

# RF MOSFET Power Transistor, 100W, 28V

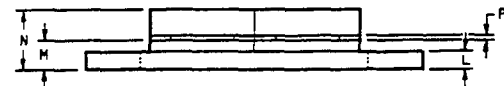
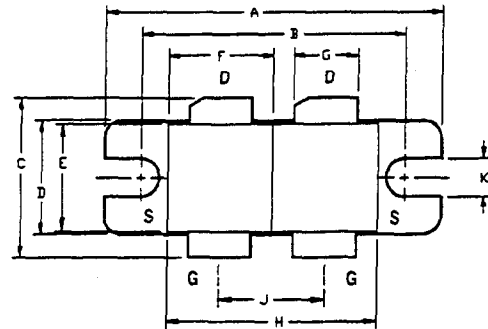
## 100 - 500 MHz

### UF28100M

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



#### 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	$I_{DS}$	12*	A
Power Dissipation	$P_D$	250	W
Junction Temperature	$T_J$	200	°C
Storage Temperature	$T_{STG}$	-55 to +150	°C
Thermal Resistance	$\theta_{JC}$	0.7	°C/W

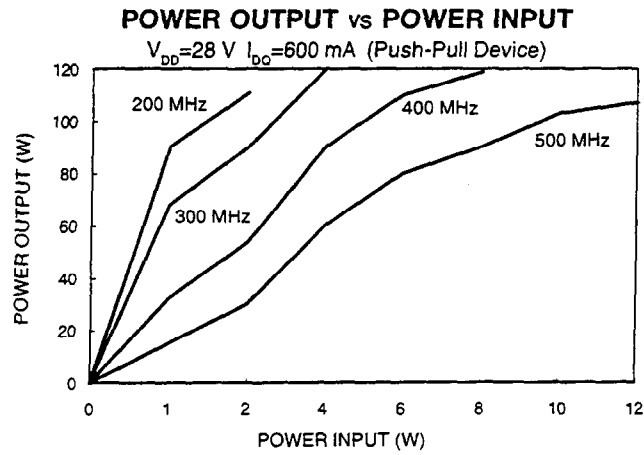
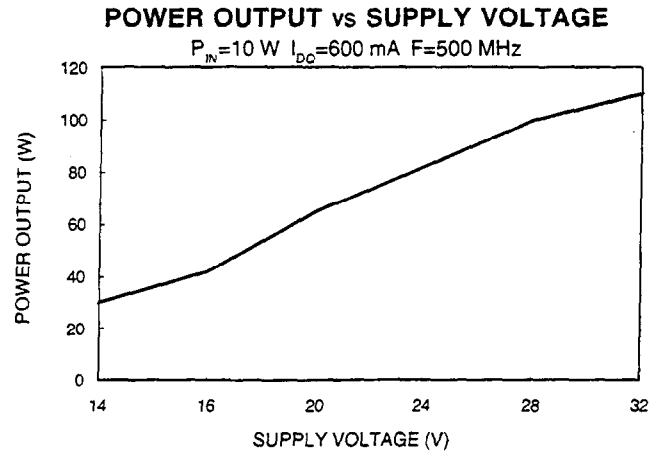
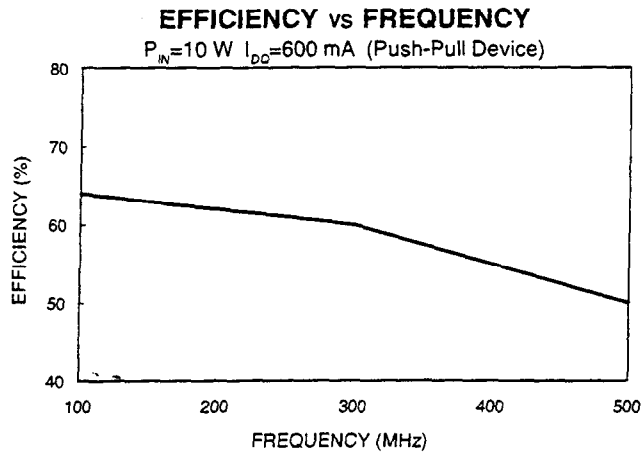
LETTER DIM	MILLIMETERS		INCHES	
	MIN	MAX	MIN	MAX
A	20.35	20.61	1.195	1.205
B	23.65	23.90	.931	.941
C	13.72	14.22	.540	.560
D	9.63	9.88	.379	.389
E	9.40	9.65	.370	.380
F	9.40	9.65	.370	.380
G	5.59	5.84	.220	.230
H	18.80	19.20	.740	.760
J	9.40	9.65	.370	.380
K	3.12	3.36	.123	.133
L	1.47	1.57	.058	.062
N	2.59	2.74	.094	.108
N	3.03	3.69	.118	.224
P	.05	.13	.002	.005

#### Electrical Characteristics at 25°C

Parameter	Symbol	Min	Max	Units	Test Conditions
Drain-Source Breakdown Voltage	$BV_{DSS}$	65	-	V	$V_{GS}=0.0\text{ V}, I_{DS}=15.0\text{ mA}^*$
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	$\mu\text{A}$	$V_{GS}=20\text{ V}, V_{DS}=0.0\text{ V}^*$
Gate Threshold Voltage	$V_{GS(TH)}$	2.0	6.0	V	$V_{DS}=10.0\text{ V}, I_{DS}=300.0\text{ mA}^*$
Forward Transconductance	$G_M$	1.5	-	S	$V_{DS}=10.0\text{ V}, I_{DS}=3000.0\text{ mA}, \Delta V_{GS}=1.0\text{ V}, 80\text{ }\mu\text{s Pulse}^*$
Input Capacitance	$C_{ISS}$	-	135	pF	$V_{DS}=28.0\text{ V}, F=1.0\text{ MHz}^*$
Output Capacitance	$C_{OSS}$	-	90	pF	$V_{DS}=28.0\text{ V}, F=1.0\text{ MHz}^*$
Reverse Capacitance	$C_{RSS}$	-	24	pF	$V_{DS}=28.0\text{ V}, F=1.0\text{ MHz}^*$
Power Gain	$G_P$	10	-	dB	$V_{DD}=28.0\text{ V}, I_{DQ}=600.0\text{ mA}, P_{OUT}=100.0\text{ W}, F=500\text{ MHz}$
Drain Efficiency	$\eta_D$	50	-	%	$V_{DD}=28.0\text{ V}, I_{DQ}=600.0\text{ mA}, P_{OUT}=100.0\text{ W}, F=500\text{ MHz}$
Return Loss	$R_L$	10	-	dB	$V_{DD}=28.0\text{ V}, I_{DQ}=600.0\text{ mA}, P_{OUT}=100.0\text{ W}, F=500\text{ MHz}$
Load Mismatch Tolerance	VSWR-T	-	30:1	-	$V_{DD}=28.0\text{ V}, I_{DQ}=600.0\text{ mA}, P_{OUT}=100.0\text{ W}, F=500\text{ MHz}$

\* Per Side

Typical Broadband Performance Curves



## Typical Device Impedance

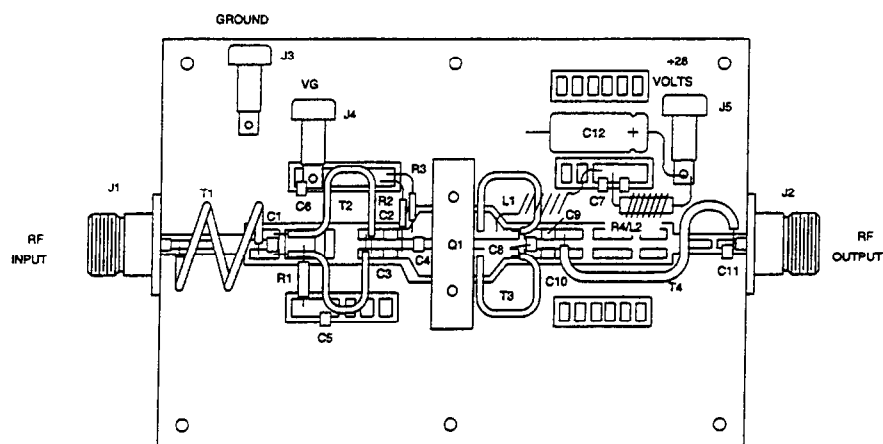
Frequency (MHz)	$Z_{IN}$ (OHMS)	$Z_{LOAD}$ (OHMS)
100	4.5 - j 6.0	14.5 + j 0.5
300	2.25 - j 1.75	7.5 + j 1.0
500	1.5 + j 5.5	3.5 - j 3.5

$$V_{DD}=28 \text{ V}, I_{DQ}=600 \text{ mA}, P_{OUT}=100.0 \text{ Watts}$$

$Z_{IN}$  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,C8	CHIP CAPACITOR, 2.0pF ATC B
C2,C3	CHIP CAPACITOR, 5000pF
C4	CHIP CAPACITOR, 37pF ATC B
C5	CHIP CAPACITOR, 260pF ATC B
C6,C7	CHIP CAPACITOR, .015uF
C9,C10	CHIP CAPACITOR, 560pF ATC B
C11	CHIP CAPACITOR, 0.6pF ATC B
C12	ELECTROLYTIC CAPACITOR, 50uF 50 VOLTS
R1,R4	RESISTOR, 27 OHM .25 WATT
R2,R3	RESISTOR, 22K OHM .25 WATT
L1	INDUCTOR, 5 TURNS OF NO. 18 AWG ON .10"
L2	INDUCTOR, 10 TURNS OF NO. 22 AWG ON R4
T1	1:1 BALUN TRANSFORMER, 50 OHM SEMI-RIGID COAX .085" X 3" LONG
T2	4:1 BALUN TRANSFORMER, 25 OHM SEMI-RIGID COAX .070" X 2.5" LONG
T3	1:9 BALUN TRANSFORMER, 10 OHM SEMI-RIGID COAX .070" X 2.5" LONG
T4	1:1 BALUN TRANSFORMER, 50 OHM SEMI-RIGID COAX .085" X 4" LONG
Q1	UF28100M
BOARD	ROGERS 5870, .031" THICK
J1,J2	CONNECTOR, TYPE 'N'
J3,J4,J5	BANANA JACK
HEATSINK	FINNED ALUMINUM, D/N 73050182-03