>280</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-AA06A)

![Package Outline Diagram]

**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.
**Pout, Gain, PAE, IDS vs. Pin**

VDS = 24 V, IDSset = 4.0 A, f = 5.0, 5.45, 5.9 GHz, Ta = +25 °C

**Pout vs Pin**
VDS = 24V, IDS = 4A
- 5.0GHz
- 5.45GHz
- 5.9GHz

**Gain vs Pin**
VDS = 24V, IDS = 4A
- 5.0GHz
- 5.45GHz
- 5.9GHz

**PAE vs Pin**
VDS = 24V, IDS = 4A
- 5.0GHz
- 5.45GHz
- 5.9GHz

**IDS vs Pin**
VDS = 24V, IDS = 4A
- 5.0GHz
- 5.45GHz
- 5.9GHz
- IM3, IM5 vs. Pout

VDS = 24 V, IDSset = 4.0 A, f = 5.0, 5.45, 5.9 GHz, Δf = 5 MHz, Ta = +25 °C

IM3 vs Pout
VDS=24V, IDS=4A

IM5 vs Pout
VDS=24V, IDS=4A
- Pout, Gain, PAE, IDS vs. Pin vs. Temperature

VDS = 24 V, IDSset = 4.0 A, f = 5.45 GHz, Ta = -25, +25, +75 °C

**Pout vs Pin**
VDS=24V, IDS=4A, f=5.45GHz

**Gain vs Pin**
VDS=24V, IDS=4A, f=5.45GHz

**PAE vs Pin**
VDS=24V, IDS=4A, f=5.45GHz

**IDS vs Pin**
VDS=24V, IDS=4A, f=5.45GHz
- S-Parameters

VDS = 24 V, IDS = 4.0 A, f = 4.0 to 9.0 GHz, Ta = +25 °C

\[ S_{11}, S_{22} \]

VDS = 24V, IDS = 4A

\[ S_{21}, S_{12} \]

VDS = 24V, IDS = 4A
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