### FEATURES

- **BROAD BAND INTERNALLY MATCHED FET**
- **HIGH POWER**
  - $P_{1dB} = 46.5$ dBm at 7.7GHz to 8.5GHz
- **HIGH GAIN**
  - $G_{1dB} = 6.0$ dB at 7.7GHz to 8.5GHz
- **LOW INTERMODULATION DISTORTION**
  - $IM_3 = -45$ dBc at $P_{out} = 35.5$ dBm (Single Carrier Level)
- **HERMETICALLY SEALED PACKAGE**

### RF PERFORMANCE SPECIFICATIONS  \( (T_a=25°C) \)

<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>
</table>
| Output Power at 1dB                    | $P_{1dB}$ | $V_{DS}= 10$ V  
Gain Compression Point               |         | $I_{DS}= 9.0$ A  
$ f= 7.7$ to 8.5GHz                   | dBm    | 46.0  | 46.5  |  —    |
| Power Gain at 1dB                      | $G_{1dB}$ | $V_{DS}= 10$ V  
Gain Compression Point               |         | $I_{DS}= 9.0$ A  
$ f= 7.7$ to 8.5GHz                   | dB     | 5.0   | 6.0   |  —    |
| Drain Current                          | $I_{DS1}$ | A  
Gain Flatness                        | $\Delta G$ | $f= 7.7$ to 8.5GHz | A  |  9.6  | 10.8  |
| Power Added Efficiency                 | $\eta_{add}$ | %                                  |        |      | 35    |  —    |
| 3rd Order Intermodulation Distortion  | $IM_3$ | Two-Tone Test  
$P_o= 35.5$ dBm, $\Delta f= 5$ MHz  
(Single Carrier Level)          | dBc    | -42   | -45   |  —    |
| Drain Current                          | $I_{DS2}$ | A  
Channel Temperature Rise             | $\Delta T_{ch}$ | $(V_{DS} \times I_{DS} + P_{out} - P_{1dB}) \times R_{th(c-c)}$ | °C |  9.6  | 10.8  |

Recommended Gate Resistance (Rg): 28 Ω

### ELECTRICAL CHARACTERISTICS  \( (T_a=25°C) \)

<table>
<thead>
<tr>
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<th>UNIT</th>
<th>MIN.</th>
<th>TYP.</th>
<th>MAX.</th>
</tr>
</thead>
</table>
| Transconductance                       | $g_m$  | $V_{DS}= 3$ V  
ID$S= 11.0$ A                        | S      | 8.0   |  —    |  —    |
| Pinch-off Voltage                      | $V_{GSO}$ | $V_{DS}= 3$ V  
ID$S= 170$ mA                         | V      | -1.0  | -2.5  | -4.0  |
| Saturated Drain Current                | $I_{DSS}$ | $V_{DS}= 3$ V  
VGS$= 0$ V                            | A      | 24    |  —    |  —    |
| Gate-Source Breakdown Voltage          | $V_{GSO}$ | $I_{GS}= -500$ nA                   | V      | -5    |  —    |  —    |
| Thermal Resistance                     | $R_{th(c-c)}$ | Channel to Case                     | °C/W   | 0.8   | 1.2   |  —    |

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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>20</td>
</tr>
<tr>
<td>Total Power Dissipation (Tc= 25°C)</td>
<td>PT</td>
<td>W</td>
<td>125</td>
</tr>
<tr>
<td>Channel Temperature</td>
<td>Tch</td>
<td>°C</td>
<td>175</td>
</tr>
<tr>
<td>Storage Temperature</td>
<td>Tstg</td>
<td>°C</td>
<td>-65 to +175</td>
</tr>
</tbody>
</table>

PACKAGE OUTLINE (2-16G1B)

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, $I_{DS}$ vs. $P_{in}$

VDS = 10 V, IDS = 9 A, f = 7.7, 8.1, 8.5 GHz, $T_a$ = +25 °C

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**Pout vs Pin**

**Gain vs Pin**

**PAE vs Pin**

**IDS vs Pin**
Pout vs. Frequency

VDS= 10 V, IDS= 9.0 A, Ta= +25 °C

Pout vs Freq
VDS=10A IDS=9Aset

\[ Pout (\text{dBm}) \]

\[ f (\text{GHz}) \]

- 40dBm
- 38dBm
- 36dBm
- 34dBm
- 32dBm
- 30dBm
- 28dBm
- 26dBm
- 24dBm
- Pout, Gain, PAE, IDS vs. Pin vs. IDSset

$V_{DS} = 10 \text{ V, } \text{IDS}_{\text{set}} = 8.0, 9.0, 10.0 \text{ A, } f = 8.1 \text{ GHz, } T_a = +25 \ ^\circ \text{C}$
- Pout, Gain, PAE, IDS vs. Pin vs. Temperature

VDS = 10 V, IDSset = 9.0 A, f = 8.1 GHz, Ta = -25, +25, +75 °C
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