an AMP company

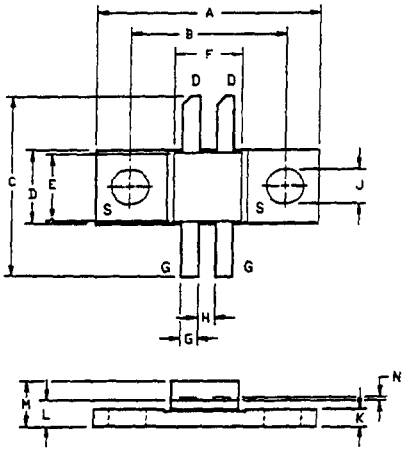
RF MOSFET Power Transistor, 20W, 28V 100 - 500 MHz

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 MIN	MILLIMETERS MAX	INCHES MIN	INCHES 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

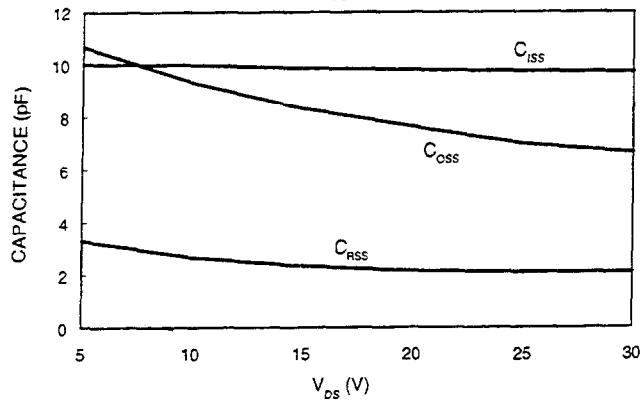
Electrical Characteristics at 25°C

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

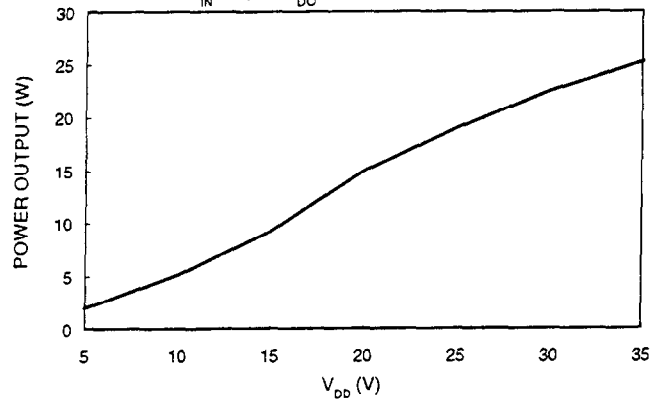
* Per Side

Typical Broadband Performance Curves

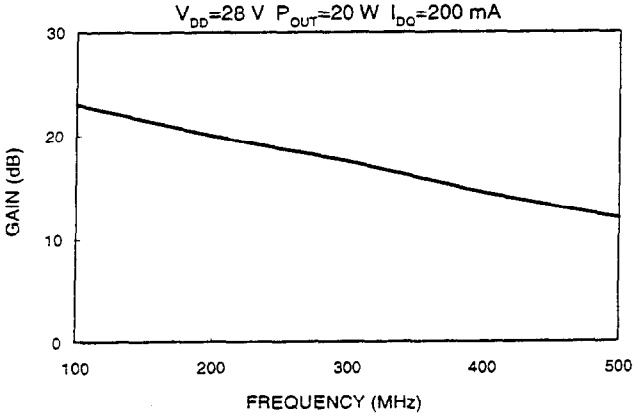
CAPACITANCES vs VOLTAGE
F=1.0 MHz



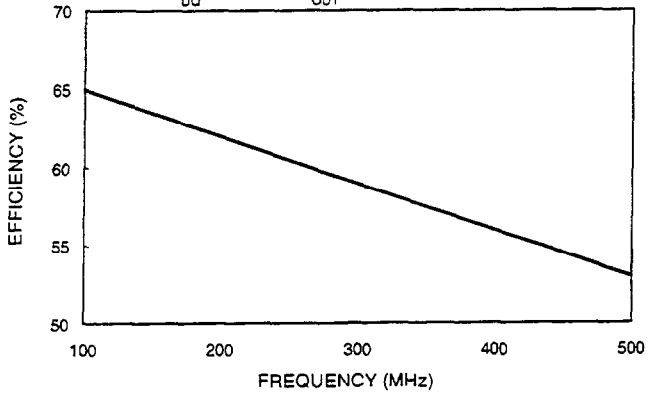
POWER OUTPUT vs VOLTAGE
P_{IN}=1.0 W I_{DQ}=200 mA F=500 MHz



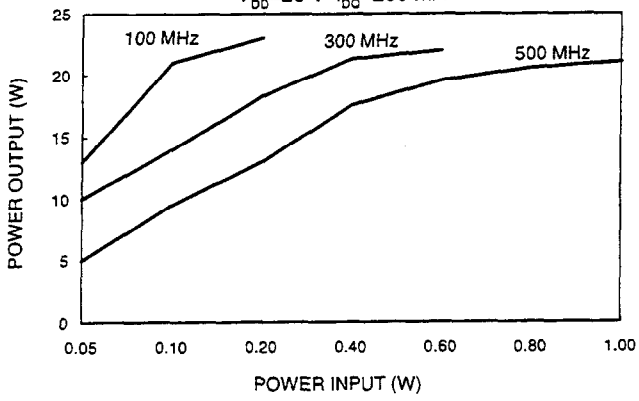
GAIN vs FREQUENCY
V_{DD}=28 V P_{OUT}=20 W I_{DQ}=200 mA



EFFICIENCY vs FREQUENCY
I_{DQ}=200 mA P_{OUT}=20 W F=500 MHz



POWER OUTPUT vs POWER INPUT
V_{DD}=28 V I_{DQ}=200 mA



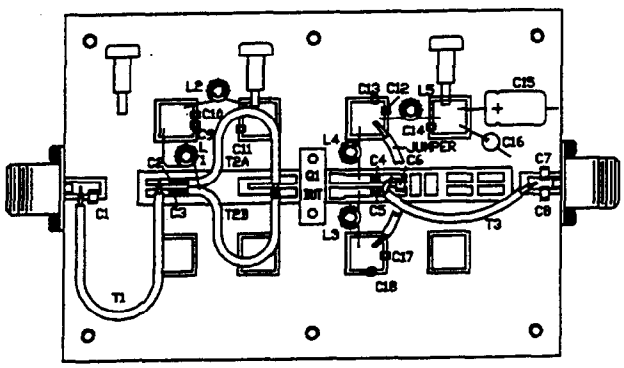
Typical Device Impedance

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 V, I_{DQ}=200 mA, P_{OUT}=20.0 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



P A R T S L I S T

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