

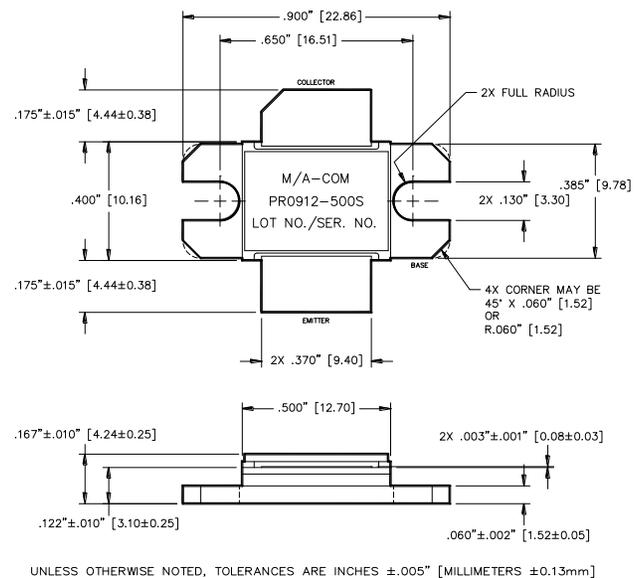
## Avionics Pulsed Power Transistor 500 W, 960 - 1215 MHz, 10 $\mu$ s Pulse, 10 % Duty

Rev. V1

### 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 @ +25°C

Parameter	Symbol	Rating
Collector-Emitter Voltage	$V_{CES}$	80 V
Emitter-Base Voltage	$V_{EBO}$	3 V
Collector Current (Peak)	$I_C$	52.5 A
Power Dissipation	$P_{TOT}$	2.2 kW
Storage Temperature	$T_{STG}$	-65°C to +200°C
Junction Temperature	$T_J$	+200°C

### Electrical Specifications: $V_{CC} = 50$ V, $P_{IN} = 63$ W, $T_A = 25 \pm 5^\circ$ C (unless otherwise noted)

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

\* Restrictions on Hazardous Substances, European Union Directive 2011/65/EU.

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**500 W, 960 - 1215 MHz, 10  $\mu$ s Pulse, 10 % Duty**

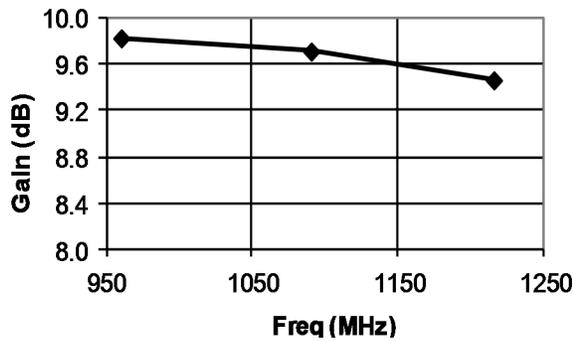
Rev. V1

### Typical RF Performance

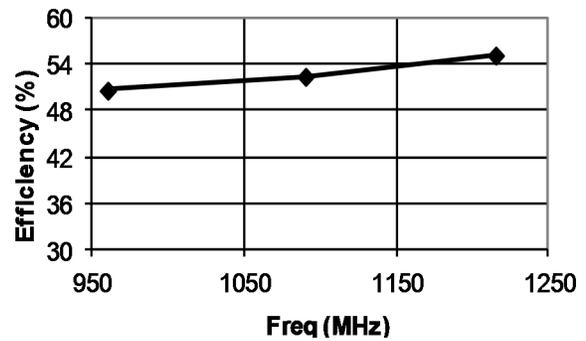
Freq. (MHz)	P <sub>IN</sub> (W)	P <sub>OUT</sub> (W)	Gain (dB)	$\Delta$ Gain (dB)	I <sub>c</sub> (A)	Eff (%)	RL (dB)	VSWR-S (1.5:1)	VSWR-T (10:1)	P1dB Overdrive	
										P <sub>OUT</sub> (W)	$\Delta$ P <sub>O</sub> (dB)
960	63	598	9.77	—	23.5	50.9	-17.1	S	P	675	0.52
1090	63	582	9.65	—	21.9	53.1	-21.8	S	—	677	0.66
1215	63	554	9.44	033	19.7	56.1	-16.8	S	—	619	0.48

Note:  $\Delta$ Po(dB) is the difference between P<sub>OUT</sub> at 1dB overdrive and P<sub>OUT</sub> at P<sub>IN</sub> = 63 W.

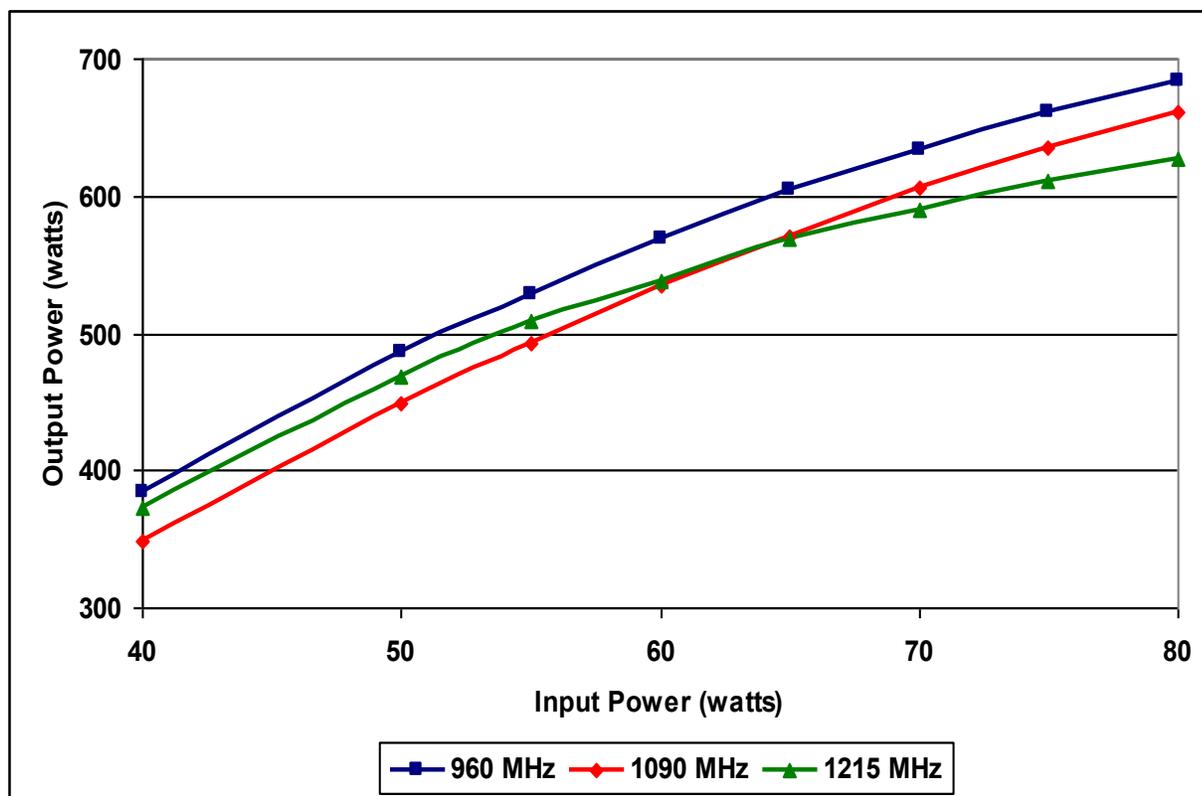
### Gain vs. Frequency



### Collector Efficiency vs. Frequency

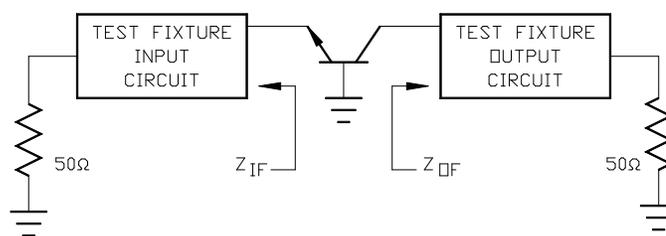


## RF Power Transfer Curve (Output Power Vs. Input Power)



## Broadband Test Fixture Impedance

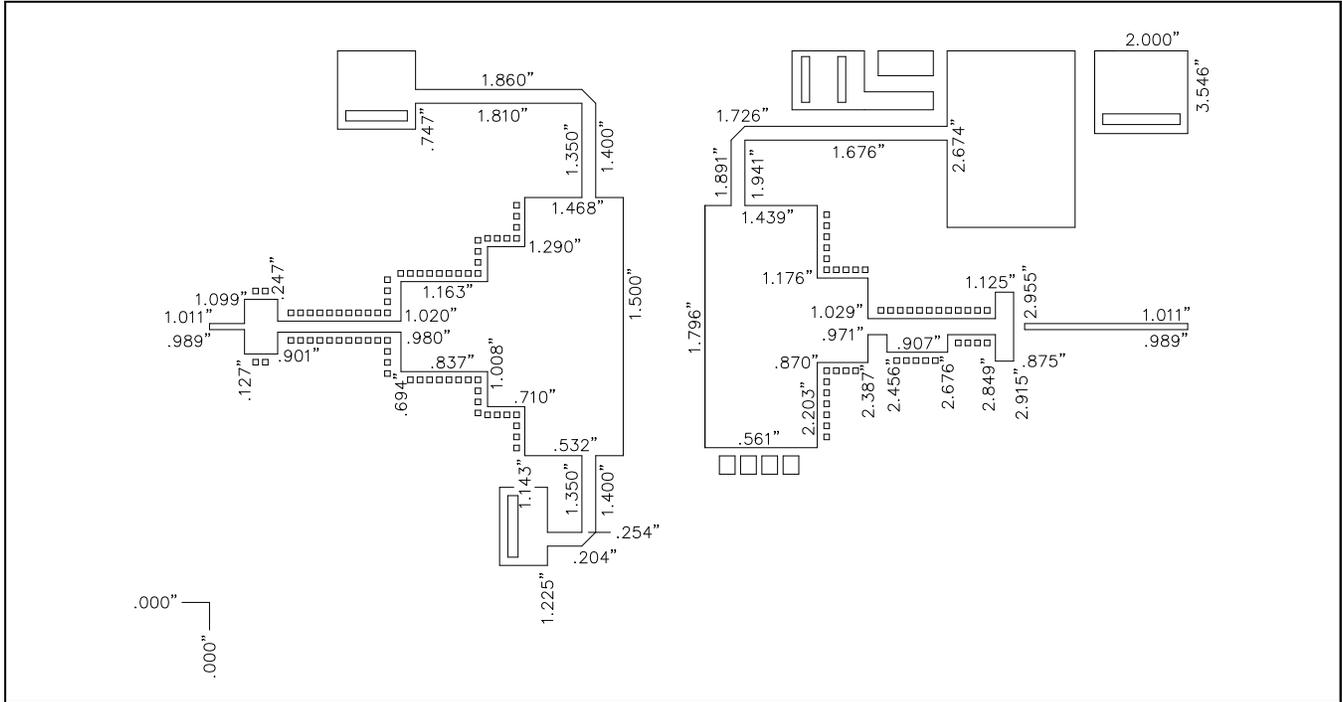
F (MHz)	Z <sub>IF</sub> ( $\Omega$ )	Z <sub>OF</sub> ( $\Omega$ )
960	1.3 - j1.4	1.27 - j1.4
1025	1.3 - j1.1	1.2 - j1.1
1090	1.2 - j0.9	1.3 - j0.9
1150	1.2 - j0.8	1.4 - j0.7
1215	1.0 - j0.8	1.3 - j0.6



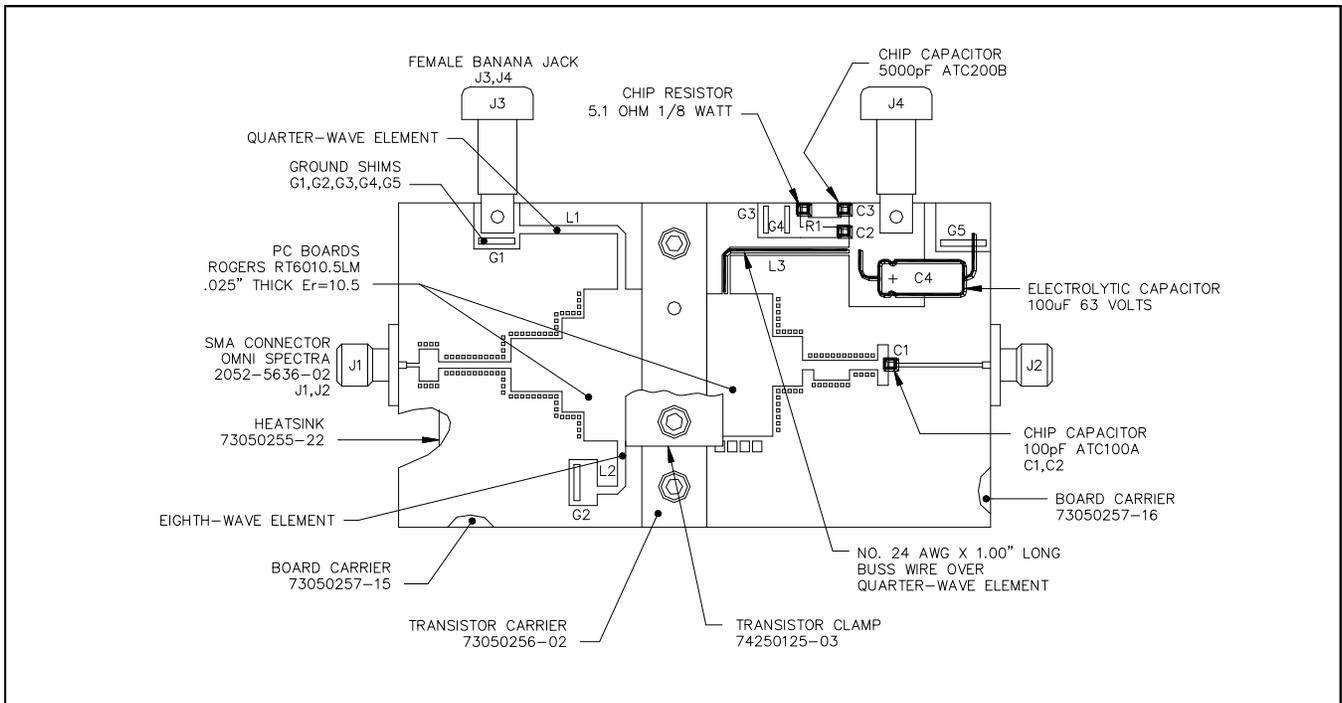
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### Test Fixture Circuit Dimensions



### Test Fixture Assembly



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