

## RF Power MOSFET Transistor 150W, 100MHz-500MHz, 28V

M/A-COM Products  
Released; RoHS Compliant

### Features

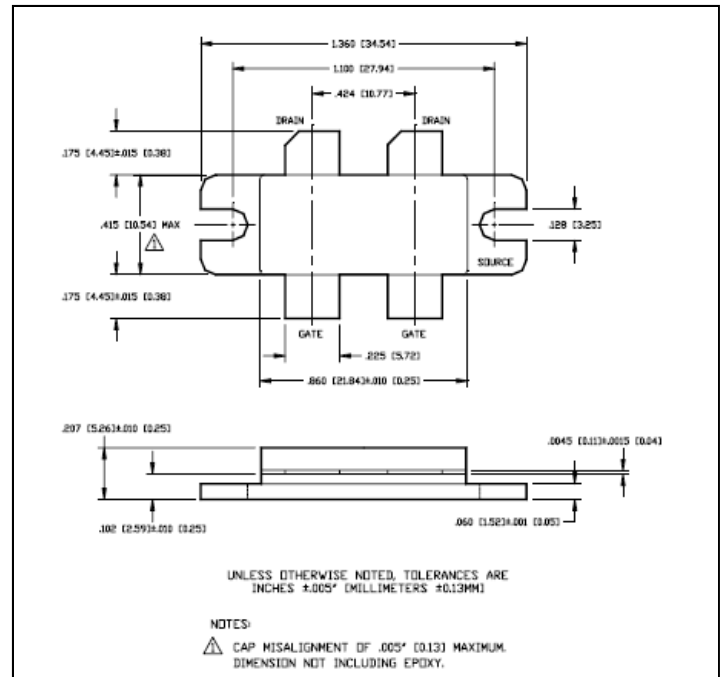
- DMOS structure
- Lower capacitance for broadband operation
- Common source configuration

### ABSOLUTE MAXIMUM RATINGS<sup>1, 2, 3</sup>

Parameter	Symbol	Rating	Units
Drain-Source Voltage	$V_{DS}$	65	V
Gate-Source Voltage	$V_{GS}$	20	V
Drain-Source Current	$I_{DS}$	16*	A
Power Dissipation	$P_D$	389	W
Junction Temperature	$T_J$	200	°C
Storage Temperature	$T_{STG}$	-65 to +150	°C
Thermal Resistance	$\Theta_{JC}$	0.45	°C/W

1. Exceeding any one or combination of these limits may cause permanent damage to this device.
2. M/A-COM does not recommend sustained operation near these maximum limits.
3. At 25°C Tcase, unless noted.

### Package Outline



### ELECTRICAL SPECIFICATIONS: 25°C

Parameter	Test Conditions	Units	Min.	Max.
Drain-Source Breakdown Voltage	$V_{GS} = 0.0\text{ V}$ , $I_{DS} = 20.0\text{ mA}^*$	$BV_{DSS}$	65	—
Drain-Source Leakage Current	$V_{DS} = 28.0\text{ V}$ , $V_{GS} = 0.0\text{ V}^*$	$I_{DSS}$	—	4.0
Gate-Source Leakage Current	$V_{GS} = 20\text{ V}$ , $V_{DS} = 0.0\text{ V}^*$	$I_{GSS}$	—	4.0
Gate Threshold Voltage	$V_{DS} = 10.0\text{ V}$ , $I_{DS} = 400.0\text{ mA}^*$	$V_{GS(TH)}$	2.0	6.0
Forward Transconductance	$V_{DS} = 10.0\text{ V}$ , $I_{DS} = 4000.0\text{ mA}$ , $\Delta V_{GS} = 1.0\text{ V}$ , 80 $\mu\text{s}$ pulse*	$G_M$	2.0	—
Input Capacitance	$V_{DS} = 28.0\text{ V}$ , $F = 1.0\text{ MHz}^*$	$C_{ISS}$	—	180
Output Capacitance	$V_{DS} = 28.0\text{ V}$ , $F = 1.0\text{ MHz}^*$	$C_{OSS}$	—	120
Reverse Capacitance	$V_{DS} = 28.0\text{ V}$ , $F = 1.0\text{ MHz}^*$	$C_{RSS}$	—	32
Power Gain	$V_{DD} = 28.0\text{ V}$ , $I_{DQ} = 400.0\text{ mA}$ , $P_{OUT} = 150.0\text{ W}$ , $F = 500\text{ MHz}$	$G_P$	8	—
Drain Efficiency	$V_{DD} = 28.0\text{ V}$ , $I_{DQ} = 400.0\text{ mA}$ , $P_{OUT} = 150.0\text{ W}$ , $F = 500\text{ MHz}$	$\eta_D$	55	—
Load Mismatch Tolerance	$V_{DD} = 28.0\text{ V}$ , $I_{DQ} = 400.0\text{ mA}$ , $P_{OUT} = 150.0\text{ W}$ , $F = 500\text{ MHz}$	VSWR-T	—	10:1**

Notes:

\* Per side

\*\* At all phase angles

1

M/A-COM Inc. and its affiliates reserve the right to make changes to the product(s) or information contained herein without notice. M/A-COM makes no warranty, representation or guarantee regarding the suitability of its products for any particular purpose, nor does M/A-COM assume any liability whatsoever arising out of the use or application of any product(s) or information.

• **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.macom.com](http://www.macom.com) for additional data sheets and product information.

**ADVANCED:** Data Sheets contain information regarding a product M/A-COM 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 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.

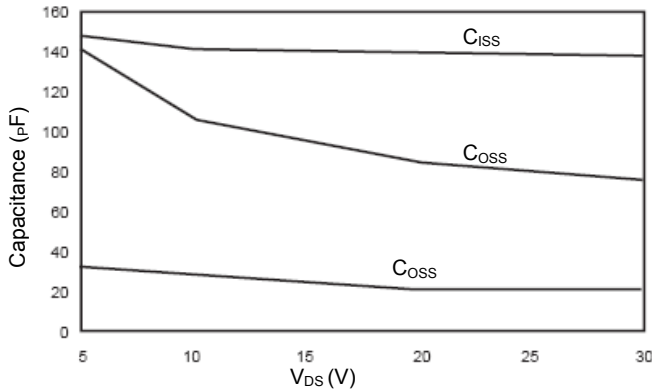
**RELEASED:** In full production, samples readily available, standard lead times apply.

**RF Power MOSFET Transistor**  
**150W, 100MHz-500MHz, 28V**

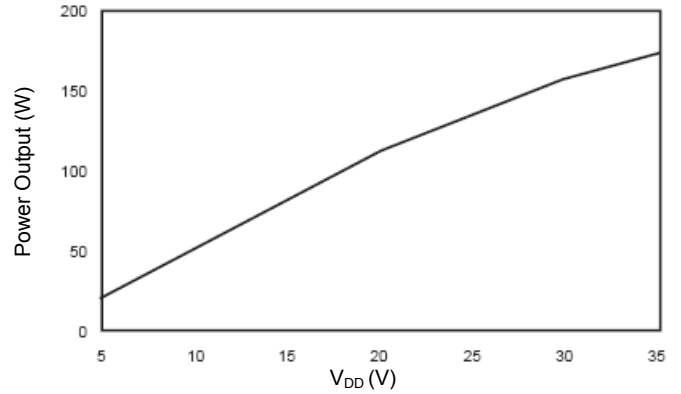
**M/A-COM Products**  
*Released; RoHS Compliant*

**Typical Broadband Performance Curves**

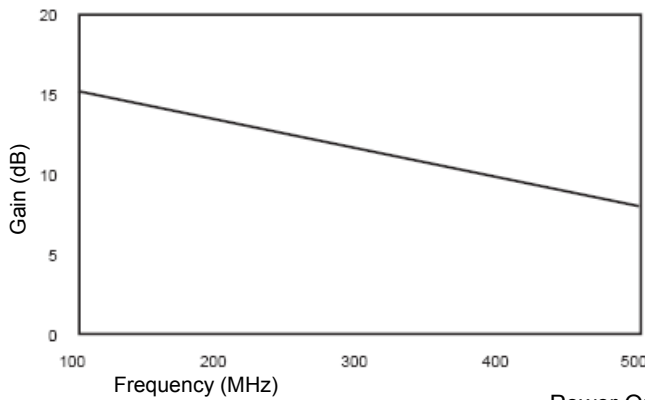
Capacitance vs Voltage  
 $F=1.0\text{ MHz}$



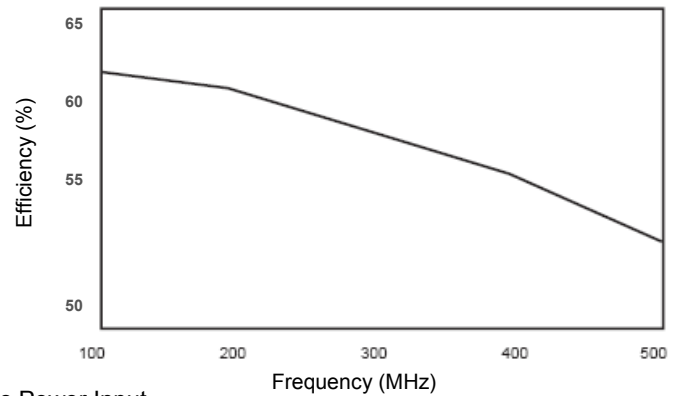
Power Output vs Voltage  
 $P_{IN}=24\text{ W } I_{DQ}=400\text{ mA } F=500\text{ MHz}$



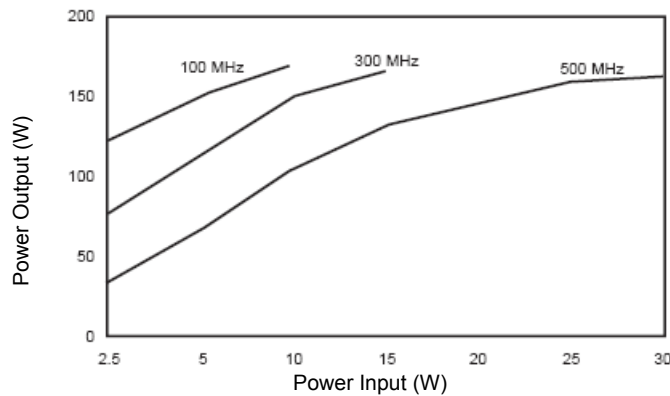
Gain vs Frequency  
 $V_{DD}=28\text{ V } P_{OUT}=100\text{ W } I_{DQ}=400\text{ mA}$



Efficiency vs Frequency  
 $V_{DD}=28\text{ V } I_{DQ}=400\text{ mA } P_{OUT}=150\text{ W}$



Power Output vs Power Input  
 $V_{DD}=28\text{ V } I_{DQ}=400\text{ mA}$



M/A-COM Inc. and its affiliates reserve the right to make changes to the product(s) or information contained herein without notice. M/A-COM makes no warranty, representation or guarantee regarding the suitability of its products for any particular purpose, nor does M/A-COM assume any liability whatsoever arising out of the use or application of any product(s) or information.

- **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.macom.com](http://www.macom.com) for additional data sheets and product information.

**ADVANCED:** Data Sheets contain information regarding a product M/A-COM 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 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.

**RELEASED:** In full production, samples readily available, standard lead times apply.

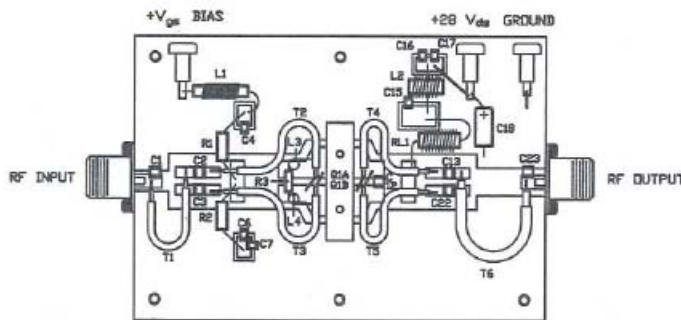
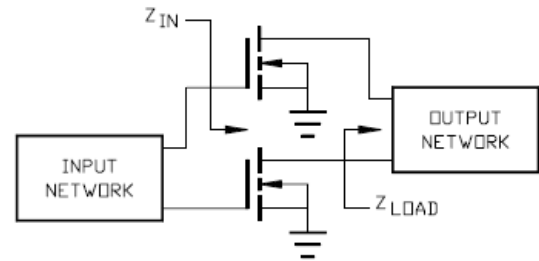
# UF28150J

**RF Power MOSFET Transistor**  
**150W, 100MHz-500MHz, 28V**

**M/A-COM Products**  
*Released; RoHS Compliant*

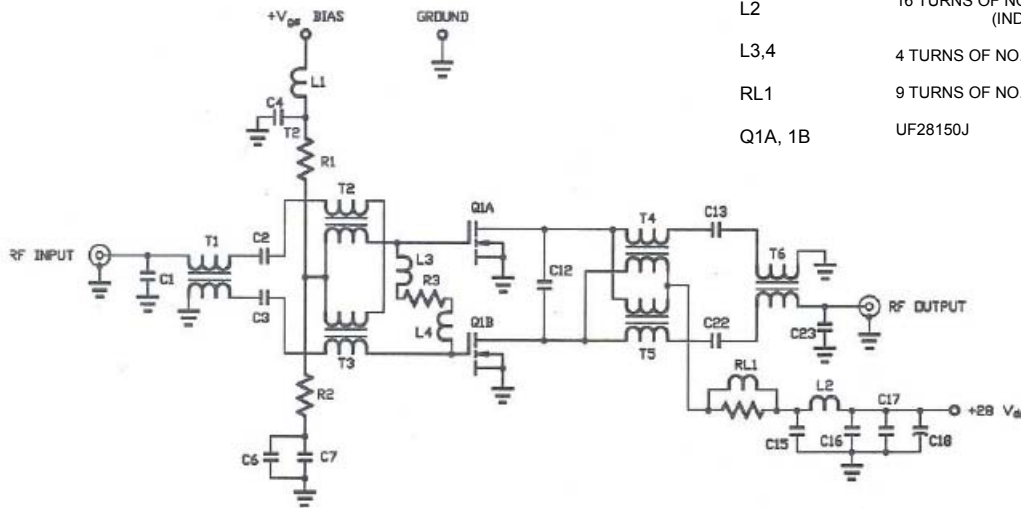
**TYPICAL OPTIMUM DEVICE IMPEDANCES**

F (MHz)	Z <sub>IN</sub> (Ω)	Z <sub>LOAD</sub> (Ω)
100	3.7 - j5.9	3.0 - j0.7
300	2.7 - j5.9	2.6 - j0.55
500	2.5 - j2.9	2.5 - j0.5
V <sub>DD</sub> = 28V, I <sub>DQ</sub> = 400mA, P <sub>OUT</sub> = 150W		



**PARTS LIST**

- |               |  |
|---------------|--|
| C23           | 1.0pF  |
| C1            | 9.1pF  |
| C12           | 11pF   |
| C2, 3, 13, 22 | 270pF  |
| C7, 16        | 680pF  |
| C4, 6, 15, 17 | .015uF   |
| C18           | 50uF 50V   |
| R1            | 11K OHM .25 W. 10%   |
| R2            | 47 OHM .05 W. 10%  |
| R3            | 12 OHM .25 W. 10%  |
| T1            | 2.50' OF 50 OHM (.85' OD) SEMI-RIGID CABLE                         |
| T2,3,4,5      | 2.50' OF 10 OHM (.70' OD) SEMI-RIGID CABLE                         |
| T6            | 2.50' OF 50 OHM (.141' OD) SEMI-RIGID CABLE                        |
| L1            | 5uH  |
| L2            | 16 TURNS OF NO. 18 AWG ON TORID CORE<br>(INDIANA GENERAL F6278-Q1) |
| L3,4          | 4 TURNS OF NO. 18 AWG ON .125 DIAMETER                             |
| RL1           | 9 TURNS OF NO. 18 AWG ON 15 OHM 2 W. 10% RESISTOR                  |
| Q1A, 1B       | UF28150J   |



**HANDLING PROCEDURES: STATIC SENSITIVITY**

Please observe the following precautions to avoid damage:

DMOS devices are sensitive to electrostatic discharge (ESD) and can be damaged by static electricity. Proper ESD control techniques should be used when handling these devices.

M/A-COM Inc. and its affiliates reserve the right to make changes to the product(s) or information contained herein without notice. M/A-COM makes no warranty, representation or guarantee regarding the suitability of its products for any particular purpose, nor does M/A-COM assume any liability whatsoever arising out of the use or application of any product(s) or information.

- **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.macom.com](http://www.macom.com) for additional data sheets and product information.

**ADVANCED:** Data Sheets contain information regarding a product M/A-COM 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 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.

**RELEASED:** In full production, samples readily available, standard lead times apply.