

# RF MOSFET Power Transistor, 20W, 28V

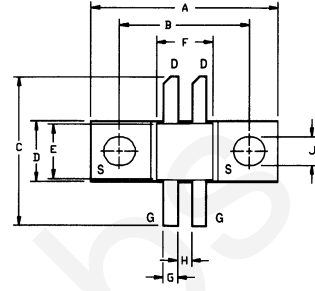
## 100 - 500 MHz

**UF2820P**

V2.00

### 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	$I_{DS}$	2.8*	A
Power Dissipation	$P_D$	53	W
Junction Temperature	$T_J$	200	°C
Storage Temperature	$T_{STG}$	-55 to +150	°C
Thermal Resistance	$\theta_{JC}$	3.3	°C/W

LETTER DIM	MILLIMETERS		INCHES	
	MIN	MAX	MIN	MAX
A	20.70	20.96	.815	.823
B	14.35	14.61	.565	.575
C	15.67	17.45	.617	.687
D	6.27	6.53	.247	.257
E	6.22	6.48	.245	.255
F	6.22	6.48	.245	.255
G	1.40	1.65	.055	.065
H	1.40	1.65	.055	.065
J	2.92	3.18	.115	.125
K	1.40	1.65	.055	.065
L	1.96	2.46	.077	.097
M	3.61	4.37	.142	.172
N	.08	.13	.003	.005



Island Labs

### Electrical Characteristics at 25°C

Parameter	Symbol	Min	Max	Units	Test Conditions
Drain-Source Breakdown Voltage	$BV_{DSS}$	65	-	V	$V_{GS}=0.0\text{ V}, I_{DS}=4.0\text{ mA}^*$
Drain-Source Leakage Current	$I_{DSS}$	-	2.0	mA	$V_{DS}=28.0\text{ V}, V_{GS}=0.0\text{ V}^*$
Gate-Source Leakage Current	$I_{GSS}$	-	2.0	$\mu\text{A}$	$V_{GS}=20\text{ V}, V_{DS}=0.0\text{ V}^*$
Gate Threshold Voltage	$V_{GS(TH)}$	2.0	6.0	V	$V_{DS}=10.0\text{ V}, I_{DS}=200.0\text{ mA}^*$
Forward Transconductance	$G_M$	.160	-	S	$V_{DS}=10.0\text{ V}, I_{DS}=200.0\text{ mA}, \Delta V_{GS}=1.0\text{ V}, 80\text{ }\mu\text{s Pulse}^*$
Input Capacitance	$C_{ISS}$	-	14	pF	$V_{DS}=28.0\text{ V}, F=1.0\text{ MHz}^*$
Output Capacitance	$C_{OSS}$	-	10	pF	$V_{DS}=28.0\text{ V}, F=1.0\text{ MHz}^*$
Reverse Capacitance	$C_{RSS}$	-	4.8	pF	$V_{DS}=28.0\text{ V}, F=1.0\text{ MHz}^*$
Power Gain	$G_P$	10	-	dB	$V_{DD}=28.0\text{ V}, I_{DQ}=200.0\text{ mA}, P_{OUT}=20.0\text{ W}, F=500\text{ MHz}$
Drain Efficiency	$\eta_D$	50	-	%	$V_{DD}=28.0\text{ V}, I_{DQ}=200.0\text{ mA}, P_{OUT}=20.0\text{ W}, F=500\text{ MHz}$
Load Mismatch Tolerance	VSWR-T	-	20:1	-	$V_{DD}=28.0\text{ V}, I_{DQ}=200.0\text{ mA}, P_{OUT}=20.0\text{ W}, F=500\text{ MHz}$

\* Per Side

Specifications Subject to Change Without Notice.

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

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Fax (800) 618-8883

Asia/Pacific: Tel. +81 (03) 3226-1671  
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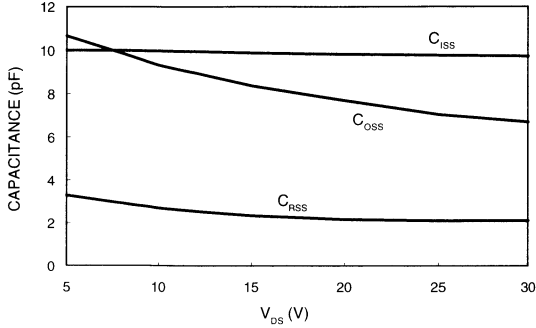
Europe: Tel. +44 (1344) 869 595  
Fax +44 (1344) 300 020

**9-275**

Typical Broadband Performance Curves

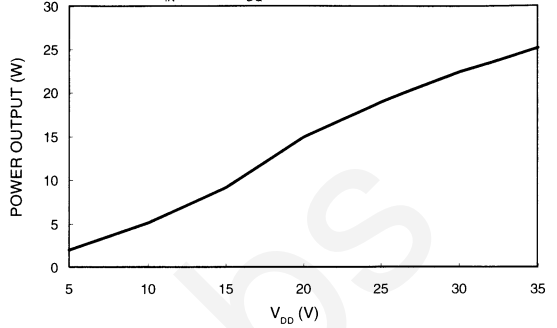
**CAPACITANCES vs VOLTAGE**

F=1.0 MHz



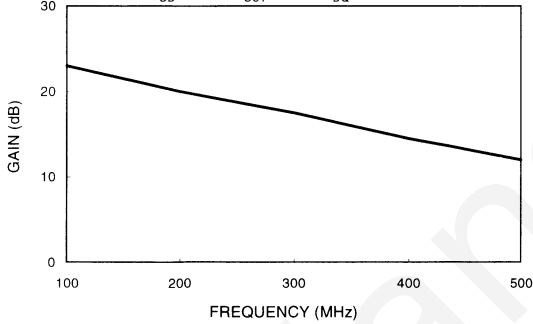
**POWER OUTPUT vs VOLTAGE**

P<sub>IN</sub>=1.0 W I<sub>DO</sub>=200 mA F=500 MHz



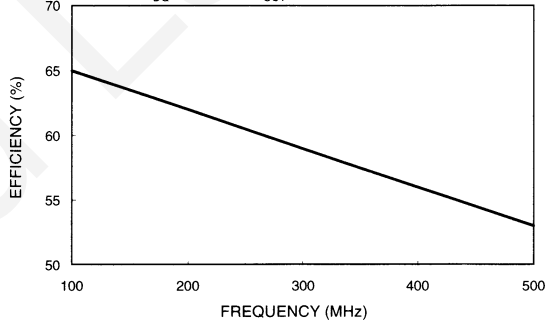
**GAIN vs FREQUENCY**

V<sub>DD</sub>=28 V P<sub>OUT</sub>=20 W I<sub>DO</sub>=200 mA



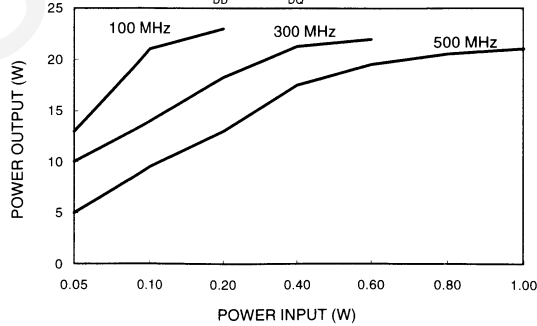
**EFFICIENCY vs FREQUENCY**

I<sub>DO</sub>=200 mA P<sub>OUT</sub>=20 W F=500 MHz



**POWER OUTPUT vs POWER INPUT**

V<sub>DD</sub>=28 V I<sub>DO</sub>=200 mA



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9-276

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Typical Device Impedance

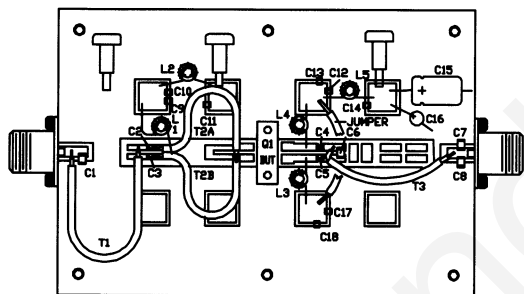
Frequency (MHz)	Z <sub>IN</sub> (OHMS)	Z <sub>LOAD</sub> (OHMS)
100	9.5 - j 60.0	4.0 + j 68.0
300	5.0 - j 35.0	40.0 + j 48.0
500	2.0 - j 22.0	36.0 + j 34.0

V<sub>DD</sub>=28 V, I<sub>DQ</sub>=200 mA, P<sub>OUT</sub>=20.0 Watts

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

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

RF Test Fixture



PARTS LIST

- C1 11pf
- C2, 3, 4, 5 560pf
- C6 6.8pf
- C7 0.6pf
- C8 2.0PF
- C10, 11, 12, 14, 17 .015uf
- C9, 13, 18 680pf
- C15 50uf 50V.
- C16 0.1uf
- T1 2.50' OF 50 OHM (.085' OD) SEMI RIGID COAX
- T2A, 2B 2.50' OF 25 OHM (.070' OD) SEMI RIGID COAX
- T3 2.10' OF 50 OHM (.085' OD) SEMI RIGID COAX
- L1, 2, 3, 4, 5 14 TURNS OF NO. 28 AWG ON TOROID CORE

