Features

- N-channel enhancement mode device
- DMOS structure
- Lower capacitances for broadband operation
- Common source configuration
- Lower noise floor

**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*</td>
<td>A</td>
</tr>
<tr>
<td>Power Dissipation</td>
<td>P_{D}</td>
<td>116</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>1.5</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>6.0-j20.0</td>
<td>25.0-j27.0</td>
</tr>
<tr>
<td>300</td>
<td>2.5-j5.5</td>
<td>13.0-j13.0</td>
</tr>
<tr>
<td>500</td>
<td>4.0+j3.0</td>
<td>12.0+j5.0</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 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_{DS} = 5.0 mA</td>
</tr>
<tr>
<td>Drain-Source Leakage Current</td>
<td>I_{DSS}</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_{DS} = 10.0 V , I_{DSS} = 100.0 mA</td>
</tr>
<tr>
<td>Forward Transconductance</td>
<td>G_{M}</td>
<td>.5</td>
<td>-</td>
<td>S</td>
<td>V_{DS} = 10.0 V , I_{DS} 1.0 A , Δ V_{GS} = 1.0V, 80 µs Pulse</td>
</tr>
<tr>
<td>Input Capacitance</td>
<td>C_{iss}</td>
<td>-</td>
<td>45</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>30</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>8</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>10</td>
<td>-</td>
<td>dB</td>
<td>V_{DD} = 28.0 V , I_{DQ} = 500.0 mA, P_{OUT} = 40.0 W F = 500 MHz</td>
</tr>
<tr>
<td>Drain Efficiency</td>
<td>η_{D}</td>
<td>50</td>
<td>-</td>
<td>%</td>
<td>V_{DD} = 28.0 V , I_{DQ} = 500.0 mA, P_{OUT} = 40.0 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_{DD} = 28.0 V , I_{DQ} = 500.0 mA, P_{OUT} = 40.0 W F = 500 MHz</td>
</tr>
</tbody>
</table>

*Per side
RF Power MOSFET Transistor
40W, 100-500 MHz, 28V

Typical Broadband Performance Curves

**CAPACITANCES vs VOLTAGE**
F=1.0MHz

**POWER OUTPUT vs VOLTAGE**
P_{in}=3.0 W  I_{DQ}=500 mA  P_{out}=500 W

**GAIN vs FREQUENCY**
V_{DD}=28 V  P_{out}=40 W  I_{DQ}=500 mA

**EFFICIENCY vs FREQUENCY**
V_{DD}=28V  I_{DQ}=500 mA  P_{out}=40 W

**POWER OUTPUT vs POWER INPUT**
V_{DD}=28 V  I_{DQ}=500 mA

For further information and support please visit:
https://www.macom.com/support
UF2840P

RF Power MOSFET Transistor
40W, 100-500 MHz, 28V

Rev. V1

TEST FIXTURE SCHEMATIC

V DS = 28 VOLTS
IDQ = 500mA

RF IN
J1
Q1A
RF OUT
J2
V GS
J3
R2
R1
L2
L4
+V DD
J4
T2
T1
R3
C7
C6
C8
T3
RF OUT
J2
C4
C5
C3
C2
C1
L1
L3
L4
L2

INDUCTOR 7 TURNS OF NO. 22 AWG ON .0125”
INDUCTOR 2 TURNS OF NO. 22 AWG ON .125”
FEMALE BANANA JACKS 1/8”, 1/4”
JUMPERS NO. 16 AWG
TYPICAL COST 1.00
100/250 OHM 0.25 WATT
RESISTOR 100/250 OHM 0.25 WATT
CERAMIC CHIP CAPACITOR 100nF
CERAMIC CHIP CAPACITOR 10nF
CERAMIC CHIP CAPACITOR 1nF
CERAMIC CHIP CAPACITOR 0.1nF
CERAMIC CHIP CAPACITOR 0.01nF
CERAMIC CHIP CAPACITOR 0.001nF
CERAMIC CHIP CAPACITOR 0.0001nF
CERAMIC CHIP CAPACITOR 0.00001nF
CERAMIC CHIP CAPACITOR 0.000001nF
INDUCTOR 5 TURNS OF NO. 22 AWG ON .125”

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RF Power MOSFET Transistor
40W, 100-500 MHz, 28V

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