

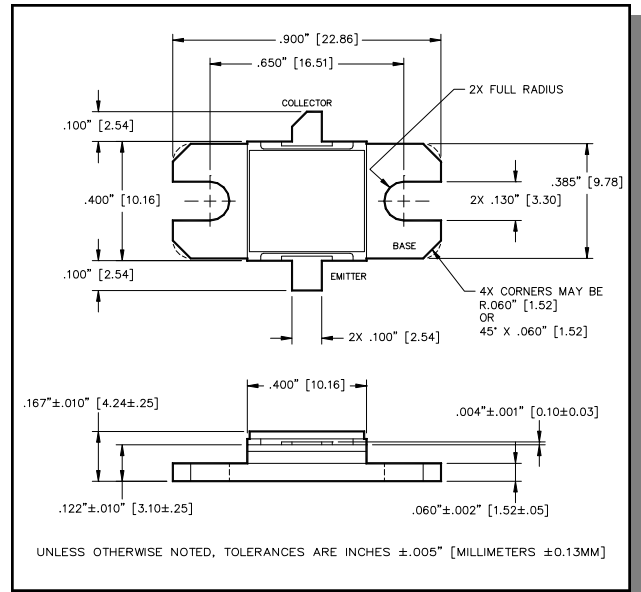
**Radar Pulsed Power Transistor**  
**20W, 3.1-3.4 GHz, 300µs Pulse, 10% Duty**

**M/A-COM Products**  
**Released, 10 Jul 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)	$I_C$	2.4	A
Power Dissipation @ +25°C	$P_{TOT}$	146	W
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	$I_C = 10\text{mA}$		$BV_{CES}$	65	-	V
Collector-Emitter Leakage Current	$V_{CE} = 40\text{V}$		$I_{CES}$	-	1.5	mA
Thermal Resistance	$V_{CC} = 36\text{V}$ , $P_{out} = 20\text{W}$	$F = 3.1, 3.25, 3.4\text{ GHz}$	$R_{TH(JC)}$	-	1.2	°C/W
Input Power	$V_{CC} = 36\text{V}$ , $P_{out} = 20\text{W}$	$F = 3.1, 3.25, 3.4\text{ GHz}$	$P_{IN}$	-	3.56	W
Power Gain	$V_{CC} = 36\text{V}$ , $P_{out} = 20\text{W}$	$F = 3.1, 3.25, 3.4\text{ GHz}$	$G_P$	7.5	-	dB
Collector Efficiency	$V_{CC} = 36\text{V}$ , $P_{out} = 20\text{W}$	$F = 3.1, 3.25, 3.4\text{ GHz}$	$\eta_C$	35	-	%
Input Return Loss	$V_{CC} = 36\text{V}$ , $P_{out} = 20\text{W}$	$F = 3.1, 3.25, 3.4\text{ GHz}$	RL	-	-6	dB
Load Mismatch Tolerance	$V_{CC} = 36\text{V}$ , $P_{out} = 20\text{W}$	$F = 3.1, 3.25, 3.4\text{ GHz}$	VSWR-T	-	2:1	-

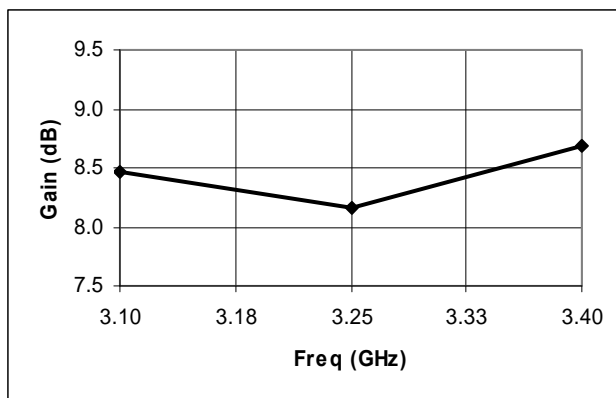
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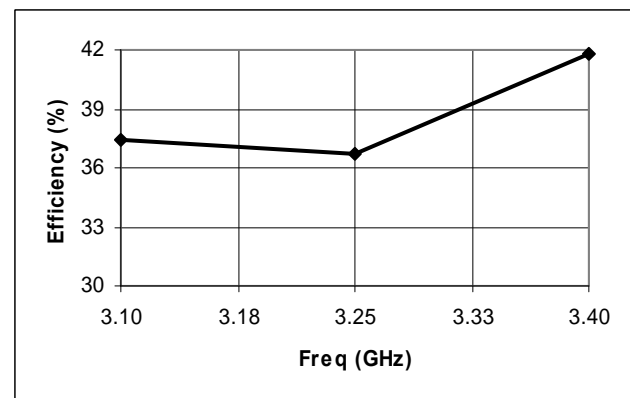
## Typical RF Performance

Freq. (GHz)	Pin (W)	Pout (W)	Gain (dB)	Ic (A)	Eff (%)	RL (dB)	VSWR-T (2:1)
3.10	2.85	20.0	8.47	1.49	37.4	-9.6	-
3.25	3.05	20.0	8.17	1.52	36.7	-10.7	P
3.40	2.71	20.0	8.68	1.33	41.8	-15.8	-

## Gain vs. Frequency

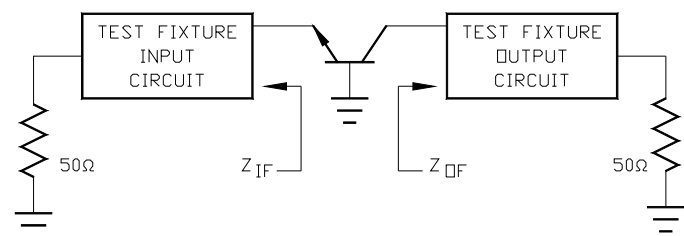


## Collector Efficiency vs. Frequency



## RF Test Fixture Impedance

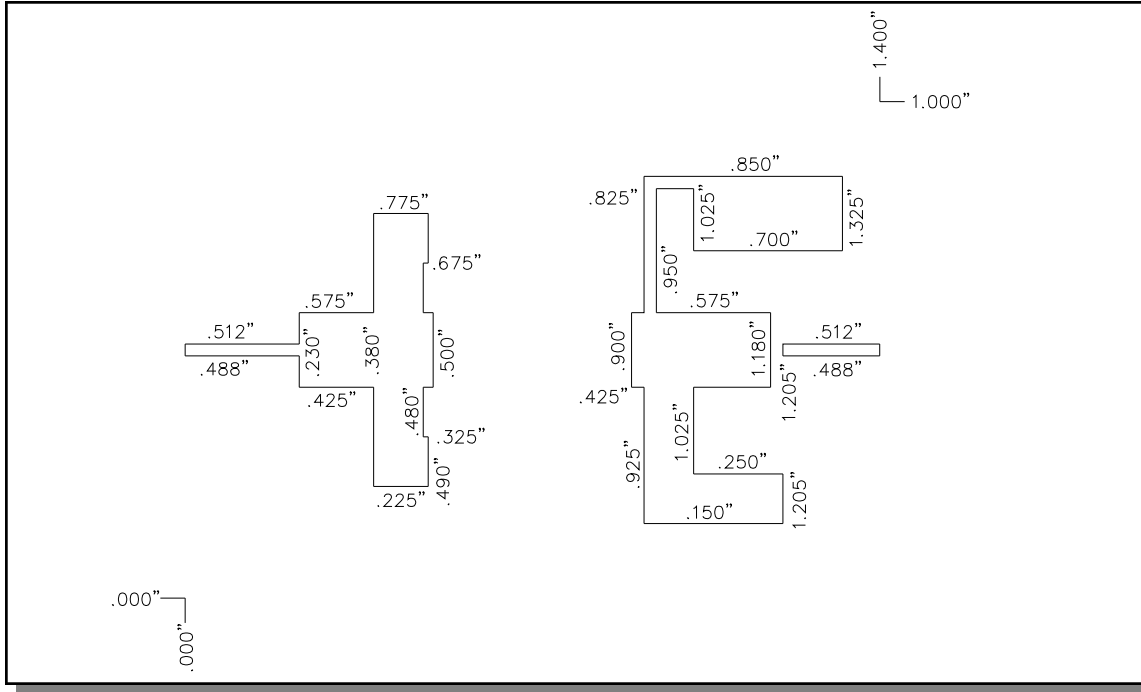
F (GHz)	Z <sub>IF</sub> (Ω)	Z <sub>OF</sub> (Ω)
3.10	16.0 + j5.0	19.0 + j3.0
3.25	14.5 + j2.0	15.5 - j2.0
3.40	11.5 + j0.0	10.0 - j3.5



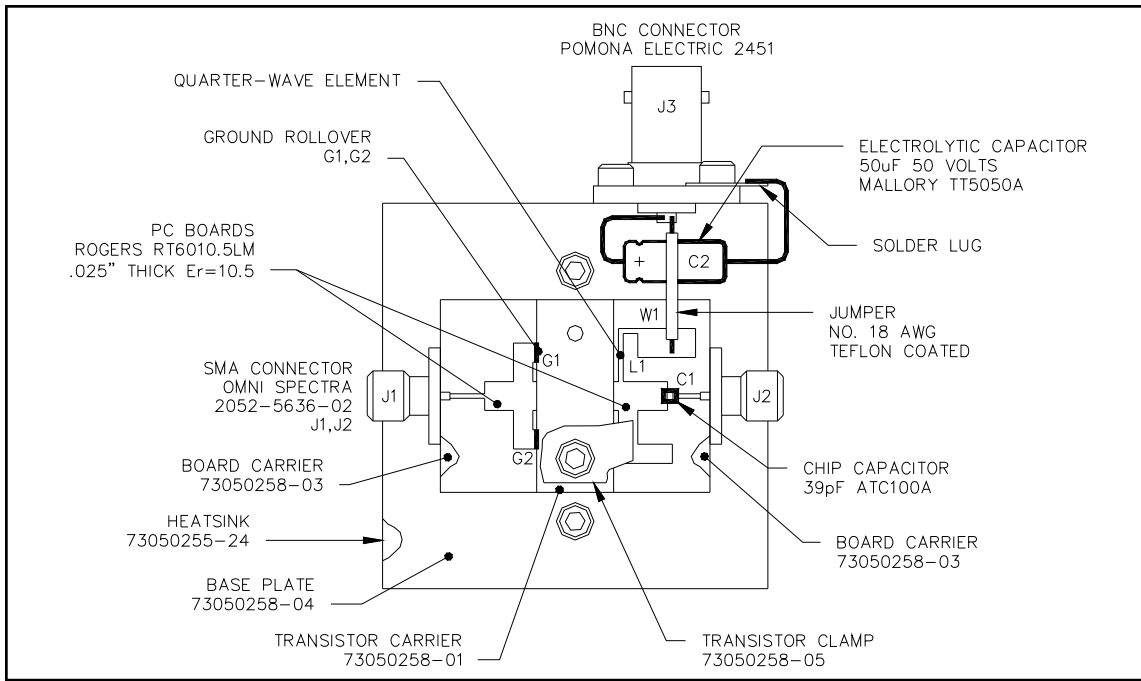
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## Test Fixture Circuit Dimensions



## Test Fixture Assembly



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

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