MAPRST0912-50

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

Rev. V2

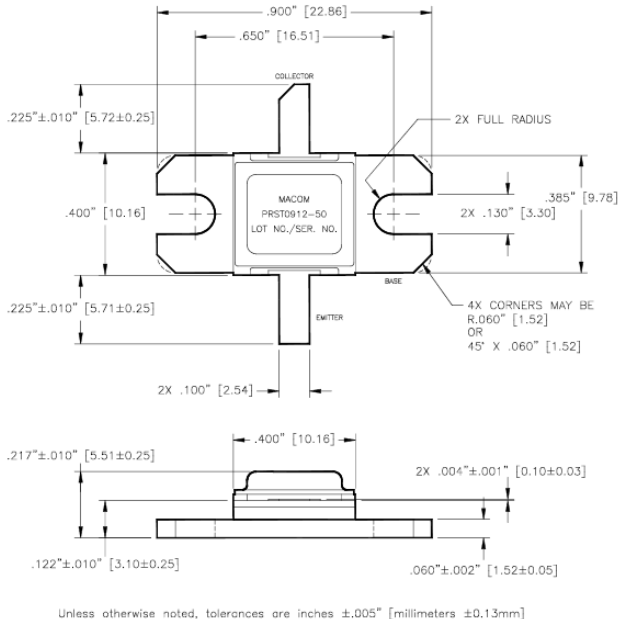
Features

- 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

Description

The MAPRST0912-50 is a RF power transistor. These high power transistors are ideal for avionics, communications, radar, and industrial, scientific, and medical applications.

Outline Drawing



Electrical Specifications: T_A = +25°C ± 5°C, V_{CC} = 50 V, P_{IN} = 6.2 W (unless otherwise noted)

Parameter	Test Conditions	Symbol	Min.	Max.	Units
Collector-Emitter Breakdown Voltage	I_C = 15 mA	BV_{CES}	65	-	V
Collector-Emitter Leakage Current	V_{CE} = 40 V	I_{CES}	-	2.0	mA
Thermal Resistance	F = 960, 1090, 1215 MHz	$R_{TH(JC)}$	-	0.80	°C/W
Output Power	F = 960, 1090, 1215 MHz	P_O	50	-	W
Power Gain	F = 960, 1090, 1215 MHz	G_P	9.1	-	dB
Input Return Loss	F = 960, 1090, 1215 MHz	RL	40	-	dB
Collector Efficiency	F = 960, 1090, 1215 MHz	η_C	-	-9	%
Load Mismatch Stability	F = 960 MHz	VSWR-S	-	10:1	-
Load Mismatch Tolerance	F = 960, 1090, 1215 MHz	VSWR-T	-	1.5:1	-

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

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Typical RF Performance

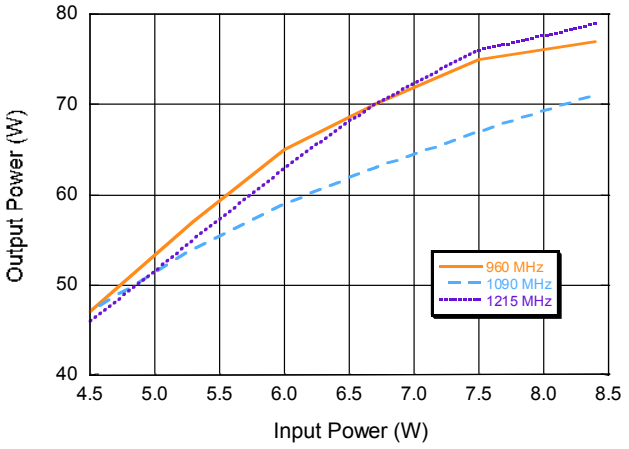
Freq. (MHz)	Pin (W)	Pout (W)	Gain (dB)	ΔGain (dB)	Ic (A)	Eff (%)	RL (dB)	VSWR-S (1.5:1)	VSWR-T (10:1)	P1dB Overdrive	
										Pout (W)	Δ Po
960	6.2	65.9	10.25	-	2.66	49.6	-22.2	S	P	73.4	0.48
1090	6.2	61.9	9.98	-	2.58	48.0	-15.2	S	-	68.7	0.45
1215	6.2	64.6	10.16	0.35	2.50	51.6	-15.9	S	-	74.8	0.63

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

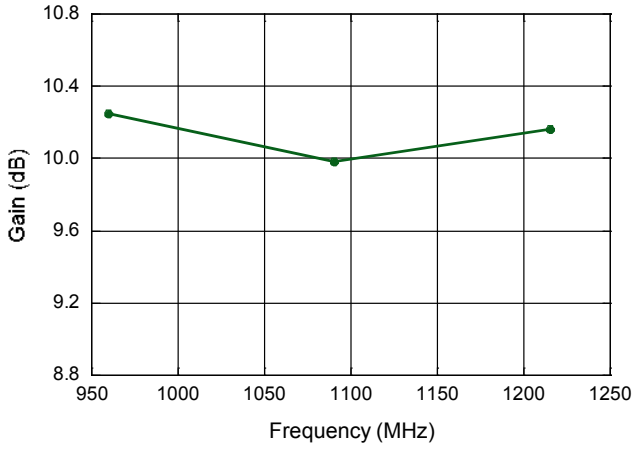
Absolute Maximum Ratings @ +25°C

Parameter	Rating
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°C to +200°C
Junction Temperature (T_J)	200°C

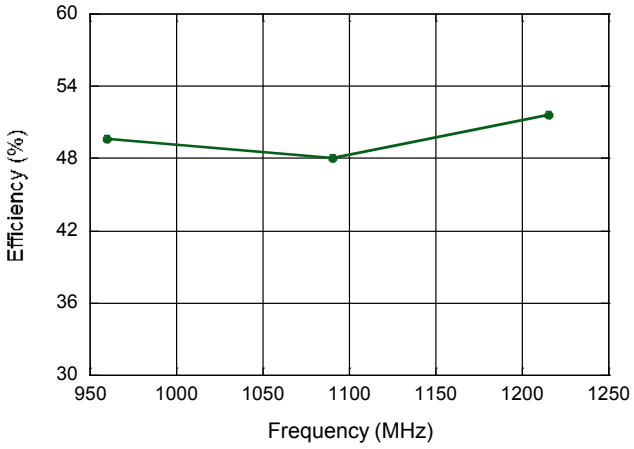
Output Power vs. Input Power



Gain vs. Frequency



Collector Efficiency vs. Frequency



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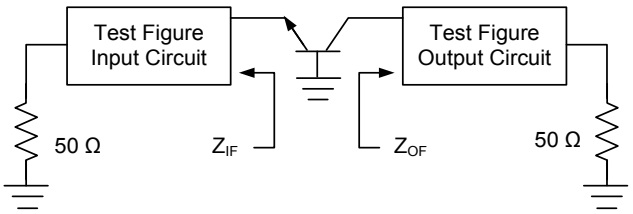
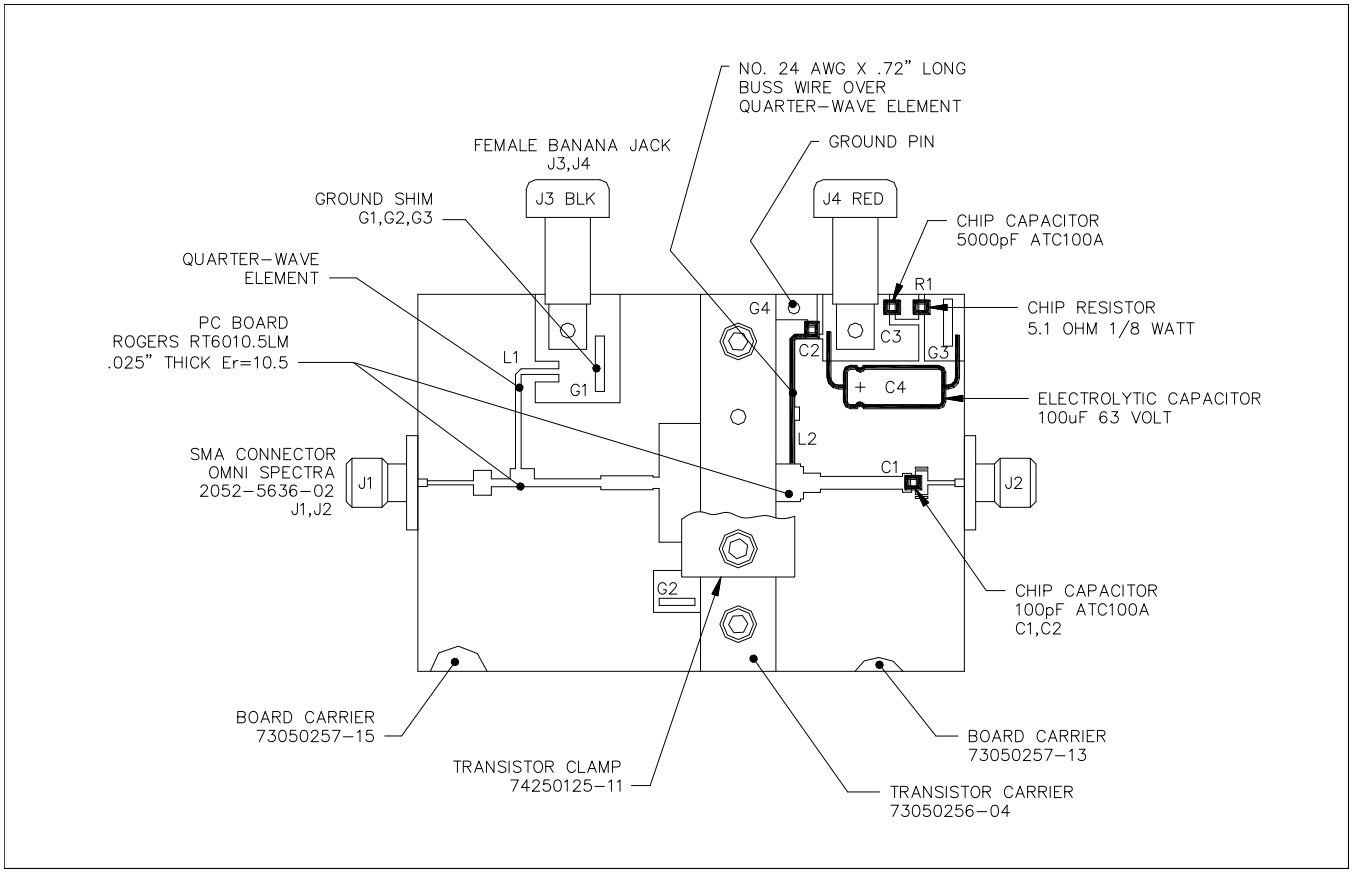
Broadband Test Fixture Impedance

Frequency (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



Test Fixture Assembly



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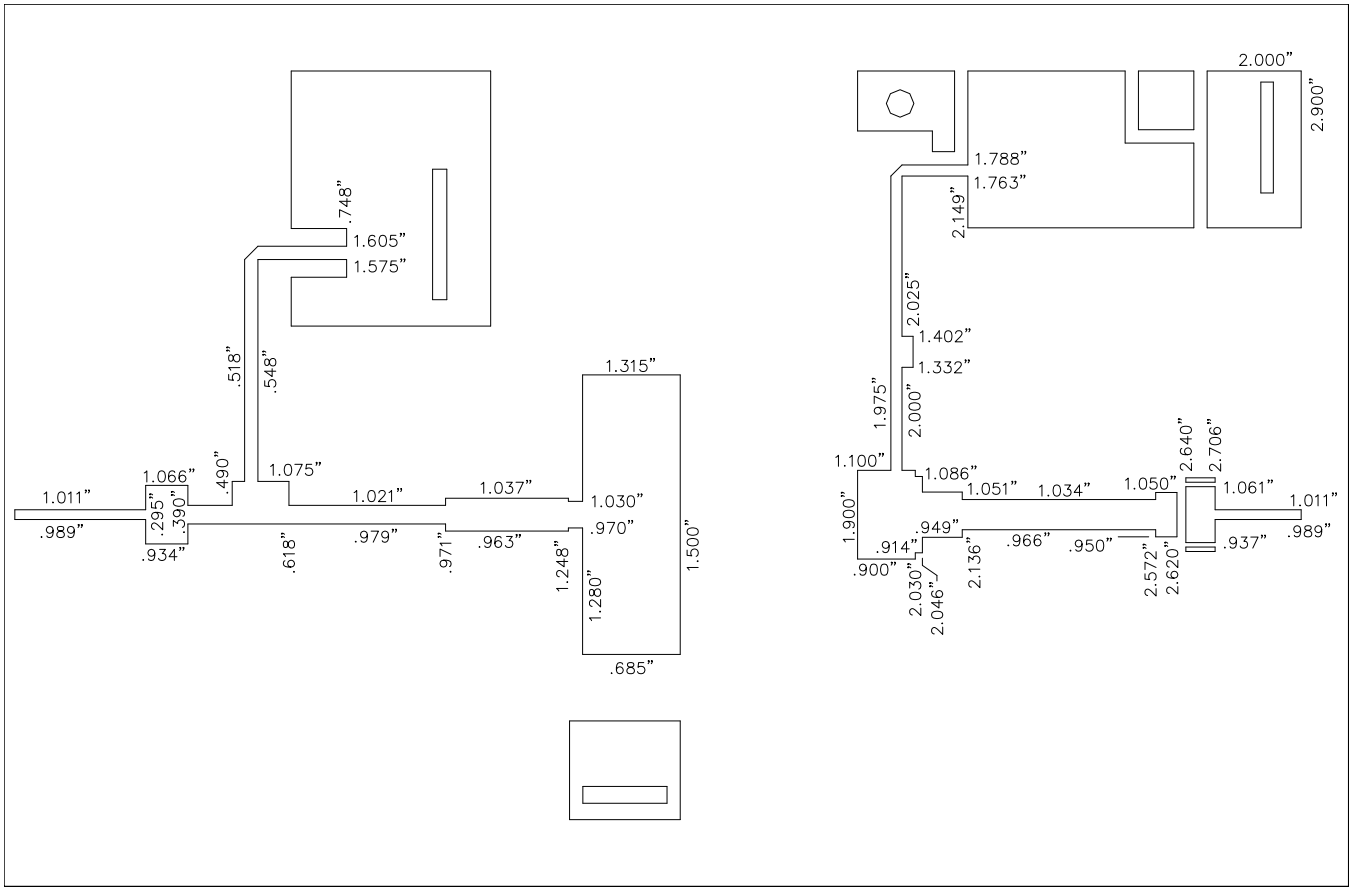
Test Fixture Circuit Dimensions



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