

RF MOSFET Power Transistor, 15W, 28V

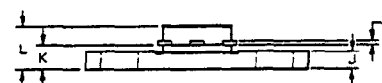
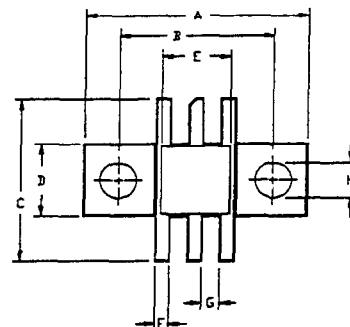
100 - 500 MHz

UF2815B

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

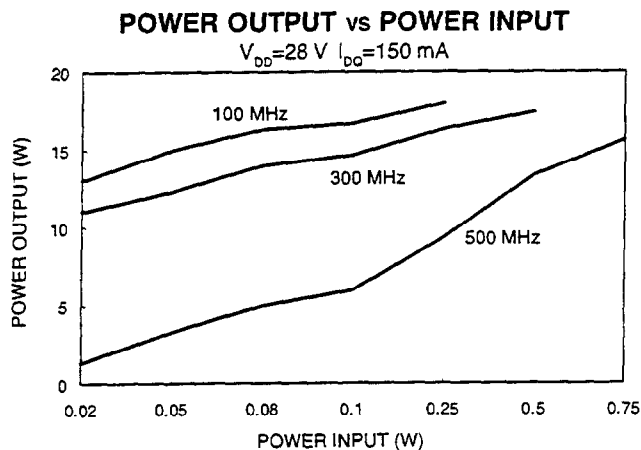
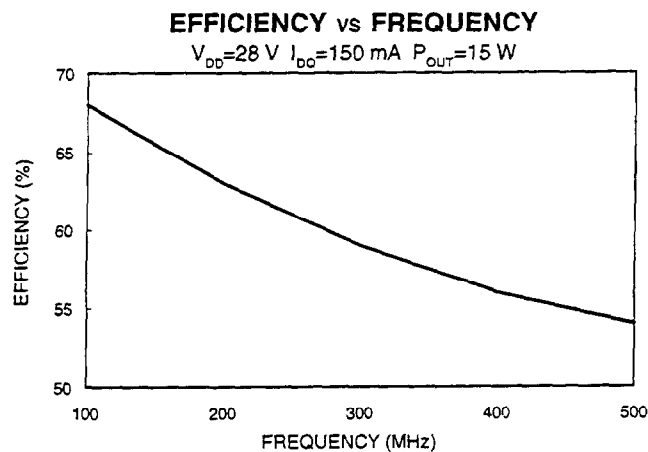
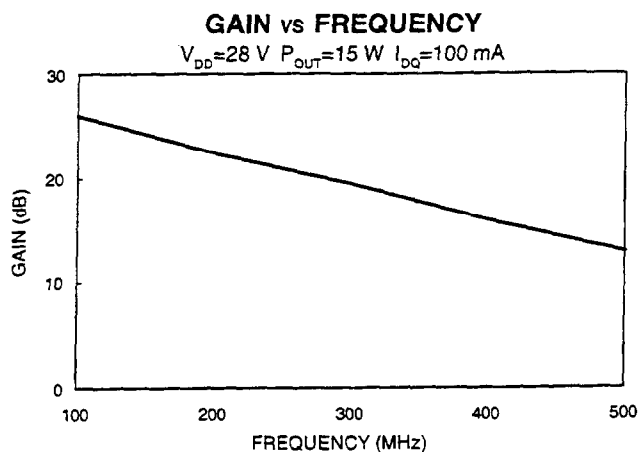
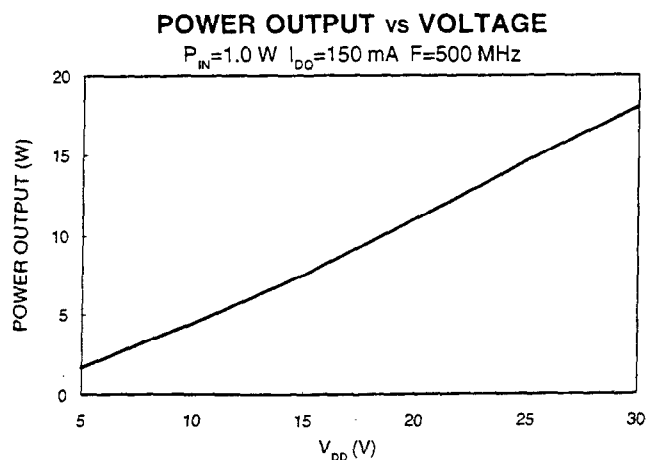
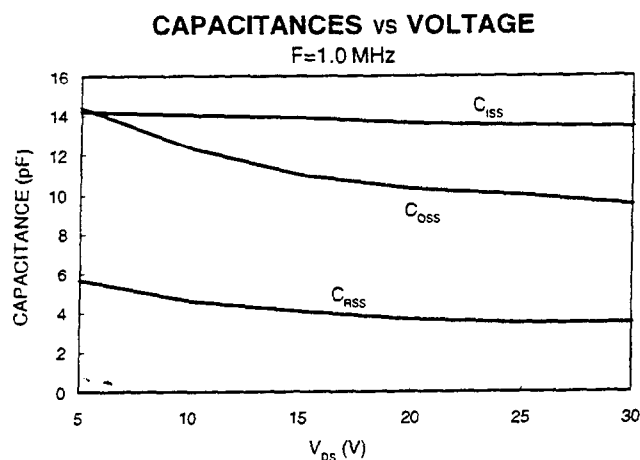
Parameter	Symbol	Rating	Units
Drain-Source Voltage	V_{DS}	65	V
Gate-Source Voltage	V_{GS}	20	V
Drain-Source Current	I_{DS}	4.2	A
Power Dissipation	P_D	48.6	W
Junction Temperature	T_J	200	°C
Storage Temperature	T_{STG}	-55 to +150	°C
Thermal Resistance	θ_{JC}	3.6	°C/W

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	$V_{GS}=0.0\text{ V}$, $I_{DS}=6.0\text{ mA}$
Drain-Source Leakage Current	I_{DSS}	-	3.0	mA	$V_{DS}=28.0\text{ V}$, $V_{GS}=0.0\text{ V}$
Gate-Source Leakage Current	I_{GSS}	-	3.0	μA	$V_{GS}=20\text{ V}$, $V_{DS}=0.0\text{ V}$
Gate Threshold Voltage	$V_{GS(TH)}$	2.0	6.0	V	$V_{DS}=10.0\text{ V}$, $I_{DS}=30.0\text{ mA}$
Forward Transconductance	G_M	.240	-	S	$V_{DS}=10.0\text{ V}$, $I_{DS}=300.0\text{ mA}$, $\Delta V_{GS}=1.0\text{ V}$, 80 μs Pulse
Input Capacitance	C_{ISS}	-	21	pF	$V_{DS}=28.0\text{ V}$, $F=1.0\text{ MHz}$
Output Capacitance	C_{OSS}	-	15	pF	$V_{DS}=28.0\text{ V}$, $F=1.0\text{ MHz}$
Reverse Capacitance	C_{RSS}	-	7.2	pF	$V_{DS}=28.0\text{ V}$, $F=1.0\text{ MHz}$
Power Gain	G_P	10	-	dB	$V_{DD}=28.0\text{ V}$, $I_{DQ}=150.0\text{ mA}$, $P_{OUT}=15.0\text{ W}$, $F=500\text{ MHz}$
Drain Efficiency	η_D	50	-	%	$V_{DD}=28.0\text{ V}$, $I_{DQ}=150.0\text{ mA}$, $P_{OUT}=15.0\text{ W}$, $F=500\text{ MHz}$
Load Mismatch Tolerance	VSWR-T	-	20:1	-	$V_{DD}=28.0\text{ V}$, $I_{DQ}=150.0\text{ mA}$, $P_{OUT}=15.0\text{ W}$, $F=500\text{ MHz}$

Typical Broadband Performance Curves



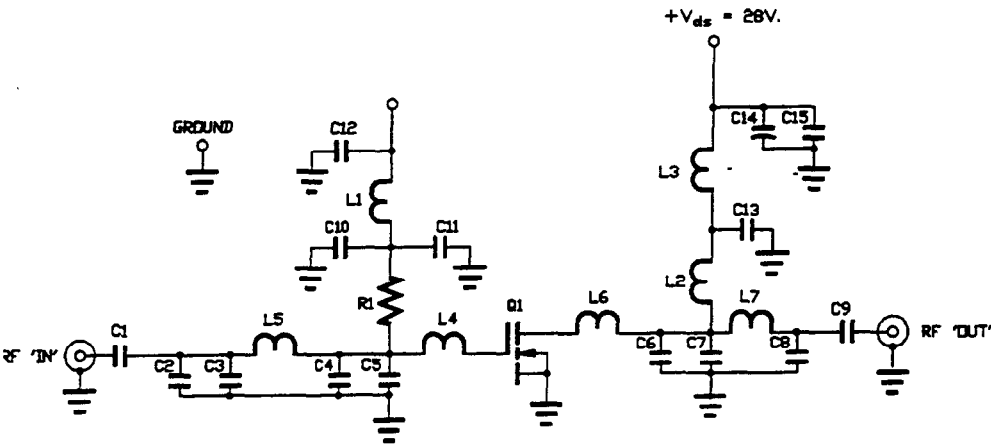
Typical Device Impedance

Frequency (MHz)	Z _{IN} (OHMS)	Z _{LOAD} (OHMS)
100	6.4 - j 25.0	22.0 + j 16.0
300	6.5 - j 12.0	15.0 + j 14.0
500	1.7 - j 10.5	8.0 + j 10.5

$V_{DD}=28\text{ V}, I_{DQ}=150\text{ mA}, P_{OUT}=15.0\text{ Watts}$

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 ground.

RF Test Fixture



PARTS LIST

C7	2.0 pf
C4	3.0pf
C6	3.6pf
C5, 8	5.6pf
C3	9.1pf
C2	13pf
C9	270pf
C1	820pf
C11, 12, 13, 15	.015uf
C10	.10uf
C14	50uf 50V.
R1	10K OHM
Q1	UF2815B
L1, 3	9 TURNS OF NO. 22 AWG
L2	20 TURNS OF NO. 22 AWG
L4	.55' OF 50 OHM TRANSMISSION LINE
L5	.25' OF 50 OHM TRANSMISSION LINE
L6	1.20' OF 50 OHM TRANSMISSION LINE
L7	.10' OF 50 OHM TRANSMISSION LINE