

RF MOSFET Power Transistor, 20W, 28V

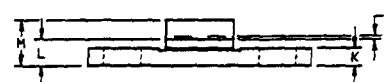
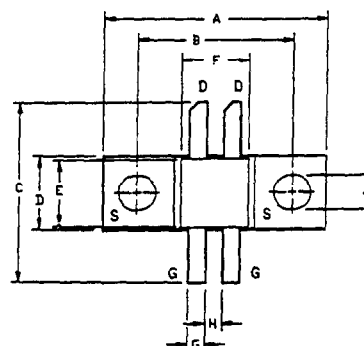
100 - 500 MHz

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	θ_{JC}	3.3	°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	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

Electrical Characteristics at 25°C

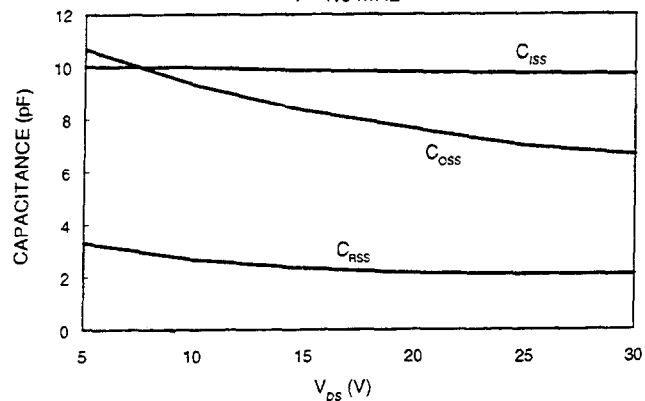
Parameter	Symbol	Min	Max	Units	Test Conditions
Drain-Source Breakdown Voltage	BV_{DSS}	65	-	V	$V_{GS}=0.0\text{ V}$, $I_{DS}=4.0\text{ mA}^*$
Drain-Source Leakage Current	I_{DSS}	-	2.0	mA	$V_{DS}=28.0\text{ V}$, $V_{GS}=0.0\text{ V}^*$
Gate-Source Leakage Current	I_{GSS}	-	2.0	μA	$V_{GS}=20\text{ V}$, $V_{DS}=0.0\text{ V}^*$
Gate Threshold Voltage	$V_{GS(TH)}$	2.0	6.0	V	$V_{DS}=10.0\text{ V}$, $I_{DS}=200.0\text{ mA}^*$
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 μs 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	$V_{DS}=28.0\text{ V}$, $I_{DQ}=200.0\text{ mA}$, $P_{OUT}=20.0\text{ W}$, $F=500\text{ MHz}$
Drain Efficiency	η_D	50	-	%	$V_{DS}=28.0\text{ V}$, $I_{DQ}=200.0\text{ mA}$, $P_{OUT}=20.0\text{ W}$, $F=500\text{ MHz}$
Load Mismatch Tolerance	VSWR-T	-	20:1	-	$V_{DS}=28.0\text{ V}$, $I_{DQ}=200.0\text{ mA}$, $P_{OUT}=20.0\text{ W}$, $F=500\text{ MHz}$

* Per Side

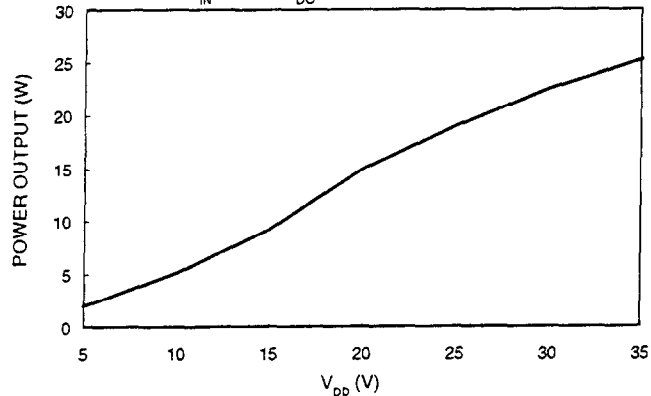
Specifications Subject to Change Without Notice.

Typical Broadband Performance Curves

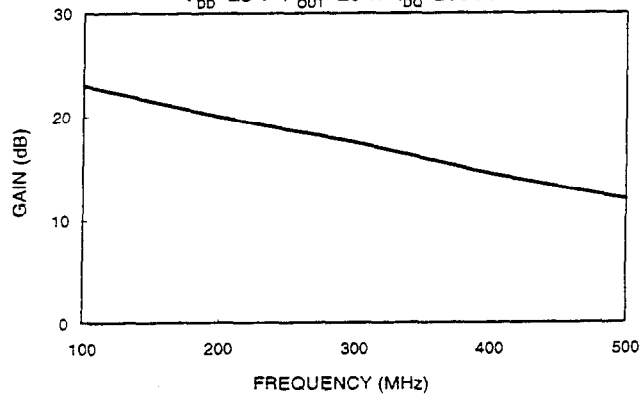
CAPACITANCES vs VOLTAGE

 $F=1.0\text{ MHz}$ 

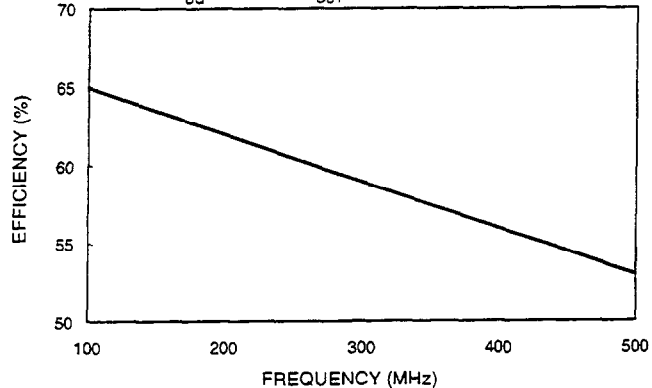
POWER OUTPUT vs VOLTAGE

 $P_{IN}=1.0\text{ W}$ $I_{DO}=200\text{ mA}$ $F=500\text{ MHz}$ 

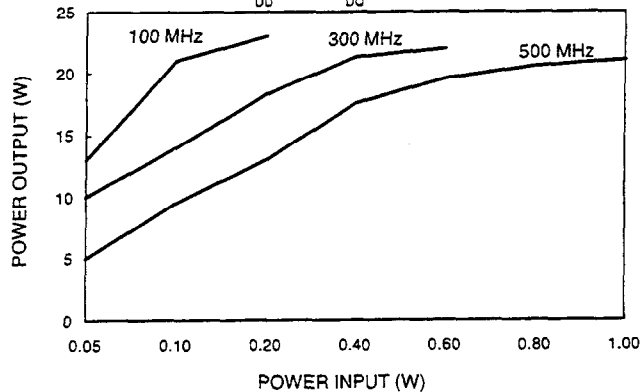
GAIN vs FREQUENCY

 $V_{DD}=28\text{ V}$ $P_{OUT}=20\text{ W}$ $I_{DO}=200\text{ mA}$ 

EFFICIENCY vs FREQUENCY

 $I_{DO}=200\text{ mA}$ $P_{OUT}=20\text{ W}$ $F=500\text{ MHz}$ 

POWER OUTPUT vs POWER INPUT

 $V_{DD}=28\text{ V}$ $I_{DO}=200\text{ mA}$ 

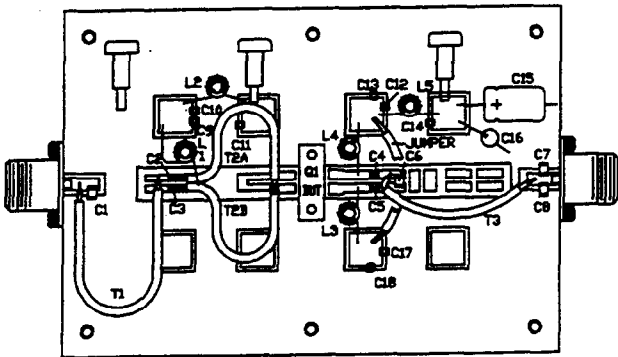
Typical Device Impedance

Frequency (MHz)	Z_{IN} (OHMS)	Z_{LOAD} (OHMS)
100	$9.5 - j 60.0$	$4.0 + j 68.0$
300	$5.0 - j 35.0$	$40.0 + j 48.0$
500	$2.0 - j 22.0$	$36.0 + j 34.0$

$V_{DD}=28\text{ V}$, $I_{DQ}=200\text{ mA}$, $P_{OUT}=20.0\text{ Watts}$

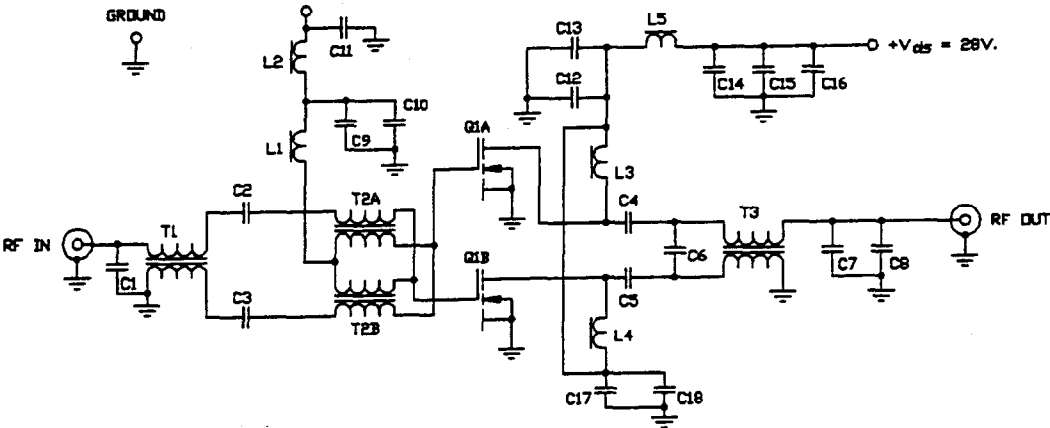
Z_{IN} is the series equivalent input impedance of the device from gate to gate.
 Z_{LOAD} is the optimum series equivalent load impedance as measured from drain to drain.

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



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