

# RF MOSFET Power Transistor, 120W, 28V

## 2 - 175 MHz

### DU28120V

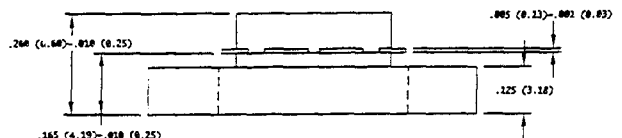
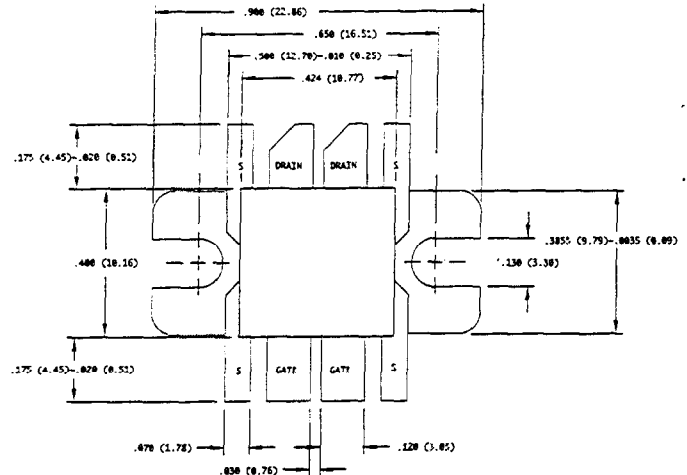
V2.00

#### 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	$\theta_{JC}$	0.7	°C/W



UNLESS OTHERWISE NOTED, TOLERANCES ARE  
 INCHES - .005" (MILLIMETERS - 0.13MM)

#### 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	$\mu\text{A}$	$V_{GS}=20.0\text{ V}, V_{DS}=0.0\text{ V}^*$
Gate Threshold Voltage	$V_{GS(TH)}$	2.0	6.0	V	$V_{DS}=10.0\text{ V}, I_{DS}=600.0\text{ mA}^*$
Forward Transconductance	$G_M$	3.0	-	S	$V_{DS}=10.0\text{ V}, I_{DS}=6000.0\text{ A}, \Delta V_{GS}=1.0\text{ V}, 80\text{ }\mu\text{s Pulse}^*$
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	$V_{DS}=28.0\text{ V}, I_{DQ}=600\text{ mA}, P_{OUT}=120.0\text{ W}, F=175\text{ MHz}$
Drain Efficiency	$\eta_D$	60	-	%	$V_{DS}=28.0\text{ V}, I_{DQ}=600\text{ mA}, P_{OUT}=120.0\text{ W}, F=175\text{ MHz}$
Return Loss	$R_L$	10	-	%	$V_{DS}=28.0\text{ V}, I_{DQ}=600\text{ mA}, P_{OUT}=120.0\text{ W}, F=175\text{ MHz}$
Load Mismatch Tolerance	VSWR-T	-	30:1	-	$V_{DS}=28.0\text{ V}, I_{DQ}=600\text{ mA}, P_{OUT}=120.0\text{ W}, F=175\text{ MHz}$

\* Per side

Specifications Subject to Change Without Notice.

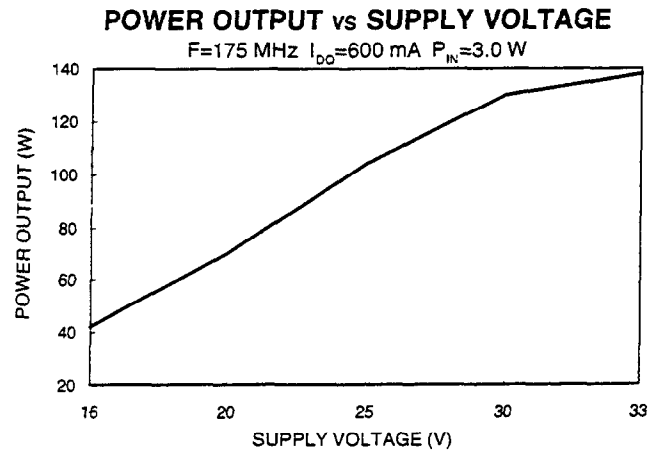
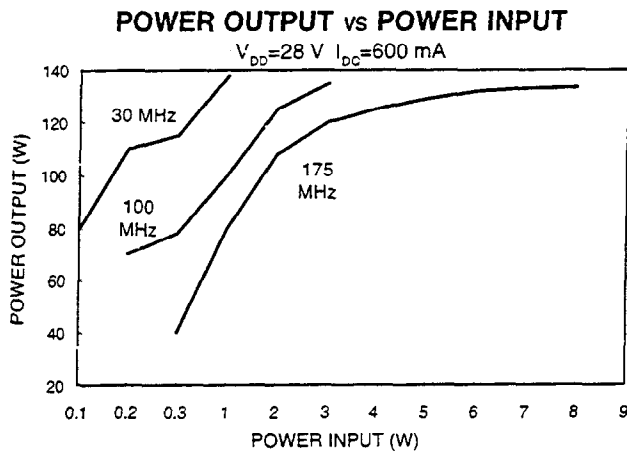
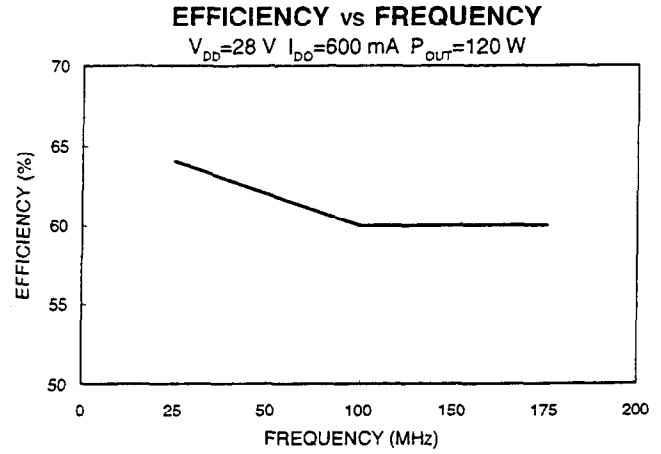
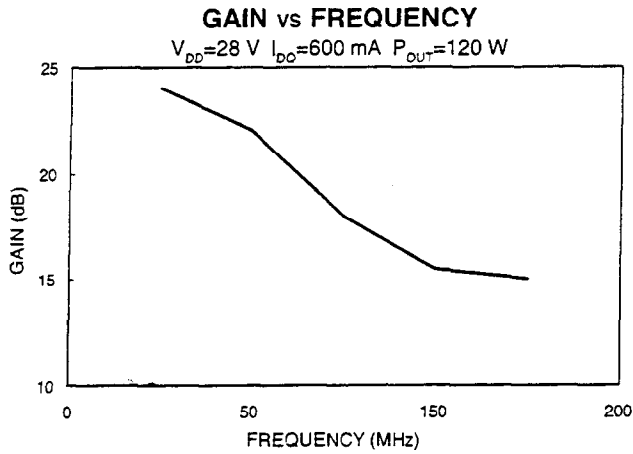
**M/A-COM, Inc.**

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Typical Broadband Performance Curves



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Typical Device Impedance

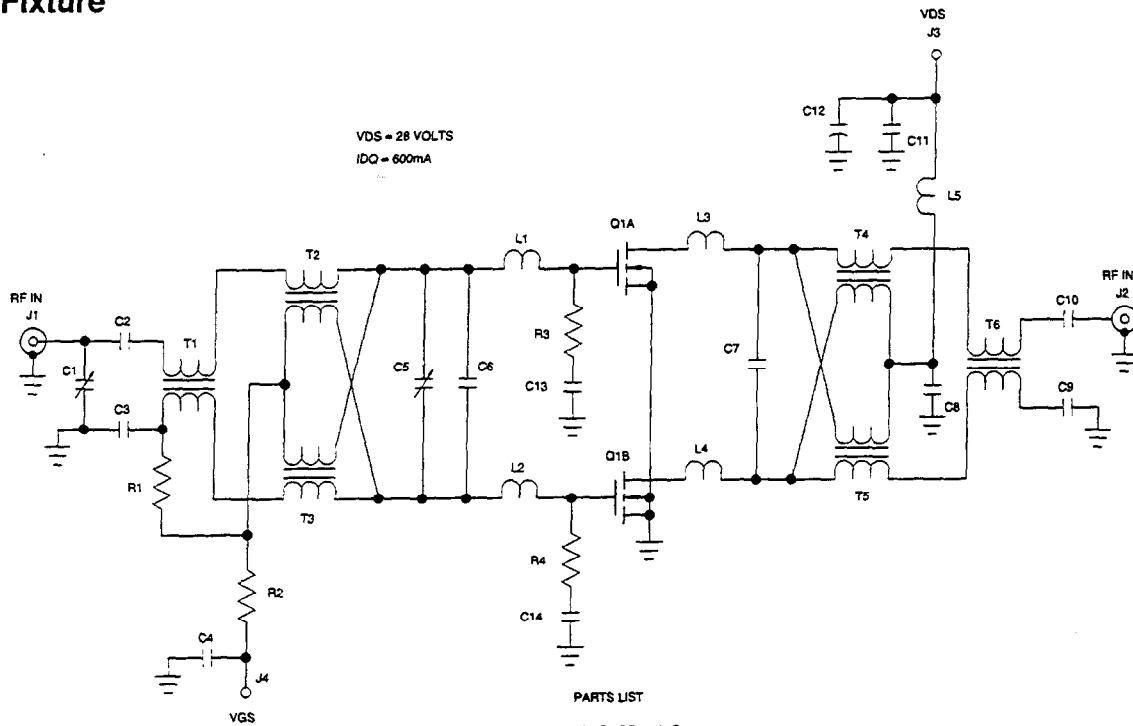
Frequency (MHz)	Z <sub>IN</sub> (OHMS)	Z <sub>LOAD</sub> (OHMS)
30	3.0 - j 12.5	8.0 + j 6.0
100	1.5 - j 8.5	7.0 + j 6.5
175	1.0 - j 6.0	6.5 + j 5.0

V<sub>DD</sub>=28 V, I<sub>DD</sub>=600 mA, P<sub>OUT</sub>=120 Watts

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

Z<sub>LOAD</sub> 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 4:1 TRANSFORMER 2 TURNS OF 2 50 OHM COAX THRU 2 STACKPOLE 57-1522 BALUN CORES
  - T5 2 STACKPOLE 57-1522 BALUN CORES
  - Q1 DU28120V
  - BOARD FR4 0.062"

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