

模块参数		
参数名称	参数值	备注
模块型号	AD8314	
模块类型	射频对数检波器	
模块供电电压	DC5V	
模块供电电流	7mA	
输入信号形式	单端	
输入电压范围	-50dBm -- +0dBm	
输入频率范围	100MHz-2.7GHz	
输入阻抗	50欧	
输出电压范围	0.3V-2.1V	以实测值为准，不同模块之间有差异
输入信号特点	输入耦合	可为连续正弦波或者脉冲，脉冲测量需要修改电路，模块默认为连续均值检波。
输出电流	2mA（max）	输出为电压信号，一般不带电流。
模块动态范围	优于45dB	
模块重量	7.7g	
模块保护	无	无反接保护，无限流保护
模块重量	7.7g	
模块规格	31*23*10mm	长*宽*高-PCB尺寸
模块屏蔽	有屏蔽盖	
模块发热因素		供电电压过大损坏芯片或者模块有损坏
模块工作温度	-40℃--+85℃	工业级
模块特点		模块简约小巧，接口简单，带有供电指示。
应用范围		蜂窝手机，无线终端设备的RSSI和TSSI,
模块接口类型		SMA信号输入输出，XH2.54防呆电源

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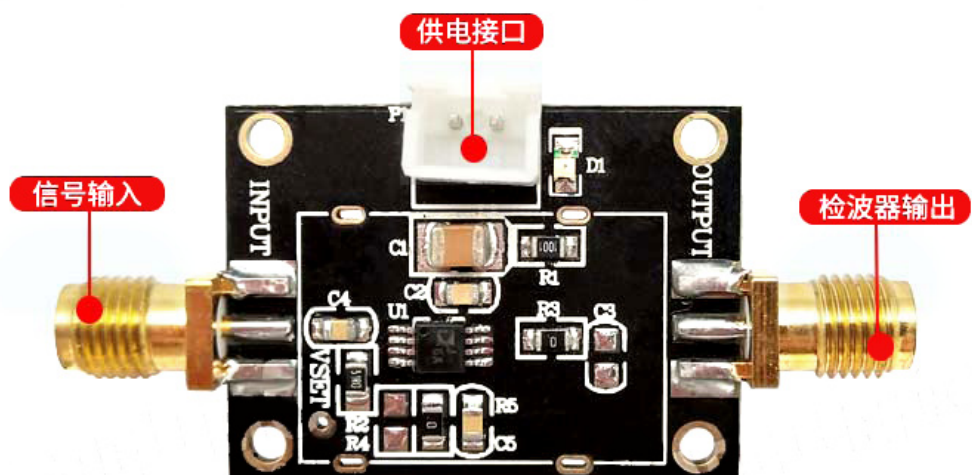
模块描述

AD8314是一款用于RF信号测量与控制的低成本完整子系统。它具有完全射频检测器/控制器功能，本质上是一种电压响应装置，具有典型信号范围为1.25mV至224mVrms或-58dBV至-13dBV,这相当于-45dBm到0dBm,Re50Ω。为了方便起见，信号在内部进行交流耦合。

AD8314提供两个电压输出。第一个输出V_UP,从接近地面增加到大约1.2V作为输入信号，这个输出是预期的用于测量模式。第二个输出V_DN，是V_UP的反转，但斜率和偏移量是固定的两倍，这个输出开始于2.25V左右（如果电源电压是 $\geq 3.3V$ ），在最大输入时下降到接近地面的值，此输出用于模拟控制。当电源关闭时，典型的省电模式电流是20μA。

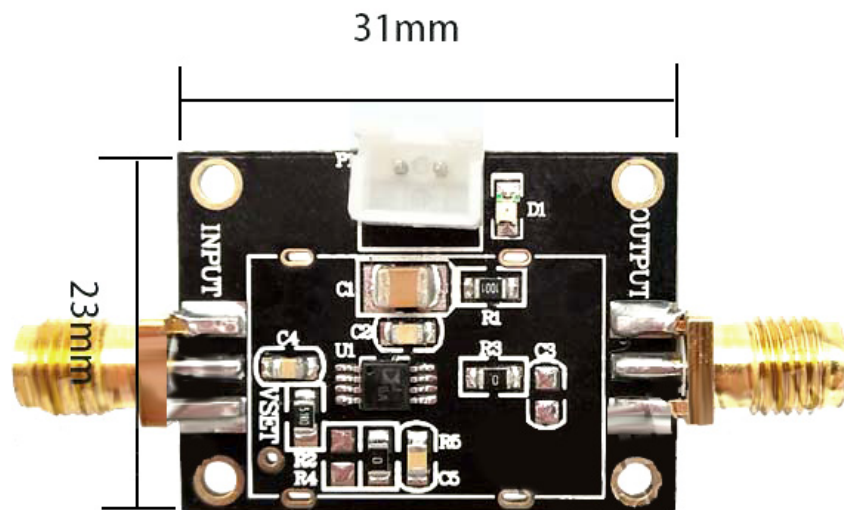
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模块接口图



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模块尺寸图

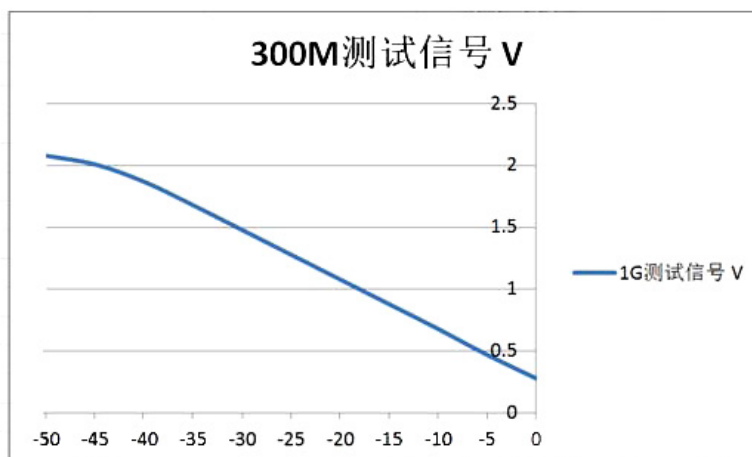


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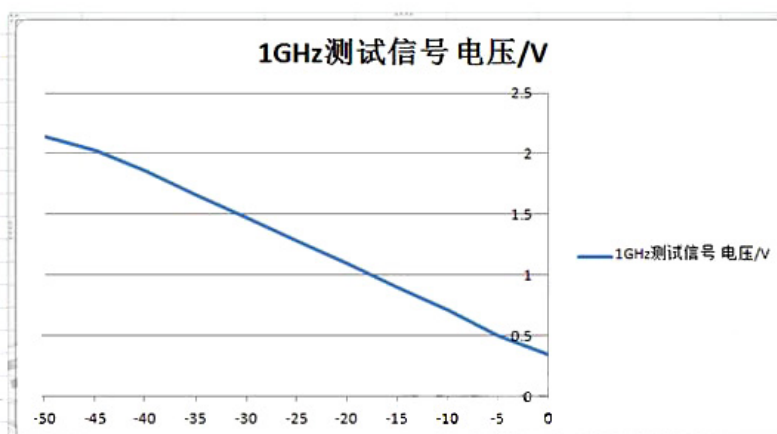
模块使用注意事项

- (1) 检波器模块最大输入功率为0dBm。检波器动态范围50dB，温度稳定线性分贝响应。
- (2) 模块无反接、无限流保护，使用模块时一定要注意不要反接，否则容易损坏芯片或模块。
- (3) 模块为低功耗模块，供电电源不超过5.5V。
- (4) 由于模块是高精度器件，为了避免不必要的干扰，建议使用线性电源供电。
- (5) 输入信号建议使用SMA接口，接触不良或劣质的线材可能导致信号衰减或者噪声过大，使得测量不准确。
- (6) 检波器模块在不同频率下的响应和动态范围会差别，不同的模块之间也有差异，属于正常现象，并非模块问题

300M测试信号		
dB	V	
0	0.28	
-5	0.47	
-10	0.68	
-15	0.88	
-20	1.08	
-25	1.28	
-30	1.48	
-35	1.68	
-40	1.87	
-45	2.01	
-50	2.08	



1GHz测试信号	
输入功率/dBm	电压/V
0	0.348
-5	0.507
-10	0.709
-15	0.902
-20	1.092
-25	1.28
-30	1.47
-35	1.662
-40	1.858
-45	2.025
-50	2.145



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常见问题解答

Q: 测量脉冲功率是无反应? 输出是一条直线。

A: 模块默认功能为功率检波, 不能检测脉冲或者瞬时功率大小, 需要将C5电容换为小电容值才能检测脉冲和瞬时功率, 一般对瞬时要求越高, 那么C5电容就要够小。

Q: 买了3个模块, 同一检测条件输出电压有差异, 是正常现象么?

A: 模块之间存在个体差异, 详情实测图为典型数据, 具体参数以实测为准。

Q: 可以做快速检波或者解调吗?

A: 在去掉C5电容的情况下可以做快速检波或者解调。



ANALOG DEVICES

100 MHz to 2.7 GHz, 45 dB RF Detector/Controller

Data Sheet

AD8314

FEATURES

Complete RF detector/controller function

Typical range: -58 dBV to -13 dBV

–45 dBm to 0 dBm, re 50 Ω

Frequency response from 100 MHz to 2.7 GHz

Temperature-stable linear-in-dB response

Accurate to 2.7 GHz

Rapid response: 70 ns to a 10 dB step

Low power: 12 mW at 2.7 V

Power down to 20 μ A

APPLICATIONS

Cellular handsets (TDMA, CDMA , GSM)

RSSI and TSSI for wireless terminal devices

Transmitter power measurement and control

GENERAL DESCRIPTION

The AD8314 is a complete low cost subsystem for the measurement and control of RF signals in the frequency range of 100 MHz to 2.7 GHz, with a typical dynamic range of 45 dB, intended for use in a wide variety of cellular handsets and other wireless devices. It provides a wider dynamic range and better accuracy than possible using discrete diode detectors. In particular, its temperature stability is excellent over the full operating range of -40°C to $+85^{\circ}\text{C}$.

Its high sensitivity allows control at low power levels, thus reducing the amount of power that needs to be coupled to the detector. It is essentially a voltage-responding device, with a typical signal range of 1.25 mV to 224 mV rms or -58 dBV to -13 dBV. This is equivalent to -45 dBm to 0 dBm, re 50 Ω .

For convenience, the signal is internally ac-coupled, using a 5 pF capacitor to a load of 3 k Ω in shunt with 2 pF. This high-pass coupling, with a corner at approximately 16 MHz, determines the lowest operating frequency. Therefore, the source can be dc grounded.

The AD8314 provides two voltage outputs. The first, V_UP, increases from close to ground to about 1.2 V as the input signal level increases from 1.25 mV to 224 mV. This output is intended for use in measurement mode. Consult the Applications section for information on this mode. A capacitor can be connected between the V_UP and FLTR pins when it is desirable to increase the time interval over which averaging of the input waveform occurs.

The second output, V_{DN} , is an inversion of V_{UP} but with twice the slope and offset by a fixed amount. This output starts at about 2.25 V (provided the supply voltage is ≥ 3.3 V) for the minimum input and falls to a value close to ground at the maximum input. This output is intended for analog control loop applications. A setpoint voltage is applied to V_{SET} , and V_{DN} is then used to control a VGA or power amplifier. Here again, an external filter capacitor can be added to extend the averaging time. Consult the Applications section for information on this mode.

The AD8314 is available in 8-lead MSOP and 8-lead LFCSP packages and consumes 4.5 mA from a 2.7 V to 5.5 V supply. When powered down, the typical sleep current is 20 μ A.

FUNCTIONAL BLOCK DIAGRAM

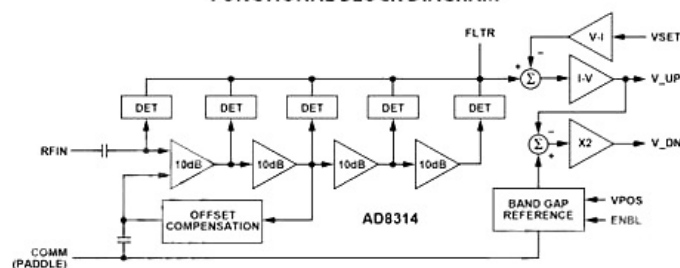


Figure 1.

Rev. C

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