LF2805A

RF Power MOSFET Transistor
5 W, 500 - 1000 MHz, 28 V

Features
- N-Channel enhancement mode device
- DMOS structure
- Lower capacitances for broadband operation
- Common source configuration
- Lower noise floor
- Applications
  - Broadband linear operation
  - 500 MHz to 1400 MHz
- RoHS Compliant

Absolute Maximum Ratings @ 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>VDS</td>
<td>65</td>
<td>V</td>
</tr>
<tr>
<td>Gate-Source Voltage</td>
<td>VGS</td>
<td>20</td>
<td>V</td>
</tr>
<tr>
<td>Drain-Source Current</td>
<td>IDS</td>
<td>1.4</td>
<td>A</td>
</tr>
<tr>
<td>Power Dissipation</td>
<td>PD</td>
<td>14.4</td>
<td>W</td>
</tr>
<tr>
<td>Junction Temperature</td>
<td>TJ</td>
<td>200</td>
<td>°C</td>
</tr>
<tr>
<td>Storage Temperature</td>
<td>TSTG</td>
<td>-65 to +150</td>
<td>°C</td>
</tr>
<tr>
<td>Thermal Resistance</td>
<td>θJC</td>
<td>12.1</td>
<td>°C/W</td>
</tr>
</tbody>
</table>

Typical Device Impedance

\[
\begin{array}{c|c|c}
F (MHz) & Z_i (\Omega) & Z_{LOAD} (\Omega) \\
\hline
500     & 4.3 - j29.0 & 27.3 + j28.6 \\
1000    & 2.2 - j2.75 & 8.0 + j16.0 \\
1400    & 2.8 - j3.0  & 9.4 + j10.6 \\
\end{array}
\]

\[V_{DD} = 28\, V, I_{DS} = 50\, mA, P_{OUT} = 5.0\, W\]

- \( Z_i \) 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 @ 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(DS)</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>IDS</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>IGSS</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>VGS(TH)</td>
<td>2.0</td>
<td>6.0</td>
<td>V</td>
<td>( V_{DS} = 10.0, V, I_{DS} = 10.0, mA )</td>
</tr>
<tr>
<td>Forward Transconductance</td>
<td>GM</td>
<td>80</td>
<td>-</td>
<td>mS</td>
<td>( V_{DS} = 10.0, V, I_{DS} = 100.0, mA, \Delta V_{GS} = 1.0V, 80, \mu s ) Pulse</td>
</tr>
<tr>
<td>Input Capacitance</td>
<td>Ciss</td>
<td>-</td>
<td>7</td>
<td>pF</td>
<td>( V_{DS} = 28.0, V, F = 1.0, MHz )</td>
</tr>
<tr>
<td>Output Capacitance</td>
<td>Coss</td>
<td>-</td>
<td>5</td>
<td>pF</td>
<td>( V_{DS} = 28.0, V, F = 1.0, MHz )</td>
</tr>
<tr>
<td>Reverse Capacitance</td>
<td>Crss</td>
<td>-</td>
<td>2.4</td>
<td>pF</td>
<td>( V_{DS} = 28.0, V, F = 1.0, MHz )</td>
</tr>
<tr>
<td>Power Gain</td>
<td>GP</td>
<td>10</td>
<td>-</td>
<td>dB</td>
<td>( V_{DD} = 28.0, V, I_{DS} = 50, mA, P_{OUT} = 5.0, W F =1.0, GHz )</td>
</tr>
<tr>
<td>Drain Efficiency</td>
<td>ηD</td>
<td>50</td>
<td>-</td>
<td>%</td>
<td>( V_{DD} = 28.0, V, I_{DS} = 50, mA, P_{OUT} = 5.0, W F =1.0, GHz )</td>
</tr>
<tr>
<td>Load Mismatch Tolerance</td>
<td>VSWR-T</td>
<td>20:1</td>
<td>-</td>
<td></td>
<td>( V_{DD} = 28.0, V, I_{DS} = 50, mA, P_{OUT} = 5.0, W F =1.0, GHz )</td>
</tr>
</tbody>
</table>

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Typical Broadband Performance Curves

**CAPACITANCES vs VOLTAGE**

F = 1.0 MHz

![CAPACITANCES vs VOLTAGE graph](image)

**POWER OUTPUT vs VOLTAGE**

F = 1.0 GHz P_{in}=0.5 W I_{DQ}=50 mA

![POWER OUTPUT vs VOLTAGE graph](image)

**GAIN vs FREQUENCY**

V_{DD}=28 V I_{DQ}=50 mA P_{out}=5.0 W

![GAIN vs FREQUENCY graph](image)

**EFFICIENCY vs FREQUENCY**

V_{DD}=28 V I_{DQ}=50.0 mA P_{out}=5.0 W

![EFFICIENCY vs FREQUENCY graph](image)

**POWER OUTPUT vs POWER INPUT**

V_{DD}=28 V I_{DQ}=50 mA

![POWER OUTPUT vs POWER INPUT graph](image)
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5 W, 500 - 1000 MHz, 28 V

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