

RF MOSFET Power Transistor, 200W, 28V

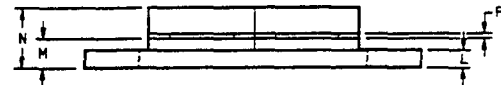
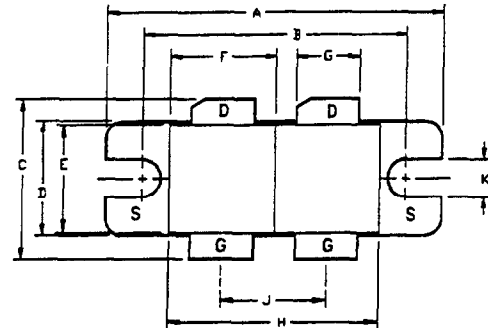
2 - 175 MHz

DU28200M

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}	20	A
Power Dissipation	P_D	389	W
Junction Temperature	T_J	200	°C
Storage Temperature	T_{STG}	-65 to +150	°C
Thermal Resistance	θ_{JC}	0.45	°C/W

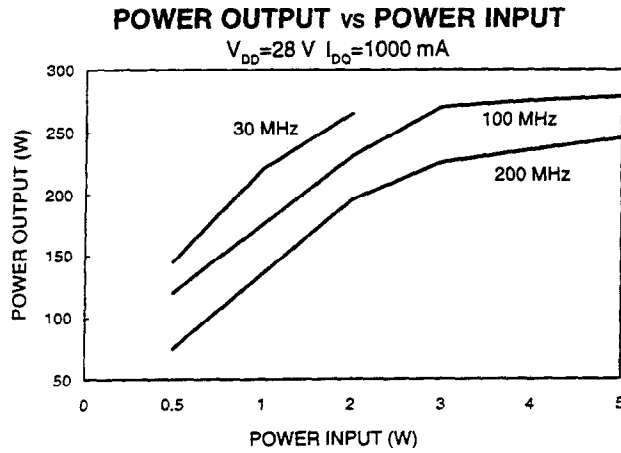
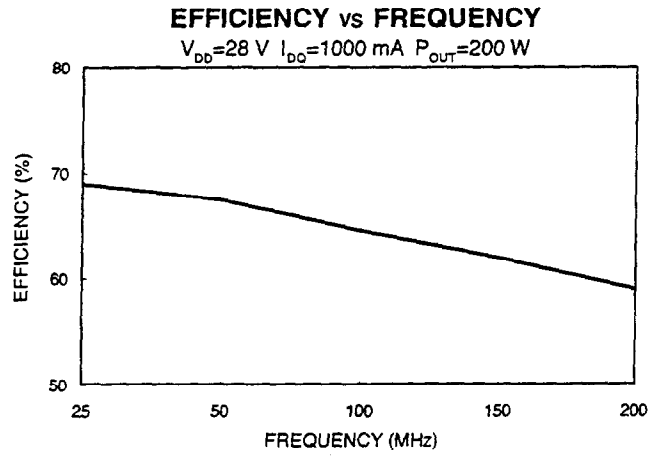
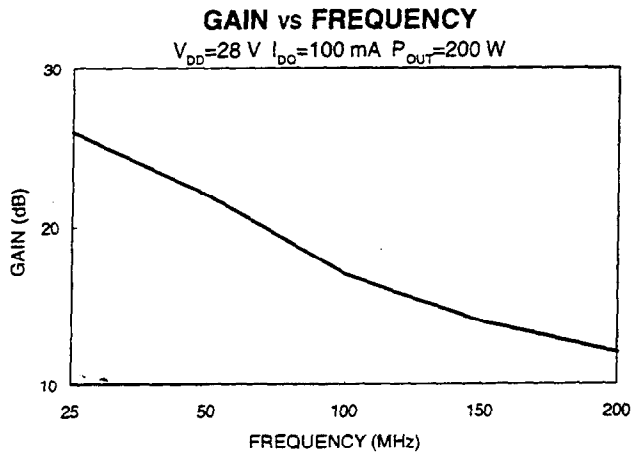
LETTER DIM	MILLIMETERS		INCHES	
	MIN	MAX	MIN	MAX
A	30.35	30.61	1.195	1.205
B	23.65	23.90	.931	.941
C	13.72	14.22	.540	.560
D	9.63	9.88	.379	.389
E	9.40	9.65	.370	.380
F	9.40	9.65	.370	.380
G	5.59	5.84	.220	.230
H	18.80	19.30	.740	.760
J	9.40	9.65	.370	.380
K	3.12	3.38	.123	.133
L	1.47	1.57	.058	.062
M	2.39	2.74	.094	.108
N	5.03	5.69	.198	.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	$V_{GS}=0.0\text{ V}$, $I_{DS}=25.0\text{ mA}^*$
Drain-Source Leakage Current	I_{DSS}	-	5.0	mA	$V_{DS}=28.0\text{ V}$, $V_{GS}=0.0\text{ V}^*$
Gate-Source Leakage Current	I_{GSS}	-	5.0	μA	$V_{GS}=20.0\text{ V}$, $V_{DS}=0.0\text{ V}^*$
Gate Threshold Voltage	$V_{GS(TH)}$	2.0	6.0	V	$V_{DS}=10.0\text{ V}$, $I_{DS}=500.0\text{ mA}^*$
Forward Transconductance	G_M	2.5	-	S	$V_{DS}=10.0\text{ V}$, $I_{DS}=5.0\text{ A}$, $\Delta V_{GS}=1.0\text{ V}$, 80 μs Pulse*
Input Capacitance	C_{ISS}	-	225	pF	$V_{DS}=28.0\text{ V}$, $F=1.0\text{ MHz}^*$
Output Capacitance	C_{OSS}	-	200	pF	$V_{DS}=28.0\text{ V}$, $F=1.0\text{ MHz}^*$
Reverse Capacitance	C_{RSS}	-	40	pF	$V_{DS}=28.0\text{ V}$, $F=1.0\text{ MHz}^*$
Power Gain	G_P	13	-	dB	$V_{DD}=28.0\text{ V}$, $I_{DQ}=1000\text{ mA}$, $P_{OUT}=200.0\text{ W}$, $F=175\text{ MHz}$
Drain Efficiency	η_D	55	-	%	$V_{DD}=28.0\text{ V}$, $I_{DQ}=1000\text{ mA}$, $P_{OUT}=200.0\text{ W}$, $F=175\text{ MHz}$
Load Mismatch Tolerance	VSWR-T	-	10:1	-	$V_{DD}=28.0\text{ V}$, $I_{DQ}=1000\text{ mA}$, $P_{OUT}=200.0\text{ W}$, $F=175\text{ MHz}$

* Per Side

Typical Broadband Performance Curves



Typical Device Impedance

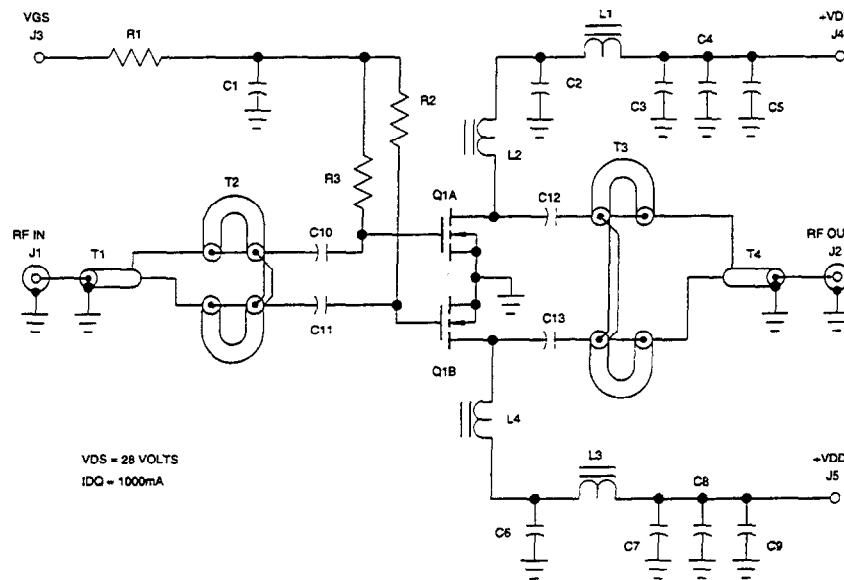
Frequency (MHz)	Z _{IN} (OHMS)	Z _{LOAD} (OHMS)
30	2.7 - j 4.8	7.2 - j 1.9
100	1.6 - j 3.0	5.25 - j 1.4
150	1.5 - j 2.0	5.0 - j 0.7
175	1.6 - j 1.0	5.2 - j 0.6
200	1.8 - j 0.5	5.5 - j 0.5

V_{DD}=28 V, I_{DD}=1000 mA, P_{OUT}=200 Watts

Z_{IN} is the series equivalent input impedance of the device from gate to source.

Z_{LOAD} is the series optimum equivalent load impedance as measured from drain to drain.

RF Test Fixture



VDS = 28 VOLTS
IDQ = 1000mA

PARTS LIST

- C1,C2,C5, C6,C9 UNELCO CAPACITOR 1000pF
- C3 CAPACITOR 50uF
- C4,C8 CAPACITOR 0.1uF
- C7 ELECTROLYTIC CAPACITOR 50uF 50 V.
- C10,C11 CAPACITOR ATC 500pF
- C12,C13 CAPACITOR 2X ATC 500pF
- L1,L3 1 TURN OF NO. 14 AWG THROUGH BINOCULAR CORE
- L2,L4 4 TURNS OF NO. 14 AWG THROUGH BINOCULAR CORE
- R1 RESISTOR 6800 OHM 0.5 WATT
- R2,R3 RESISTOR 2700 OHM 0.5 WATT
- T1,T4 1:1 BALUN 50 OHM COAX X 4"
- T2,T3 TWO SECTIONS, 4" EACH OF 25 OHM COAX, CONNECTED IN A 9:1 CONFIGURATION
- Q1 DU28200M
- BOARD FR4 0.062"