

RF Power MOSFET Transistor 60W, 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} | 12 | A |
| Power Dissipation | P_D | 159 | W |
| Junction Temperature | T_J | 200 | °C |
| Storage Temperature | T_{STG} | -65 to +150 | °C |
| Thermal Resistance | θ_{JC} | 1.1 | °C/W |

TYPICAL DEVICE IMPEDANCE

| F (MHz) | Z_{IN} (Ω) | Z_{LOAD} (Ω) |
|---------|-----------------------|-------------------------|
| 30 | 9.0 - j4.0 | 6.0 + j0.0 |
| 50 | 10.0 - j6.5 | 5.0 + j2.0 |
| 100 | 6.0 - j5.5 | 4.0 + j3.0 |
| 200 | 1.1 - j3.0 | 2.0 + j1.9 |

$V_{DD} = 28V, I_{DQ} = 300mA, P_{OUT} = 60W$

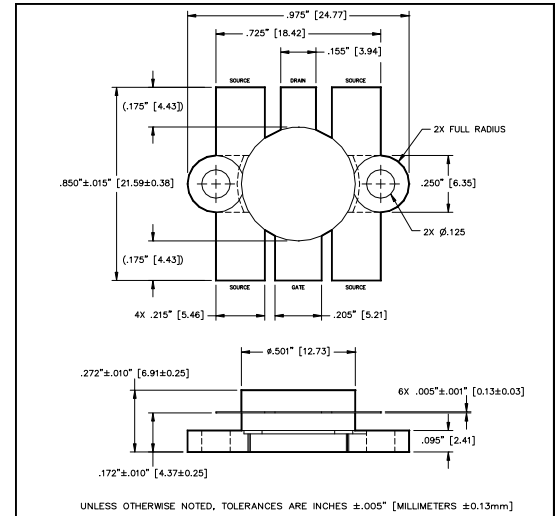
Z_{IN} is the series equivalent input impedance of the device from gate to source.

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

ELECTRICAL CHARACTERISTICS AT 25°C

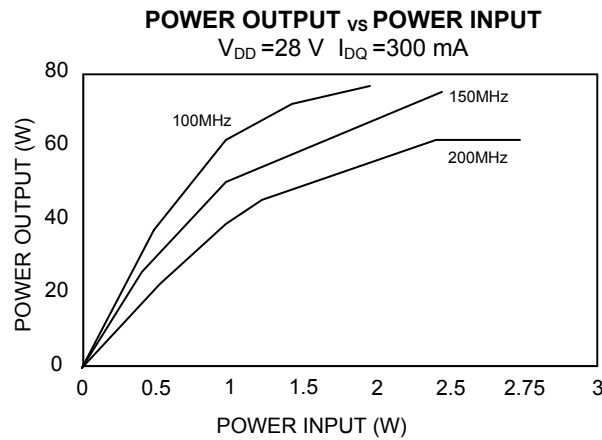
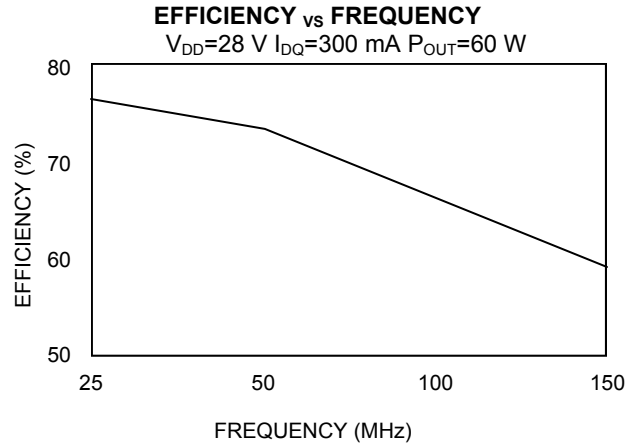
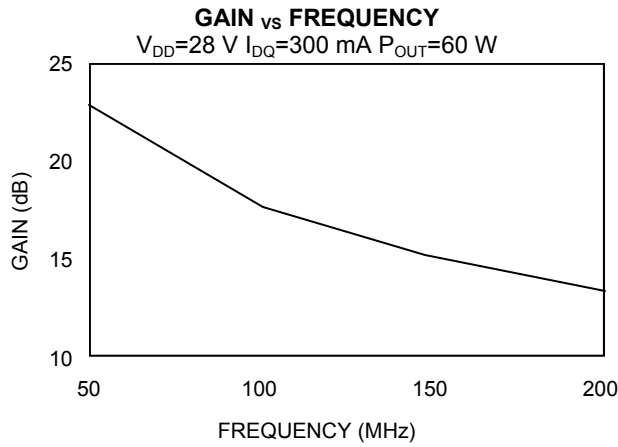
| Parameter | Symbol | Min | Max | Units | Test Conditions |
|--------------------------------|--------------|-----|------|---------|--|
| Drain-Source Breakdown Voltage | BV_{DSS} | 65 | - | V | $V_{GS} = 0.0V, I_{DS} = 15.0mA$ |
| Drain-Source Leakage Current | I_{DSS} | - | 3.0 | mA | $V_{GS} = 28.0V,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

Package Outline



| LETTER 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 |

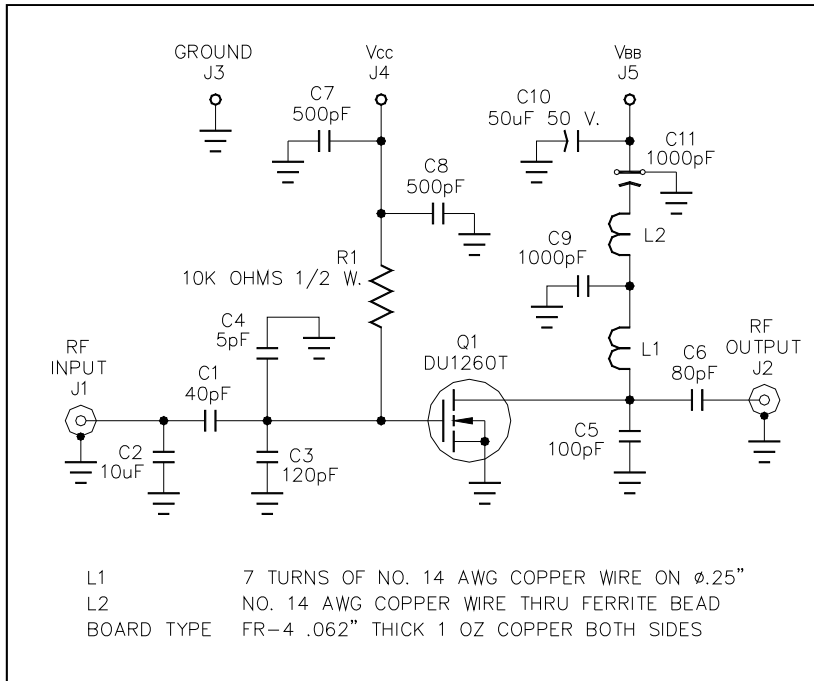
Typical Broadband Performance Curves



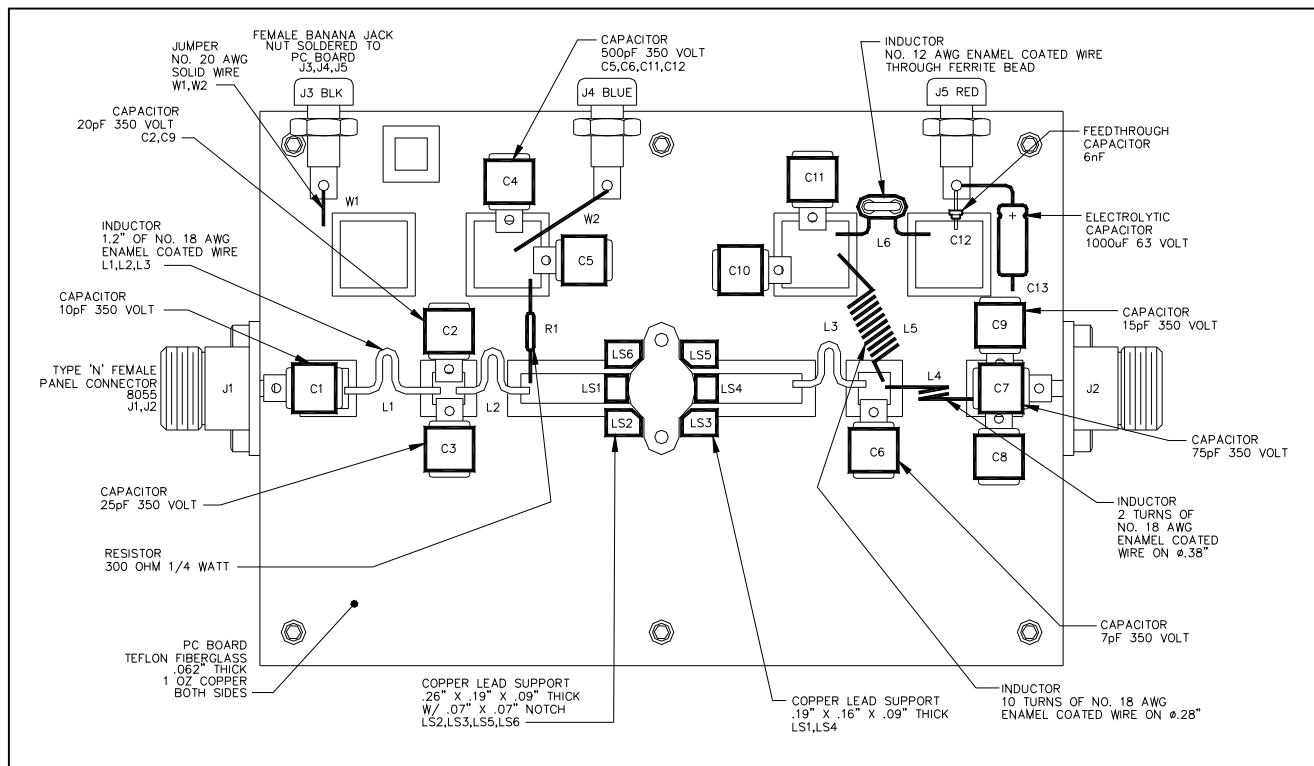
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TEST FIXTURE SCHEMATIC



TEST FIXTURE ASSEMBLY



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