

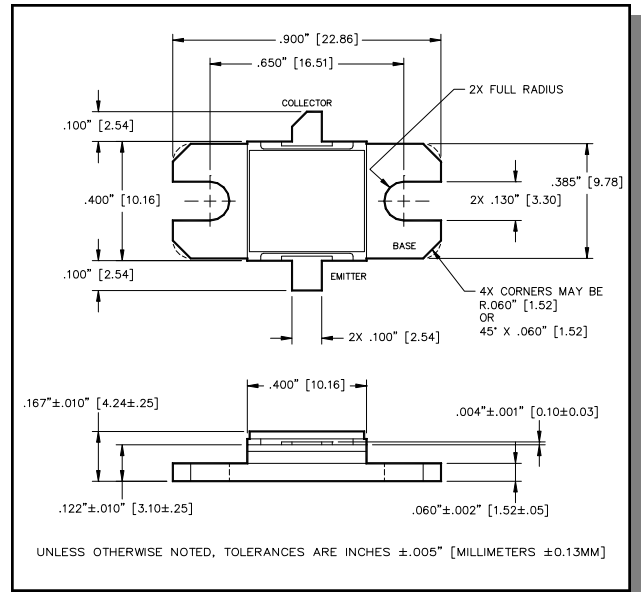
Radar Pulsed Power Transistor
20W, 3.1-3.4 GHz, 300µs Pulse, 10% Duty

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	$V_{CC} = 36\text{V}$, $P_{out} = 20\text{W}$	$F = 3.1, 3.25, 3.4\text{ GHz}$	η_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	-

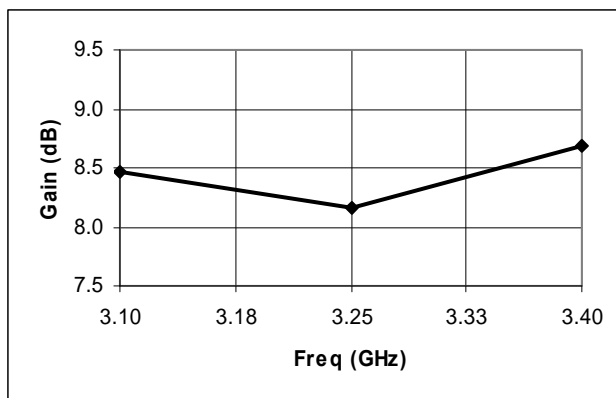
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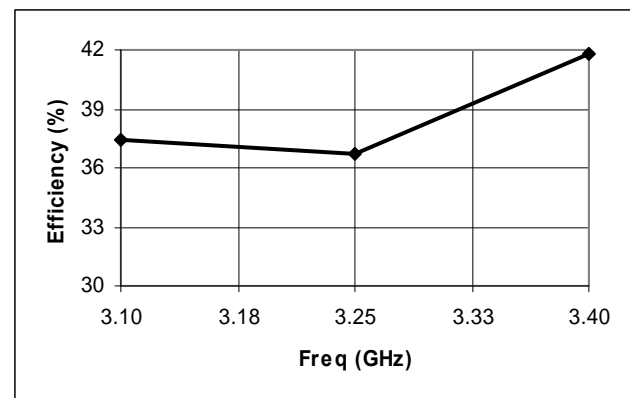
Typical RF Performance

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

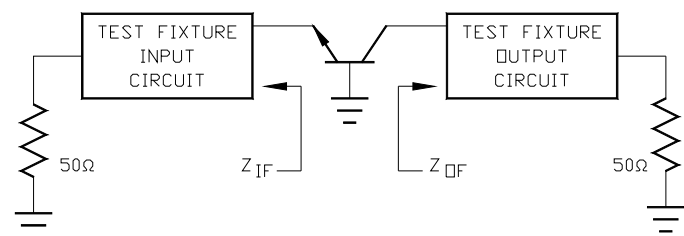


Collector Efficiency vs. Frequency



RF Test Fixture Impedance

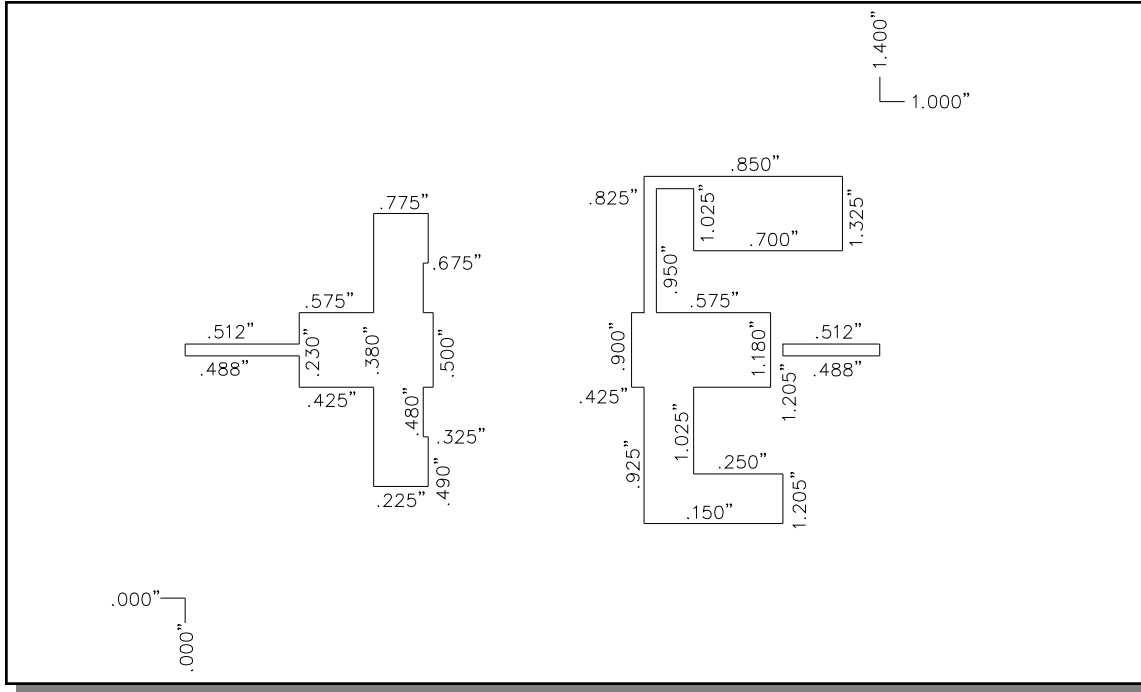
F (GHz)	Z _{IF} (Ω)	Z _{OF} (Ω)
3.10	16.0 + j5.0	19.0 + j3.0
3.25	14.5 + j2.0	15.5 - j2.0
3.40	11.5 + j0.0	10.0 - j3.5



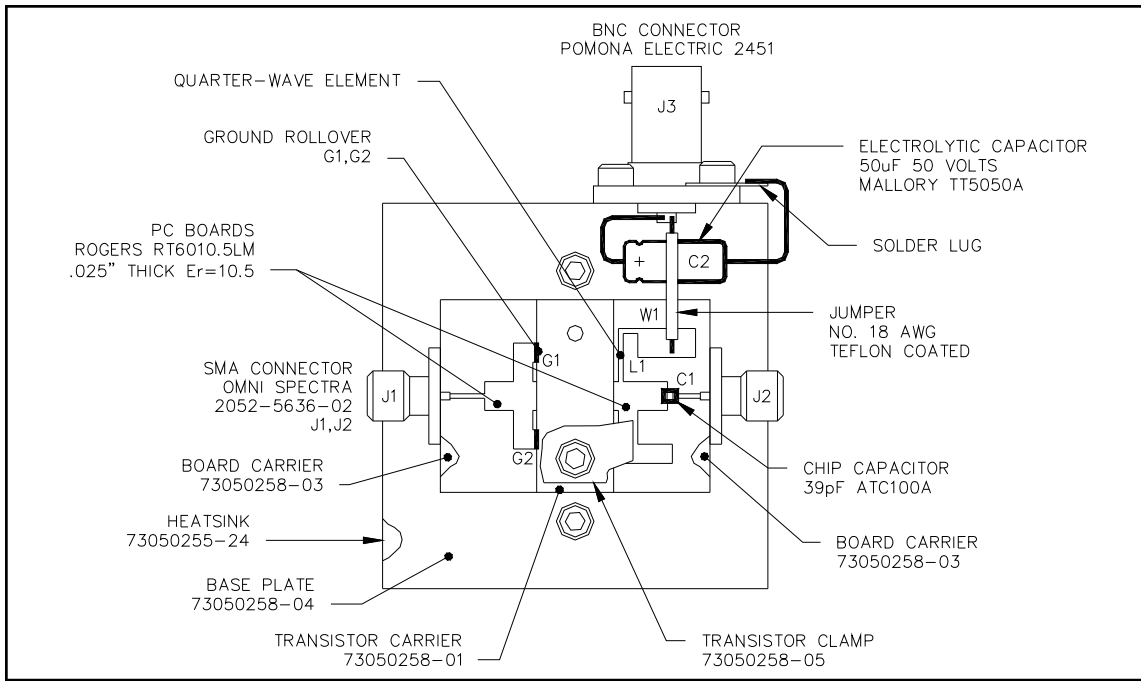
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Test Fixture Circuit Dimensions



Test Fixture Assembly



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