

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

M/A-COM Products
Released; RoHS Compliant

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}	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

TYPICAL DEVICE IMPEDANCE

F (MHz)	Z_{IN} (Ω)	Z_{LOAD} (Ω)
30	5.4 - j4.4	5.7 + j4.7
50	2.5 - j4.4	3.4 + j3.5
100	1.6 - j3.4	2.4 + j2.4
175	0.7 - j1.2	1.7 + j0.8

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

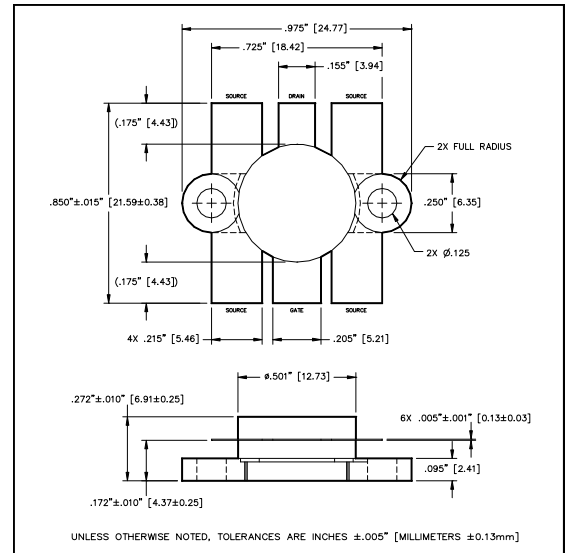
Z_{IN} is the series equivalent input impedance of the device from gate to source.

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

ELECTRICAL CHARACTERISTICS AT 25°C

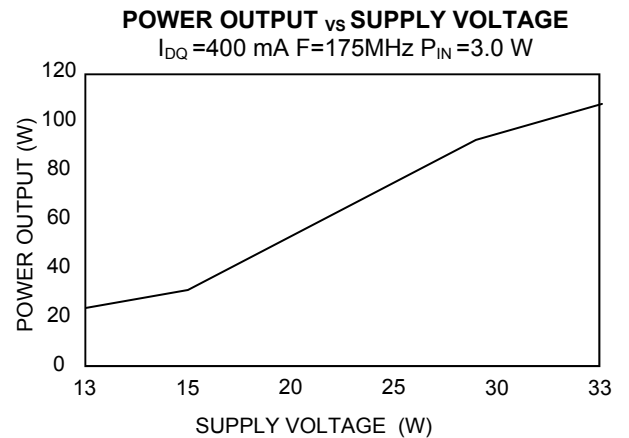
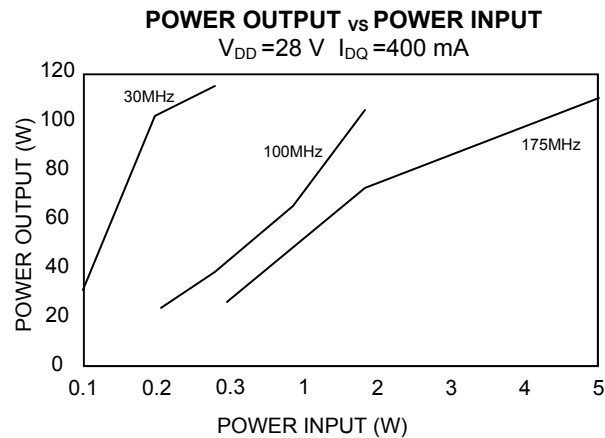
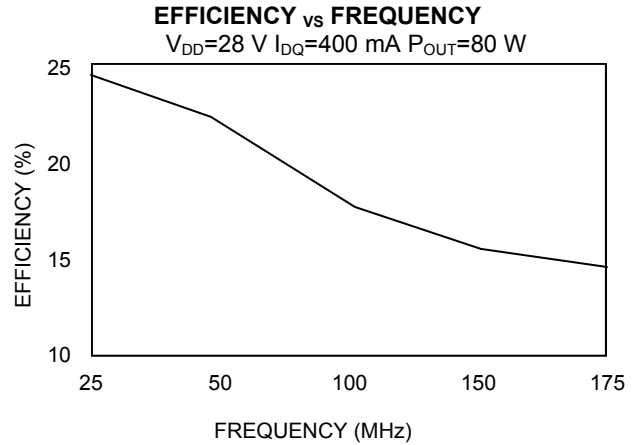
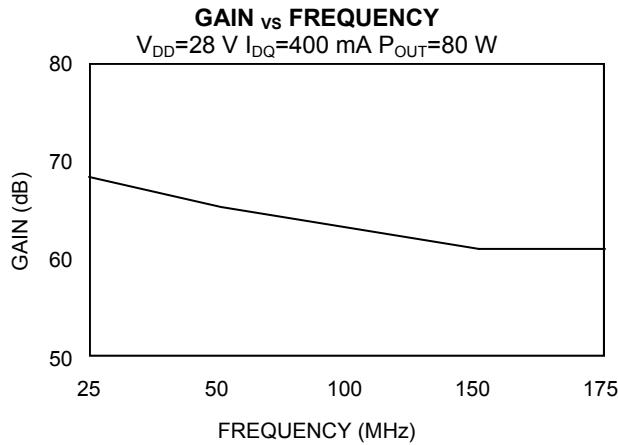
Parameter	Symbol	Min	Max	Units	Test Conditions
Drain-Source Breakdown Voltage	BV_{DSS}	65	-	V	$V_{GS} = 0.0 V, I_{DS} = 20.0 mA$
Drain-Source Leakage Current	I_{DSS}	-	4.0	mA	$V_{GS} = 28.0 V, V_{DS} = 0.0 V$
Gate-Source Leakage Current	I_{GSS}	-	4.0	μA	$V_{GS} = 20.0 V, V_{DS} = 0.0 V$
Gate Threshold Voltage	$V_{GS(TH)}$	2.0	6.0	V	$V_{DS} = 10.0 V, I_{DS} = 400.0 mA$
Forward Transconductance	G_M	2.0	-	S	$V_{DS} = 10.0 V, I_{DS} = 4.0 A, \Delta V_{GS} = 1.0V, 80 \mu s$ Pulse
Input Capacitance	C_{ISS}	-	180	pF	$V_{DS} = 28.0 V, F = 1.0 MHz$
Output Capacitance	C_{OSS}	-	160	pF	$V_{DS} = 28.0 V, F = 1.0 MHz$
Reverse Capacitance	C_{RSS}	-	32	pF	$V_{DS} = 28.0 V, F = 1.0 MHz$
Power Gain	G_P	13	-	dB	$V_{DD} = 28.0 V, I_{DQ} = 400 mA, P_{OUT} = 60.0 W F = 175 MHz$
Drain Efficiency	η_D	60	-	%	$V_{DD} = 28.0 V, I_{DQ} = 400 mA, P_{OUT} = 60.0 W F = 175 MHz$
Load Mismatch Tolerance	VSWR-T	-	30:1	-	$V_{DD} = 28.0 V, I_{DQ} = 400 mA, P_{OUT} = 60.0 W F = 175 MHz$

Package Outline

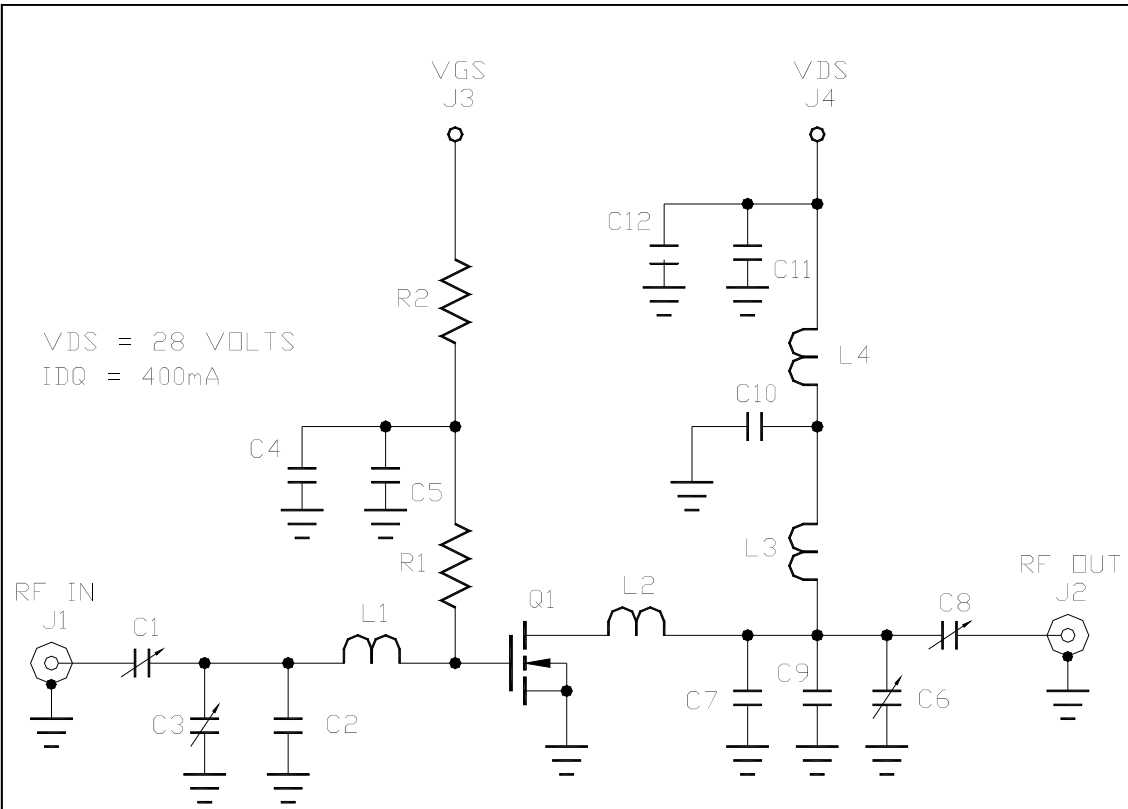


LETTER DIM	MILLIMETERS		INCHES	
	MIN	MAX	MIN	MAX
A	24.38	25.15	.960	.990
B	18.29	18.54	.720	.730
C	21.36	21.74	.841	.856
D	12.60	12.85	.496	.506
E	5.33	5.59	.210	.220
F	5.08	5.33	.200	.210
G	3.81	4.06	.150	.160
H	3.10	3.15	.122	.128
J	2.51	2.67	.099	.105
K	4.06	4.57	.160	.180
L	6.68	7.49	.263	.295
M	.10	.15	.004	.005

Typical Broadband Performance Curves



TEST FIXTURE SCHEMATIC



VDS = 28 VOLTS
 IDQ = 400mA

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
 φ0.25", CLOSE WOUND
- R1 RESISTOR 300 OHMS 0.5 WATT
- R2 RESISTOR 2.7K OHMS 0.25 WATT
- Q1 DU2880T
- BOARD FR4 0.062"