AC812B Datasheet

Zhuhai Jieli Technology Co.,LTD

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AC812B Features

High performance 32Bit RISC CPU

- Proprietary 32bit CPU
- CPU can be used in proprietary C code compiler
- 120MHz operation
- 16kB high performance cache
- 64 Vectored interrupts
- 4 Levels interrupt priority

Flexible I/O

- 48 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

- 4 multi-function 16-bit timers, support capture and PWM mode
- One full-duplex basic UART without DMA
- One full-duplex basic UART with DMA
- One SPI interface supports host and device mode
- One IIC interface supports host and device mode
- One EMI interface with 8 data IO
- One RTC(real time clock) with alarm
- Support double pin 32KHz Crystal Oscillator or single pin 32KHz Crystal Oscillator
- 480MHz PLL-based clock generator
- 11 channels 10-bit ADC
- 2 channels 8 levels Low Voltage Detector
- On chip relaxation Oscillator
- Built in LCD Driver, support 6COM/24SEG support high voltage output
- Built in 6 channels input high accuracy SDADC (24bit)
- Built in low noise amplifier, support 1x 4x 8x 16x 32x 64x 128x amplification factor
- Class D Output Amplifier
- Watchdog

PMU

- Built in LCD voltage select 3.0V to 4.2V
- Built in charge pump 3.0V to 4.4V for sensor AFE
- LDO: 5V to 3.3V
- ONE Analog LDO: charge pump 3.8V to AVDDR 3.3V
- Power-On Reset
- LDOIN is 2.2V to 5.5V

Packages

- LQFP64

Temperature

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

Application

- blood pressure meter
- Weight scale
- Other measurement application

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1、Pin Definition

1.1 Pin Assignment

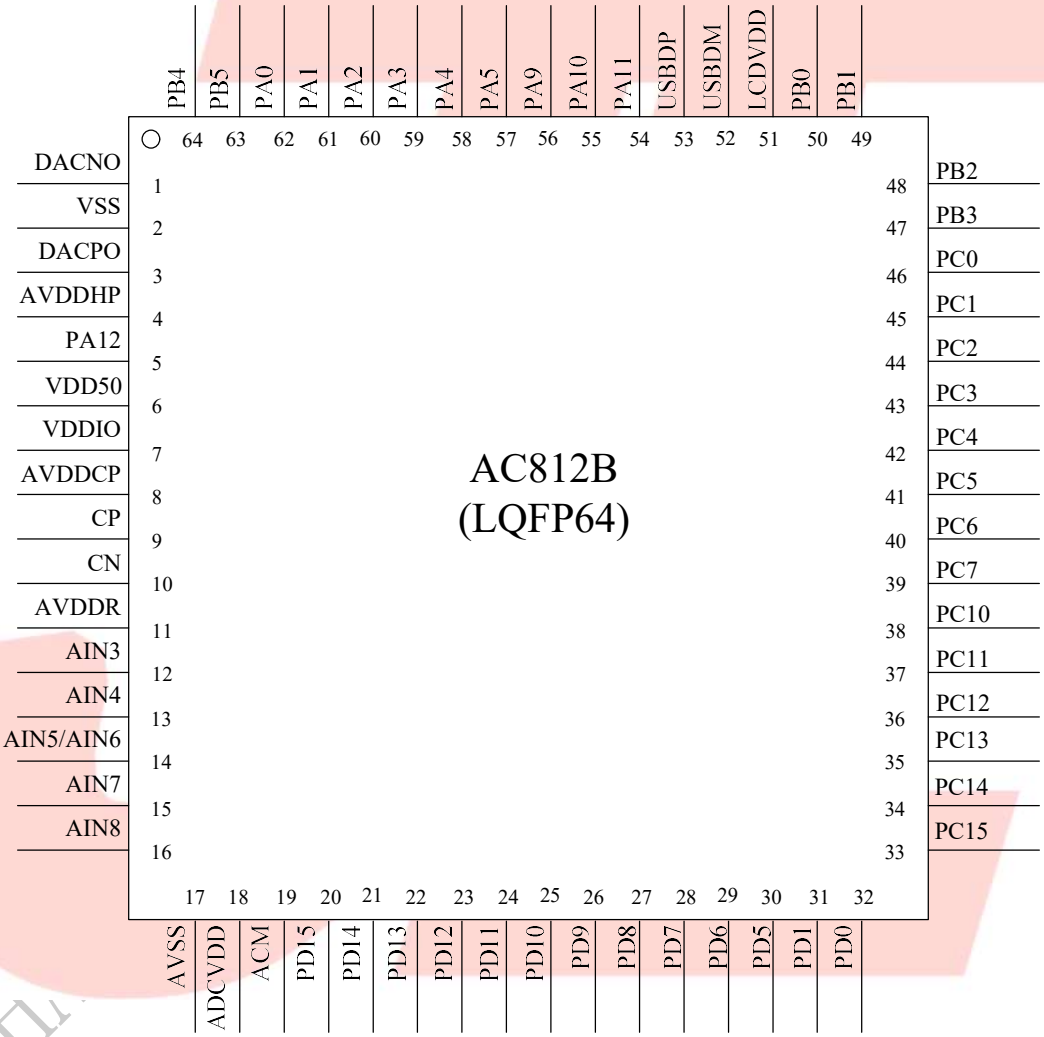


Figure 1-1 AC812B_LQFP64 Package Diagram

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1.2 Pin Description

Table 1-1 AC812B_LQFP64 Pin Description

PIN NO.	Name	I/O Type	Funtion	Other Funtion
1	DACNO	O	DAC Negative Channel	
2	VSS	P	Ground	
3	DACPO	O	DAC Positive Channel	
4	AVDDHP	P	Power	
5	PA12	I/O	GPIO	VPP: OTP Program Power; DACOA_P; PWM1: Timer1 PWM Output; WAKEUP7: Port Interrupt/Wakeup;
6	LDOIN	P	LDO Power Input	
7	VDDIO	P	IO Power 3.3V	
8	AVDDCP	P	CHARGE PUMP Output	
9	CP	P	CHARGE PUMP Capacitor Positive	
10	CN	P	CHARGE PUMP Capacitor Negative	
11	AVDDR	P	Analog Power	
12	AIN3	I/O	Analog input3	SDADC Input Channel 3 ;
13	AIN4	I/O	Analog input4	SDADC Input Channel 4 ;
14	AIN5	I/O	Analog input5	SDADC Input Channel 5 ;
	AIN6	I/O	Analog input6	SDADC Input Channel 6 ; OPA Positive Phase Input Port;
15	AIN7	I/O	Analog input7	SDADC Input Channel 7 ; OPA Negative Phase Input Port;
16	AIN8	I/O	Analog input8	SDADC Input Channel 8 ; OPA Output Port;
17	AGND	P	Analog GND	
18	ADCVDD	P	ADC Power	
19	ACM	P	ADC Common Voltage	
20	PD15	I/O	GPIO	SEG31: LCD SEG Output 31; PWMCH2L;
21	PD14	I/O	GPIO	SEG30: LCD SEG Output 30; PWMCH2H;
22	PD13	I/O	GPIO	SEG29: LCD SEG Output 29; UARTRXB3:UART Data Input(B3);

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23	PD12	I/O	GPIO	SEG28: LCD SEG Output 28; UARTTXB3:UART Data Output(B3);
24	PD11	I/O	GPIO	SEG27: LCD SEG Output 27; CAP0: Timer0 Capture Pin;
25	PD10	I/O	GPIO	SEG26: LCD SEG Output26;
26	PD9	I/O	GPIO	SEG25: LCD SEG Output 25; PWM3: Timer3 PWM Output;
27	PD8	I/O	GPIO	SEG24: LCD SEG Output 24; EMI_RD;
28	PD7	I/O	GPIO	SEG23: LCD SEG Output 23; EMI_WR;
29	PD6	I/O	GPIO	SEG22: LCD SEG Output22; IIC_DAT2;
30	PD5	I/O	GPIO	SEG21: LCD SEG Output 21; IIC_CLK2;
31	PD1	I/O	GPIO	SEG17: LCD SEG Output 17; UARTRXA2:UART Data Input(A2);
32	PD0	I/O	GPIO	SEG16: LCD SEG Output 16; UARTTXA2:UART Data Output(A2);
33	PC15	I/O	GPIO	SEG15: LCD SEG Output 15; SPI1_DOC: SPI1 Data Output(C); EMI7;
34	PC14	I/O	GPIO	SEG14: LCD SEG Output 14; SPI1_CLKC: SPI1 CLK Output(C); EMI6;
35	PC13	I/O	GPIO	SEG13: LCD SEG Output 13; SPI1_DIC: SPI1 Data Input(C); EMI5;
36	PC12	I/O	GPIO	SEG12: LCD SEG Output 12; EMI4;
37	PC11	I/O	GPIO	SEG11: LCD SEG Output11; PWMCH1L; EMI3;
38	PC10	I/O	GPIO	SEG10: LCD SEG Output 10; PWMCH1H; EMI2;
39	PC7	I/O	GPIO	SEG07: LCD SEG Output 07; UARTRXA1:UART Data Input(A1);
40	PC6	I/O	GPIO	SEG06: LCD SEG Output06; UARTTXA1:UART Data Output(A1); CAP2: Timer2 Capture Pin;

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41	PC5	I/O	GPIO	SEG05: LCD SEG Output 05; SPI0_DOB: SPI0 Data Output(B);
42	PC4	I/O	GPIO	SEG04: LCD SEG Output 04; SPI0_CLKB: SPI0 CLK Output(B);
43	PC3	I/O	GPIO	SEG03: LCD SEG Output03; SPI0_DIB: SPI0 Data Input(B);
44	PC2	I/O	GPIO	SEG02: LCD SEG Output 02; SPI0_CSB: SPI0 Data CS(B);
45	PC1	I/O	GPIO	SEG01: LCD SEG Output 01; COM5: LCD COM Output 5;
46	PC0	I/O	GPIO	SEG00: LCD SEG Output 00; COM4: LCD COM Output 4;
47	PB3	I/O	GPIO	COM3: LCD COM Output 3;
48	PB2	I/O	GPIO	COM2: LCD COM Output 2;
49	PB1	I/O	GPIO	COM1: LCD COM Output1;
50	PB0	I/O	GPIO	COM0: LCD COM Output0;
51	LCDVDD	P	LCD PUMP Power	
52	USBDM	I/O	GPIO (pull down)	UARTRXA3:UART Data Input(A3); IIC_DAT3; ISP_DI: ISP Data Input;
53	USBDP	I/O	GPIO (pull down)	UARTTXA3:UART Data Output(A3); IIC_CLK3; ISP_DO: ISP Data Output;
54	PA11	I/O	GPIO	ADC9: ADC Channel9 Input; LVD: Low voltage detect input IIC_CLK1; Timer3; WAKEUP6: Port Interrupt/Wakeup;
55	PA10	I/O	GPIO	ADC8: ADC Channel 8 Input; SPI1_DOA: SPI1 Data Output(A); IIC_DAT1; CAP3: Timer3 Capture Pin; UARTRXB2:UART Data Input(B2);

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56	PA9	I/O	GPIO	ADC7: ADC Channel 7 Input; SPI1_CLKA: SPI1 CLK Output(A); PWM2: Timer2 PWM Output; WAKEUP5: Port Interrupt/Wakeup; UARTTXB2:UART Data Output(B2);
57	PA5	I/O	GPIO	ADC5: ADC Channel 5 Input; Timer1; WAKEUP3: Port Interrupt/Wakeup; PWMCH0L;
58	PA4	I/O	GPIO	ADC4: ADC Channel 4 Input; UARTRXA0:UART Data Input(A0); PWMCH0H;
59	PA3	I/O	GPIO	ADC3: ADC Channel 3 Input; UARTTXA0:UART Data Output(A0); DAC_CLK; WAKEUP2: Port Interrupt/Wakeup;
60	PA2	I/O	GPIO	ADC2: ADC Channel 2 Input; IIC_DAT0; PWM0: Timer0 PWM Output; UARTRXB0:UART Data Input(B0);
61	PA1	I/O	GPIO	ADC1: ADC Channel 1 Input; DACOB_N; IIC_CLK0; Timer0; WAKEUP1: Port Interrupt/Wakeup; UARTTXB0:UART Data Output(B0);
62	PA0	I/O	GPIO	ADC0: ADC Channel 0 Input; DACOB_P; CLK_OUTA;
63	PB5	I/O	GPIO	OSCI：Oscillator Input; DACOA_N
64	PB4	I/O	GPIO (pull down)	OSCO: Oscillator Output; ADC11: ADC Channel 11Input; ISP_CLK: ISP CLK IN;

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2、Electrical Characteristics

2.1 Absolute Maximum Ratings

Table 2-1

Symbol	Parameter	Min	Max	Unit
Topt	Operating temperature	-40	+85	℃
Tstg	Storage temperature	-65	+150	℃
LDOIN	Supply Voltage	-0.3	5.5	V
$V_{3.3IO}$	3.3V IO Input Voltage	-0.3	3.6	V

Note : The chip can be damaged by any stress in excess of the absolute maximum ratings listed below

2.2 Recommended Operating Conditions

Table 2-2

Symbol	Parameter	Min	Typ	Max	Unit	Test Conditions
LDOIN	Voltage Input	2.2	4.2	5.5	V	-
VDDIO	Voltage output	-	3.3	-	V	LDO5V = 5V, 100mA loading
AVDDR		-	3.3	-	V	LDO5V = 5V, 20mA loading
AVDDCP	Voltage output	3.3	3.8	4.4	V	VDDIO=2.2V~3.3V
LCDVDD	Voltage output	3.0	3.6	4.2	V	VDDIO=2.2V~3.3V
ACM	Voltage output	1.2	-	1.53	V	AVDDR=3.3V
ADCVDD	Voltage output	2.4	-	3.06	V	AVDDR=3.3V
IVDDIO	Loading current	-	-	100	mA	LDOIN = 5V
IAVDDR	Loading current	-	-	10	mA	AVDDCP=4.0V，VDDIO=3.3V
IAVDDF	Loading current	-	-	10	mA	AVDDCP=4.0V，VDDIO=3.3V
ILCDVDD	Loading current	-	-	50	uA	VDDIO=2.2~3.3V

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2.3 IO Input/Output Electrical Logical Characteristics

Table 2-3

IO input characteristics						
Symbol	**Parameter**	**Min**	**Typ**	**Max**	**Unit**	**Test Conditions**
VIL	Low-Level Input Voltaget	-0.3	-	0.3* VDDIO	V	VDDIO = 3.3V
VIH	High-Level Input Voltage	0.7* VDDIO	-	VDDIO+0.3	V	VDDIO = 3.3V
IO output characteristics						
VOL	Low-Level Output Voltaget	-	-	0.33	V	VDDIO = 3.3V
VOH	High-Level Output Voltaget	2.7	-	-	V	VDDIO = 3.3V

2.4 Internal Resistor Characteristics

Table 2-4

Port	General Output	High Drive	Internal Pull-Up Resistor	Internal Pull-Down Resistor	Comment
PA0~PA5 PA9~PA11	8mA	24mA	10K	10K	1.PB4 default pull_down 2.PA5 default pull_up 3.Internal pull-up/pull-down resistance | accuracy ±20% 4.USBDM & USBDP default pull down
PB0~PB5 PC0~PC15 PD0~PD15	8mA	-	10K	10K	
PA12（VPP）	8mA	-	10K	10K	
USBDP	8mA	-	1.5k	15k	
USBDM	8mA	-	192k	15k	

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3、Package Information

3.1 LQFP64

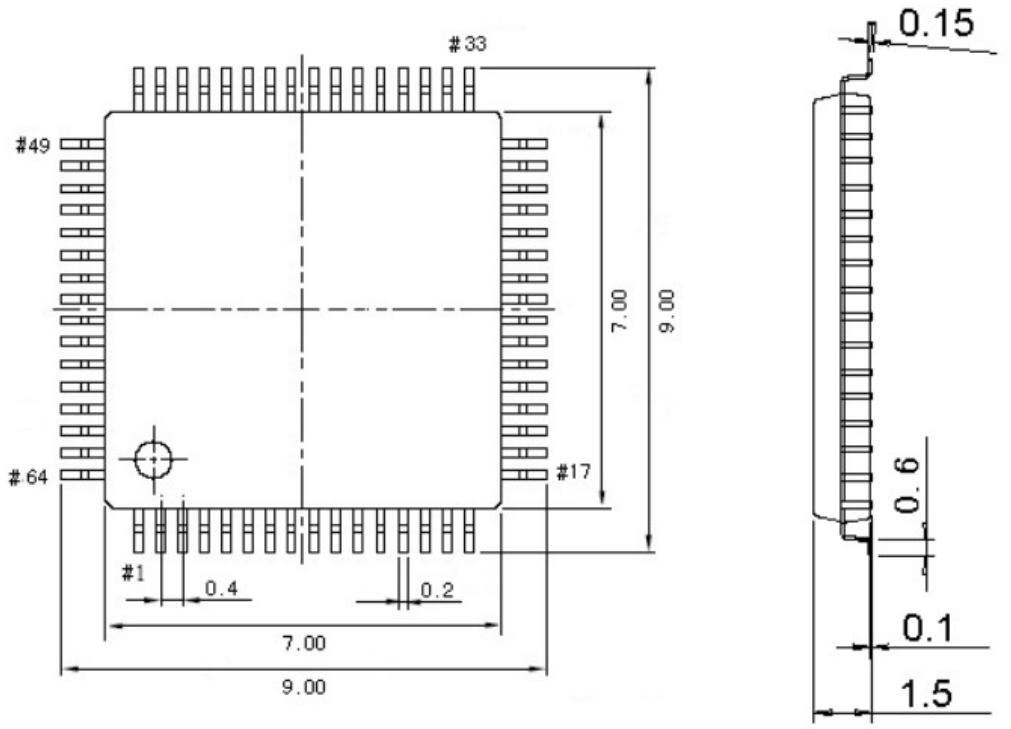


Figure 3-1 AC812B_LQFP64 Package

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4、Revision History

Date	Revision	Description
2020.11.17	V1.0	Initial Release

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