

MAPRST1214-6UF



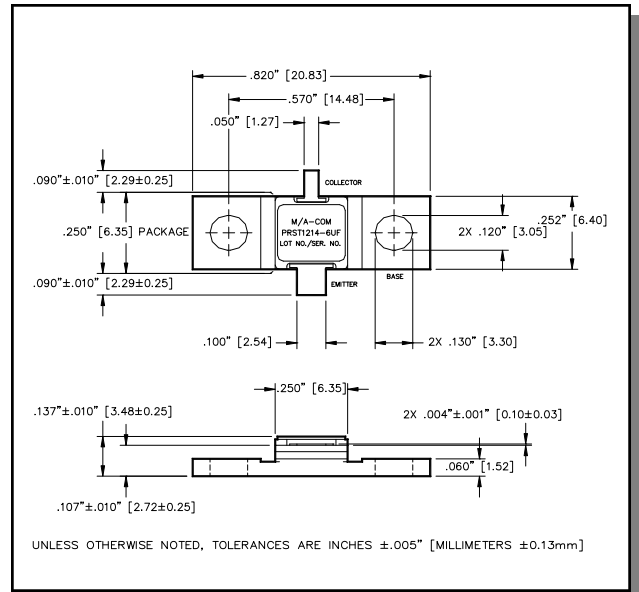
Radar Pulsed Power Transistor
6W, 1.2-1.4 GHz, 6ms Pulse, 25% Duty

M/A-COM Products
Released, 30 May 07

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	Symbol	Rating	Units
Collector-Emitter Voltage	V_{CES}	65	V
Emitter-Base Voltage	V_{EBO}	3.0	V
Collector Current (Peak)	I_C	1.9	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 Ambient)

Parameter	Test Conditions	Frequency	Symbol	Min	Max	Units
Collector-Emitter Breakdown Voltage	$I_C = 10\text{mA}$		BV_{CES}	65	-	V
Collector-Emitter Leakage Current	$V_{CE} = 40\text{V}$		I_{CES}	-	3.0	mA
Thermal Resistance	$V_{CC} = 36\text{V}$, $P_{in} = 0.8\text{W}$	F = 1.2, 1.3, 1.4 GHz	$R_{TH(JC)}$	-	1.8	°C/W
Output Power	$V_{CC} = 36\text{V}$, $P_{in} = 0.8\text{W}$	F = 1.2, 1.3, 1.4 GHz	P_{OUT}	6	-	W
Power Gain	$V_{CC} = 36\text{V}$, $P_{in} = 0.8\text{W}$	F = 1.2, 1.3, 1.4 GHz	G_P	8.75	-	dB
Gain Flatness	$V_{CC} = 36\text{V}$, $P_{in} = 0.8\text{W}$	F = 1.2, 1.3, 1.4 GHz	ΔG	-	0.75	dB
Collector Efficiency	$V_{CC} = 36\text{V}$, $P_{in} = 0.8\text{W}$	F = 1.2, 1.3, 1.4 GHz	η_C	40	-	%
Input Return Loss	$V_{CC} = 36\text{V}$, $P_{in} = 0.8\text{W}$	F = 1.2, 1.3, 1.4 GHz	RL	-	-10	dB
Pulse Droop	$V_{CC} = 36\text{V}$, $P_{in} = 0.8\text{W}$	F = 1.2, 1.3, 1.4 GHz	Droop	-	0.3	dB
Load Mismatch Tolerance	$V_{CC} = 36\text{V}$, $P_{in} = 0.8\text{W}$	F = 1.2, 1.3, 1.4 GHz	VSWR-T	-	3:1	-
Load Mismatch Stability	$V_{CC} = 36\text{V}$, $P_{in} = 0.8\text{W}$	F = 1.2, 1.3, 1.4 GHz	VSWR-S	-	1.5:1	-

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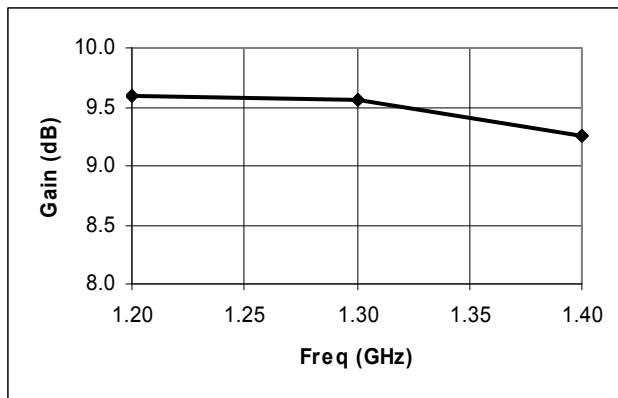
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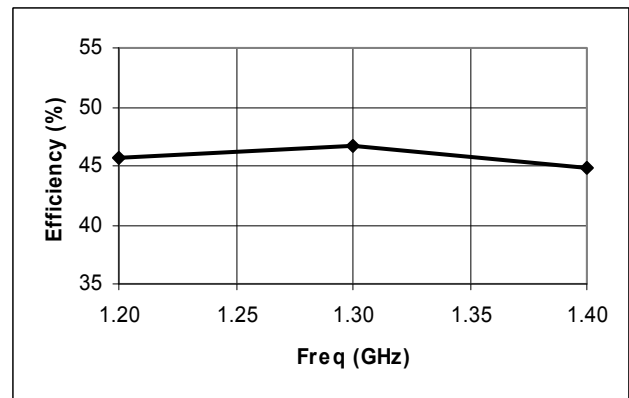
Typical RF Performance

Freq. (GHz)	Pin (W)	Pout (W)	Gain (dB)	Ic (A)	Eff (%)	Droop (dB)	RL (dB)	VSWR-S (1.5:1)	VSWR-T (3:1)
1.2	0.8	7.3	9.59	0.44	45.7	0.10	-14.1	S	P
1.3	0.8	7.2	9.56	0.43	46.6	0.09	-15.2	S	P
1.4	0.8	6.7	9.26	0.42	44.8	0.08	-16.1	S	P

Gain vs. Frequency

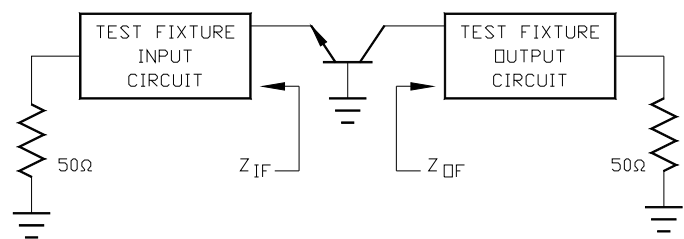


Collector Efficiency vs. Frequency



RF Test Fixture Impedance

F (GHz)	Z _{IF} (Ω)	Z _{OF} (Ω)
1.2	3.7 - j 3.2	16.9 + j18.0
1.3	3.8 - j 3.4	14.2 + j16.4
1.4	3.4 - j 3.7	11.7 + j18.2



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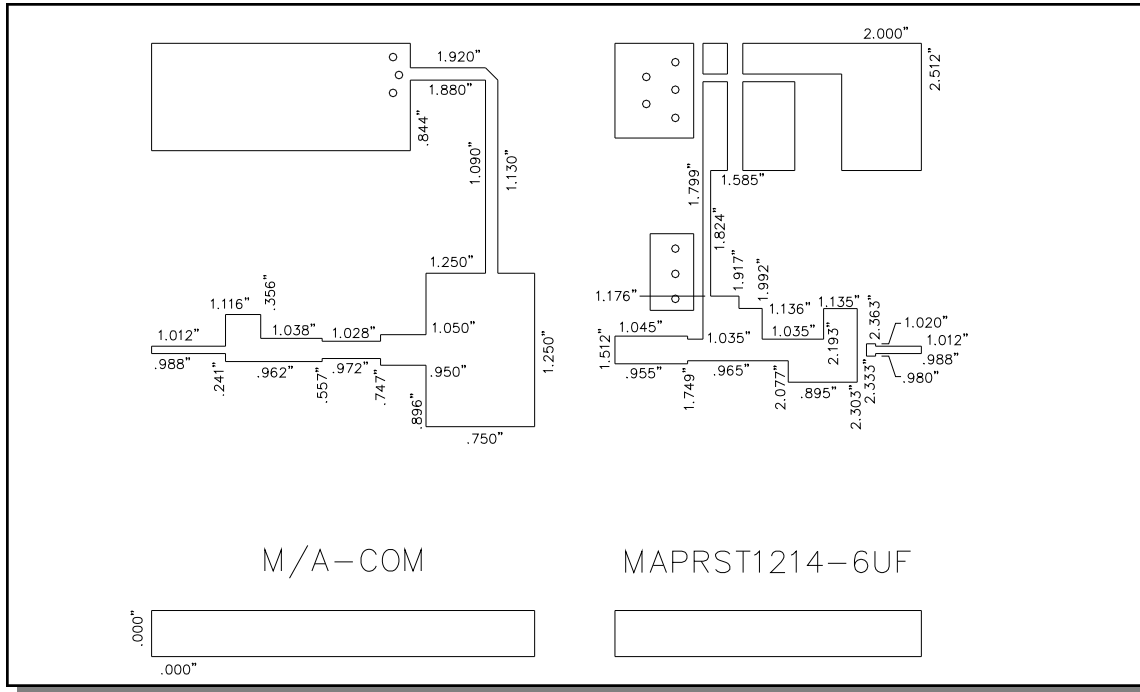
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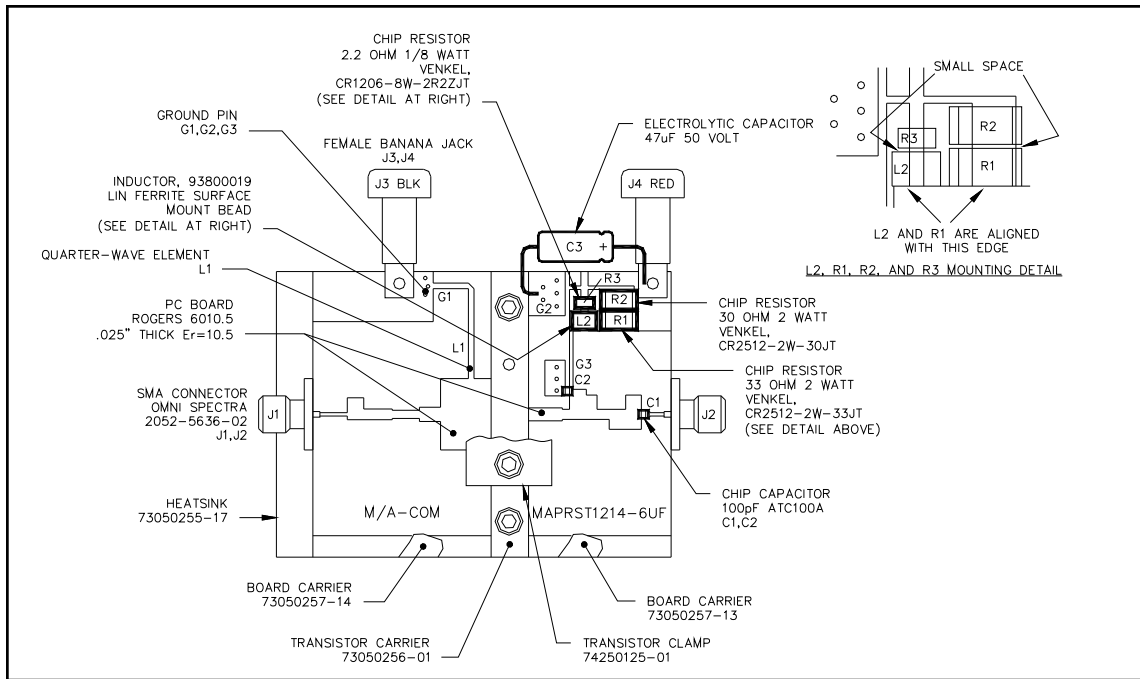
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Test Fixture Circuit Dimensions



Test Fixture Assembly



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