

# **AC6925F Datasheet**

**Zhuhai Jieli Technology Co.,LTD**

**Version: V1.0**

**Date: 2018.09.05**

**Copyright © Zhuhai Jieli Technology Co.,LTD. All rights reserved.**

## AC6925F Features

### High performance 32-bit RISC CPU

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

### Flexible I/O

- 9 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
- Three 16-bit PWM generator for motor driving
- One full-duplex basic UART
- Two 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
- One Quadrate decoder
- Watchdog
- 1 Crystal Oscillator
- 16-bit Stereo DAC with headphone amplifier, SNR >= 95dB
- 1 channel ADC , SNR >= 90dB
- 1 channel MIC amplifier
- 1 channels Stereo analog MUX
- 6 channels 10-bit ADC
- 2 channels 8 levels Low Voltage Detector
- Power-on reset
- Embedded PMU support low power mode

### Bluetooth Feature

- CMOS single-chip fully-integrated radio and baseband
- Compliant with Bluetooth V5.0+BR+EDR+BLE specification
- Bluetooth Piconet and Scatternet support
- Meet class2 and class3 transmitting power requirement
- Support GFSK and  $\pi/4$  DQPSK all paket types

### Confidential

The information contained herein is the exclusive property of JIELI and shall not be distributed, reproduced, or disclosed in whole or in part without prior written permission of JIELI.

- Provides +2dbm transmitting power
- receiver with -89dBm sensitivity
- Support a2dp\avctp\avdtp\avrcp\hfp\spp\smp\att\gap\gatt\rfcomm\sdpl2cap profile

### FM Tuner

- Support worldwide frequency band 76-108MHz
- Fully integrated digital low-IF tuner & frequency synthesizer
- Autonomous search tuning
- Digital auto gain control (AGC)
- Digital adaptive noise cancellation
- Programmable de-emphasis (50/75 uS)
- Receive signal strength indicator (RSSI)
- Radio search in multi-channel simultaneously
- Digital volume control

### Power Supply

- VBAT is 2.2V to 5.5V
- VDDIO is 2.2V to 3.6V
- RTCVDD is 2.2V to 3.6V

### Packages

- QSOP24

### Temperature

- Operating temperature: -20°C to +70°C
- Storage temperature: -65°C to +150°C

# 1、 Pin Definition

## 1.1 Pin Assignment

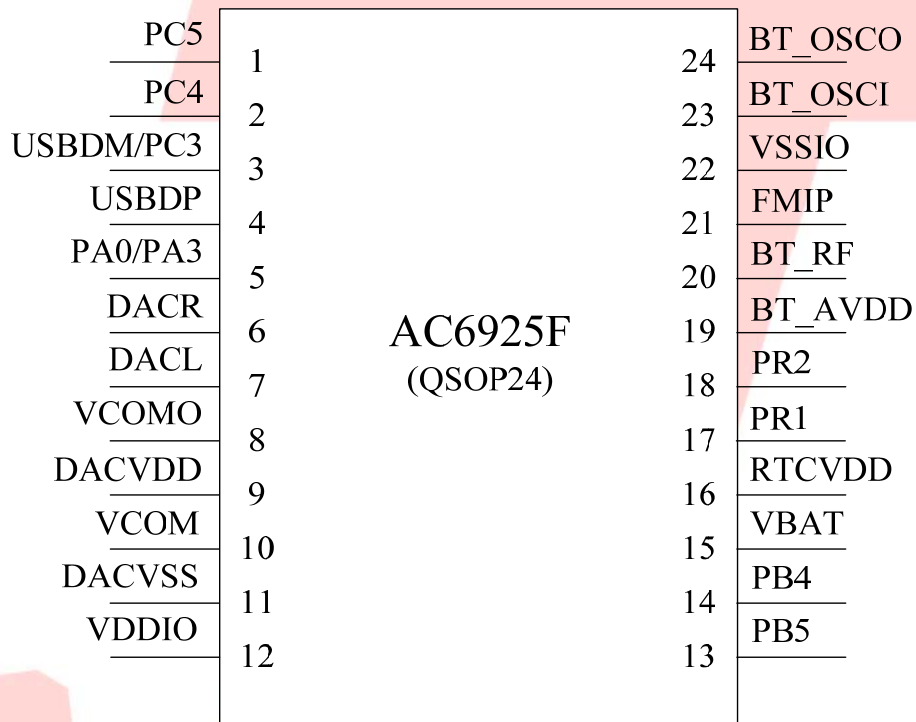


Figure 1-1 AC6925F\_QSOP24 Package Diagram

## 1.2 Pin Description

**Table 1-1 AC6925F\_QSOP24 Pin Description**

PIN NO.	Name	I/O Type	High Drive (mA)	Function	Other Function
1	PC5	I/O	24	GPIO	SD1CLKA: SD1 Clock(A); SPI1DOB: SPI1 Data Out(B); UART2RXD: Uart2 Data In(B); IIC_SDA_B: IIC SDA(B);
2	PC4	I/O	24	GPIO	SD1CMDA: SD1 Command(A); SPI1CLKB: SPI1 Clock(B); UART2TXD: Uart2 Data Out(B); IIC_SCL_B: IIC SCL(B);
3	PC3	I/O	24	GPIO	SD1DAT0A: SD1 Data0(A); SPI1DIB: SPI1 Data In(B); TMR3: Timer3 Clock Input; ADC10: ADC Input Channel 10;
	USBDM	I/O	4	USB Negative Data (pull down)	UART1RXD: Uart1 Data In(D); SPI2DOB: SPI2 Data Out(B); IIC_SDA_A: IIC SDA(A); ADC11: ADC Input Channel 11;
4	USBDP	I/O	4	USB Positive Data (pull down)	UART1TXD: Uart1 Data Out(D); SPI2CLKB: SPI2 Clock(B); IIC_SCL_A: IIC SCL(A);
5	PA0	I/O	24	GPIO	MIC: MIC Input Channel; UART0RXB: Uart0 Data In(B);
	PA3	I/O	24	GPIO	AMUX1L: Simulator Channel1 Left; ADC0: ADC Input Channel 0; Touch10: Touch Input Channel 10;
6	DACR	O	/	DAC Right Channel	
7	DACL	O	/	DAC Left Channel	
8	VCOMO	O	/	DAC Reference Output	
9	DACVDD	P	/	DAC Power	
10	VCOM	P	/	DAC Reference	
11	DACVSS	P	/	Ground	
12	VDDIO	P	/	IO Power 3.3v	
13	PB5	I/O	8	GPIO	AMUX0R: Simulator Channel0 Right;

### Confidential

The information contained herein is the exclusive property of JIELI and shall not be distributed, reproduced, or disclosed in whole or in part without prior written permission of JIELI.

					SPI1DOA: SPI1 Data Out(A); ADC9: ADC Input Channel 9; Touch5: Touch Input Channel 5;
14	PB4	I/O	8	GPIO	PWM3: Timer3 PWM Output; AMUX0L: Simulator Channel0 Left; SPI1CLKA: SPI1 Clock(A); ADC8: ADC Input Channel 8; Touch4: Touch Input Channel 4;
15	VBAT	P	/	LDO Power	
16	RTCVDD	P	/	RTC Power 3.3v	
17	PR1	I/O	10	RTCIO1 (output 0V)	RESET1: ADC12: ADC Input Channel 12;
18	PR2	I/O	10	RTCIO2 (pull up)	RESET2: ADC12: ADC Input Channel 12;
19	BT_AVDD	P	/	BT Power 1.3v	
20	BT_RF	P	/		
21	FMIP	I	/		
22	VSSIO	P	/	Ground	
23	BT_OSCI	I	/	BT OSC In	
24	BT_OSCO	O	/	BT OSC Out	

## 2、Electrical Characteristics

### 2.1 PMU Characteristics

Table 2-1

Symbol	Parameter	Min	Typ	Max	Unit	Test Conditions
V <sub>BAT</sub>	Voltage Input	2.2	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>1.3</sub>	Voltage output		1.3		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 Input/Output Electrical Logical Characteristics

Table 2-2

IO input characteristics						
Symbol	Parameter	Min	Typ	Max	Unit	Test Conditions
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 output characteristics						
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 Internal Resistor Characteristics

Table 2-3

Port	General Output	High Drive	Internal Pull-Up Resistor	Internal Pull-Down Resistor	Comment
PA0 PA3 PC3~PC5	8mA	24mA	10K	10K	1、USBDM & USBDP default pull down 2、internal pull-up/pull-down resistance   accuracy ±20% 3、PR2 default pull up
PB4 PB5	4mA	8mA	10K	10K	
PR1 PR2	8mA	10mA	10K	10K	
USBDM USBDP	4mA	–	1.5K	15K	

#### Confidential

The information contained herein is the exclusive property of JIELI and shall not be distributed, reproduced, or disclosed in whole or in part without prior written permission of JIELI.

## 2.4 DAC Characteristics

Table 2-4

Parameter	Min	Typ	Max	Unit	Test Conditions
Frequency Response	20	–	20K	Hz	1KHz/0dB 10Kohm loading With A-Weighted Filter
THD+N	–	-69	–	dB	
S/N	–	95	–	dB	
Crosstalk	–	-80	–	dB	
Output Swing		1		Vrms	
Dynamic Range		90		dB	1KHz/-60dB 10Kohm loading With A-Weighted Filter
DAC Output Power	11		–	mW	32ohm loading

## 2.5 ADC Characteristics

Table 2-5

Parameter	Min	Typ	Max	Unit	Test Conditions
Dynamic Range		85		dB	1KHz/-60dB 10Kohm loading With A-Weighted Filter
S/N	–	90	–	dB	1KHz/-60dB
THD+N	–	-72	–	dB	10Kohm loading
Crosstalk	–	-80	–	dB	With A-Weighted Filter

## 2.6 BT Characteristics

### 2.6.1 Transmitter

#### Basic Data Rate

Table 2-6

Parameter	Min	Typ	Max	Unit	Test Conditions
RF Transmit Power		0	4	dBm	25°C, Power Supply Voltage=5V 2441MHz
RF Power Control Range		20		dB	
20dB Bandwidth		950		KHz	
Adjacent Channel	+2MHz	-40		dBm	
	-2MHz	-38		dBm	
Transmit Power	+3MHz	-44		dBm	
	-3MHz	-35		dBm	



**Enhanced Data Rate Table 2-7**

Parameter		Min	Typ	Max	Unit	Test Conditions
Relative Power			1.2		dB	25°C, Power Supply
π/4 DQPSK Modulation Accuracy	DEVm RMS		6		%	
	DEVm 99%		10		%	
	DEVm Peak		15		%	
Adjacent Channel	+2MHz		-40		dBm	Voltage=5V 2441MHz
	-2MHz		-38		dBm	
Transmit Power	+3MHz		-44		dBm	
	-3MHz		-35		dBm	

**2.6.2 Receiver**

**Basic Data Rate Table 2-8**

Parameter		Min	Typ	Max	Unit	Test Conditions
Sensitivity			-89		dBm	25°C, Power Supply
Co-channel Interference Rejection			-13		dB	
Adjacent Channel Interference Rejection	+1MHz		+5		dB	
	-1MHz		+2		dB	
	+2MHz		+37		dB	
Interference Rejection	-2MHz		+36		dB	Voltage=5V 2441MHz
	+3MHz		+40		dB	
	-3MHz		+35		dB	

**Enhanced Data Rate Table 2-9**

Parameter		Min	Typ	Max	Unit	Test Conditions
Sensitivity			-89		dBm	25°C, Power Supply
Co-channel Interference Rejection			-13		dB	
Adjacent Channel Interference Rejection	+1MHz		+5		dB	
	-1MHz		+2		dB	
	+2MHz		+37		dB	
Interference Rejection	-2MHz		+36		dB	Voltage=5V 2441MHz
	+3MHz		+40		dB	
	-3MHz		+35		dB	

## 2.7 FM Receiver Characteristics

Table 2-10

Parameter	Min	Typ	Max	Unit	Test Conditions
Input Frequency	76		108	MHz	
Usable Sensitivity	3	4	8	dB $\mu$ V EMF	(S+N)/N=26dB
Adjacent Channel Selectivity		48		dB	$\pm$ 200kHz
IIP3		88		dB $\mu$ V EMF	$\Delta$ f1=200 kHz, $\Delta$ f2=400 kHz
Audio Output Voltage	0		3	V	Empty load
Audio Frequency Response	20		20k	Hz	DAC test
Audio (S+N)/N		52		dB	
Stereo Separation		40		dB	
Audio Total Harmonic Distortion (THD)		0.4		%	

### 3、 Package Information

#### 3.1 QSOP24

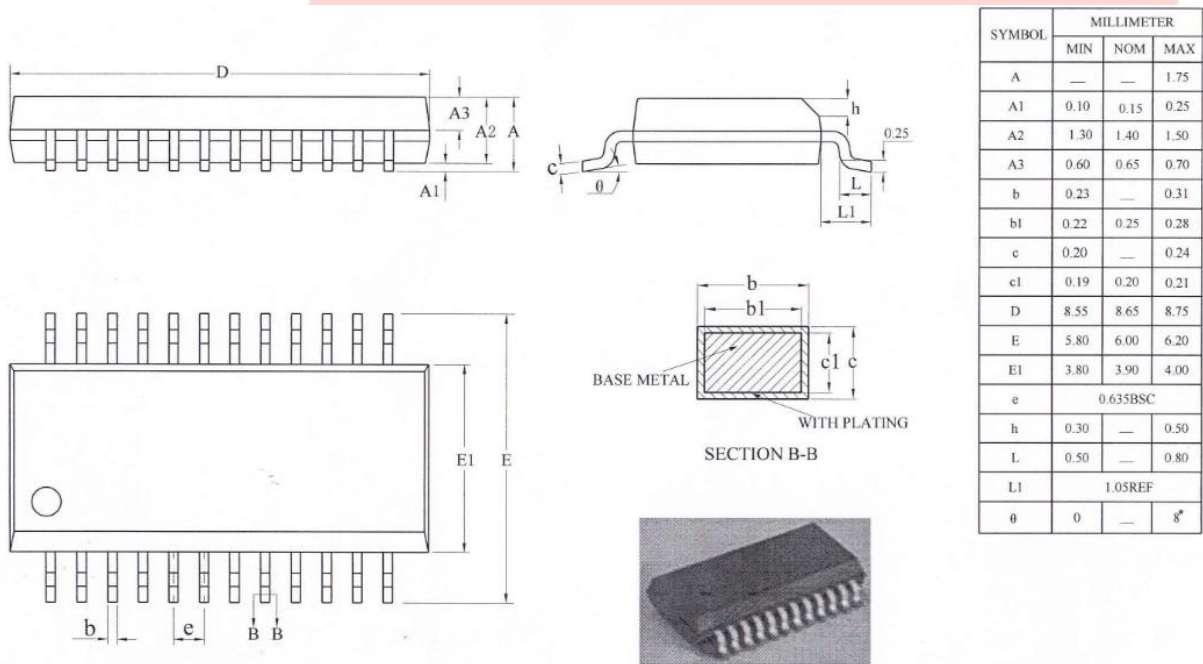


Figure 3-1. AC6925F\_QSOP24 Package

## 4、 Revision History

Date	Revision	Description
2018.09.05	V1.0	Initial Release



ZHUHAI