

RF Power MOSFET Transistor 80W, 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} | 16 | A |
| Power Dissipation | P_D | 206 | W |
| Junction Temperature | T_J | 200 | °C |
| Storage Temperature | T_{STG} | -65 to +150 | °C |
| Thermal Resistance | θ_{JC} | 0.85 | °C/W |

TYPICAL DEVICE IMPEDANCE

| F (MHz) | Z_{IN} (Ω) | Z_{LOAD} (Ω) |
|---------|-----------------------|-------------------------|
| 30 | 5.4 - j4.4 | 5.7 + j4.7 |
| 50 | 2.5 - j4.4 | 3.4 + j3.5 |
| 100 | 1.6 - j3.4 | 2.4 + j2.4 |
| 175 | 0.7 - j1.2 | 1.7 + j0.8 |

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

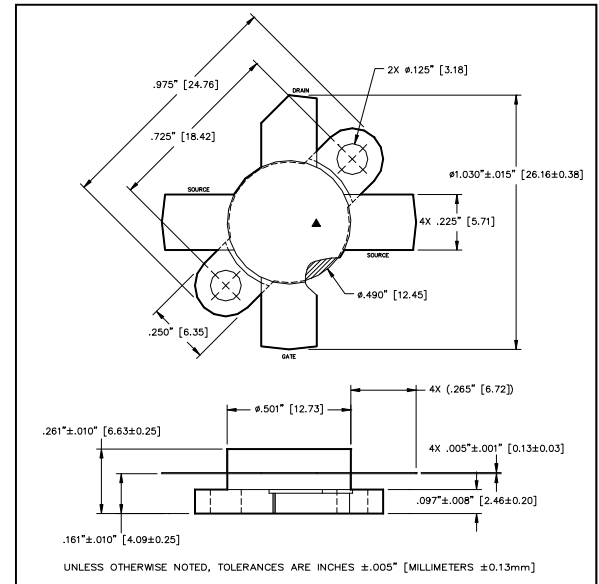
Z_{IN} is the series equivalent input impedance of the device from gate to source.

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

ELECTRICAL CHARACTERISTICS AT 25°C

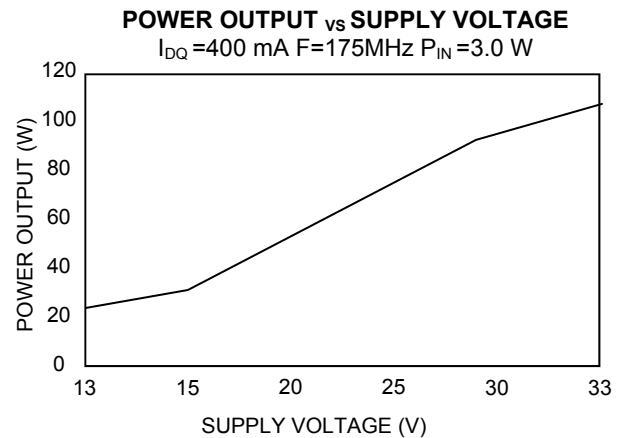
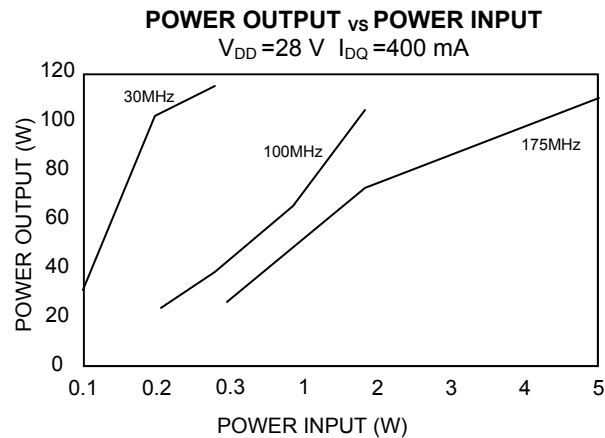
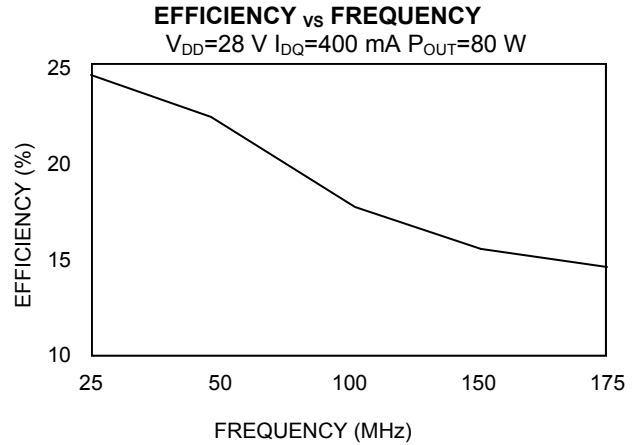
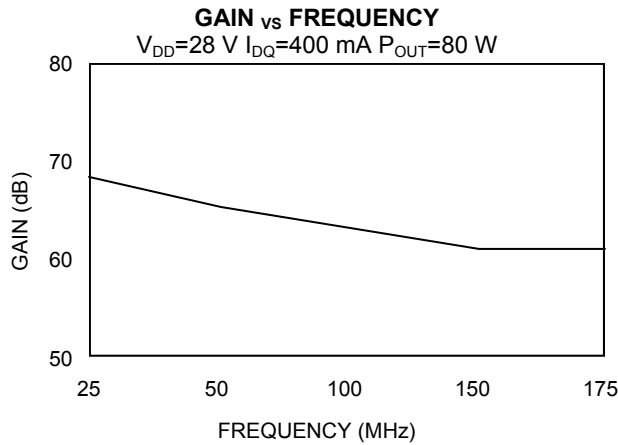
| Parameter | Symbol | Min | Max | Units | Test Conditions |
|--------------------------------|--------------|-----|------|---------|--|
| Drain-Source Breakdown Voltage | BV_{DSS} | 65 | - | V | $V_{GS} = 0.0V, I_{DS} = 20.0mA$ |
| Drain-Source Leakage Current | I_{DSS} | - | 4.0 | mA | $V_{GS} = 28.0V, V_{DS} = 0.0V$ |
| Gate-Source Leakage Current | I_{GSS} | - | 4.0 | μA | $V_{GS} = 20.0V, V_{DS} = 0.0V$ |
| Gate Threshold Voltage | $V_{GS(TH)}$ | 2.0 | 6.0 | V | $V_{DS} = 10.0V, I_{DS} = 400.0mA$ |
| Forward Transconductance | G_M | 2.0 | - | S | $V_{DS} = 10.0V, I_{DS} = 4.0A, \Delta V_{GS} = 1.0V, 80\mu s$ Pulse |
| Input Capacitance | C_{ISS} | - | 180 | pF | $V_{DS} = 28.0V, F = 1.0MHz$ |
| Output Capacitance | C_{OSS} | - | 160 | pF | $V_{DS} = 28.0V, F = 1.0MHz$ |
| Reverse Capacitance | C_{RSS} | - | 32 | pF | $V_{DS} = 28.0V, F = 1.0MHz$ |
| Power Gain | G_P | 13 | - | dB | $V_{DD} = 28.0V, I_{DQ} = 400mA, P_{OUT} = 80.0W F = 175MHz$ |
| Drain Efficiency | η_D | 60 | - | % | $V_{DD} = 28.0V, I_{DQ} = 400mA, P_{OUT} = 80.0W F = 175MHz$ |
| Load Mismatch Tolerance | VSWR-T | - | 30:1 | - | $V_{DD} = 28.0V, I_{DQ} = 400mA, P_{OUT} = 80.0W F = 175MHz$ |

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 | 25.91 | 26.42 | 1.020 | 1.040 |
| D | 12.60 | 12.85 | .496 | .506 |
| E | 6.22 | 6.48 | .245 | .255 |
| F | 5.59 | 5.84 | .220 | .230 |
| G | 3.05 | 3.30 | .120 | .130 |
| H | 2.21 | 2.59 | .087 | .102 |
| J | 3.91 | 4.42 | .154 | .174 |
| K | 6.53 | 7.34 | .257 | .289 |
| L | .10 | .15 | .004 | .006 |

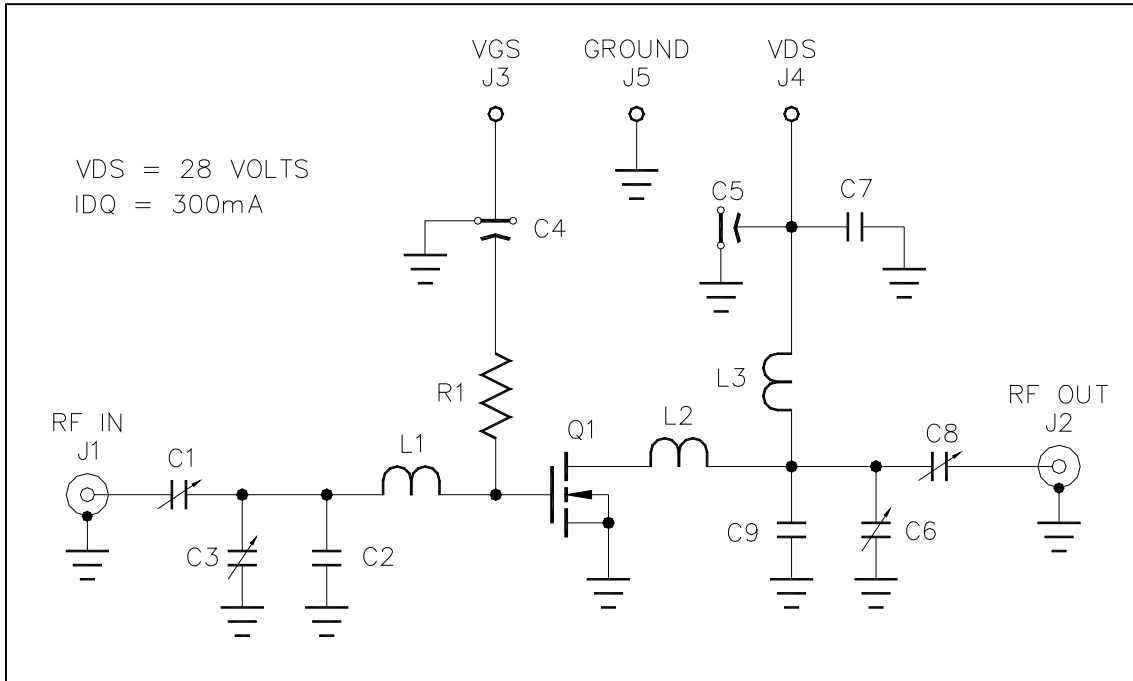
Typical Broadband Performance Curves



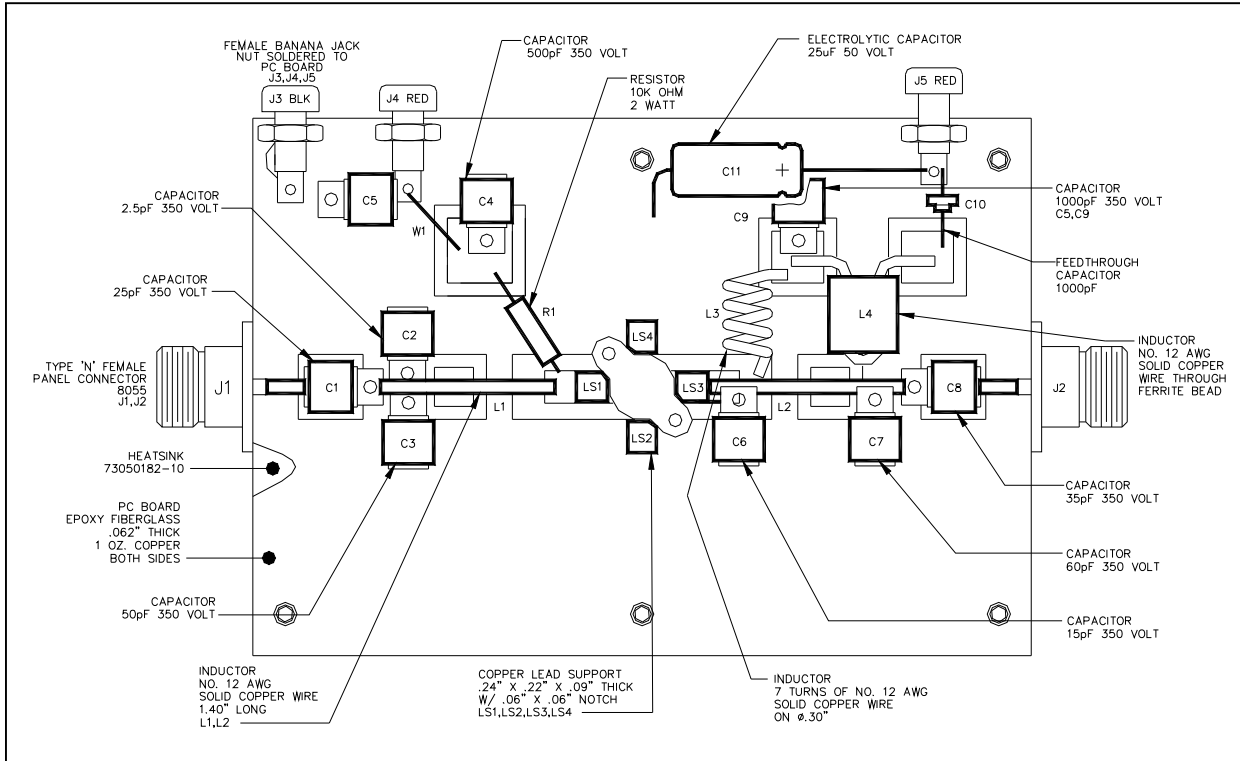
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TEST FIXTURE SCHEMATIC



TEST FIXTURE ASSEMBLY



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