

RMPA2450-53

2.4 to 2.5 GHz GaAs MMIC Power Amplifier

Description The Raytheon RMPA2450-53 is a fully monolithic power amplifier in a surface mount package for use in wireless applications in the 2.4 to 2.5 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 μ m power PHEMT process.

- Features**
- 35% Power Added Efficiency
 - 31 dBm Output Power (P1 dB) at $V_d=+7V$
 - 28 dBm Output Power (P1 dB) at $V_d=+5V$
 - 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	2400	2450	2500	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		35		%
	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) $I_{dq}=360$ mA, $V_{d1}=V_{d2}=4.8V$ (2) $P_{in}=-3$ dBm, (3) $V_{d1}=V_{d2}=+7V$
 (4) Production Testing includes Gain, Output Power (P1dB) and Input Return Loss at $V_{d1}=V_{d2}=4.8V$, $V_{g1}=V_{g2}=-0.5V$ (nominal), adjusted for $I_{dq}=360$ mA, $P_{in}=-3$ dBm and at $F=2.45$ GHz. Other Parameters are guaranteed by Design Validation Testing.

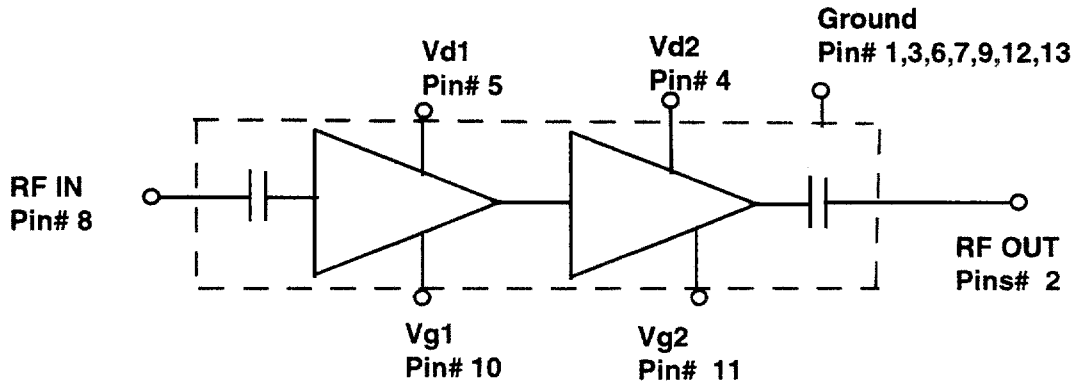
Product Information

Raytheon reserves the right to update or change specifications without notice.

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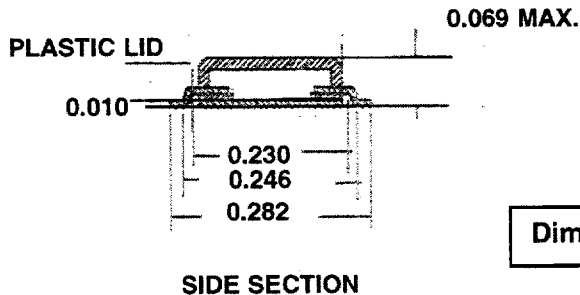
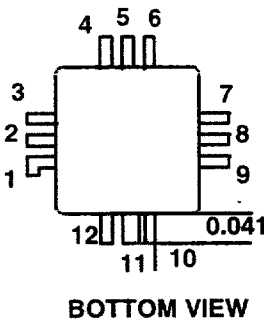
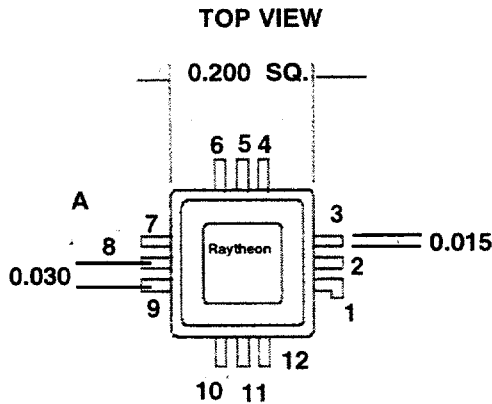
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Functional Block Diagram (RMPA2450-53)



Product Information

Outline Dimensions (RMPA2450-53)



Dimensions in INCHES

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)

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