

Rev. V1

- 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

Technical drawing of a 100W 28VDC tube socket, showing top and side views with dimensions in inches and millimeters.

Top View Dimensions:

- Overall width: $.900'' [22.86]$
- Distance from center to side flange: $.650'' [16.51]$
- Distance from center to top flange: $.175'' \pm .015'' [4.45 \pm 0.38]$
- Distance from center to bottom flange: $.175'' \pm .015'' [4.45 \pm 0.38]$
- Distance from center to side flange (inner): $.400'' [10.16]$
- Distance from center to side flange (outer): $.385'' [9.78]$
- Distance from center to side flange (inner): $2X .130'' [3.30]$
- Distance from center to side flange (outer): $2X .370'' [9.40]$
- Distance from center to side flange (inner): $2X \text{ FULL RADIUS}$
- Distance from center to side flange (outer): $4X \text{ CORNERS MAY BE } 45^\circ X .060'' [1.52] \text{ OR } R.060'' [1.52]$

Side View Dimensions:

- Overall height: $.222'' \pm .010'' [5.64 \pm 0.25]$
- Distance from center to side flange: $.500'' [12.70]$
- Distance from center to side flange (inner): $2X .003'' \pm .001'' [0.10 \pm 0.03]$
- Distance from center to side flange (outer): $.122'' \pm .010'' [3.10 \pm 0.25]$
- Distance from center to side flange (outer): $.060'' \pm .002'' [1.52 \pm 0.05]$

Labels:

- COLLECTOR
- BASE
- EMITTER

UNLESS OTHERWISE NOTED, TOLERANCES ARE INCHES $\pm .005''$ [MILLIMETERS $\pm 0.13\text{mm}$]

Parameter	Symbol	Rating	Units
Collector-Emitter Voltage	V_{CES}	70	V
Emitter-Base Voltage	V_{EBO}	3.0	V
Collector Current (Peak)	I_C	21	A
Power Dissipation @ +25°C	P_{TOT}	700	W
Storage Temperature	T_{STG}	-65 to +200	°C
Junction Temperature	T_J	200	°C

Parameter	Test Conditions	Frequency	Symbol	Min	Max	Units
Collector-Emitter Breakdown Voltage	I _C = 100mA		BV _{CES}	70	-	V
Collector-Emitter Leakage Current	V _{CE} = 40V		I _{CES}	-	10	mA
Thermal Resistance	V _{CC} = 40V, P _{in} = 40W	F = 1.2, 1.3, 1.4 GHz	R _{TH(JC)}	-	0.25	°C/W
Output Power	V _{CC} = 40V, P _{in} = 40W	F = 1.2, 1.3, 1.4 GHz	P _{OUT}	220	-	W
Power Gain	V _{CC} = 40V, P _{in} = 40W	F = 1.2, 1.3, 1.4 GHz	G _P	7.4	-	dB
Collector Efficiency	V _{CC} = 40V, P _{in} = 40W	F = 1.2, 1.3, 1.4 GHz	η _C	50	-	%
Input Return Loss	V _{CC} = 40V, P _{in} = 40W	F = 1.2, 1.3, 1.4 GHz	RL	-	-9	dB
Pulse Droop	V _{CC} = 40V, P _{in} = 40W	F = 1.2, 1.3, 1.4 GHz	Droop	-	0.8	dB
Load Mismatch Tolerance	V _{CC} = 40V, P _{in} = 40W	F = 1.2, 1.3, 1.4 GHz	VSWR-T	-	3:1	-
Load Mismatch Stability	V _{CC} = 40V, P _{in} = 40W	F = 1.2, 1.3, 1.4 GHz	VSWR-S	-	1.5:1	-

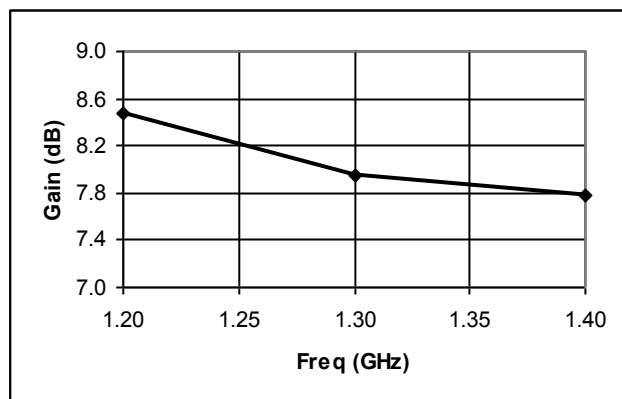
Radar Pulsed Power Transistor 220W, 1.2-1.4 GHz, 150μs Pulse, 10% Duty

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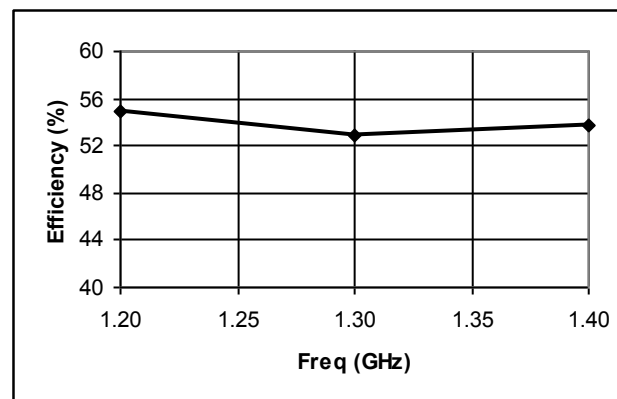
Typical RF Performance

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	40	281	8.47	12.8	54.8	0.34	-16.7	S	P
1.3	40	250	7.95	11.8	53.0	0.22	-16.8	S	P
1.4	40	240	7.78	11.2	53.7	0.24	-15.4	S	P

Gain vs. Frequency

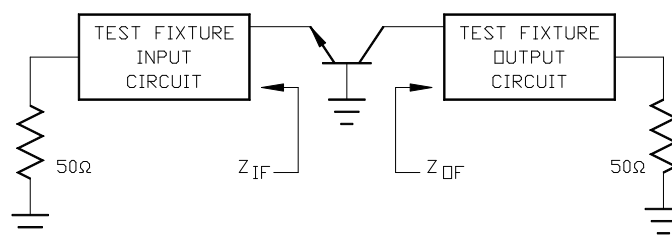


Collector Efficiency vs. Frequency



RF Test Fixture Impedance

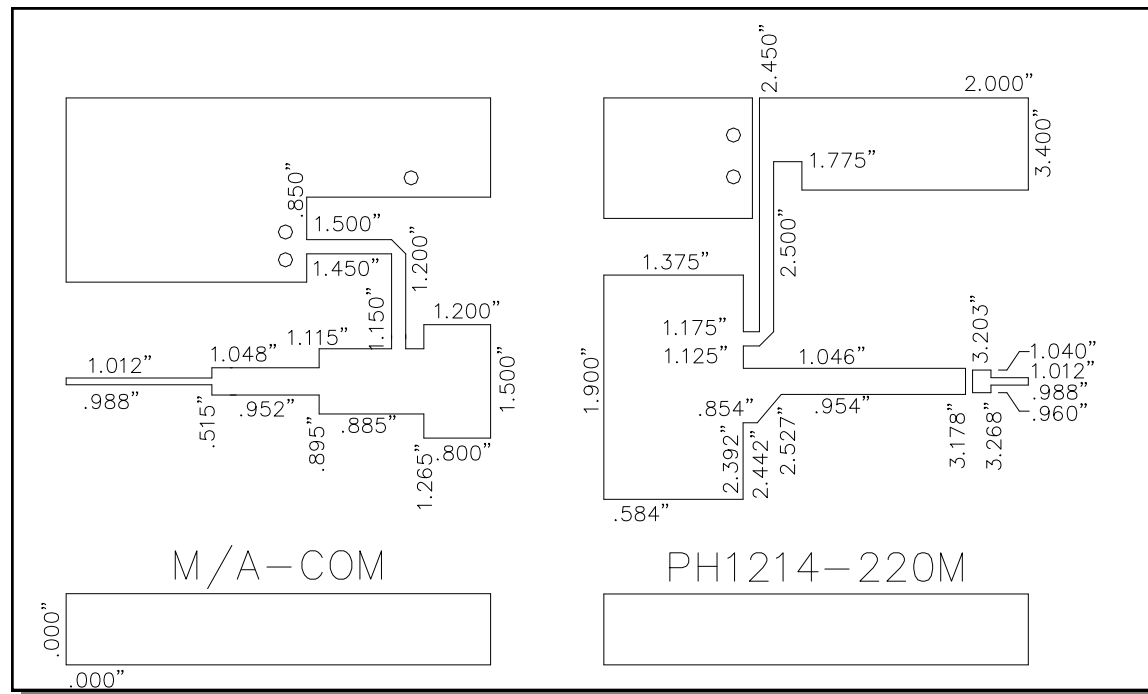
F (GHz)	Z _{IF} (Ω)	Z _{OF} (Ω)
1.2	3.3 - j2.7	2.0 - j1.5
1.3	3.4 - j2.1	1.9 - j1.6
1.4	3.6 - j1.3	1.7 - j1.4



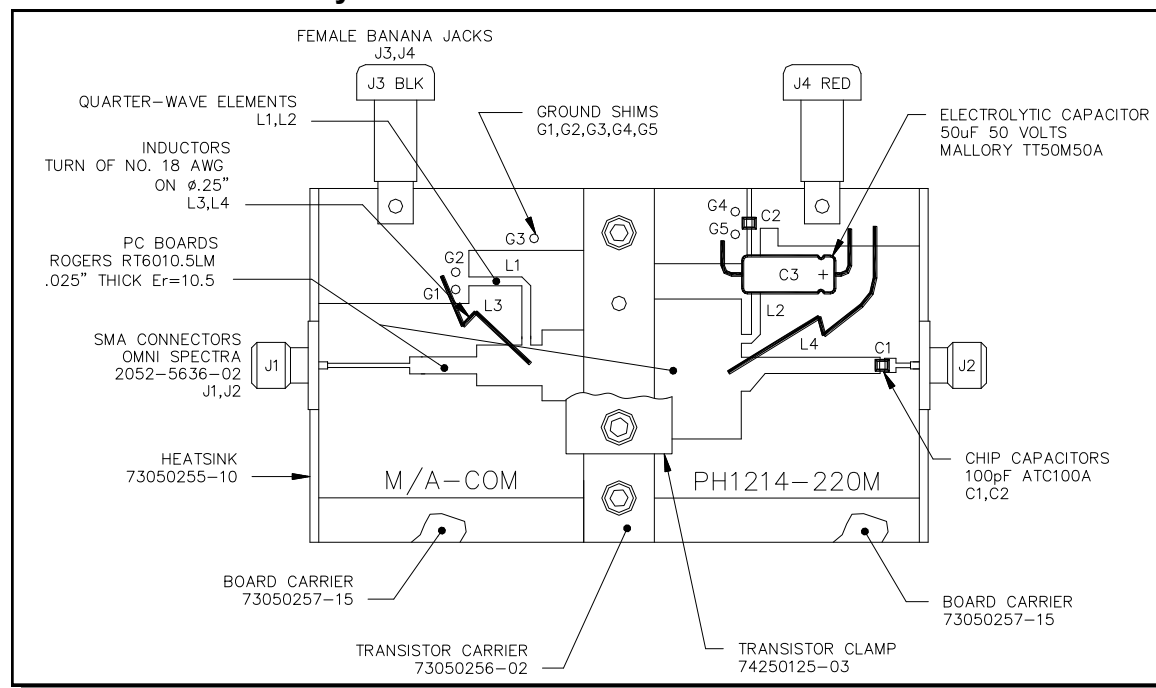
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Test Fixture Circuit Dimensions



Test Fixture Assembly



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