RF Power MOSFET Transistor
60 W, 2 - 175 MHz, 28 V

Features
- N-Channel enhancement mode device
- DMOS structure
- Lower capacitances for broadband operation
- High saturated output power
- Lower noise figure than bipolar devices
- RoHS Compliant

ABSOLUTE MAXIMUM RATINGS AT 25°C

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Symbol</th>
<th>Rating</th>
<th>Units</th>
</tr>
</thead>
<tbody>
<tr>
<td>Drain-Source Voltage</td>
<td>V_DS</td>
<td>65</td>
<td>V</td>
</tr>
<tr>
<td>Gate-Source Voltage</td>
<td>V_GS</td>
<td>20</td>
<td>V</td>
</tr>
<tr>
<td>Drain-Source Current</td>
<td>I_DS</td>
<td>12</td>
<td>A</td>
</tr>
<tr>
<td>Power Dissipation</td>
<td>P_D</td>
<td>159</td>
<td>W</td>
</tr>
<tr>
<td>Junction Temperature</td>
<td>T_J</td>
<td>200</td>
<td>°C</td>
</tr>
<tr>
<td>Storage Temperature</td>
<td>T_STG</td>
<td>-65 to +150</td>
<td>°C</td>
</tr>
<tr>
<td>Thermal Resistance</td>
<td>θ_JC</td>
<td>1.1</td>
<td>°C/W</td>
</tr>
</tbody>
</table>

TYPICAL DEVICE IMPEDANCE

<table>
<thead>
<tr>
<th>F (MHz)</th>
<th>Z_IN (Ω)</th>
<th>Z_LOAD (Ω)</th>
</tr>
</thead>
<tbody>
<tr>
<td>30</td>
<td>9.0 - j4.0</td>
<td>6.0 + j0.0</td>
</tr>
<tr>
<td>50</td>
<td>10.0 - j6.5</td>
<td>5.0 + j2.0</td>
</tr>
<tr>
<td>100</td>
<td>6.0 - j5.5</td>
<td>4.0 + j3.0</td>
</tr>
<tr>
<td>200</td>
<td>1.1 - j3.0</td>
<td>2.0 + j1.9</td>
</tr>
</tbody>
</table>

Z_IN is the series equivalent input impedance of the device from gate to source.

Z_LOAD is the optimum series equivalent load impedance as measured from drain to ground.

ELECTRICAL CHARACTERISTICS AT 25°C

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Symbol</th>
<th>Min</th>
<th>Max</th>
<th>Units</th>
<th>Test Conditions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Drain-Source Breakdown Voltage</td>
<td>BV_DSS</td>
<td>65</td>
<td>-</td>
<td>V</td>
<td>V_GS = 0.0 V, I_GS = 15.0 mA</td>
</tr>
<tr>
<td>Drain-Source Leakage Current</td>
<td>I_GSS</td>
<td>-</td>
<td>3.0</td>
<td>mA</td>
<td>V_GS = 28.0 V, V_GS = 0.0 V</td>
</tr>
<tr>
<td>Gate-Source Leakage Current</td>
<td>I_GSS</td>
<td>-</td>
<td>3.0</td>
<td>μA</td>
<td>V_GS = 20.0 V, V_GS = 0.0 V</td>
</tr>
<tr>
<td>Gate Threshold Voltage</td>
<td>V_GS(TH)</td>
<td>2.0</td>
<td>6.0</td>
<td>V</td>
<td>V_DDS = 10.0 V, I_GS = 300 mA</td>
</tr>
<tr>
<td>Forward Transconductance</td>
<td>G_M</td>
<td>1.5</td>
<td>-</td>
<td>S</td>
<td>V_GS = 10.0 V, I_GS = 3.0 A, Δ V_GS = 1.0V, 80 μs Pulse</td>
</tr>
<tr>
<td>Input Capacitance</td>
<td>C_RS</td>
<td>-</td>
<td>135</td>
<td>pF</td>
<td>V_GS = 28.0 V, F = 1.0 MHz</td>
</tr>
<tr>
<td>Output Capacitance</td>
<td>C_OSS</td>
<td>-</td>
<td>120</td>
<td>pF</td>
<td>V_GS = 28.0 V, F = 1.0 MHz</td>
</tr>
<tr>
<td>Reverse Capacitance</td>
<td>C_RSS</td>
<td>-</td>
<td>24</td>
<td>pF</td>
<td>V_GS = 28.0 V, F = 1.0 MHz</td>
</tr>
<tr>
<td>Power Gain</td>
<td>G_P</td>
<td>13</td>
<td>-</td>
<td>dB</td>
<td>V_DDS = 28.0 V, I_GS = 300 mA, P_OUT = 60 W F =175 MHz</td>
</tr>
<tr>
<td>Drain Efficiency</td>
<td>η_D</td>
<td>60</td>
<td>-</td>
<td>%</td>
<td>V_DDS = 28.0 V, I_GS = 300 mA, P_OUT = 60 W F =175 MHz</td>
</tr>
<tr>
<td>Load Mismatch Tolerance</td>
<td>VSWR-T</td>
<td>-</td>
<td>30:1</td>
<td>-</td>
<td>V_DDS = 28.0 V, I_GS = 300 mA, P_OUT = 60 W F =175 MHz</td>
</tr>
</tbody>
</table>
**Typical Broadband Performance Curves**

**GAIN vs FREQUENCY**  
\[V_{DD}=28\ V \ I_{DO}=300\ mA \ P_{OUT}=60\ W\]

**EFFICIENCY vs FREQUENCY**  
\[V_{DD}=28\ V \ I_{DO}=300\ mA \ P_{OUT}=60\ W\]

**POWER OUTPUT vs POWER INPUT**  
\[V_{DD}=28\ V \ I_{DO}=300\ mA\]
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TEST FIXTURE SCHEMATIC

L1: 7 TURNS OF NO. 14 AWG COPPER WIRE ON 6.25" L2: NO. 14 AWG COPPER WIRE THRU FERRITE BEAD
BOARD TYPE: FR-4 1.062" THICK 1 OZ COPPER BOTH SIDES

TEST FIXTURE ASSEMBLY

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