

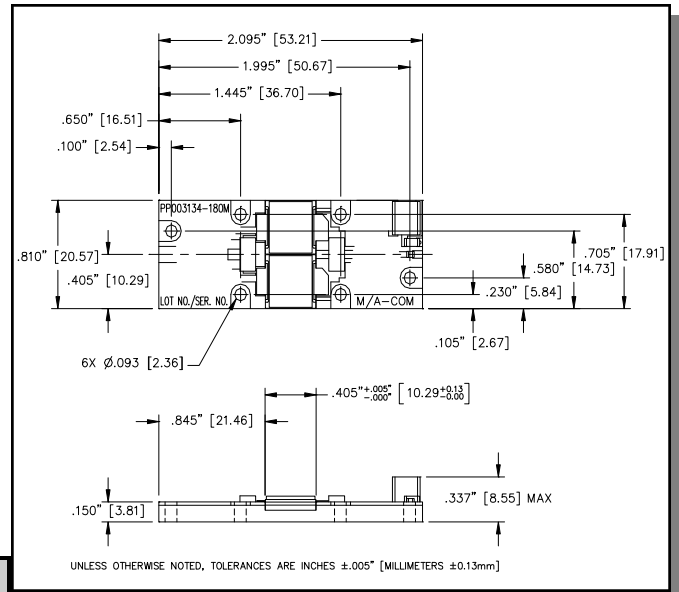
RADAR PULSED POWER MODULE
180 WATTS, 3.1-3.4 GHz, 150uS PULSE, 10% DUTY

M/A-COM Preliminary
02 July 08

Features

- Dual NPN Silicon class C power Transistors
- Input and Output Matched to 50 Ω
- Soft Substrate $\epsilon_R = 10.5$ Circuit Board
- Nickle Plated Copper Flange
- Includes RC bias circuit.

Outline Drawing



Absolute Maximum Ratings at 25°C

Parameter	Symbol	Rating	Units
Junction Temperature	T_J	200	°C
Thermal Resistance @ 50°C	θ_{JC}	0.4	°C/W
Power Dissipation Total @ 25°C	P_D	437	W
Operating Case Temperature**	T_C	-40 to +100	°C
Storage Temperature	T_{STG}	-40 to +125	°C

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

Parameter	Test Conditions	Frequency	Symbol	Min	Typ	Max	Units
Pin	$V_{CC}=36V$, $P_{out}=180W_{pk}$	F=3.1, 3.2, 3.3, 3.4GHz	Pin	-	-	33.7	Wpk
Power Gain	$V_{CC}=36V$, $P_{out}=180W_{pk}$	F=3.1, 3.2, 3.3, 3.4GHz	G_p	7.5	-	-	dB
Collector Efficiency	$V_{CC}=36V$, $P_{out}=180W_{pk}$	F=3.1, 3.2, 3.3, 3.4GHz	η_c	35	-	-	%
Input Return Loss	$V_{CC}=36V$, $P_{out}=180W_{pk}$	F=3.1, 3.2, 3.3, 3.4GHz	RL	-8	-	-	dB
Spurious Level	$V_{CC}=36V$, $P_{out}=180W_{pk}$	F=3.1, 3.2, 3.3, 3.4GHz	Spurious	-	-	-55	dBc
2nd Harmonic Level	$V_{CC}=36V$, $P_{out}=180W_{pk}$	F=3.1, 3.2, 3.3, 3.4GHz	2fc	-	-35	-25	dBc
Insertion Phase Deviation	$V_{CC}=36V$, $P_{out}=180W_{pk}$	F=3.1, 3.2, 3.3, 3.4GHz	$\Delta\Phi$	-20	-	+20	Degree
Load Mismatch Stability	$V_{CC}=36V$, $P_{out}=180W_{pk}$	F=3.1, 3.2, 3.3, 3.4GHz	VSWR-S	-	-	2.0:1	-
Load Mismatch Tolerance	$V_{CC}=36V$, $P_{out}=180W_{pk}$	F=3.1, 3.2, 3.3, 3.4GHz	VSWR-T	-	-	2.5:1	-
Gain Flatness over Frequency	$V_{CC}=36V$, $P_{out}=180W_{pk}$	F=3.1, 3.2, 3.3, 3.4GHz	G_p Flat	-	-	1	dB

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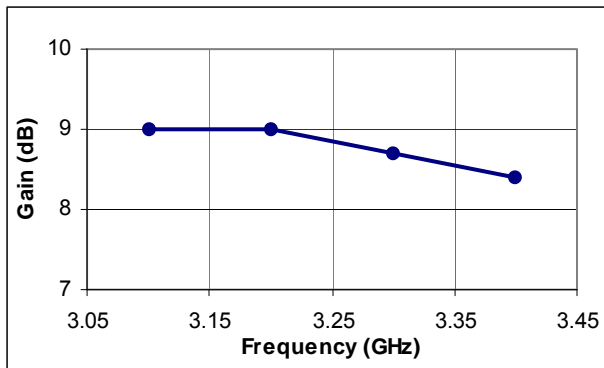
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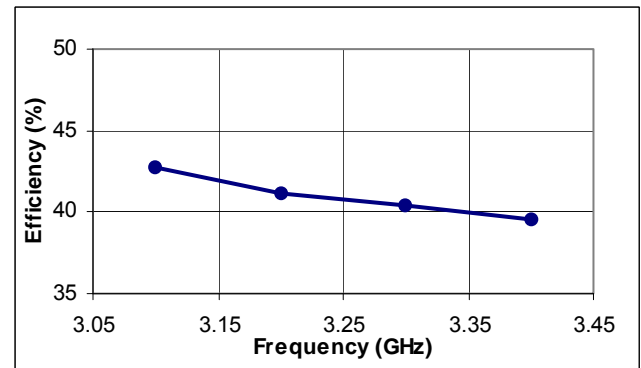
Typical RF Performance

Freq. (GHz)	Pin (W)	Pout (W)	Gain (dB)	ΔGain (dB)	Ic (A)	Eff (%)	RL (dB)	Droop (dB)	VSWR-S (2.0:1)	VSWR-T (2.5:1)	P1dB Over-	
											Pout	Δ Po
3.1	22.6	180	9.0	-	10.8	42.7	-10.8	-0.2	S	P	207.7	0.6
3.2	22.7	180	9.0	-	12.1	41.2	-14.5	0.0	S	P	204.1	0.5
3.3	24.1	180	8.7	-	12.4	40.4	-14.1	0.1	S	P	199.8	0.5
3.4	25.8	180	8.4	0.7	12.7	39.6	-16.4	0.3	S	P	191.9	0.3

Gain vs. Frequency



Collector Efficiency vs. Frequency



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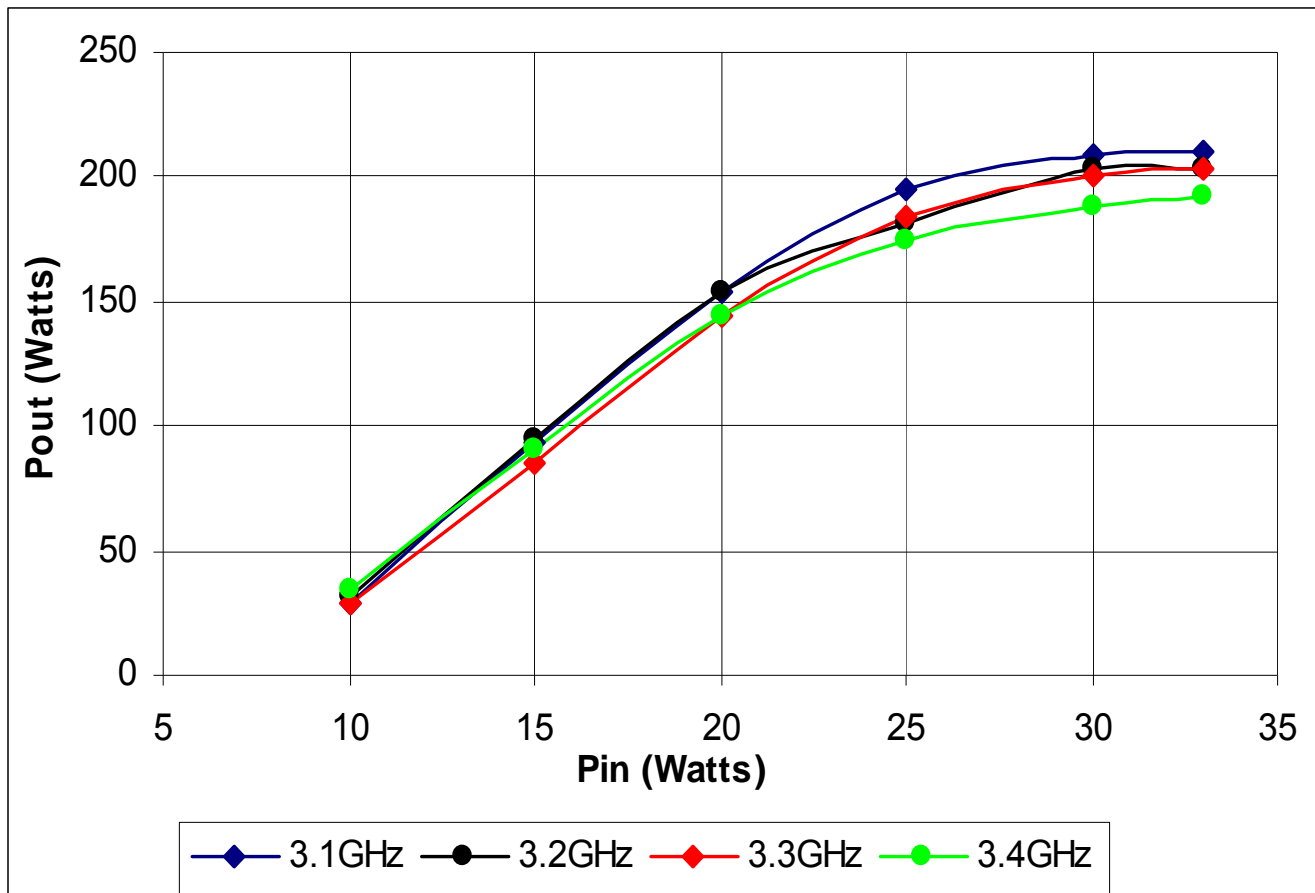
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RF Power Transfer Curve (Output Power Vs. Input Power)



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Test Fixture Assembly

10	_____	.138-32 UNC-2A 1/2 LG SOC HD SCR	2
9	_____	.112-40 UNC-2A X 1/4 LG SOC HD SCR	6
8	_____	.086-56 UNC-2A X 1/4 LG SOC HD SCR	4
7	_____	TERMINAL	1
6	MALLORY TT50M50A	ELECT. CAP. 50uF 50 VOLT C1	1
5	ITT POMONA 2451	BNC CONNECTOR J3	1
4	OMNI SPECTRA 2052-5363-02	SMA CONNECTOR J1,J2	2
3	74350148-0001	PC BOARD	2
2	_____	CARRIER	1
1	73050255-31	HEATSINK	1
ITEM	PART NUMBER	DESCRIPTION	QTY

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