

RF MOSFET Power Transistor, 100W, 28V

100 - 500 MHz

UF28100H

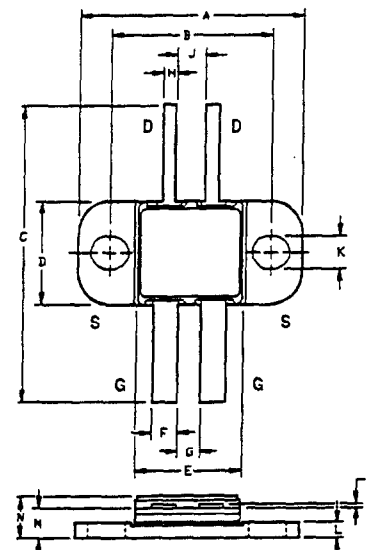
V2.00

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	θ_{JC}	0.7	°C/W



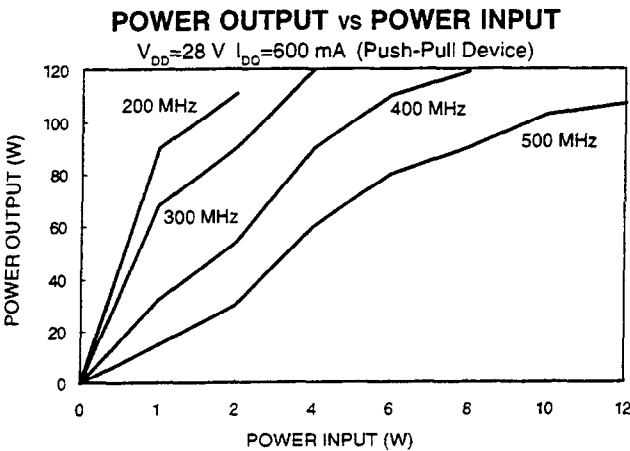
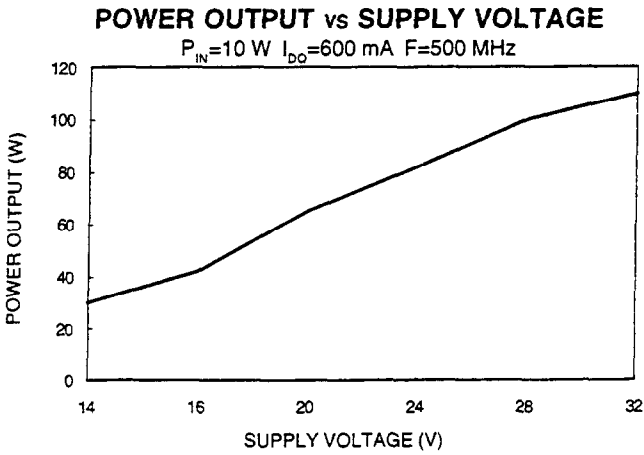
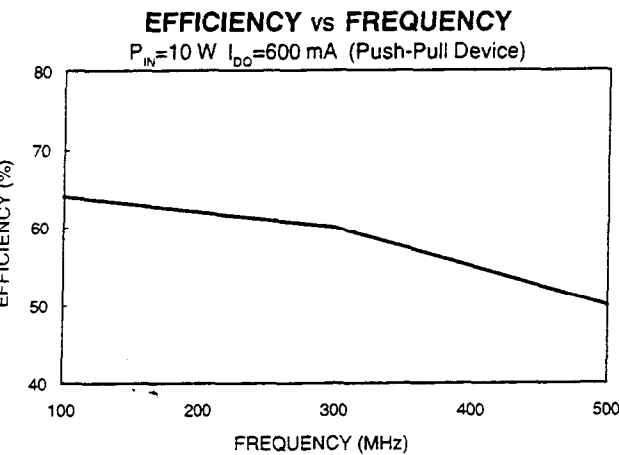
LETTER DIM	MILLIMETERS		INCHES	
	MIN	MAX	MIN	MAX
A	22.73	22.79	.895	.905
B	16.50	16.64	.649	.653
C	29.88	29.95	1.173	1.177
D	10.43	10.59	.410	.415
E	10.64	10.90	.419	.429
F	2.41	2.47	.095	.098
G	2.82	2.94	.110	.116
H	1.14	1.40	.045	.055
J	2.79	2.90	.110	.114
K	3.32	3.38	.130	.133
L	1.40	1.65	.055	.065
M	2.67	3.38	.105	.133
N	2.64	4.27	.104	.168
P	.30	.35	.012	.014

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	μA	$V_{GS}=20\text{ V}, V_{DS}=0.0\text{ V}^*$
Gate Threshold Voltage	$V_{GS(TH)}$	2.0	6.0	V	$V_{DS}=10.0\text{ V}, I_{DS}=300.0\text{ mA}^*$
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	η_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



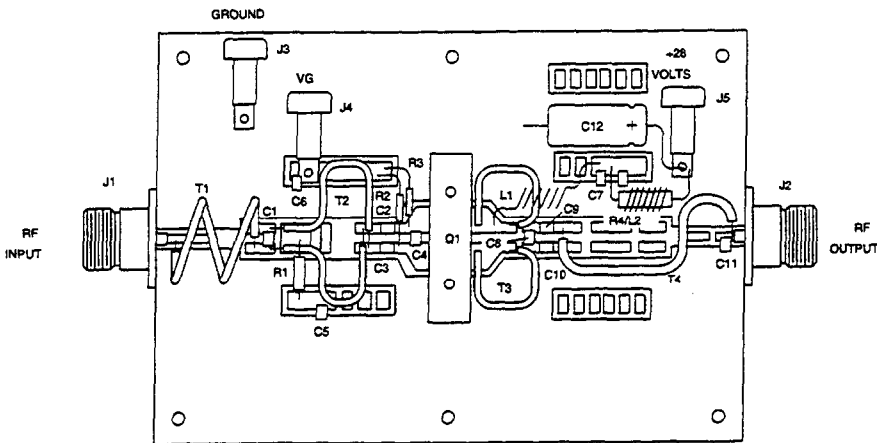
Typical Device Impedance

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	UF28100H
BOARD	ROGERS 5870, .031" THICK
J1,J2	CONNECTOR, TYPE "N"
J3,J4,J5	BANANA JACK
HEATSINK	FINNED ALUMINUM, D/N 73050182-03