

Radar Pulsed Power Transistor

110W, 1.2-1.4 GHz, 150 μ s Pulse, 10% Duty

M/A-COM Products
Released, 30 May 07

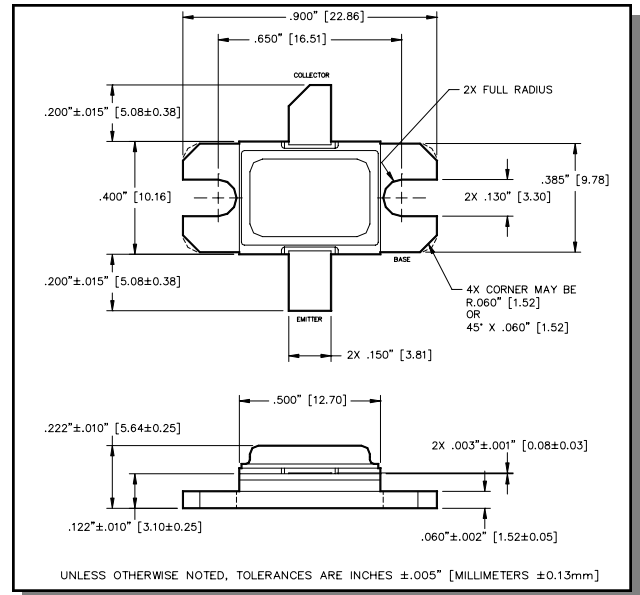
Features

- 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

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	10.5	A
Power Dissipation @ +25°C	P_{TOT}	350	W
Storage Temperature	T_{STG}	-65 to +200	°C
Junction Temperature	T_J	200	°C

Outline Drawing



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 = 100mA		BV _{CES}	70	-	V
Collector-Emitter Leakage Current	V _{CE} = 40V		I _{CES}	-	5.5	mA
Thermal Resistance	V _{CC} = 40V, P _{in} = 20W	F = 1.2, 1.3, 1.4 GHz	R _{TH(JC)}	-	0.5	°C/W
Output Power	V _{CC} = 40V, P _{in} = 20W	F = 1.2, 1.3, 1.4 GHz	P _{OUT}	110	-	W
Power Gain	V _{CC} = 40V, P _{in} = 20W	F = 1.2, 1.3, 1.4 GHz	G _P	7.4	-	dB
Collector Efficiency	V _{CC} = 40V, P _{in} = 20W	F = 1.2, 1.3, 1.4 GHz	η _c	50	-	%
Input Return Loss	V _{CC} = 40V, P _{in} = 20W	F = 1.2, 1.3, 1.4 GHz	RL	-	-9	dB
Load Mismatch Tolerance	V _{CC} = 40V, P _{in} = 20W	F = 1.2, 1.3, 1.4 GHz	VSWR-T	-	3:1	-
Load Mismatch Stability	V _{CC} = 40V, P _{in} = 20W	F = 1.2, 1.3, 1.4 GHz	VSWR-S	-	1.5:1	-

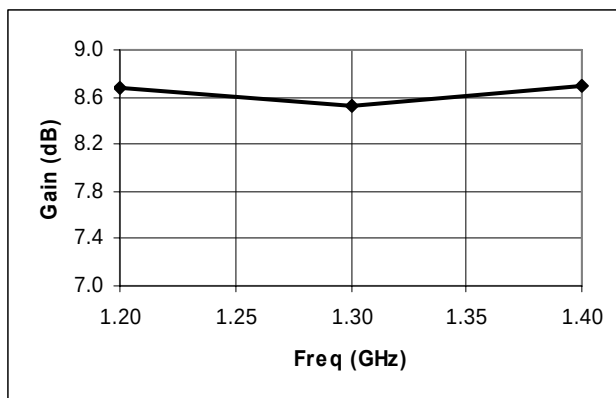
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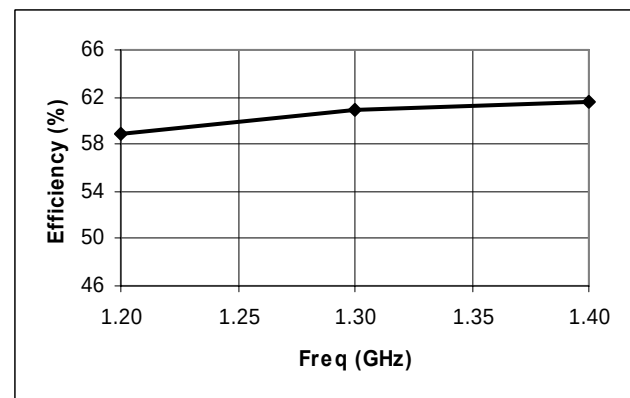
Typical RF Performance

Freq. (GHz)	Pin (W)	Pout (W)	Gain (dB)	Ic (A)	Eff (%)	RL (dB)	VSWR-S (1.5:1)	VSWR-T (3:1)
1.2	20	148	8.68	6.26	59.0	-10.0	S	P
1.3	20	143	8.53	5.86	60.8	-11.0	S	P
1.4	20	148	8.69	6.00	61.7	-25.6	S	P

Gain vs. Frequency

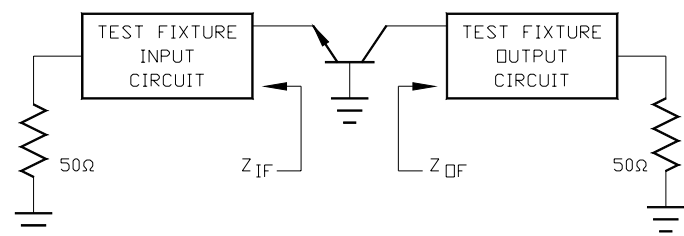


Collector Efficiency vs. Frequency



RF Test Fixture Impedance

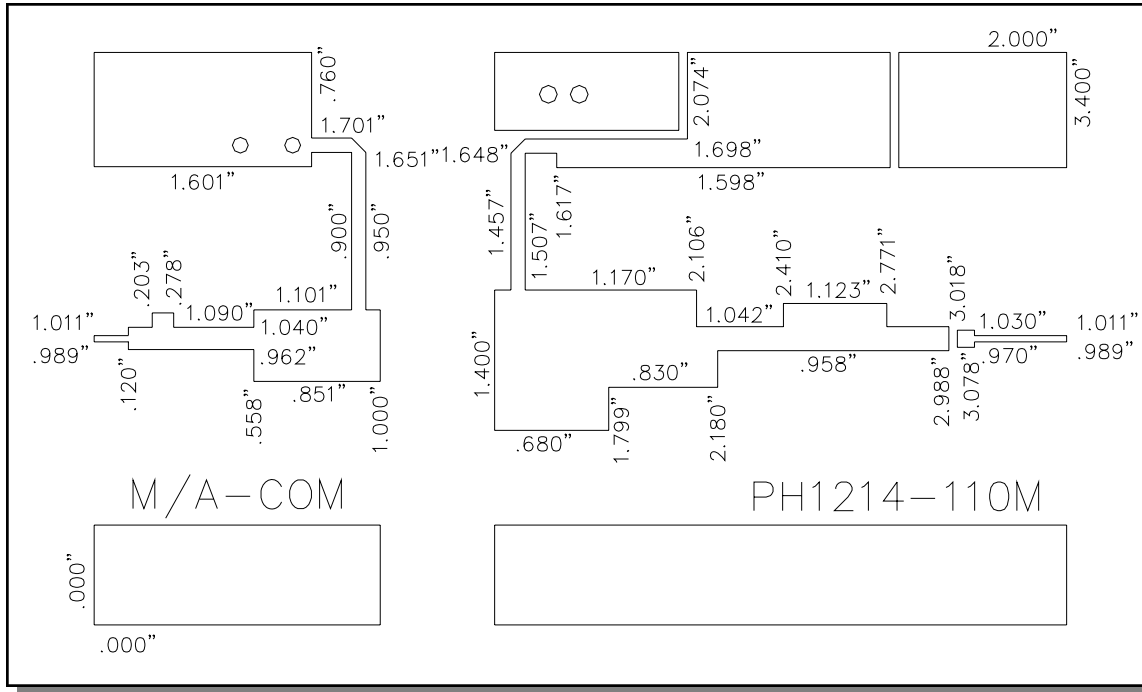
F (GHz)	Z _{IF} (Ω)	Z _{OF} (Ω)
1.2	4.7 - j4.4	4.4 - j3.3
1.3	4.5 - j3.3	3.0 - j2.8
1.4	4.5 - j2.3	2.3 - j1.8



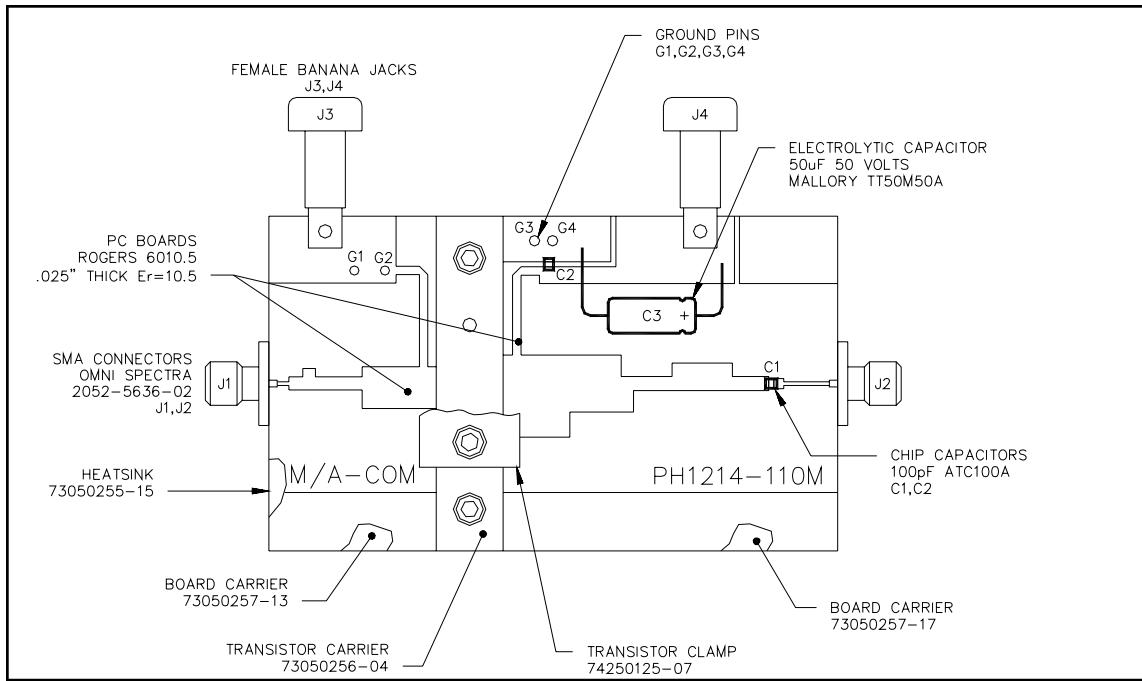
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Test Fixture Circuit Dimensions



Test Fixture Assembly



ADVANCED: Data Sheets contain information regarding a product M/A-COM 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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