UF2815B

RF Power MOSFET Transistor
15W, 100-500 MHz, 28V

Features
- N-Channel enhancement mode device
- DMOS structure
- Lower capacitances for broadband operation
- Common source configuration
- Lower noise floor
- RoHS Compliant
- 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>4.2</td>
<td>A</td>
</tr>
<tr>
<td>Power Dissipation</td>
<td>P_D</td>
<td>48.6</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>3.6</td>
<td>°C/W</td>
</tr>
</tbody>
</table>

**TYPICAL DEVICE IMPEDANCES**

\[
\begin{array}{c|c|c}
 F (MHz) & Z_{IN} (\Omega) & Z_{LOAD} (\Omega) \\
100     & 6.4-j25.0     & 22.0+j16.0 \\
300     & 6.5-j12.0     & 15.0+j14.0 \\
500     & 1.7-j10.5     & 8.0-j10.5 \\
\end{array}
\]

\[V_{DD}=28V, I_{DQ}=150 mA, P_{OUT}=15.0 W\]

\[Z_{IN}\] 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>
</tr>
</thead>
<tbody>
<tr>
<td>Drain-Source Breakdown Voltage</td>
<td>V_{BDS}</td>
<td>65</td>
<td>-</td>
<td>V</td>
</tr>
<tr>
<td>Drain-Source Leakage Current</td>
<td>I_{DSS}</td>
<td>-</td>
<td>3.0</td>
<td>mA</td>
</tr>
<tr>
<td>Gate-Source Leakage Current</td>
<td>I_{GS}</td>
<td>-</td>
<td>3.0</td>
<td>μA</td>
</tr>
<tr>
<td>Gate Threshold Voltage</td>
<td>V_{GS(TH)}</td>
<td>2.0</td>
<td>6.0</td>
<td>V</td>
</tr>
<tr>
<td>Forward Transconductance</td>
<td>G_m</td>
<td>240</td>
<td>-</td>
<td>S</td>
</tr>
<tr>
<td>Input Capacitance</td>
<td>C_{ISS}</td>
<td>-</td>
<td>21</td>
<td>pF</td>
</tr>
<tr>
<td>Output Capacitance</td>
<td>C_{OS}</td>
<td>-</td>
<td>15</td>
<td>pF</td>
</tr>
<tr>
<td>Reverse Capacitance</td>
<td>C_{RSS}</td>
<td>-</td>
<td>7.2</td>
<td>pF</td>
</tr>
<tr>
<td>Power Gain</td>
<td>G_p</td>
<td>10</td>
<td>-</td>
<td>dB</td>
</tr>
<tr>
<td>Drain Efficiency</td>
<td>η_D</td>
<td>50</td>
<td>-</td>
<td>%</td>
</tr>
<tr>
<td>Load Mismatch Tolerance</td>
<td>VSWR-T</td>
<td>-</td>
<td>20:1</td>
<td>-</td>
</tr>
</tbody>
</table>

**Test Conditions**

\[V_{DS} = 0.0 \text{ V}, I_{DS} = 6.0 \text{ mA}\]
\[V_{GS} = 28.0 \text{ V}, V_{DS} = 0.0 \text{ V}\]
\[V_{GS} = 20.0 \text{ V}, V_{DS} = 0.0 \text{ V}\]
\[V_{DS} = 10.0 \text{ V}, I_{DS} = 30.0 \text{ mA}\]
\[V_{DS} = 10.0 \text{ V}, I_{DS} = 300.0 \text{ mA}, ΔV_{GS} = 1.0 \text{ V}, 80 \mu\text{s Pulse}\]
\[V_{DS} = 28.0 \text{ V}, F = 1.0 \text{ MHz}\]
\[V_{DS} = 28.0 \text{ V}, F = 1.0 \text{ MHz}\]

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

**CAPACITANCES vs VOLTAGE**  
F=1.0MHz

**POWER OUTPUT vs VOLTAGE**  
P_{IN}=1.0 W I_{DO}=150 mA P_{OUT}=500 W

**GAIN vs FREQUENCY**  
V_{DD}=28 V P_{OUT}=15 W I_{DO}=100 mA

**EFFICIENCY vs FREQUENCY**  
V_{DD}=28V I_{DO}=150 mA P_{OUT}=15 W

**POWER OUTPUT vs POWER INPUT**  
V_{DD}=28 V I_{DO}=150 mA

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TEST FIXTURE SCHEMATICS

L1, L2 8 TURNS OF NO. 22 AWG ON 0.12”
L3 20 TURNS OF NO. 22 AWG ON 0.12”
BOARD TYPE TEFLOC FIREGLASS .062” THICK 1 OZ. COPPER ON BOTH SIDES

TEST FIXTURE ASSEMBLY
RF Power MOSFET Transistor
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