

RF Power MOSFET Transistor 10W, 500-1000MHz, 28V

M/A-COM Products
Released; RoHS Compliant

Features

- N-Channel enhancement mode device
- DMOS structure
- Lower capacitances for broadband operation
- Common source configuration
- Lower noise floor
- Applications
 - Broadband linear operation
500 MHz to 1200 MHz

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}	2.8	A
Power Dissipation	P_D	26.5	W
Junction Temperature	T_J	200	°C
Storage Temperature	T_{STG}	-55 to +150	°C
Thermal Resistance	θ_{JC}	6.6	°C/W

TYPICAL DEVICE IMPEDANCE

F (MHz)	Z_{IN} (Ω)	Z_{LOAD} (Ω)
500	0.60 - j9.5	10.0 + j17.0
1000	1.4 - j1.0	4.85 + j7.9
1200	1.5 - j3.5	5.7 + j5.7

$V_{DD} = 28V, I_{DQ} = 100 \text{ mA}, P_{OUT} = 10 \text{ W}$

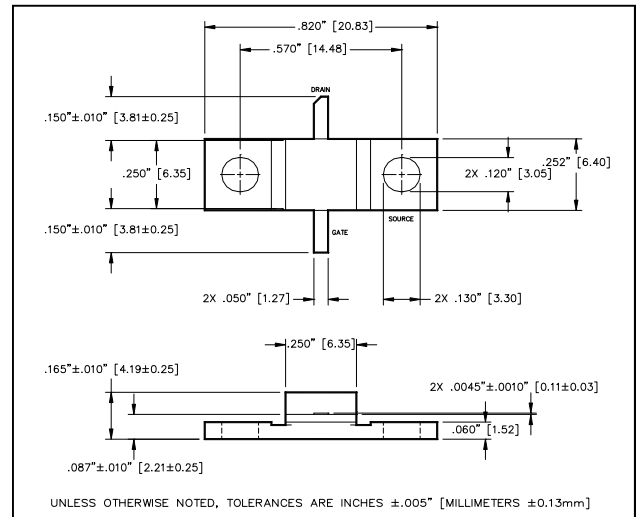
Z_{IN} is the series equivalent input impedance of the device from gate to source.

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	$V_{GS} = 0.0 \text{ V}, I_{DS} = 4.0 \text{ mA}$
Drain-Source Leakage Current	I_{DSS}	-	2.0	mA	$V_{DS} = 28.0 \text{ V}, V_{GS} = 0.0 \text{ V}$
Gate-Source Leakage Current	I_{GSS}	-	2.0	μA	$V_{GS} = 20.0 \text{ V}, V_{DS} = 0.0 \text{ V}$
Gate Threshold Voltage	$V_{GS(TH)}$	2.0	6.0	V	$V_{DS} = 10.0 \text{ V}, I_{DS} = 20.0 \text{ mA}$
Forward Transconductance	G_M	160	-	mS	$V_{DS} = 10.0 \text{ V}, I_{DS} 200.0 \text{ mA}, 80\text{-}30 \mu\text{s Pulse}$
Input Capacitance	C_{ISS}	-	14	pF	$V_{DS} = 28.0 \text{ V}, F = 1.0 \text{ MHz}$
Output Capacitance	C_{OSS}	-	10	pF	$V_{DS} = 28.0 \text{ V}, F = 1.0 \text{ MHz}$
Reverse Capacitance	C_{RSS}	-	4.8	pF	$V_{DS} = 28.0 \text{ V}, F = 1.0 \text{ MHz}$
Power Gain	G_P	10	-	dB	$V_{DD} = 28.0 \text{ V}, I_{DQ} = 100 \text{ mA}, P_{OUT} = 10.0 \text{ W}, F = 1.0 \text{ GHz}$
Drain Efficiency	η_D	50	-	%	$V_{DD} = 28.0 \text{ V}, I_{DQ} = 100 \text{ mA}, P_{OUT} = 10.0 \text{ W}, F = 1.0 \text{ GHz}$
Load Mismatch Tolerance	VSWR-T	-	20:1	-	$V_{DD} = 28.0 \text{ V}, I_{DQ} = 100 \text{ mA}, P_{OUT} = 10.0 \text{ W}, F = 1.0 \text{ GHz}$

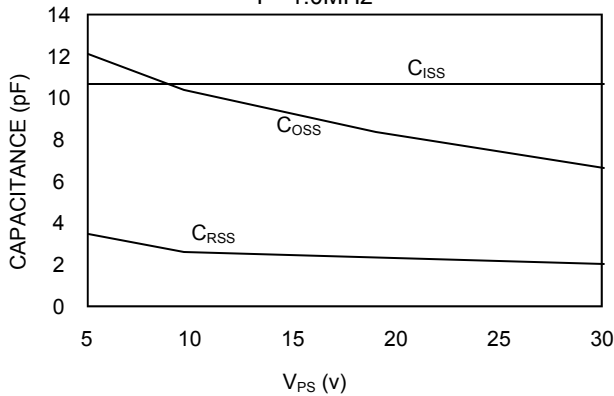
Package Outline



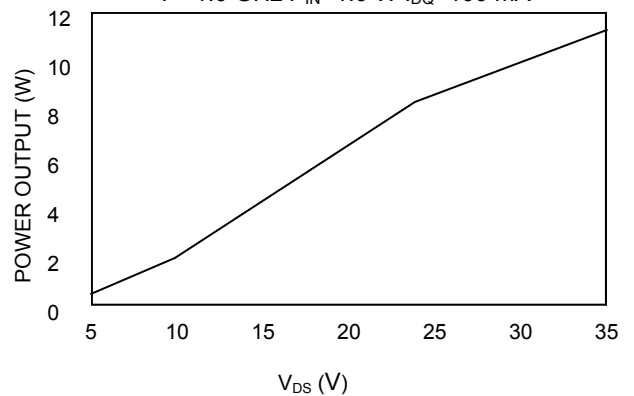
LETTER DIM	MILLIMETERS		INCHES	
	MIN	MAX	MIN	MAX
A	20.70	20.96	.815	.825
B	14.35	14.61	.565	.575
C	13.72	14.22	.540	.560
D	6.27	6.53	.247	.257
E	6.22	6.48	.245	.255
F	6.22	6.48	.245	.255
G	1.14	1.40	.045	.055
H	2.92	3.18	.115	.125
J	1.40	1.65	.055	.065
K	1.96	2.46	.077	.097
L	3.61	4.37	.142	.172
M	.08	.15	.003	.006

Typical Broadband Performance Curves

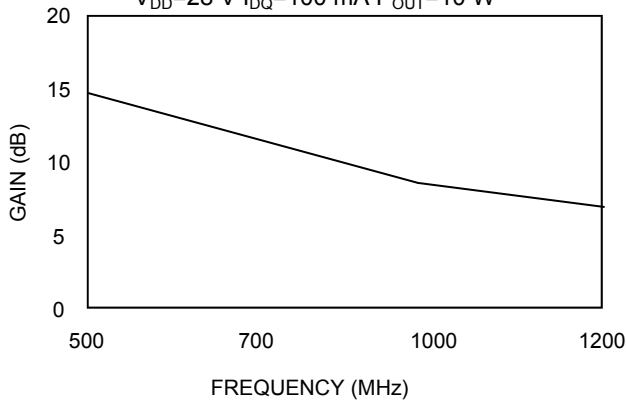
CAPACITANCES vs VOLTAGE
 $F = 1.0\text{MHz}$



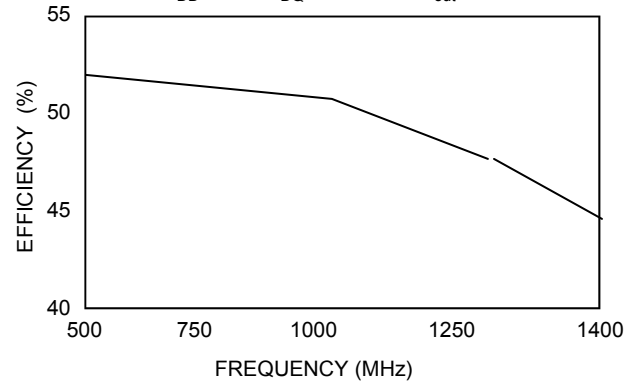
POWER OUTPUT vs VOLTAGE
 $F = 1.0\text{ GHz } P_{IN} = 1.0\text{ W } I_{DQ} = 100\text{ mA}$



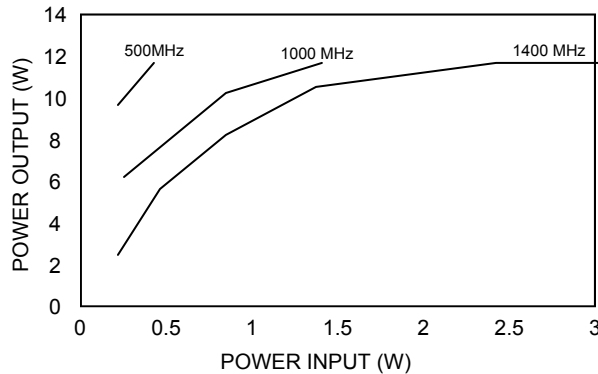
GAIN vs FREQUENCY
 $V_{DD} = 28\text{ V } I_{DQ} = 100\text{ mA } P_{OUT} = 10\text{ W}$



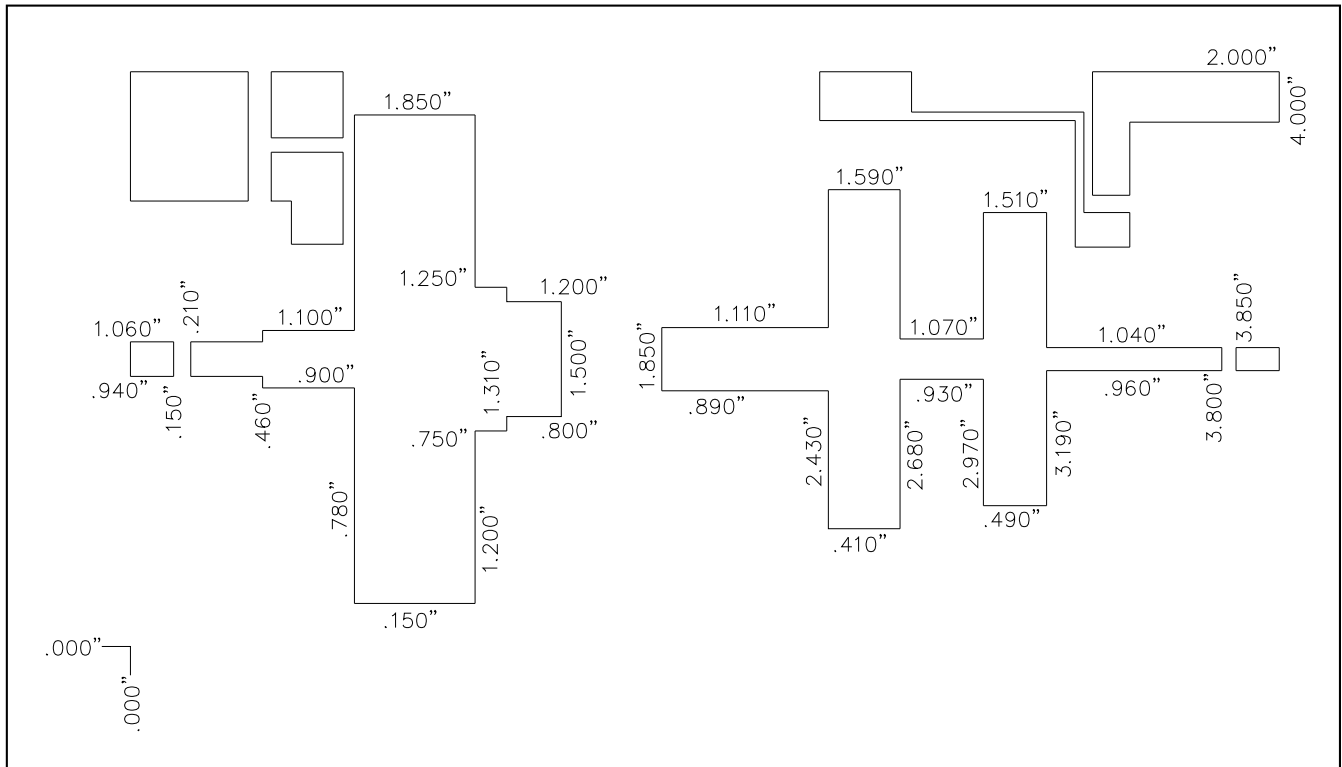
EFFICIENCY vs FREQUENCY
 $V_{DD} = 28\text{ V } I_{DQ} = 100\text{ mA } P_{out} = 10\text{ W}$



POWER OUTPUT vs POWER INPUT
 $V_{DD} = 28\text{ V } I_{DQ} = 50\text{ mA}$



TEST FIXTURE CIRCUIT DIMENSIONS



TEST FIXTURE ASSEMBLY

