

Avionics Pulsed Power Transistor

350 W, 1025 - 1150 MHz, 10 μ s Pulse, 1% Duty

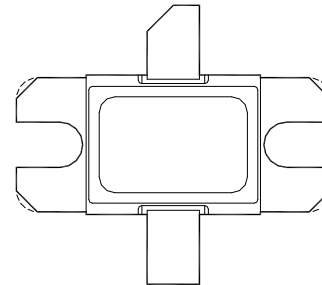


MAPR-001090-350S00

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 & Output Impedance Matching
- Hermetic Metal/Ceramic Package
- RoHS* Compliant



Applications

- Aerospace & Defense
- ISM

Electrical Specifications: Freq. = 1090 MHz, $T_C = 25 \pm 5^\circ\text{C}$ (Room Ambient)

Parameter	Test Conditions	Min.	Max.	Units
Collector-Emitter Breakdown Voltage	$I_C = 250 \text{ mA}$	65	—	V
Collector-Emitter Leakage Current	$V_{CE} = 50 \text{ V}$	—	15	mA
Thermal Resistance	$V_{CC} = 50 \text{ V}, P_{OUT} = 350 \text{ W}$	—	0.16	$^\circ\text{C}/\text{W}$
Input Power	$V_{CC} = 50 \text{ V}, P_{OUT} = 350 \text{ W}$	—	44	W
Power Gain	$V_{CC} = 50 \text{ V}, P_{OUT} = 350 \text{ W}$	9	—	dB
Collector Efficiency	$V_{CC} = 50 \text{ V}, P_{OUT} = 350 \text{ W}$	45	—	%
Input Return Loss	$V_{CC} = 50 \text{ V}, P_{OUT} = 350 \text{ W}$	—	-9	dB
Load Mismatch Tolerance	$V_{CC} = 50 \text{ V}, P_{OUT} = 350 \text{ W}$	—	10:1	—
Load Mismatch Stability	$V_{CC} = 50 \text{ V}, P_{OUT} = 350 \text{ W}$	—	1.5:1	—

Absolute Maximum Ratings @ $+25^\circ\text{C}$

Parameter	Rating
Collector-Emitter Voltage	65 V
Emitter-Base Voltage	3 V
Collector Current (Peak)	25 A
Power Dissipation	1.1 kW
Storage Temperature	-65°C to $+200^\circ\text{C}$
Junction Temperature	$+200^\circ\text{C}$

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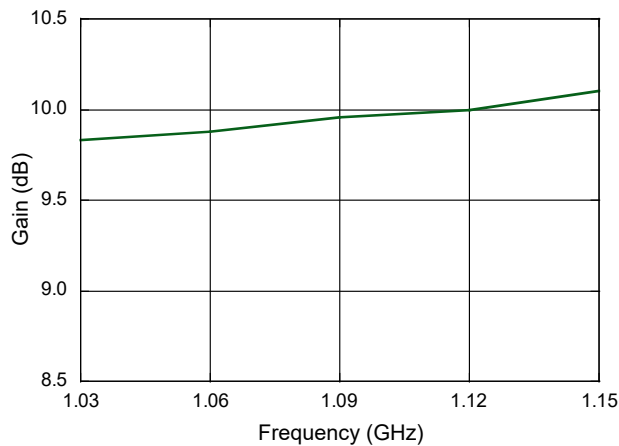
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Typical Broadband RF Performance

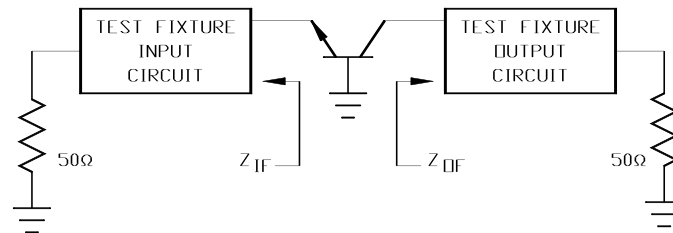
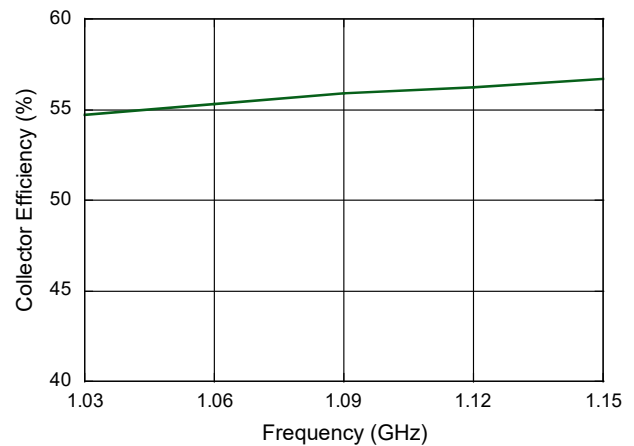
(Provided for information only - 100% Production testing performed at 1090 MHz only)

Freq. (MHz)	P _{IN} (W)	P _{OUT} (W)	Gain (dB)	I _C (A)	E _{FF} (%)	R _L (dB)	VSWR-S (1.5:1)	VSWR-T (10:1)
1025	37	350	9.81	12.8	54.6	-14.8	S	P
1090	35	350	9.96	12.5	55.8	-16.7	S	P
1150	34	350	10.10	12.4	56.6	-26.1	S	P

Gain vs. Frequency



Collector Efficiency vs. Frequency



RF Test Fixture Impedance

F (MHz)	Z _{IF} (Ω)	Z _{OF} (Ω)
960	1.8 - j3.7	2.2 - j2.8
1025	1.8 - j3.2	2.3 - j2.2
1090	1.8 - j2.7	2.4 - j1.7
1150	1.9 - j2.3	2.6 - j1.5
1215	2.0 - j1.9	2.8 - j1.3

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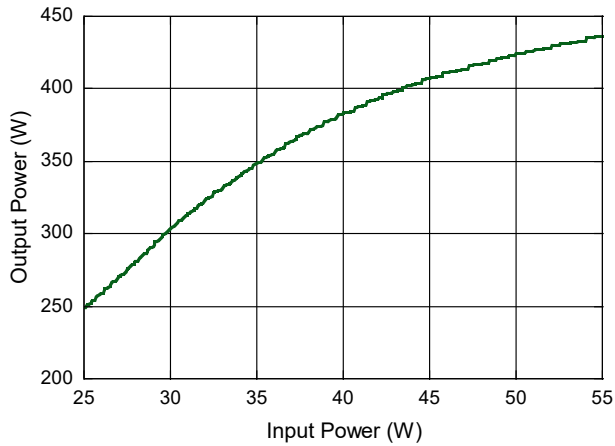


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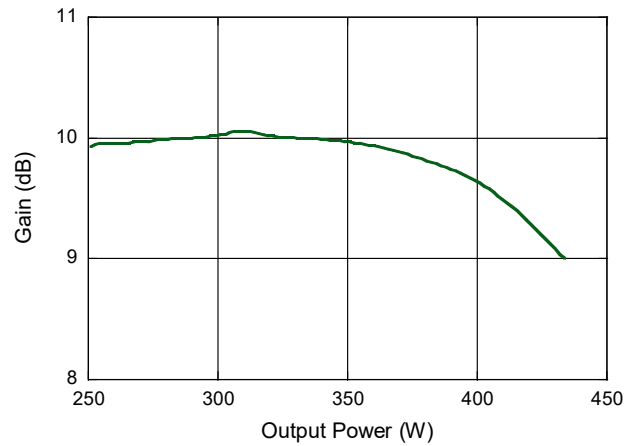
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RF Power Transfer Curves @ 1090 MHz

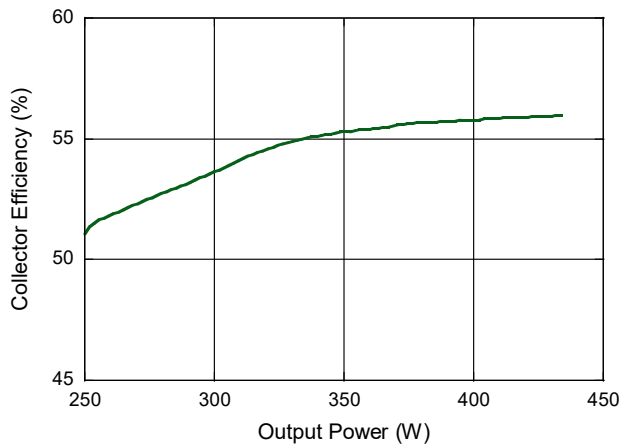
Output Power vs. Input Power



Gain vs. Output Power



Collector Efficiency vs. Output Power



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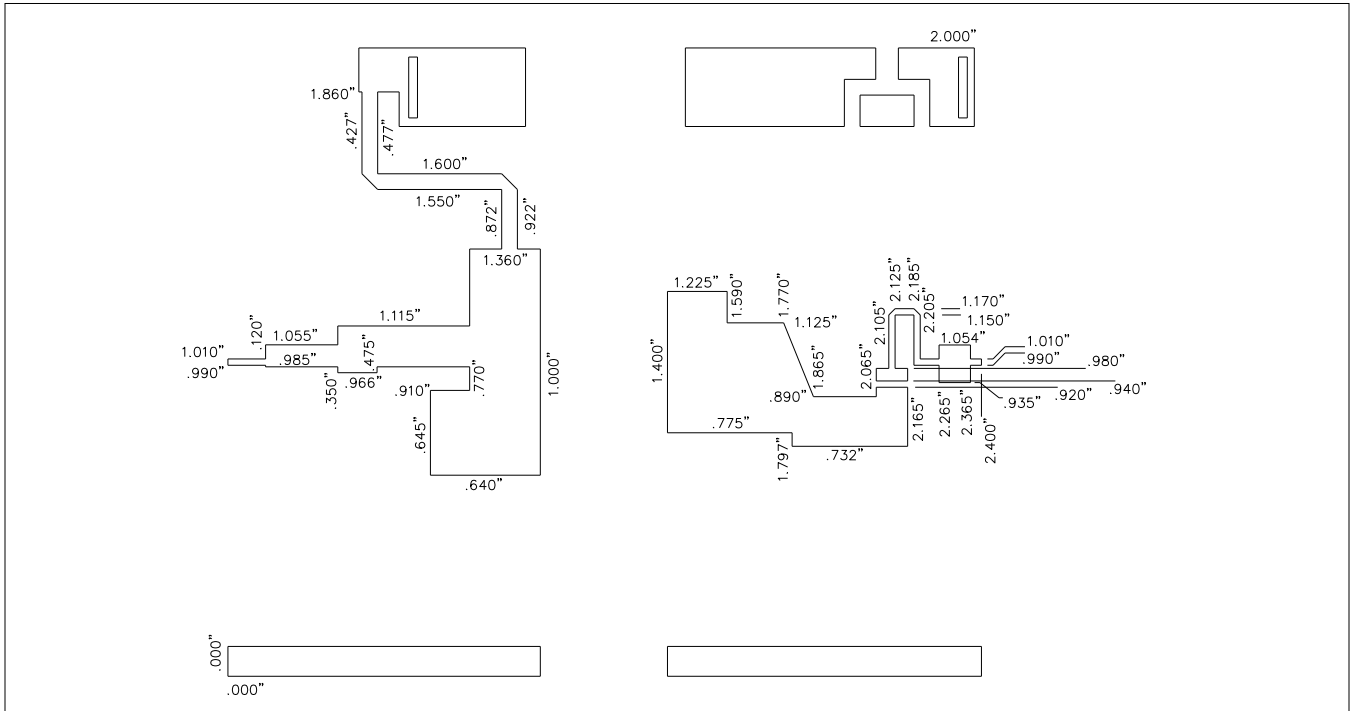
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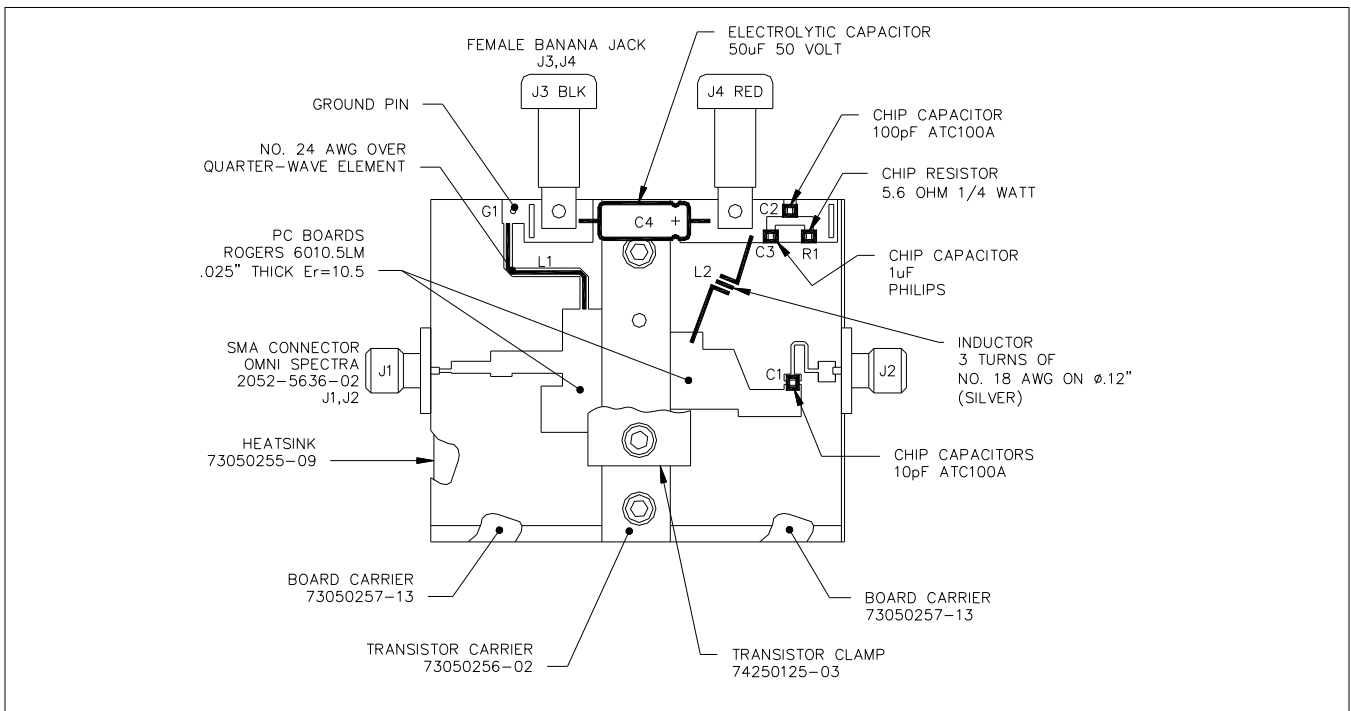
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Test Fixture Circuit Dimensions



Test Fixture Assembly



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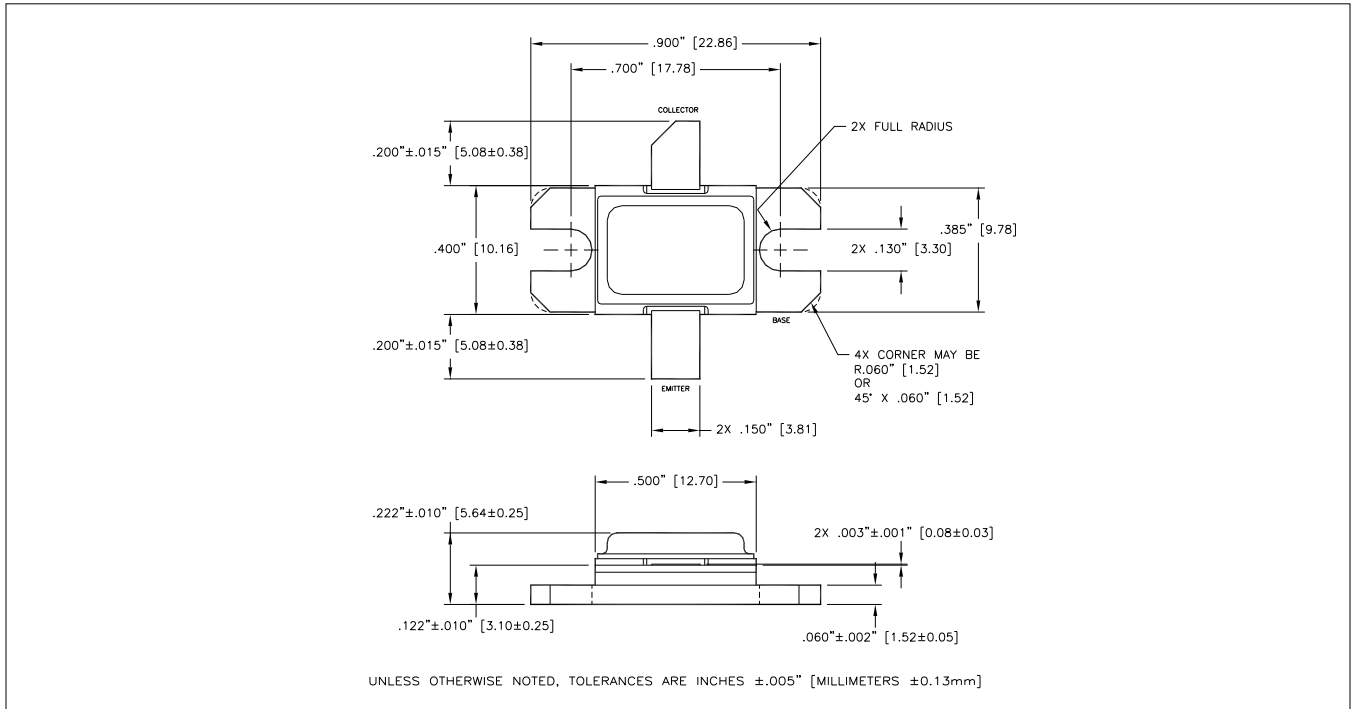
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Outline Drawing



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