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>16</td>
<td>A</td>
</tr>
<tr>
<td>Power Dissipation</td>
<td>$P_D$</td>
<td>206</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>$\theta_{JC}$</td>
<td>0.85</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>5.4 - j4.4</td>
<td>5.7 + j4.7</td>
</tr>
<tr>
<td>50</td>
<td>2.5 - j4.4</td>
<td>3.4 + j3.5</td>
</tr>
<tr>
<td>100</td>
<td>1.6 - j3.4</td>
<td>2.4 + j2.4</td>
</tr>
<tr>
<td>175</td>
<td>0.7 - j1.2</td>
<td>1.7 + j0.8</td>
</tr>
</tbody>
</table>

$V_{DD} = 28 V, I_{DS} = 400 mA, P_{OUT} = 80 W$

$Z_{IN}$ 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>
<th>Test Conditions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Drain-Source Breakdown Voltage</td>
<td>$B_{VDS}$</td>
<td>65</td>
<td>-</td>
<td>V</td>
<td>$V_{GS} = 0.0 V, I_{DS} = 20.0 mA$</td>
</tr>
<tr>
<td>Drain-Source Leakage Current</td>
<td>$I_{DS}$</td>
<td>-</td>
<td>4.0</td>
<td>mA</td>
<td>$V_{DS} = 28.0 V, V_{GS} = 0.0 V$</td>
</tr>
<tr>
<td>Gate-Source Leakage Current</td>
<td>$I_{GS}$</td>
<td>-</td>
<td>4.0</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>$V_{DS} = 10.0 V, I_{DS} = 400.0 mA$</td>
</tr>
<tr>
<td>Forward Transconductance</td>
<td>$G_{m}$</td>
<td>2.0</td>
<td>-</td>
<td>S</td>
<td>$V_{GS} = 10.0 V, I_{DS} = 4.0 A, \Delta V_{GS} = 1.0V, 80 \mu s Pulse$</td>
</tr>
<tr>
<td>Input Capacitance</td>
<td>$C_{ISS}$</td>
<td>-</td>
<td>180</td>
<td>pF</td>
<td>$V_{DS} = 28.0 V, F = 1.0 MHz$</td>
</tr>
<tr>
<td>Output Capacitance</td>
<td>$C_{oss}$</td>
<td>-</td>
<td>160</td>
<td>pF</td>
<td>$V_{DS} = 28.0 V, F = 1.0 MHz$</td>
</tr>
<tr>
<td>Reverse Capacitance</td>
<td>$C_{rss}$</td>
<td>-</td>
<td>32</td>
<td>pF</td>
<td>$V_{DS} = 28.0 V, F = 1.0 MHz$</td>
</tr>
<tr>
<td>Power Gain</td>
<td>$G_{P}$</td>
<td>13</td>
<td>-</td>
<td>dB</td>
<td>$V_{DD} = 28.0 V, I_{DS} = 400 mA, P_{OUT} = 60.0 W F = 175 MHz$</td>
</tr>
<tr>
<td>Drain Efficiency</td>
<td>$\eta_{D}$</td>
<td>60</td>
<td>-</td>
<td>%</td>
<td>$V_{DD} = 28.0 V, I_{DS} = 400 mA, P_{OUT} = 60.0 W F = 175 MHz$</td>
</tr>
<tr>
<td>Load Mismatch Tolerance</td>
<td>VSWR-T</td>
<td>30:1</td>
<td>-</td>
<td>-</td>
<td>$V_{DD} = 28.0 V, I_{DS} = 400 mA, P_{OUT} = 60.0 W F = 175 MHz$</td>
</tr>
</tbody>
</table>
RF Power MOSFET Transistor
80 W, 2 - 175 MHz, 28 V

Typical Broadband Performance Curves

- **Gain vs Frequency**
  - $V_{DD}=28$ V $I_{DQ}=400$ mA $P_{OUT}=80$ W
  - Frequency range: 25 MHz to 175 MHz

- **Efficiency vs Frequency**
  - $V_{DD}=28$ V $I_{DQ}=400$ mA $P_{OUT}=80$ W
  - Frequency range: 25 MHz to 175 MHz

- **Power Output vs Power Input**
  - $V_{DD}=28$ V $I_{DQ}=400$ mA
  - Frequency: 30 MHz, 100 MHz, 175 MHz

- **Power Output vs Supply Voltage**
  - $I_{DQ}=400$ mA $F=175$ MHz $P_{IN}=3.0$ W

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

TEST FIXTURE SCHEMATIC

VGS J3

VDS J4

C12

C11

C10

L4

C9

C8

RF IN J1

C1

L1

Q1

L2

C2

C3

C4

R1

Q1

L3

C7

C6

C5

R2

C12

C11

C10

L4

C9

C8

RF OUT J2

VDS = 28 VOLTS
IDQ = 400mA

PARTS LIST

C1,C3 TRIMMER CAPACITOR 4-40pF
C2,C9,C10 CAPACITOR 50pF
C4,C11 CAPACITOR 1000pF
C5 MONOLITHIC CIRCUIT CAPACITOR 0.01μF
C6,C8 TRIMMER CAPACITOR 9-180pF
C7 CAPACITOR 15pF
C12 ELECTROLYTIC CAPACITOR 50μF 50 VOLT
L1 NO. 12 AWG COPPER WIRE X 1.18" (LOOP 0.5")
L2 NO. 12 AWG COPPER WIRE X 1" (LOOP 0.4")
L3,L4 8 TURNS OF NO. 18 AWG ENAMEL WIRE ON
Ø0.25", CLOSE WOUND
R1 RESISTOR 300 OHMS 0.5 WATT
R2 RESISTOR 2.7K OHMS 0.25 WATT
Q1 DU2880T
BOARD FR4 0.062"
RF Power MOSFET Transistor
80 W, 2 - 175 MHz, 28 V

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