

## RF Power MOSFET Transistor 5W, 500-1000MHz, 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
- Applications
  - Broadband linear operation  
500 MHz to 1400 MHz

### 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	$I_{DS}$	1.4	A
Power Dissipation	$P_D$	14.4	W
Junction Temperature	$T_J$	200	°C
Storage Temperature	$T_{STG}$	-65 to +150	°C
Thermal Resistance	$\theta_{JC}$	12.1	°C/W

### TYPICAL DEVICE IMPEDANCE

F (MHz)	$Z_{IN}$ ( $\Omega$ )	$Z_{LOAD}$ ( $\Omega$ )
500	4.3 - j29.0	27.3 + j28.6
1000	2.2 - j2.75	8.0 + j16.0
1400	2.8 - j3.0	9.4 + j10.6

$V_{DD} = 28V, I_{DQ} = 50\text{ mA}, P_{OUT} = 5.0\text{ W}$

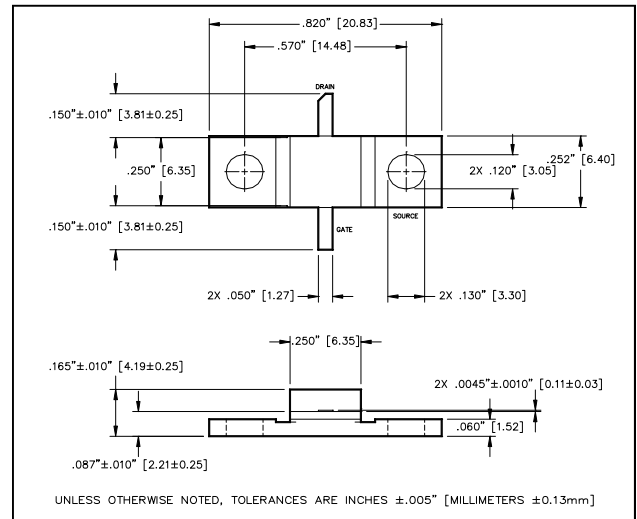
$Z_{IN}$  is the series equivalent input impedance of the device from gate to source.

$Z_{LOAD}$  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	$V_{GS} = 0.0\text{ V}, I_{DS} = 2.0\text{ mA}$
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	$V_{DS} = 10.0\text{ V}, I_{DS} = 10.0\text{ mA}$
Forward Transconductance	$G_M$	80	-	mS	$V_{DS} = 10.0\text{ V}, I_{DS} = 100.0\text{ mA}, \Delta V_{GS} = 1.0V, 80\ \mu\text{s Pulse}$
Input Capacitance	$C_{ISS}$	-	7	pF	$V_{DS} = 28.0\text{ V}, F = 1.0\text{ MHz}$
Output Capacitance	$C_{OSS}$	-	5	pF	$V_{DS} = 28.0\text{ V}, F = 1.0\text{ MHz}$
Reverse Capacitance	$C_{RSS}$	-	2.4	pF	$V_{DS} = 28.0\text{ V}, F = 1.0\text{ MHz}$
Power Gain	$G_P$	10	-	dB	$V_{DD} = 28.0\text{ V}, I_{DQ} = 50\text{ mA}, P_{OUT} = 5.0\text{ W}, F = 1.0\text{ GHz}$
Drain Efficiency	$\eta_D$	50	-	%	$V_{DD} = 28.0\text{ V}, I_{DQ} = 50\text{ mA}, P_{OUT} = 5.0\text{ W}, F = 1.0\text{ GHz}$
Load Mismatch Tolerance	VSWR-T	-	20:1	-	$V_{DD} = 28.0\text{ V}, I_{DQ} = 50\text{ mA}, P_{OUT} = 5.0\text{ W}, F = 1.0\text{ GHz}$

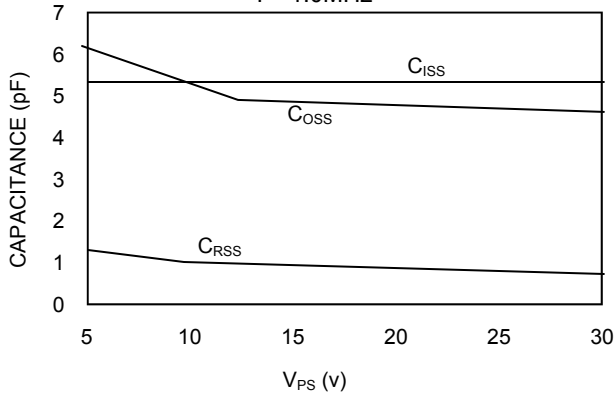
### Package Outline



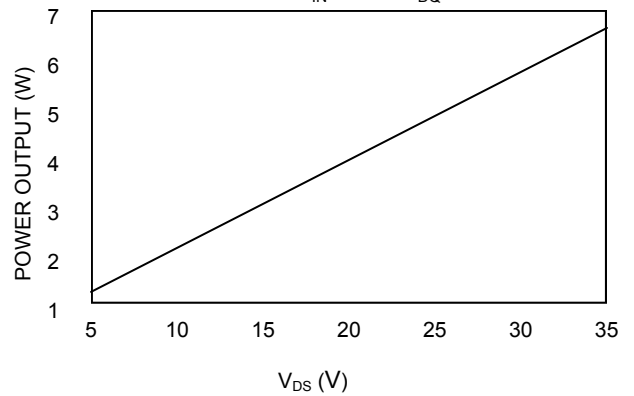
LETTER DIM	MILLIMETERS		INCHES	
	MIN	MAX	MIN	MAX
A	20.70	20.96	.815	.825
B	14.35	14.61	.565	.575
C	13.72	14.22	.540	.560
D	6.27	6.53	.247	.257
E	6.22	6.48	.245	.255
F	6.22	6.48	.245	.255
G	1.14	1.40	.045	.055
H	2.92	3.18	.115	.125
J	1.40	1.65	.055	.065
K	1.96	2.46	.077	.097
L	3.61	4.37	.142	.172
M	.08	.15	.003	.006

**Typical Broadband Performance Curves**

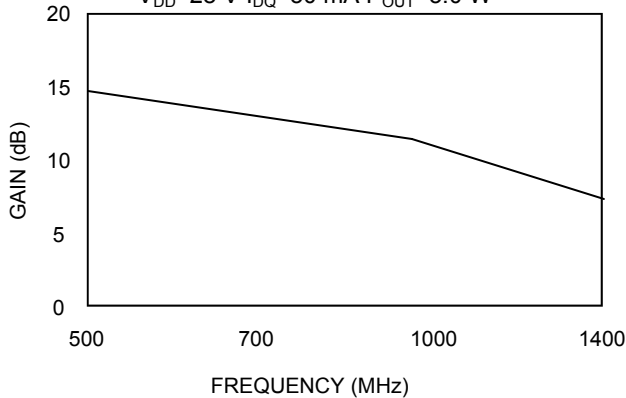
**CAPACITANCES vs VOLTAGE**  
 $F = 1.0\text{MHz}$



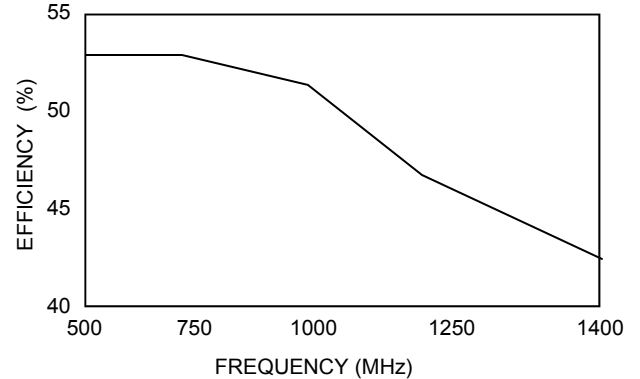
**POWER OUTPUT vs VOLTAGE**  
 $F = 1.0\text{GHz } P_{IN} = 0.5\text{W } I_{DQ} = 50\text{mA}$



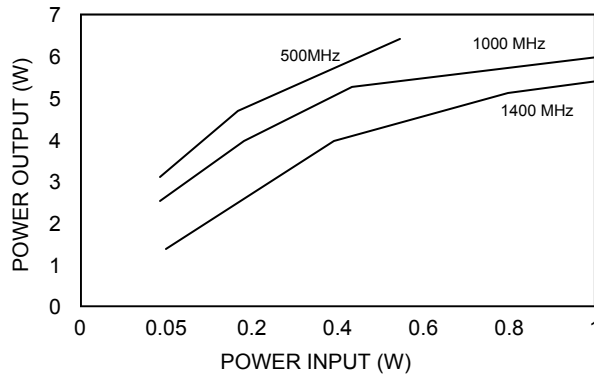
**GAIN vs FREQUENCY**  
 $V_{DD} = 28\text{V } I_{DQ} = 50\text{mA } P_{OUT} = 5.0\text{W}$



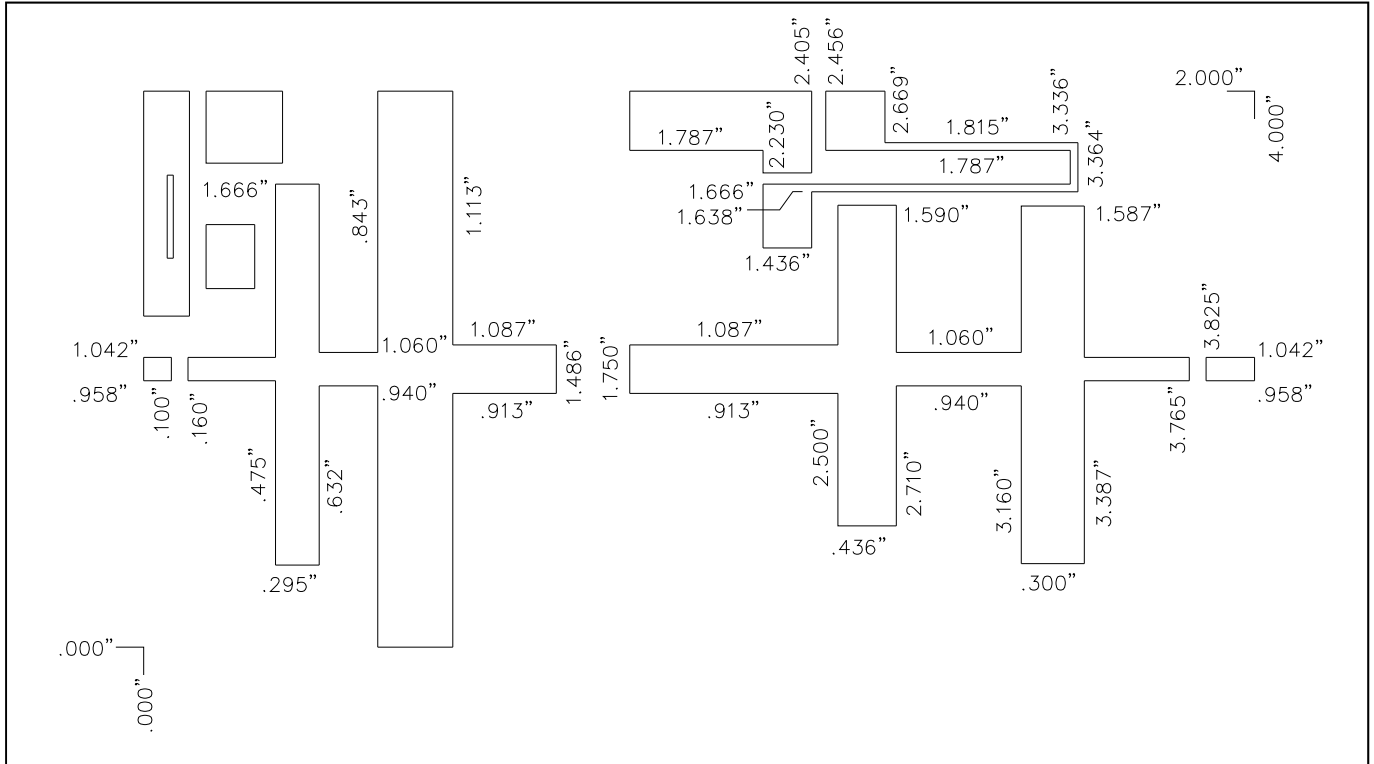
**EFFICIENCY vs FREQUENCY**  
 $V_{DD} = 28\text{V } I_{DQ} = 50.0\text{mA } P_{out} = 5.0\text{W}$



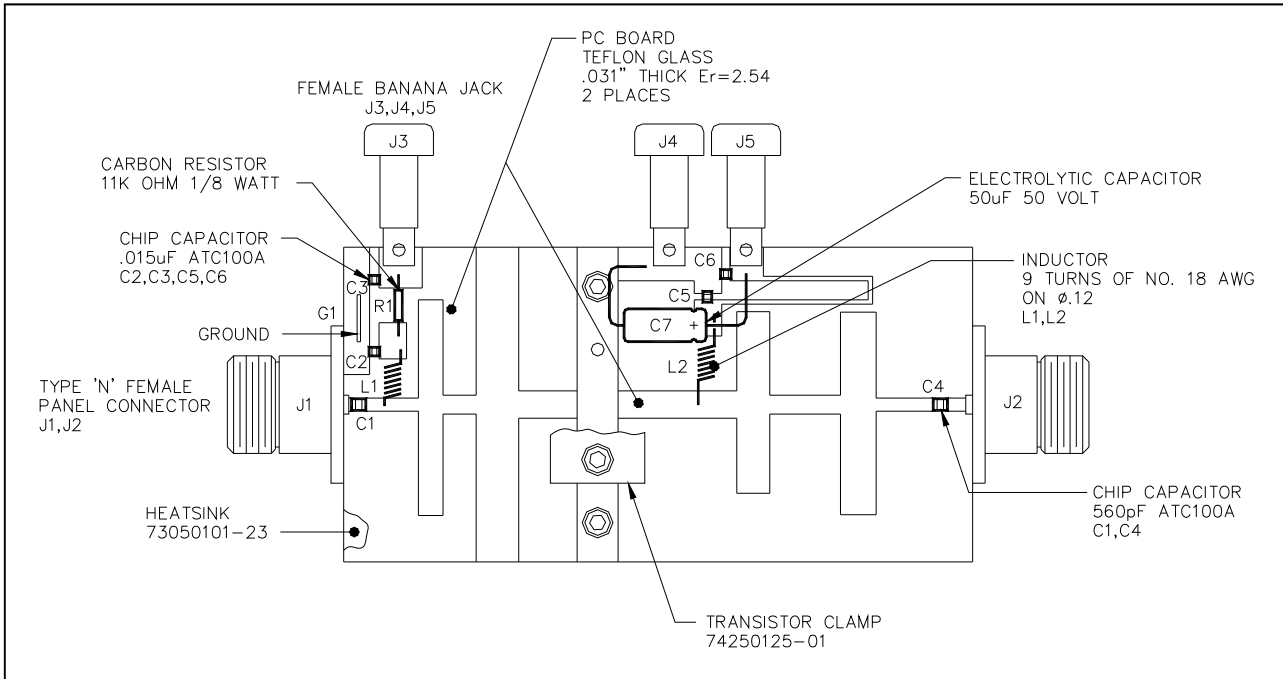
**POWER OUTPUT vs POWER INPUT**  
 $V_{DD} = 28\text{V } I_{DQ} = 50\text{mA}$



**TEST FIXTURE CIRCUIT DIMENSIONS**



**TEST FIXTURE ASSEMBLY**



**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.

- **North America** Tel: 800.366.2266 / Fax: 978.366.2266
- **Europe** Tel: 44.1908.574.200 / Fax: 44.1908.574.300
- **Asia/Pacific** Tel: 81.44.844.8296 / Fax: 81.44.844.8298

Visit [www.macontech.com](http://www.macontech.com) for additional data sheets and product information.

M/A-COM Technology Solutions Inc. and its affiliates reserve the right to make changes to the product(s) or information contained herein without notice.