

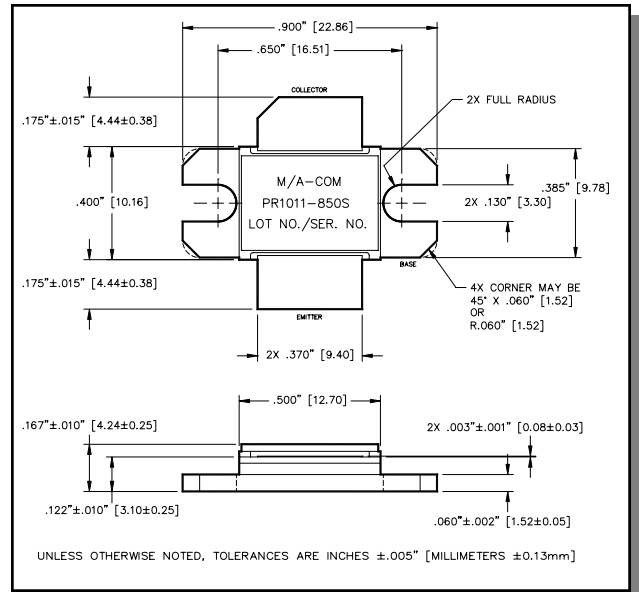
Avionics Pulsed Power Transistor  
850W, 1025-1150 MHz, 10µs Pulse, 1% Duty

M/A-COM Products  
Released, 30 May 07

## Features

- NPN silicon microwave power transistors
- Common base configuration
- Broadband Class C operation
- High efficiency inter-digitized geometry
- Diffused emitter ballasting resistors
- Gold metallization system
- Internal input and output impedance matching
- Hermetic metal/ceramic package
- RoHS compliant

## Outline Drawing



## Absolute Maximum Ratings at 25°C

Parameter	Symbol	Rating	Units
Collector-Emitter Voltage	$V_{CES}$	80	V
Emitter-Base Voltage	$V_{EBO}$	3.0	V
Collector Current (Peak)	$I_C$	250	A
Power Dissipation @ +25°C	$P_{TOT}$	11.6	kW
Storage Temperature	$T_{STG}$	-65 to +200	°C
Junction Temperature	$T_J$	200	°C

## Electrical Specifications: $T_C = 25 \pm 5^\circ\text{C}$ (Room Ambient)

Parameter	Test Conditions	Frequency	Symbol	Min	Max	Units
Collector-Emitter Breakdown Voltage	$I_C = 250\text{mA}$		$BV_{CES}$	80	-	V
Collector-Emitter Leakage Current	$V_{CE} = 50\text{V}$		$I_{CES}$	-	30	mA
Thermal Resistance	$V_{CC}=50\text{V}$ , $P_{out}=850\text{W}$	$F = 1025, 1090, 1150\text{ MHz}$	$R_{TH(JC)}$	-	0.015	°C/W
Input Power	$V_{CC}=50\text{V}$ , $P_{out}=850\text{W}$	$F = 1025, 1090, 1150\text{ MHz}$	$P_{IN}$	-	141	W
Power Gain	$V_{CC}=50\text{V}$ , $P_{out}=850\text{W}$	$F = 1025, 1090, 1150\text{ MHz}$	$G_P$	7.8	-	dB
Collector Efficiency	$V_{CC}=50\text{V}$ , $P_{out}=850\text{W}$	$F = 1025, 1090, 1150\text{ MHz}$	$\eta_C$	42	-	%
Input Return Loss	$V_{CC}=50\text{V}$ , $P_{out}=850\text{W}$	$F = 1025, 1090, 1150\text{ MHz}$	RL	-	-9	dB
Load Mismatch Tolerance	$V_{CC}=50\text{V}$ , $P_{out}=850\text{W}$	$F = 1025\text{ MHz}$	VSWR-T	-	5:1	-
Load Mismatch Stability *	$V_{CC}=50\text{V}$ , $P_{out}=850\text{W}$	$F = 1025, 1090, 1150\text{ MHz}$	VSWR-S	-	1.5:1	-

1 \* All spurious signals shall be < -60dBc below carrier, except  $F = F_0 \pm \frac{1}{2} F_0$  shall be < -40dBc

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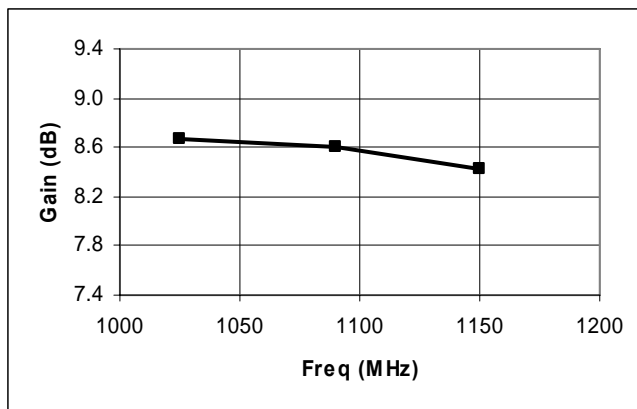
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## Typical RF Performance

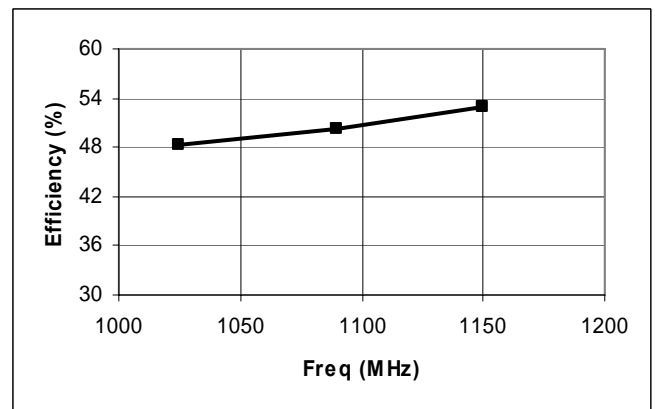
Freq. (MHz)	Pin (W)	Pout (W)	Gain (dB)	ΔGain (dB)	Ic (A)	Eff (%)	RL (dB)	VSWR-S (1.5:1)	VSWR-T (5:1)	P1dB Overdrive	
										Pout	Δ Po
1025	116	850	8.67	-	35.3	48.2	-18.3	S	P	974	0.59
1090	117	850	8.61	-	33.9	50.3	-16.3	S	-	1014	0.76
1150	112	850	8.42	0.25	32.1	53.0	-21.1	S	-	997	0.69

Note:  $\Delta P_o(\text{dB})$  is the difference between Pout at 1dB overdrive and Pout at Pout=850W.

## Gain vs. Frequency



## Collector Efficiency vs. Frequency



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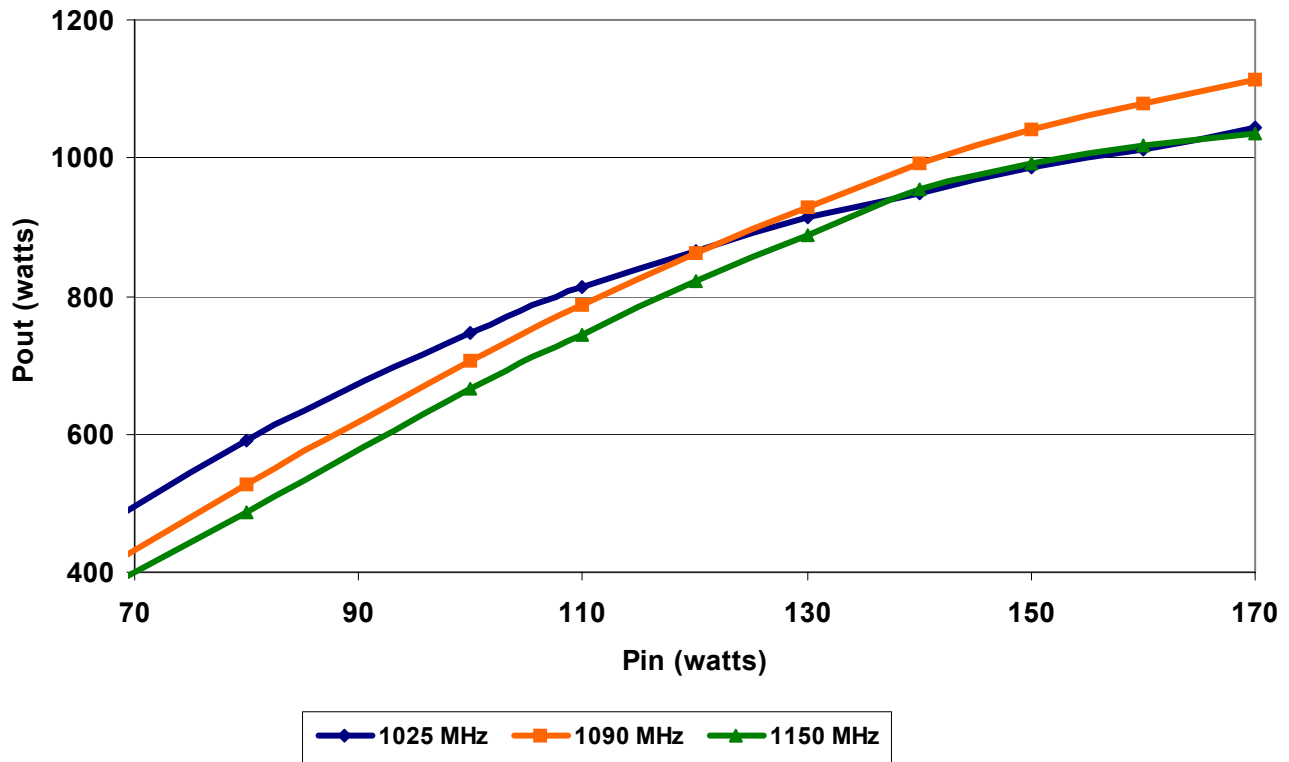
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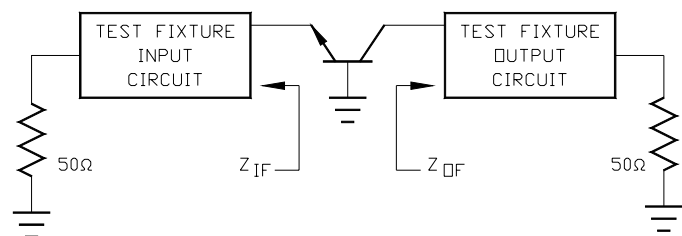
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## RF Power Transfer Curve (Output Power Vs. Input Power)



## Broadband Test Fixture Impedance

F (MHz)	Z <sub>IF</sub> (Ω)	Z <sub>OF</sub> (Ω)
1025	1.7 - j1.8	0.8 - j1.3
1090	1.4 - j1.2	0.8 - j1.0
1150	1.3 - j0.7	0.8 - j0.8



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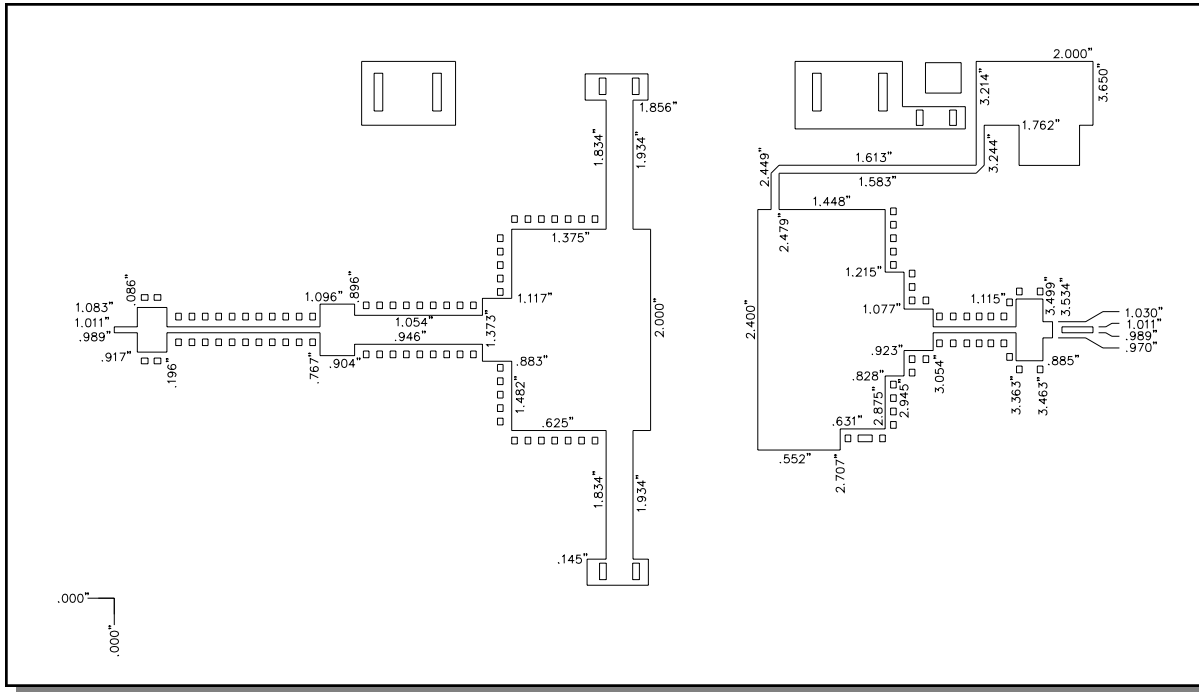
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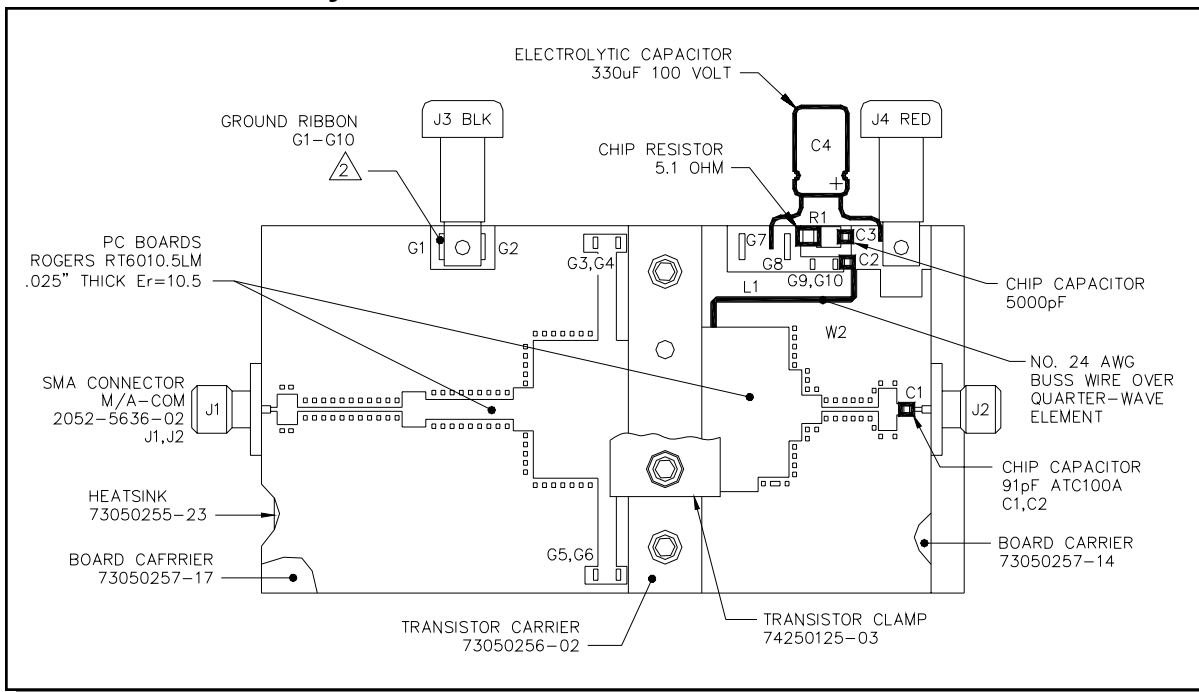
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## Test Fixture Circuit Dimensions



## Test Fixture Assembly



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