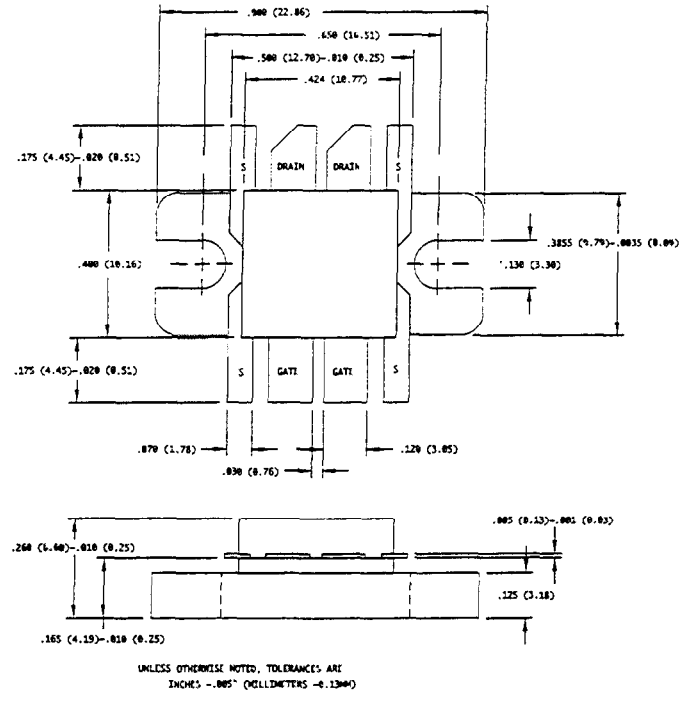
RF MOSFET Power Transistor, 80W, 28V
2 - 175 MHz

DU2880V

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}	8*	A
Power Dissipation	P_D	206	W
Junction Temperature	T_J	200	°C
Storage Temperature	T_{STG}	-55 to +150	°C
Thermal Resistance	θ_{JC}	0.85	°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 V, I_{DS}=10.0 mA*
Drain-Source Leakage Current	I_{DSS}	-	2.0	mA	V_{DS}=28.0 V, V_{GS}=0.0 V*
Gate-Source Leakage Current	I_{GSS}	-	2.0	µA	V_{GS}=20.0 V, V_{DS}=0.0 V*
Gate Threshold Voltage	$V_{GS(TH)}$	2.0	6.0	V	V_{DS}=10.0 V, I_{DS}=200.0 mA*
Forward Transconductance	G_M	1.0	-	S	V_{DS}=10.0 V, I_{DS}=2000.0 mA, ΔV_{GS}=1.0 V, 80 µs Pulse*
Input Capacitance	C_{ISS}	-	90	pF	V_{DS}=28.0 V, F=1.0 MHz*
Output Capacitance	C_{OSS}	-	80	pF	V_{DS}=28.0 V, F=1.0 MHz*
Reverse Capacitance	C_{RSS}	-	16	pF	V_{DS}=28.0 V, F=1.0 MHz*
Power Gain	G_P	13	-	dB	V_{DD}=28.0 V, I_{DQ}=400 mA, P_{OUT}=80.0 W, F=175 MHz
Drain Efficiency	η_D	60	-	%	V_{DD}=28.0 V, I_{DQ}=400 mA, P_{OUT}=80.0 W, F=175 MHz
Load Mismatch Tolerance	VSWR-T	-	30:1	-	V_{DD}=28.0 V, I_{DQ}=400 mA, P_{OUT}=80.0 W, F=175 MHz

* Per Side

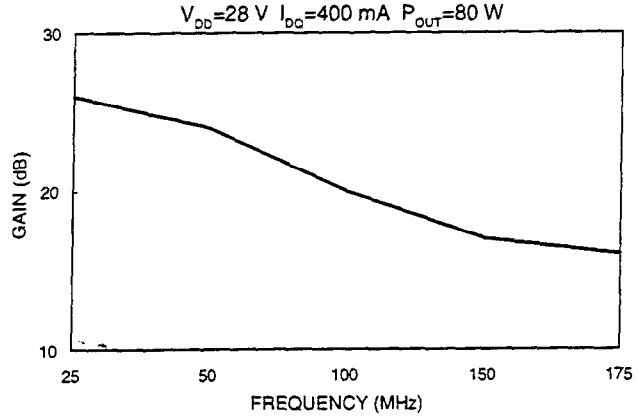
M/A-COM, Inc.

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

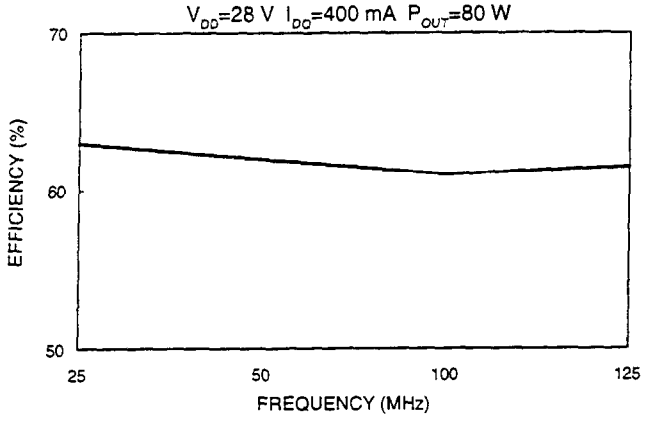
GAIN vs FREQUENCY

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



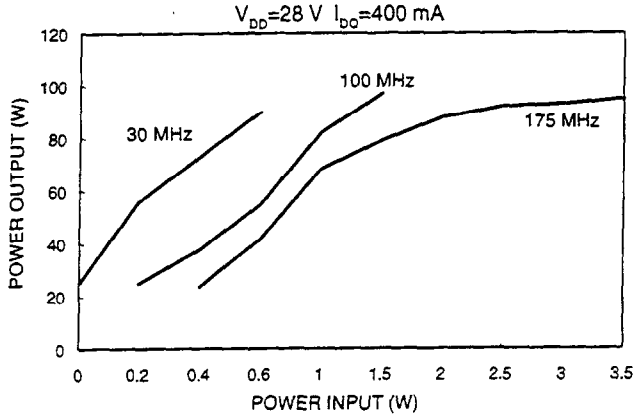
EFFICIENCY vs FREQUENCY

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



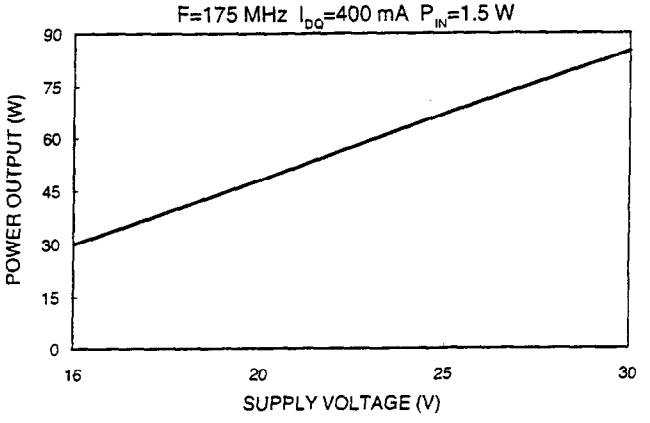
POWER OUTPUT vs POWER INPUT

V_{DD}=28 V I_{DQ}=400 mA



POWER OUTPUT vs SUPPLY VOLTAGE

F=175 MHz I_{DQ}=400 mA P_{IN}=1.5 W



Typical Device Impedance

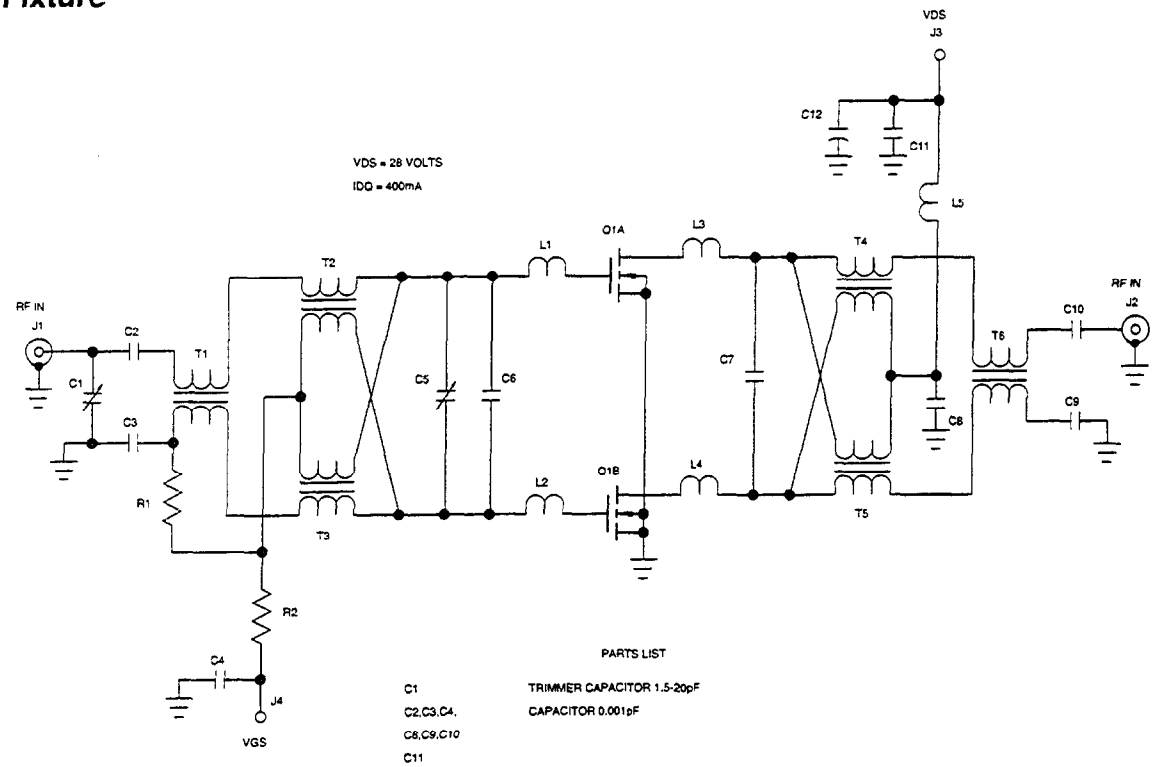
Frequency (MHz)	Z_{IN} (OHMS)	Z_{LOAD} (OHMS)
30	4.5 - j 14.5	13.5 + j 4.5
100	3.0 - j 10.5	13.5 + j 6.0
175	2.0 - j 7.5	12.0 + j 4.5

V_{DD}=28 V, I_{DQ}=400 mA, P_{OUT}=80 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 1.5-20pF
C2,C3,C4, C6,C9,C10	CAPACITOR 0.001pF
C11	
C5	TRIMMER CAPACITOR 5-80pF
C6	CAPACITOR 68pF
C7	CAPACITOR 50pF
C12	ELECTROLYTYIC CAPACITOR 100uF 50 VOLTS
L1,L2	0.50" X 0.10" TRACE ON BOARD = Ø0.125" X Ø0.25" LOOP
L3,L4	0.87" X 0.10" TRACE ON BOARD
L5	7.5 TURNS OF NO. 20 AWG COPPER WIRE X Ø0.31"
R1	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 1 TURN OF 2 50 OHM COAX IN
T5	PARALLEL THRU 2 STACKPOLE 57-1522 BALUN CORES
Q1	DU2880V
BOARD	FR4 0.062"