



RF MOSFET Power Transistor, 80W, 28V

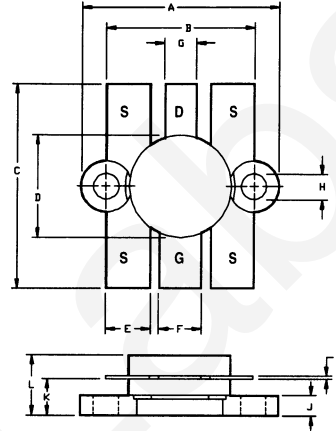
2 - 175 MHz

DU2880T

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}	16	A
Power Dissipation	P_D	206	W
Junction Temperature	T_J	200	°C
Storage Temperature	T_{STG}	-65 to +150	°C
Thermal Resistance	θ_{JC}	0.85	°C/W

LETTER DIM	MILLIMETERS		INCHES	
	MIN	MAX	MIN	MAX
A	24.38	25.15	.960	.990
B	18.29	18.54	.720	.730
C	21.36	21.74	.841	.856
D	12.60	12.85	.496	.506
E	5.33	5.59	.210	.220
F	5.08	5.33	.200	.210
G	3.81	4.06	.150	.160
H	3.10	3.15	.122	.128
J	2.51	2.67	.099	.105
K	4.06	4.57	.160	.180
L	6.68	7.49	.263	.295
M	.10	.15	.004	.006

Electrical Characteristics at 25°C

Parameter	Symbol	Min	Max	Units	Test Conditions
Drain-Source Breakdown Voltage	BV_{DSS}	65	-	V	$V_{GS}=0.0\text{ V}$, $I_{DS}=20.0\text{ mA}$
Drain-Source Leakage Current	I_{DSS}	-	4.0	mA	$V_{DS}=28.0\text{ V}$, $V_{GS}=0.0\text{ V}$
Gate-Source Leakage Current	I_{GSS}	-	4.0	μA	$V_{GS}=20.0\text{ V}$, $V_{DS}=0.0\text{ V}$
Gate Threshold Voltage	$V_{GS(TH)}$	2.0	6.0	V	$V_{DS}=10.0\text{ V}$, $I_{DS}=400.0\text{ mA}$
Forward Transconductance	G_M	2.0	-	S	$V_{DS}=10.0\text{ V}$, $I_{DS}=4.0\text{ A}$, $\Delta V_{GS}=1.0\text{ V}$, 80 μs Pulse
Input Capacitance	C_{ISS}	-	180	pF	$V_{DS}=28.0\text{ V}$, $F=1.0\text{ MHz}$
Output Capacitance	C_{OSS}	-	160	pF	$V_{DS}=28.0\text{ V}$, $F=1.0\text{ MHz}$
Reverse Capacitance	C_{RSS}	-	32	pF	$V_{DS}=28.0\text{ V}$, $F=1.0\text{ MHz}$
Power Gain	G_P	13	-	dB	$V_{DD}=28.0\text{ V}$, $I_{DQ}=400\text{ mA}$, $P_{OUT}=80.0\text{ W}$, $F=175\text{ MHz}$
Drain Efficiency	η_D	60	-	%	$V_{DD}=28.0\text{ V}$, $I_{DQ}=400\text{ mA}$, $P_{OUT}=80.0\text{ W}$, $F=175\text{ MHz}$
Load Mismatch Tolerance	VSWR-T	-	30:1	-	$V_{DD}=28.0\text{ V}$, $I_{DQ}=400\text{ mA}$, $P_{OUT}=80.0\text{ W}$, $F=175\text{ MHz}$

Specifications Subject to Change Without Notice.

9-44

M/A-COM, Inc.

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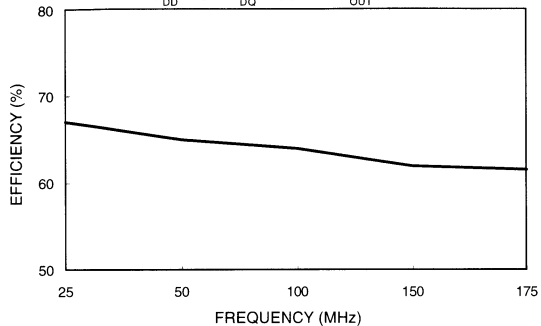
Asia/Pacific: Tel. +81 (03) 3226-1671
Fax +81 (03) 3226-1451

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Fax +44 (1344) 300 020

Typical Broadband Performance Curves

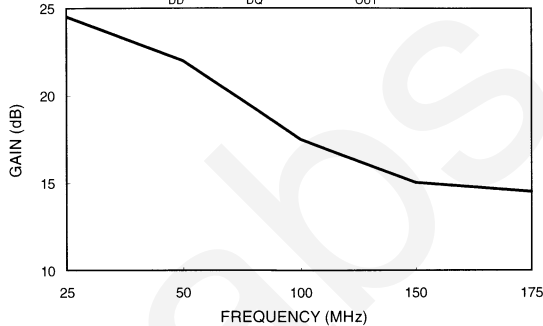
EFFICIENCY vs FREQUENCY

$V_{DD}=28\text{ V}$ $I_{DQ}=400\text{ mA}$ $P_{OUT}=80\text{ W}$



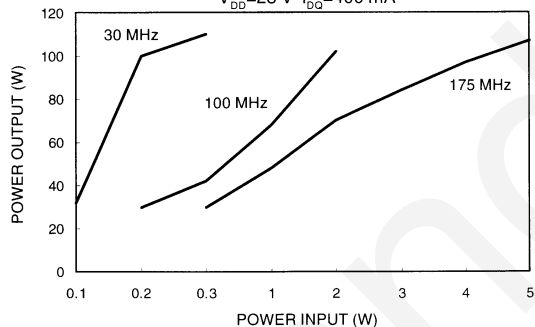
GAIN vs FREQUENCY

$V_{DD}=28\text{ V}$ $I_{DQ}=400\text{ mA}$ $P_{OUT}=80\text{ W}$



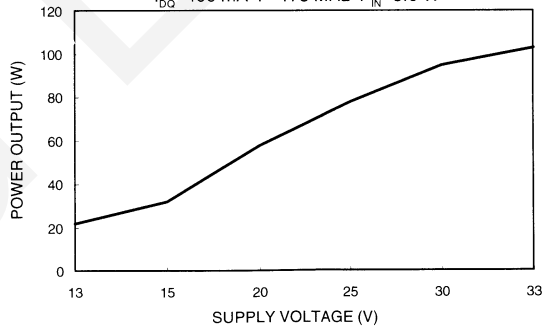
POWER OUTPUT vs POWER INPUT

$V_{DD}=28\text{ V}$ $I_{DQ}=400\text{ mA}$



POWER OUTPUT vs SUPPLY VOLTAGE

$I_{DQ}=400\text{ mA}$ $F=175\text{ MHz}$ $P_{IN}=3.0\text{ W}$



Typical Device Impedance

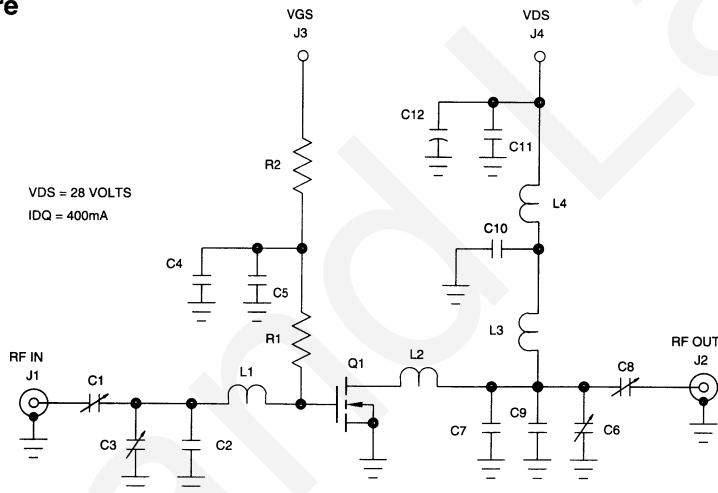
Frequency (MHz)	Z_{IN} (OHMS)	Z_{LOAD} (OHMS)
30	5.4 - j 4.4	5.7 + j 4.7
50	2.5 - j 4.4	3.4 + j 3.5
100	1.6 - j 3.4	2.4 + j 2.4
175	0.7 - j 1.2	1.7 + j 0.8

$$V_{DD}=28\text{ V, } I_{DQ}=400\text{ mA, } P_{OUT}=80\text{ Watts}$$

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

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

RF Test Fixture



PARTS LIST

C1,C3	TRIMMER CAPACITOR 4-40pF
C2,C9,C10	CAPACITOR 50pF
C4,C11	CAPACITOR 1000pF
C5	MONOLITHIC CIRCUIT CAPACITOR 0.01uF
C6,C8	TRIMMER CAPACITOR 9-180pF
C7	CAPACITOR 15pF
C12	ELECTROLYTIC CAPACITOR 50uF 50 VOLT
L1	NO. 12 AWG COPPER WIRE X 1.18" (LOOP 0.5")
L2	NO. 12 AWG COPPER WIRE X 1" (LOOP 0.4")
L3,L4	8 TURNS OF NO. 18 AWG ENAMEL WIRE ON 0.25", CLOSE WOUND
R1	RESISTOR 300 OHMS 0.25 WATT
R2	RESISTOR 2.7K OHMS 0.25 WATT
Q1	DU2880T
BOARD	FR4 0.062"

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