RF Power MOSFET Transistor
5W, 100-500 MHz, 28V

Features
- N-channel enhancement mode device
- DMOS structure
- Lower capacitances for broadband operation
- Common source configuration
- Lower noise floor
- 100 MHz to 500 MHz operation

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>1.4</td>
<td>A</td>
</tr>
<tr>
<td>Power Dissipation</td>
<td>P_D</td>
<td>14.4</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>-55 to +150</td>
<td>°C</td>
</tr>
<tr>
<td>Thermal Resistance</td>
<td>θ_JC</td>
<td>12.1</td>
<td>°C/W</td>
</tr>
</tbody>
</table>

TYPICAL DEVICE IMPEDANCES

<table>
<thead>
<tr>
<th>F (MHz)</th>
<th>Z_IN (Ω)</th>
<th>Z_LOAD (Ω)</th>
</tr>
</thead>
<tbody>
<tr>
<td>100</td>
<td>15.0+j8.0</td>
<td>35.0+j55.0</td>
</tr>
<tr>
<td>300</td>
<td>8.0+j43.0</td>
<td>29.0+j40.0</td>
</tr>
<tr>
<td>500</td>
<td>4.0+j29.0</td>
<td>28.0+j29.0</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 drain.

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_OSS</td>
<td>65</td>
<td>-</td>
<td>V</td>
<td>V_GS = 0.0 V, I_DS = 2.0 mA</td>
</tr>
<tr>
<td>Drain-Source Leakage Current</td>
<td>I_OSS</td>
<td>-</td>
<td>1.0</td>
<td>mA</td>
<td>V_GS = 28.0 V, V_DS = 0.0 V</td>
</tr>
<tr>
<td>Gate-Source Leakage Current</td>
<td>I_GSS</td>
<td>-</td>
<td>1.0</td>
<td>μA</td>
<td>V_GS = 20.0 V, V_DS = 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_GS = 10.0 V, I_OSS = 10.0 mA</td>
</tr>
<tr>
<td>Forward Transconductance</td>
<td>G_M</td>
<td>80</td>
<td>-</td>
<td>S</td>
<td>V_GS = 10.0 V, I_OSS 1.0 mA, ΔV_GS = 1.0V, 80 μs Pulse</td>
</tr>
<tr>
<td>Input Capacitance</td>
<td>C_GS</td>
<td>-</td>
<td>7.0</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>5</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>2.4</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>10</td>
<td>-</td>
<td>dB</td>
<td>V_GD = 28.0 V, I_OSS = 50 mA, P_OUT = 5.0 W F =500 MHz</td>
</tr>
<tr>
<td>Drain Efficiency</td>
<td>η_D</td>
<td>50</td>
<td>-</td>
<td>%</td>
<td>V_GD = 28.0 V, I_OSS = 50 mA, P_OUT = 5.0 W F =500 MHz</td>
</tr>
<tr>
<td>Load Mismatch Tolerance</td>
<td>VSWR-T</td>
<td>-</td>
<td>20:1</td>
<td>-</td>
<td>V_GD = 28.0 V, I_OSS = 50 mA, P_OUT = 5.0 W F =500 MHz</td>
</tr>
</tbody>
</table>

For further information and support please visit: https://www.macom.com/support
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Typical Broadband Performance Curves

**CAPACITANCES vs VOLTAGE**

\[ F = 1.0 \text{MHz} \]

\[ V_{DS} \text{(V)} \]

\[ C_{GS} \]

\[ C_{DS} \]

**POWER OUTPUT vs VOLTAGE**

\[ P_{IN} = 0.4 \text{ W} \quad I_{DQ} = 5.0 \text{ mA} \quad P_{OUT} = 500 \text{ W} \]

**GAIN vs FREQUENCY**

\[ V_{DD} = 28 \text{ V} \quad P_{OUT} = 5.0 \text{ W} \quad I_{DQ} = 50 \text{ mA} \]

**EFFICIENCY vs FREQUENCY**

\[ V_{DD} = 28 \text{ V} \quad I_{DQ} = 50 \text{ mA} \quad P_{OUT} = 5.0 \text{ W} \]

**POWER OUTPUT vs POWER INPUT**

\[ V_{DD} = 28 \text{ V} \quad I_{DQ} = 50 \text{ mA} \]

**POWER OUTPUT** vs **POWER INPUT**

\[ P_{OUT} (W) \]

\[ P_{IN} (W) \]

\[ V_{DD} = 28 \text{ V} \quad I_{DQ} = 50 \text{ mA} \]

\[ 100 \text{MHz}, 300 \text{MHz}, 500 \text{MHz} \]

Visit www.macom.com for additional data sheets and product information.
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