

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

M/A-COM Products
Released - 08.07

Features

- N-channel enhancement mode device
- DMOS structure
- Lower capacitances for broadband operation
- High saturated output power
- Lower noise figure than competitive 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 | θ_{JC} | 0.7 | °C/W |

TYPICAL DEVICE IMPEDANCES

| F (MHz) | Z_{IN} (Ω) | Z_{LOAD} (Ω) |
|--|-----------------------|-------------------------|
| 100 | 4.5-j6.0 | 14.5+j0.5 |
| 300 | 2.25-j1.75 | 7.5j1.0 |
| 500 | 1.5+j5.5 | 3.5+j3.5 |
| $V_{DD}=28V, I_{DQ}=600\text{ Ma}, P_{OUT}=100.0\text{ W}$ | | |

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

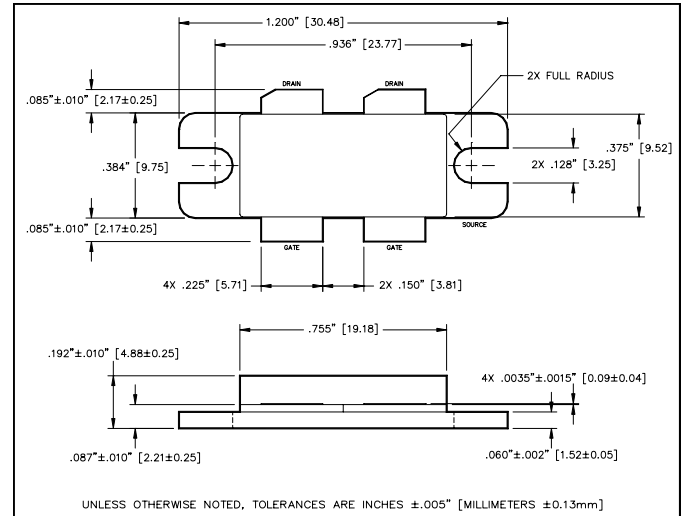
Z_{LOAD} is the optimum series equivalent load impedance as measured from drain to drain.

ELECTRICAL CHARACTERISTICS AT 25°C

| Parameter | Symbol | Min | Max | Units | Test Conditions |
|--------------------------------|--------------|-----|------|---------------|--|
| Drain-Source Breakdown Voltage | BV_{DSS} | 65 | - | V | $V_{GS} = 0.0\text{ V}, I_{DS} = 15.0\text{ mA}$ |
| Drain-Source Leakage Current | I_{DSS} | - | 3.0 | mA | $V_{GS} = 28.0\text{ V}, V_{DS} = 0.0\text{ V}$ |
| Gate-Source Leakage Current | I_{GSS} | - | 3.0 | μA | $V_{GS} = 20.0\text{ V}, V_{DS} = 0.0\text{ V}$ |
| Gate Threshold Voltage | $V_{GS(TH)}$ | 2.0 | 6.0 | V | $V_{DS} = 10.0\text{ V}, I_{DS} = 300.0\text{ mA}$ |
| Forward Transconductance | G_M | 1.5 | - | S | $V_{DS} = 10.0\text{ V}, I_{DS} = 3000.0\text{ mA}, \Delta V_{GS} = 1.0V, 80\ \mu\text{s Pulse}$ |
| Input Capacitance | C_{ISS} | - | 135 | pF | $V_{DS} = 28.0\text{ V}, F = 1.0\text{ MHz}$ |
| Output Capacitance | C_{OSS} | - | 90 | pF | $V_{DS} = 28.0\text{ V}, F = 1.0\text{ MHz}$ |
| Reverse Capacitance | C_{RSS} | - | 24 | pF | $V_{DS} = 28.0\text{ V}, F = 1.0\text{ MHz}$ |
| Power Gain | G_P | 10 | - | dB | $V_{DD} = 28.0\text{ V}, I_{DQ} = 600.0\text{ mA}, P_{OUT} = 100.0\text{ W } F = 500\text{ MHz}$ |
| Drain Efficiency | η_D | 50 | - | % | $V_{DD} = 28.0\text{ V}, I_{DQ} = 600.0\text{ mA}, P_{OUT} = 100.0\text{ W } F = 500\text{ MHz}$ |
| Return Loss | R_L | 10 | - | dB | $V_{DD} = 28.0\text{ V}, I_{DQ} = 600.0\text{ mA}, P_{OUT} = 100.0\text{ W } F = 500\text{ MHz}$ |
| Load Mismatch Tolerance | VSWR-T | - | 30:1 | - | $V_{DD} = 28.0\text{ V}, I_{DQ} = 600.0\text{ mA}, P_{OUT} = 100.0\text{ W } F = 500\text{ MHz}$ |

*Per side

PACKAGE OUTLINE



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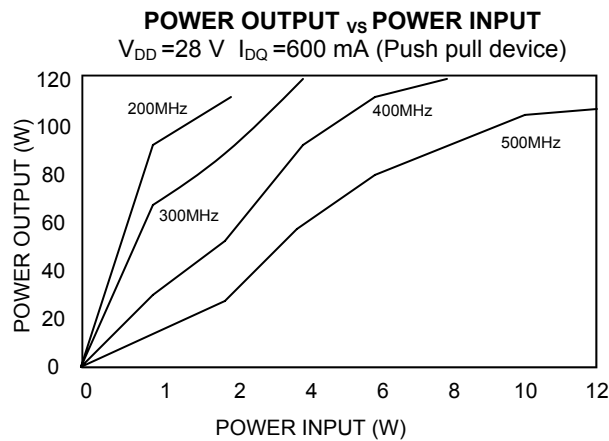
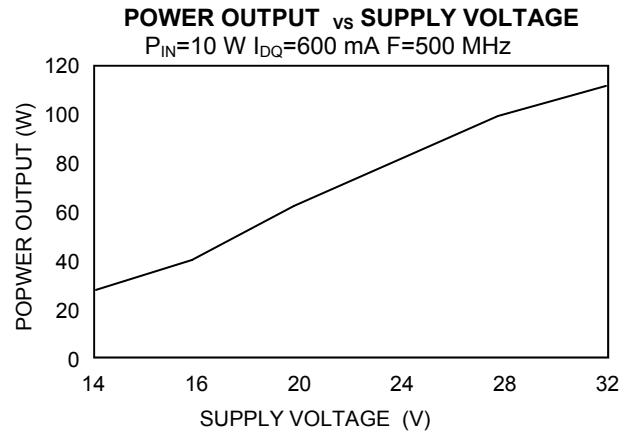
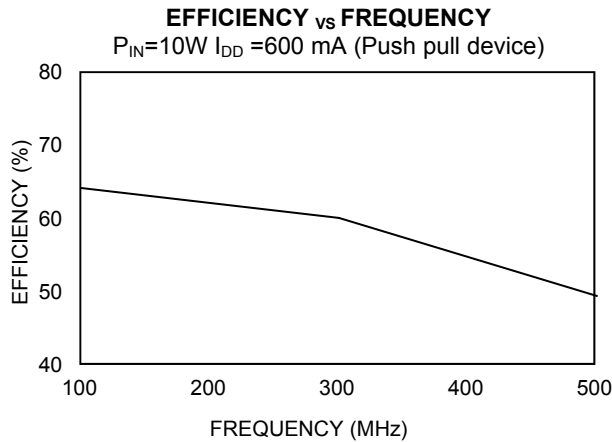
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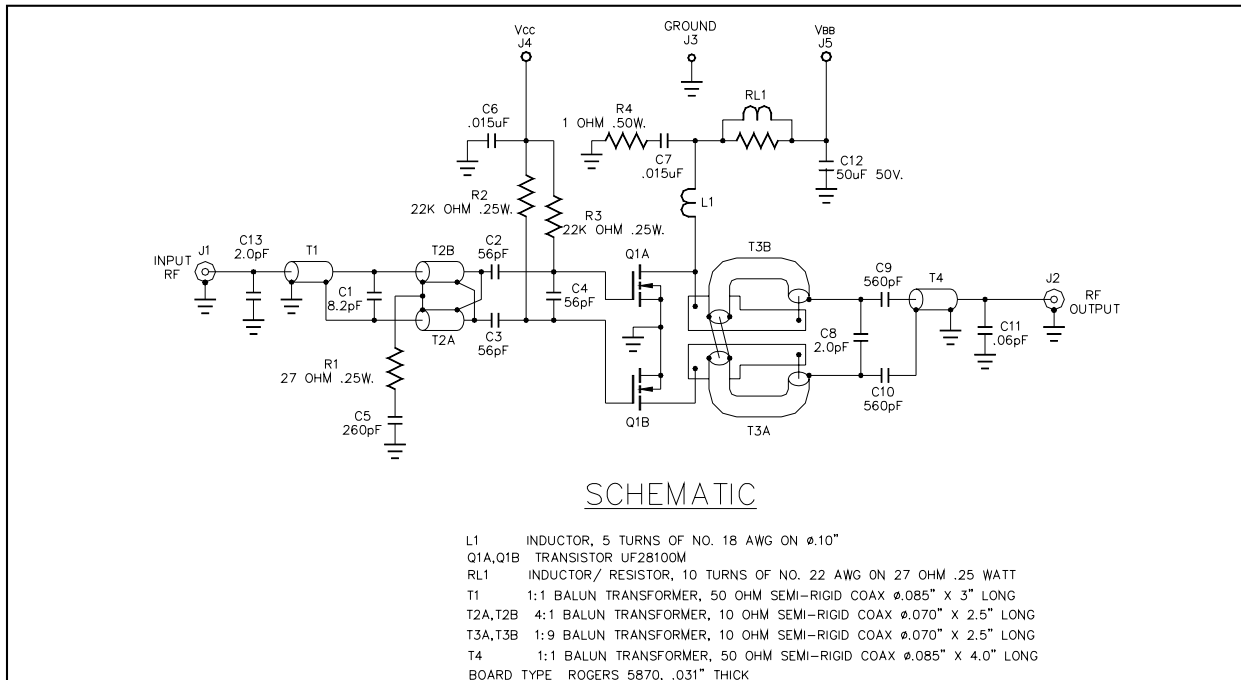
Typical Broadband Performance Curves



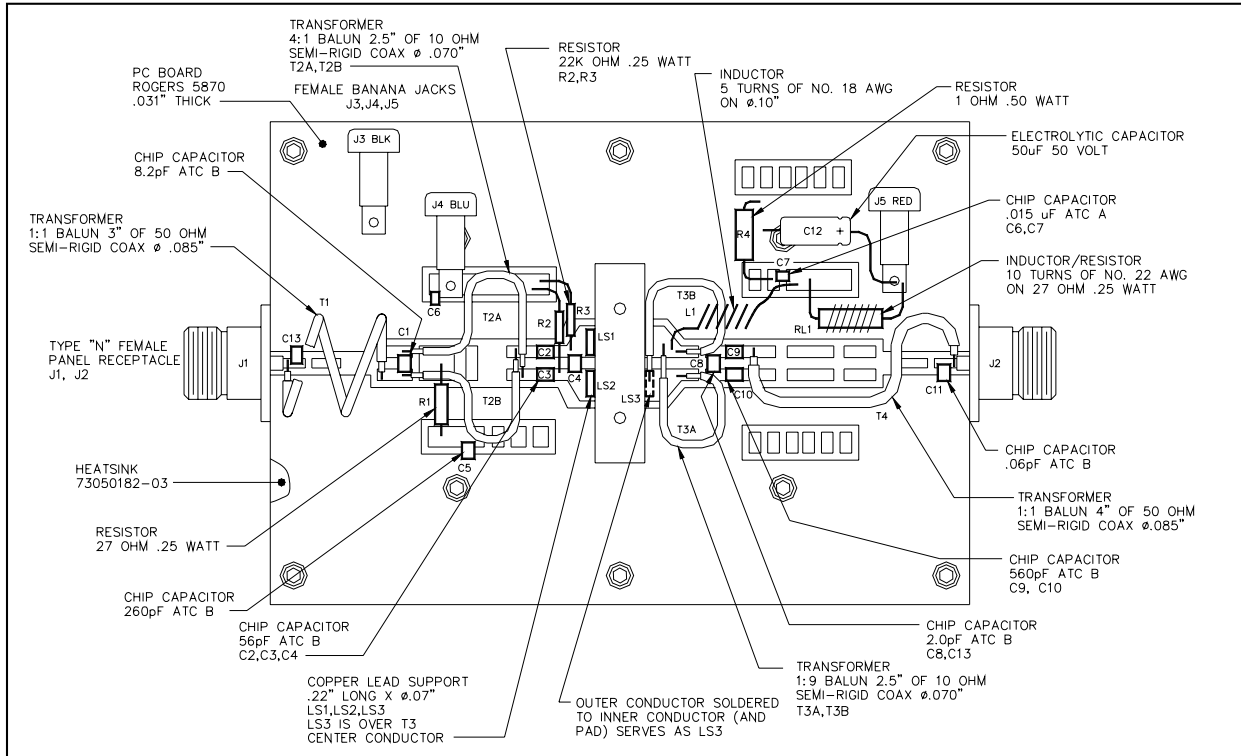
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TEST FIXTURE SCHEMATIC



TEST FIXTURE ASSEMBLY



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