

2004.12.20

DESCRIPTION

AP1045A is a linear, two-stages power amplifier MMIC with high output power in 2.4GHz band utilizing InGaP/GaAs HBT process. With the excellent linearity performance, the device delivers 20dBm output power under 54Mbps OFDM (IEEE802.11g) modulation, with 3% EVM at 3.3V. It can also deliver 22.5dBm 11g linear power at 5V. The PA also includes on-chip power detector, providing a DC voltage proportional to the output power of device. The AP1045A is housed in a 3 x 3(mm), 16 pin, QFN leadless package.

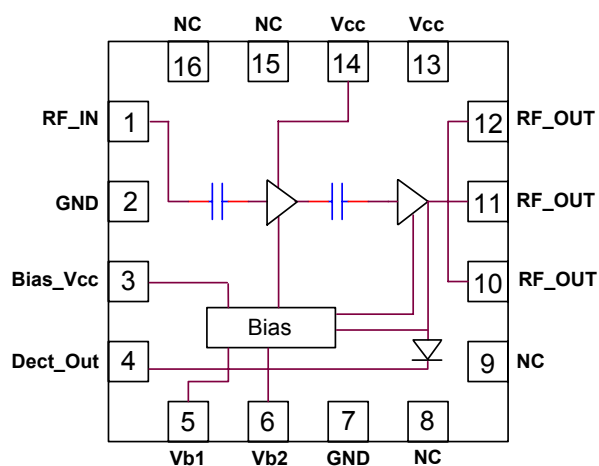
KEY FEATURES

- **High Power:**
20dBm 11g linear power at 3.3V
22.5dBm 11g linear power at 5V
- **High Gain:**
30.5dB Gain at 3.3V, Pout=20dBm
- **Detector**

Major Applications

- IEEE 802.11b/g
- Wireless LAN Systems
- 2.4 GHz ISM Band Application
- Suitable for high power WLAN applications

Functional Block Diagram



QFN-16pin, 3x3 (mm)

Pin Details

Pin Number	Name	Description
1	RF_IN	RF input
2	GND	Ground
3	Bias_Vcc	Bias Ckt Voltage
4	Dect_Out	Detector Output
5	Vb1	First stage Bias
6	Vb2	Second stage Bias
7	GND	Ground
8	NC	No contact
9	NC	No contact
10	RF_OUT	RF output
11	RF_OUT	RF output
12	RF_OUT	RF output
13	Vcc	Power supply input
14	Vcc	Power supply input
15	NC	No contact
16	NC	No contact
Pkg Base	GND	Ground

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1 of 6

2004.12.20

Items	Symbol	Test Conditions	Max.	Typ.	Min.	Unit
Freq.	f		2.5		2.4	GHz
Power Gain		@3.3V, Pout=20dBm with 64QAM Modulation Signal		30.5		dB
P1dB				26.5		dBm
Idle current	Icq	@3.3V		130		mA
In put return loss			-10			dB
Out put return loss			-9			dB
Linear power		@3.3V, 64QAM modulation type @5V, 64QAM modulation type		20 22.5		dBm
Current consumption	Icc	@3.3V, Pout=20dBm @5V, Pout=22.5dBm		190 280		mA
Gain flatness				+/-0.5		
Harmonics	2f 3f	2f 3f		-35 -35		dBc
PAE @ linear power	PAE			15%		%
Max. Input power		No damage	10			dBm
On chip detector		@3.3V, 20dBm		1.00		V

Absolute Maximum Ratings

Parameter	Rating	Unit
DC Power Supply	5.5	V
DC Supply Current	550	mA
RF Input Power	10	dBm
Operating Ambient Temperature	-40 to +85	°C
Storage Temperature	-40 to +125	°C

Notes:1.Exceeding Maximum ratings could cause damage to the device.

2.This device operation condition is biasing at 5V, please refer to the application note.

Caution

RF Integrated Corp. believes the information provided is reliable at present time. However, we assumes no responsibility for inaccuracies and omissions and use of the information shall be entirely at the user's own risk. RF Integrated Corp. reserves the right to make change to the specifications without notice.

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2 of 6

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Data Charts

(AP1045A Evaluation Kit, RF Signal = With IEEE 802.11g Modulation (54Mbps), $V_{cc}=3.3V$, $V_{ref}=2.8V$, $T_A = 25^{\circ}C$, unless otherwise noted.)

Fig.1
EVM, I_{cc} vs. Output Power

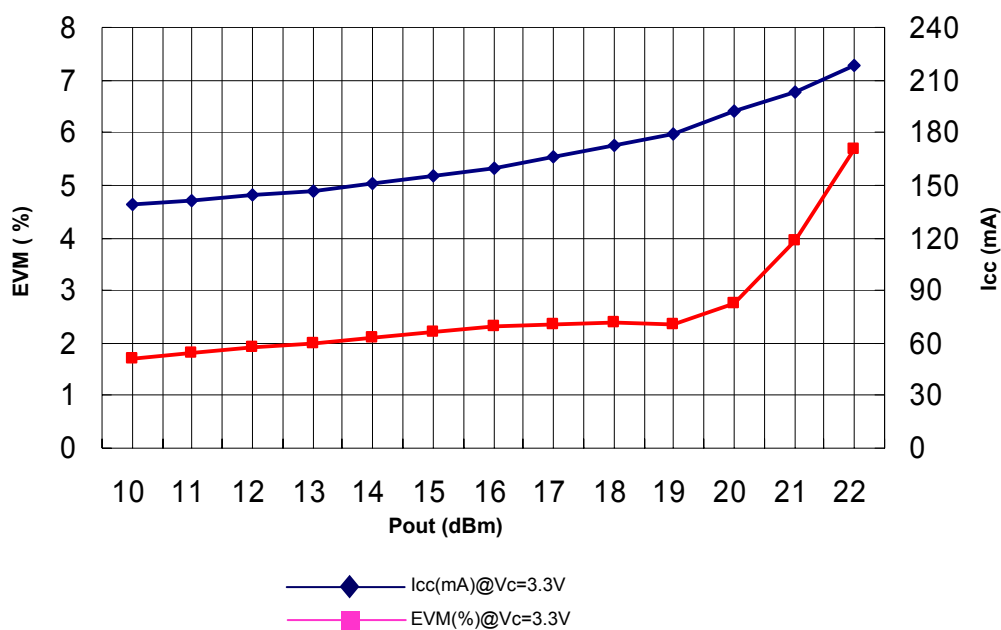


Fig.2
Gain vs. Output Power

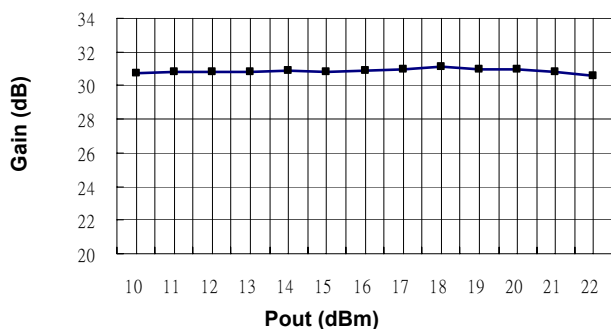


Fig.3
Detector Output vs. Output Power

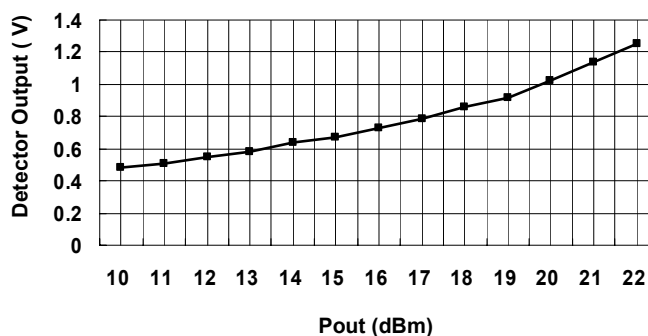


Fig. 3

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3 of 6

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Data Charts

Small Signal S-Parameter Data

Fig.4

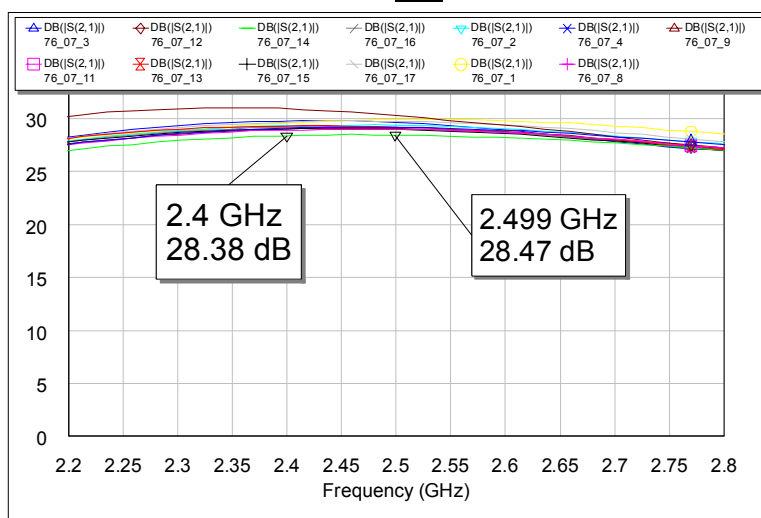
S₂₁


Fig.5

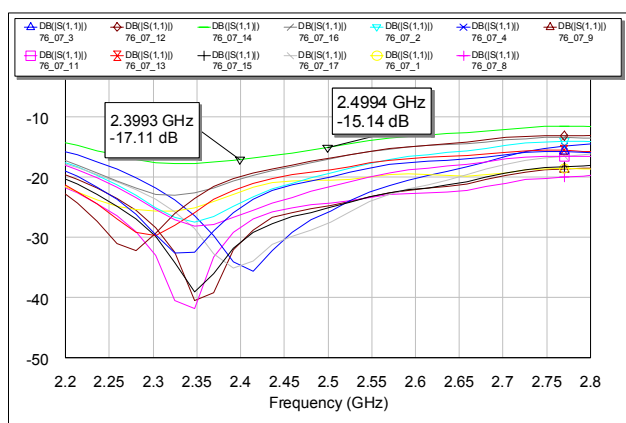
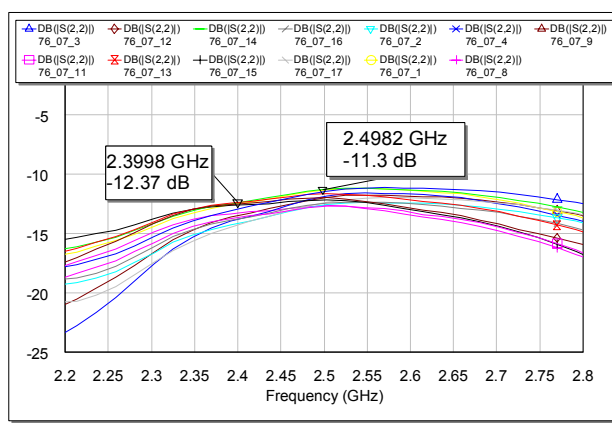
S₁₁


Fig.6

S₂₂


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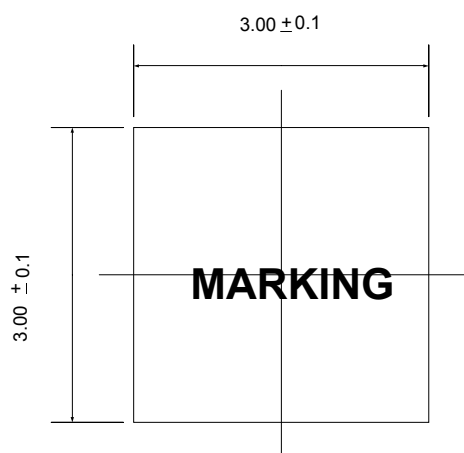
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4 of 6

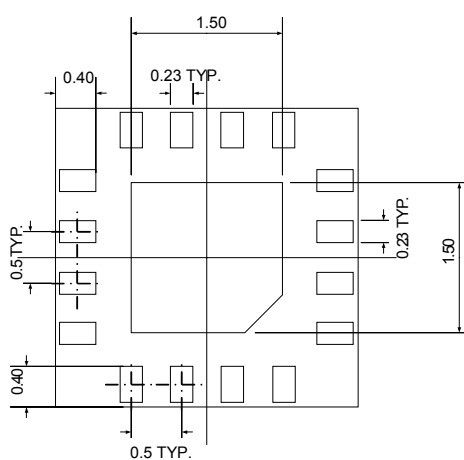
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Package Outline

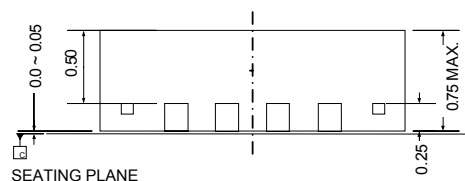
Top View



Bottom View



Side View



Unit: mm

Note :

1. Dimension and tolerance conform to ASME Y14.5M-1994.
2. Refer to JEDEC STD. MO-220 WEED-2 ISSUE B

© For more detailed information, please refer to AP1098 Application Note.

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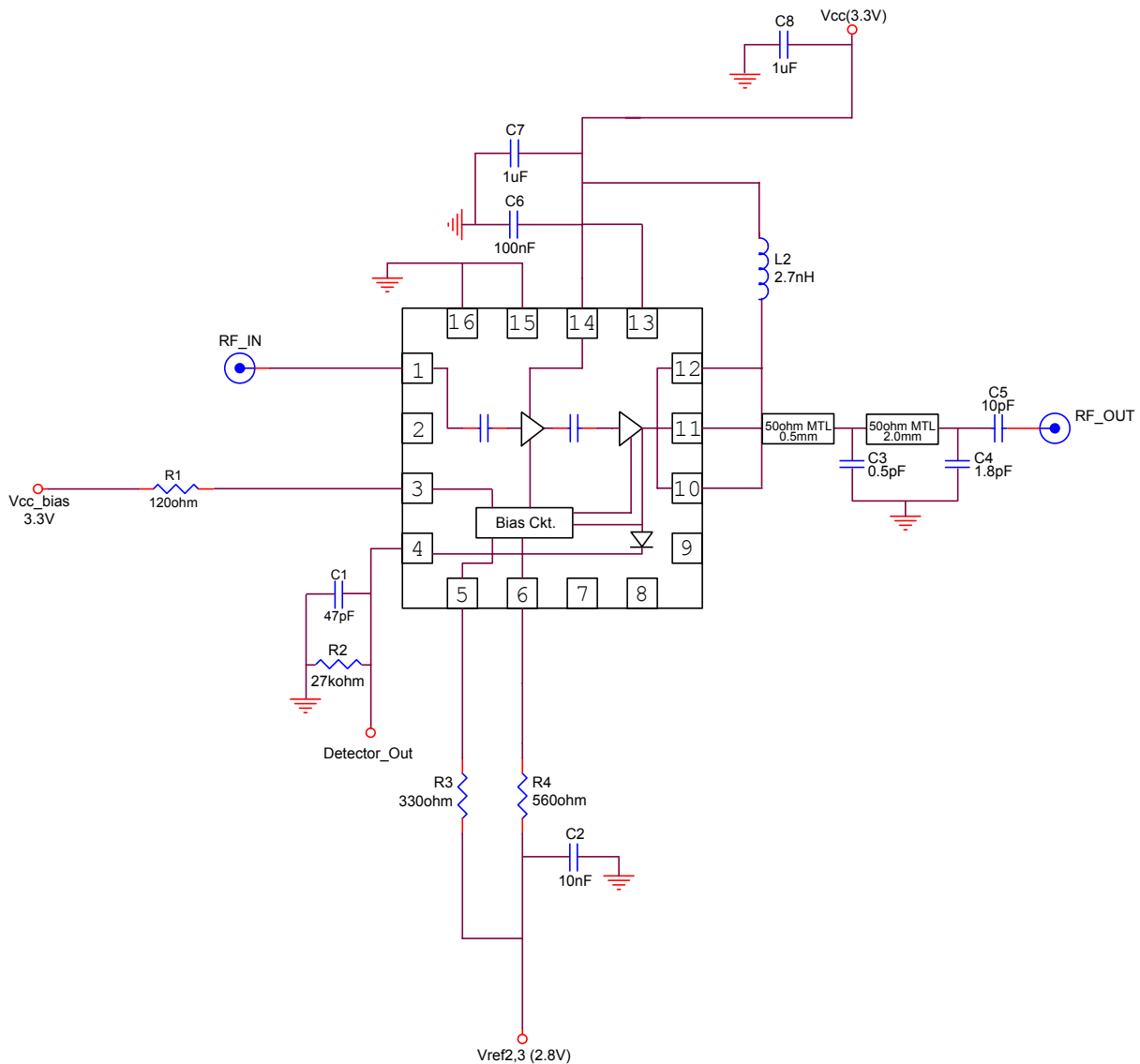
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5 of 6

AP1045A

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EVB Circuit Diagram



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6 of 6