



RF MOSFET Power Transistor, 120W, 28V

2 - 175 MHz

DU28120V

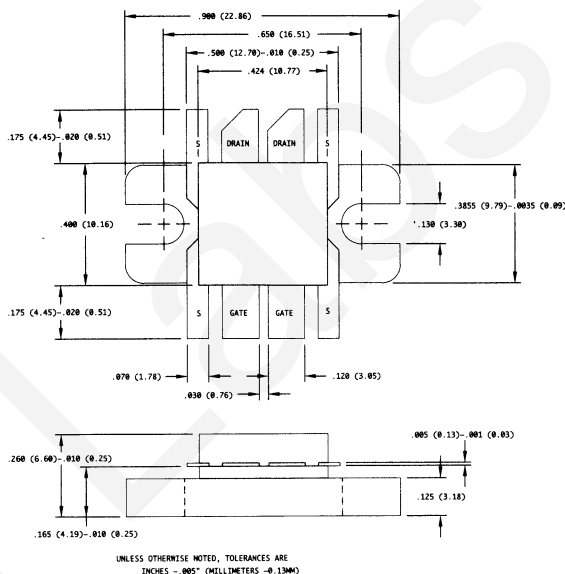
V2.00

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}	12*	A
Power Dissipation	P_D	250	W
Junction Temperature	T_J	200	°C
Storage Temperature	T_{STJ}	-55 to +150	°C
Thermal Resistance	θ_{JC}	0.7	°C/W



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	$V_{DD}=28.0\text{ V}$, $I_{DD}=600\text{ mA}$, $P_{OUT}=120.0\text{ W}$, $F=175\text{ MHz}$
Drain Efficiency	η_D	60	-	%	$V_{DD}=28.0\text{ V}$, $I_{DD}=600\text{ mA}$, $P_{OUT}=120.0\text{ W}$, $F=175\text{ MHz}$
Return Loss	R_L	10	-	%	$V_{DD}=28.0\text{ V}$, $I_{DD}=600\text{ mA}$, $P_{OUT}=120.0\text{ W}$, $F=175\text{ MHz}$
Load Mismatch Tolerance	VSWR-T	-	30:1	-	$V_{DD}=28.0\text{ V}$, $I_{DD}=600\text{ mA}$, $P_{OUT}=120.0\text{ W}$, $F=175\text{ MHz}$

* Per side

Specifications Subject to Change Without Notice.

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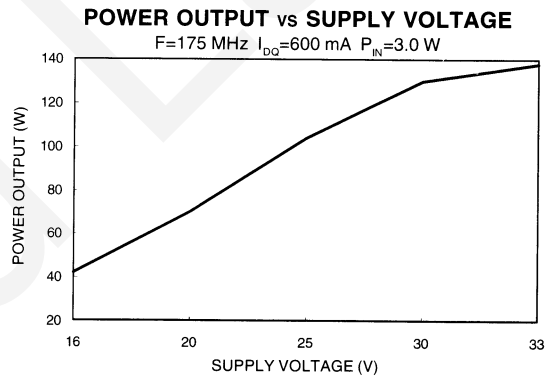
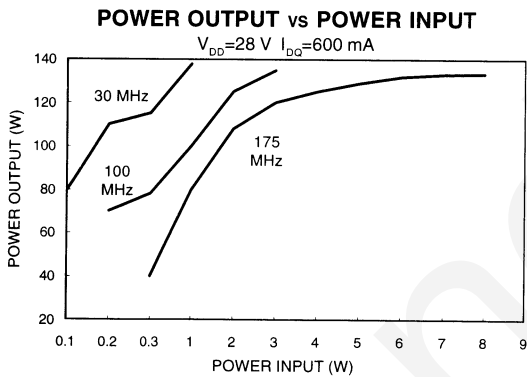
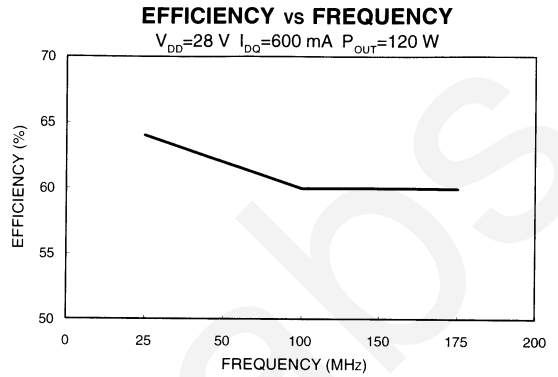
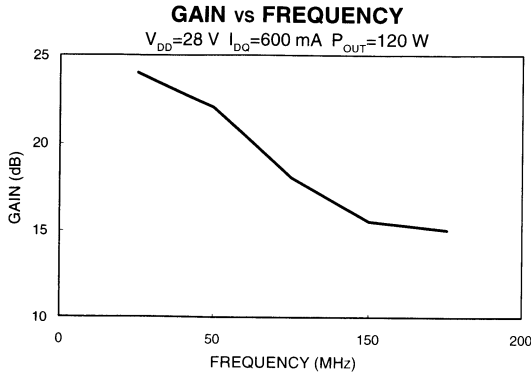
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Typical Broadband Performance Curves



Typical Device Impedance

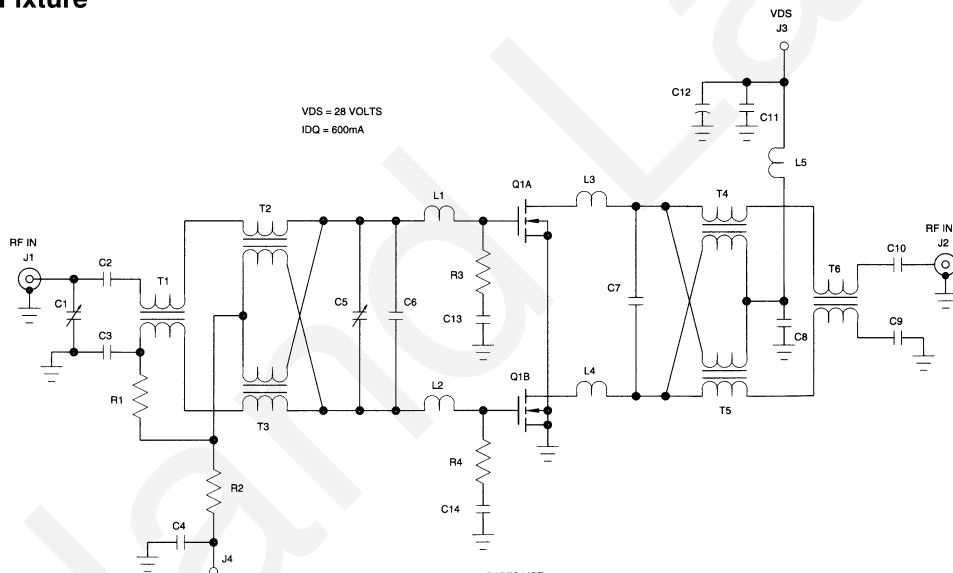
Frequency (MHz)	Z _{IN} (OHMS)	Z _{LOAD} (OHMS)
30	3.0 - j 12.5	8.0 + j 6.0
100	1.5 - j 8.5	7.0 + j 6.5
175	1.0 - j 6.0	6.5 + j 5.0

V_{DD}=28 V, I_{DQ}=600 mA, P_{OUT}=120 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 drain.

RF Test Fixture



PARTS LIST

- C1 TRIMMER CAPACITOR 4-40pF
- C2,C3,C4, C8,C9,C10 CAPACITOR 0.001pF
- C11,C13,C14 TRIMMER CAPACITOR 5-80pF
- C5 TRIMMER CAPACITOR 5-80pF
- C6 CAPACITOR 68pF
- C7 CAPACITOR 50pF
- C12 ELECTROLYTIC CAPACITOR 100uF 50 VOLTS
- L1,L2 0.50" X 0.10" TRACE ON BOARD + 0.125" X 0.25" LOOP
- L3,L4 0.87" X 0.10" TRACE ON BOARD
- L5 7.5 TURNS OF NO. 20 AWG COPPER WIRE X 0.31"
- R1,R3,R4 RESISTOR 18 OHMS 2 WATTS
- R2 RESISTOR 10K OHMS
- T1,T6 50 OHM BALUN CORES, 2 TURNS OF 50 OHM COAX THRU 2 STACKPOLE 57-1522
- T2,T3,T4, T5 4:1 TRANSFORMER 2 TURNS OF 2 50 OHM COAX THRU 2 STACKPOLE 57-1522 BALUN CORES
- Q1 DU28120V
- BOARD FR4 0.062"

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