

# RF MOSFET Power Transistor, 60W, 28V

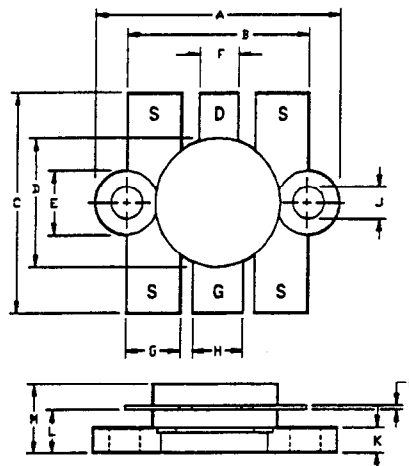
## 2 - 175 MHz

# DU2860T

V2.00

### Features

- N-Channel Enhancement Mode Device
- DMOS Structure
- Lower Capacitances for Broadband Operation
- High Saturated Output Power
- Lower Noise Figure Than Bipolar Devices



### Absolute Maximum Ratings at 25°C

| Parameter            | Symbol        | Rating      | Units |
|----------------------|---------------|-------------|-------|
| Drain-Source Voltage | $V_{DS}$      | 65          | V     |
| Gate-Source Voltage  | $V_{GS}$      | 20          | V     |
| Drain-Source Current | $I_{DS}$      | 12          | A     |
| Power Dissipation    | $P_D$         | 159         | W     |
| Junction Temperature | $T_J$         | 200         | °C    |
| Storage Temperature  | $T_{STG}$     | -65 to +150 | °C    |
| Thermal Resistance   | $\theta_{JC}$ | 1.1         | °C/W  |

| LETTER<br>DIM | MILLIMETERS |       | INCHES |      |
|---------------|-------------|-------|--------|------|
|               | MIN         | MAX   | MIN    | MAX  |
| A             | 24.64       | 24.89 | .970   | .980 |
| B             | 18.29       | 18.54 | .720   | .730 |
| C             | 21.21       | 21.97 | .835   | .865 |
| D             | 12.60       | 12.85 | .496   | .506 |
| E             | 6.22        | 6.48  | .245   | .255 |
| F             | 3.81        | 4.06  | .150   | .160 |
| G             | 5.33        | 5.59  | .210   | .220 |
| H             | 5.08        | 5.33  | .200   | .210 |
| J             | 3.05        | 3.30  | .120   | .130 |
| K             | 2.29        | 2.54  | .090   | .100 |
| L             | 4.06        | 4.57  | .160   | .180 |
| M             | 6.68        | 7.49  | .263   | .295 |
| N             | .10         | .15   | .004   | .006 |

### Electrical Characteristics at 25°C

| Parameter                      | Symbol       | Min | Max  | Units         | Test Conditions                                                                                      |
|--------------------------------|--------------|-----|------|---------------|------------------------------------------------------------------------------------------------------|
| Drain-Source Breakdown Voltage | $BV_{DSS}$   | 65  | -    | V             | $V_{GS}=0.0\text{ V}, I_{DS}=15.0\text{ mA}$                                                         |
| Drain-Source Leakage Current   | $I_{DSS}$    | -   | 3.0  | mA            | $V_{DS}=28.0\text{ V}, V_{GS}=0.0\text{ V}$                                                          |
| Gate-Source Leakage Current    | $I_{GSS}$    | -   | 3.0  | $\mu\text{A}$ | $V_{GS}=20.0\text{ V}, V_{DS}=0.0\text{ V}$                                                          |
| Gate Threshold Voltage         | $V_{GS(TH)}$ | 2.0 | 6.0  | V             | $V_{DS}=10.0\text{ V}, I_{DS}=300.0\text{ mA}$                                                       |
| Forward Transconductance       | $G_M$        | 1.5 | -    | S             | $V_{DS}=10.0\text{ V}, I_{DS}=3.0\text{ A}, \Delta V_{GS}=1.0\text{ V}, 80\text{ }\mu\text{s Pulse}$ |
| Input Capacitance              | $C_{ISS}$    | -   | 135  | pF            | $V_{DS}=28.0\text{ V}, F=1.0\text{ MHz}$                                                             |
| Output Capacitance             | $C_{OSS}$    | -   | 120  | pF            | $V_{DS}=28.0\text{ V}, F=1.0\text{ MHz}$                                                             |
| Reverse Capacitance            | $C_{RSS}$    | -   | 24   | pF            | $V_{DS}=28.0\text{ V}, F=1.0\text{ MHz}$                                                             |
| Power Gain                     | $G_P$        | 13  | -    | dB            | $V_{DD}=28.0\text{ V}, I_{DO}=300\text{ mA}, P_{OUT}=60.0\text{ W}, F=175\text{ MHz}$                |
| Drain Efficiency               | $\eta_D$     | 60  | -    | %             | $V_{DD}=28.0\text{ V}, I_{DO}=300\text{ mA}, P_{OUT}=60.0\text{ W}, F=175\text{ MHz}$                |
| Load Mismatch Tolerance        | VSWR-T       | -   | 30:1 | -             | $V_{DD}=28.0\text{ V}, I_{DO}=300\text{ mA}, P_{OUT}=60.0\text{ W}, F=175\text{ MHz}$                |

Specifications Subject to Change Without Notice.

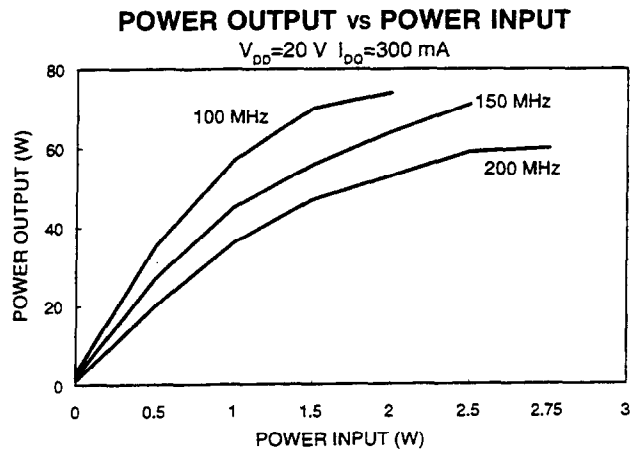
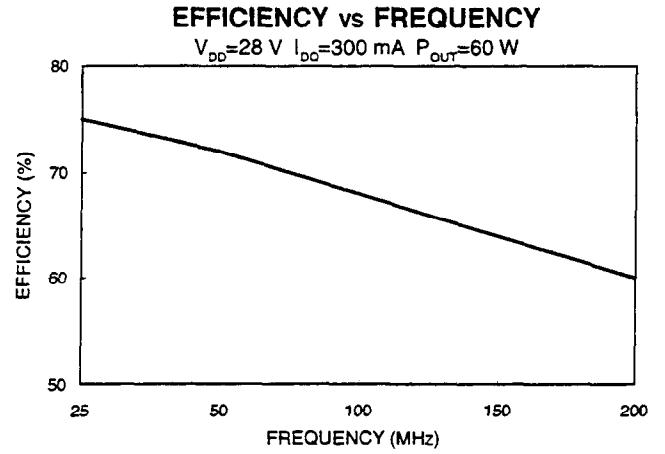
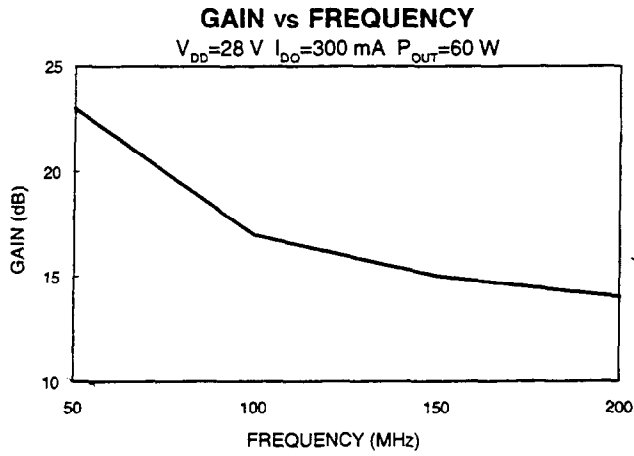
M/A-COM, Inc.

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Typical Broadband Performance Curves



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Typical Device Impedance

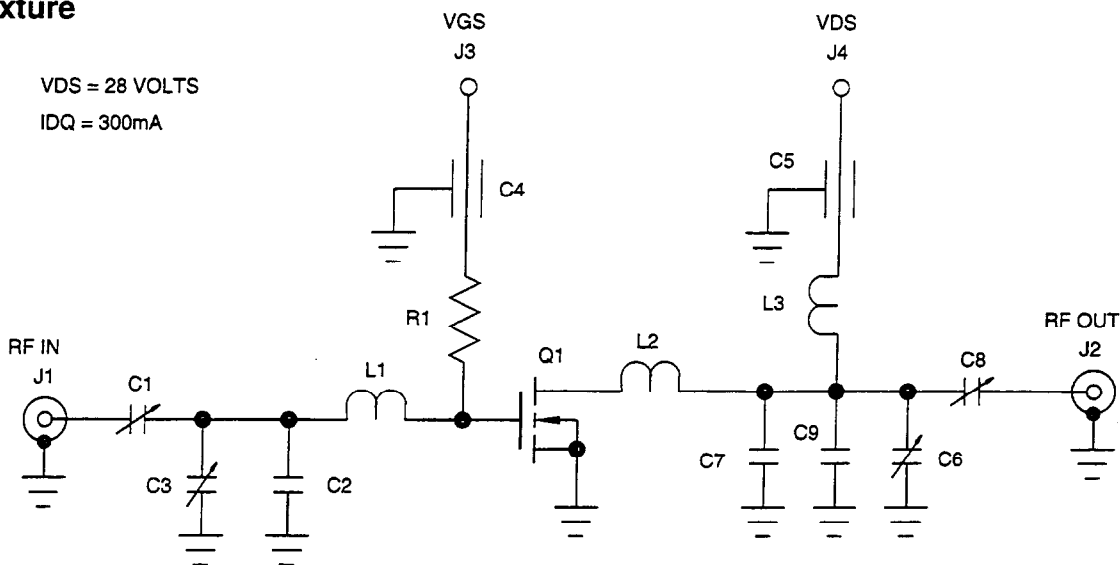
| Frequency (MHz) | Z <sub>IN</sub> (OHMS) | Z <sub>LOAD</sub> (OHMS) |
|-----------------|------------------------|--------------------------|
| 30              | 9.0 - j 4.0            | 6.0 + j 0.0              |
| 50              | 6.0 - j 5.8            | 5.0 + j 2.0              |
| 100             | 4.0 - j 4.2            | 4.0 + j 3.0              |
| 200             | 1.0 - j 1.0            | 2.0 + j 1.9              |

V<sub>DD</sub>=28 V, I<sub>DQ</sub>=300 mA, P<sub>OUT</sub>=60 Watts

Z<sub>IN</sub> is the series equivalent input impedance of the device from gate to source.

Z<sub>LOAD</sub> is the optimum series equivalent load impedance as measured from drain to ground.

RF Test Fixture



PARTS LIST

- C1,C3 TRIMMER CAPACITOR 4-40pF
- C2,C9 CAPACITOR 50pF
- C4,C5 FEEDTHROUGH CAPACITOR 0.001uF
- C6,C8 TRIMMER CAPACITOR 9-180pF
- C7 CAPACITOR 15pF
- L1 NO. 12 AWG COPPER WIRE X 1.18" (LOOP 0.5")
- L2 NO. 12 AWG COPPER WIRE X 1" (LOOP 0.4")
- L3 8 TURNS OF NO. 22 AWG ENAMEL WIRE ON '0.25", CLOSE WOUND
- R1 RESISTOR 300 OHMS 0.5 WATT
- Q1 DU2860T
- BOARD FR4 0.062"

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