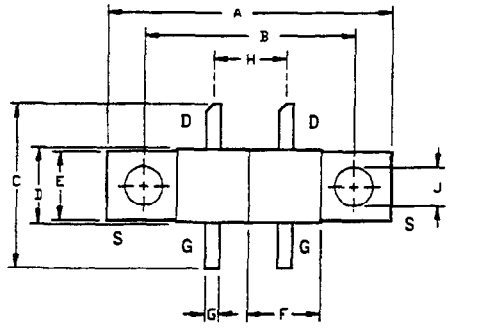
RF MOSFET Power Transistor, 40W, 28V
100 - 500 MHz

UF2840G

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}	4*	A
Power Dissipation	P_D	116	W
Junction Temperature	T_J	200	°C
Storage Temperature	T_{STG}	-55 to +150	°C
Thermal Resistance	θ_{JC}	1.52	°C/W

LETTER DIM	MILLIMETERS		INCHES	
	MIN	MAX	MIN	MAX
A	24.64	24.89	.970	.980
B	18.29	18.54	.720	.730
C	13.72	14.22	.540	.560
D	6.22	6.48	.245	.255
E	5.72	5.97	.225	.235
F	6.22	6.48	.245	.255
G	1.14	1.40	.045	.055
H	6.22	6.48	.245	.255
J	3.18	3.43	.125	.135
K	1.78	2.03	.070	.080
L	2.34	2.84	.092	.112
M	3.99	4.75	.157	.187
N	.08	.15	.003	.006

Electrical Characteristics at 25°C

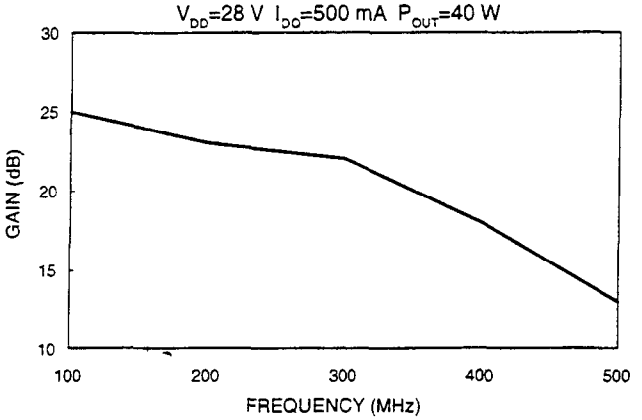
Parameter	Symbol	Min	Max	Units	Test Conditions
Drain-Source Breakdown Voltage	BV_{DSS}	65	-	V	V_{GS}=0.0 V, I_{DS}=5.0 mA*
Drain-Source Leakage Current	I_{DSS}	-	1.0	mA	V_{DS}=28.0 V, V_{GS}=0.0 V*
Gate-Source Leakage Current	I_{GSS}	-	1.0	µA	V_{GS}=20 V, V_{DS}=0.0 V*
Gate Threshold Voltage	$V_{GS(TH)}$	2.0	6.0	V	V_{DS}=10.0 V, I_{DS}=100.0 mA*
Forward Transconductance	G_M	.500	-	S	V_{DS}=10.0 V, I_{DS}=1.0 A, ΔV_{GS}=1.0 V, 80 µs Pulse*
Input Capacitance	C_{ISS}	-	45	pF	V_{DS}=28.0 V, F=1.0 MHz*
Output Capacitance	C_{OSS}	-	30	pF	V_{DS}=28.0 V, F=1.0 MHz*
Reverse Capacitance	C_{RSS}	-	8	pF	V_{DS}=28.0 V, F=1.0 MHz*
Power Gain	G_P	10	-	dB	V_{DD}=28.0 V, I_{DQ}=500.0 mA, P_{OUT}=40.0 W, F=500 MHz
Drain Efficiency	η_D	50	-	%	V_{DD}=28.0 V, I_{DQ}=500.0 mA, P_{OUT}=40.0 W, F=500 MHz
Load Mismatch Tolerance	VSWR-T	-	30:1	-	V_{DD}=28.0 V, I_{DQ}=500.0 mA, P_{OUT}=40.0 W, F=500 MHz

* Per Side

Typical Broadband Performance Curves

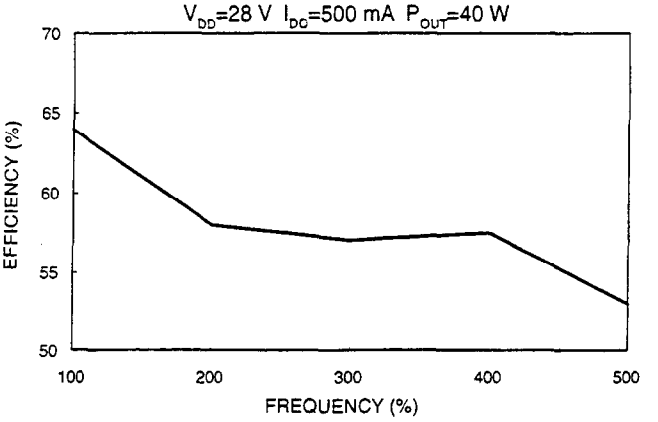
GAIN vs FREQUENCY

V_{DD}=28 V I_{DQ}=500 mA P_{OUT}=40 W



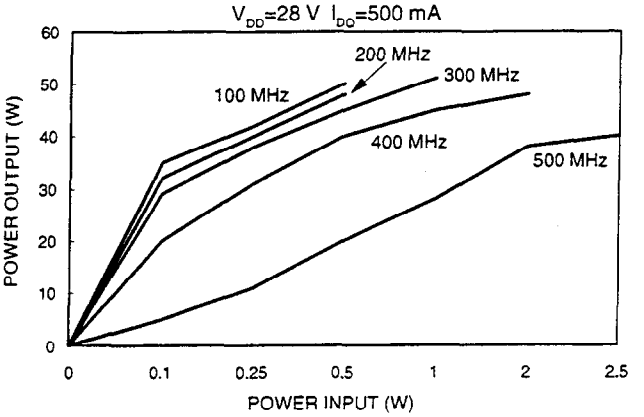
EFFICIENCY vs FREQUENCY

V_{DD}=28 V I_{DQ}=500 mA P_{OUT}=40 W



POWER OUTPUT vs POWER INPUT

V_{DD}=28 V I_{DQ}=500 mA



Typical Device Impedance

Frequency (MHz)	Z_{IN} (OHMS)	Z_{LOAD} (OHMS)
100	6.0 - j 20.0	25.0 + j 27.0
200	3.5 - j 11.5	16.5 + j 19.5
300	2.5 - j 5.5	13.0 + j 13.0
400	3.0 + j 0.0	12.0 + j 9.0
500	4.0 + j 3.0	12.0 + j 5.0

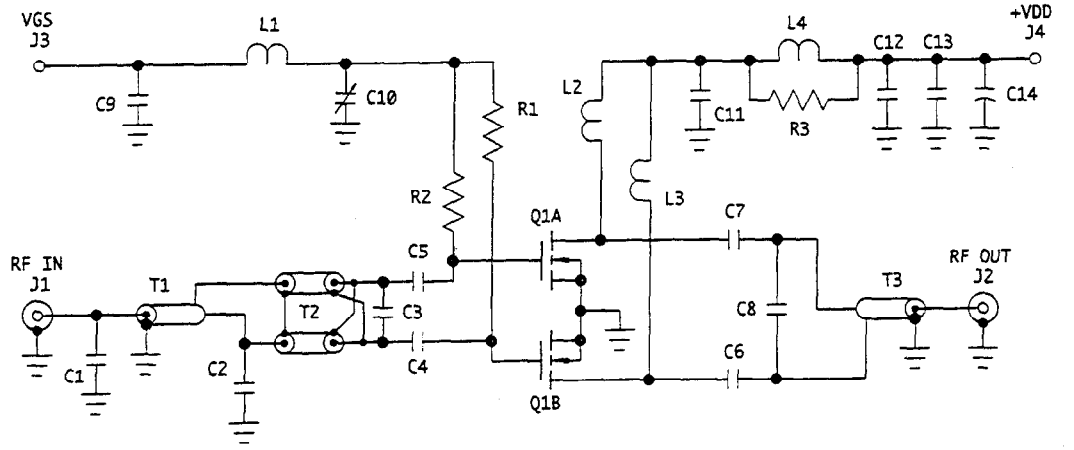
V_{DD}=28 V, I_{DQ}=500 mA, P_{OUT}=40.0 Watts

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 ground.

RF Test Fixture

VDS = 28 VOLTS
IDQ = 500mA



PARTS LIST

C1,C3	CAPACITOR 15pF
C2	CAPACITOR 7pF
C4,C5,C6, C7	CHIP CAPACITOR 620pF ATC
C8	CHIP CAPACITOR 9.1pF ATC
C9,C12	CAPACITOR 1000pF
C10	TRIMMER CAPACITOR 2-500pF
C11	CAPACITOR ATC 500pF
C13	MONOLITHIC CERAMIC CAPACITOR 0.1uF
C14	ELECTROLYTIC CAPACITOR 50uF 50 V.
L1	4 TURNS OF NO. 22 AWG ON '0.35"
L2,L3	6 TURNS OF NO. 22 AWG ON '0.35"
L4	8 TURNS OF NO. 22 AWG ON R3
R1,R2	RESISTOR 12K OHMS 0.25 WATT
R3	RESISTOR 33 OHMS 3 WATTS
T1	50 OHM SEMI-RIGID COAX 2.1" X '0.085"
T2	25 OHM SEMI-RIGID COAX 2X 2.3" X '0.070"
T3	25 OHM SEMI-RIGID COAX 3.3" X '0.070"
Q1	UF2840G
BOARD	FR4 0.062"