MAPF-250128-150000

Linear RF Power TMOS
150W, 30MHz 100V

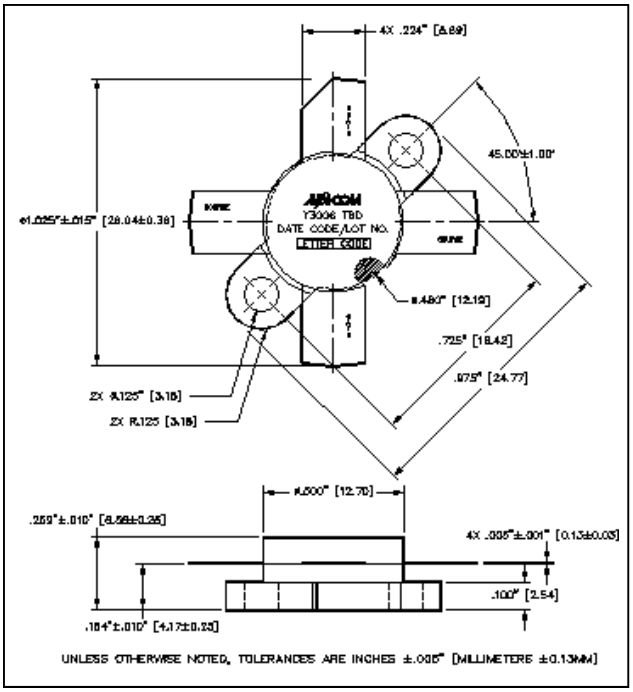
M/A-COM Products
Preliminary - Rev. 1108

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)



Case 211-11, Style 2

ABSOLUTE MAXIMUM RATINGS AT 25°C

Parameter	Symbol	Rating	Units
Drain Source Voltage	V_{DS}	250	V
Gate Source Voltage	V_{DS}	+/-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

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	$Vgs_{(TH)}$	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, Tj = 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 W (PEP) P_{out} = 150 W, F = 128 MHz CW	19 14		dB dB
Drain Efficiency	η	P_{out} = 150 W (PEP) P_{out} = 150 W, F = 128 MHz CW	40 50		% %
Intermodulation	IM3	P_{out} =150 W (PEP),		-30	dBc
Electrical Ruggedness	Ψ	P_{out} = 150 W (PEP), VSWR 5:1, 360°	No degradation		
CW Output Power at P1dB	P_{1DB}	V_{DD}=100 V, F= 30 MHz , I_{DQ} = 160mA V_{DD}=100 V, F=128 MHz , I_{DQ} = 160mA	150 150		Watts Watts

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

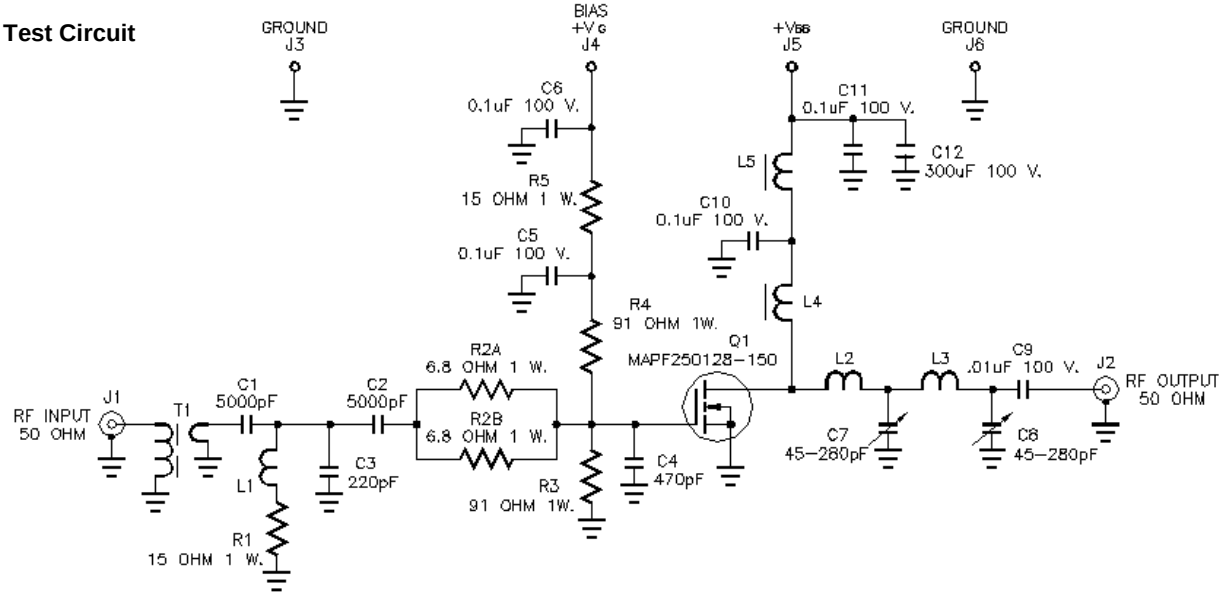
Large Signal Impedance

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



L1	AIR CORE INDUCTOR, 4 TURNS OF NO. 22 AWG ø.20" X .12" LONG
L2,L3	AIR CORE INDUCTOR, 5 TURNS OF NO. 18 AWG ø.25" X .30" LONG
L4	INDUCTOR, 8.4uH SPT50H-842X, COILCRAFT OR 18 TURNS OF NO. 18 AWG ON T50-18, MICROMETALS
L5	INDUCTOR 2.0uH, NO. 18 AWG THROUGH FERRITE BEAD
T1	BROADBAND TRANSFORMER, IMPEDANCE 16:1 32-38uH PRIMARY SIDE
BOARD TYPE	FR4 .062" THICK 1 OZ COPPER BOTH SIDES

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