

# RF Power MOSFET Transistor 40W, 2-175MHz, 28V

M/A-COM Products Released; RoHS Compliant

### **Features**

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

## 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 <sub>DS</sub>	8	Α
Power Dissipation	P <sub>D</sub>	125	W
Junction Temperature	$T_J$	200	°C
Storage Temperature	T <sub>STG</sub>	-55 to +150	°C
Thermal Resistance	$\theta_{JC}$	1.4	°C/W

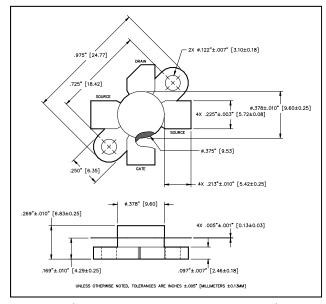
## **TYPICAL DEVICE IMPEDANCE**

F (MHz)	Z <sub>IN</sub> (Ω)	Z <sub>LOAD</sub> (Ω)		
30	12.0 - j6.8	6.5 - j1.5		
50	10.0 - j6.5 6.0 - j1.8			
100	6.0 - j5.5	5.5 - j1.8		
200	1.1 - j3.0	3.5 - j1.8		
V <sub>DD</sub> = 28V, I <sub>DQ</sub> = 200mA, P <sub>OUT</sub> = 40 W				

Z<sub>IN</sub> is the series equivalent input impedance of the device from gate to source.

Z<sub>LOAD</sub> is the optimum series equivalent load impedance as measured from drain to ground.

## **Package Outline**



LETTER	MILLIM	ETERS	INCHES	
DIM	MIN	MAX	MIN	MAX
Α	24.64	24.89	.970	.980
В	18.29	18.54	.720	.730
С	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
Н	2.29	2.67	.090	.105
J	4.04	4.55	.159	.179
К	6.58	7.39	.259	.291
L	.10	.15	.004	.006

#### **ELECTRICAL CHARACTERISTICS AT 25°C**

LEECTRICAL CHARACTERISTICS AT 25 C					
Parameter	Symbol	Min	Max	Units	Test Conditions
Drain-Source Breakdown Voltage	BV <sub>DSS</sub>	65	-	V	V <sub>GS</sub> = 0.0 V , I <sub>DS</sub> = 10.0 mA
Drain-Source Leakage Current	I <sub>DSS</sub>	-	2.0	mA	V <sub>GS</sub> = 28.0 V , V <sub>GS</sub> = 0.0 V
Gate-Source Leakage Current	I <sub>GSS</sub>	-	2.0	μA	$V_{GS} = 20.0 \text{ V}$ , $V_{DS} = 0.0 \text{ V}$
Gate Threshold Voltage	V <sub>GS(TH)</sub>	2.0	6.0	V	V <sub>DS</sub> = 10.0 V , I <sub>DS</sub> = 200.0 mA
Forward Transconductance	G <sub>M</sub>	1	-	S	$V_{DS}$ = 10.0 V , $I_{DS}$ = 2000.0 mA , $\Delta$ $V_{GS}$ = 1.0V, 80 $\mu s$ Pulse
Input Capacitance	C <sub>ISS</sub>	-	90	pF	V <sub>DS</sub> = 28.0 V , F = 1.0 MHz
Output Capacitance	Coss	-	80	pF	V <sub>DS</sub> = 28.0 V , F = 1.0 MHz
Reverse Capacitance	C <sub>RSS</sub>	-	16	pF	V <sub>DS</sub> = 28.0 V , F = 1.0 MHz
Power Gain	G <sub>P</sub>	13	-	dB	V <sub>DD</sub> = 28.0 V, I <sub>DQ</sub> = 200 mA, P <sub>OUT</sub> = 40 W F =175 MHz
Drain Efficiency	ŋ <sub>D</sub>	60	-	%	V <sub>DD</sub> = 28.0 V, I <sub>DQ</sub> = 200 mA, P <sub>OUT</sub> = 40 W F =175 MHz
Load Mismatch Tolerance	VSWR-T	-	30:1	-	V <sub>DD</sub> = 28.0 V, I <sub>DQ</sub> = 200 mA, P <sub>OUT</sub> = 40 W F =175 MHz

ADVANCED: Data Sheets contain information regarding a product M/A-COM Technology Solutions is considering for development. Performance is based on target specifications, simulated results, and/or prototype measurements. Commitment to develop is not guaranteed.

PRELIMINARY: Data Sheets contain information regarding a product M/A-COM Technology Solutions has under development. Performance is based on engineering tests. Specifications are typical. Mechanical outline has been fixed. Engineering samples and/or test data may be available. Commitment to produce in volume is not guaranteed.

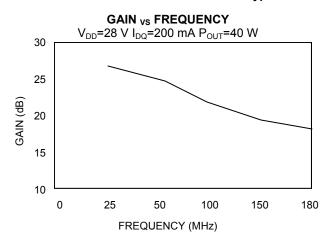
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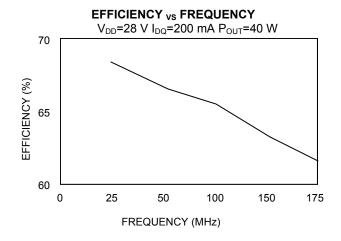


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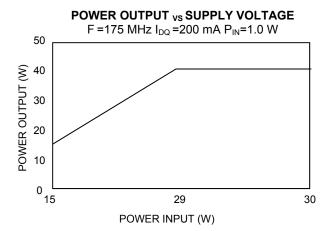
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## **Typical Broadband Performance Curves**





## POWER OUTPUT vs POWER INPUT $V_{DD} = 28 \text{ V } I_{DQ} = 100 \text{ mA}$ 60 50 100MHz POWER OUTPUT (W) 175MHz 40 30 20 10 0.3 0.5 1 1.5 0.5 0.1 POWER INPUT (W)



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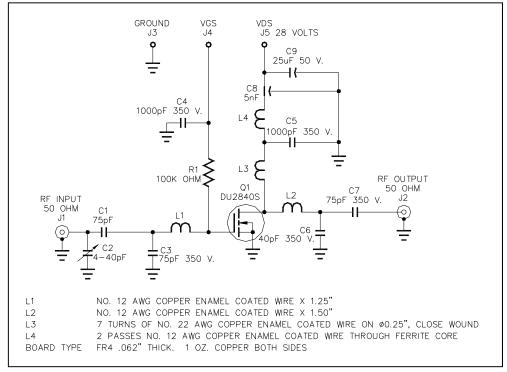
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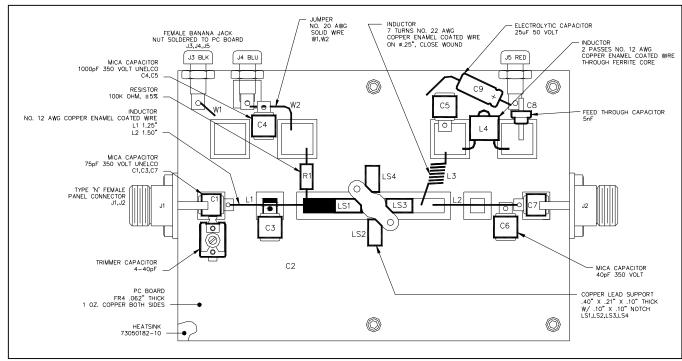
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## **TEST FIXTURE SCHEMATIC**



#### **TEST FIXTURE ASSEMBLY**



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