AC6905C 芯片规格书

珠海市杰理科技有限公司

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AC6905C 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

- 8 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 SPI interface supports host and device mode
- One SD Card Host controller
- 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 Stereo analog MUX
- 10-bit ADC
- 2 channels 4 levels Low Voltage Detector
- Built in Cap Sense Key controller
- Power-on reset
- Embedded PMU

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
- Provides +2dBm transmitting power
- receiver with -85dBm sensitivity
- Support a2dp\avctp\avdtp\avrcp\hfp\spp\smp\att\gap\gatt\rfcomm\sdp\l2cap profile

Power Supply

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

Packages

- QSOP24

Temperature

- Operating temperature: -40℃ to +85℃
- Storage temperature: -65℃ to +150℃

一、引脚定义

1.1 引脚分配

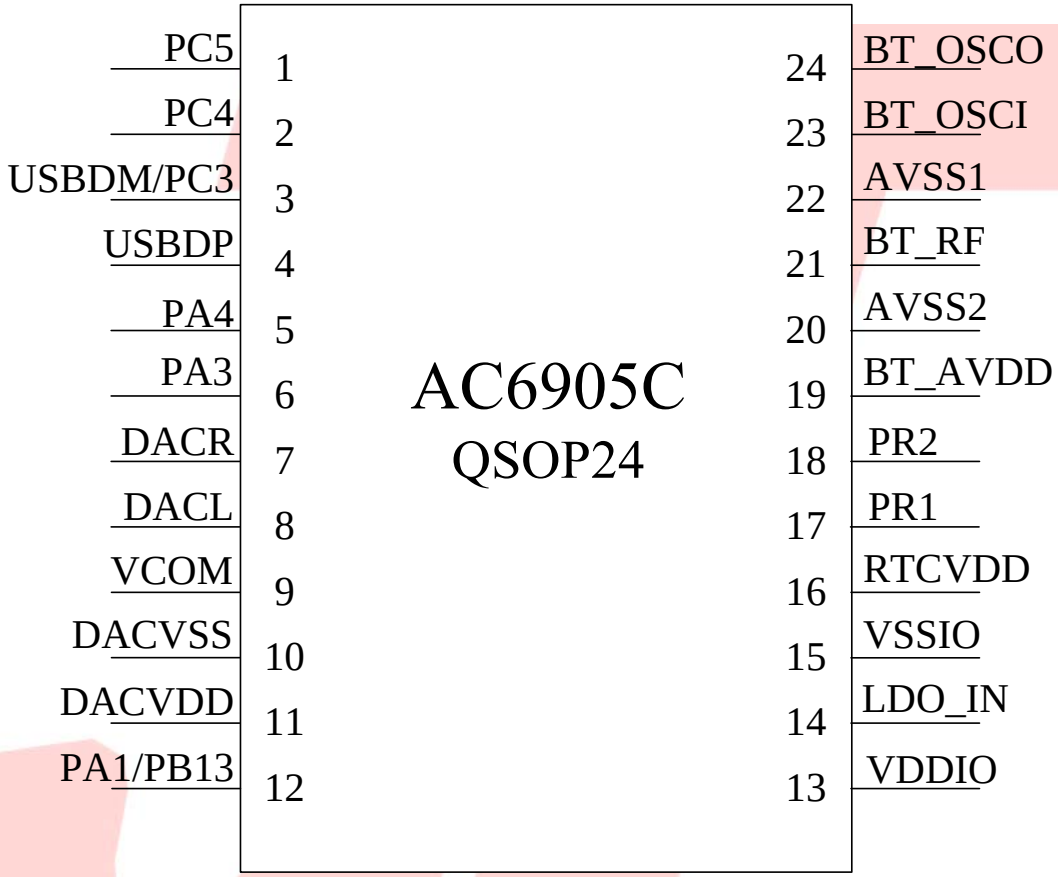


图 1-1 AC6905C_QSOP24 引脚分配图

1.2 引脚描述

表 1-1 AC6905C_QSOP24 引脚描述

PIN NO.	Name	I/O Type	Drive (mA)	Function	Other Function
1	PC5	I/O	16	GPIO	SD1CLKA：SD1 Clk(A); PAPWR：PAP Write; SPI1DOB：SPI1 Data Out(B); UART2RXD：Uart2 Data In(D) IIC_SDA_B：IIC SDA(B);
2	PC4	I/O	16	GPIO	SD1CMDA：SD1 Command(A); SPI1CLKB：SPI1 Clk(B); UART2TXD：Uart2 Data Out(D); IIC_SCL_B：IIC SCL(B);
3	PC3	I/O	16	GPIO	SD1DAT0A：SD1 Data0(A); SPI1DIB：SPI1 Data In(B); UART0RXC：Uart0 Data In(C)
	USBDM	I/O	4	USB Negative Data	
4	USBDP	I/O	4	USB Positive Data	
5	PA4	I/O	16	GPIO	AMUX1R：Simulator Channel1 Right; Touch11：Touch Input Channel 11; ADC1：ADC Input Channel 1; UART2RXA：Uart2 Data In(A); PWM1：Timer1 PWM Output;
6	PA3	I/O	16	GPIO	AMUX1L：Simulator Channel 1 Left; Touch10：Touch Input Channel 10; ADC0：ADC Input Channel 0; UART2TXA：Uart2 Data Out(A); Wakeup8：Port Interrupt /Wakeup 8;
7	DACR	O	/	DAC Right Channel	
8	DACL	O	/	DAC Left Channel	
9	VCOM	P	/	DAC Reference	
10	DACVSS	P	/	DAC Ground	
11	DACVDD	P	/	DAC Power	
12	PA1	I/O	16	GPIO	AMUX0L：Simulator Channel0 left;

					Touch8：Touch Input Channel 8; PWM0：Timer0 PWM Output; UART1TXC：Uart1 Data Out(C);
	PB13	I/O	16	GPIO	MIC
13	VDDIO	P	/	IO Power 3.3v	
14	LDO_IN	P	/	LDO Power Supply	
15	VSSIO	P	/	Ground	
16	RTCVDD	P	/	RTC Power 3.3v	
17	PR1	I/O	16	RTCIO1	ADC12：ADC Input Channel 12;
18	PR2	I/O	16	RTCIO2	ADC13：ADC Input Channel 13;
19	BT_AVDD	P	/	Power 1.5v	
20	AVSS2	P	/	Ground	
21	BT_RF	P	/		
22	AVSS1	P	/	Ground	
23	BT_OSCI	I	/	OSC In	
24	BT_OSCO	O	/	OSC Out	

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	
$V_{3.3}$	Voltage output	_	3.3	_	V	LDO5V = 5V, 100mA loading
$V_{1.2}$		_	1.2	_	V	LDO5V = 5V, 50mA loading
$V_{1.5}$	Voltage output		1.5		V	LDO5V=5V, 100mA loading
V_{DACVDD}	DAC Voltage	_	3.1	_	V	LDO5V = 5V, 10mA loading
$I_{L3.3}$	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_{IL}	Low-Level Input Voltaget	-0.3	_	0.3* VDDIO	V	VDDIO = 3.3V
V_{IH}	High-Level Input Voltage	0.7* VDDIO	_	VDDIO+0.3	V	VDDIO = 3.3V
IO 输出特性						

V_{OL}	Low-Level Output Voltaget	–	–	0.33	V	VDDIO = 3.3V
V_{OH}	High-Level Output Voltaget	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
PA3、PA4 PA1、PB13 PR1、PR2 PC3~PC5	串接200欧电阻（寄存器可控制）	16mA	10K	60K	1、PA3 default pulldown 2、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	–	200000	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 10Kohm loading With A-Weighted Filter
THD+N	–	-70	–	dB	
Crosstalk	–	-80	–	dB	

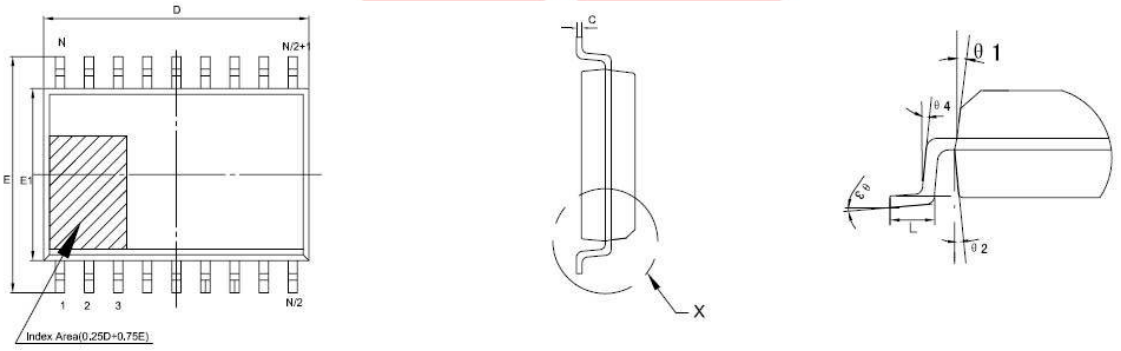
2.6 BT 特性

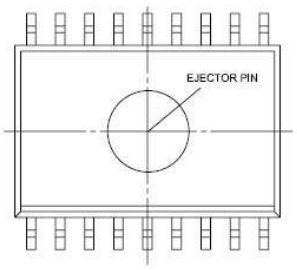
表 2-4

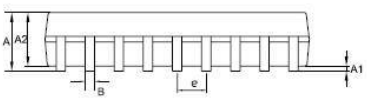
参数	最小	典型	最大	单位	测试条件
Maximum Output Power	_	2	_	dBm	_
RMS DEVM	_	5.3	_	%	Maximum output power
PEAK DEVM	_	12	_	%	
99% DEVM	_	8	_	%	
EDR Relative Power	_	-1.4	_	dB	
BDR Sensitivity	_	-84	_	dBm	BER=0.001
EDR Sensitivity	_	-86	_	dBm	BER=0.0001

三、封装

3.1 QSOP24







Symbol	符号	QSOP24		
		Min	Nom	Max
A	总高	1.50		1.80
A1	站高	0.102		0.249
A2	塑封体厚	1.40		1.55
E	跨度	5.842		6.198
E1	塑封体宽	3.861		3.998
D	塑封体长	8.585		8.738
L	脚长	0.406		0.889
e	脚间距	0.635TYP		
B	脚宽度	0.20		0.30
C	脚厚度	0.2TYP		
θ1	脱模斜度	8° TYP		
θ2	脱模斜度	8° TYP		
θ3	脚角度	0°		8°
θ4	成型肩部角度	4° TYP		

图 3-1 AC6905C_QSOP24 封装图

四、版本信息

日期	版本号	描述
2016.12.08	V1.0	原始版本
2016.12.22	V1.1	规范统一蓝牙 4.2 版本格式