

RF MOSFET Power Transistor, 20W, 28V

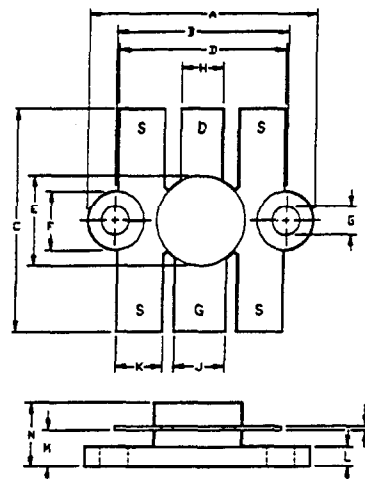
100 - 500 MHz

UF2820R

V2.00

Features

- N-Channel Enhancement Mode Device
- DMOS Structure
- Lower Capacitances for Broadband Operation
- High Saturated Output Power
- Lower Noise Figure Than Competitive Devices



LETTER DIM	MILLIMETERS		INCHES	
	MIN	MAX	MIN	MAX
A	24.64	24.87	.970	.980
B	18.29	18.54	.720	.730
C	23.86	24.38	.940	.960
D	18.16	18.42	.715	.725
E	9.47	9.73	.373	.383
F	6.22	6.48	.245	.255
G	2.92	3.18	.115	.125
H	4.45	4.69	.175	.185
J	5.46	5.72	.215	.225
K	4.95	5.21	.195	.205
L	2.41	2.67	.095	.105
M	4.86	4.57	.160	.180
N	6.36	7.39	.250	.291
P	.30	.35	.004	.006

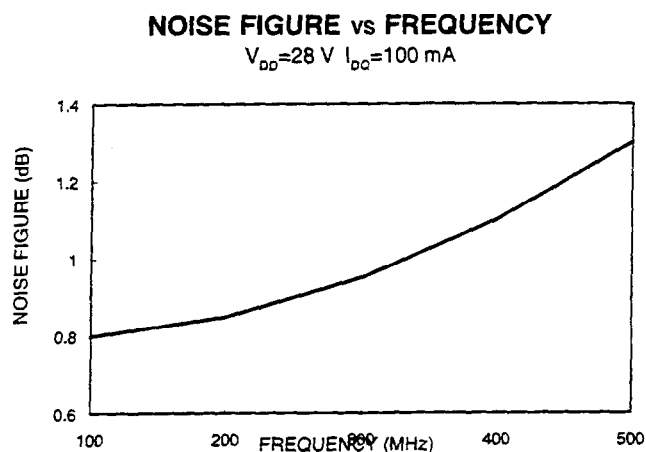
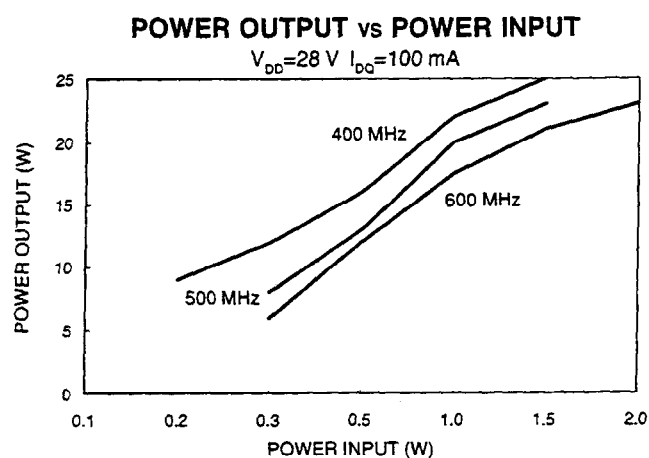
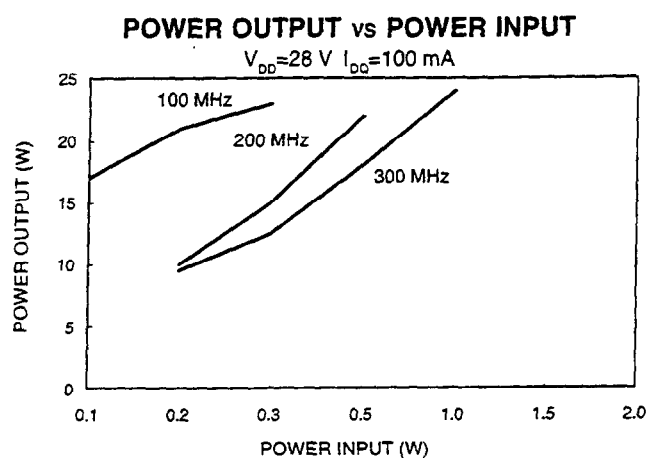
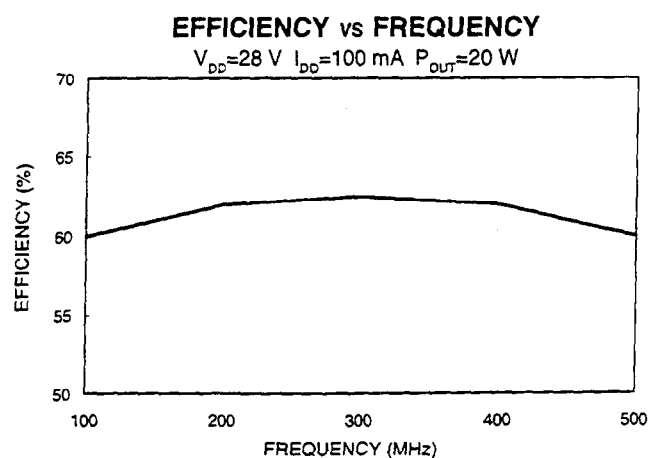
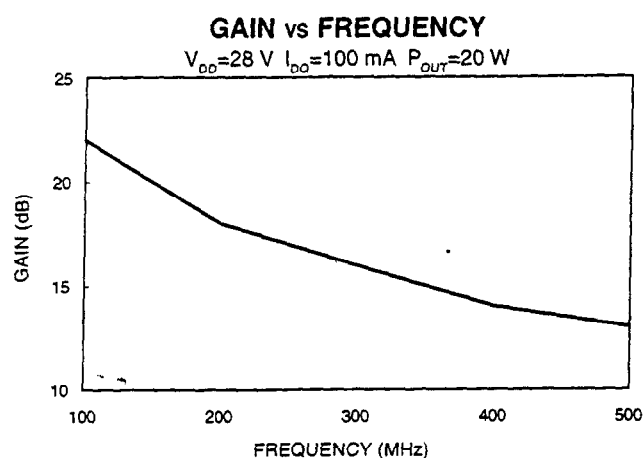
Absolute Maximum Ratings at 25°C

Parameter	Symbol	Rating	Units
Drain-Source Voltage	V_{DS}	65	V
Gate-Source Voltage	V_{GS}	20	V
Drain-Source Current	I_{DS}	4	A
Power Dissipation	P_D	61	W
Junction Temperature	T_J	200	°C
Storage Temperature	T_{STG}	-55 to +150	°C
Thermal Resistance	θ_{JC}	2.86	°C/W

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	$V_{GS}=20\text{ V}$, $V_{DS}=0.0\text{ V}$
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	-	S	$V_{DS}=10.0\text{ V}$, $I_{DS}=1000.0\text{ mA}$, $\Delta V_{GS}=1.0\text{ V}$, 80 μs Pulse
Input Capacitance	C_{ISS}	-	45	pF	$V_{DS}=28.0\text{ V}$, $F=1.0\text{ MHz}$
Output Capacitance	C_{OSS}	-	30	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	10	-	dB	$V_{DD}=28.0\text{ V}$, $I_{DQ}=100.0\text{ mA}$, $P_{OUT}=20.0\text{ W}$, $F=500\text{ MHz}$
Drain Efficiency	η_D	50	-	%	$V_{DD}=28.0\text{ V}$, $I_{DQ}=100.0\text{ mA}$, $P_{OUT}=20.0\text{ W}$, $F=500\text{ MHz}$
Load Mismatch Tolerance	VSWR-T	-	20:1	-	$V_{DD}=28.0\text{ V}$, $I_{DQ}=100.0\text{ mA}$, $P_{OUT}=20.0\text{ W}$, $F=500\text{ MHz}$

Typical Broadband Performance Curves



Typical Device Impedance

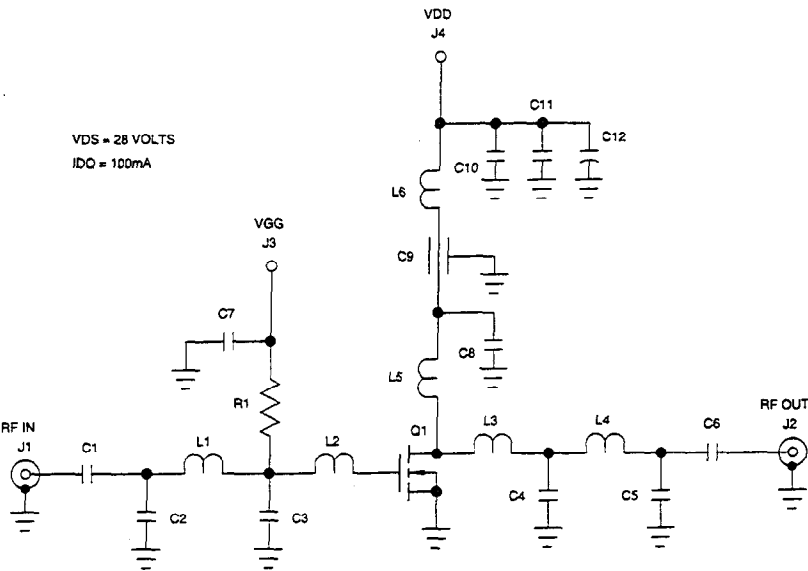
Frequency (MHz)	Z_{IN} (OHMS)	Z_{LOAD} (OHMS)
100	$8.0 - j\ 16.0$	$12.0 + j\ 6.0$
200	$5.5 - j\ 8.0$	$9.3 + j\ 6.0$
300	$4.0 - j\ 3.8$	$6.8 + j\ 5.5$
400	$3.0 - j\ 2.0$	$4.5 + j\ 4.5$
500	$2.0 + j\ 1.0$	$3.0 + j\ 3.0$

$V_{DD}=28\text{ V}, I_{DQ}=100\text{ mA}, P_{OUT}=20.0\text{ Watts}$

Z_{IN} is the series equivalent input impedance of the device from gate to source.

Z_{LOAD} is the optimum series equivalent load impedance as measured from drain to source.

RF Test Fixture



PARTS LIST

C1,C6,C10	CAPACITOR 1000pF
C7	
C2,C5	CAPACITOR 10pF
C3	CAPACITOR 30pF
C4	CAPACITOR 25pF
C8	CAPACITOR 500pF
C9	FEEDTHROUGH CAPACITOR 500pF
C11	MONOLITHIC CERAMIC CAPACITOR 0.1uF
C12	ELECTROLYTIC CAPACITOR 50uF 50 VOLTS
L1	0.25" X 0.63" HAIRPIN, NO. 22 AWG
L2	0.25" X 0.20" MICROSTRIP LINE
L3	0.25" X 0.40" MICROSTRIP LINE
L4	0.30" X 0.06" HAIRPIN, NO. 18 AWG
L5	6 TURNS OF NO. 20 AWG ON "0.30", CLOSE WOUND
L6	12 TURNS OF NO. 20 AWG ON "0.30", CLOSE WOUND
R1	RESISTOR 12K OHMS 0.25 WATT
Q1	UF2820R
BOARD	FR4 0.062"