

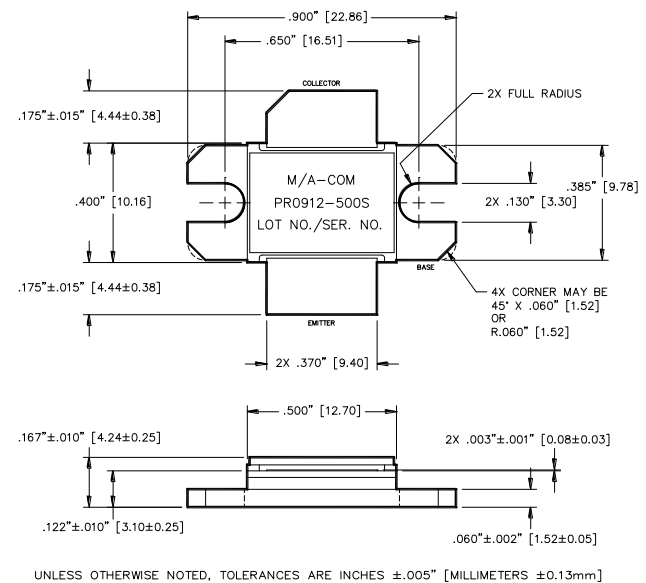
Avionics Pulsed Power Transistor 500 W, 960 - 1215 MHz, 10 μ s Pulse, 10 % Duty

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.

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

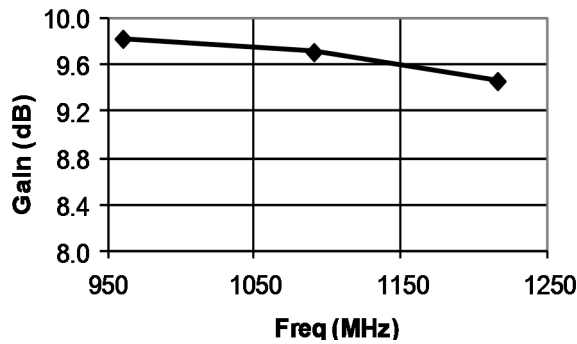
Rev. V1

Typical RF Performance

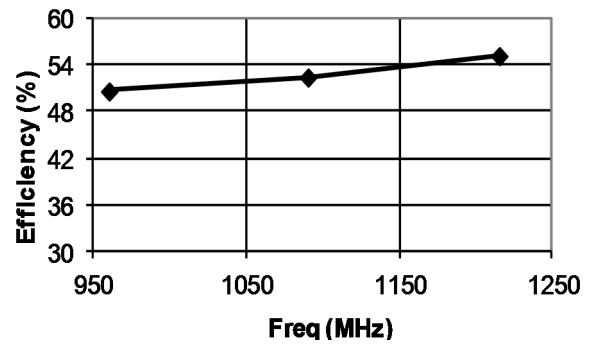
Freq. (MHz)	P _{IN} (W)	P _{OUT} (W)	Gain (dB)	Δ Gain (dB)	I _c (A)	Eff (%)	RL (dB)	VSWR-S (1.5:1)	VSWR-T (10:1)	P1dB Overdrive	
										P _{OUT} (W)	Δ P _O (dB)
960	63	598	9.77	—	23.5	50.9	-17.1	S	P	675	0.52
1090	63	582	9.65	—	21.9	53.1	-21.8	S	—	677	0.66
1215	63	554	9.44	033	19.7	56.1	-16.8	S	—	619	0.48

Note: Δ Po(dB) is the difference between P_{OUT} at 1dB overdrive and P_{OUT} at P_{IN} = 63 W.

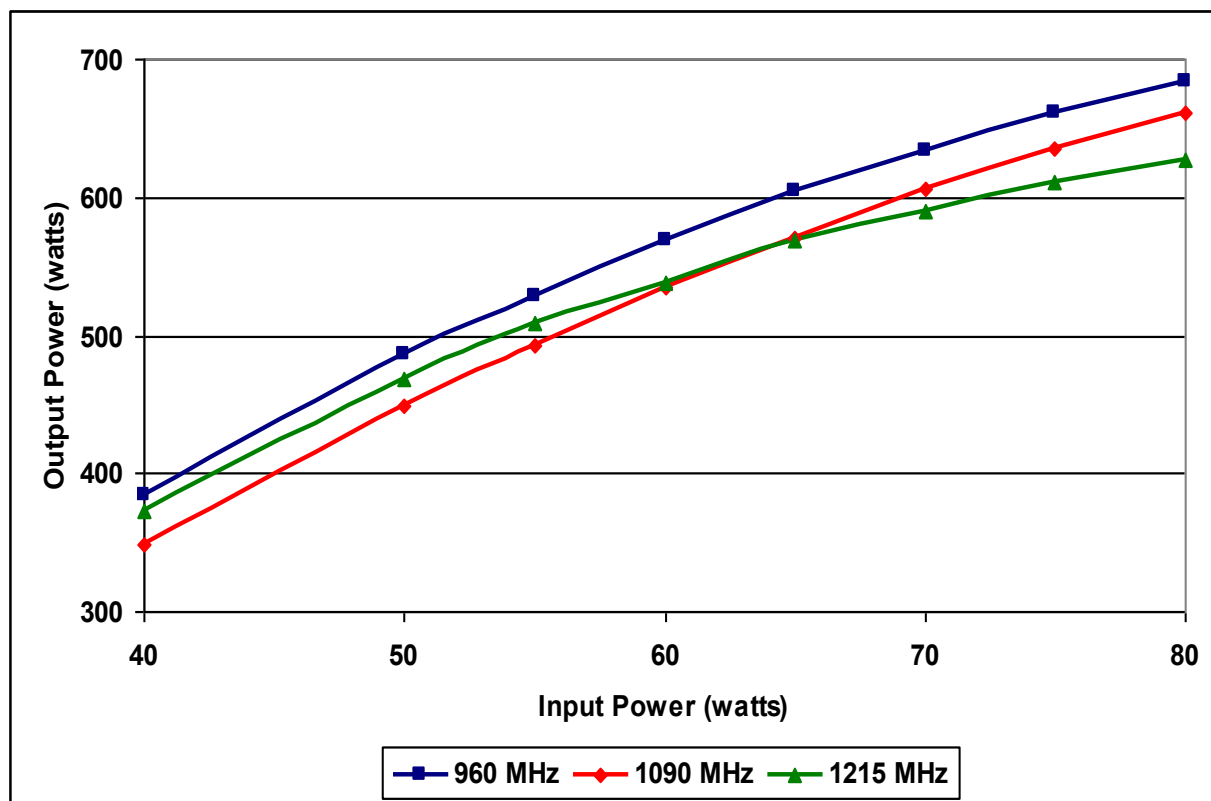
Gain vs. Frequency



Collector Efficiency vs. Frequency

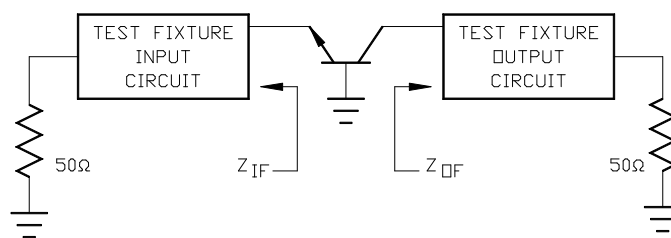


RF Power Transfer Curve (Output Power Vs. Input Power)



Broadband Test Fixture Impedance

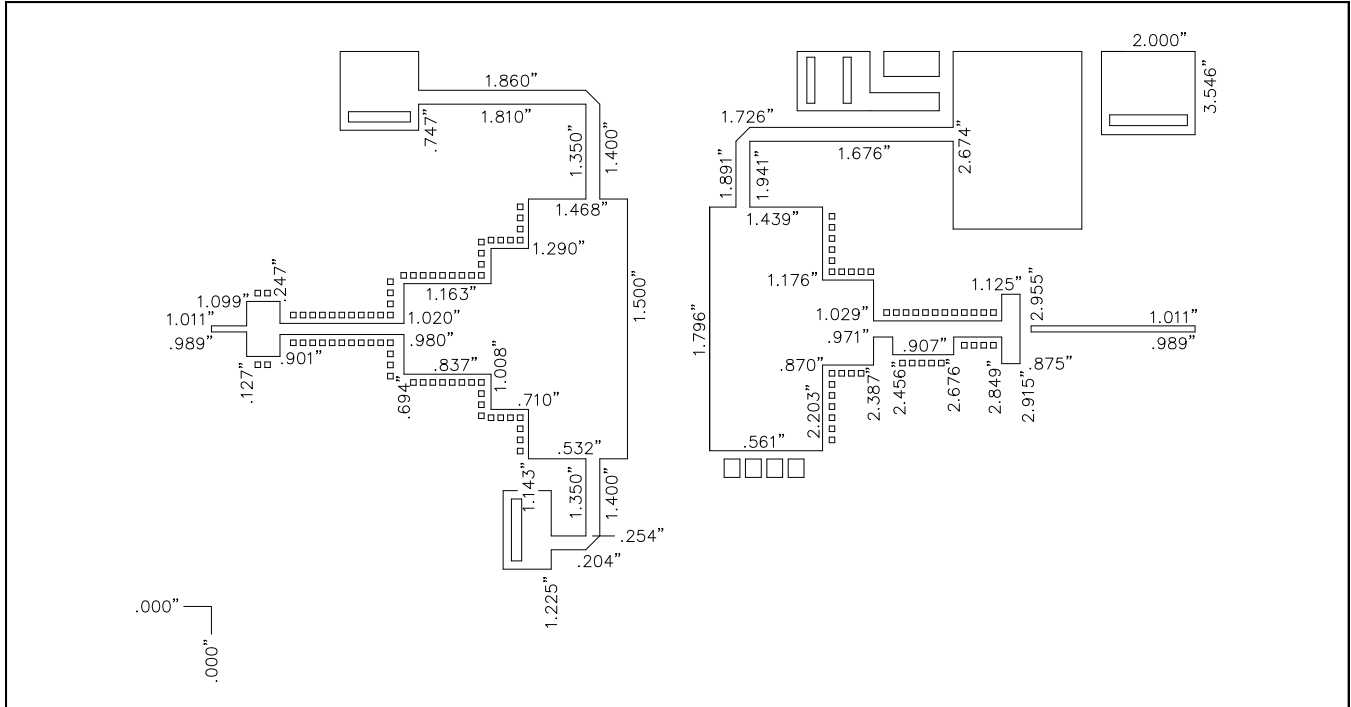
F (MHz)	Z _{IF} (Ω)	Z _{OF} (Ω)
960	1.3 - j1.4	1.27 - j1.4
1025	1.3 - j1.1	1.2 - j1.1
1090	1.2 - j0.9	1.3 - j0.9
1150	1.2 - j0.8	1.4 - j0.7
1215	1.0 - j0.8	1.3 - j0.6



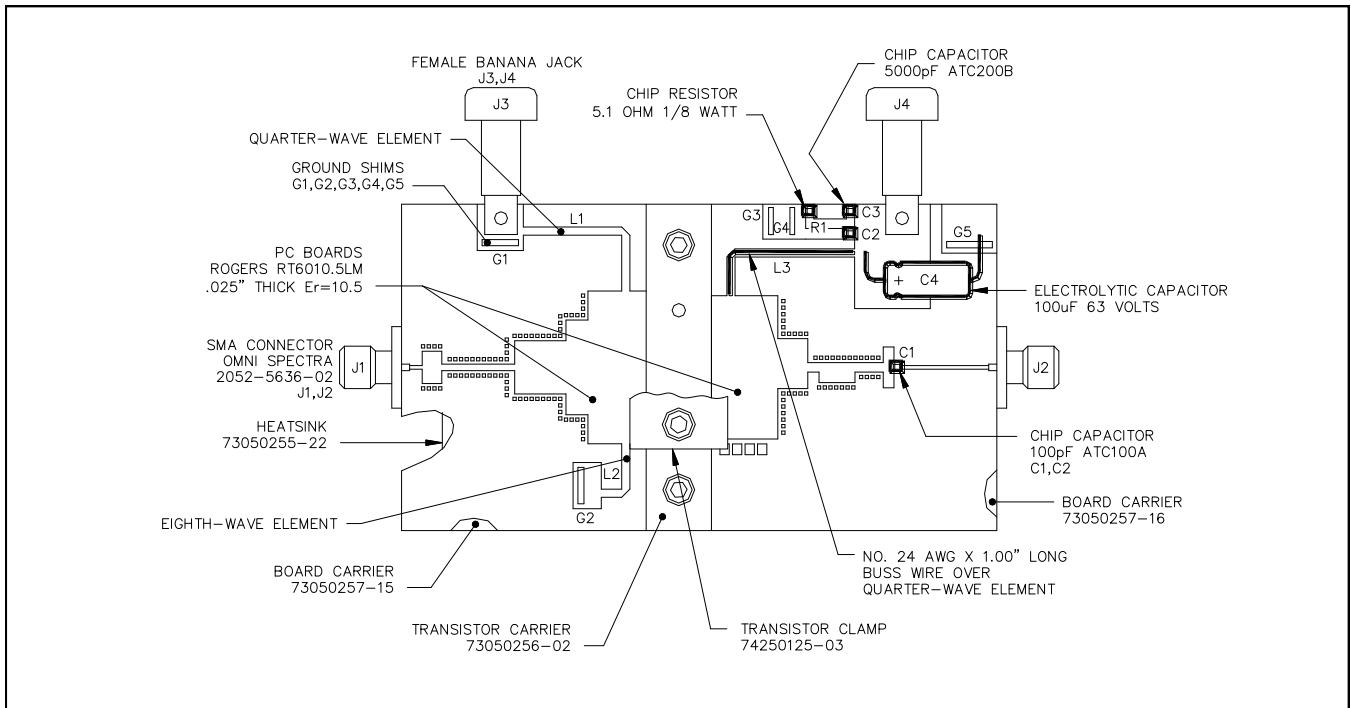
Avionics Pulsed Power Transistor 500 W, 960 - 1215 MHz, 10 μ s Pulse, 10 % Duty

Rev. V1

Test Fixture Circuit Dimensions



Test Fixture Assembly



M/A-COM Technology Solutions Inc. All rights reserved.

Information in this document is provided in connection with M/A-COM Technology Solutions Inc ("MACOM") products. These materials are provided by MACOM as a service to its customers and may be used for informational purposes only. Except as provided in MACOM's Terms and Conditions of Sale for such products or in any separate agreement related to this document, MACOM assumes no liability whatsoever. MACOM assumes no responsibility for errors or omissions in these materials. MACOM may make changes to specifications and product descriptions at any time, without notice. MACOM makes no commitment to update the information and shall have no responsibility whatsoever for conflicts or incompatibilities arising from future changes to its specifications and product descriptions. No license, express or implied, by estoppel or otherwise, to any intellectual property rights is granted by this document.

THESE MATERIALS ARE PROVIDED "AS IS" WITHOUT WARRANTY OF ANY KIND, EITHER EXPRESS OR IMPLIED, RELATING TO SALE AND/OR USE OF MACOM PRODUCTS INCLUDING LIABILITY OR WARRANTIES RELATING TO FITNESS FOR A PARTICULAR PURPOSE, CONSEQUENTIAL OR INCIDENTAL DAMAGES, MERCHANTABILITY, OR INFRINGEMENT OF ANY PATENT, COPYRIGHT OR OTHER INTELLECTUAL PROPERTY RIGHT. MACOM FURTHER DOES NOT WARRANT THE ACCURACY OR COMPLETENESS OF THE INFORMATION, TEXT, GRAPHICS OR OTHER ITEMS CONTAINED WITHIN THESE MATERIALS. MACOM SHALL NOT BE LIABLE FOR ANY SPECIAL, INDIRECT, INCIDENTAL, OR CONSEQUENTIAL DAMAGES, INCLUDING WITHOUT LIMITATION, LOST REVENUES OR LOST PROFITS, WHICH MAY RESULT FROM THE USE OF THESE MATERIALS.

MACOM products are not intended for use in medical, lifesaving or life sustaining applications. MACOM customers using or selling MACOM products for use in such applications do so at their own risk and agree to fully indemnify MACOM for any damages resulting from such improper use or sale.