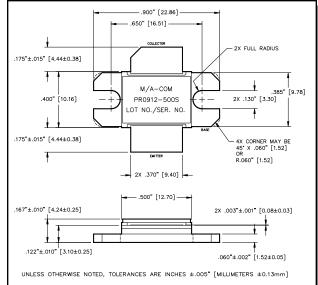
# MAPR-000912-500S00

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

#### 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 <sub>CES</sub>	80	V
Emitter-Base Voltage	V <sub>EBO</sub>	3.0	V
Collector Current (Peak)	Ι <sub>C</sub>	52.5	А
Power Dissipation @ +25°C	P <sub>TOT</sub>	2.2	kW
Storage Temperature	T <sub>STG</sub>	-65 to +200	°C
Junction Temperature	TJ	200	°C

## Electrical Specifications: $T_c = 25 \pm 5^{\circ}C$ (Room Ambient )

Parameter	Test Conditions	Frequency	Symbol	Min	Max	Units
Collector-Emitter Breakdown Voltage	$I_{C} = 80 \text{mA}$		BV <sub>CES</sub>	80	-	V
Collector-Emitter Leakage Current	$V_{CE} = 40V$		I <sub>CES</sub>	-	15	mA
Thermal Resistance	Vcc = 50V, Pin = 63W	F = 960, 1090, 1215 MHz	R <sub>TH(JC)</sub>	-	0.08	°C/W
Output Power	Vcc = 50V, Pin = 63W	F = 960, 1090, 1215 MHz	P <sub>OUT</sub>	500	-	W
Power Gain	Vcc = 50V, Pin = 63W	F = 960, 1090, 1215 MHz	G <sub>P</sub>	9.0	-	dB
Collector Efficiency	Vcc = 50V, Pin = 63W	F = 960, 1090, 1215 MHz	η <sub>c</sub>	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	-

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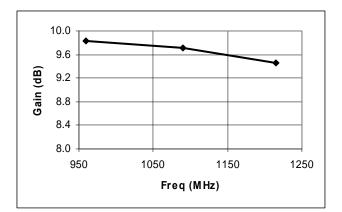
### Typical RF Performance

Freq.	Pin	Pout	Gain	∆Gain	lc	Eff	RL	VSWR-S	VSWR-T (3:1)	P1dB Overdrive	
(MHz)	(W)	(W)	(dB)	(dB)	(A)	(%)	(dB)	(1.5:1)		Pout	ΔPo
960	63	598	9.77	-	23.5	50.9	-17.1	S	Р	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

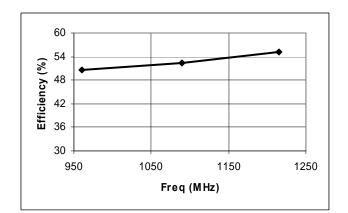
Note:  $\Delta Po(dB)$  is the difference between Pout at 1dB overdrive and Pout at Pin = 63W.

#### Gain vs. Frequency

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## **Collector Efficiency vs. Frequency**



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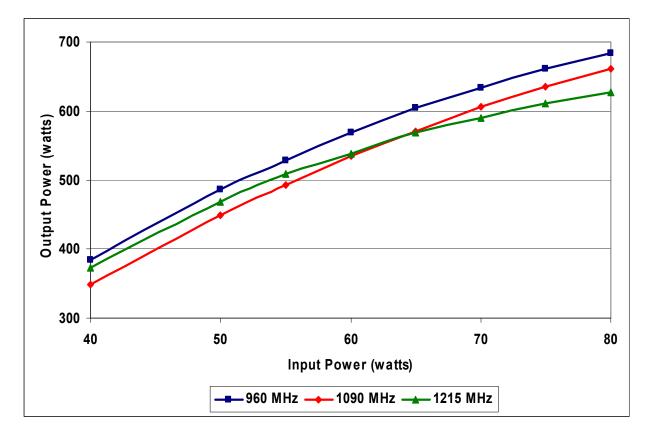
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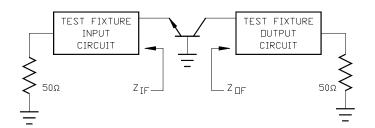
### RF Power Transfer Curve (Output Power Vs. Input Power)



#### **Broadband Test Fixture Impedance**

F (MHz)	Z <sub>IF</sub> (Ω)	Z <sub>OF</sub> (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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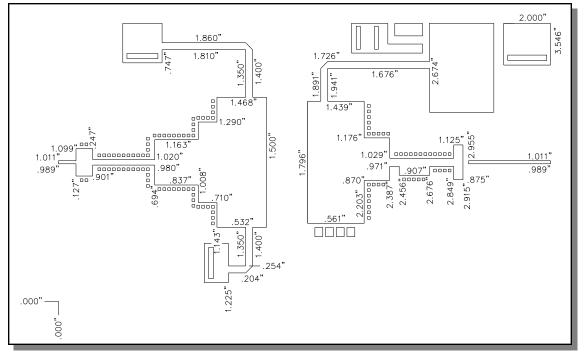
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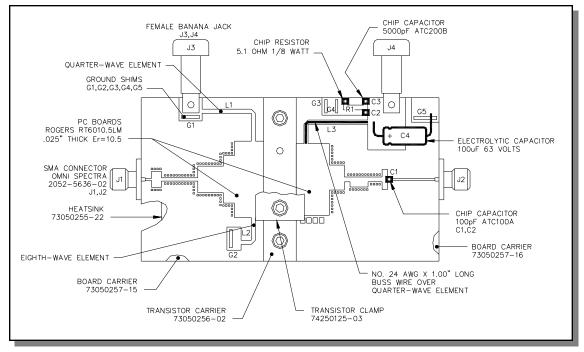
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## **Test Fixture Circuit Dimensions**



## **Test Fixture Assembly**



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