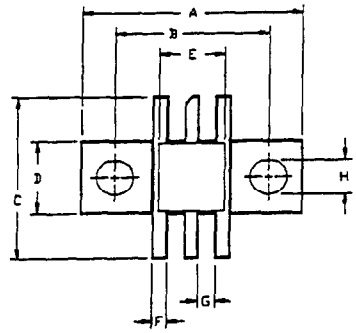
RF MOSFET Power Transistor, 5W, 28V
100 - 500 MHz

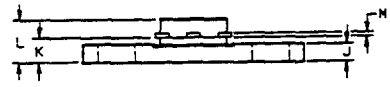
UF2805B

V2.00

Features

- N-Channel Enhancement Mode Device
- DMOS Structure
- Lower Capacitances for Broadband Operation
- Common Source Configuration
- Lower Noise Floor
- 100 MHz to 500 MHz Operation





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}	1.4	A
Power Dissipation	P_D	14.4	W
Junction Temperature	T_J	200	°C
Storage Temperature	T_{STG}	-55 to +150	°C
Thermal Resistance	θ_{JC}	12.1	°C/W

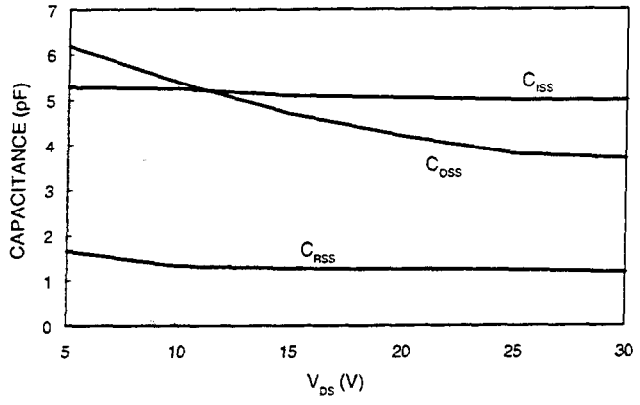
LETTER DIM	MILLIMETERS		INCHES	
	MIN	MAX	MIN	MAX
A	20.70	20.96	.815	.825
B	14.35	14.61	.565	.575
C	14.73	15.24	.580	.600
D	6.27	6.53	.247	.257
E	6.22	6.48	.245	.255
F	1.14	1.40	.045	.055
G	1.52	1.78	.060	.070
H	2.92	3.17	.115	.125
J	1.40	1.65	.055	.065
K	2.03	2.39	.080	.094
L	3.66	4.32	.144	.170
M	.10	.15	.004	.006

Electrical Characteristics at 25°C

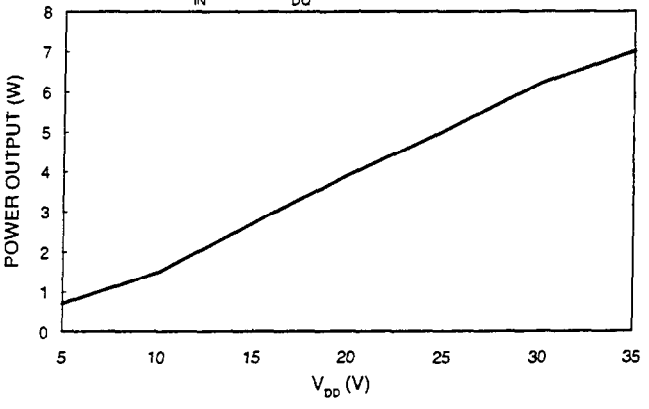
Parameter	Symbol	Min	Max	Units	Test Conditions
Drain-Source Breakdown Voltage	BV_{DSS}	65	-	V	V_{GS}=0.0 V, I_{DS}=2.0 mA
Drain-Source Leakage Current	I_{DSS}	-	1.0	mA	V_{DS}=28.0 V, V_{GS}=0.0 V
Gate-Source Leakage Current	I_{GSS}	-	1.0	µA	V_{GS}=20 V, V_{DS}=0.0 V
Gate Threshold Voltage	$V_{GS(TH)}$	2.0	6.0	V	V_{DS}=10.0 V, I_{DS}=10.0 mA
Forward Transconductance	G_M	80	-	mS	V_{DS}=10.0 V, I_{DS}=100.0 mA, ΔV_{GS}=1.0 V, 80 µs Pulse
Input Capacitance	C_{ISS}	-	7	pF	V_{DS}=28.0 V, F=1.0 MHz
Output Capacitance	C_{OSS}	-	5	pF	V_{DS}=28.0 V, F=1.0 MHz
Reverse Capacitance	C_{RSS}	-	2.4	pF	V_{DS}=28.0 V, F=1.0 MHz
Power Gain	G_P	10	-	dB	V_{DD}=28.0 V, I_{DQ}=50.0 mA, P_{OUT}=5.0 W, F=500 MHz
Drain Efficiency	η_D	50	-	%	V_{DD}=28.0 V, I_{DQ}=50.0 mA, P_{OUT}=5.0 W, F=500 MHz
Load Mismatch Tolerance	VSWR-T	-	20:1	-	V_{DD}=28.0 V, I_{DQ}=50.0 mA, P_{OUT}=5.0 W, F=500 MHz

Typical Broadband Performance Curves

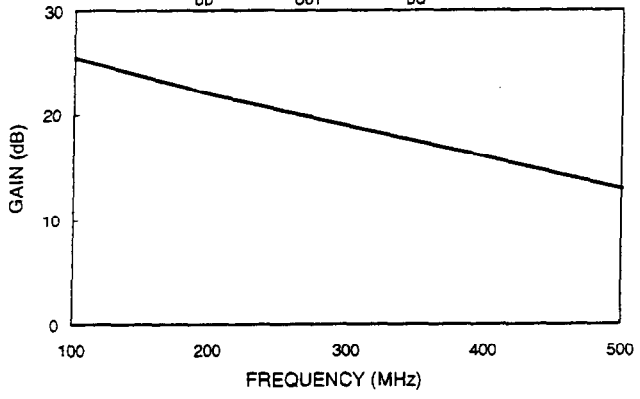
CAPACITANCES vs VOLTAGE
F=1.0 MHz



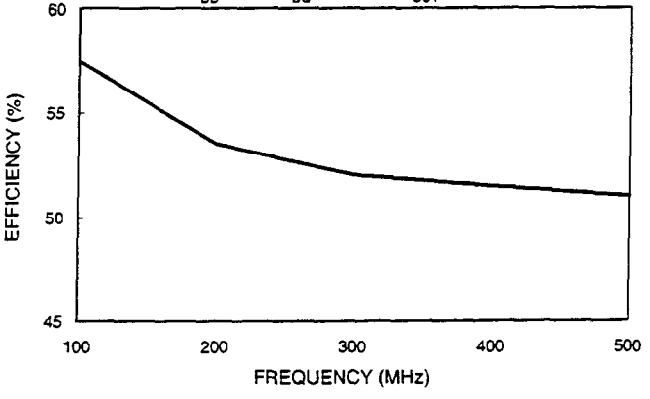
POWER OUTPUT vs VOLTAGE
P_{IN}=0.3 W I_{DQ}=5.0 mA F=500 MHz



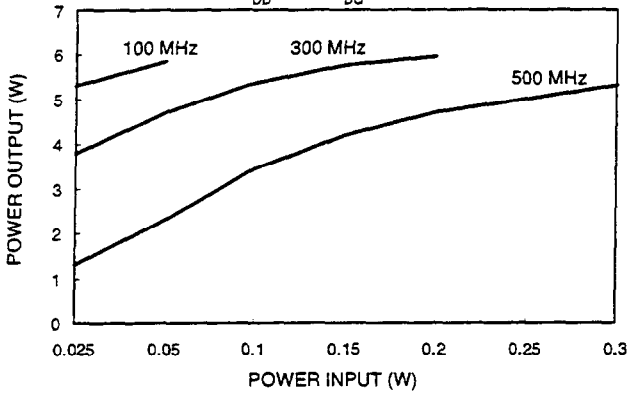
GAIN vs FREQUENCY
V_{DD}=28 V P_{OUT}=5.0 W I_{DQ}=50 mA



EFFICIENCY vs FREQUENCY
V_{DD}=28 V I_{DQ}=50 mA P_{OUT}=5.0 W



POWER OUTPUT vs POWER INPUT
V_{DD}=28 V I_{DQ}=50 mA



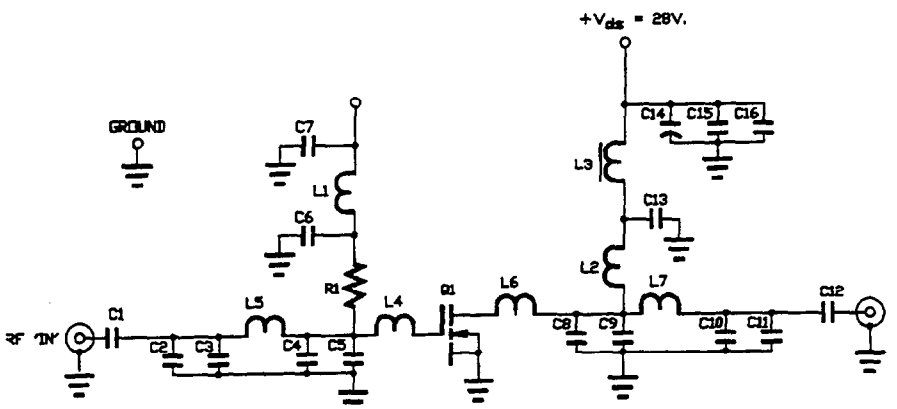
Typical Device Impedance

Frequency (MHz)	Z_{IN} (OHMS)	Z_{LOAD} (OHMS)
100	15.0 - j 80.0	35.0 + j 55.0
300	8.0 - j 43.0	29.0 + j 40.0
500	4.0 - j 29.0	28.0 + j 29.0

V_{DD}=28 V, I_{DQ}=50 mA, P_{OUT}=5.0 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 drain.

RF Test Fixture



PARTS LIST

C8	1.0pf
C9	3.9pf
C4, 10, 11	4.7pf
C2	5.6pf
C3	8.2pf
C5	15pf
C6, 7, 13, 16	680pf
C1, 12	820pf
C15	.01uf
C14	50uf 50V.
R1	10K OHM
Q1	UF2805B
L1	9 TURNS OF NO. 24 AWG
L2	7 TURNS OF NO. 22 AWG
L3	3 TURNS OF NO. 24 AWG ON FERRITE BEAD
L4	1.30" OF 50 OHM TRANSMISSION LINE
L5	.70" OF 50 OHM TRANSMISSION LINE
L6	.20" OF 50 OHM TRANSMISSION LINE
L7	1.85" OF 50 OHM TRANSMISSION LINE