

## RF Power MOSFET Transistor 40W, 100-500 MHz, 28V

M/A-COM Products  
Released; RoHS Compliant

### Features

- N-channel enhancement mode device
- DMOS structure
- Lower capacitances for broadband operation
- Common source configuration
- Lower noise floor

### 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 | $I_{DS}$      | 4*         | A     |
| Power Dissipation    | $P_D$         | 116        | W     |
| Junction Temperature | $T_J$         | 200        | °C    |
| Storage Temperature  | $T_{STG}$     | -55 to 150 | °C    |
| Thermal Resistance   | $\theta_{JC}$ | 1.5        | °C/W  |

### TYPICAL DEVICE IMPEDANCES

| F (MHz)  | $Z_{IN}$ ( $\Omega$ ) | $Z_{LOAD}$ ( $\Omega$ ) |
|--|-----------------------|-------------------------|
| 100  | 6.0-j20.0             | 25.0j27.0               |
| 300  | 2.5-j5.5              | 13.0+j13.0              |
| 500  | 4.0+j3.0              | 12.0j5.0                |
| $V_{DD}=28V$ , $I_{DQ}=500$ mA, $P_{OUT}=40.0$ W |                       |                         |

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

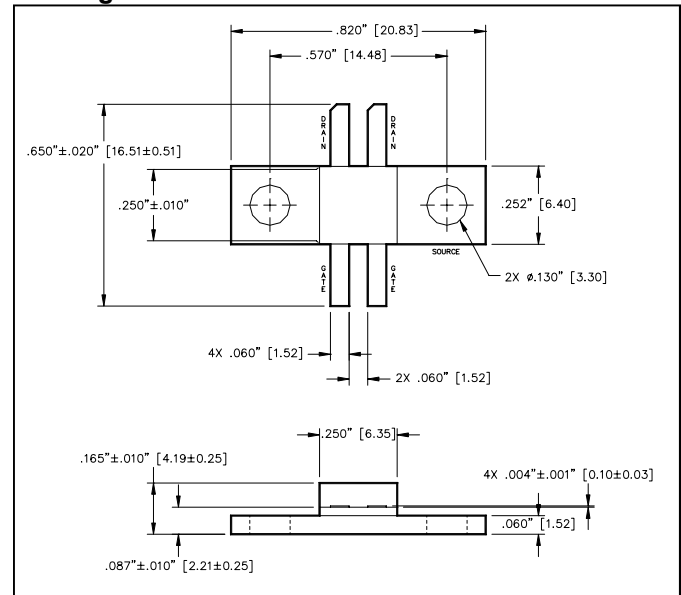
$Z_{LOAD}$  is the optimum series equivalent load impedance as measured from drain to ground.

### 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  | $\mu$ 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, $I_{DS} = 100.0$ mA   |
| Forward Transconductance       | $G_M$        | .5  | -    | S       | $V_{DS} = 10.0$ V, $I_{DS} = 1.0$ A, $\Delta V_{GS} = 1.0$ V, 80 $\mu$ s Pulse |
| Input Capacitance              | $C_{ISS}$    | -   | 45   | pF      | $V_{DS} = 28.0$ V, $F = 1.0$ MHz   |
| Output Capacitance             | $C_{OSS}$    | -   | 30   | 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                     | $G_P$        | 10  | -    | dB      | $V_{DD} = 28.0$ V, $I_{DQ} = 500.0$ mA, $P_{OUT} = 40.0$ W $F = 500$ MHz       |
| Drain Efficiency               | $\eta_D$     | 50  | -    | %       | $V_{DD} = 28.0$ V, $I_{DQ} = 500.0$ mA, $P_{OUT} = 40.0$ W $F = 500$ MHz       |
| Load Mismatch Tolerance        | VSWR-T       | -   | 20:1 | -       | $V_{DD} = 28.0$ V, $I_{DQ} = 500.0$ mA, $P_{OUT} = 40.0$ W $F = 500$ MHz       |

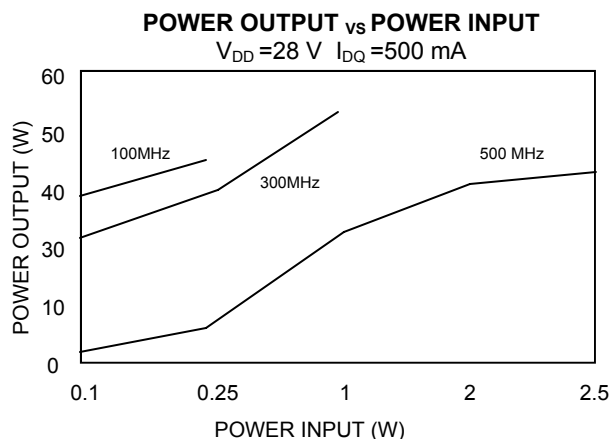
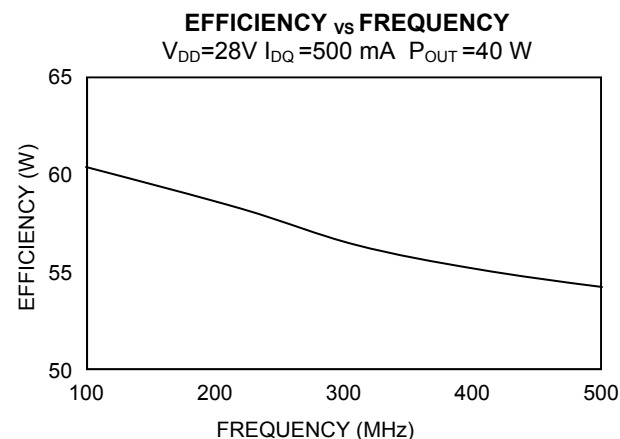
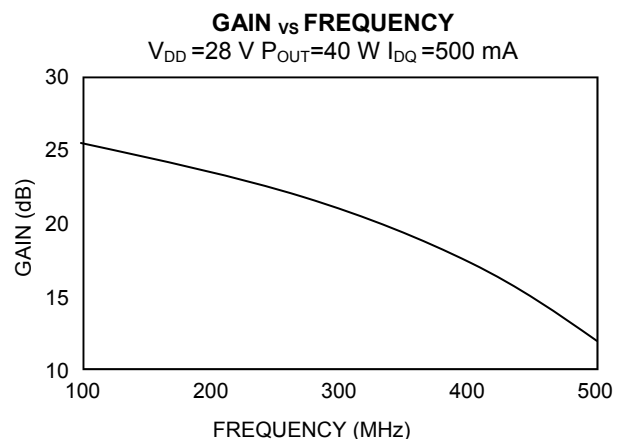
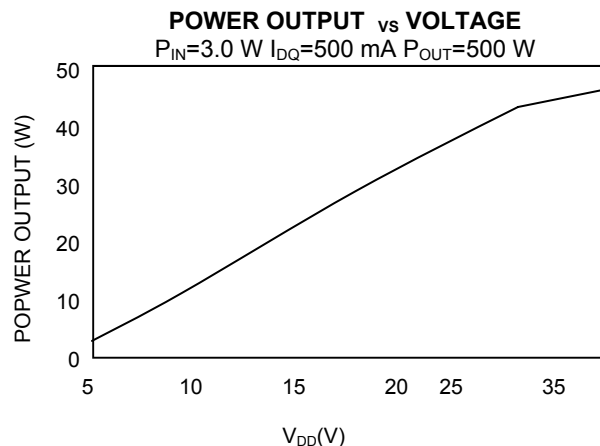
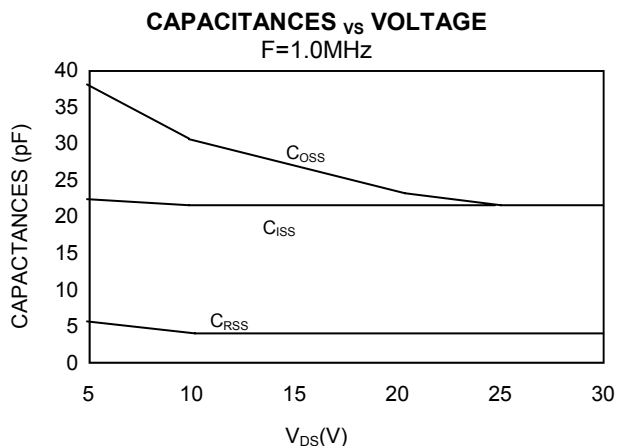
\*Per side

### Package Outline



UNLESS OTHERWISE NOTED, TOLERANCES ARE INCHES  $\pm .005$ " [MILLIMETERS  $\pm 0.13$ mm]

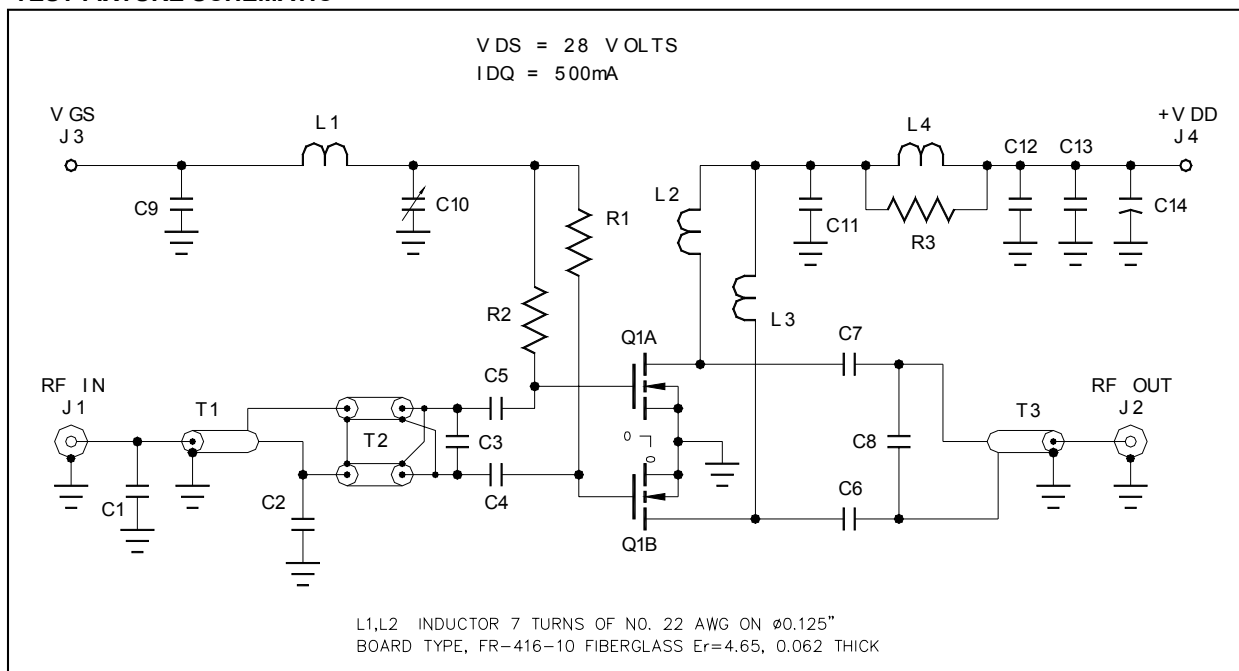
## Typical Broadband Performance Curves



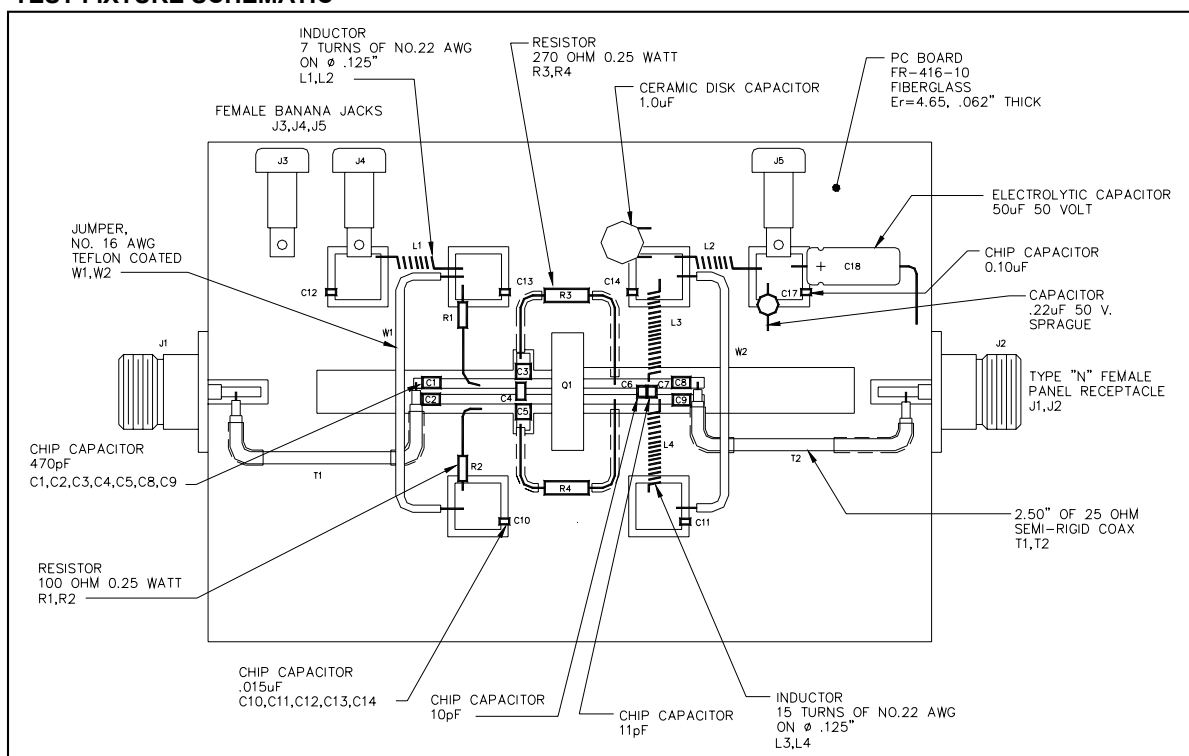
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### TEST FIXTURE SCHEMATIC



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