

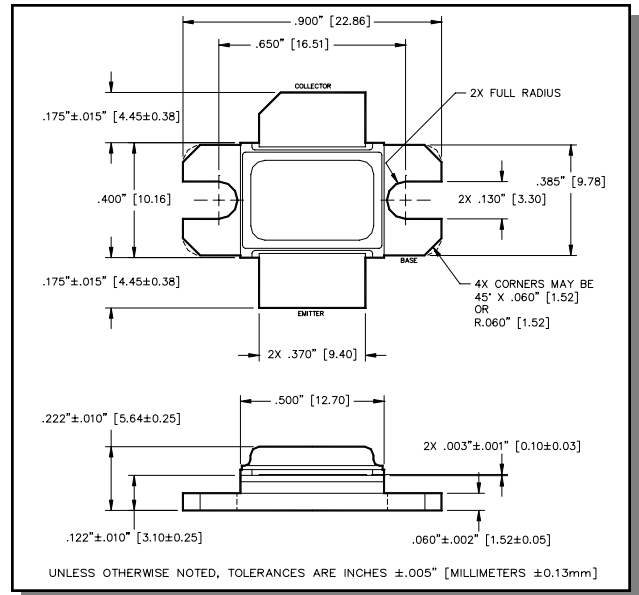
Radar Pulsed Power Transistor
220W, 1.2-1.4 GHz, 150µs Pulse, 10% Duty

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}	70	V
Emitter-Base Voltage	V_{EBO}	3.0	V
Collector Current (Peak)	I_C	21	A
Power Dissipation @ +25°C	P_{TOT}	700	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	$I_C = 100\text{mA}$		BV_{CES}	70	-	V
Collector-Emitter Leakage Current	$V_{CE} = 40\text{V}$		I_{CES}	-	10	mA
Thermal Resistance	$V_{CC} = 40\text{V}$, $P_{in} = 40\text{W}$	$F = 1.2, 1.3, 1.4 \text{ GHz}$	$R_{TH(JC)}$	-	0.25	°C/W
Output Power	$V_{CC} = 40\text{V}$, $P_{in} = 40\text{W}$	$F = 1.2, 1.3, 1.4 \text{ GHz}$	P_{OUT}	220	-	W
Power Gain	$V_{CC} = 40\text{V}$, $P_{in} = 40\text{W}$	$F = 1.2, 1.3, 1.4 \text{ GHz}$	G_P	7.4	-	dB
Collector Efficiency	$V_{CC} = 40\text{V}$, $P_{in} = 40\text{W}$	$F = 1.2, 1.3, 1.4 \text{ GHz}$	η_C	50	-	%
Input Return Loss	$V_{CC} = 40\text{V}$, $P_{in} = 40\text{W}$	$F = 1.2, 1.3, 1.4 \text{ GHz}$	RL	-	-9	dB
Pulse Droop	$V_{CC} = 40\text{V}$, $P_{in} = 40\text{W}$	$F = 1.2, 1.3, 1.4 \text{ GHz}$	Droop	-	0.8	dB
Load Mismatch Tolerance	$V_{CC} = 40\text{V}$, $P_{in} = 40\text{W}$	$F = 1.2, 1.3, 1.4 \text{ GHz}$	VSWR-T	-	3:1	-
Load Mismatch Stability	$V_{CC} = 40\text{V}$, $P_{in} = 40\text{W}$	$F = 1.2, 1.3, 1.4 \text{ GHz}$	VSWR-S	-	1.5:1	-

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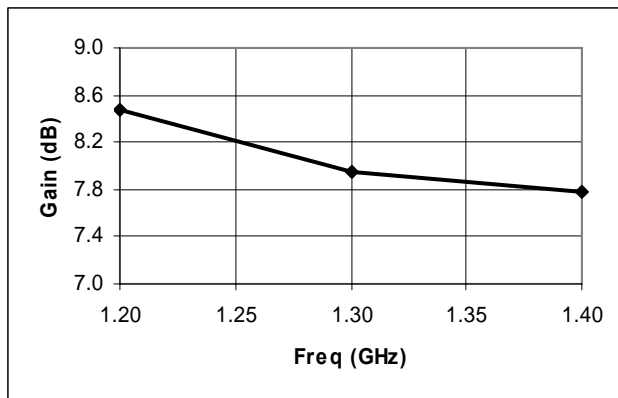
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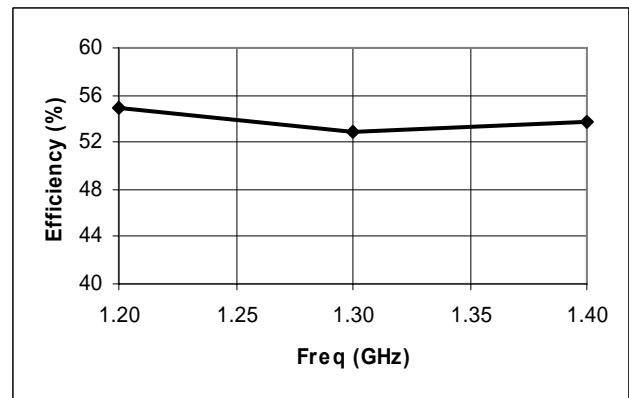
Typical RF Performance

Freq. (GHz)	Pin (W)	Pout (W)	Gain (dB)	Ic (A)	Eff (%)	Droop (dB)	RL (dB)	VSWR-S (1.5:1)	VSWR-T (3:1)
1.2	40	281	8.47	12.8	54.8	0.34	-16.7	S	P
1.3	40	250	7.95	11.8	53.0	0.22	-16.8	S	P
1.4	40	240	7.78	11.2	53.7	0.24	-15.4	S	P

Gain vs. Frequency

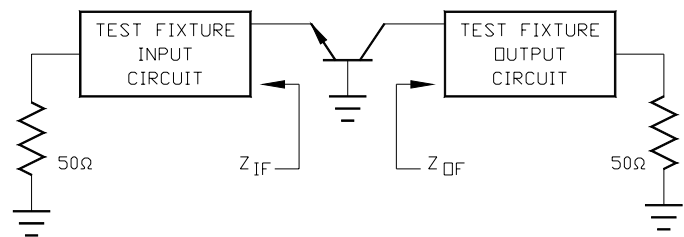


Collector Efficiency vs. Frequency



RF Test Fixture Impedance

F (GHz)	Z _{IF} (Ω)	Z _{OF} (Ω)
1.2	3.3 - j2.7	2.0 - j1.5
1.3	3.4 - j2.1	1.9 - j1.6
1.4	3.6 - j1.3	1.7 - j1.4



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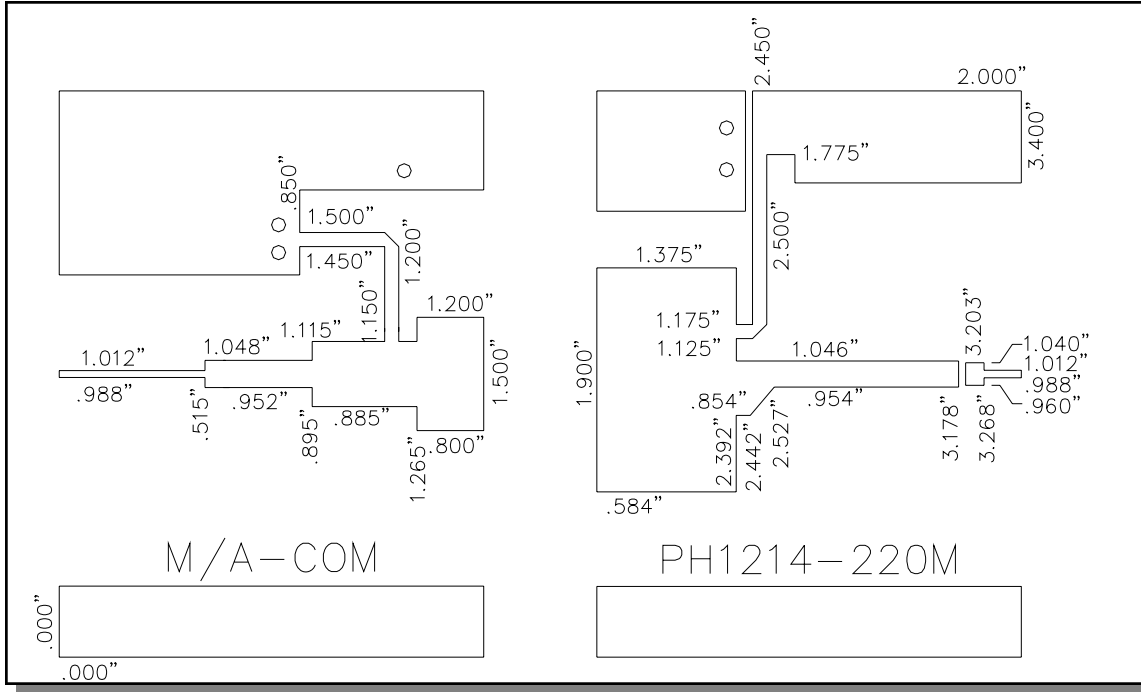
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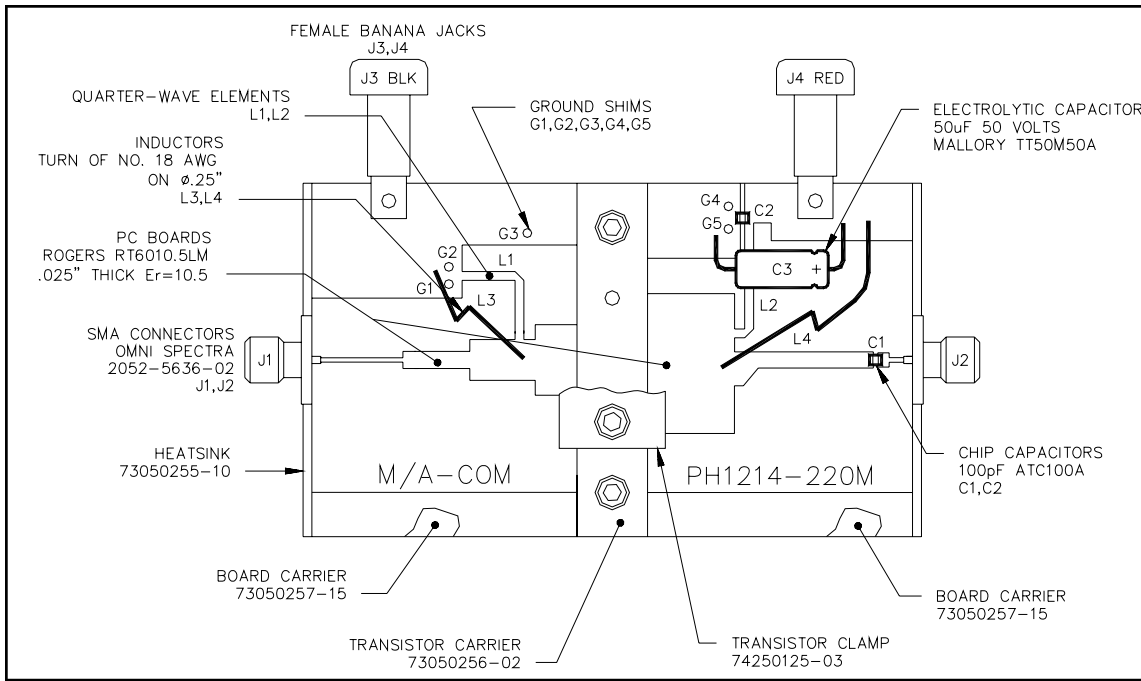
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Test Fixture Circuit Dimensions



Test Fixture Assembly



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