PH1214-220M

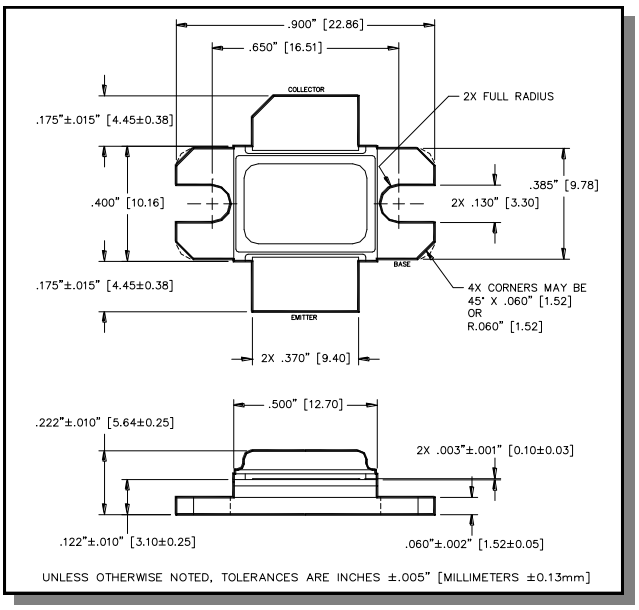
Radar Pulsed Power Transistor
220W, 1.2-1.4 GHz, 150µs Pulse, 10% Duty

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	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

Electrical Specifications: T_C = 25 ± 5°C (Room Ambient)

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	Vcc = 40V, Pin = 40W	F = 1.2, 1.3, 1.4 GHz	$R_{TH(JC)}$	-	0.25	°C/W
Output Power	Vcc = 40V, Pin = 40W	F = 1.2, 1.3, 1.4 GHz	P_{OUT}	220	-	W
Power Gain	Vcc = 40V, Pin = 40W	F = 1.2, 1.3, 1.4 GHz	G_P	7.4	-	dB
Collector Efficiency	Vcc = 40V, Pin = 40W	F = 1.2, 1.3, 1.4 GHz	η_C	50	-	%
Input Return Loss	Vcc = 40V, Pin = 40W	F = 1.2, 1.3, 1.4 GHz	RL	-	-9	dB
Pulse Droop	Vcc = 40V, Pin = 40W	F = 1.2, 1.3, 1.4 GHz	Droop	-	0.8	dB
Load Mismatch Tolerance	Vcc = 40V, Pin = 40W	F = 1.2, 1.3, 1.4 GHz	VSWR-T	-	3:1	-
Load Mismatch Stability	Vcc = 40V, Pin = 40W	F = 1.2, 1.3, 1.4 GHz	VSWR-S	-	1.5:1	-

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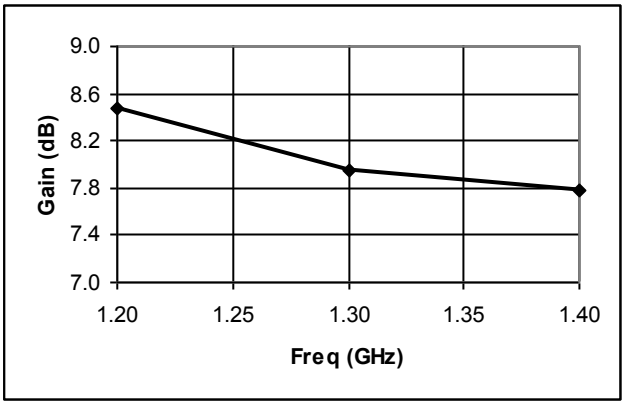
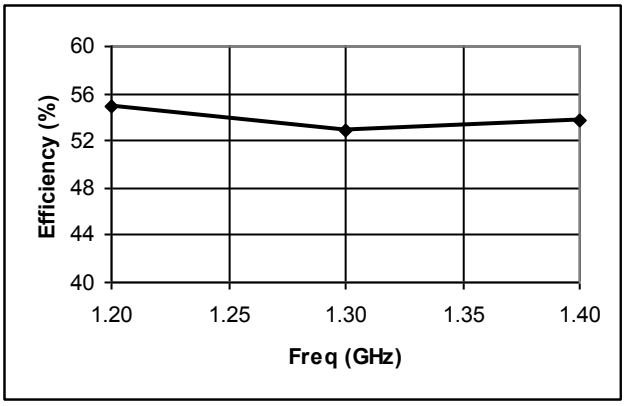
Typical RF Performance

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

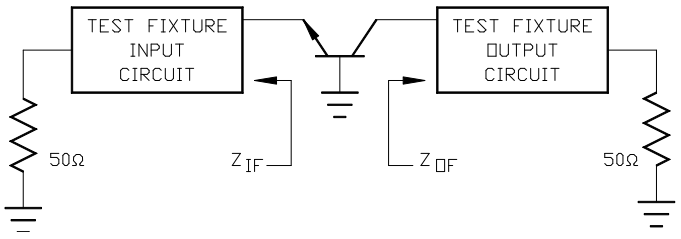


Collector Efficiency vs. Frequency



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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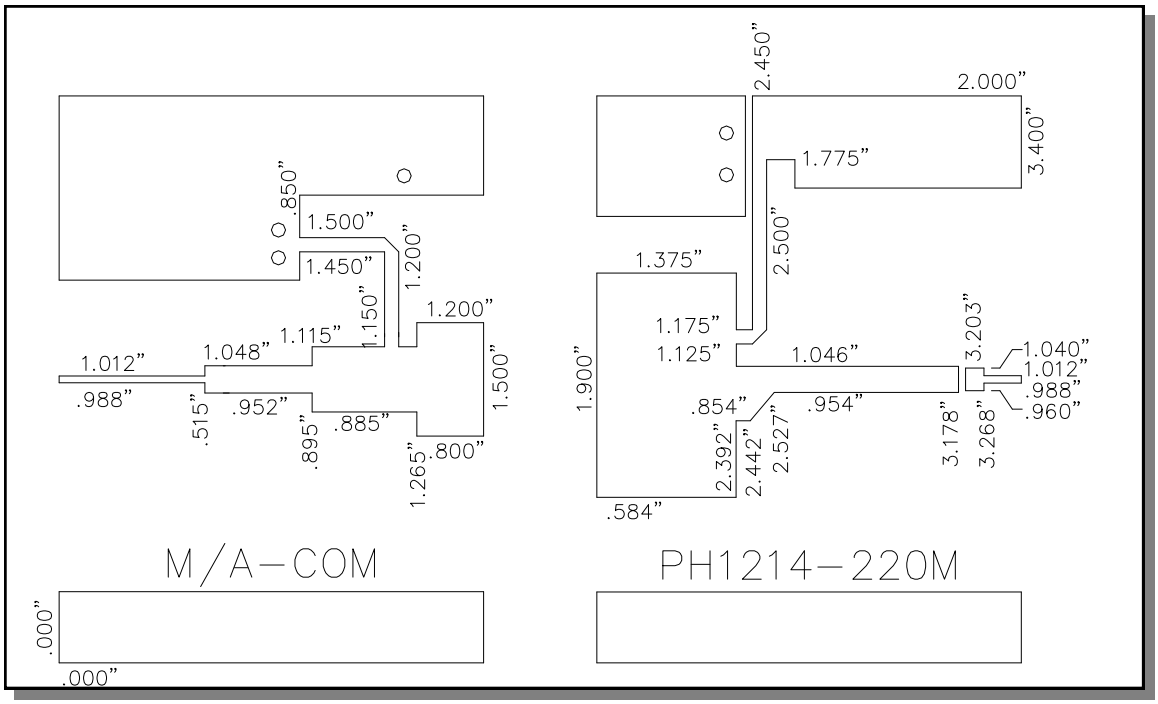
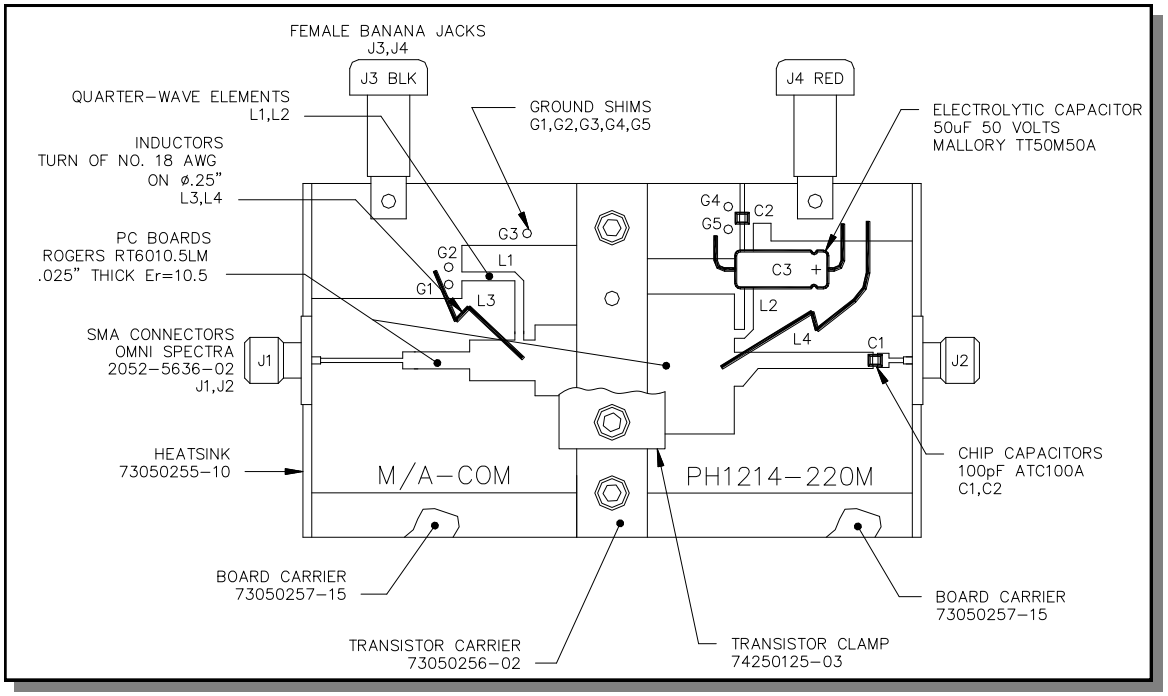
Test Fixture Circuit Dimensions



Test Fixture Assembly



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