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模块参数

模块参数		
参数名称	参数值	备注
模块型号	DAC902	
模块类型	数模转换模块	
模块供电	DC5V	
模块电流	50mA (MAX)	
模块通讯协议	12位并行	
模块提供例程	STM32F103RBT6	
例程平台	STM32F103X-M3	KEIL5版本源码
模块输出电压范围	$\pm 1.24V$	
DAC分辨率位数	12位	
输出通道数	单通道	
模块输出接口	SMA	24小时镀盐雾抗氧化
模块输出信号	电压	OPA690芯片输出，有一定驱动能力，50mA以内
基准电压	1.24V	预留SOT-23封装的外部输入基准
电压建立时间	30nS	
DAC采样率	165MSPS	
DAC输出模拟带宽	33MHz	
模块特点	多种	具有输出缓冲放大器，超低交流串扰，超快建立时间
模块应用	多种	数字微波连接，电缆调制器，任意波形生成，高速仪器控制，视频和数字电视
模块重量	19g	
模块规格	54*42*12	长*宽*高-PCB尺寸
模块接口类型		SMA信号输出，3.81-2PIN电源座子XH2.54双排针数据接口

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模块描述

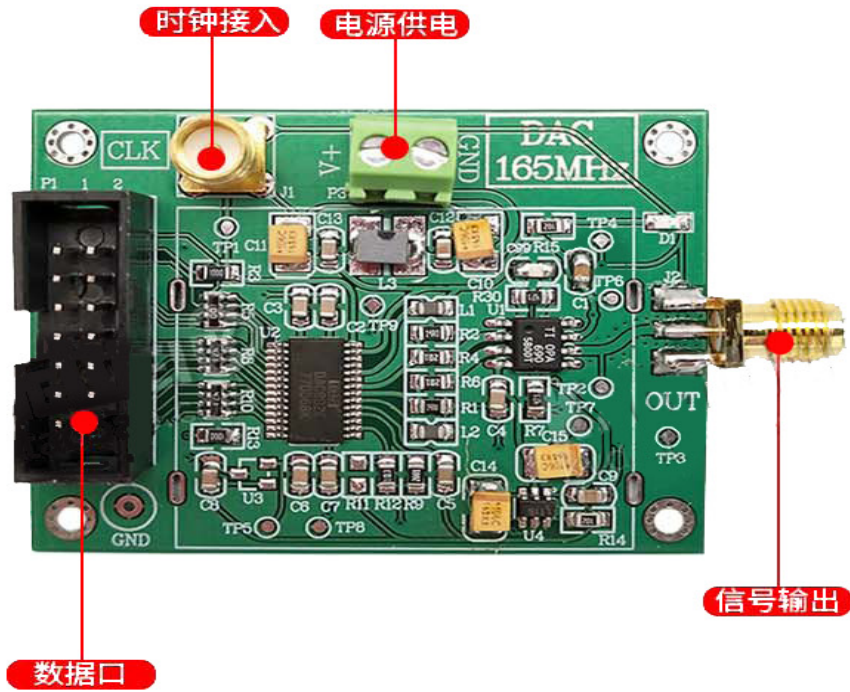
DAC902是一种12位分辨率高速数模转换器。支持超过165MSPS的更新速率，并具有出色的动态性能，尤其适合满足各种应用的需求。

DAC902的高级分段架构经过优化，可为单音以及多音信号提供高无杂散动态范围（SFDR），这在用于通信系统的发射信号路径时必不可少。电流输出的紧密匹配具有出色的动态性能。

它的低功耗使其可用于便携式和电池供电的系统。通过使用可调的满量程选项降低输出电流，可以实现进一步的优化。一般可用于数字微波连接，电缆调制器，任意波形生成，高速仪器控制，视频和数字电视等方向。

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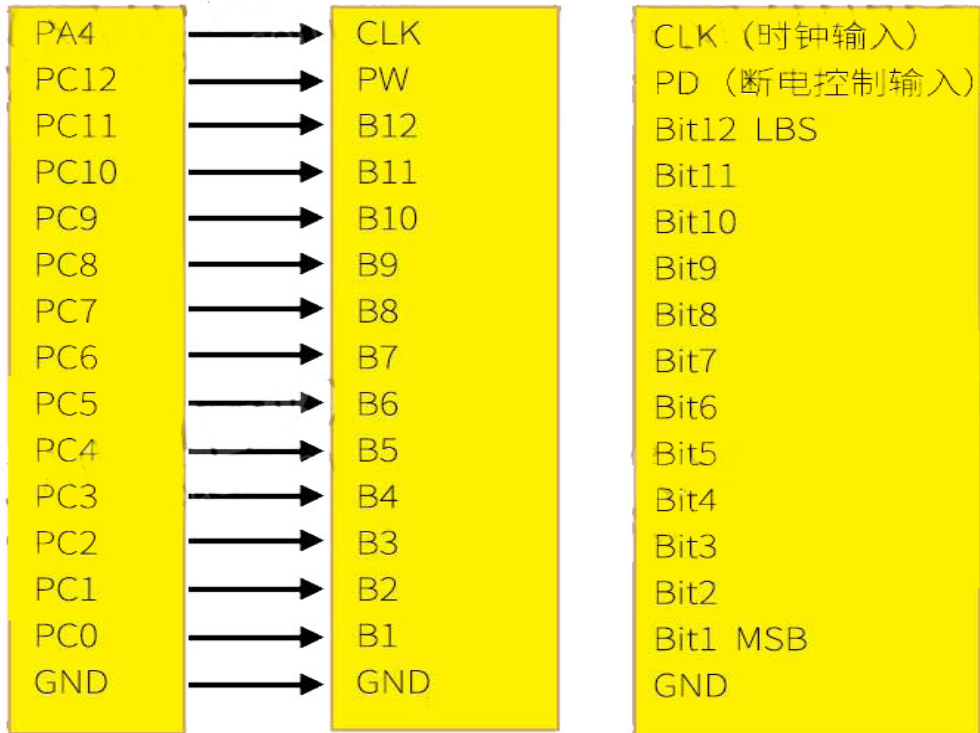
模块接口图



STM32单片机管脚

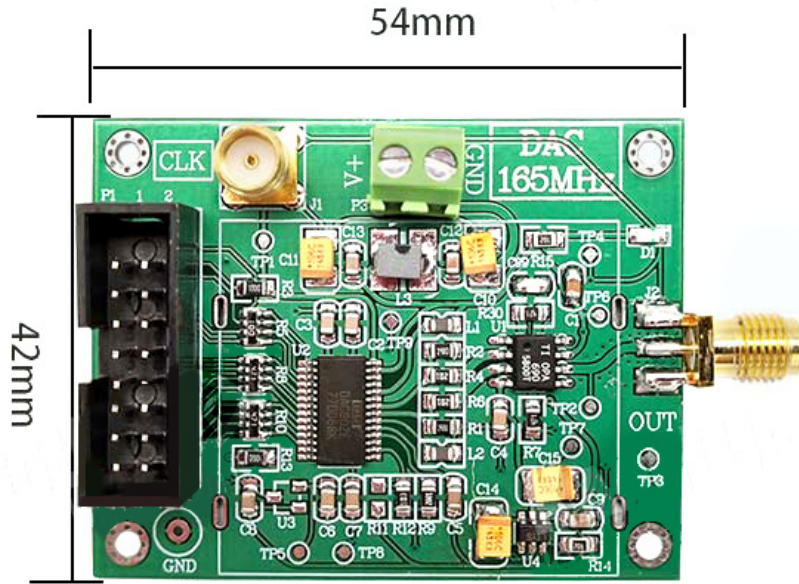
本店DAC902管脚

功能



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模块尺寸图



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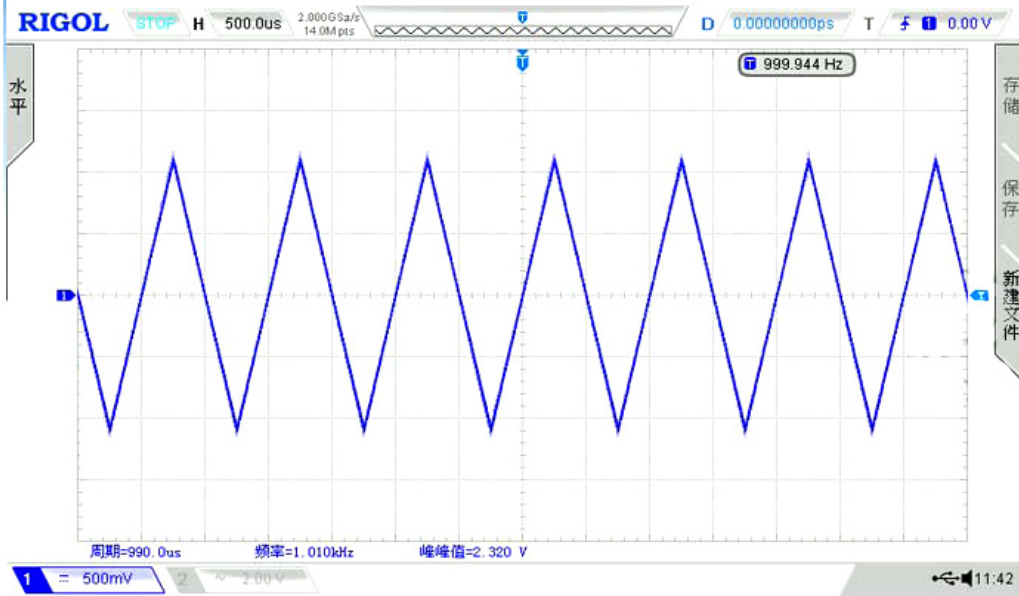
模块使用注意事项

- (1) 模块为低功耗模块，供电电源不超过5.5V。
- (2) 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。
- (3) 输出信号线建议使用SMA对应接口。接口不匹配容易导致接触不良，劣质的线材可能导致信号衰减或者噪声过大。
- (4) 配送的代码仅为配套主控板使用，不提供单片机教程，宝贝详情展示以外的功能需要自行开发。
- (5) 如需简单测试模块功能，建议搭配本店控制板使用，正确接线后给控制板供电即可实现模拟电压输出。

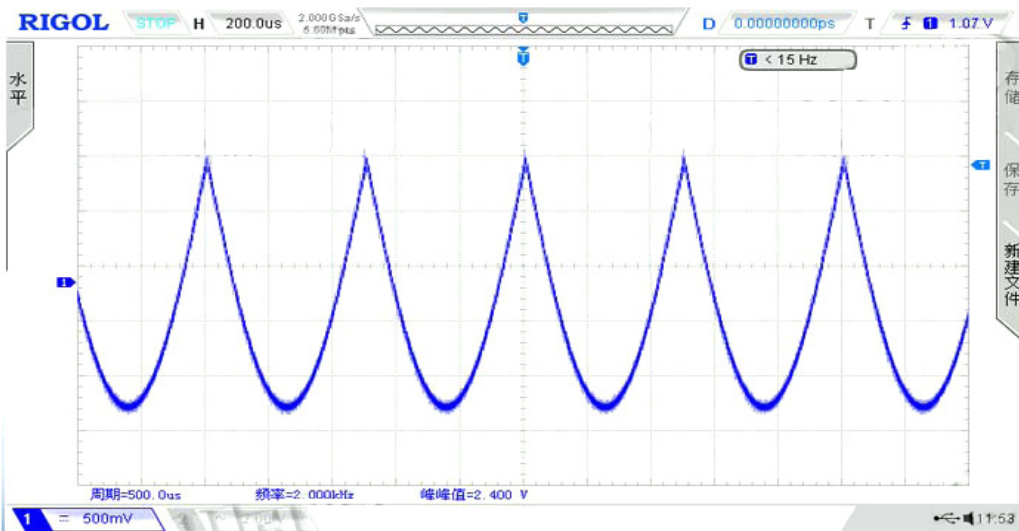
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模块测试图

三角波



半正弦波



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常见问题解答

Q:配套本店的主控板，DAC902能生成正弦波频率最高是多少？

A:本店主控板默认配置的输出频率是1KHz，由于单片机无法达到DAC902最佳性能，所以就没有测试极限值，一般需要用到FPGA这样高速的处理器才能发挥出所有性能，理论最高是33MHz正弦波？

Q:模块的输出电压范围能到增大么？控制精度是多少？输出电流的能力是多少？

A:目前模块的电路只能输出±1.25V，输出电压控制精度为1mV（电源纹波低）。电流输出50mA以内，可根据原理图修改放大倍率，即可提高输出电压，但是控制精度也会降低。

Q:板子上的SMA口的时钟和排针上的时钟有什么区别？

A:没有区别，SMA口只是有更好的屏蔽效果，抗干扰性强一些。



Burr-Brown Products
from Texas Instruments

DAC902



SBAS094B – MAY 2002

Speed^{PLUS} 12-Bit, 165MSPS DIGITAL-TO-ANALOG CONVERTER

FEATURES

- SINGLE +5V OR +3V OPERATION
- HIGH SFDR: 6MHz Output at 100MSPS: 67dBc
- LOW GLITCH: 3pV-s
- LOW POWER: 170mW at +5V
- INTERNAL REFERENCE:
 - Optional Ext. Reference
 - Adjustable Full-Scale Range
 - Multiplying Option

DESCRIPTION

The DAC902 is a high-speed, Digital-to-Analog Converter (DAC) offering a 12-bit resolution option within the *SpeedPlus* Family of high-performance converters. Featuring pin compatibility among family members, the DAC908, DAC900, and DAC904 provide a component selection option to an 8-, 10-, and 14-bit resolution, respectively. All models within this family of DACs support update rates in excess of 165MSPS with excellent dynamic performance, and are especially suited to fulfill the demands of a variety of applications.

The advanced segmentation architecture of the DAC902 is optimized to provide a high Spurious-Free Dynamic Range (SFDR) for single-tone, as well as for multi-tone signals—essential when used for the transmit signal path of communication systems.

The DAC902 has a high impedance (200k Ω) current output with a nominal range of 20mA and an output compliance of up to 1.25V. The differential outputs allow for both a differential or single-ended analog signal interface. The close matching of the current outputs ensures superior dynamic performance in the differential configuration, which can be implemented with a transformer.

Utilizing a small geometry CMOS process, the monolithic DAC902 can be operated on a wide, single-supply range of +2.7V to +5.5V. Its low power consumption allows for use in portable and battery-operated systems. Further optimization can be realized by lowering the output current with the adjustable full-scale option.

APPLICATIONS

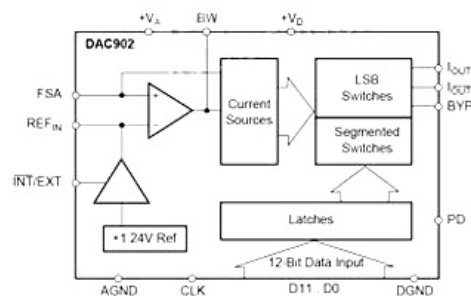
- COMMUNICATION TRANSMIT CHANNELS:
 - WLL, Cellular Base Station
 - Digital Microwave Links
 - Cable Modems
- WAVEFORM GENERATION:
 - Direct Digital Synthesis (DDS)
 - Arbitrary Waveform Generation (ARB)
- MEDICAL/ULTRASOUND
- HIGH-SPEED INSTRUMENTATION AND CONTROL
- VIDEO, DIGITAL TV

For noncontinuous operation of the DAC902, a power-down mode results in only 45mW of standby power.

The DAC902 comes with an integrated 1.24V bandgap reference and edge-triggered input latches, offering a complete converter solution. Both +3V and +5V CMOS logic families can be interfaced to the DAC902.

The reference structure of the DAC902 allows for additional flexibility by utilizing the on-chip reference, or applying an external reference. The full-scale output current can be adjusted over a span of 2mA to 20mA, with one external resistor, while maintaining the specified dynamic performance.

The DAC902 is available in the SO-28 and TSSOP-28 packages.



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