

RF MOSFET Power Transistor, 120W, 28V

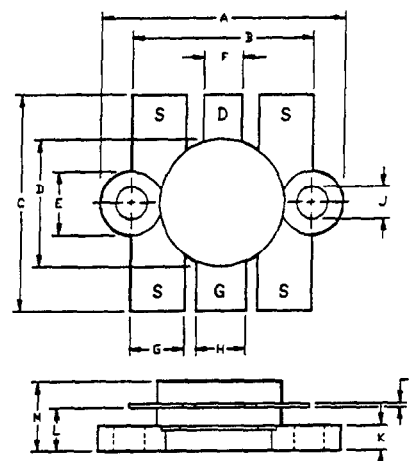
2 - 175 MHz

DU28120T

V2.00

Features

- N-Channel Enhancement Mode Device
- DMOS Structure
- Lower Capacitances for Broadband Operation
- High Saturated Output Power
- Lower Noise Figure Than Bipolar 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}	24	A
Power Dissipation	P_D	269	W
Junction Temperature	T_J	200	°C
Storage Temperature	T_{STG}	-55 to +150	°C
Thermal Resistance	θ_{JC}	0.65	°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	21.21	21.97	.835	.865
D	12.60	12.85	.496	.506
E	6.22	6.48	.245	.255
F	3.81	4.06	.150	.160
G	5.33	5.59	.210	.220
H	5.08	5.33	.200	.210
J	3.05	3.30	.120	.130
K	2.29	2.54	.090	.100
L	4.06	4.57	.160	.180
M	6.68	7.49	.263	.295
N	.30	.35	.004	.006

Electrical Characteristics at 25°C

Parameter	Symbol	Min	Max	Units	Test Conditions
Drain-Source Breakdown Voltage	BV_{DSS}	65	-	V	$V_{GS}=0.0\text{ V}$, $I_{DS}=30.0\text{ mA}$
Drain-Source Leakage Current	I_{DSS}	-	6.0	mA	$V_{DS}=28.0\text{ V}$, $V_{GS}=0.0\text{ V}$
Gate-Source Leakage Current	I_{GSS}	-	6.0	μA	$V_{GS}=20.0\text{ V}$, $V_{DS}=0.0\text{ V}$
Gate Threshold Voltage	$V_{GS(TH)}$	2.0	6.0	V	$V_{DS}=10.0\text{ V}$, $I_{DS}=600.0\text{ mA}$
Forward Transconductance	G_M	3.0	-	S	$V_{DS}=10.0\text{ V}$, $I_{DS}=6000.0\text{ A}$, $\Delta V_{GS}=1.0\text{ V}$, 80 μs Pulse
Input Capacitance	C_{ISS}	-	270	pF	$V_{DS}=28.0\text{ V}$, $F=1.0\text{ MHz}$
Output Capacitance	C_{OSS}	-	240	pF	$V_{DS}=28.0\text{ V}$, $F=1.0\text{ MHz}$
Reverse Capacitance	C_{RSS}	-	48	pF	$V_{DS}=28.0\text{ V}$, $F=1.0\text{ MHz}$
Power Gain	G_P	13	-	dB	$V_{DS}=28.0\text{ V}$, $I_{DS}=600\text{ mA}$, $P_{OUT}=120.0\text{ W}$, $F=175\text{ MHz}$
Drain Efficiency	η_D	60	-	%	$V_{DS}=28.0\text{ V}$, $I_{DS}=600\text{ mA}$, $P_{OUT}=120.0\text{ W}$, $F=175\text{ MHz}$
Load Mismatch Tolerance	VSWR-T	-	30:1	-	$V_{DS}=28.0\text{ V}$, $I_{DS}=600\text{ mA}$, $P_{OUT}=120.0\text{ W}$, $F=175\text{ MHz}$

Specifications Subject to Change Without Notice.

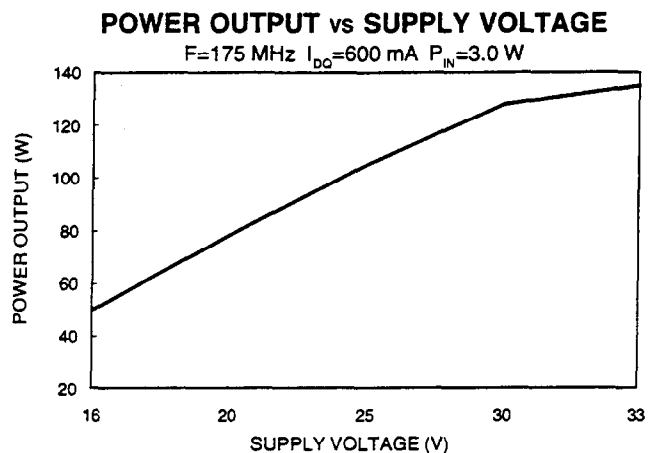
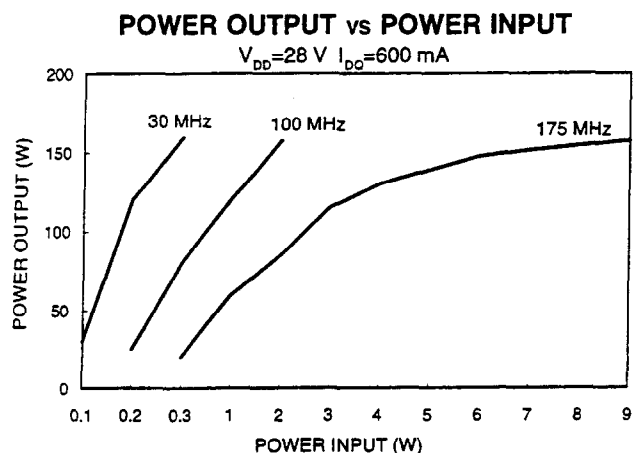
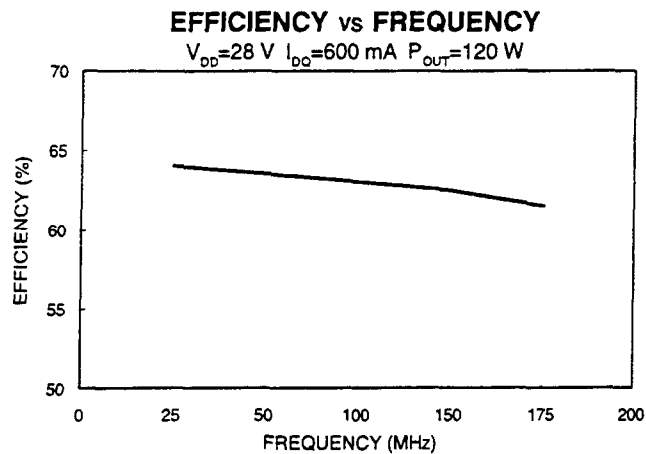
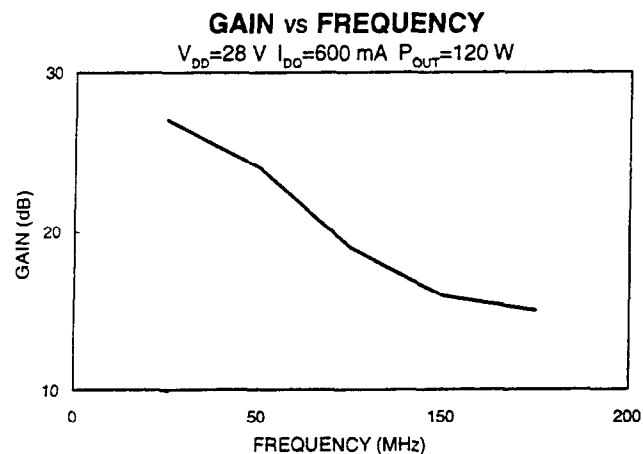
M/A-COM, Inc.

North America: Tel. (800) 366-2266
Fax (800) 618-8883

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

Europe: Tel. +44 (1344) 869 595
Fax +44 (1344) 300 020

Typical Broadband Performance Curves



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Typical Device Impedance

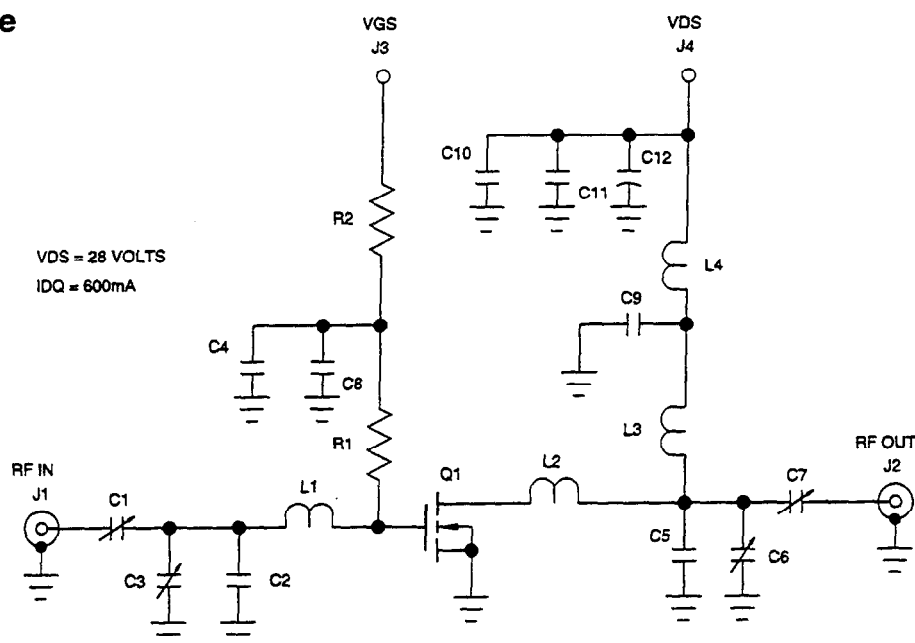
Frequency (MHz)	Z_{IN} (OHMS)	Z_{LOAD} (OHMS)
30	$4.0 - j 8.0$	$3.4 + j 2.4$
100	$1.0 - j 2.5$	$2.2 + j 1.3$
175	$1.0 - j 0.5$	$2.2 + j 0.0$

$$V_{DD}=28 \text{ V}, I_{DQ}=600 \text{ mA}, P_{OUT}=120 \text{ Watts}$$

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

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

RF Test Fixture



PARTS LIST

C1,C6	TRIMMER CAPACITOR 5-80pF
C2,C5	CAPACITOR 50pF
C3	TRIMMER CAPACITOR 4-40pF
C4,C11	MONOLITHIC CIRCUIT CAPACITOR 0.01uF
C7	TRIMMER CAPACITOR 9-180pF
C8,C9	CAPACITOR 500pF
C10	CAPACITOR 1000pF
C12	ELECTROLYTIC CAPACITOR 50uF 50 VOLT
L1,L2	NO. 12 AWG COPPER WIRE X 0.87" (LOOP 0.4")
L3,L4	8 TURNS OF NO. 16 AWG ENAMEL WIRE ON 0.25", CLOSE WOUND
R1,R2	RESISTOR 2.7K OHMS 0.25 WATT
Q1	DU28120T
BOARD	FR4 0.062"

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