

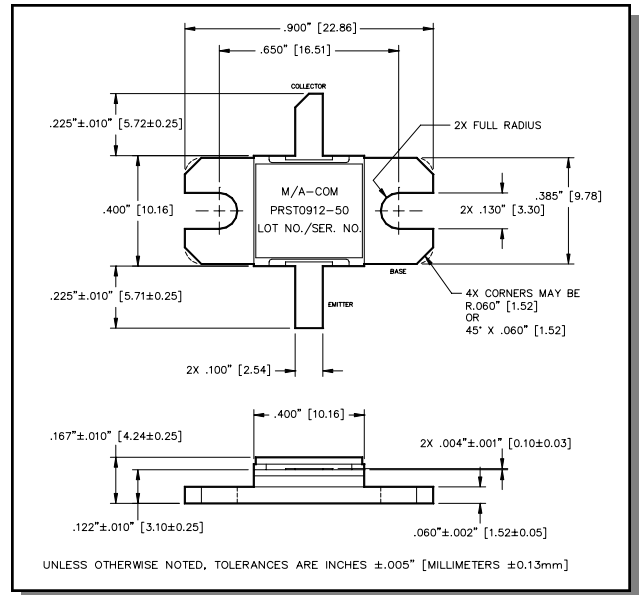
Avionics Pulsed Power Transistor
50W, 960-1215 MHz, 10μs Pulse, 10% Duty

M/A-COM Products
Released, 05 Sep 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	5.3	A
Power Dissipation @ +25°C	P_{TOT}	220	kW
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	$I_C = 15\text{mA}$		BV_{CES}	65	-	V
Collector-Emitter Leakage Current	$V_{CE} = 40\text{V}$		I_{CES}	-	2.0	mA
Thermal Resistance	$V_{CC} = 50\text{V}$, $P_{in} = 6.2\text{W}$	F = 960, 1090, 1215 MHz	$R_{TH(JC)}$	-	0.80	°C/W
Output Power	$V_{CC} = 50\text{V}$, $P_{in} = 6.2\text{W}$	F = 960, 1090, 1215 MHz	P_O	50	-	W
Power Gain	$V_{CC} = 50\text{V}$, $P_{in} = 6.2\text{W}$	F = 960, 1090, 1215 MHz	G_P	9.1	-	dB
Collector Efficiency	$V_{CC} = 50\text{V}$, $P_{in} = 6.2\text{W}$	F = 960, 1090, 1215 MHz	η_C	40	-	%
Input Return Loss	$V_{CC} = 50\text{V}$, $P_{in} = 6.2\text{W}$	F = 960, 1090, 1215 MHz	RL	-	-9	dB
Load Mismatch Stability	$V_{CC} = 50\text{V}$, $P_{in} = 6.2\text{W}$	F = 960 MHz	VSWR-T	-	10:1	-
Load Mismatch Tolerance	$V_{CC} = 50\text{V}$, $P_{in} = 6.2\text{W}$	F = 960, 1090, 1215 MHz	VSWR-S	-	1.5:1	-

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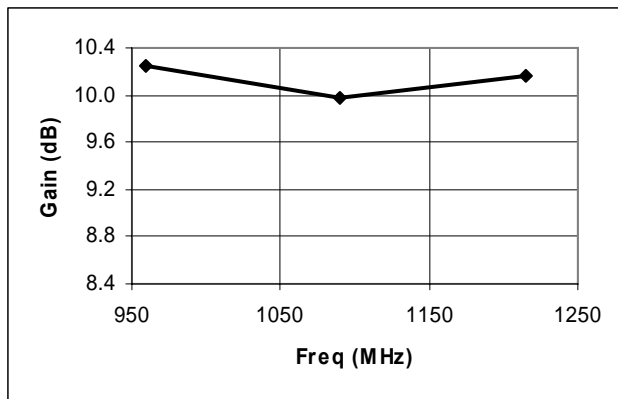
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Typical RF Performance

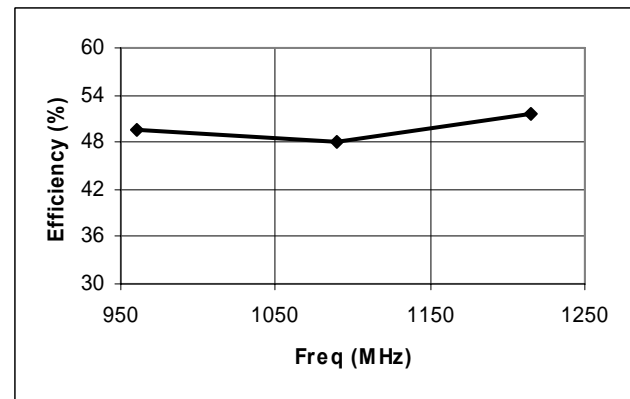
Freq. (MHz)	Pin (W)	Pout (W)	Gain (dB)	Δ Gain (dB)	Ic (A)	Eff (%)	RL (dB)	VSWR-S (1.5:1)	VSWR-T (10:1)	P1dB Overdrive	
										Pout	Δ Po
960	6.2	65.9	10.25	-	2.66	49.6	-22.2	S	P	73.4	0.48
1090	6.2	61.9	9.98	-	2.58	48.0	-15.2	S	-	68.7	0.45
1215	6.2	64.6	10.16	0.35	2.50	51.6	-15.9	S	-	74.8	0.63

Note: Δ Po(dB) is the difference between Pout at 1dB overdrive and Pout at Pin = 6.2W.

Gain vs. Frequency



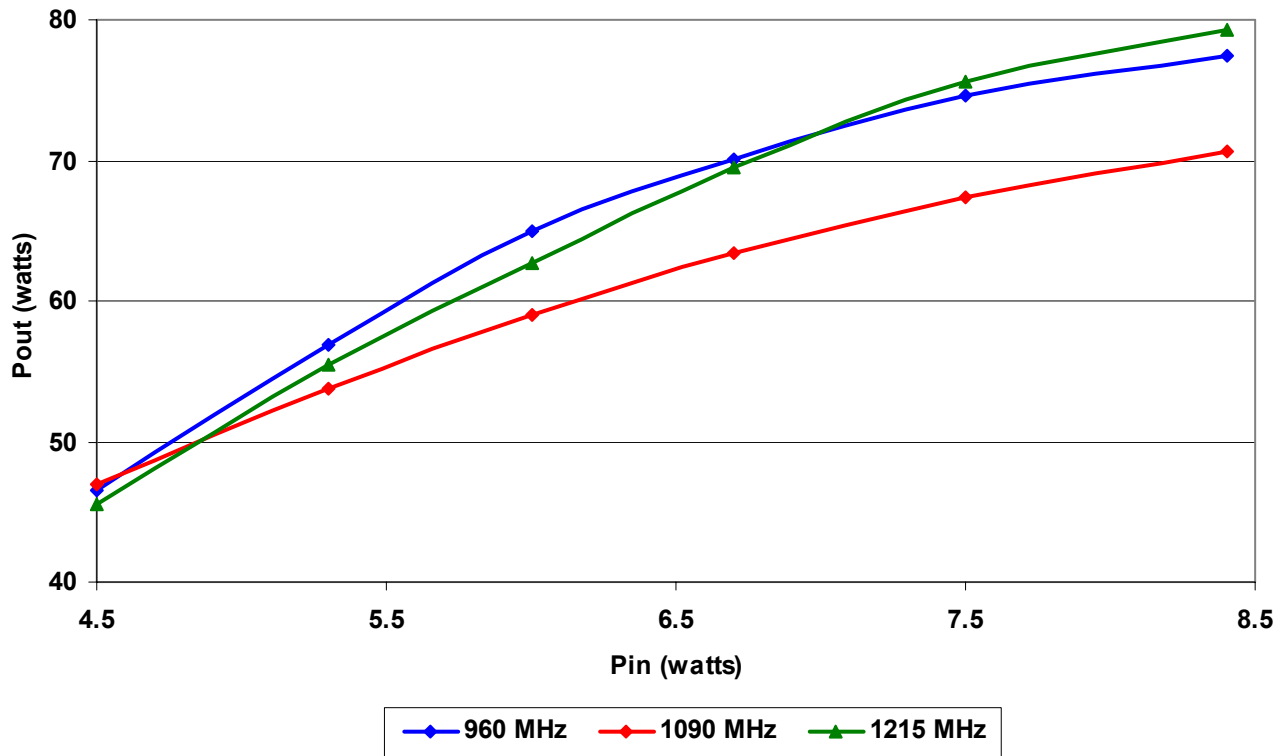
Collector Efficiency vs. Frequency



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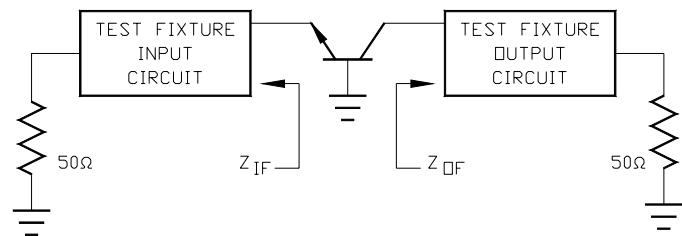
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RF Power Transfer Curve (Output Power Vs. Input Power)



Broadband Test Fixture Impedance

F (MHz)	Z _{IF} (Ω)	Z _{OF} (Ω)
960	3.5 - j7.5	12.0 - j7.8
1030	3.8 - j7.0	11.1 - j6.4
1090	3.9 - j6.8	10.6 - j5.1
1150	3.9 - j6.8	10.8 - j3.8
1215	3.6 - j7.0	11.1 - j3.2



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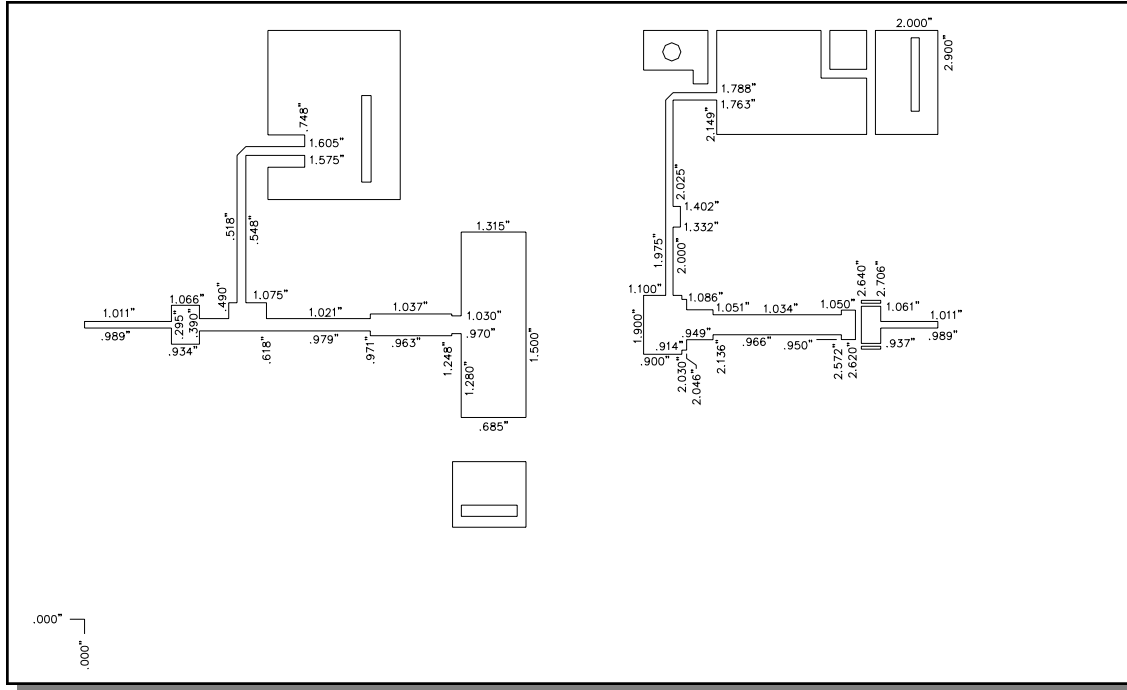
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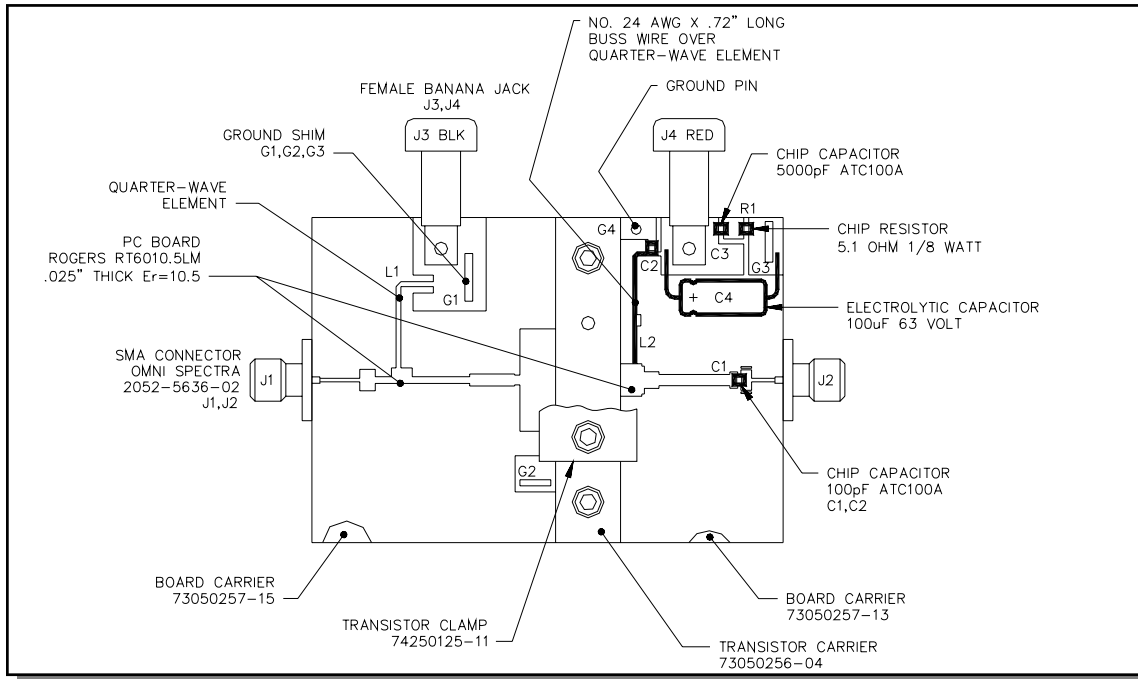
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Test Fixture Circuit Dimensions



Test Fixture Assembly



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