

2004.12.28

DESCRIPTION

AP1046 is a linear, three-stages power amplifier MMIC with super high output power in 2.4GHz band utilizing InGaP/GaAs HBT process. With the excellent linearity performance, the device delivers 22dBm output power under 54Mbps OFDM (IEEE802.11g) modulation, with 3% EVM at 3.3V. It can also deliver 25.5dBm 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 AP1046 is housed in a 3 x 3(mm), 16 pin, QFN leadless package.

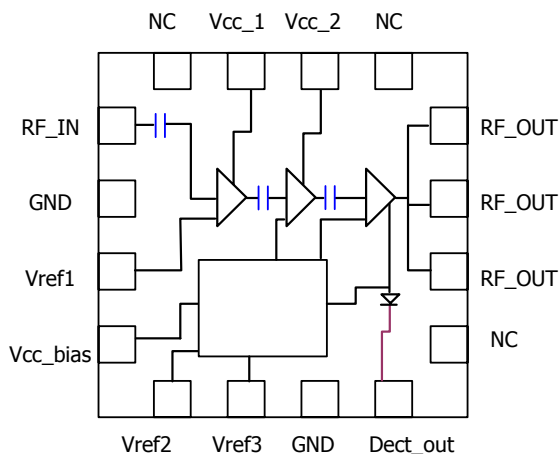
KEY FEATURES

- **High Power:**
22dBm 11g linear power at 3.3V
25.5dBm 11g linear power at 5V
- **High Gain:**
31.5dB Gain at 3.3V, Pout=22dBm
- **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	Vref1	First stage Bias
4	Vcc_bias	Power supply Bias
5	Vref2	Second stage Bias
6	Vref3	Third stage Bias
7	GND	Ground
8	Dect_out	Detector Supply Voltage
9	NC	No contact
10	RF_OUT	RF output
11	RF_OUT	RF output
12	RF_OUT	RF output
13	NC	No contact
14	Vcc_2	Power supply input
15	Vcc_1	Power supply input
16	NC	No contact
Pkg Base	GND	Ground

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Items	Symbol	Test Conditions	Max.	Typ.	Min.	Unit
Freq.	f		2.5		2.4	GHz
Power Gain		@3.3V, Pout=22dBm		31.5		dB
P1dB				28.5		dBm
Idle current	Icq	@3.3V		170		mA
Input return loss			-10			dB
Output return loss			-8			dB
Linear power		@3.3V, 64QAM modulation type @5V, 64QAM modulation type		22 25.5		dBm
Current consumption	Icc	@3.3V, Pout=22dBm @5V, Pout=25.5dBm		330 470		mA
Gain flatness				+/-0.5		
Harmonics	2f 3f	2f 3f		TBD		
PAE @ linear power	PAE			15%		%
Max. Input power		No damage	10dBm			dBm
On chip detector		@3.3V, 22dBm		1.05		V

Absolute Maximum Ratings

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

Caution

RF Integrated Corp. believes the information provided is reliable at present time. However, we assume 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.

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.

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Data Charts

(AP1046 Evaluation Kit, RF Signal = With IEEE 802.11g Modulation (54Mbps), Vcc=3.3V, Vref=2.7V, TA = 25°C, unless otherwise noted.)

EVM, Icc vs. Output Power

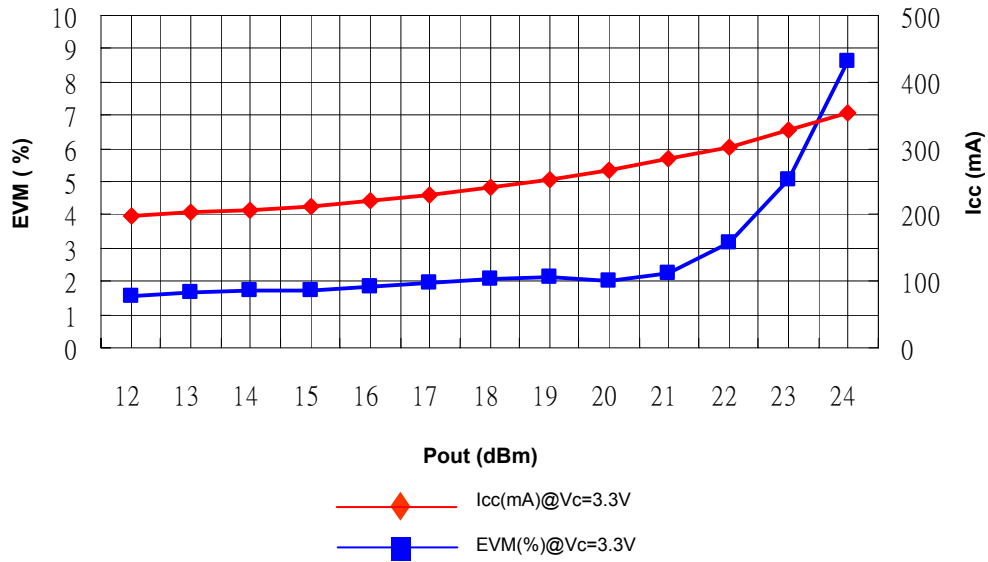


Fig.1

Gain vs. Output Power

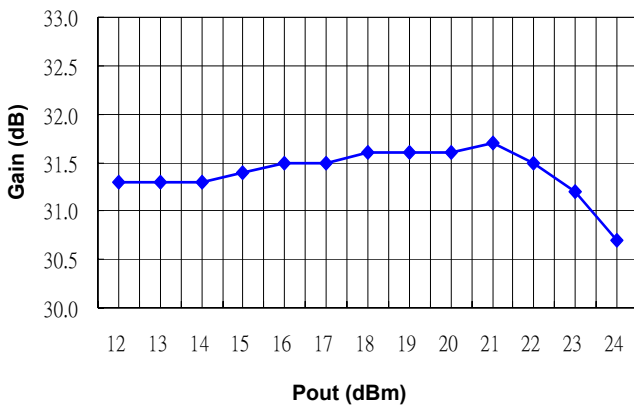


Fig.2

Detector Output vs. Output Power

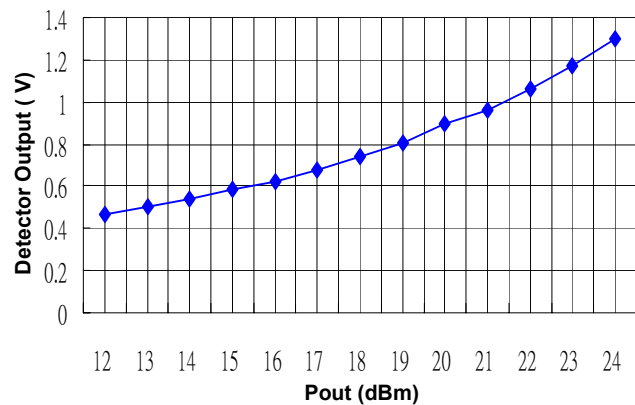


Fig.3

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Data Charts- Small Signal S-Parameter Data

S21

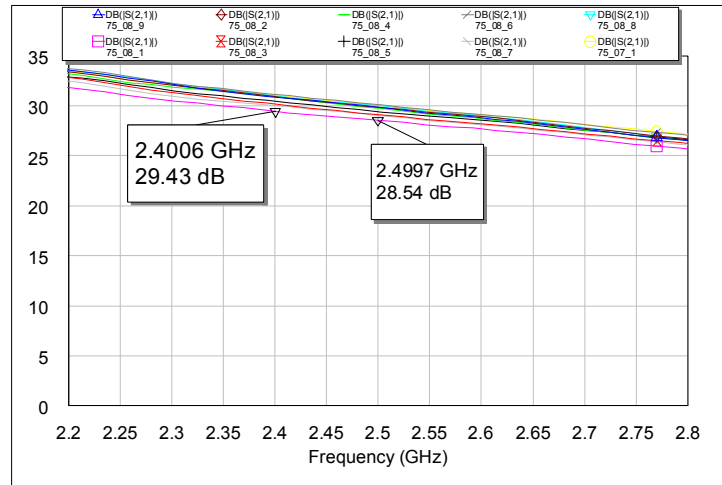


Fig.4

S11

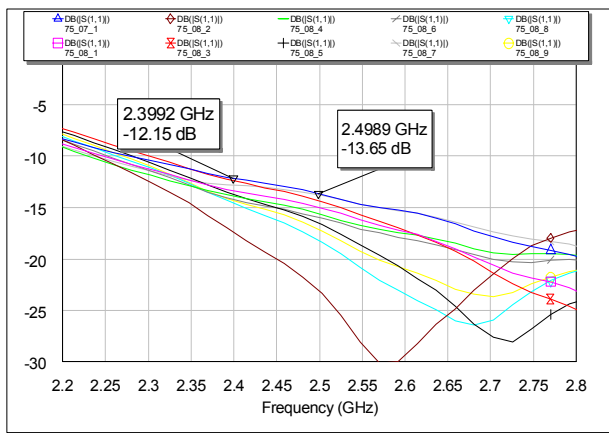


Fig.5

S22

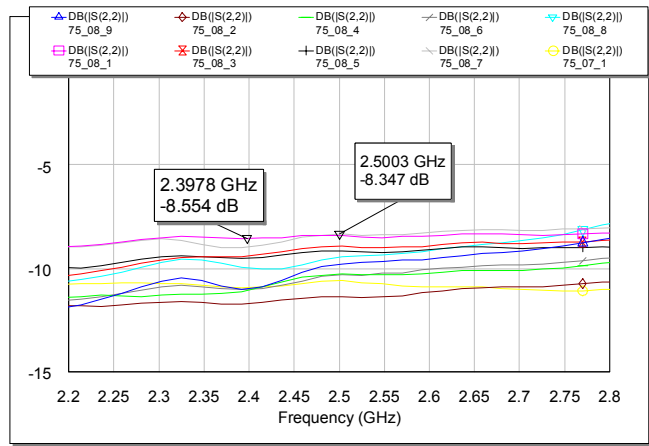


Fig.6

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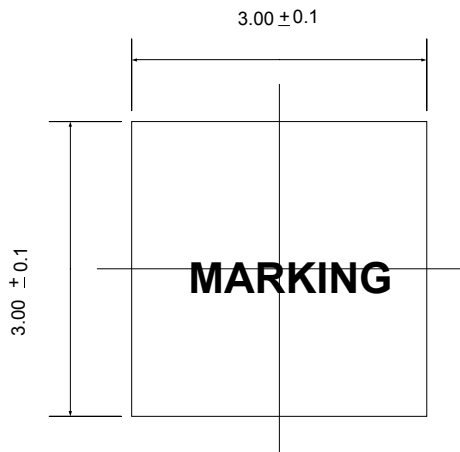
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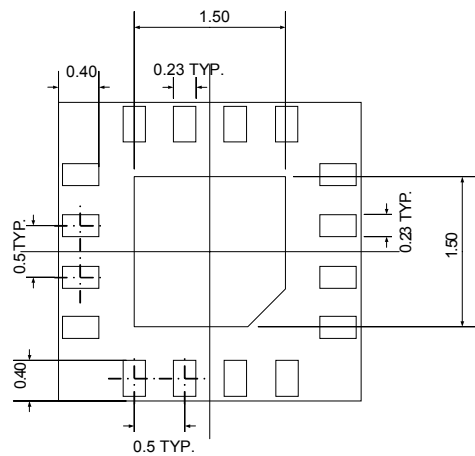
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Package Outline

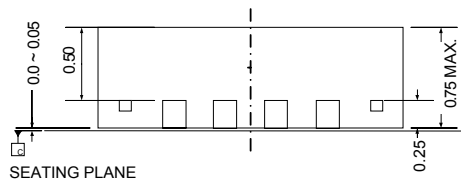
Top View



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 AP1046 Application Note.

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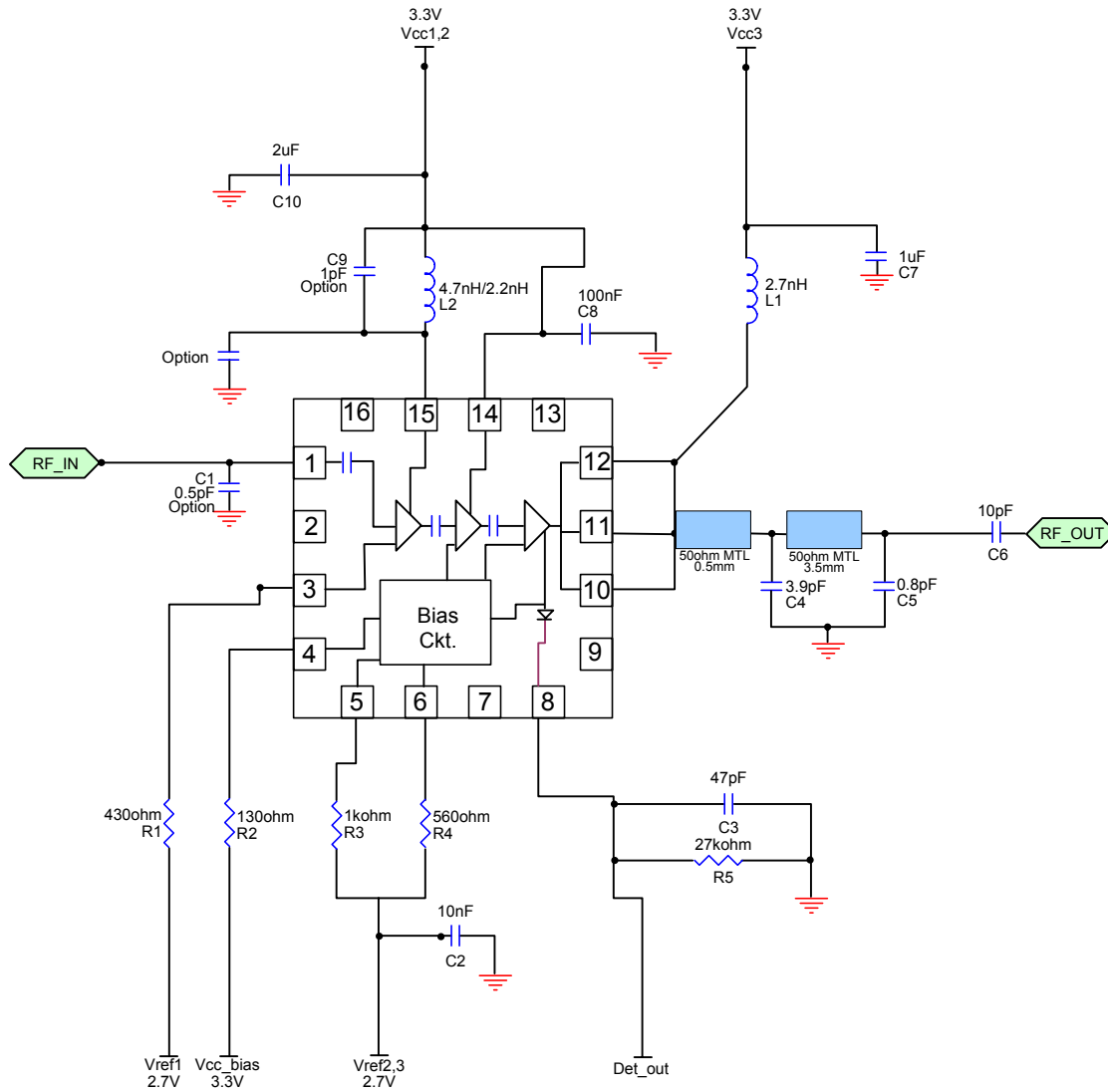
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EVB Circuit Diagram



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