

RF MOSFET Power Transistor, 20W, 28V

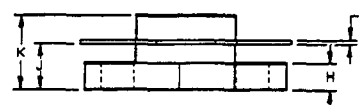
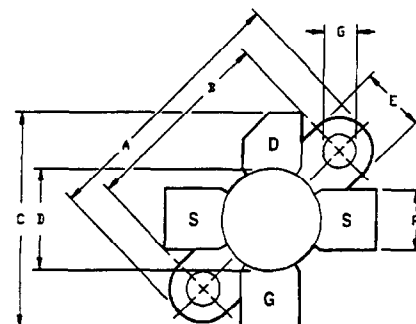
2 - 175 MHz

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	θ_{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 μs 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	$V_{DS}=28.0\text{ V}$, $I_{DQ}=100\text{ mA}$, $P_{OUT}=20\text{ W}$, $F=175\text{ MHz}$
Drain Efficiency	η_D	60	-	%	$V_{DS}=28.0\text{ V}$, $I_{DQ}=100\text{ mA}$, $P_{OUT}=20\text{ W}$, $F=175\text{ MHz}$
Load Mismatch Tolerance	VSWR-T	-	30:1	-	$V_{DS}=28.0\text{ V}$, $I_{DQ}=100\text{ mA}$, $P_{OUT}=20\text{ W}$, $F=175\text{ MHz}$

Specifications Subject to Change Without Notice.

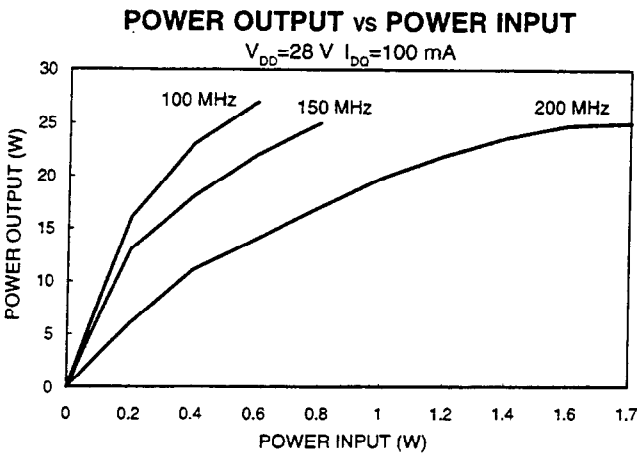
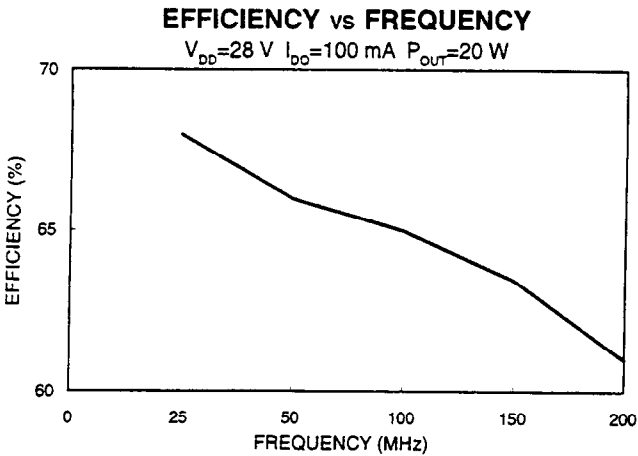
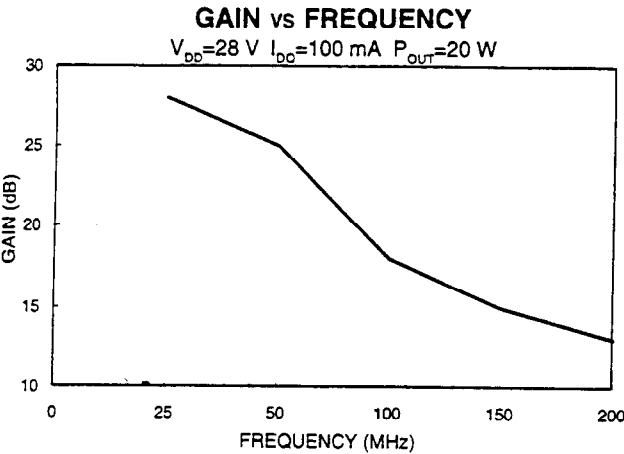
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Typical Broadband Performance Curves



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Typical Device Impedance

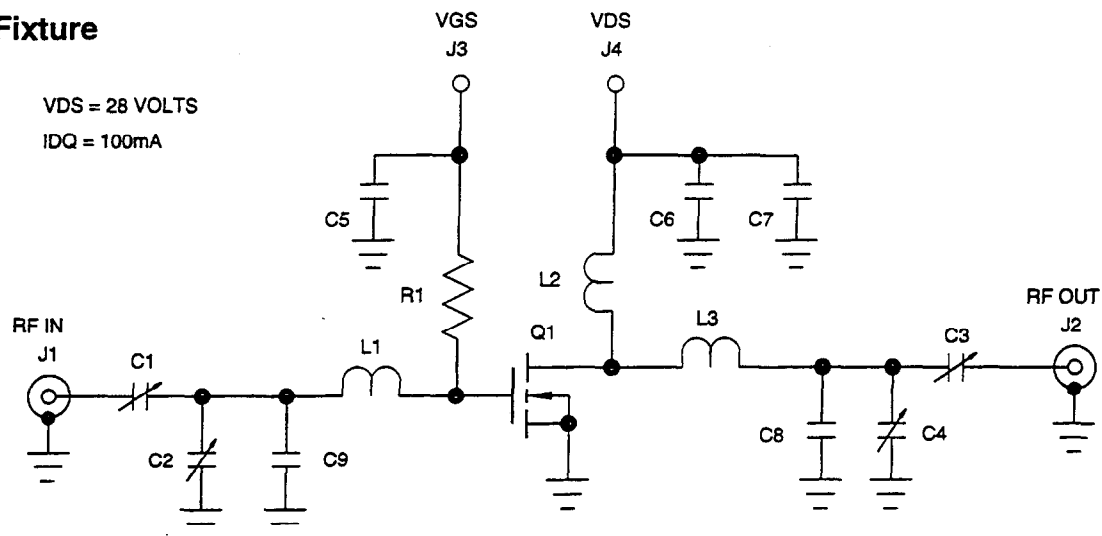
Frequency (MHz)	Z_{IN} (OHMS)	Z_{LOAD} (OHMS)
30	17.5 - j 13.0	16.0 + j 2.5
50	15.0 - j 15.5	15.0 + j 4.0
100	8.0 - j 14.0	12.0 + j 6.0
200	5.5 - j 8.0	9.25 + j 6.0

$$V_{DD}=28 \text{ V}, I_{DQ}=100 \text{ mA}, P_{OUT}=20 \text{ Watts}$$

Z_{IN} is the series equivalent input impedance of the device.

Z_{LOAD} 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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