

AC6366C Datasheet

Zhuhai Jieli Technology Co.,LTD

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AC6366C Features

CPU

- 32-bit DSP supports hardware Float Point Unit (FPU)
- Up to 160MHz programmable processor
- 64 Vectored interrupts
- 4 Levels interrupt priority

Bluetooth

- Compliant with Bluetooth V5.3+BR+EDR+BLE specification
- Meet class1 class2 and class3 transmitting power requirement
- Support GFSK and $\pi/4$ DQPSK all packet types
- Provides +6dbm transmitting power
- receiver with -90dBm sensitivity
- Fast AGC for enhanced dynamic range
- Supports
a2dp\avctp\avdtp\avrcp\hfp\spp\smpt\att\gap\gatt\rfcomm\sdpl2cap profile

Peripherals

- One full speed USB 2.0 OTG controller
- Six multi-function 32-bit timers, support capture and PWM mode
- Three full-duplex basic UART, UART0 and

UART1 supports DMA mode

- Two SPI interface supports host and device mode
- One hardware IIC interface supports host and device mode
- 10-bit ADC for analog sampling
- External wake up/interrupt on all GPIOs

PMU

- Low voltage LDO for internal digital and analog circuit supply
- 3uA current consumption in the soft-off mode
- Built-in LDO for the core, I/O, Bluetooth and flash
- VBAT is 2.0V to 4.5V
- VDDIO is 2.0V to 3.4V

Temperature

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

Packages

- QFN32(4mm*4mm)

Applications

- Bluetooth IOT

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1、 Pin Definition

1.1 Pin Assignment

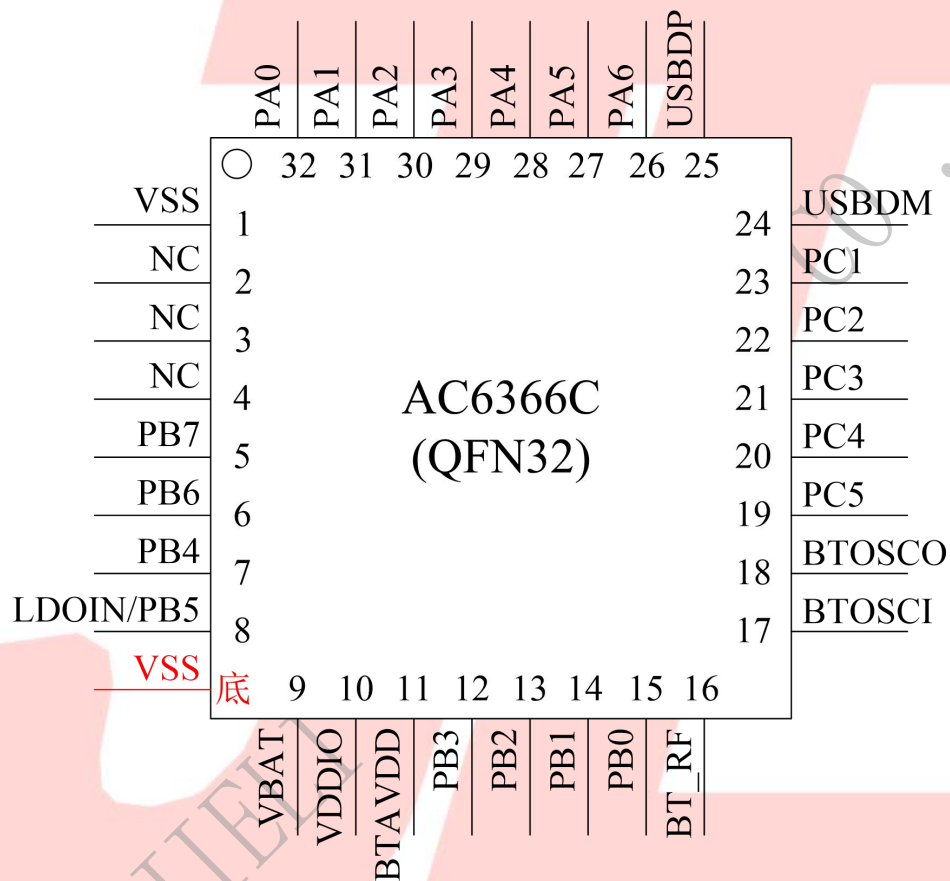


Figure 1-1 AC6366C_QFN32 Package Diagram

1.2 Pin Description

Table 1-1 AC6366C_QFN32 Pin Description

PIN NO.	Name	I/O Type	Drive (mA)	Function	Other Function
1	VSS	P	/		Ground
2	NC		/		
3	NC	O	/		
4	NC	O	/		
5	PB7	I/O	24/8	GPIO	SPI2DOA: SPI2 Data Out(A) IIC_SDA_C: IIC DAT(C) ADC9: ADC Input Channel 9 PWM5: Timer5 PWM Output UART1RXA: Uart1 Data In(A)
6	PB6	I/O	24/8	GPIO	SPI2CLKA: SPI2 Data Out(A) IIC_SCL_C: IIC SCL(C) ADC8: ADC Input Channel 8 TMR3: Timer3 Clock Input UART1TXA: Uart1 Data Out(A)
7	PB4	I/O	24/8	GPIO	ADC7: ADC Input Channel 7 CLKOUT1 UART2TXC: Uart2 Data Out(C) UART2RXC: Uart2 Data In(C)
8	PB5	I/O	8	GPIO (High Voltage Resistance)	PWM3: Timer3 PWM Output SPI2_DIA: SPI2 Data In(A) CAP1: Timer1 Capture UART0TXC: Uart0 Data Out(C) UART0RXC: Uart0 Data In(C)
	LDOIN	P	/		Battery Charger In
9	VBAT	P	/		Battery Power Supply
10	VDDIO	P	/		IO Power 3.3v
11	BTA VDD	P	/		BT Power
12	PB3	I/O	/	GPIO	SD0DAT_D: SD0 Data(D); ADC6: ADC Input Channel 6 PWM2: Timer2 PWM Output UART2RXB: Uart2 Data In(B)

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13	PB2	I/O	8	GPIO (High Voltage Resistance)	SD0CMD_D: SD0 Command(D) SPI1DIA: SPI1 Data In(A) CAP0: Timer0 Capture UART2TXB: Uart2 Data Out (B)
14	PB1	I/O	24/8	GPIO (pull up)	Long Press Reset SPI1DOA: SPI1 Data Out(A) ADC5: ADC Input Channel 5 TMR2: Timer2 Clock Input UART0RXB: Uart0 Data In(B)
15	PB0	I/O	8	GPIO (High Voltage Resistance)	SD0CLK_D:SD0Clock(D) SPI1CLKA:SPI1 Clock(A) UART0TXB:Uart1 Data Out(B) TMR5:Timer5 Clock Input
16	BT_RF	/			BT Antenna
17	BTOSCI	I			BT OSC In
18	BTOSCO	O			BT OSC Out
19	PC5	I/O	24/8	GPIO	SD0CLK_AE: SD0 Clock(AE) SPI1DOB: SPI1 Data Out(B) IIC_SDA_B: IIC SDA(B) ADC12: ADC Input Channel 12 TMR1: Timer1 Clock Input UART2RXD: Uart2 Data In(D)
20	PC4	I/O	24/8	GPIO	SD0CMD_A: SD0 Command(A) SPI1CLKB: SPI1 Clock(B) IIC_SCL_B: IIC SCL(B) ADC11: ADC Input Channel 11 PWM1: Timer1 PWM Output UART2TXD: Uart2 Data Out (D)
21	PC3	I/O	24/8	GPIO	SD0DAT_A: SD0 Data(A) SPI1DIB: SPI1 Data In(B) CAP2: Timer2 Capture UART0TXD: Uart0 Data Out (D) UART0RXD: Uart0 Data In(D)
22	PC2	I/O	24/8	GPIO	ADC10: ADC Input Channel 10 CAP5: Timer5 Capture UART1RXB: Uart1 Data In(B)
23	PC1	I/O	24/8	GPIO	TMR0: Timer0 Clock Input UART1TXB: Uart1 Data Out(B)
24	USBDM	I/O	4	USB Negative Data (pull down)	IIC_SDA_A: IIC SDA(A) SPI2_DOB: SPI2 Data Out(B) ADC14: ADC Input Channel 14 UART1RXD: Uart1 Data In(D)

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25	USBDP	I/O	4	USB Positive Data (pull down)	IIC_SCL_A: IIC SCL(A) SPI2_CLKB: SPI2 Clock(B) ADC13: ADC Input Channel 13 UART1TXD: Uart1 Data Output(D)
26	PA6	I/O	24/8	GPIO	IIC_SDA_D: IIC SDA(D) ADC4: ADC Input Channel 4 CAP4: Timer4 Capture UART0RXA: Uart0 Data In(A)
27	PA5	I/O	24/8	GPIO	IIC_SCL_D: IIC SCL(D) PWM0: Timer0 PWM Output UART0TXA: Uart0 Data Output(A)
28	PA4	I/O	24/8	GPIO	SD0CMD_CE: SD0 Command(CE) UART1_RTS: Uart1 Request to send ADC3: ADC Input Channel 3 TMR4: Timer4 Clock Input UART2RXA: Uart2 Data In(A)
29	PA3	I/O	24/8	GPIO	SD0DAT_C: SD0 Data(C) UART1_CTS: Uart1 Clear to send ADC2: ADC Input Channel 3 PWM5: Timer5 PWM Output UART2TXA: Uart1 Data Output(D)
30	PA2	I/O	24/8	GPIO	SD0CLK_C: SD0 Clock(C) CAP3: Timer3 Capture
31	PA1	I	24/8	GPIO	ADC1: ADC Input Channel 1 PWM4: Timer4 PWM Output UART1RXC: Uart0 Data In(C)
32	PA0	I/O	/	GPIO	SDPG: SD Power Supply ADC0: ADC Input Channel 0 CLKOUT0 UART1TXC: Uart1 Data Output(C)
Substrate		VSS	-	Substrate	

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2、Electrical Characteristics

2.1 Absolute Maximum Ratings

Table 2-1

Symbol	Parameter	Min	Max	Unit
T _{opt}	Operating temperature	-40	+85	°C
T _{stg}	Storage temperature	-65	+150	°C
VBAT	Supply Voltage	-0.3	4.5	V
LDOIN	Charger Voltage	-0.3	6	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
VBAT	Voltage Input	2.0	3.7	4.5	V	
LDOIN	Charger Voltage	4.5	5	5.5	V	
V _{VDDIO}	Voltage output	2.0	3.0	3.4	V	VBAT = 4.2V, 100mA loading
V _{BT_AVDD}	Voltage output		1.3		V	VBAT=4.2V, 100mA loading
I _{vddio}	Loading current	—	—	150	mA	VBAT = 4.2V

2.3 Battery Charge

Table 2-3

Symbol	Parameter	Min	Typ	Max	Unit	Test Conditions
LDO_IN	Charge Input Voltage	4.5	5	5.5	V	—
V _{Charge}	Charge Voltage	4.15	4.2	4.25	V	—
I _{Charge}	Charge Current	20		300	mA	Charge current at fast charge mode
I _{Trikl}	Trickle Charge Current	20	45	70	mA	V _{BAT} <V _{Trikl}

2.4 IO Input/Output Electrical Logical Characteristics

Table 2-4

IO input characteristics						
Symbol	Parameter	Min	Typ	Max	Unit	Test Conditions
V_{IL}	Low-Level Input Voltage	-0.3	—	$0.3 * V_{DDIO}$	V	$V_{DDIO} = 3.3V$
V_{IH}	High-Level Input Voltage	$0.7 * V_{DDIO}$	—	$V_{DDIO} + 0.3$	V	$V_{DDIO} = 3.3V$
IO output characteristics						
V_{OL}	Low-Level Output Voltage	—	—	0.33	V	$V_{DDIO} = 3.3V$
V_{OH}	High-Level Output Voltage	2.7	—	—	V	$V_{DDIO} = 3.3V$

2.5 Internal Resistor Characteristics

Table 2-5

Port		General Output	High Drive	Internal Pull-Up Resistor	Internal Pull-Down Resistor	Comment
PA1~PA6 PB1,PB4,PB6,PB7 PC1~PC5		8mA	24mA	10K	10K	1、PB1 default pull up 2、USBDM & USBDP default pull down 3、PB0,PB2,PB5 can pull-up resistance to 5V 4、internal pull-up/pull-down resistance accuracy ±20%
PA0	Output 0	8mA	24mA	10K	10K	
PB3	Output 1	8mA	64mA			
PB0, PB2, PB5		8mA	—	10K	10K	
USBDP		4mA	—	1.5K	15K	
USBDM		4mA	—	180K	15K	

2.6 BT Characteristics

2.6.1 Transmitter

Basic Data Rate

Table 2-6

Parameter		Min	Typ	Max	Unit	Test Conditions
RF Transmit Power			4	6	dBm	25°C, Power Supply VBAT=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		dB	25°C, Power Supply VBAT=5V 2441MHz
$\pi/4$ DQPSK Modulation Accuracy	DEVM RMS		6		%	
	DEVM 99%		10		%	
	DEVM Peak		15		%	
Adjacent Channel	+2MHz		-40		dBm	
	-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			-90		dBm	25°C, Power Supply VBAT=5V 2441MHz
Co-channel Interference Rejection			-13		dB	
Adjacent Channel	+1MHz		+5		dB	
	-1MHz		+2		dB	
	+2MHz		+37		dB	
Interference Rejection	-2MHz		+36		dB	
	+3MHz		+40		dB	
	-3MHz		+35		dB	

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Enhanced Data Rate

Table 2-9

Parameter		Min	Typ	Max	Unit	Test Conditions
Sensitivity			-90		dBm	25°C, Power Supply VBAT=5V 2441MHz
Co-channel Interference Rejection			-13		dB	
Adjacent Channel Interference Rejection	+1MHz		+5		dB	
	-1MHz		+2		dB	
	+2MHz		+37		dB	
	-2MHz		+36		dB	
	+3MHz		+40		dB	
	-3MHz		+35		dB	

3.Package Information

3.1 QFN32(4mm*4mm)

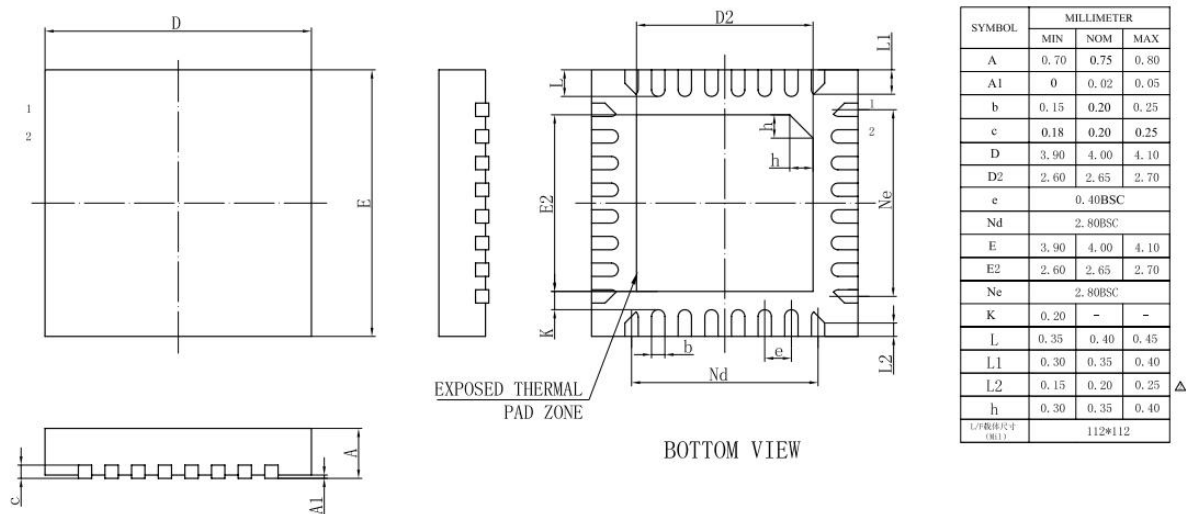


Figure 3-1 AC6366C_QFN32 Package

4、Revision History

Date	Revision	Description
2020.08.26	V1.0	Initial Release
2022.07.19	V1.1	Update Bluetooth Feature

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