MAPR-001214-380M00

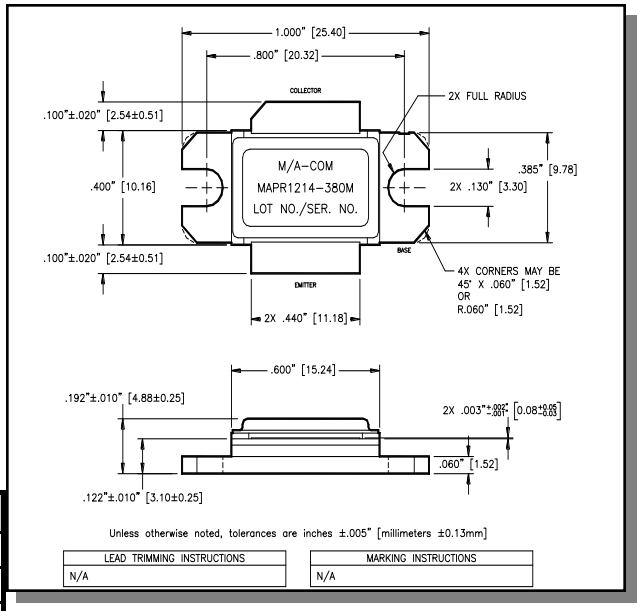
Radar Pulsed Power Transistor
380 WATTS, 1.2-1.4 GHz, 150us Pulse, 10% DUTY

Production
02 Feb 2012

Features

- NPN Silicon Microwave Power Transistors
- Common Base Configuration
- Broadband Class C Operation
- High Efficiency Interdigitated 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}	88	V
Emitter-Base Voltage	V_{EBO}	3.0	V
Collector Current (Peak)	I_C	23.9	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 = 10mA		BV_{CES}	90	-	V
Collector-Emitter Leakage Current	V_{CE} = 44V		I_{CES}	-	10	mA
Thermal Resistance	Vcc = 44V, Pin = 50W	F = 1.2, 1.3, 1.4 GHz	$R_{TH(JC)}$	-	0.25	°C/W
Output Power	Vcc = 44V, Pin = 50W	F = 1.2, 1.3, 1.4 GHz	P_O	380	-	W
Power Gain	Vcc = 44V, Pin = 50W	F = 1.2, 1.3, 1.4 GHz	G_P	8.8	-	dB
Gain Flatness	Vcc = 44V, Pin = 50W	F = 1.2, 1.3, 1.4 GHz	ΔG_P		1	dB
Droop	Vcc = 44V, Pin = 50W	F = 1.2, 1.3, 1.4 GHz	Droop	-	0.6	dB
Collector Efficiency	Vcc = 44V, Pin = 50W	F = 1.2, 1.3, 1.4 GHz	η_C	45	-	%
Input Return Loss	Vcc = 44V, Pin = 50W	F = 1.2, 1.3, 1.4 GHz	RL	-	-9	dB
Load Mismatch Tolerance	Vcc = 44V, Pin = 50W	F = 1.2, 1.3, 1.4 GHz	VSWR-T	-	2:1	-
Load Mismatch Stability	Vcc = 44V, Pin = 50W	F = 1.2, 1.3, 1.4 GHz	VSWR-S	-	1.5:1	-

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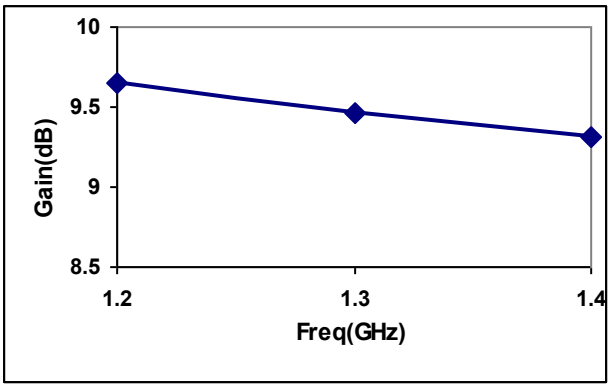
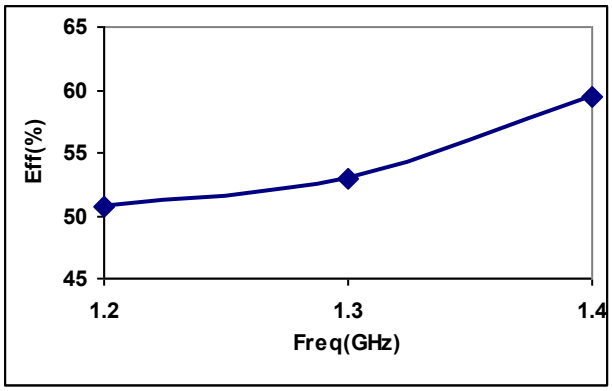
Typical RF Performance

Freq. (GHz)	Pin (W)	Pout (W)	Gain (dB)	ΔGain (dB)	Eff (%)	RL (dB)	Droop (dB)	VSWR-S 1.5:1	VSWR-T 2:01
1.2	50	458.5	9.65		50.75	-23.6	0.15	S	P
1.3	50	436.8	9.46		52.88	-16.8	-0.02	S	P
1.4	50	421.3	9.31	0.34	59.52	-15.2	-0.01	S	P

Gain vs. Frequency



Collector Efficiency vs. Frequency



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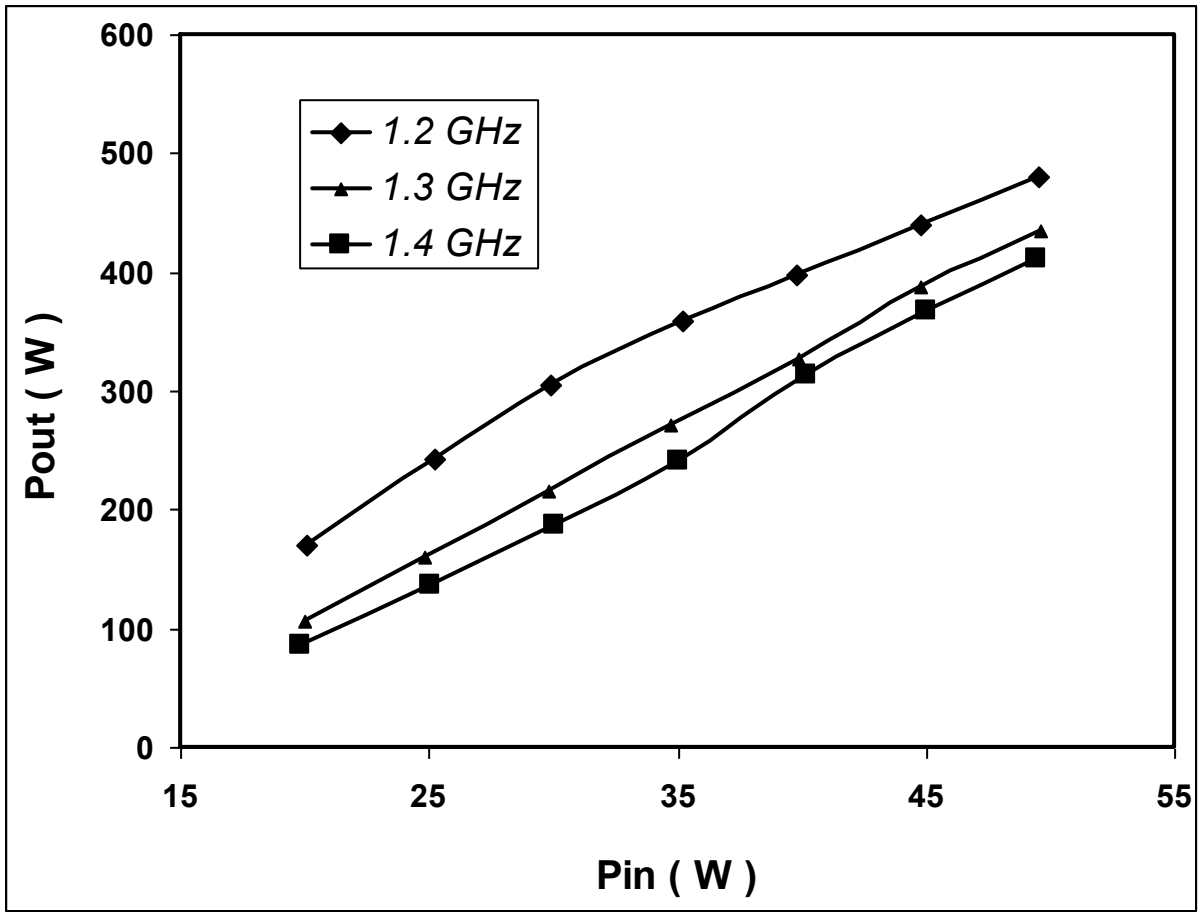
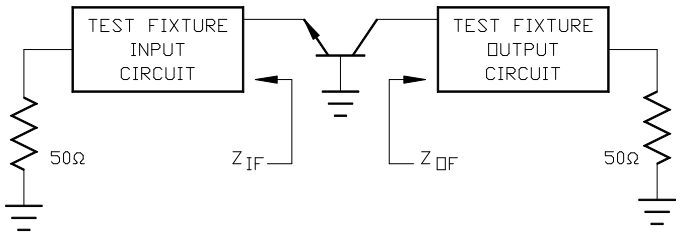
RF Power Transfer Curve
(Output Power Vs. Input Power)



Broadband Test Fixture Impedance

F (MHz)	Z_{IF} (Ω)	Z_{OF} (Ω)
1200	1.3 - j1.89	1.08 - j1.83
1300	1.43 - j1.28	1.08 - j1.24
1400	1.51 - j0.73	1.1 - j0.75



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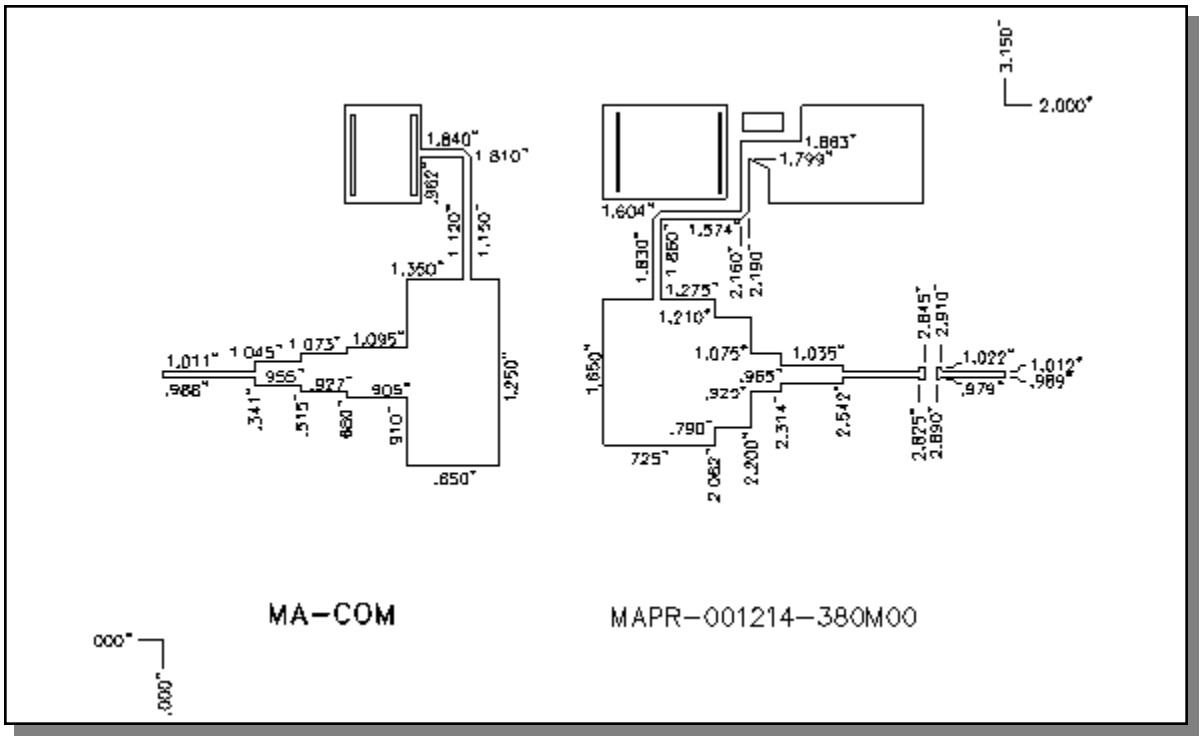
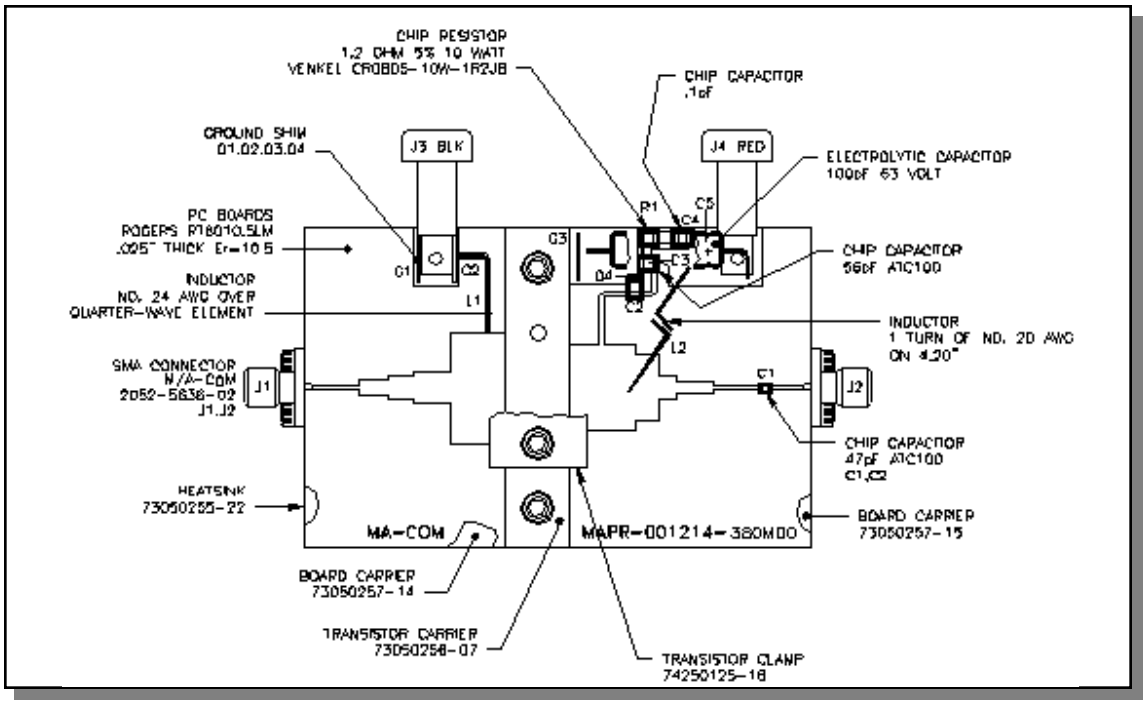
Test Fixture Circuit Dimensions



Test Fixture Assembly



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