

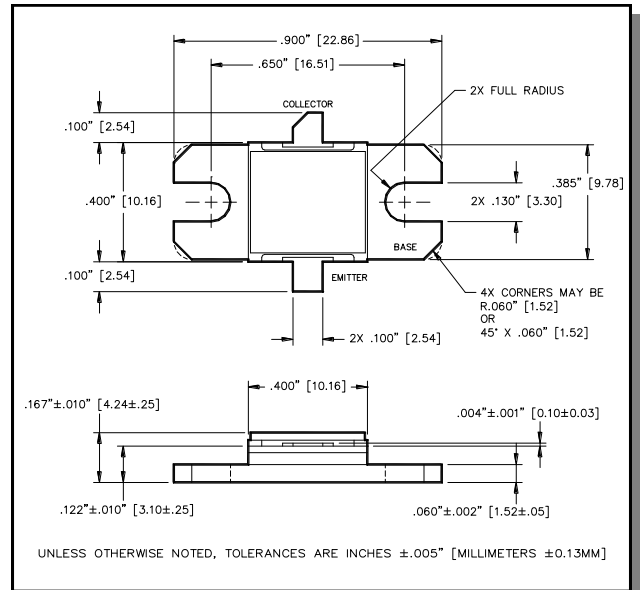
## Radar Pulsed Power Transistor 20W, 3.1-3.5 GHz, 100µs Pulse, 10% Duty

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	$V_{CES}$	65	V
Emitter-Base Voltage	$V_{EBO}$	3.0	V
Collector Current (Peak)	$I_C$	2.4	A
Power Dissipation @ +25°C	$P_{TOT}$	200	W
Storage Temperature	$T_{STG}$	-65 to +200	°C
Junction Temperature	$T_J$	200	°C

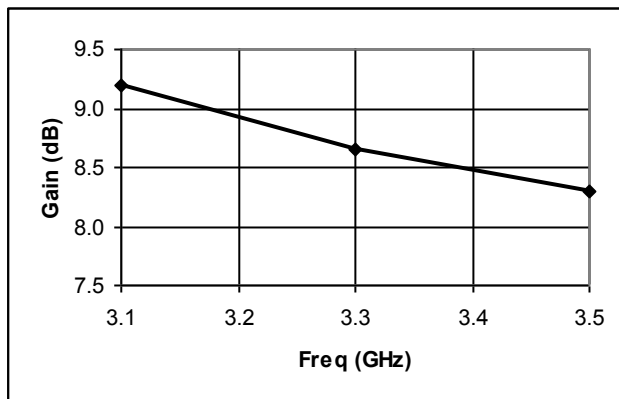
### Electrical Specifications: $T_C = 25 \pm 5^\circ\text{C}$ (Room Ambient)

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	$V_{CC} = 36\text{V}$ , $P_{out} = 20\text{W}$	$F = 3.1, 3.3, 3.5\text{ GHz}$	$R_{TH(JC)}$	-	1.1	°C/W
Output Power	$V_{CC} = 36\text{V}$ , $P_{out} = 20\text{W}$	$F = 3.1, 3.3, 3.5\text{ GHz}$	$P_{IN}$	-	3.6	W
Power Gain	$V_{CC} = 36\text{V}$ , $P_{out} = 20\text{W}$	$F = 3.1, 3.3, 3.5\text{ GHz}$	$G_P$	7.5	-	dB
Collector Efficiency	$V_{CC} = 36\text{V}$ , $P_{out} = 20\text{W}$	$F = 3.1, 3.3, 3.5\text{ GHz}$	$\eta_C$	35	-	%
Input Return Loss	$V_{CC} = 36\text{V}$ , $P_{out} = 20\text{W}$	$F = 3.1, 3.3, 3.5\text{ GHz}$	RL	-	-6	dB
Load Mismatch Tolerance	$V_{CC} = 36\text{V}$ , $P_{out} = 20\text{W}$	$F = 3.1, 3.3, 3.5\text{ GHz}$	VSWR-T	-	2:1	-

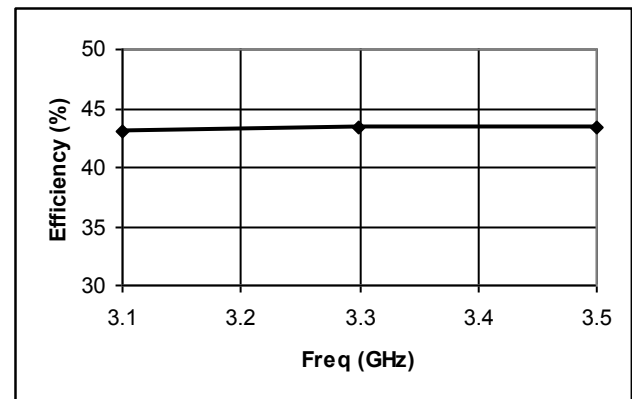
## Typical RF Performance

Freq. (GHz)	Pin (W)	Pout (W)	Gain (dB)	Ic (A)	Eff (%)	RL (dB)	VSWR-T (2:1)
3.1	2.4	20	9.19	1.29	43.1	-10.2	P
3.3	2.7	20	8.65	1.28	43.4	-10.9	P
3.5	3.0	20	8.30	1.28	43.4	-13.0	P

## Gain vs. Frequency

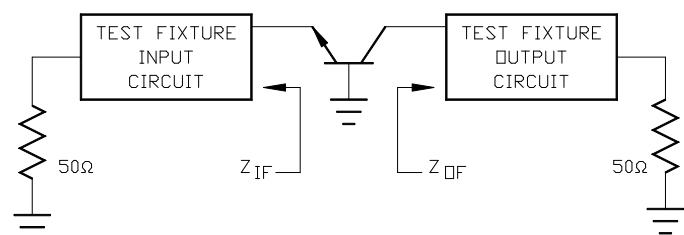


## Collector Efficiency vs. Frequency

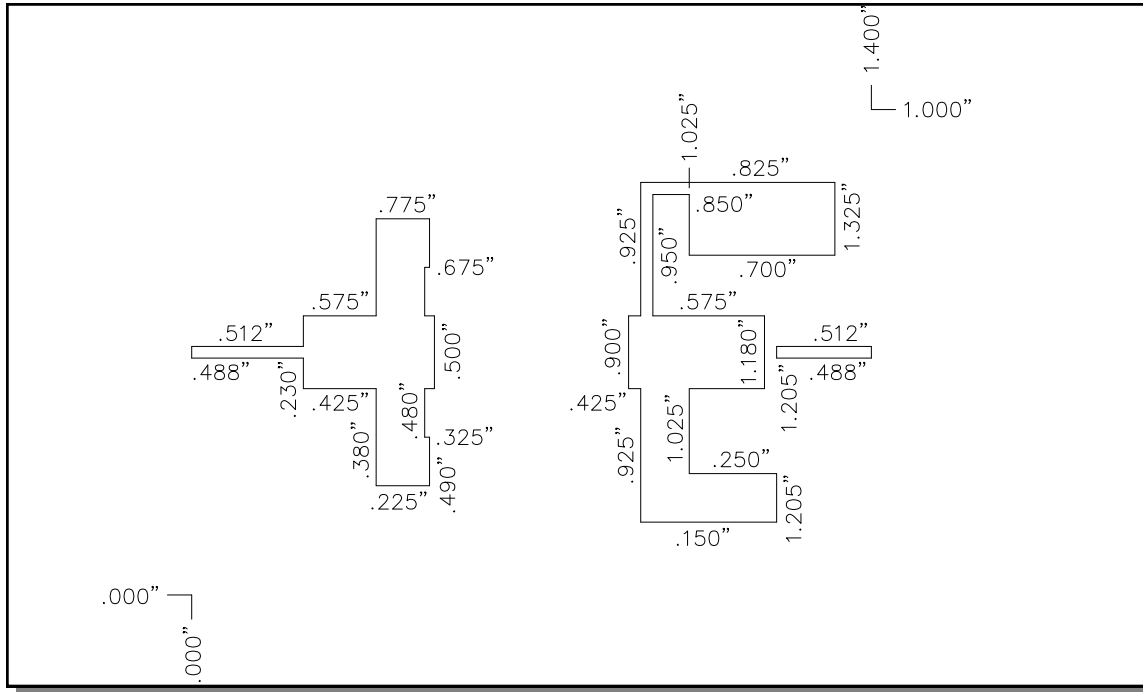


## RF Test Fixture Impedance

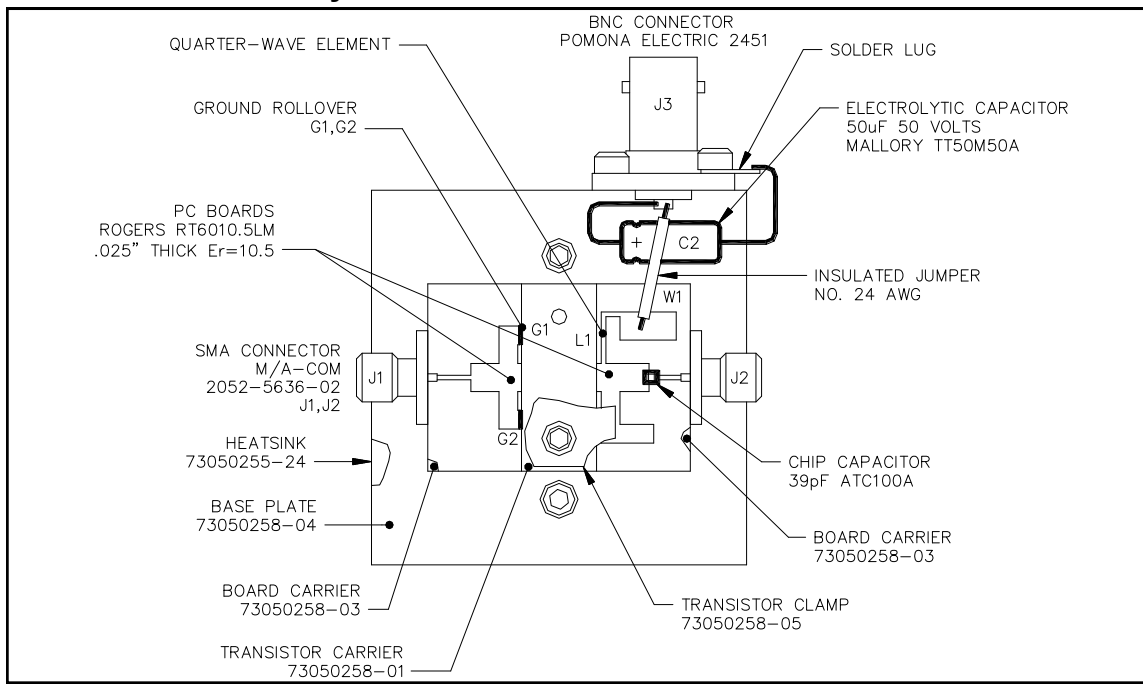
F (GHz)	Z <sub>IF</sub> (Ω)	Z <sub>OF</sub> (Ω)
3.1	16.0 + j5.5	19.0 + j3.4
3.3	14.5 + j1.6	14.2 - j2.8
3.5	11.3 + j0.0	10.7 - j3.3



## Test Fixture Circuit Dimensions



## Test Fixture Assembly



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