

# RF MOSFET Power Transistor, 200W, 28V

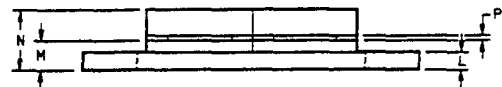
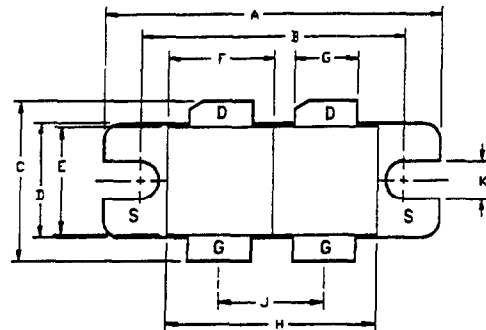
## 2 - 175 MHz

**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	$\theta_{JC}$	0.45	°C/W

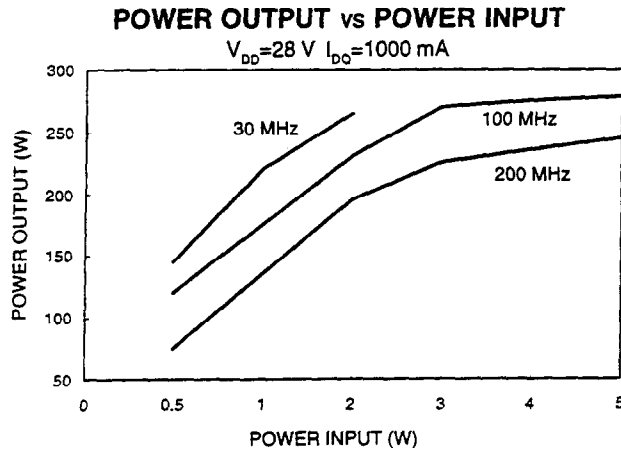
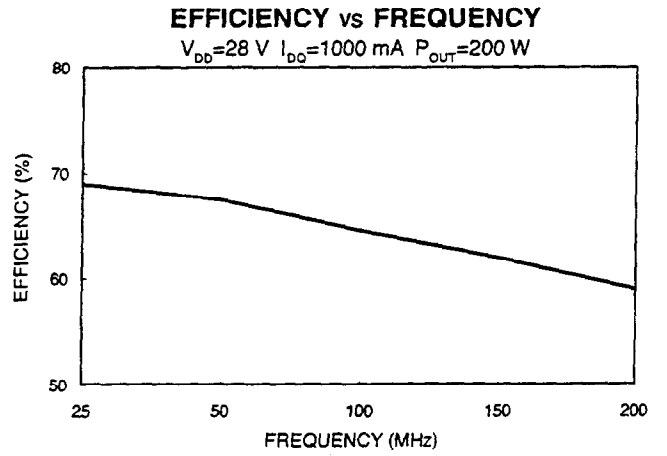
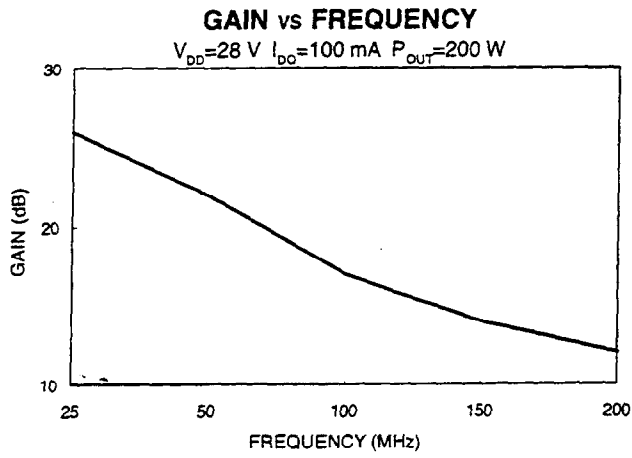
LETTER DIM	MILLIMETERS		INCHES	
	MIN	MAX	MIN	MAX
A	30.35	30.61	1.195	1.205
B	23.65	23.90	.931	.941
C	13.72	14.22	.540	.560
D	9.63	9.88	.379	.389
E	9.40	9.65	.370	.380
F	9.40	9.65	.370	.380
G	5.59	5.84	.220	.230
H	18.80	19.30	.740	.760
J	9.40	9.65	.370	.380
K	3.12	3.38	.123	.133
L	1.47	1.57	.058	.062
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	$\mu\text{A}$	$V_{GS}=20.0\text{ V}, V_{DS}=0.0\text{ V}^*$
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	$V_{DS}=10.0\text{ V}, I_{DS}=5.0\text{ A}, \Delta V_{GS}=1.0\text{ V}, 80\text{ }\mu\text{s Pulse}^*$
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	$\eta_D$	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

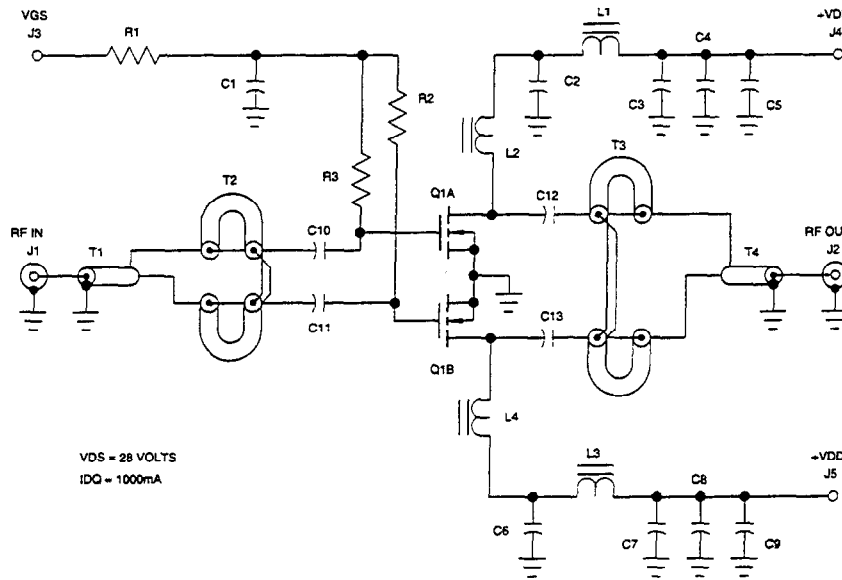
Frequency (MHz)	Z <sub>IN</sub> (OHMS)	Z <sub>LOAD</sub> (OHMS)
30	2.7 - j 4.8	7.2 - j 1.9
100	1.6 - j 3.0	5.25 - j 1.4
150	1.5 - j 2.0	5.0 - j 0.7
175	1.6 - j 1.0	5.2 - j 0.6
200	1.8 - j 0.5	5.5 - j 0.5

V<sub>DD</sub>=28 V, I<sub>DD</sub>=1000 mA, P<sub>OUT</sub>=200 Watts

Z<sub>IN</sub> is the series equivalent input impedance of the device from gate to source.

Z<sub>LOAD</sub> 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"