

# RF Power MOSFET Transistor

## 40W, 2-175MHz, 28V

M/A-COM Products  
Released; RoHS Compliant

### 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 | $I_{DS}$      | 8           | A     |
| Power Dissipation    | $P_D$         | 125         | W     |
| Junction Temperature | $T_J$         | 200         | °C    |
| Storage Temperature  | $T_{STG}$     | -55 to +150 | °C    |
| Thermal Resistance   | $\theta_{JC}$ | 1.4         | °C/W  |

### TYPICAL DEVICE IMPEDANCE

| F (MHz)                                        | $Z_{IN} (\Omega)$ | $Z_{LOAD} (\Omega)$ |
|------------------------------------------------|-------------------|---------------------|
| 30                                             | 12.0 - j6.8       | 6.5 - j1.5          |
| 50                                             | 10.0 - j6.5       | 6.0 - j1.8          |
| 100                                            | 6.0 - j5.5        | 5.5 - j1.8          |
| 200                                            | 1.1 - j3.0        | 3.5 - j1.8          |
| $V_{DD} = 28V, I_{DQ} = 200mA, P_{OUT} = 40 W$ |                   |                     |

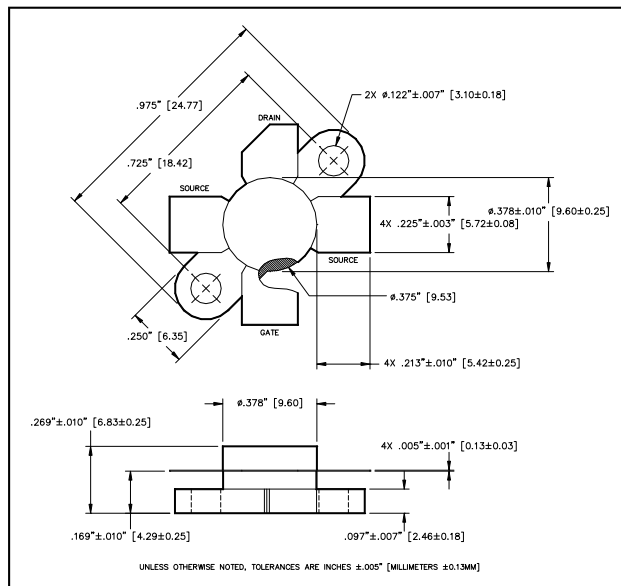
$Z_{IN}$  is the series equivalent input impedance of the device from gate to source.

$Z_{LOAD}$  is the optimum series equivalent load impedance as measured from drain to ground.

### ELECTRICAL CHARACTERISTICS AT 25°C

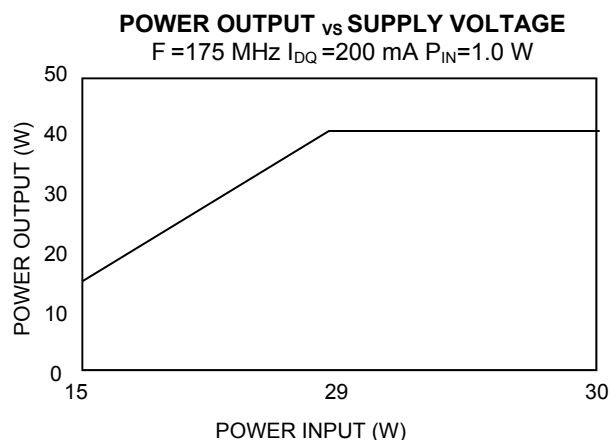
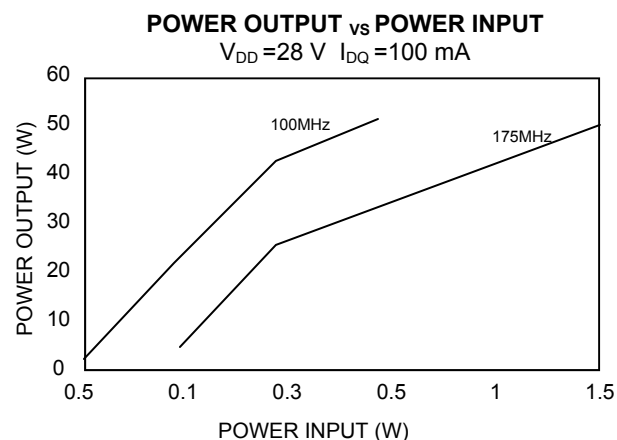
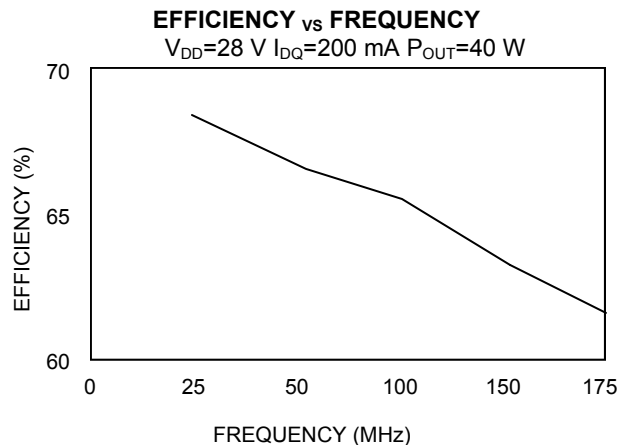
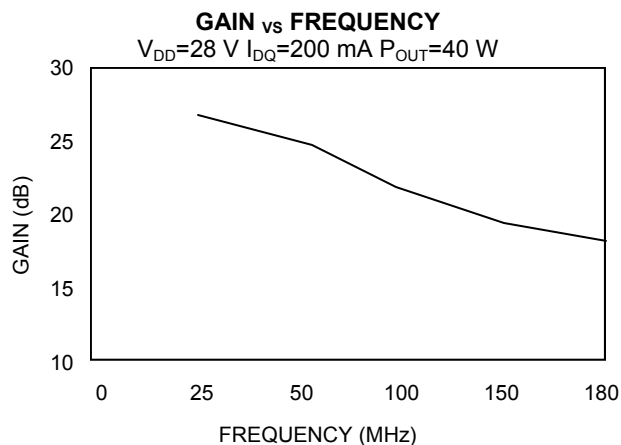
| Parameter                      | Symbol       | Min | Max  | Units   | Test Conditions                                                             |
|--------------------------------|--------------|-----|------|---------|-----------------------------------------------------------------------------|
| Drain-Source Breakdown Voltage | $BV_{DSS}$   | 65  | -    | V       | $V_{GS} = 0.0 V, I_{DS} = 10.0 mA$                                          |
| Drain-Source Leakage Current   | $I_{DSS}$    | -   | 2.0  | mA      | $V_{GS} = 28.0 V, V_{DS} = 0.0 V$                                           |
| Gate-Source Leakage Current    | $I_{GSS}$    | -   | 2.0  | $\mu A$ | $V_{GS} = 20.0 V, V_{DS} = 0.0 V$                                           |
| Gate Threshold Voltage         | $V_{GS(TH)}$ | 2.0 | 6.0  | V       | $V_{DS} = 10.0 V, I_{DS} = 200.0 mA$                                        |
| Forward Transconductance       | $G_M$        | 1   | -    | S       | $V_{DS} = 10.0 V, I_{DS} = 2000.0 mA, \Delta V_{GS} = 1.0V, 80 \mu s$ Pulse |
| Input Capacitance              | $C_{ISS}$    | -   | 90   | pF      | $V_{DS} = 28.0 V, F = 1.0 MHz$                                              |
| Output Capacitance             | $C_{OSS}$    | -   | 80   | pF      | $V_{DS} = 28.0 V, F = 1.0 MHz$                                              |
| Reverse Capacitance            | $C_{RSS}$    | -   | 16   | pF      | $V_{DS} = 28.0 V, F = 1.0 MHz$                                              |
| Power Gain                     | $G_P$        | 13  | -    | dB      | $V_{DD} = 28.0 V, I_{DQ} = 200 mA, P_{OUT} = 40 W F = 175 MHz$              |
| Drain Efficiency               | $\eta_D$     | 60  | -    | %       | $V_{DD} = 28.0 V, I_{DQ} = 200 mA, P_{OUT} = 40 W F = 175 MHz$              |
| Load Mismatch Tolerance        | VSWR-T       | -   | 30:1 | -       | $V_{DD} = 28.0 V, I_{DQ} = 200 mA, P_{OUT} = 40 W F = 175 MHz$              |

### Package Outline



| LETTER<br>DIM | MILLIMETERS |       | INCHES |      |
|---------------|-------------|-------|--------|------|
|               | MIN         | MAX   | MIN    | MAX  |
| A             | 24.64       | 24.89 | .970   | .980 |
| B             | 18.29       | 18.54 | .720   | .730 |
| C             | 20.07       | 20.83 | .790   | .820 |
| D             | 9.47        | 9.73  | .373   | .383 |
| E             | 6.22        | 6.48  | .245   | .255 |
| F             | 5.64        | 5.79  | .222   | .228 |
| G             | 2.92        | 3.30  | .115   | .130 |
| H             | 2.29        | 2.67  | .090   | .105 |
| J             | 4.04        | 4.55  | .159   | .179 |
| K             | 6.58        | 7.39  | .259   | .291 |
| L             | .10         | .15   | .004   | .006 |

## Typical Broadband Performance Curves

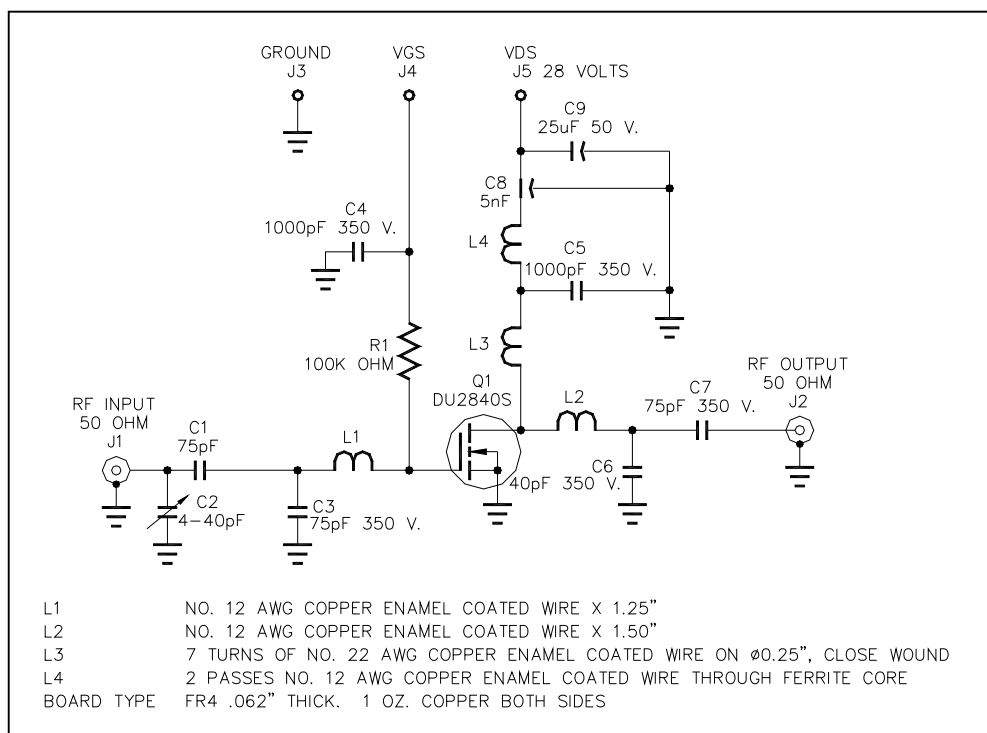


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## TEST FIXTURE SCHEMATIC



## TEST FIXTURE ASSEMBLY

