

RF Power MOSFET Transistor 20 W, 2 - 175 MHz, 28 V

Rev. V2

Features

- N-Channel enhancement mode device
- DMOS structure
- Lower capacitances for broadband operation
- High saturated output power
- Lower noise figure than bipolar devices
- RoHS Compliant

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} | 24 | A |
| Power Dissipation | P_D | 62.5 | W |
| Junction Temperature | T_J | 200 | °C |
| Storage Temperature | T_{STG} | -55 to +150 | °C |
| Thermal Resistance | θ_{JC} | 2.8 | °C/W |

TYPICAL DEVICE IMPEDANCE

| F (MHz) | Z_{IN} (Ω) | Z_{LOAD} (Ω) |
|--|-----------------------|-------------------------|
| 30 | 17.5 - j13.0 | 16.0 - j2.5 |
| 50 | 15.0 - j15.5 | 15.0 - j4.0 |
| 100 | 8.0 - j14.0 | 12.0 - j6.0 |
| 200 | 5.5 - j8.0 | 9.25 - j6.0 |
| $V_{DD} = 28V, I_{DQ} = 100mA, P_{OUT} = 20 W$ | | |

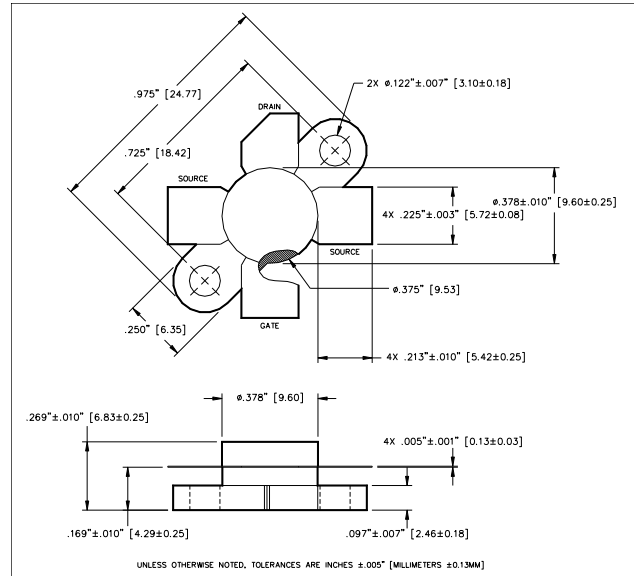
Z_{IN} is the series equivalent input impedance of the device from gate to source.

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

ELECTRICAL CHARACTERISTICS AT 25°C

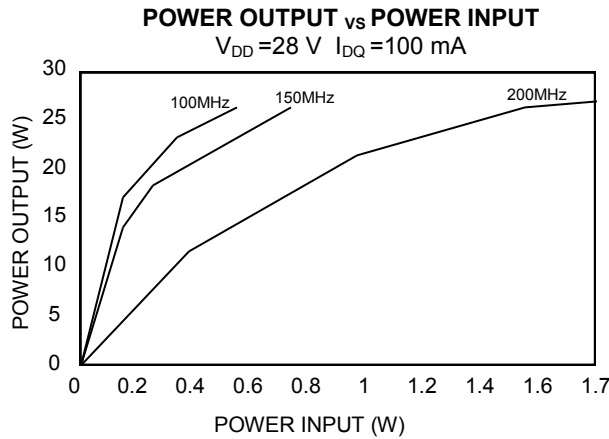
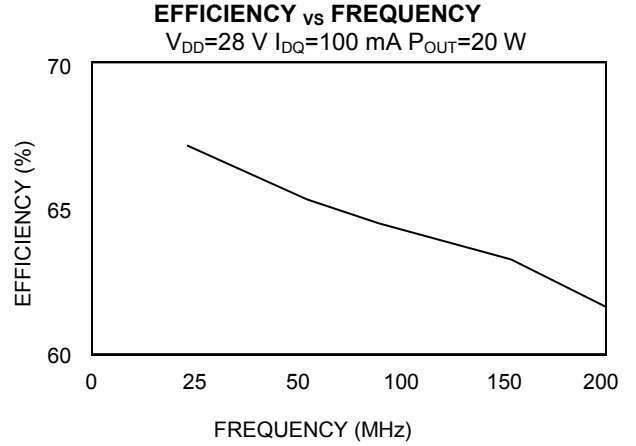
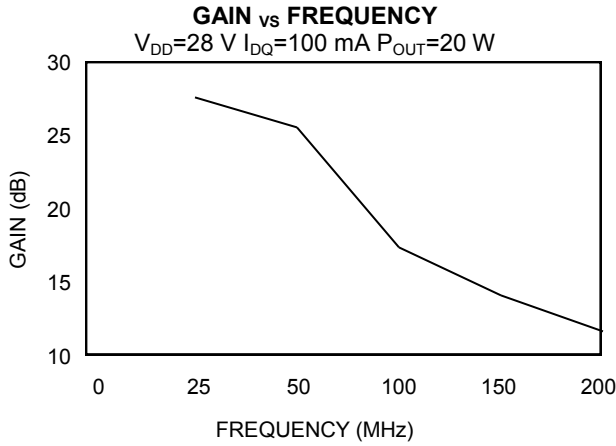
| Parameter | Symbol | Min | Max | Units | Test Conditions |
|--------------------------------|--------------|-----|------|---------|--|
| Drain-Source Breakdown Voltage | BV_{DSS} | 65 | - | V | $V_{GS} = 0.0 V, I_{DS} = 5.0 mA$ |
| Drain-Source Leakage Current | I_{DSS} | - | 1.0 | mA | $V_{GS} = 28.0 V, V_{DS} = 0.0 V$ |
| Gate-Source Leakage Current | I_{GSS} | - | 1.0 | μA | $V_{GS} = 20.0 V, V_{DS} = 0.0 V$ |
| Gate Threshold Voltage | $V_{GS(TH)}$ | 2.0 | 6.0 | V | $V_{DS} = 10.0 V, I_{DS} = 100.0 mA$ |
| Forward Transconductance | G_M | 500 | - | S | $V_{DS} = 10.0 V, I_{DS} = 100.0 mA, \Delta V_{GS} = 1.0V, 80 \mu s$ Pulse |
| Input Capacitance | C_{ISS} | - | 45 | pF | $V_{DS} = 28.0 V, F = 1.0 MHz$ |
| Output Capacitance | C_{OSS} | - | 40 | pF | $V_{DS} = 28.0 V, F = 1.0 MHz$ |
| Reverse Capacitance | C_{RSS} | - | 8 | pF | $V_{DS} = 28.0 V, F = 1.0 MHz$ |
| Power Gain | G_P | 13 | - | dB | $V_{DD} = 28.0 V, I_{DQ} = 100 mA, P_{OUT} = 20 W F = 175 MHz$ |
| Drain Efficiency | η_D | 60 | - | % | $V_{DD} = 28.0 V, I_{DQ} = 100 mA, P_{OUT} = 20 W F = 175 MHz$ |
| Load Mismatch Tolerance | VSWR-T | - | 30:1 | - | $V_{DD} = 28.0 V, I_{DQ} = 100 mA, P_{OUT} = 20 W F = 175 MHz$ |

Package Outline



| LETTER | 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 |

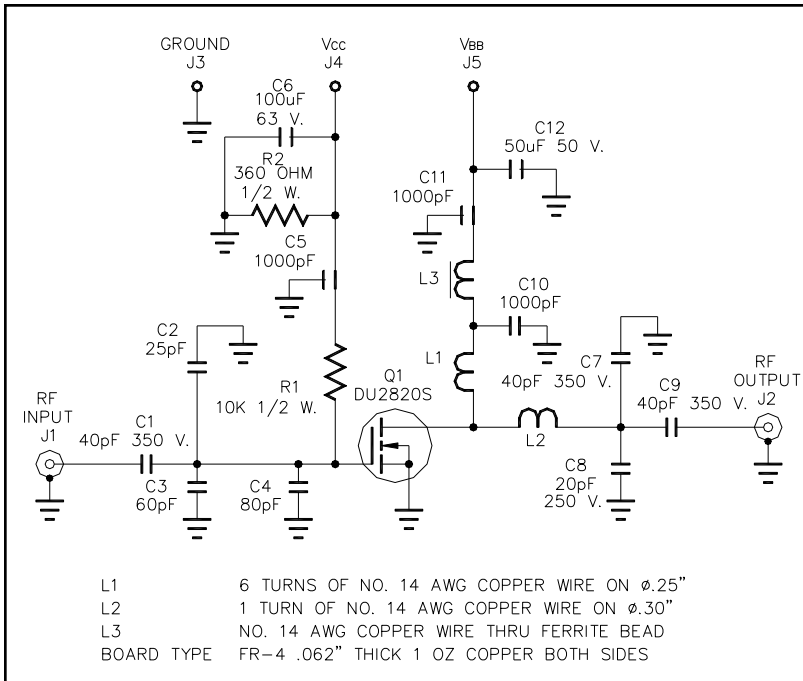
Typical Broadband Performance Curves



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TEST FIXTURE SCHEMATIC



TEST FIXTURE ASSEMBLY

