

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

Rev. V1

### 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

$V_{DD}=28V, I_{DQ}=500\text{ mA}, P_{OUT}=40.0\text{ W}$

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

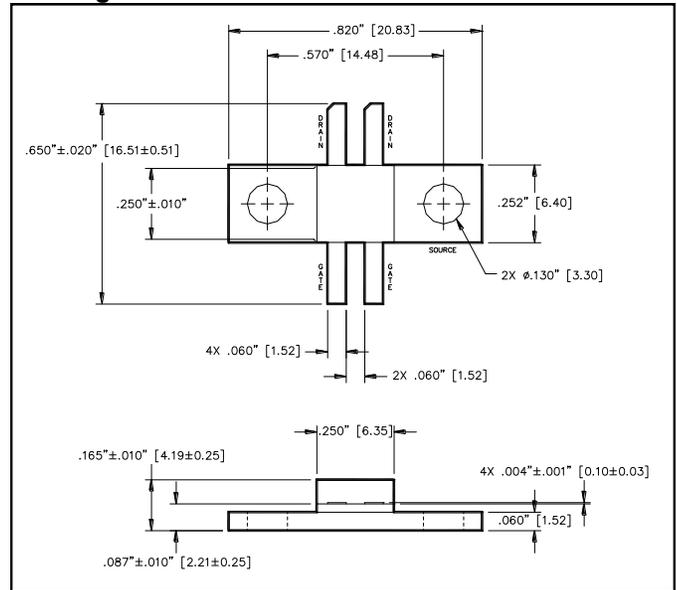
$Z_{LOAD}$  is the optimum series equivalent load impedance as measured from drain to ground.

### ELECTRICAL CHARACTERISTICS AT 25°C

Parameter	Symbol	Min	Max	Units	Test Conditions
Drain-Source Breakdown Voltage	$BV_{DSS}$	65	-	V	$V_{GS} = 0.0\text{ V}, I_{DS} = 5.0\text{ mA}$
Drain-Source Leakage Current	$I_{DSS}$	-	1.0	mA	$V_{GS} = 28.0\text{ V}, V_{DS} = 0.0\text{ V}$
Gate-Source Leakage Current	$I_{GSS}$	-	1.0	$\mu\text{A}$	$V_{GS} = 20.0\text{ V}, V_{DS} = 0.0\text{ V}$
Gate Threshold Voltage	$V_{GS(TH)}$	2.0	6.0	V	$V_{DS} = 10.0\text{ V}, I_{DS} = 100.0\text{ mA}$
Forward Transconductance	$G_M$	.5	-	S	$V_{DS} = 10.0\text{ V}, I_{DS} = 1.0\text{ A}, \Delta V_{GS} = 1.0\text{ V}, 80\ \mu\text{s Pulse}$
Input Capacitance	$C_{ISS}$	-	45	pF	$V_{DS} = 28.0\text{ V}, F = 1.0\text{ MHz}$
Output Capacitance	$C_{OSS}$	-	30	pF	$V_{DS} = 28.0\text{ V}, F = 1.0\text{ MHz}$
Reverse Capacitance	$C_{RSS}$	-	8	pF	$V_{DS} = 28.0\text{ V}, F = 1.0\text{ MHz}$
Power Gain	$G_P$	10	-	dB	$V_{DD} = 28.0\text{ V}, I_{DQ} = 500.0\text{ mA}, P_{OUT} = 40.0\text{ W } F = 500\text{ MHz}$
Drain Efficiency	$\eta_D$	50	-	%	$V_{DD} = 28.0\text{ V}, I_{DQ} = 500.0\text{ mA}, P_{OUT} = 40.0\text{ W } F = 500\text{ MHz}$
Load Mismatch Tolerance	VSWR-T	-	20:1	-	$V_{DD} = 28.0\text{ V}, I_{DQ} = 500.0\text{ mA}, P_{OUT} = 40.0\text{ W } F = 500\text{ MHz}$

\*Per side

### Package Outline

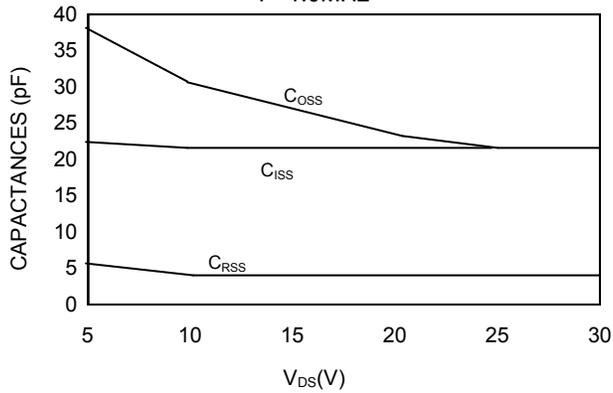


UNLESS OTHERWISE NOTED, TOLERANCES ARE INCHES  $\pm .005$ " [MILLIMETERS  $\pm 0.13\text{mm}$ ]

**Typical Broadband Performance Curves**

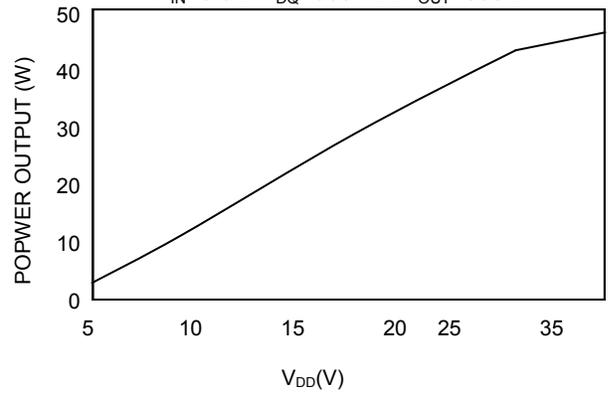
**CAPACITANCES vs VOLTAGE**

F=1.0MHz



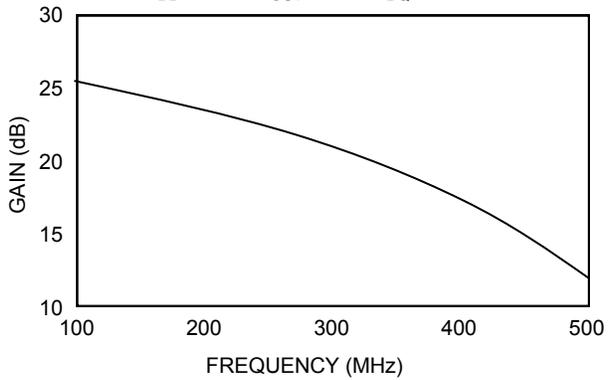
**POWER OUTPUT vs VOLTAGE**

$P_{IN}=3.0\text{ W}$   $I_{DQ}=500\text{ mA}$   $P_{OUT}=500\text{ W}$



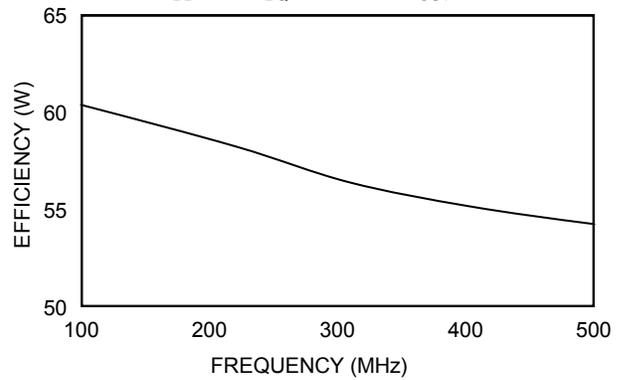
**GAIN vs FREQUENCY**

$V_{DD}=28\text{ V}$   $P_{OUT}=40\text{ W}$   $I_{DQ}=500\text{ mA}$



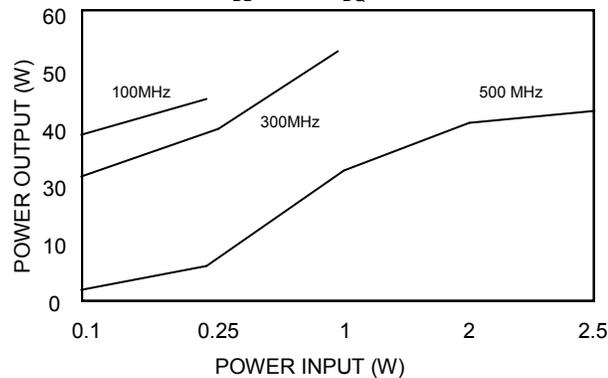
**EFFICIENCY vs FREQUENCY**

$V_{DD}=28\text{ V}$   $I_{DQ}=500\text{ mA}$   $P_{OUT}=40\text{ W}$



**POWER OUTPUT vs POWER INPUT**

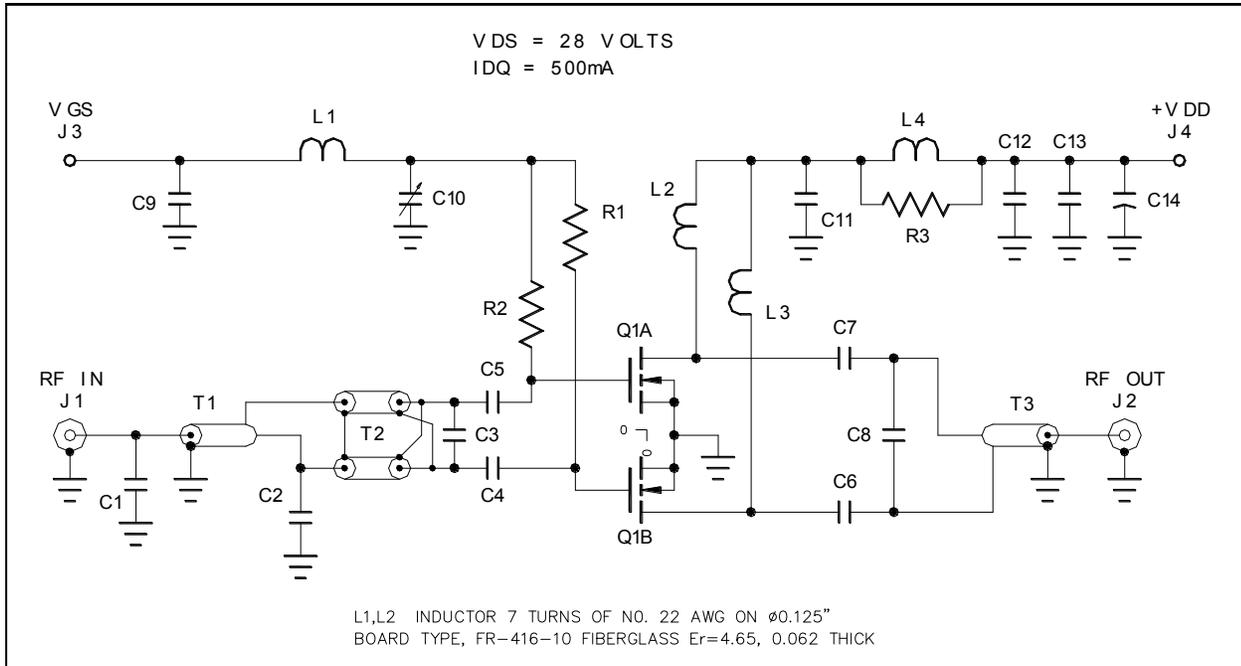
$V_{DD}=28\text{ V}$   $I_{DQ}=500\text{ mA}$



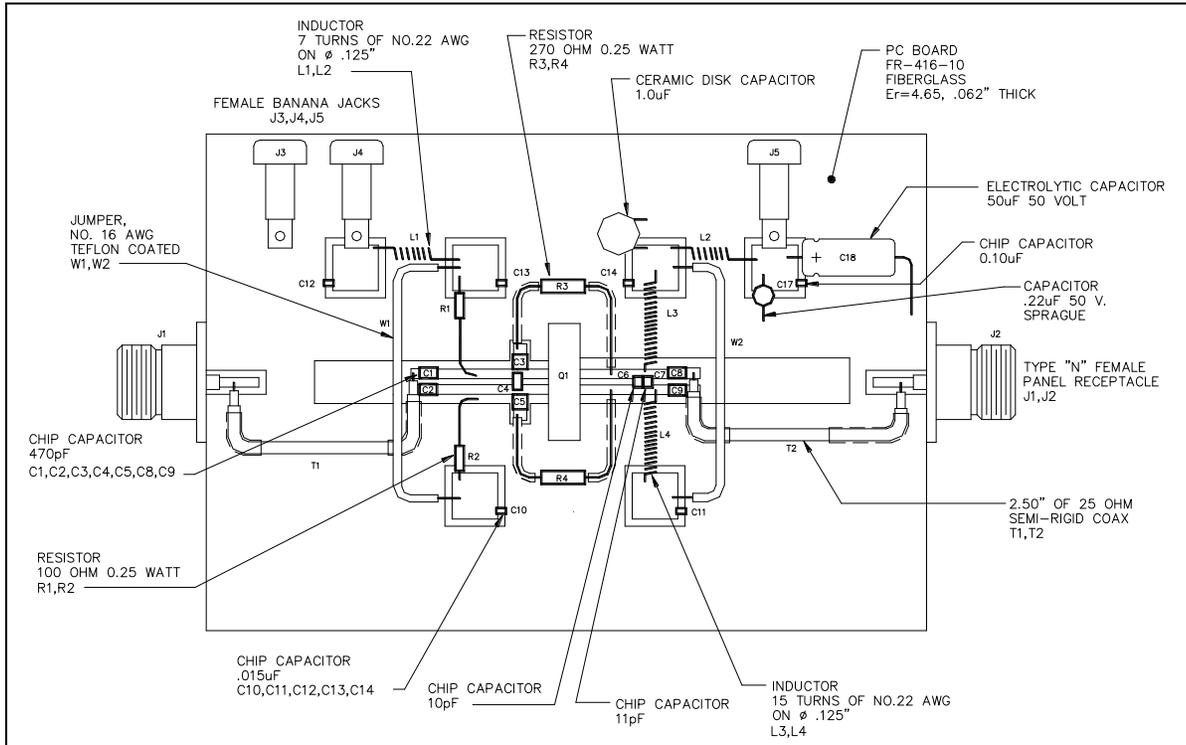
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### TEST FIXTURE SCHEMATIC



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