

# AC6908C 芯片规格书

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## AC6908C Features

### High performance 32-bit RISC CPU

- RISC 32bit CPU
- DC-160MHz operation
- Support DSP instructions
- 64Vectored interrupts
- 4 Levels interrupt priority

### Flexible I/O

- 4 GPIO pins
- All GPIO pins can be programmable as input or output individually
- All GPIO pins are internal pull-up/pull-down selectable individually
- CMOS/TTL level Schmitt triggered input
- External wake up/interrupt on all GPIOs

### Peripheral Feature

- One full speed USB 2.0 OTG controller
- Four multi-function 16-bit timers, support capture and PWM mode
- One full-duplex basic UART
- One full-duplex advanced UART
- One IIC interface supports host and device mode
- Watchdog
- 1 Crystal Oscillator
- 16-bit Stereo DAC, SNR > 90dB
- 1 channels Stereo ADC, SNR > 90dB
- 1 channel MIC amplifier
- Embedded headphone amplifier
- 1 channels analog MUX
- 10-bit ADC
- 2 channels 4 levels Low Voltage Detector
- Power-on reset
- Embedded PMU

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**Bluetooth Feature**

- CMOS single-chip fully-integrated radio and baseband
- Compliant with Bluetooth V4.2+BR+EDR+BLE specification
- Bluetooth Piconet and Scatternet support
- Meet class2 and class3 transmitting power requirement
- Support GFSK and  $\pi/4$  DQPSK all packet types
- Provides +2dbm transmitting power
- receiver with -85dBm sensitivity
- Support a2dp\avctp\avdtp\avrcp\hfp\spp\smp\att\gap\gatt\rfcomm\sdpl2cap profile

**Power Supply**

- LDOIN is 3.3V to 5.5V
- VDDIO is 3.0V to 3.6V

**Packages**

- TSSOP20

**Temperature**

- Operating temperature: -40°C to +85°C
- Storage temperature: -65°C to +150°C

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## 一、引脚定义

### 1.1 引脚分配

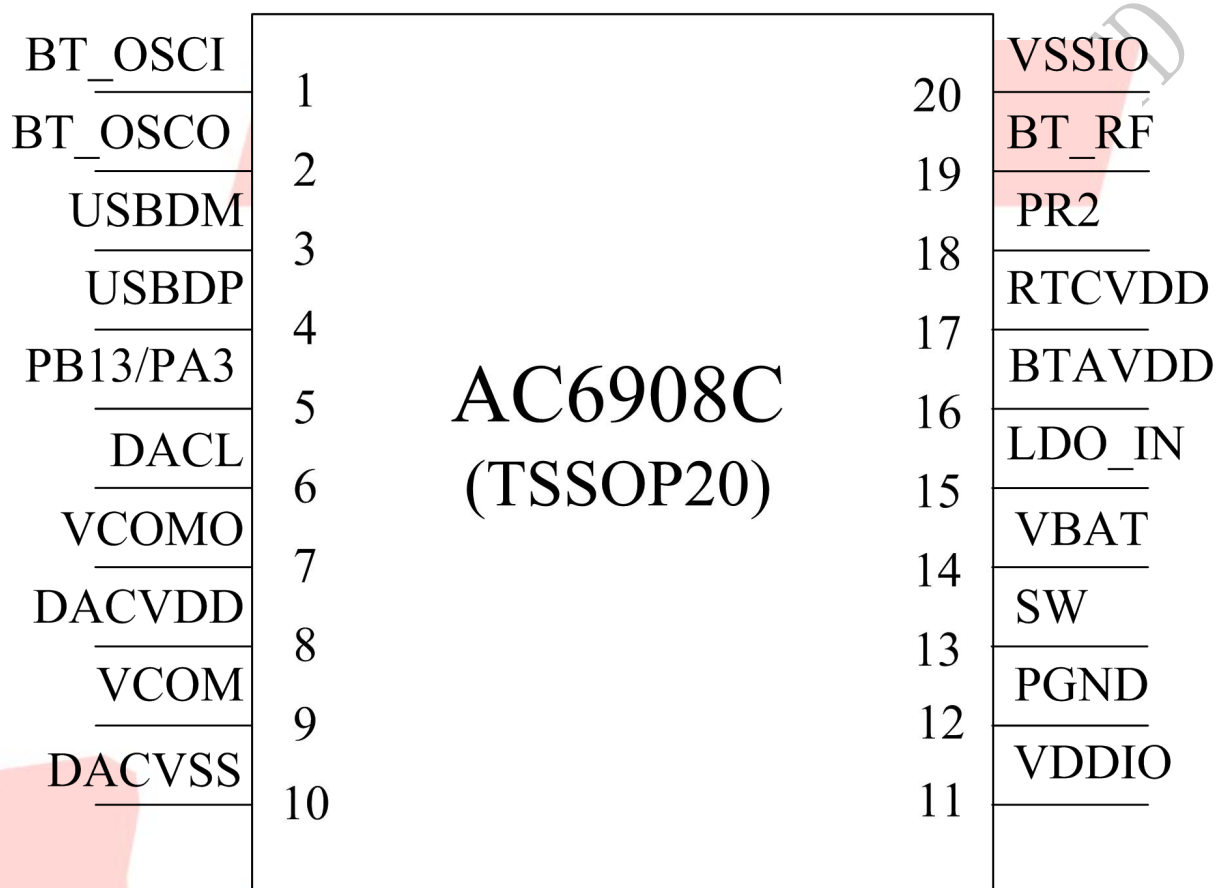


图 1-1 AC6908C\_TSSOP20 引脚分配图

## 1.2 引脚描述

表 1-1 AC6908C\_TSSOP20 引脚描述

PIN NO.	Name	I/O Type	Drive (mA)	Function	Other Function
1	BT_OSCI	I	/	OSC In	
2	BT_OSCO	O	/	OSC Out	
3	USBDM	I/O	4	USB Negative Data	
4	USBDP	I/O	4	USB Positive Data	
5	PB13	I/O	16	GPIO	MIC
	PA3	I/O	16	GPIO	AMU3X1L: Simulator Channel 1 Left; ADC0: ADC Input Channel 0; UART2TXA: Uart2 Data Out(A); Wakeup8: Port Interrupt /Wakeup 8;
6	DACL	O	/	DAC Left Channel	
7	VCOMO	O	/	DAC Reference out	
8	DACVDD	P	/	DAC Power	
9	VCOM	P	/	DAC Reference	
10	DACVSS	P	/	DAC Ground	
11	VDDIO	P	/	IO Power 3.3v	
12	PGND	P	/	Ground	
13	SW	P	/	DC-DC Switch	
14	VBAT	P	/	LDO Power	
15	LDO_IN	P	/	LDO Power Supply	
16	BT_AVDD	P	/	Power 1.5v	
17	RTCVD	P	/	RTC Power 3.3v	
18	PR2	I/O	16	RTCIO2	ADC13: ADC Input Channel 13;
19	BT_RF	P	/		
20	VSSIO	P	/	Ground	

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## 二、电气特性

### 2.1 PMU 电压、电流特性

表 2-1

符号	参数	最小	典型	最大	单位	测试条件
LDOIN	Voltage Input	3	3.7	5.5	V	
V <sub>3.3</sub>	Voltage output	-	3.3	-	V	LDO5V = 5V, 100mA loading
V <sub>1.2</sub>		-	1.2	-	V	LDO5V = 5V, 50mA loading
V <sub>1.5</sub>	Voltage output		1.5		V	LDO5V=5V, 100mA loading
V <sub>DACVDD</sub>	DAC Voltage	-	3.1	-	V	LDO5V = 5V, 10mA loading
I <sub>L3.3</sub>	Loading current	-	-	150	mA	LDO5V = 5V

### 2.2 IO 输入、输出高低逻辑特性

表 2-2

IO 输入特性						
符号	参数	最小	典型	最大	单位	测试条件
V <sub>IL</sub>	Low-Level Input Voltage	-0.3	-	0.3* VDDIO	V	VDDIO = 3.3V
V <sub>IH</sub>	High-Level Input Voltage	0.7* VDDIO	-	VDDIO+0.3	V	VDDIO = 3.3V
IO 输出特性						
V <sub>OL</sub>	Low-Level Output Voltage	-	-	0.33	V	VDDIO = 3.3V
V <sub>OH</sub>	High-Level Output Voltage	2.7	-	-	V	VDDIO = 3.3V

### 2.3 IO 输出能力、上下拉电阻特性

表 2-3

Port 口	普通输出	强输出	上拉电阻	下拉电阻	备注
PB13 PR2	串接 200 欧电阻（寄存器可控制）	16mA	10K	60K	1、内部上下拉阻抗因工艺波动差异，可能存在±20%的偏差
USBDM USBDP	4mA	-	1.5K	15K	

## 2.4 DAC 特性

参数	最小	典型	最大	单位	测试条件
Frequency Response	20	—	20000	Hz	1KHz/0dB 10Kohm loading With A-Weighted Filter
THD+N	—	-70	—	dB	
S/N	—	90	—	dB	
Crosstalk	—	-86	—	dB	
Output Swing	—	1.08	—	Vrms	
Dynamic Range	—	91	—	dB	1KHz/-60dB 10Kohm loading With A-Weighted Filter
DAC Output Power	—	>11	—	mW	32ohm loading

## 2.5 ADC 特性

参数	最小	典型	最大	单位	测试条件
Dynamic Range	—	91	—	dB	1KHz/-60dB 10Kohm loading With A-Weighted Filter
S/N	—	90	—	dB	1KHz/-60dB
THD+N	—	-70	—	dB	10Kohm loading
Crosstalk	—	-80	—	dB	With A-Weighted Filter

## 2.6 BT 特性

表 2-4

参数	最小	典型	最大	单位	测试条件
Maximum Output Power	—	2	—	dBm	—
RMS DEVM	—	5.3	—	%	Maximum output power
PEAK DEVM	—	12	—	%	
99% DEVM	—	8	—	%	
EDR Relative Power	—	-1.4	—	dB	
BDR Sensitivity	—	-84	—	dBm	BER=0.001
EDR Sensitivity	—	-86	—	dBm	BER=0.0001

## 三、封装

### 3.1 TSSOP20

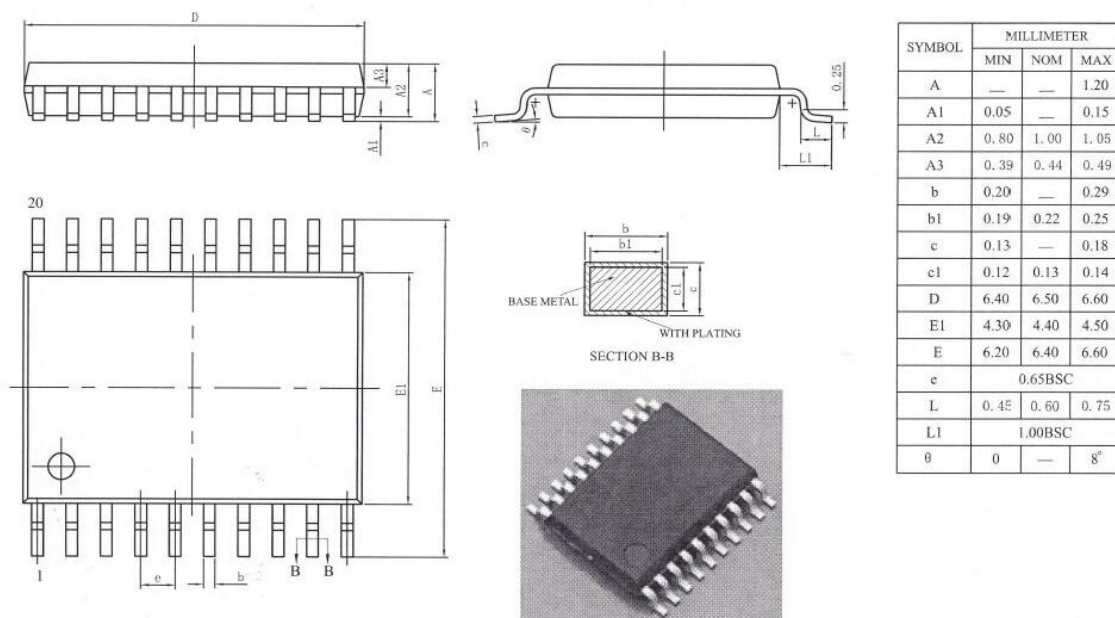


图 3-1 AC6908C\_TSSOP20 封装图



## 四、版本信息

日期	版本号	描述
2016.09.22	V1.0	原始版本
2016.12.14	V1.1	升级蓝牙版本为 4.2，增加可支持的蓝牙协议
2016.12.22	V1.2	规范统一蓝牙 4.2 版本格式
2017.03.23	V1.3	添加蓝牙支持的数据包类型