

# RF MOSFET Power Transistor, 5W, 28V

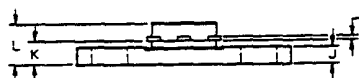
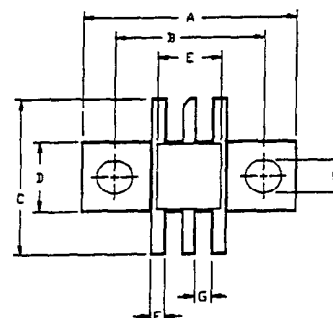
## 100 - 500 MHz

**UF2805B**

V2.00

### Features

- N-Channel Enhancement Mode Device
- DMOS Structure
- Lower Capacitances for Broadband Operation
- Common Source Configuration
- Lower Noise Floor
- 100 MHz to 500 MHz Operation



### 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	$T_{STG}$	-55 to +150	°C
Thermal Resistance	$\theta_{JC}$	12.1	°C/W

LETTER DIM	MILLIMETERS		INCHES	
	MIN	MAX	MIN	MAX
A	20.70	20.96	.815	.825
B	14.35	14.61	.565	.575
C	14.73	15.24	.580	.600
D	6.27	6.53	.247	.257
E	6.22	6.48	.245	.255
F	1.14	1.40	.045	.055
G	1.52	1.78	.060	.070
H	2.92	3.17	.115	.125
J	1.40	1.65	.055	.065
K	2.03	2.39	.080	.094
L	3.66	4.32	.144	.170
M	.10	.15	.004	.006

### 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	$V_{DS}=28.0\text{ V}$ , $V_{GS}=0.0\text{ V}$
Gate-Source Leakage Current	$I_{GSS}$	-	1.0	$\mu\text{A}$	$V_{GS}=20\text{ V}$ , $V_{DS}=0.0\text{ V}$
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	$V_{DS}=10.0\text{ V}$ , $I_{DS}=100.0\text{ mA}$ , $\Delta V_{GS}=1.0\text{ V}$ , 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	$V_{DD}=28.0\text{ V}$ , $I_{DQ}=50.0\text{ mA}$ , $P_{OUT}=5.0\text{ W}$ , $F=500\text{ MHz}$
Drain Efficiency	$\eta_D$	50	-	%	$V_{DD}=28.0\text{ V}$ , $I_{DQ}=50.0\text{ mA}$ , $P_{OUT}=5.0\text{ W}$ , $F=500\text{ MHz}$
Load Mismatch Tolerance	VSWR-T	-	20:1	-	$V_{DD}=28.0\text{ V}$ , $I_{DQ}=50.0\text{ mA}$ , $P_{OUT}=5.0\text{ W}$ , $F=500\text{ MHz}$

Specifications Subject to Change Without Notice.

**M/A-COM, Inc.**

North America: Tel. (800) 366-2266  
Fax (800) 618-8883

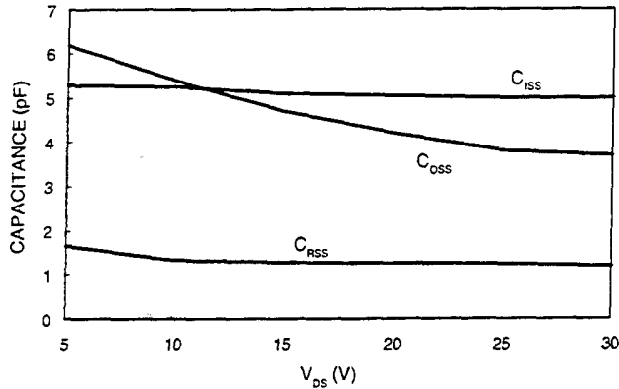
Asia/Pacific: Tel. +81 (03) 3226-1671  
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Fax +44 (1344) 300 020

Typical Broadband Performance Curves

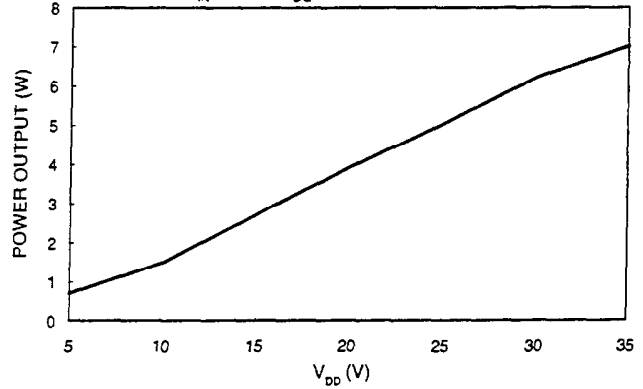
CAPACITANCES vs VOLTAGE

F=1.0 MHz



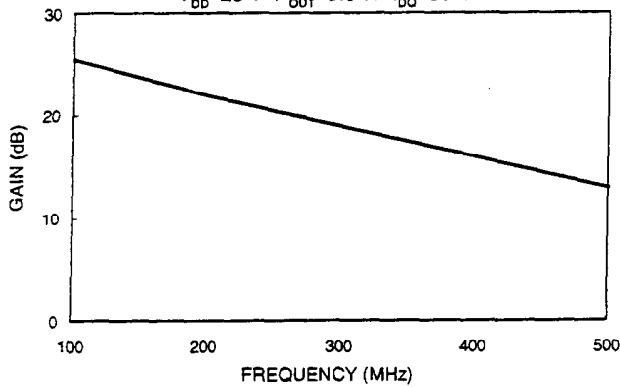
POWER OUTPUT vs VOLTAGE

P<sub>IN</sub>=0.3 W I<sub>DO</sub>=5.0 mA F=500 MHz



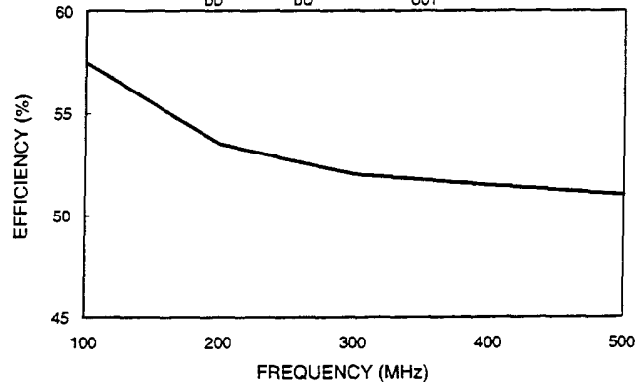
GAIN vs FREQUENCY

V<sub>DD</sub>=28 V P<sub>OUT</sub>=5.0 W I<sub>DO</sub>=50 mA



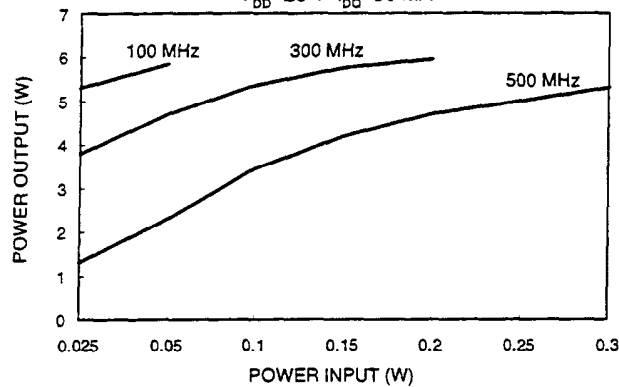
EFFICIENCY vs FREQUENCY

V<sub>DD</sub>=28 V I<sub>DO</sub>=50 mA P<sub>OUT</sub>=5.0 W



POWER OUTPUT vs POWER INPUT

V<sub>DD</sub>=28 V I<sub>DO</sub>=50 mA



Typical Device Impedance

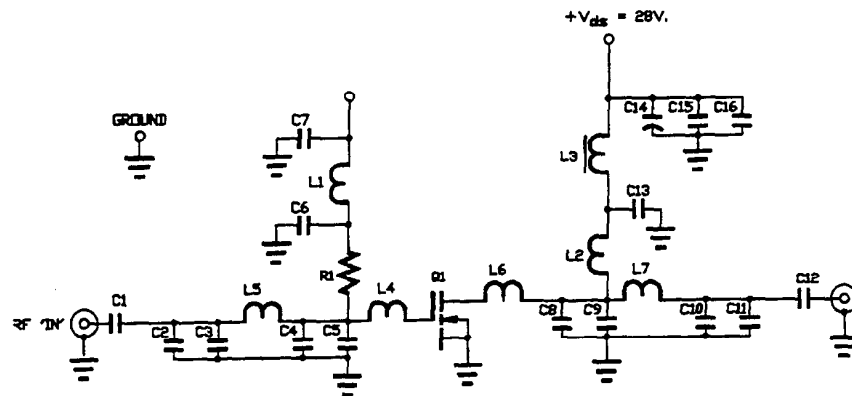
Frequency (MHz)	Z <sub>IN</sub> (OHMS)	Z <sub>LOAD</sub> (OHMS)
100	15.0 - j 80.0	35.0 + j 55.0
300	8.0 - j 43.0	29.0 + j 40.0
500	4.0 - j 29.0	28.0 + j 29.0

V<sub>DD</sub>=28 V, I<sub>DD</sub>=50 mA, P<sub>OUT</sub>=5.0 Watts

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 drain.

RF Test Fixture



PARTS LIST

- C8 1.0pf
- C9 3.9pf
- C4, 10, 11 4.7pf
- C2 5.6pf
- C3 8.2pf
- C5 15pf
- C6, 7, 13, 16 680pf
- C1, 12 820pf
- C15 .01uf
- C14 50uf 50V.
- R1 10K OHM
- Q1 UF2805B
- L1 9 TURNS OF NO. 24 AWG
- L2 7 TURNS OF NO. 22 AWG
- L3 3 TURNS OF NO. 24 AWG ON FERRITE BEAD
- L4 1.30' OF 50 OHM TRANSMISSION LINE
- L5 .70' OF 50 OHM TRANSMISSION LINE
- L6 .20' OF 50 OHM TRANSMISSION LINE
- L7 1.85' OF 50 OHM TRANSMISSION LINE

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