

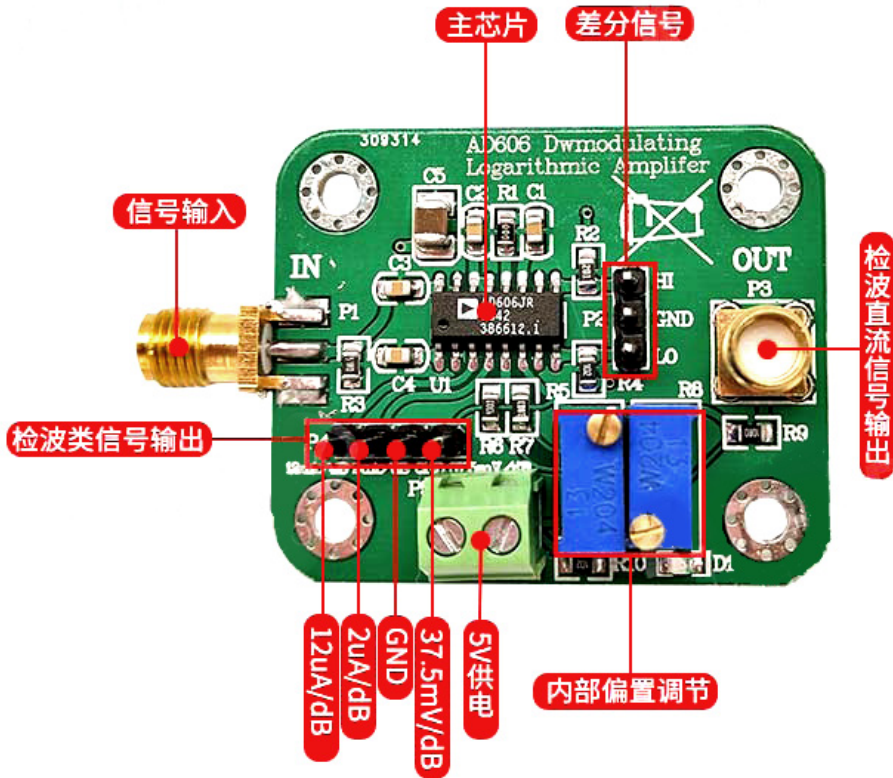
模块参数		
参数名称	参数值	备注
模块型号	AD606	
模块类型	射频对数检波器	
模块供电电压	DC5V	
模块供电电流	16mA	
输入信号形式	单端	
输入电压范围	-75dBm -- +5dBm	
输入频率范围	100Hz-70MHz	
输入阻抗	50欧	
输出电压范围	0.5V-3.5V	以实测值为准，不同模块之间有差异
输入信号特点	输入耦合	可为连续正弦波或者脉冲，脉冲测量需要修改电路，模块默认为连续均值检波。
输出电流	2mA (max)	输出为电压信号，一般不带电流
模块动态范围	80dB	
模块重量	12.9g	
模块保护	无	无反接保护，无限流保护
模块重量	12.9g	
模块规格	42*35*15mm	长*宽*高-PCB尺寸
模块屏蔽	无屏蔽盖	
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	0℃--+70℃	商业温度
模块特点		模块简约，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，3.81-2PIN电源座

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## 模块描述

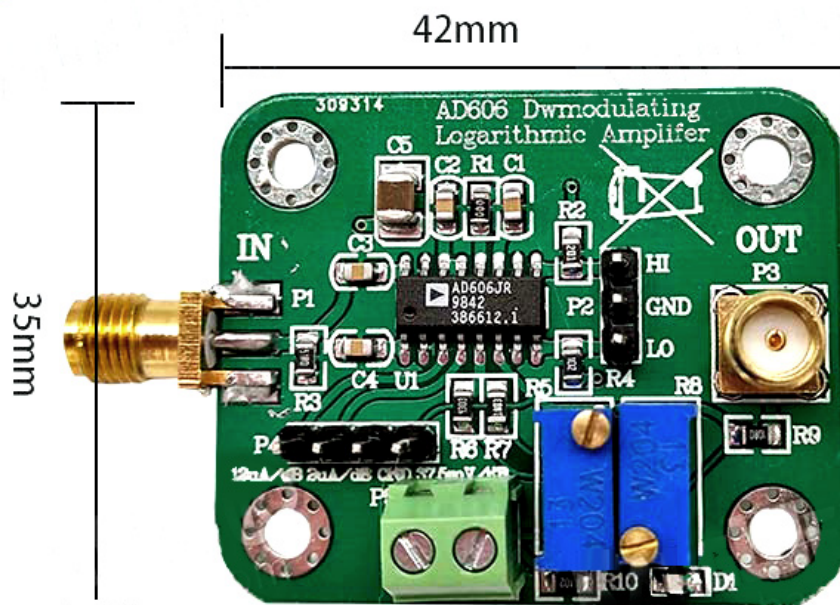
AD606是一款采用9级"连续检波"技术的完整、单芯片对数放大器。可提供对数输出和限幅输出。对数输出来自一个三极后解调低通滤波器，可提供+0.1V DC至+4V DC的可加载输出压。所有调整参数均与电源电压成比例，对数调整动态范围为:当正弦输入为-75dBm时，输出为+0.5V；当输入为+5dBm时，输出为+3.5V。超出此范围时，对数线性度典型值在 $\pm 0.4$  dB以内。第二低通滤波器自动将第一级的输入失调电压抵消至微伏以下水平。如果给两个滤波器增加外部电容，则该器件可在低至几赫兹的输入频率工作。

AD606的限幅器输出提供了一个硬限制的信号输出,作为一个 $\pm 1.2$ mA的微分电流从开放采集输出。在一个典型的应用中,这两个输出都由 $200\Omega$ 电阻负载,从输入端提供超过90dB的电压增益。在-75dBm到+5dBm信号下，在10.7MHz时,过渡时间为1.5ns,相位稳定在 $\pm 3^\circ$ 以内。



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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+5dBm。
- (2) 检波器动态范围80dB。
- (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。

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## 模块测试图

AD606带宽100Hz-75MHz 动态范围80dB						
功率(dBm)	频率(Hz) 电压(V)	100	1M	10.7M	45M	75M
5		3.195	3.203	3.323	3.159	2.686
0		3.054	3.062	3.181	3.047	2.595
-5		2.955	2.964	3.084	2.974	2.536
-10		2.865	2.873	2.995	2.891	2.479
-15		2.738	2.745	2.863	2.767	2.375
-20		2.567	2.575	2.685	2.616	2.246
-25		2.386	2.394	2.501	2.454	2.127
-30		2.191	2.201	2.304	2.271	1.979
-35		1.998	2.009	2.109	2.090	1.829
-40		1.796	1.817	1.912	1.904	1.675
-45		1.584	1.622	1.711	1.718	1.515
-50		1.350	1.432	1.515	1.535	1.363
-55		1.046	1.239	1.313	1.348	1.203
-60		0.664	1.053	1.111	1.165	1.048
-65		0.381	0.864	0.905	0.973	0.883
-70		0.301	0.667	0.700	0.767	0.709
-75		0.278	0.460	0.500	0.556	0.522

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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R1和C1电容换为小电阻和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R1和C1的值就要更小。

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: 由于模块的输出对应的电压斜率是可调, 所以基本都不会一致, 需要将电位器调节到一致的情况模块的输出才可能一致。模块之间存在个体差异, 详情实测图为典型数据, 具体参数已实测为准



## 50 MHz, 80 dB Demodulating Logarithmic Amplifier with Limiter Output

### AD606

#### FEATURES

- Logarithmic Amplifier Performance**
  - 75 dBm to +5 dBm Dynamic Range
  - $\leq 1.5$  nV/ $\sqrt{\text{Hz}}$  Input Noise
  - Usable to >50 MHz
  - 37.5 mV/dB Voltage Output
  - On-Chip Low-Pass Output Filter
- Limiter Performance**
  - $\pm 1$  dB Output Flatness over 80 dB Range
  - $\pm 3^\circ$  Phase Stability at 10.7 MHz over 80 dB Range
  - Adjustable Output Amplitude
- Low Power**
  - +5 V Single Supply Operation
  - 65 mW Typical Power Consumption
  - CMOS-Compatible Power-Down to 325  $\mu\text{W}$  typ
  - <5  $\mu\text{s}$  Enable/Disable Time

#### APPLICATIONS

- Ultrasound and Sonar Processing
- Phase-Stable Limiting Amplifier to 100 MHz
- Received Signal Strength Indicator (RSSI)
- Wide Range Signal and Power Measurement

#### PRODUCT DESCRIPTION

The AD606 is a complete, monolithic logarithmic amplifier using a 9-stage "successive-detection" technique. It provides both logarithmic and limited outputs. The logarithmic output is from a three-pole post-demodulation low-pass filter and provides

a loadable output voltage of +0.1 V dc to +4 V dc. The logarithmic scaling is such that the output is +0.5 V for a sinusoidal input of -75 dBm and +3.5 V at an input of +5 dBm; over this range the logarithmic linearity is typically within  $\pm 0.4$  dB. All scaling parameters are proportional to the supply voltage.

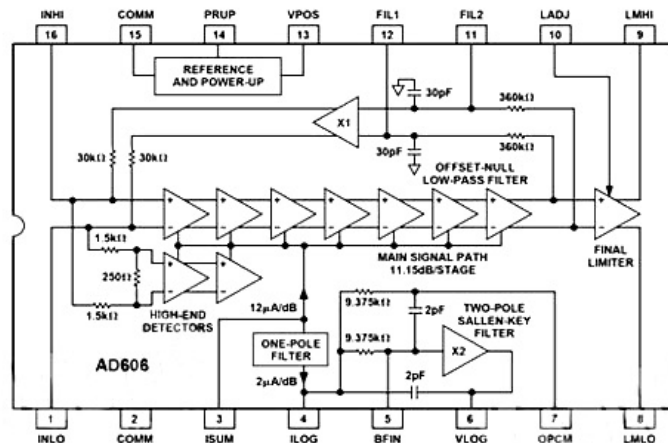
The AD606 can operate above and below these limits, with reduced linearity, to provide as much as 90 dB of conversion range. A second low-pass filter automatically nulls the input offset of the first stage down to the submicrovolt level. Adding external capacitors to both filters allows operation at input frequencies as low as a few hertz.

The AD606's limiter output provides a hard-limited signal output as a differential current of  $\pm 1.2$  mA from open-collector outputs. In a typical application, both of these outputs are loaded by 200  $\Omega$  resistors to provide a voltage gain of more than 90 dB from the input. Transition times are 1.5 ns, and the phase is stable to within  $\pm 3^\circ$  at 10.7 MHz for signals from -75 dBm to +5 dBm.

The logarithmic amplifier operates from a single +5 V supply and typically consumes 65 mW. It is enabled by a CMOS logic level voltage input, with a response time of <5  $\mu\text{s}$ . When disabled, the standby power is reduced to <1 mW within 5  $\mu\text{s}$ .

The AD606 is specified for the commercial temperature range of 0°C to +70°C and is available in 16-lead plastic DIPs or SOICs. Consult the factory for other packages and temperature ranges.

#### FUNCTIONAL BLOCK DIAGRAM



REV. B

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