

# MAPRST1030-1KS



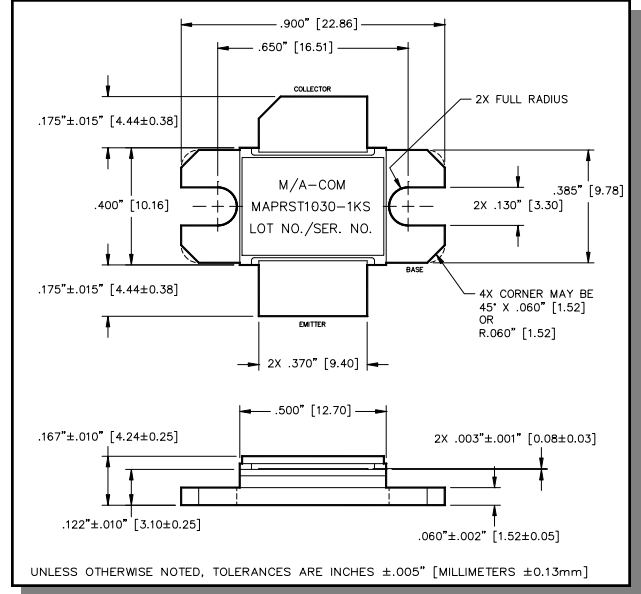
**Avionics Pulsed Power Transistor**  
**1000W, 1030 MHz, 10µs Pulse, 1% Duty**

**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	$V_{CES}$	65	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	$I_C = 250\text{mA}$		$BV_{CES}$	65	-	V
Collector-Emitter Leakage Current	$V_{CE} = 50\text{V}$		$I_{CES}$	-	30	mA
Thermal Resistance	$V_{CC} = 50\text{V}, P_{out} = 1000\text{W}$	$F = 1030\text{ MHz}$	$R_{TH(JC)}$	-	0.015	°C/W
Input Power	$V_{CC} = 50\text{V}, P_{out} = 1000\text{W}$	$F = 1030\text{ MHz}$	$P_{IN}$	-	158	W
Power Gain	$V_{CC} = 50\text{V}, P_{out} = 1000\text{W}$	$F = 1030\text{ MHz}$	$G_P$	8.0	-	dB
Collector Efficiency	$V_{CC} = 50\text{V}, P_{out} = 1000\text{W}$	$F = 1030\text{ MHz}$	$\eta_C$	45	-	%
Input Return Loss	$V_{CC} = 50\text{V}, P_{out} = 1000\text{W}$	$F = 1030\text{ MHz}$	RL	-	-10	dB
Load Mismatch Tolerance	$V_{CC} = 50\text{V}, P_{out} = 1000\text{W}$	$F = 1030\text{ MHz}$	VSWR-T	-	10:1	-
Load Mismatch Stability	$V_{CC} = 50\text{V}, P_{out} = 1000\text{W}$	$F = 1030\text{ MHz}$	VSWR-S	-	1.5:1	-

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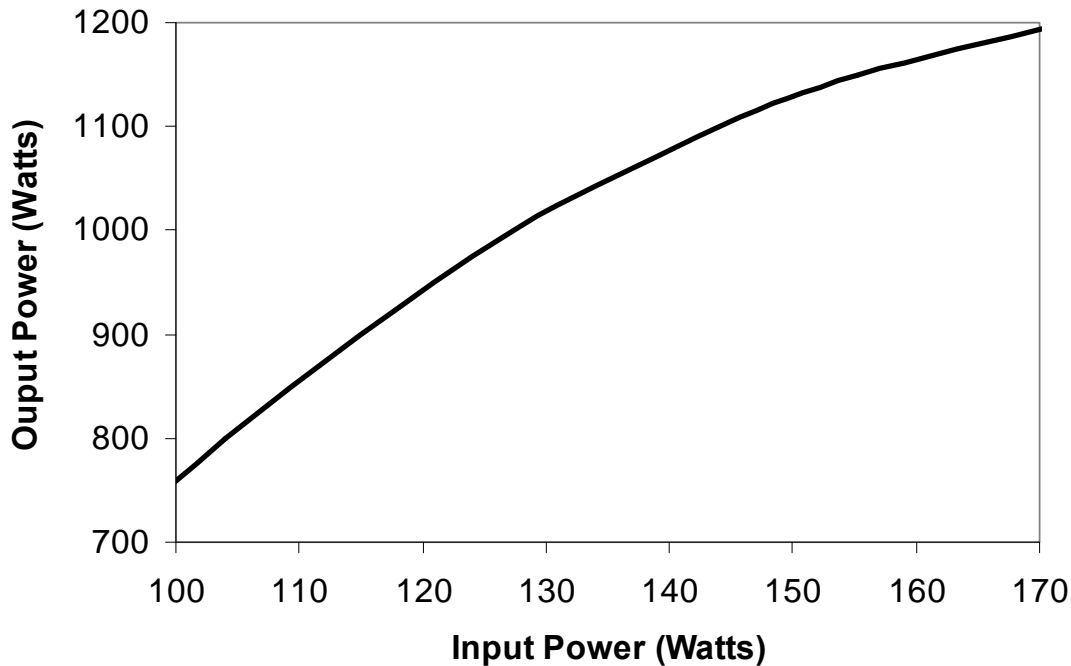
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## Typical RF Performance

Freq. (MHz)	Pin (W)	Pout (W)	Gain (dB)	Ic (A)	Eff (%)	RL (dB)	VSWR-S (1.5:1)	VSWR-T (10:1)	P1dB Overdrive	
									Pout	$\Delta Po$
1030	134	1000	8.74	39.5	50.8	-21.3	S	P	1180	0.74

Note:  $\Delta Po$ (dB) is the difference between Pout at 1dB overdrive and Pout at Pout = 1000W.

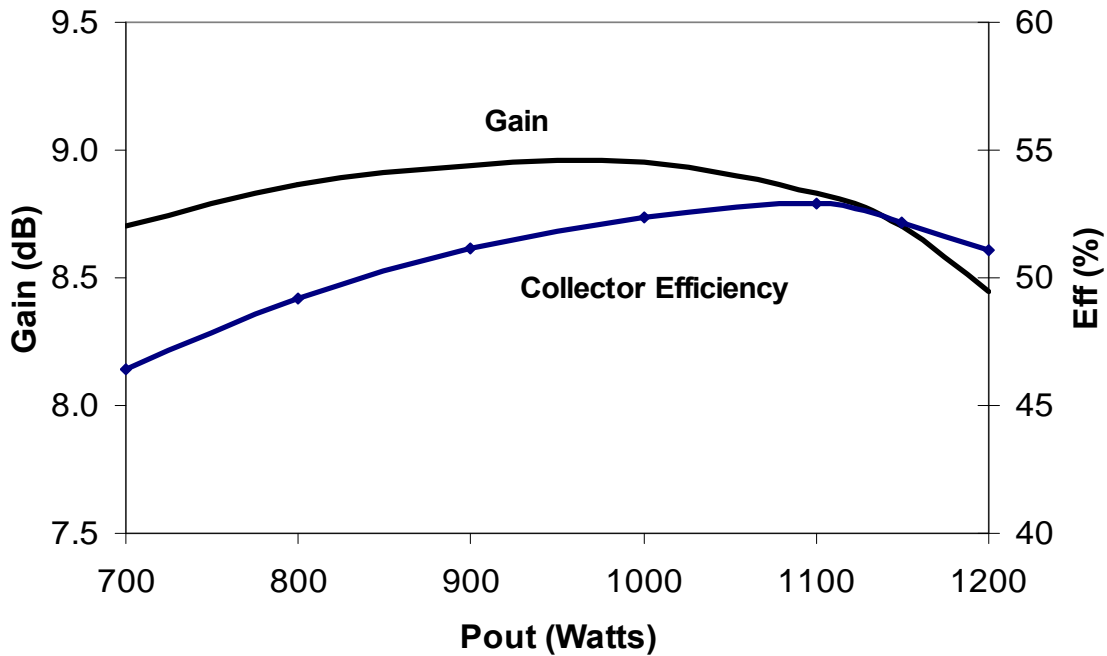
## RF Power Transfer Curve (Output Power Vs. Input Power)



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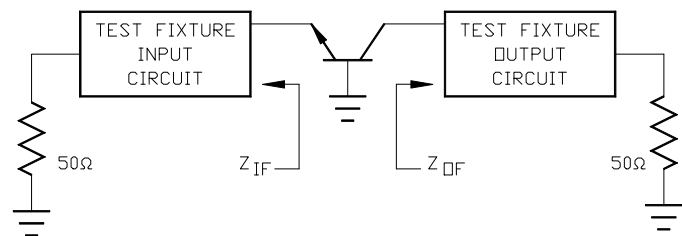
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## RF Power Transfer Curve (Gain & Collector Efficiency vs. Output Power)



### RF Test Fixture Impedance

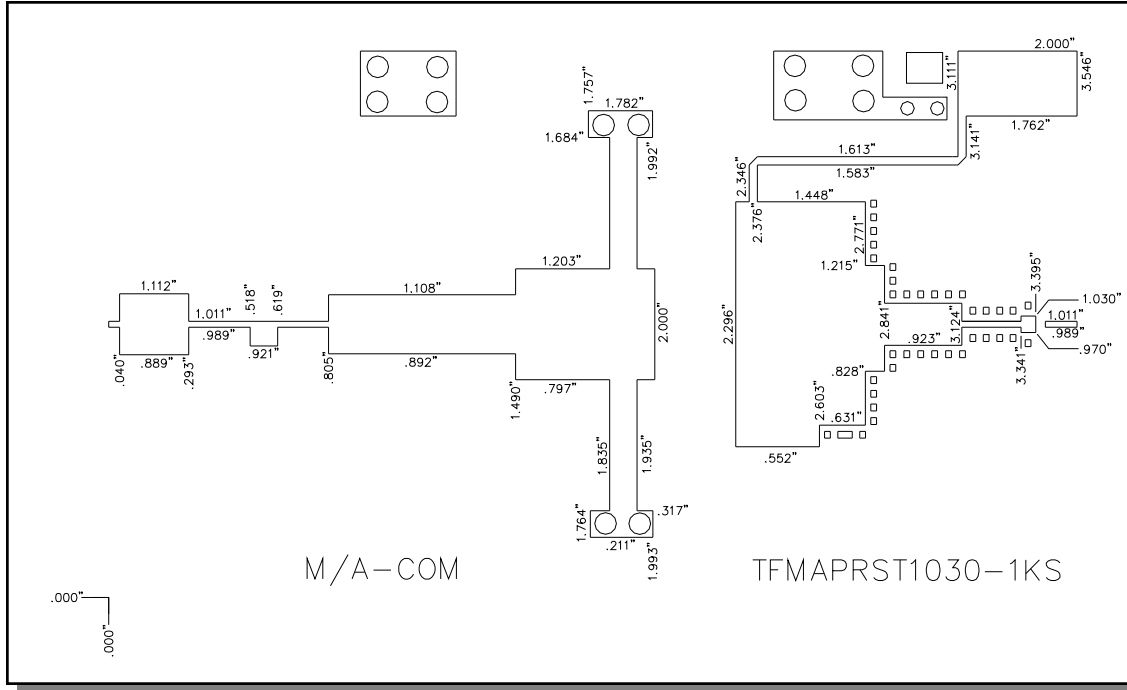
F (MHz)	Z <sub>IF</sub> (Ω)	Z <sub>OF</sub> (Ω)
1030	1.8 - j2.2	0.5 - j1.0



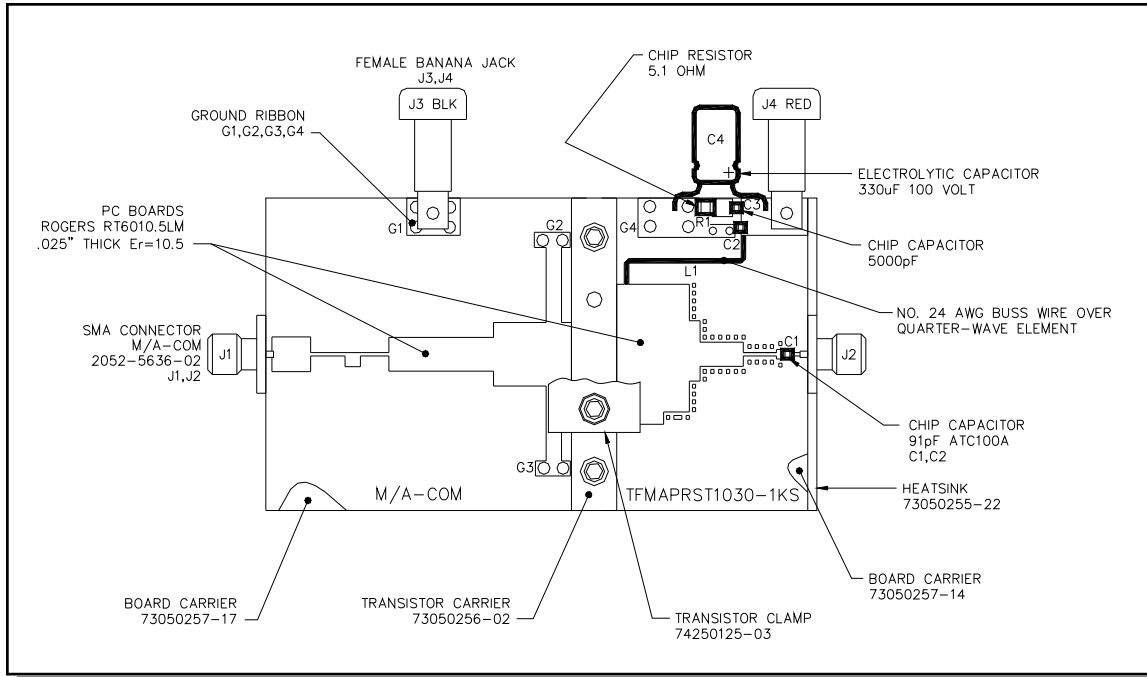
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## Test Fixture Circuit Dimensions



## Test Fixture Assembly



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