

2.4 GHz WiFi Power Amplifier

Introduction

The EPA2010A is a three-stage linearized power amplifier optimized for 802.11b/g/n wireless LAN(WLAN) applications in the 2.4 GHz band. It features 31 dB of gain and delivers up to 29 dBm of output power.

The device is sold in a RoHS compliant miniature 3 x 3 x 0.8 mm 16-pin QFN package to make automated assembly simple. Its small and thin package size makes the device an ideal solution for radios built in small form factors for mobile applications.

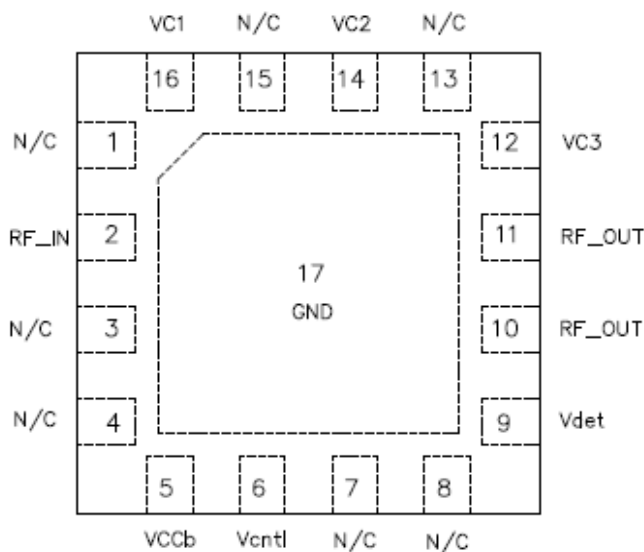
Features

- 2.4 to 2.5 GHz Operating Range
- 31 dB Gain
- 3% EVM at Pout=+22 dBm with Icc = 260 mA @ 3.3V
- On-chip power detector
- +3.3V Single Supply
- 3 x 3 x 0.8 mm 16-pin QFN Package
- RoHS compliant product

Applications

- IEEE 802.11b/g/n WLAN Mobile
- 2.4 GHz Cordless Phones
- 2.4 GHz ISM Radios

Pin Assignment



<Top View>



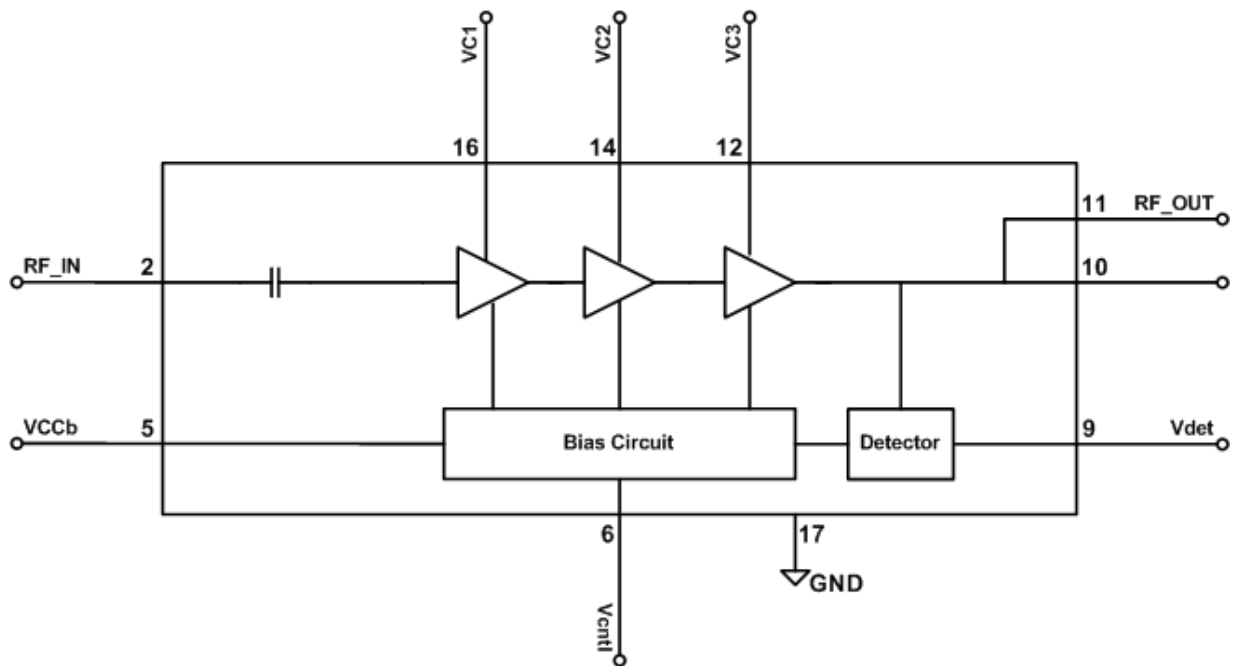
Caution!
 ESD sensitive device



Pin Description

| Pin | Pin Name | Pin Description |
|-----|----------|-------------------------------------------------|
| 1 | N/C | No connection |
| 2 | RF_IN | RF Input |
| 3 | N/C | No connection |
| 4 | N/C | No connection |
| 5 | VCCb | Supply voltage for bias circuit |
| 6 | Vcntl | PA control voltage |
| 7 | N/C | No connection |
| 8 | N/C | No connection |
| 9 | Vdet | Detector output voltage |
| 10 | RF_OUT | RF Output |
| 11 | RF_OUT | RF Output |
| 12 | VC3 | Supply voltage, 3 rd stage of the PA |
| 13 | N/C | No connection |
| 14 | VC2 | Supply voltage, 2 nd stage of the PA |
| 15 | N/C | No connection |
| 16 | VC1 | Supply voltage, 1 st stage of the PA |
| 17 | GND | Package backside ground slug |

Functional Diagram



Specifications

Absolute Maximum Ratings

| PARAMETER | MIN. | MAX. | UNIT | COMMENTS |
|-----------------------------|------|------|------|----------------------------------------|
| VC1, VC2, VC3, VCCb | TBD | TBD | V | |
| Operating Temperature Range | -10 | +85 | °C | |
| Storage Temperature Range | -65 | +125 | °C | |
| Soldering Conditions | - | +260 | °C | Peak for 20 seconds |
| ESD Tolerance (HBM) | TBD | - | V | All pins, forward and reverse voltage. |

Note : Stress in excess of the absolute maximum ratings may cause permanent damage to the device.

DC Electrical Characteristics (Temp.=25°C)

| PARAMETER | CONDITIONS | MIN. | TYP. | MAX. | UNIT |
|------------------------|-------------------|------|------|------|-------|
| Supply Voltages | | | | | |
| VC1, VC2, VC3 | | 3.0 | 3.3 | 3.6 | Volts |
| VCCb | | 3.0 | 3.3 | 3.6 | Volts |
| Vcntl | | | 2.9 | | Volts |
| Supply Currents | | | | | |
| Icc | Quiescent (no RF) | | 145 | | mA |
| Icntl | | | 4 | | mA |

AC Electrical Characteristics (VC1=VC2=VC3=VCCb=3.3V, Vcntl=2.9V, Temp.=25°C)

| PARAMETER | CONDITIONS | MIN. | TYP. | MAX. | UNIT |
|---------------------------------------------------|------------------------------------|------|------|------|------|
| RF Frequency Range (Note 1) | | 2.4 | | 2.5 | GHz |
| Gain | | | 31 | | dB |
| P1dB | | | 29 | | dBm |
| S11 (Input Return Loss) | | | -9 | | dB |
| S22 (Output Return Loss) | | | -15 | | dB |
| Detector voltage range | Pout = 22dBm | | 900 | | mV |
| ACPR 1 st Side Lobe at Pout= 27 dBm | 802.11b, 1 Mbps CCK | | -33 | | dB |
| ACPR 2 nd Side Lobe at Pout= 27 dBm | 802.11b, 1 Mbps CCK | | -52 | | dB |
| Total Current at Pout= 22 dBm | 64 QAM / 54 Mbps Duty cycle=80% | | 260 | | mA |
| EVM at Pout = 22 dBm | 64 QAM / 54 Mbps Duty cycle=80% | | 3 | | % |
| Second Harmonics | Pout = 23dBm | | -40 | | dBc |

Note 1: Operation outside this range is possible, but not guaranteed

Ordering Information

| Ordering Number | Component Packing |
|-----------------|-------------------------|
| EPA2010A | 1000pcs / Tape & Reel |
| EPA2010A-EVB | EPA2010A Evaluation Kit |

**For additional product information, please contact
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