

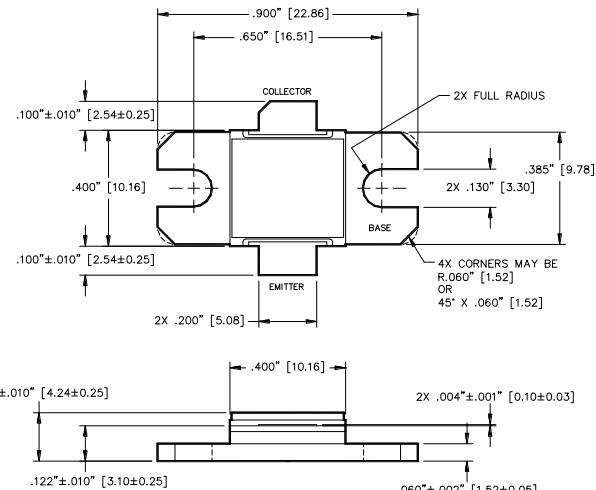
**Radar Pulsed Power Transistor**  
**130 W, 2.7—2.9 GHz, 100  $\mu$ s Pulse, 10% Duty**

Rev. V1

## 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	$V_{CES}$	63	V
Emitter-Base Voltage	$V_{EBO}$	3.0	V
Collector Current (Peak)	$I_C$	12.5	A
Power Dissipation @ +25°C	$P_{TOT}$	575	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	$I_C = 40\text{mA}$		$BV_{CES}$	63	-	V
Collector-Emitter Leakage Current	$V_{CE} = 36\text{V}$		$I_{CES}$	-	7.5	mA
Thermal Resistance	$V_{CC} = 36\text{V}$ , $P_{out} = 130\text{W}$	$F = 2.7, 2.8, 2.9 \text{ GHz}$	$R_{TH(JC)}$	-	0.3	°C/W
Input Power	$V_{CC} = 36\text{V}$ , $P_{out} = 130\text{W}$	$F = 2.7, 2.8, 2.9 \text{ GHz}$	$P_{IN}$	-	23	W
Power Gain	$V_{CC} = 36\text{V}$ , $P_{out} = 130\text{W}$	$F = 2.7, 2.8, 2.9 \text{ GHz}$	$G_P$	7.0	-	dB
Collector Efficiency	$V_{CC} = 36\text{V}$ , $P_{out} = 130\text{W}$	$F = 2.7, 2.8, 2.9 \text{ GHz}$	$\eta_C$	40	-	%
Input Return Loss	$V_{CC} = 36\text{V}$ , $P_{out} = 130\text{W}$	$F = 2.7, 2.8, 2.9 \text{ GHz}$	$RL$	-	-10	dB
Pulse Droop	$V_{CC} = 36\text{V}$ , $P_{out} = 130\text{W}$	$F = 2.7, 2.8, 2.9 \text{ GHz}$	Droop	-	0.5	dB
Load Mismatch Tolerance	$V_{CC} = 36\text{V}$ , $P_{out} = 130\text{W}$	$F = 2.7, 2.8, 2.9 \text{ GHz}$	$VSWR-T$	-	2:1	-
Load Mismatch Stability	$V_{CC} = 36\text{V}$ , $P_{out} = 130\text{W}$	$F = 2.7, 2.8, 2.9 \text{ GHz}$	$VSWR-S$	-	1.5:1	-

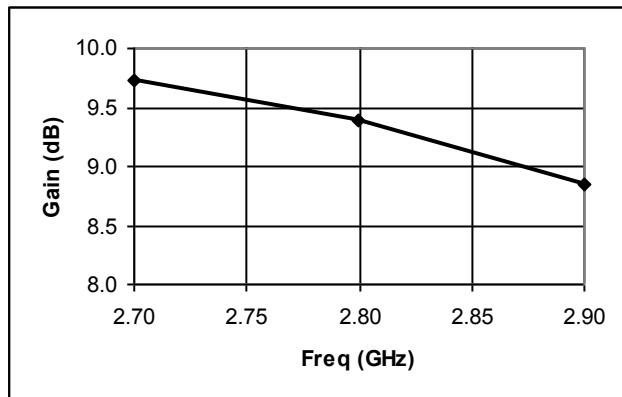
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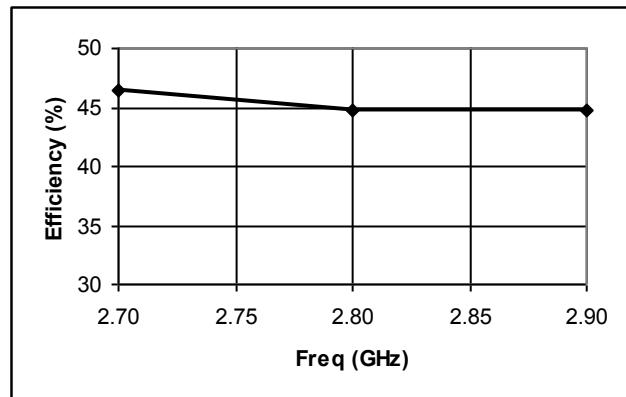
### Typical RF Performance

Freq. (GHz)	Pin (W)	Pout (W)	Gain (dB)	Ic (A)	Eff (%)	RL (dB)	VSWR-S (1.5:1)	VSWR-T (2:1)
2.7	13.9	130	9.73	7.78	46.4	-11.4	S	P
2.8	15.0	130	9.38	8.07	44.8	-13.6	S	P
2.9	17.0	130	8.85	8.07	44.8	-13.8	S	P

### Gain vs. Frequency

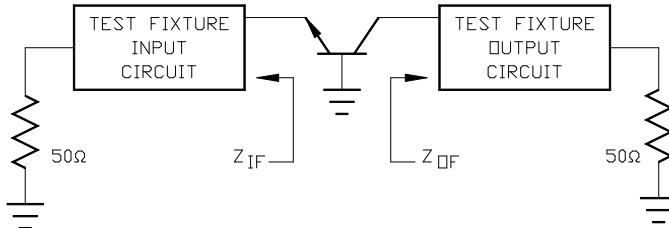


### Collector Efficiency vs. Frequency



### RF Test Fixture Impedance

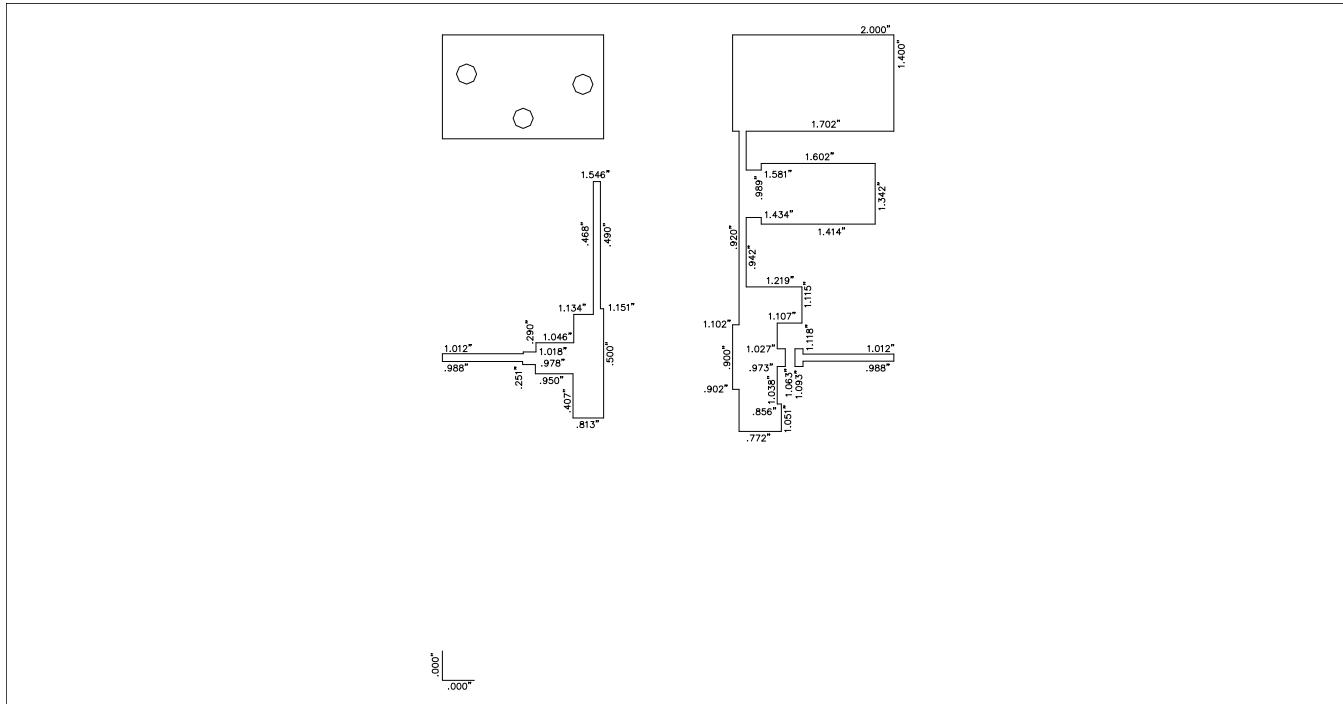
F (GHz)	$Z_{IF}$ ( $\Omega$ )	$Z_{OF}$ ( $\Omega$ )
2.7	5.5 - j9.1	1.9 - j5.6
2.8	5.25 - j8.8	1.75 - j5.2
2.9	5.05 - j8.3	1.6 - j4.8



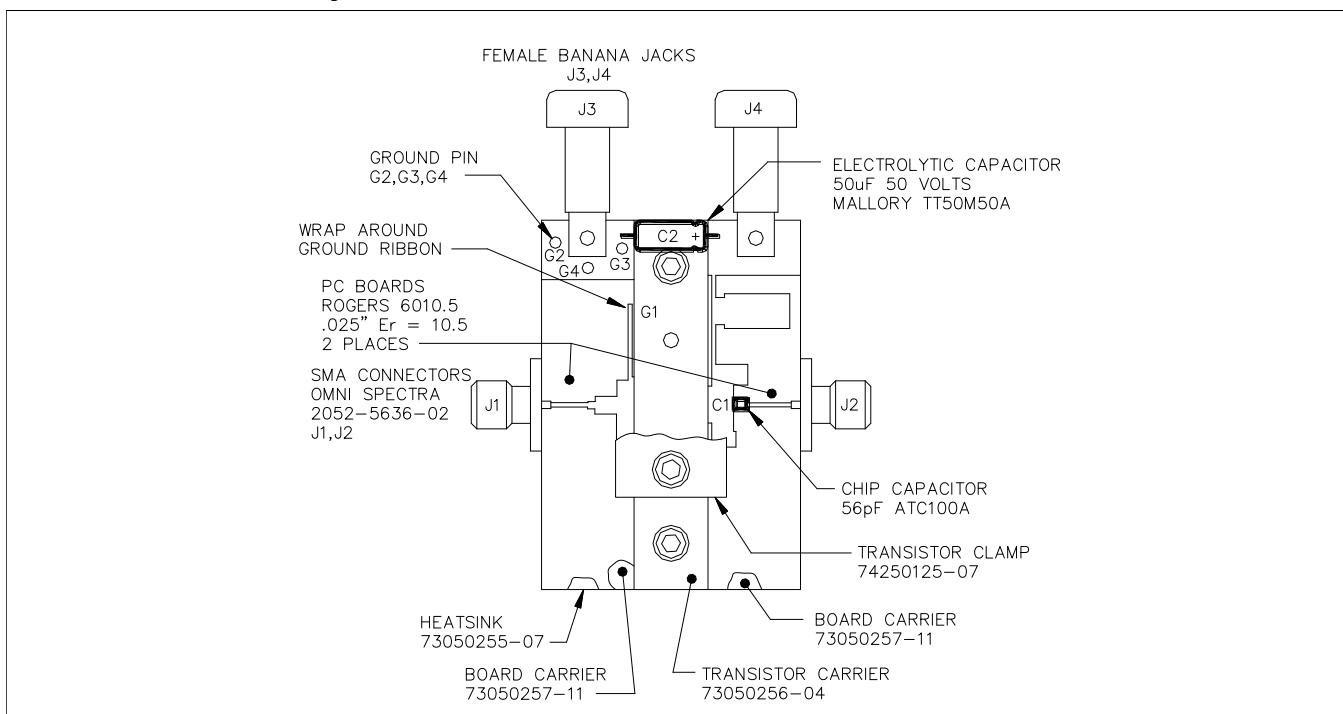
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### Test Fixture Circuit Dimensions



### Test Fixture Assembly



Radar Pulsed Power Transistor

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