

## RF Power MOSFET Transistor 120 W, 2 - 175 MHz, 28 V

Rev. V1

### 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

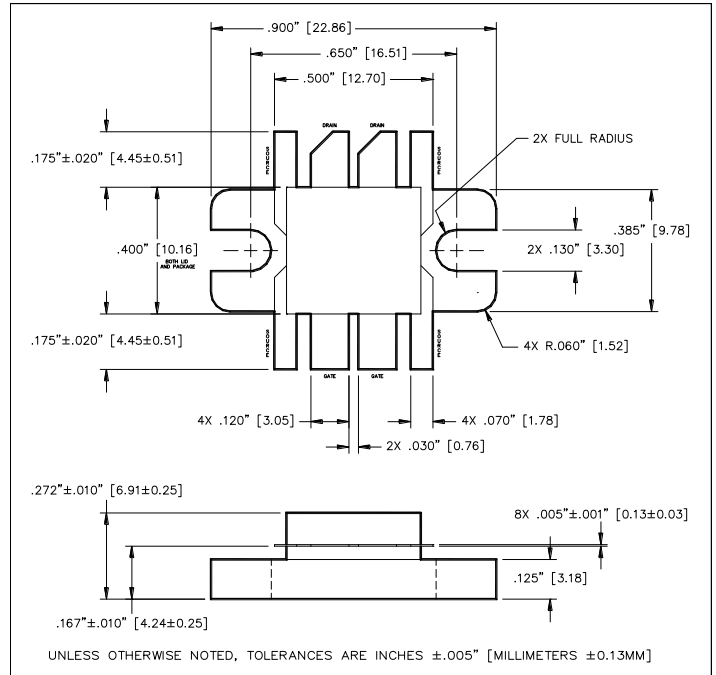
| Parameter            | Symbol        | Rating      | Units |
|----------------------|---------------|-------------|-------|
| Drain-Source Voltage | $V_{DS}$      | 65          | V     |
| Gate-Source Voltage  | $V_{GS}$      | 20          | V     |
| Drain-Source Current | $I_{DS}$      | 12          | A     |
| Power Dissipation    | $P_D$         | 250         | W     |
| Junction Temperature | $T_J$         | 200         | °C    |
| Storage Temperature  | $T_{STG}$     | -55 to +150 | °C    |
| Thermal Resistance   | $\theta_{JC}$ | 0.7         | °C/W  |

### TYPICAL DEVICE IMPEDANCE

| F (MHz) | $Z_{IN}$ ( $\Omega$ ) | $Z_{LOAD}$ ( $\Omega$ ) |
|---------|-----------------------|-------------------------|
| 30      | $3.0 - j12.5$         | $8.0 + j6.0$            |
| 50      | $1.5 - j8.5$          | $7.0 + j6.5$            |
| 100     | $1.0 - j6.0$          | $6.5 + j5.0$            |

$V_{DD} = 28V$ ,  $I_{DQ} = 600mA$ ,  $P_{OUT} = 120 W$

### Package Outline



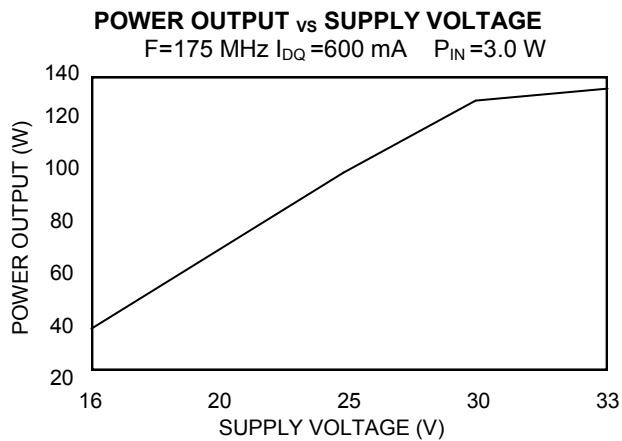
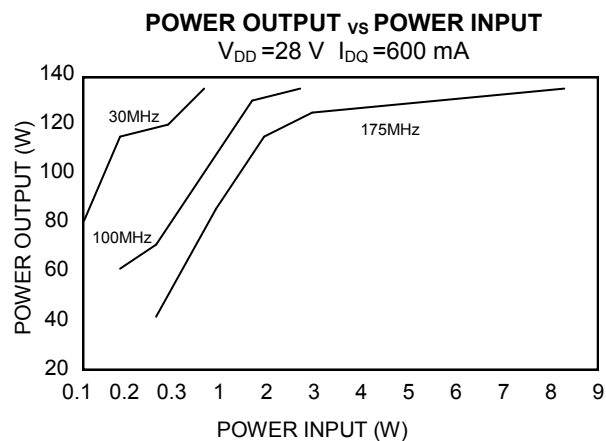
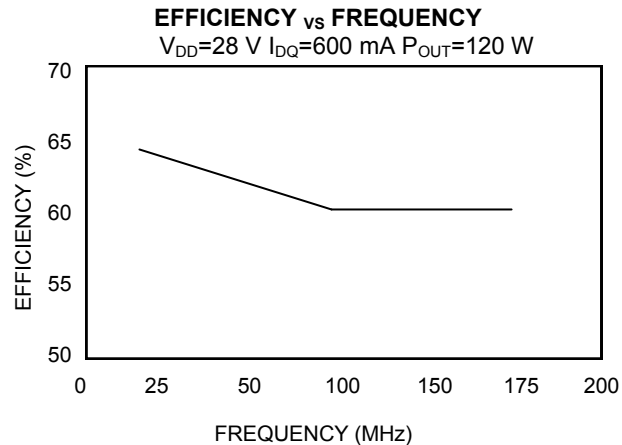
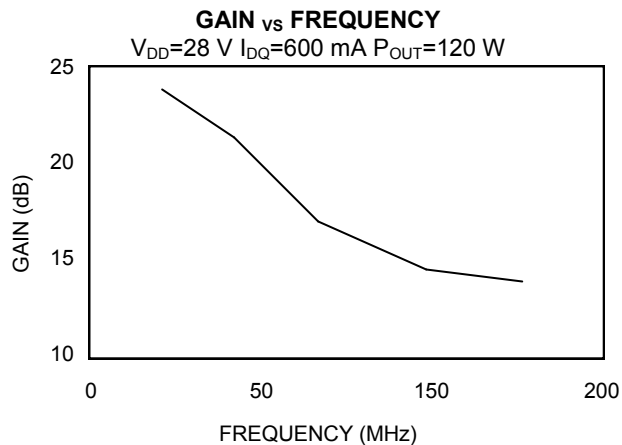
$Z_{IN}$  is the series equivalent input impedance of the device from gate to source.

$Z_{LOAD}$  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       | $V_{GS} = 0.0 V$ , $I_{DS} = 3.0 mA$                                                 |
| Drain-Source Leakage Current   | $I_{DSS}$    | -   | 6.0  | mA      | $V_{GS} = 28.0 V$ , $V_{DS} = 0.0 V$                                                 |
| Gate-Source Leakage Current    | $I_{GSS}$    | -   | 6.0  | $\mu A$ | $V_{GS} = 20.0 V$ , $V_{DS} = 0.0 V$                                                 |
| Gate Threshold Voltage         | $V_{GS(TH)}$ | 2.0 | 6.0  | V       | $V_{DS} = 10.0 V$ , $I_{DS} = 600.0 mA$                                              |
| Forward Transconductance       | $G_M$        | 3.0 | -    | S       | $V_{DS} = 10.0 V$ , $I_{DS} = 6000.0 mA$ , $\Delta V_{GS} = 1.0V$ , 80 $\mu s$ Pulse |
| Input Capacitance              | $C_{ISS}$    | -   | 270  | pF      | $V_{DS} = 28.0 V$ , $F = 1.0 MHz$                                                    |
| Output Capacitance             | $C_{OSS}$    | -   | 240  | pF      | $V_{DS} = 28.0 V$ , $F = 1.0 MHz$                                                    |
| Reverse Capacitance            | $C_{RSS}$    | -   | 48   | pF      | $V_{DS} = 28.0 V$ , $F = 1.0 MHz$                                                    |
| Power Gain                     | $G_P$        | 13  | -    | dB      | $V_{DD} = 28.0 V$ , $I_{DQ} = 600 mA$ , $P_{OUT} = 120.0 W$ $F = 175 MHz$            |
| Drain Efficiency               | $\eta_D$     | 60  | -    | %       | $V_{DD} = 28.0 V$ , $I_{DQ} = 600 mA$ , $P_{OUT} = 120.0 W$ $F = 175 MHz$            |
| Return Loss                    | $R_L$        | 10  | -    | %       | $V_{DD} = 28.0 V$ , $I_{DQ} = 600 mA$ , $P_{OUT} = 120.0 W$ $F = 175 MHz$            |
| Load Mismatch Tolerance        | VSWR-T       | -   | 30:1 | -       | $V_{DD} = 28.0 V$ , $I_{DQ} = 600 mA$ , $P_{OUT} = 120.0 W$ $F = 175 MHz$            |

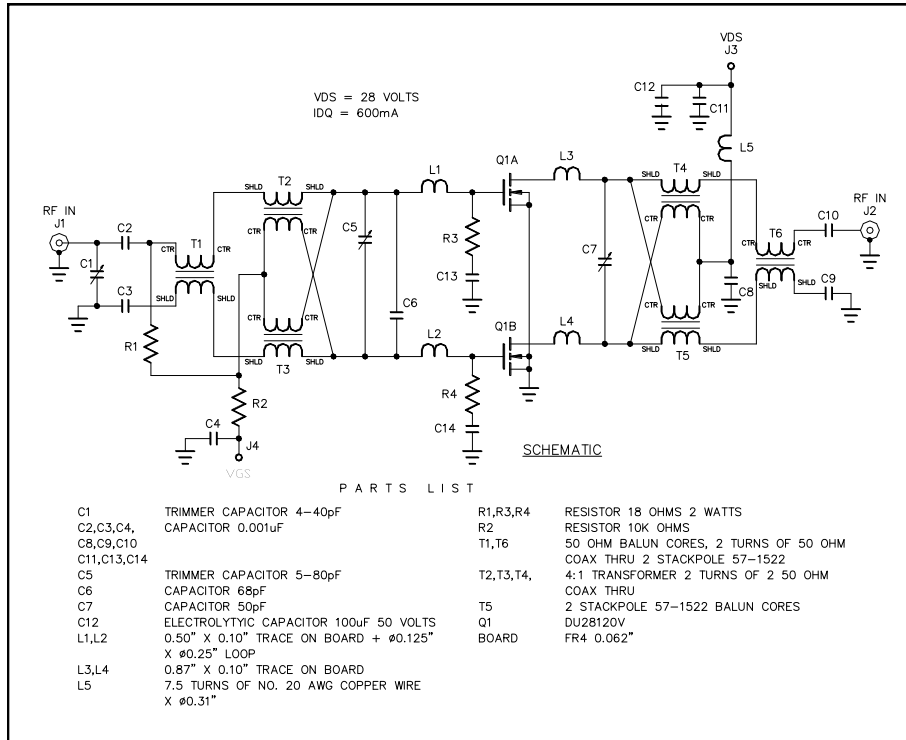
## Typical Broadband Performance Curves



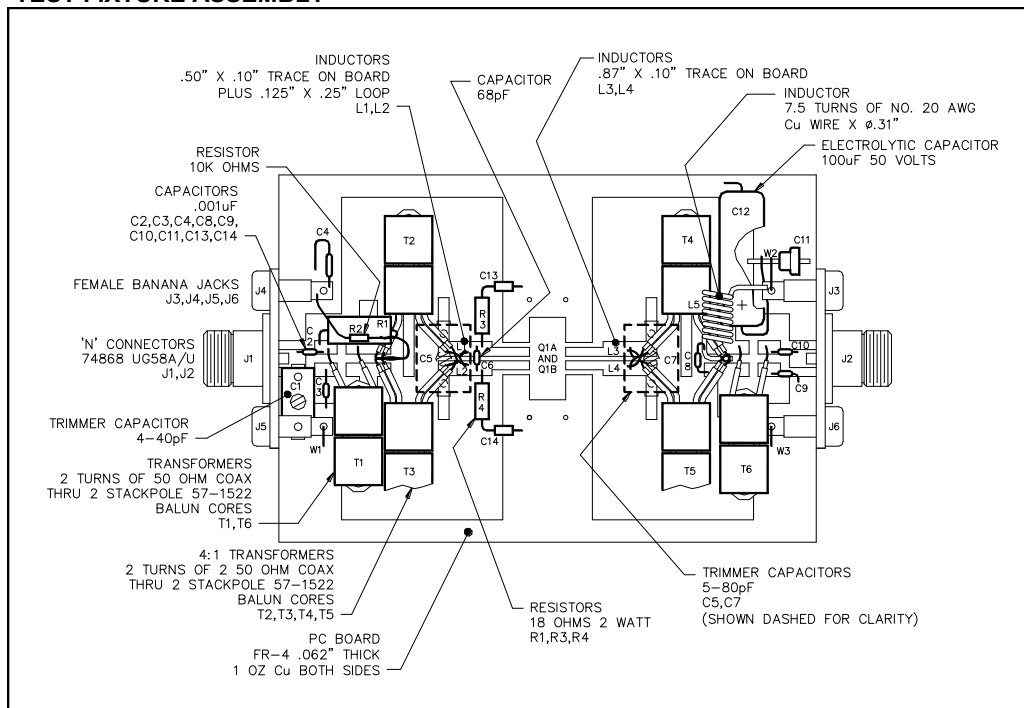
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### TEST FIXTURE SCHEMATIC



### TEST FIXTURE ASSEMBLY



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