

Radar Pulsed Power Transistor

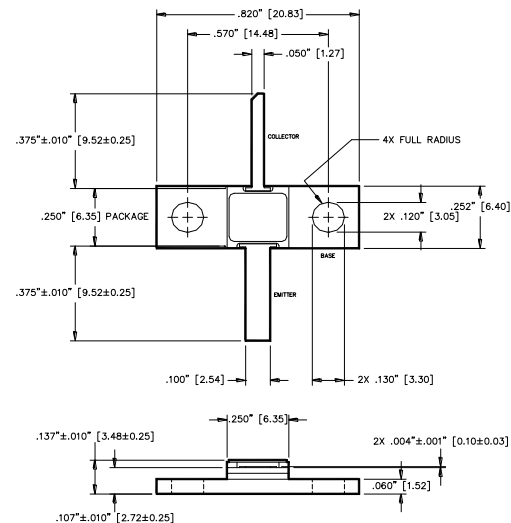
40W, 1.2-1.4 GHz, 150µs Pulse, 10% Duty

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 at 25°C

Parameter	Sym- bol	Rating	Units
Collector-Emitter Volt- age	V_{CES}	70	V
Emitter-Base Voltage	V_{EBO}	3.0	V
Collector Current (Peak)	I_C	3.0	A
Power Dissipation @ +25°C	P_{TOT}	100	W
Storage Temperature	T_{STG}	-65 to +200	°C
Junction Temperature	T_J	200	°C

Electrical Specifications: $T_C = 25 \pm 5^\circ\text{C}$ (Room

Parameter	Test Conditions	Frequency	Symbol	Min	Max	Units
Collector-Emitter Breakdown Voltage	$I_C = 15\text{mA}$		BV_{CES}	70	-	V
Collector-Emitter Leakage Current	$V_{CE} = 40\text{V}$		I_{CES}	-	2.0	mA
Thermal Resistance	$V_{CC} = 40\text{V}$, $P_{out} = 40\text{W}$	$F = 1.2, 1.3, 1.4\text{ GHz}$	$R_{TH(JC)}$	-	1.7	°C/W
Output Power	$V_{CC} = 40\text{V}$, $P_{out} = 40\text{W}$	$F = 1.2, 1.3, 1.4\text{ GHz}$	P_{IN}	-	5.65	W
Power Gain	$V_{CC} = 40\text{V}$, $P_{out} = 40\text{W}$	$F = 1.2, 1.3, 1.4\text{ GHz}$	G_P	8.5	-	dB
Collector Efficiency	$V_{CC} = 40\text{V}$, $P_{out} = 40\text{W}$	$F = 1.2, 1.3, 1.4\text{ GHz}$	η_C	50	-	%
Input Return Loss	$V_{CC} = 40\text{V}$, $P_{out} = 40\text{W}$	$F = 1.2, 1.3, 1.4\text{ GHz}$	RL	-	-6	dB
Load Mismatch Tolerance	$V_{CC} = 40\text{V}$, $P_{out} = 40\text{W}$	$F = 1.2, 1.3, 1.4\text{ GHz}$	VSWR-T	-	3:1	-
Load Mismatch Stability	$V_{CC} = 40\text{V}$, $P_{out} = 40\text{W}$	$F = 1.2, 1.3, 1.4\text{ GHz}$	VSWR-S	-	1.5:1	-

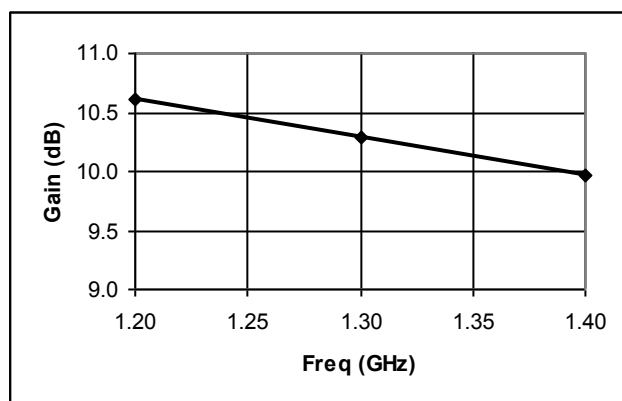
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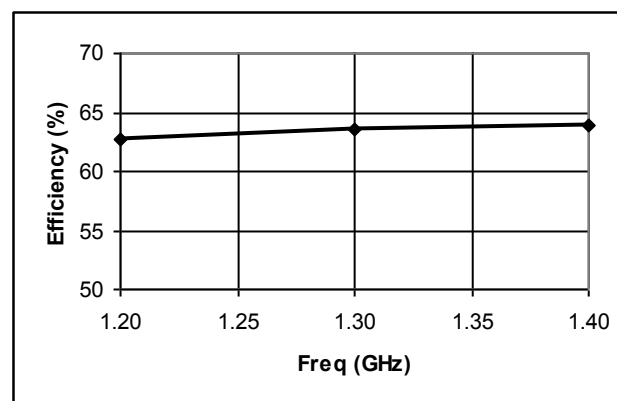
Typical RF Performance

Freq. (GHz)	Pin (W)	Pout (W)	Gain (dB)	Ic (A)	Eff (%)	RL (dB)	VSWR-S (1.5:1)	VSWR-T (3:1)
1.2	3.48	40	10.60	1.60	62.7	-11.0	S	P
1.3	3.75	40	10.28	1.57	63.5	-12.2	S	P
1.4	4.04	40	9.96	1.56	63.9	-12.9	S	P

Gain vs. Frequency

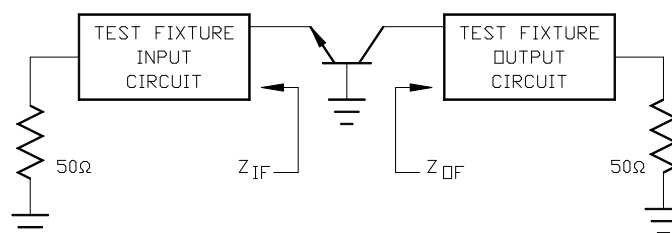


Collector Efficiency vs. Frequency



RF Test Fixture Impedance

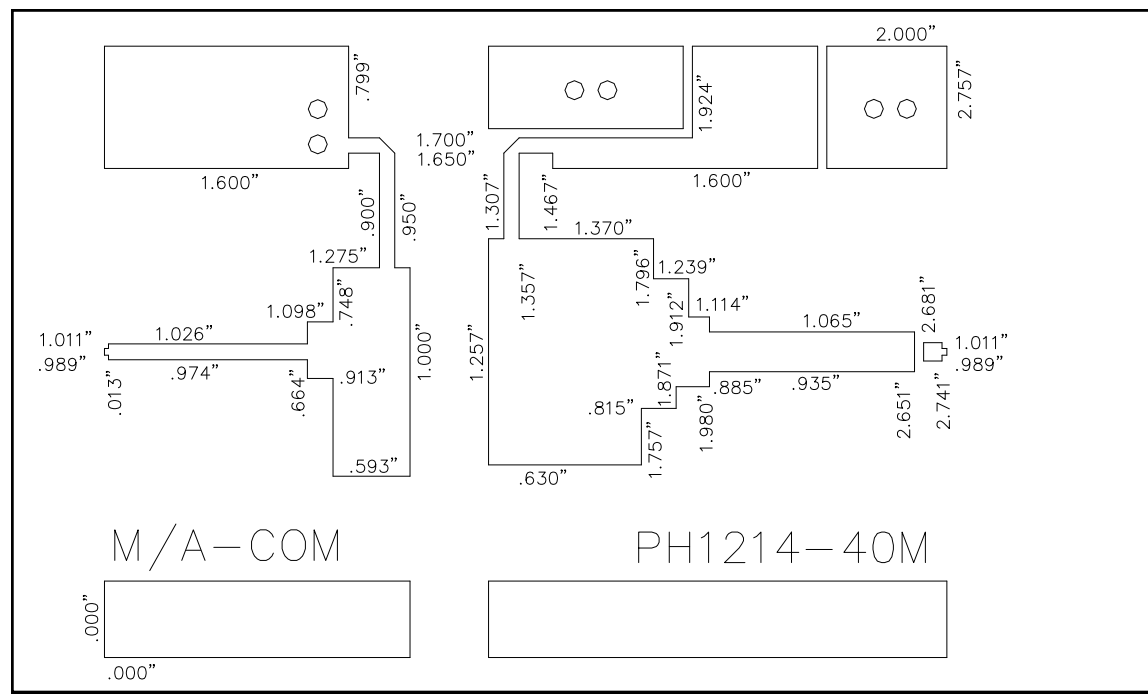
F (GHz)	Z _{IF} (Ω)	Z _{OF} (Ω)
1.2	2.6 - j4.7	2.8 - j0.7
1.3	2.5 - j4.1	3.3 - j0.2
1.4	2.3 - j3.7	3.0 + j0.4



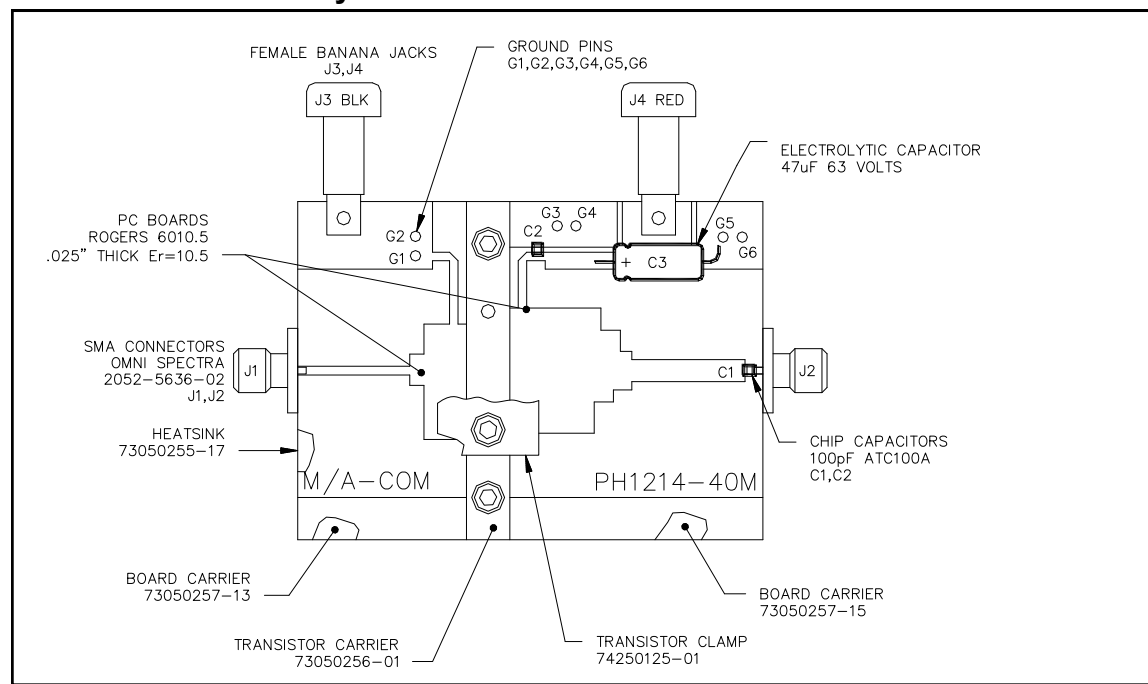
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Rev. V1

Test Fixture Circuit Dimensions



Test Fixture Assembly



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