

RMPA2000-53

1.8 to 2.0 GHz GaAs MMIC Power Amplifier

Description The Raytheon RMPA2000-53 is a fully monolithic power amplifier in a surface mount package for use in wireless applications in the 1.8 to 2.0 GHz ISM frequency band. The amplifier may be biased for linear, class AB or class F for high efficiency applications. On-chip matching components allow operation in a 50-Ohm system with no external matching components. The MMIC chip design utilizes Raytheon's 0.25 μm power PHEMT process.

- Features**
- 40% Power Added Efficiency
 - 31 dBm Output Power (P1 dB) at $V_d=+7\text{V}$
 - 28 dBm Output Power (P1 dB) at $V_d=+5\text{V}$
 - No external RF matching components
 - Small Package Outline: 0.28" x 0.28" x 0.07"
 - Thermal Resistance (channel to case): 30°C/Watt

Maximum Ratings	Parameter	Symbol	Value	Unit
	Positive Drain DC Voltage	V_{d1}, V_{d2}	+8	Volts
	Negative Gate DC Voltage	V_{g1}, V_{g2}	-5	Volts
	Simultaneous Drain to Gate Voltage	$V_d - V_g$	+10	Volts
	RF Input Power (from 50 Ω source)	P_{IN}	+10	dBm
	Drain to Source Current	I_{ds}	700	mA
	Gate Current	I_g	5	mA
	Channel Temperature	T_{ch}	150	°C
	Operating Case Temperature	T_{Case}	-40 to 100	°C
	Storage Temperature Range	T_{Stg}	-40 to 125	°C

Electrical Characteristics	Parameter	Min	Typ	Max	Unit
(Note 4, At 25°C, $Z_o=50$ Ohms, Unless Otherwise Noted)	Frequency Range	1800	1900	2000	MHz
	Gain (Note 1, 2, 4)		30		dB
	Output Power, P1 dB (Note 1, 4)		28		dBm
	Assoc. Power Added Efficiency		35		%
	Output Power, P1 dB (Note 3)		31		dBm
	Assoc. Power Added Efficiency		40		%
	Drain Current ($I_{dd1}+I_{dd2}$)			600	mA
	Gate Current ($I_{gg1}+I_{gg2}$)			5	mA
	Input Return Loss (50 Ω)	7.5			dB

Notes:

(1) $I_{dq}=300$ mA, $V_{d1}=V_{d2}=5.0\text{V}$ (2) $P_{in}= -3$ dBm, (3) $V_{d1}=V_{d2}= +7\text{V}$, $I_{dq}=400$ mA
 (4) Production Testing includes Gain, Output Power (P1dB) and Input Return Loss at $V_{d1}=V_{d2}=5.0$ V, $V_{g1}=V_{g2}= -0.5\text{V}$ (nominal) , adjusted for $I_{dq}=300$ mA, $P_{in}= -3$ dBm and at $F=1.90$ GHz. Other Parameters are guaranteed by Design Validation Testing.

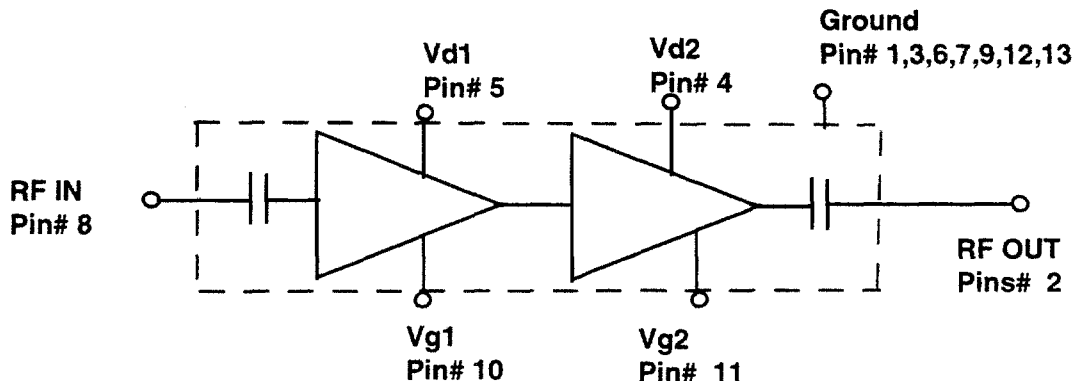
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Product Information

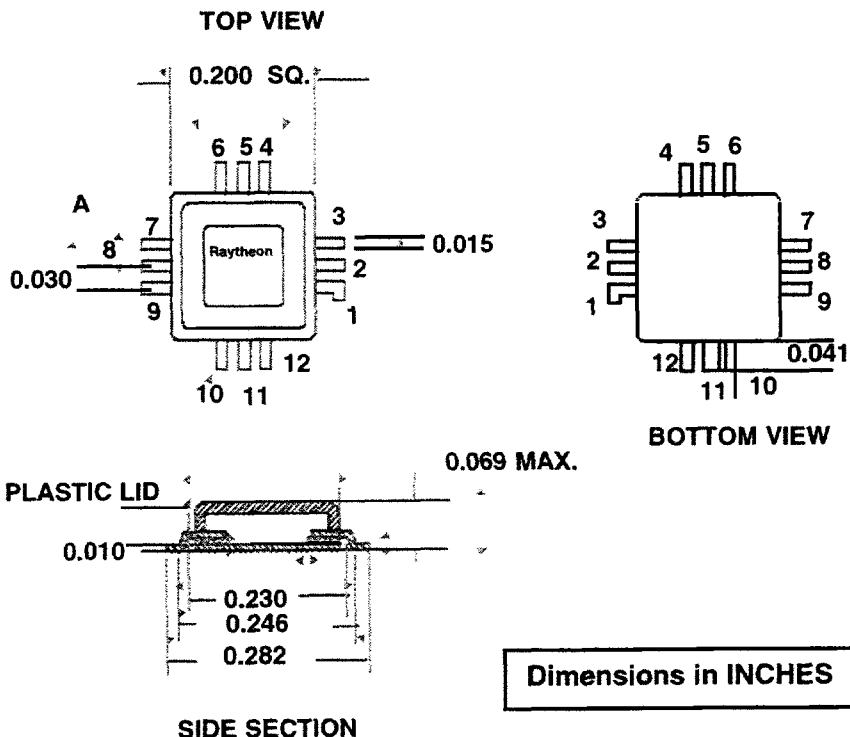
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Functional Block Diagram (RMPA2000-53)



Outline Dimensions (RMPA2000-53)



Pin#	Description
1	GND
2	RF Out
3	GND
4	Vd2
5	Vd1
6	GND
7	GND
8	RF In
9	GND
10	Vg1
11	Vg2
12	GND
13	GND (Package Base)

Dimensions in INCHES

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