

模块参数		
参数名称	参数值	备注
模块型号	AD8313	
模块类型	射频对数检波器	
模块供电电压	DC5V	
模块供电电流	15mA	
输入信号形式	单端	
输入电压范围	-70dBm -- +10dBm	
输入频率范围	100MHz-2.5GHz	
输入阻抗	50欧	
输出电压范围	0.6V-1.8V	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
模块动态范围	优于65dB	
模块重量	7.9g	
模块保护	无	无反接保护，无限流保护
模块重量	7.9g	
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		发射机功率测量，接收机强度测量等
模块接口类型		SMA信号输入输出，XH2.54防呆电源座

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模块描述

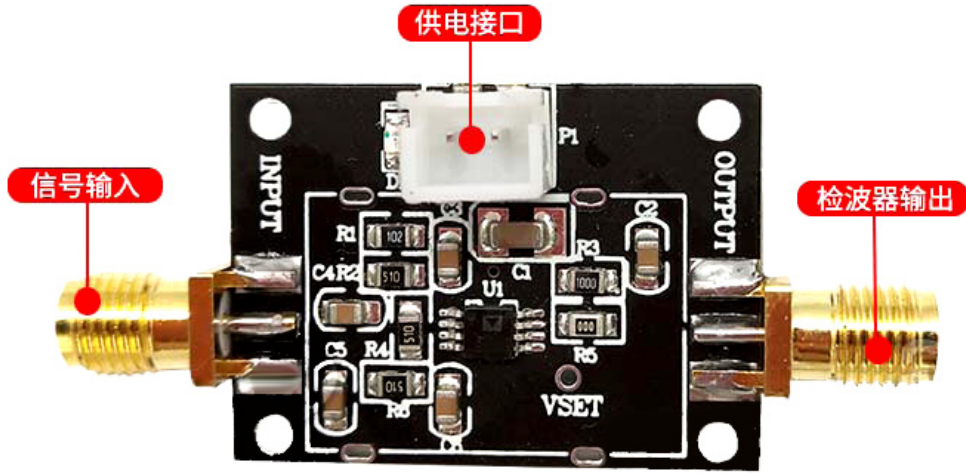
AD8313是一款完整的多级解调对数放大器，它能将输入端的RF信号精确地转换为直流输出端的等效dB标度值。AD8313在0.1GHz至2.5GHz的信号频率范围内能保持较高的对数一致性。该应用很简单，只需2.7V至5.5V的单电源并添加合适的输入和电源耦合。它采用3V电源供电时，13.7mA功耗(对于 $T_A = 25^\circ\text{C}$)仅为41 mW.具有省电特性，输入拉高以启动低电流(20 μA)休眠模式，阈值为电源电压的一半。

当用作对数放大器时，比例由一个独立的反馈接口（跨导级）确定，该反馈接口将斜率设置为大约18mV/dB作为控制器，此级接受设置点输入。对数截距约为-100dBm，输出从-73dBm输入的0.45V直流到0dBm输入的1.75V DC。标度和截距稳定，温度稳定。

AD8313是在模拟器件先进的25GHz硅双极集成电路工艺上制造的，可在8引线SOIC封装中使用。

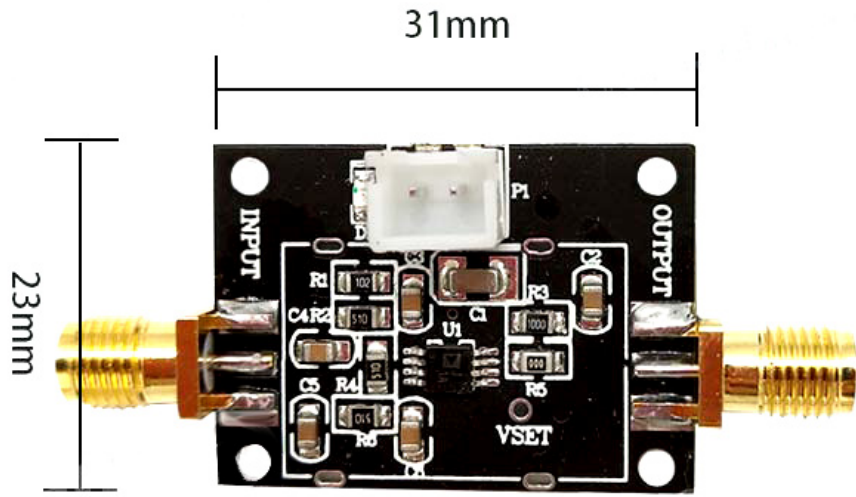
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模块接口图



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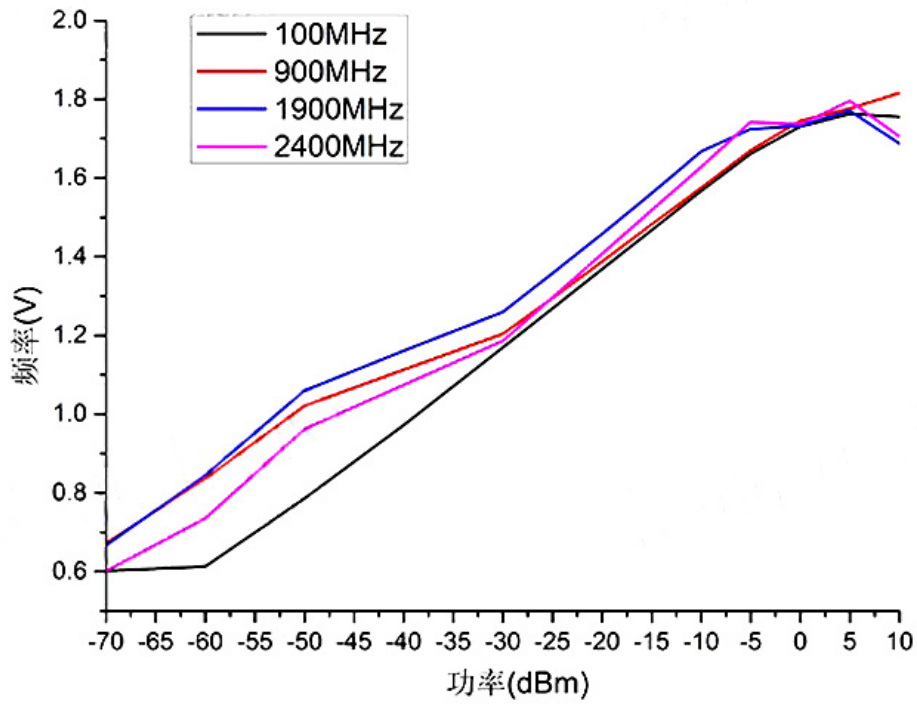
模块尺寸图



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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+10dBm。检波器动态范围80dB，有实测图可看出大于-5dBm开始出现非线性。
- (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



AD8313带宽100Mhz-2.5GHz 动态范围70dB

频率(MHz) 电压(V) 功率(dBm)	100	900	1900	2400
10	1.7551	1.8158	1.6870	1.7042
5	1.7629	1.7763	1.7703	1.7952
0	1.7304	1.7446	1.7322	1.7358
-5	1.6618	1.6699	1.7238	1.7422
-10	1.5669	1.5749	1.6678	1.6282
-15	1.4678	1.4817	1.5613	1.5182
-20	1.3679	1.3875	1.4579	1.4070
-25	1.2685	1.2951	1.3585	1.2964
-30	1.1693	1.2035	1.2599	1.1861
-40	0.9723	1.1125	1.1606	1.0743
-50	0.7862	1.0210	1.0600	0.9619
-60	0.6130	0.8364	0.8452	0.7351
-70	0.6025	0.6724	0.6673	0.6013

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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C2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C2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C2电容的情况下可以做快速检波或者解调。



0.1 GHz to 2.5 GHz 70 dB Logarithmic Detector/Controller

Data Sheet

AD8313

FEATURES

- Wide bandwidth: 0.1 GHz to 2.5 GHz min
- High dynamic range: 70 dB to ± 3.0 dB
- High accuracy: ± 1.0 dB over 65 dB range (@ 1.9 GHz)
- Fast response: 40 ns full-scale typical
- Controller mode with error output
- Scaling stable over supply and temperature
- Wide supply range: 2.7 V to 5.5 V
- Low power: 40 mW at 3 V
- Power-down feature: 60 mW at 3 V
- Complete and easy to use

APPLICATIONS

- RF transmitter power amplifier setpoint control and level monitoring
- Logarithmic amplifier for RSSI measurement cellular base stations, radio link, radar

GENERAL DESCRIPTION

The AD8313 is a complete multistage demodulating logarithmic amplifier that can accurately convert an RF signal at its input to an equivalent decibel-scaled value at its dc output. The AD8313 maintains a high degree of log conformance for signal frequencies from 0.1 GHz to 2.5 GHz. Application is straightforward, requiring only a single supply of 2.7 V to 5.5 V and the addition of a suitable input and supply decoupling. Operating on a 3 V supply, its 13.7 mA consumption (for $T_c = 25^\circ\text{C}$) is only 41 mW. A power-down feature is provided; the input is taken high to imitate a low current (20 μA) sleep mode, with a threshold at half the supply voltage.

The AD8313 is fabricated on Analog Devices, Inc., advanced 25 GHz silicon bipolar IC process and is available in an 8-lead MSOP package. The operating temperature range is -40°C to $+85^\circ\text{C}$.

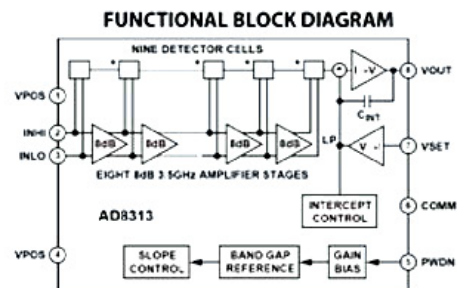


Figure 1.

Table 1. Next Generation Upgrades for AD8313

Part Number	Comments
ADL5513	Improved range and temperature stability, operation up to 4 GHz
AD8318	Improved temperature stability, operation up to 8 GHz
AD8317	Lower input range, improved temperature stability, operation up to 10 GHz
AD8319	Lower input range, improved temperature stability, operation up to 10 GHz

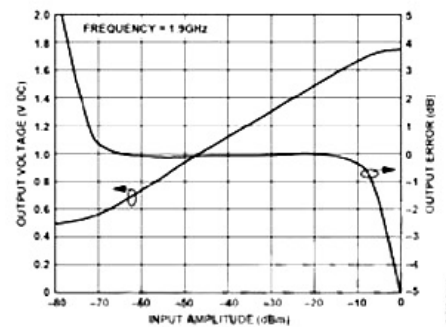


Figure 2. Typical Logarithmic Response and Error vs. Input Amplitude

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