

# RF MOSFET Power Transistor, 20W, 28V

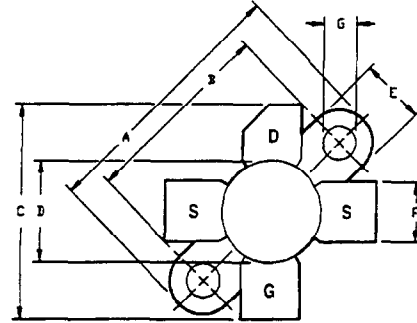
## 2 - 175 MHz

# DU2820S

V2.00

### 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	$I_{DS}$	24	A
Power Dissipation	$P_D$	62.5	W
Junction Temperature	$T_J$	200	°C
Storage Temperature	$T_{STG}$	-55 to +150	°C
Thermal Resistance	$\theta_{JC}$	2.8	°C/W



LETTER DIM	MILLIMETERS		INCHES	
	MIN	MAX	MIN	MAX
A	24.64	24.89	.970	.980
B	18.29	18.54	.720	.730
C	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
H	2.29	2.67	.090	.105
J	4.04	4.55	.159	.179
K	6.58	7.39	.259	.291
L	.10	.15	.004	.006

### Electrical Characteristics at 25°C

Parameter	Symbol	Min	Max	Units	Test Conditions
Drain-Source Breakdown Voltage	$BV_{DSS}$	65	-	V	$V_{GS}=0.0\text{ V}, I_{DS}=5.0\text{ mA}$
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	μA	$V_{GS}=20.0\text{ V}, V_{DS}=0.0\text{ V}$
Gate Threshold Voltage	$V_{GS(TH)}$	2.0	6.0	V	$V_{DS}=10.0\text{ V}, I_{DS}=100.0\text{ mA}$
Forward Transconductance	$G_M$	500	-	mS	$V_{DS}=10.0\text{ V}, I_{DS}=100.0\text{ mA}, \Delta V_{GS}=1.0\text{ V}, 80\text{ }\mu\text{s Pulse}$
Input Capacitance	$C_{ISS}$	-	45	pF	$V_{DS}=28.0\text{ V}, F=1.0\text{ MHz}$
Output Capacitance	$C_{OSS}$	-	40	pF	$V_{DS}=28.0\text{ V}, F=1.0\text{ MHz}$
Reverse Capacitance	$C_{RSS}$	-	8	pF	$V_{DS}=28.0\text{ V}, F=1.0\text{ MHz}$
Power Gain	$G_P$	13	-	dB	$V_{DD}=28.0\text{ V}, I_{DQ}=100\text{ mA}, P_{OUT}=20\text{ W}, F=175\text{ MHz}$
Drain Efficiency	$\eta_D$	60	-	%	$V_{DD}=28.0\text{ V}, I_{DQ}=100\text{ mA}, P_{OUT}=20\text{ W}, F=175\text{ MHz}$
Load Mismatch Tolerance	VSWR-T	-	30:1	-	$V_{DD}=28.0\text{ V}, I_{DQ}=100\text{ mA}, P_{OUT}=20\text{ W}, F=175\text{ MHz}$

Specifications Subject to Change Without Notice.

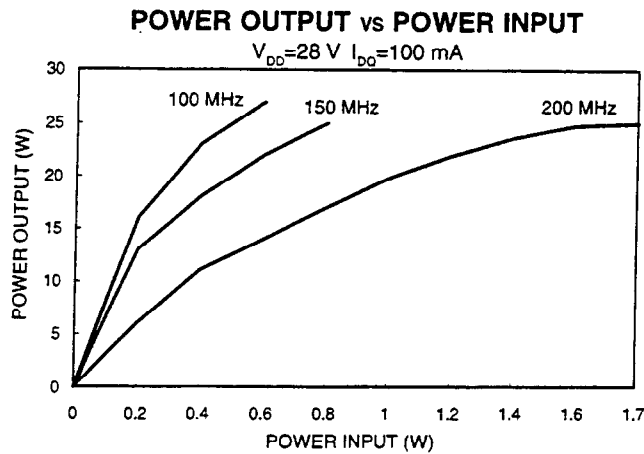
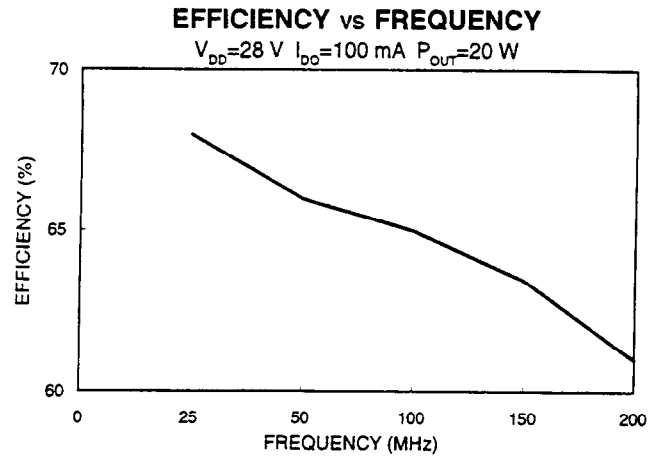
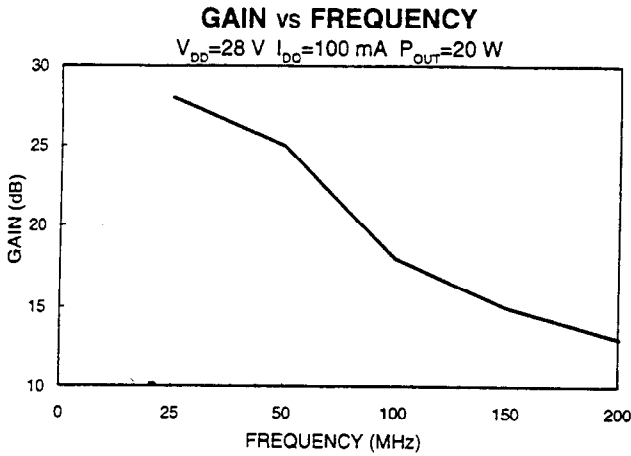
**M/A-COM, Inc.**

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Typical Broadband Performance Curves



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Typical Device Impedance

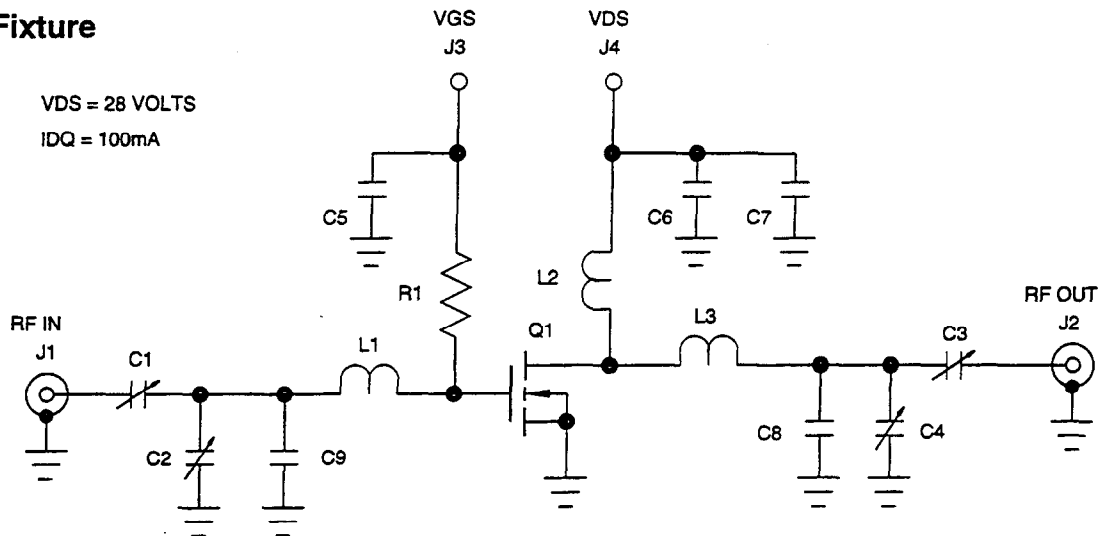
Frequency (MHz)	Z <sub>IN</sub> (OHMS)	Z <sub>LOAD</sub> (OHMS)
30	17.5 - j 13.0	16.0 + j 2.5
50	15.0 - j 15.5	15.0 + j 4.0
100	8.0 - j 14.0	12.0 + j 6.0
200	5.5 - j 8.0	9.25 + j 6.0

V<sub>DD</sub>=28 V, I<sub>DQ</sub>=100 mA, P<sub>OUT</sub>=20 Watts

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

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

RF Test Fixture



PARTS LIST

C1,C3	TRIMMER CAPACITOR 5-80pF
C2,C4	TRIMMER CAPACITOR 3-30pF
C5,C6	CAPACITOR 0.01uF
C7	CAPACITOR 0.001uF
C8	CAPACITOR 5.6pF
C9	CAPACITOR 10pF
L1,L3	2 TURNS OF NO. 20 ENAMEL WIRE ON '0.25" CLOSE WOUND
L2	7 TURNS OF NO. 20 ENAMEL WIRE ON '0.25" CLOSE WOUND
R1	RESISTOR 100K OHMS
Q1	DU2820S
BOARD	FR4 0.062"

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