

MAPF-250128-150000



Linear RF Power TMOS
150W, 30MHz 100V

M/A-COM Products
Preliminary - Rev. 1108

Features

- Designed for Industrial, Scientific, Medical applications
- N-Channel enhancement mode MOSFET
- Specified 100V, 30MHz and 128MHz, Class AB
- Internally insulated Source terminals simplify heatsinking
- High Voltage - Lower Current - Less Circuit Loss
- Gold Metallization System for Reliability

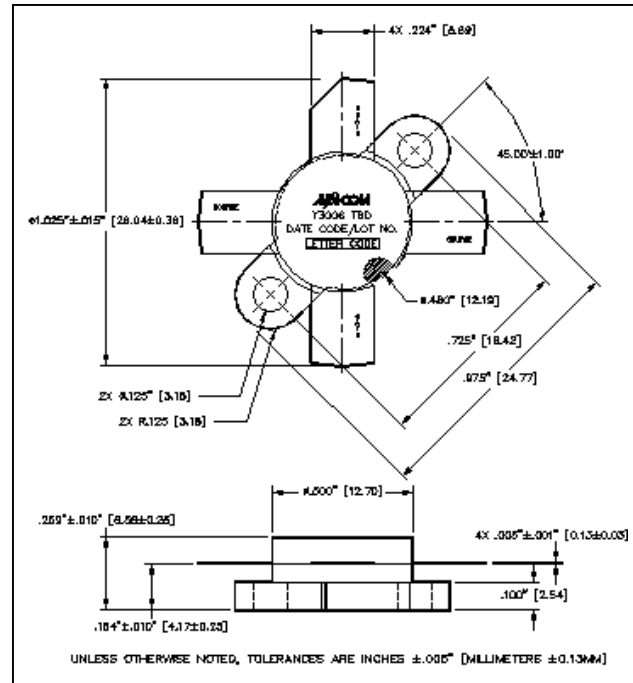
Characteristics

Output Power = 150 Watts

Power Gain = 20 dB (Typ, 30MHz), 15 dB (Typ, 128MHz)

ABSOLUTE MAXIMUM RATINGS AT 25°C

Parameter	Symbol	Rating	Units
Drain Source Voltage	V_{DS}	250	V
Gate Source Voltage	V_{GS}	+/-40	V
Drain Current	I_D	8.0(tbd)	A
Total Power Dissipation	P_D	300	W
Storage Temperature	T_{STG}	-65 to +150	°C
Junction Temperature	T_J	200	°C



Case 211-11, Style 2

ELECTRICAL CHARACTERISTICS AT 25°C

Parameter	Symbol	Test Conditions	Min	Max	Units
Drain Source Breakdown Voltage	BV_{DSS}	$I_D = 100mA$	250	-	V
Drain Source Leakage Current	I_{DSS}	$V_{DS} = 100 V$	-	5	mA
Gate Source Leakage Current	I_{GSS}	$V_{GS} = 10 V$	-	1	μA
Forward Transconductance	G_M	$I_{DS} = 2.0 A, V_{DS} = 10 V,$	3	-	S
Gate Source Threshold Voltage	$V_{GS(TH)}$	$V_{DS} = 10 V, I_D = 100mA$	2	5	V
Drain Source On State Voltage	$V_{DS(ON)}$	$V_{GS} = 10V, I_{DS} = 5 A$	-	6.6	V
Output Capacitance	C_{OSS}	$V_{DS} = 100 V, V_{GS} = 0V, f = 1 MHz$	-	120	pF
Feedback Capacitance	C_{RSS}	$V_{DS} = 100 V, V_{GS} = 0V, f = 1 MHz$	-	15	pF
Input Capacitance	C_{ISS}	$V_{DS} = 100 V, V_{GS} = 0V, f = 1 MHz$	-	350	pF
Thermal Resistance	R_{THJC}	$V_{DS} = 100 V, P_{DISS} = 100W, T_J = 150 C$	-	0.6	°C/W

ADVANCED: Data Sheets contain information regarding a product M/A-COM is considering for development. Performance is based on target specifications, simulated results, and/or prototype measurements. Commitment to develop is not guaranteed.

PRELIMINARY: Data Sheets contain information regarding a product M/A-COM has under development. Performance is based on engineering tests. Specifications are typical. Mechanical outline has been fixed. Engineering samples and/or test data may be available. Commitment to produce in volume is not guaranteed.

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RF Electrical Characteristics at 25°C*

Parameter	Symbol	Test Conditions	Minimum	Maximum	Units
Power Gain	GP	$P_{out} = 150 \text{ W}_{(PEP)}$	19		dB
		$P_{out} = 150 \text{ W}, F = 128 \text{ MHz CW}$	14		dB
Drain Efficiency	η	$P_{out} = 150 \text{ W}_{(PEP)}$	40		%
		$P_{out} = 150 \text{ W}, F = 128 \text{ MHz CW}$	50		%
Intermodulation	IM3	$P_{out} = 150 \text{ W}_{(PEP)}$		-30	dBc
Electrical Ruggedness	Ψ	$P_{out} = 150 \text{ W}_{(PEP)}$, VSWR 5:1, 360°	No degradation		
CW Output Power at P1dB	P_{1dB}	$V_{DD} = 100 \text{ V}, F = 30 \text{ MHz}, I_{DQ} = 160 \text{ mA}$	150		Watts
		$V_{DD} = 100 \text{ V}, F = 128 \text{ MHz}, I_{DQ} = 160 \text{ mA}$	150		Watts

* Test conditions unless otherwise specified: $V_{DD} = 100 \text{ V}$, $I_{DQ} = 160 \text{ mA}$, $F_1 = 30 \text{ MHz}$, $F_2 = F_1 + 0.001 \text{ MHz}$

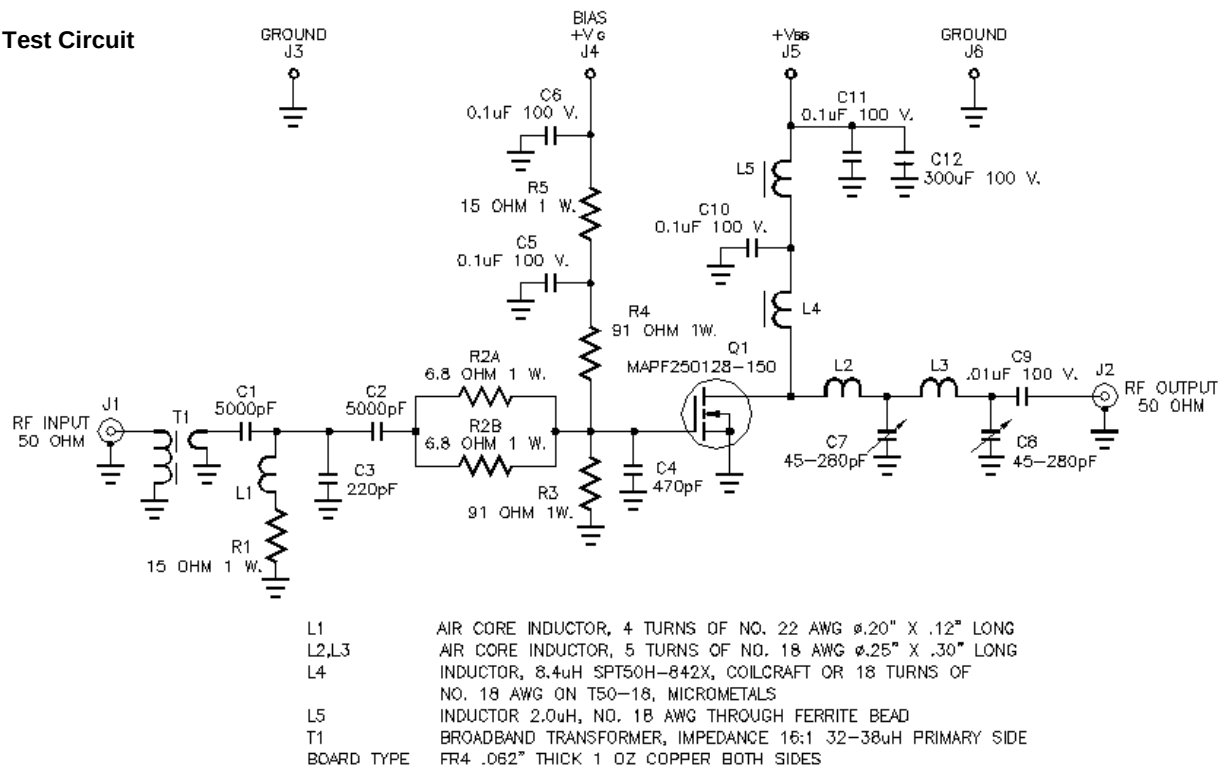
Large Signal Impedance

$V_{DD} = 100 \text{ V}$; $I_{DQ} = 160 \text{ mA}$; $P_{OUT} = 150 \text{ W (PEP)}$, 30MHz; $P_{OUT} = 150 \text{ W (P1dB)}$, 128MHz

F (MHz)	Z IN (Ω)	Z L(opt) (Ω)
30	5.09-j0.84	17.71+j14.21
128	1.90+j2.71	3.04+j7.08

Z_{IN} = Complex conjugate of source impedance
 $Z_{L(OPT)}$ = Load impedance for optimum output power and IMD at specified voltage, quiescent current and efficiency.

30MHz Test Circuit



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