MAPR-000912-500S00

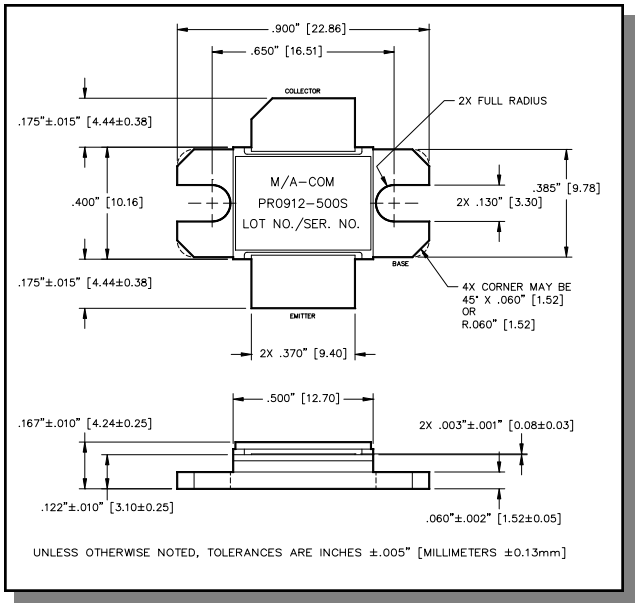
Avionics Pulsed Power Transistor
500W, 960-1215 MHz, 10µs Pulse, 10% Duty

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}	80	V
Emitter-Base Voltage	V_{EBO}	3.0	V
Collector Current (Peak)	I_C	52.5	A
Power Dissipation @ +25°C	P_{TOT}	2.2	kW
Storage Temperature	T_{STG}	-65 to +200	°C
Junction Temperature	T_J	200	°C

Electrical Specifications: T_C = 25 ± 5°C (Room Ambient)

Parameter	Test Conditions	Frequency	Symbol	Min	Max	Units
Collector-Emitter Breakdown Voltage	I_C = 80mA		BV_{CES}	80	-	V
Collector-Emitter Leakage Current	V_{CE} = 40V		I_{CES}	-	15	mA
Thermal Resistance	Vcc = 50V, Pin = 63W	F = 960, 1090, 1215 MHz	$R_{TH(JC)}$	-	0.08	°C/W
Output Power	Vcc = 50V, Pin = 63W	F = 960, 1090, 1215 MHz	P_{OUT}	500	-	W
Power Gain	Vcc = 50V, Pin = 63W	F = 960, 1090, 1215 MHz	G_P	9.0	-	dB
Collector Efficiency	Vcc = 50V, Pin = 63W	F = 960, 1090, 1215 MHz	η_C	45	-	%
Input Return Loss	Vcc = 50V, Pin = 63W	F = 960, 1090, 1215 MHz	RL	-	-9	dB
Load Mismatch Tolerance	Vcc = 50V, Pin = 63W	F = 960 MHz	VSWR-T	-	3:1	-
Load Mismatch Stability	Vcc = 50V, Pin = 63W	F = 960, 1090, 1215 MHz	VSWR-S	-	1.5:1	-

- **North America** Tel: 800.366.2266 / Fax: 978.366.2266
- **Europe** Tel: 44.1908.574.200 / Fax: 44.1908.574.300
- **Asia/Pacific** Tel: 81.44.844.8296 / Fax: 81.44.844.8298

Visit www.macomtech.com for additional data sheets and product information.

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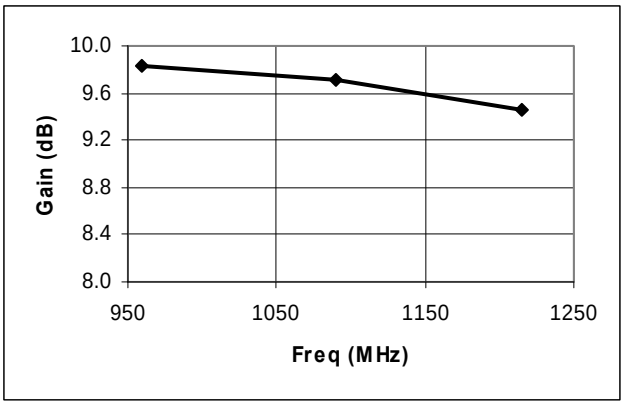
Typical RF Performance

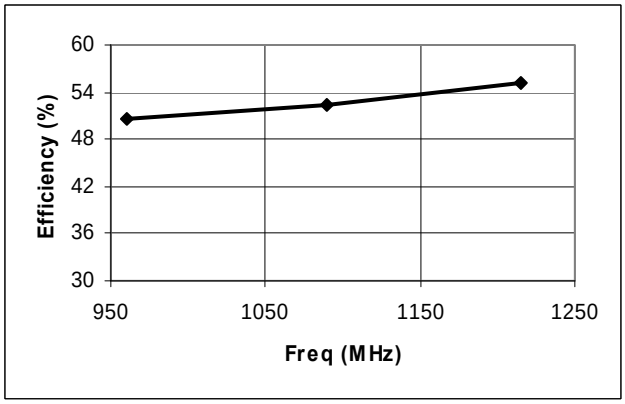
Freq. (MHz)	Pin (W)	Pout (W)	Gain (dB)	ΔGain (dB)	Ic (A)	Eff (%)	RL (dB)	VSWR-S (1.5:1)	VSWR-T (3:1)	P1dB Overdrive	
										Pout	Δ Po
960	63	598	9.77	-	23.5	50.9	-17.1	S	P	675	0.52
1090	63	582	9.65	-	21.9	53.1	-21.8	S	-	677	0.66
1215	63	554	9.44	0.33	19.7	56.1	-16.8	S	-	619	0.48

Note: **ΔPo(dB)** is the difference between Pout at 1dB overdrive and Pout at Pin = 63W.

Gain vs. Frequency



Collector Efficiency vs. Frequency



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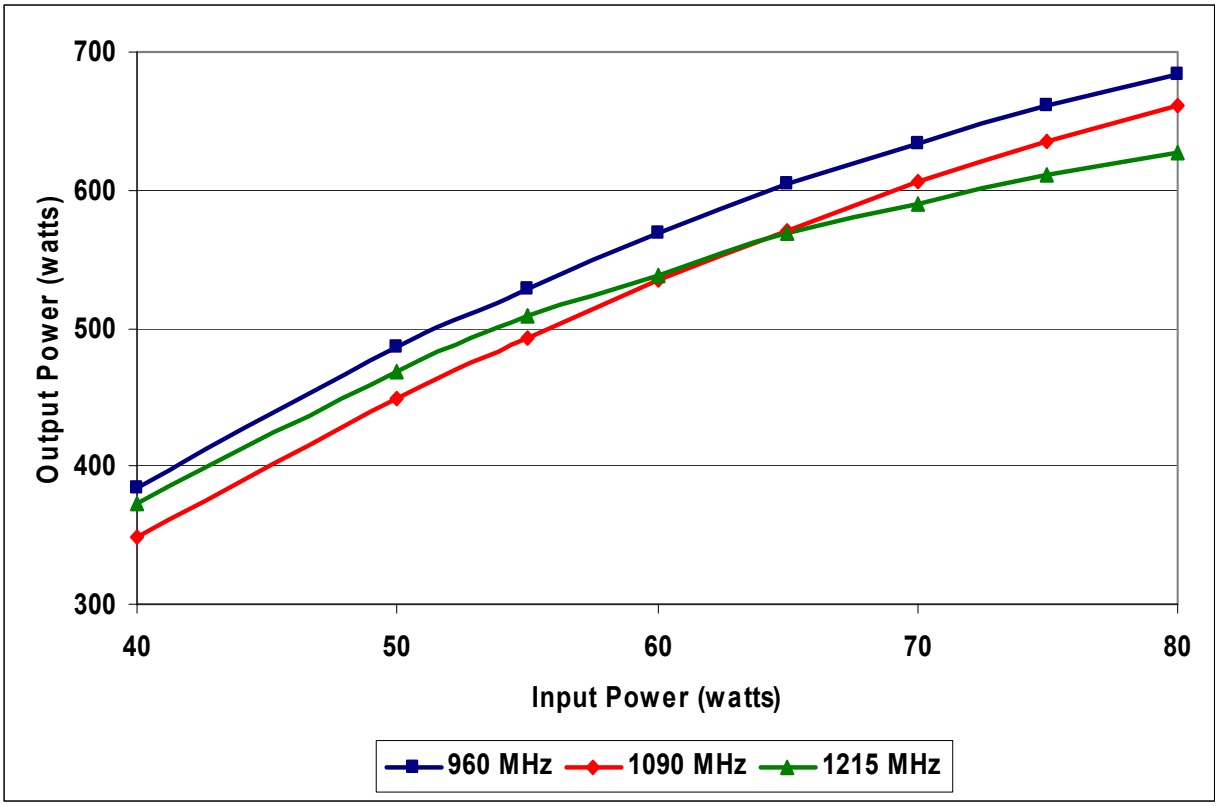
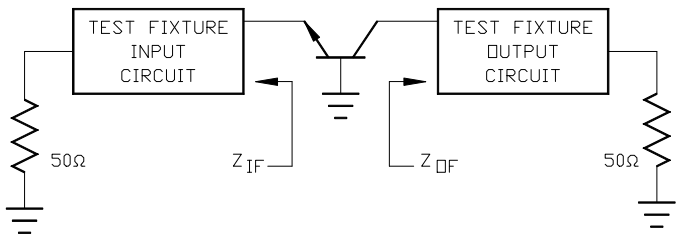
RF Power Transfer Curve
(Output Power Vs. Input Power)



Broadband Test Fixture Impedance

F (MHz)	Z_{IF} (Ω)	Z_{OF} (Ω)
960	1.3 - j1.4	1.2 - j1.4
1025	1.3 - j1.1	1.2 - j1.1
1090	1.2 - j0.9	1.3 - j0.9
1150	1.2 - j0.8	1.4 - j0.7
1215	1.0 - j0.8	1.3 - j0.6



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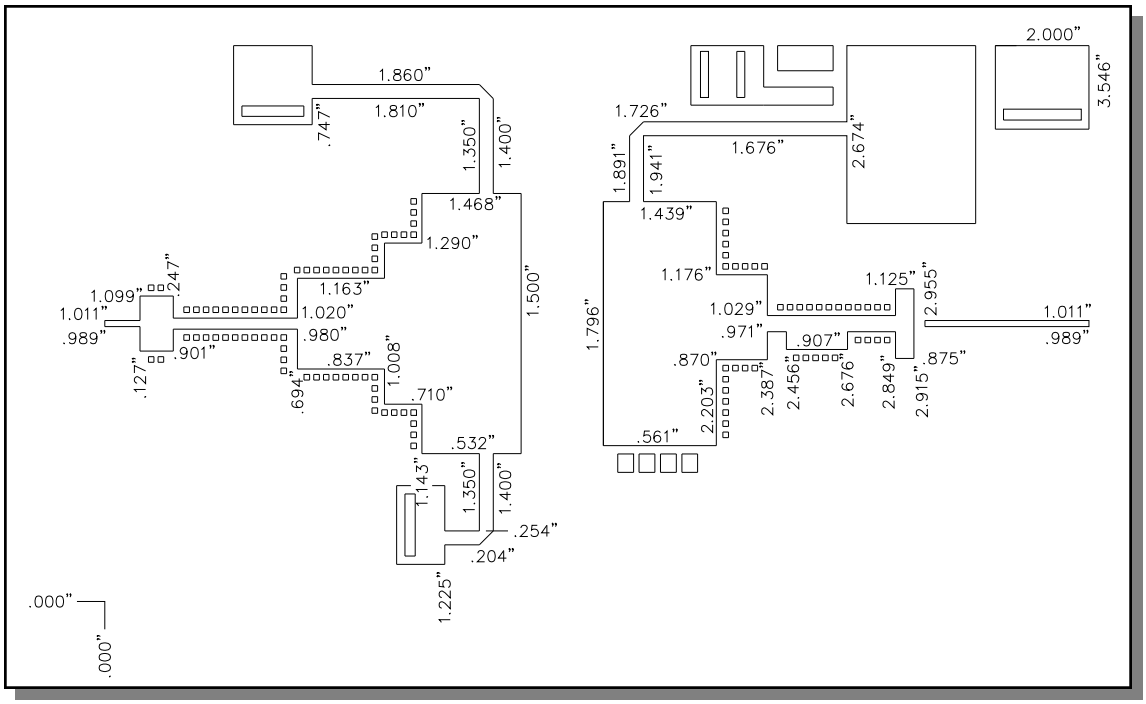
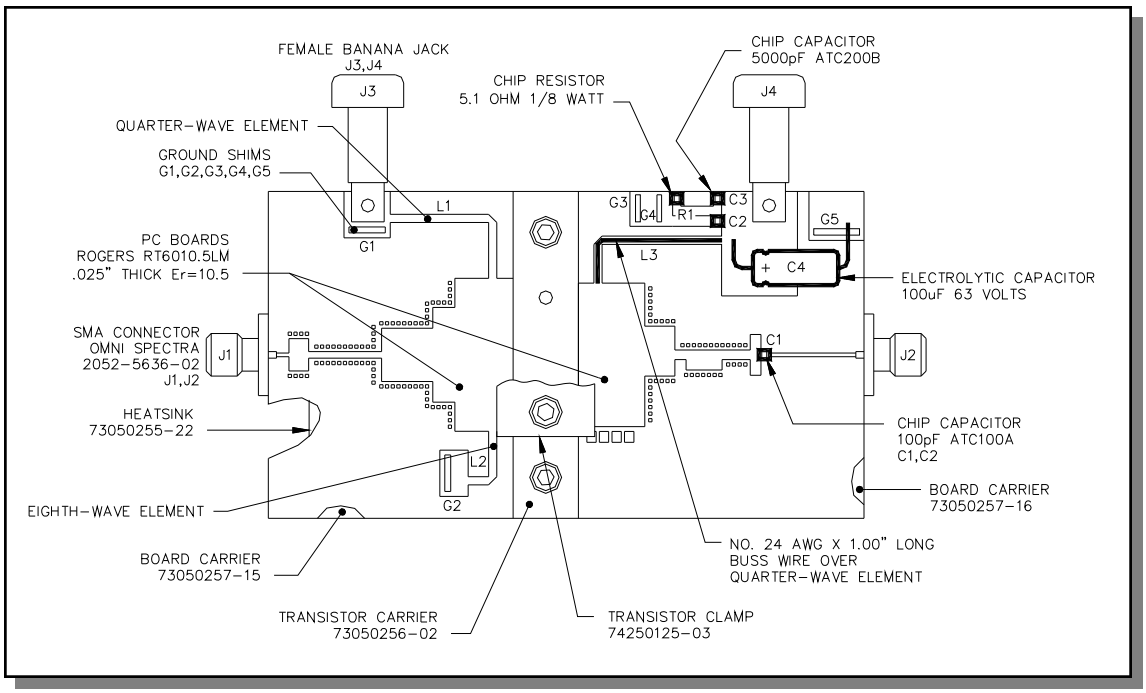
Test Fixture Circuit Dimensions



Test Fixture Assembly



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