

AC6369F Datasheet

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Version: V1.0

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AC6369F 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 V5.1+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\smp\att\gap\gatt\rfcomm\sdp\l2cap profile

Temperature

- Operating temperature: -40°C to +125°C
- Storage temperature: -65°C to +150°C

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 2.2V to 3.4V
- VDDIO is 2.2V to 3.4V

Packages

- SOP16

Applications

- Bluetooth IOT

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1、 Pin Definition

1.1 Pin Assignment

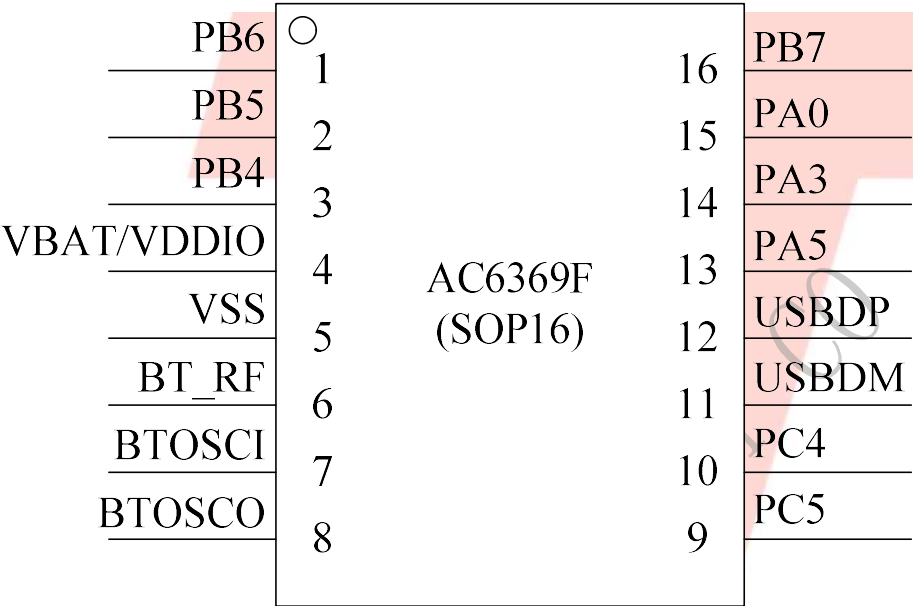


Figure 1-1 AC6369F Package Diagram

1.2 Pin Description

Table 1-1 AC6369F Pin Description

PIN NO.	Name	I/O Type	Drive (mA)	Function	Other Function
1	PB6	I/O		GPIO	IIC_SCL_C: IIC SCL(C); SPI2_CLKA: SPI2 Clock(A); ADC8: ADC Input Channel 8; TMR3: Timer3 Clock Input; UART1TXA: Uart1 Data Out(A);
2	PB5	I/O		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);
3	PB4	I/O		GPIO	ADC7: ADC Input Channel 7; UART2TXC: Uart2 Data Out(C); UART2RXC: Uart2 Data In(C);
4	VBAT	P	/		Battery Power Supply
	VDDIO	P	/		IO Power 3.3v
5	VSS	P	/		Ground
6	BT_RF	/			BT Antenna
7	BTOSCI	I			BT OSC In
8	BTOSCO	O			BT OSC Out
9	PC5	I/O		GPIO	IIC_SDA_B: IIC SDA(B); ADC12: ADC Input Channel 12; TMR1: Timer1 Clock Input; UART2RXD: Uart2 Data In(D);
10	PC4	I/O		GPIO	IIC_SCL_B: IIC SCL(B); ADC11: ADC Input Channel 11; PWM1: Timer1 PWM Output; UART2TXD: Uart2 Data Out (D);
11	USBDM	I/O		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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12	USBDP	I/O		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);
13	PA5	I/O		GPIO	IIC_SCL_D: IIC SCL(D); PWM0: Timer0 PWM Output; UART0TXA: Uart0 Data Output(A);
14	PA3	I/O		GPIO	ADC2: ADC Input Channel 2; PWM5: Timer5 PWM Output UART2TXA: Uart2 Data Output(A);
15	PA0	I/O		GPIO	ADC0: ADC Input Channel 0; UART1TXC: Uart1 Data Output(C);
16	PB7	I/O		GPIO	IIC_SDA_C: IIC DAT(C); SPI2_DOA: SPI2 Data Out(A); ADC9: ADC Input Channel 9; PWM5: Timer5 PWM Output; UART1RXA: Uart1 Data In(A);

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2、Electrical Characteristics

2.1 Absolute Maximum Ratings

Table 2-1

Symbol	Parameter	Min	Max	Unit
Tamb	Ambient Temperature	-40	+125	°C
Tstg	Storage temperature	-65	+150	°C
VBAT	Supply Voltage	-0.3	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 PMU Characteristics

Table 2-2

Symbol	Parameter	Min	Typ	Max	Unit	Test Conditions
VBAT	Voltage Input	2.2	3.0	3.4	V	
V _{VDDIO}	Voltage Input	—	3.0	—	V	

2.3 IO Input/Output Electrical Logical Characteristics

Table 2-3

IO input characteristics						
Symbol	Parameter	Min	Typ	Max	Unit	Test Conditions
V _{IL}	Low-Level Input Voltage	-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 output characteristics						
V _{OL}	Low-Level Output Voltage	—	—	0.33	V	VDDIO = 3.3V
V _{OH}	High-Level Output Voltage	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
PA5 PB4,PB6,PB7 PC4~PC5		8mA	24mA	10K	10K	1、USBDM & USBDP default pull down 2、PB5 can pull-up resistance to 5V 3、internal pull-up/pull-down resistance accuracy ±20%
PA0	Output 0	8mA	24mA	10K	10K	
	Output 1	8mA	64mA			
PB5		8mA	—	10K	10K	
USBDP		4mA	—	1.5K	15K	
USBDM		4mA	—	180K	15K	

2.5 BT Characteristics

2.5.1 Transmitter

Basic Data Rate

Table 2-5

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	

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Enhanced Data Rate**Table 2-6**

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	

2.5.2 Receiver**Basic Data Rate****Table 2-7**

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	

Enhanced 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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3、 Package Information

3.1 SOP16

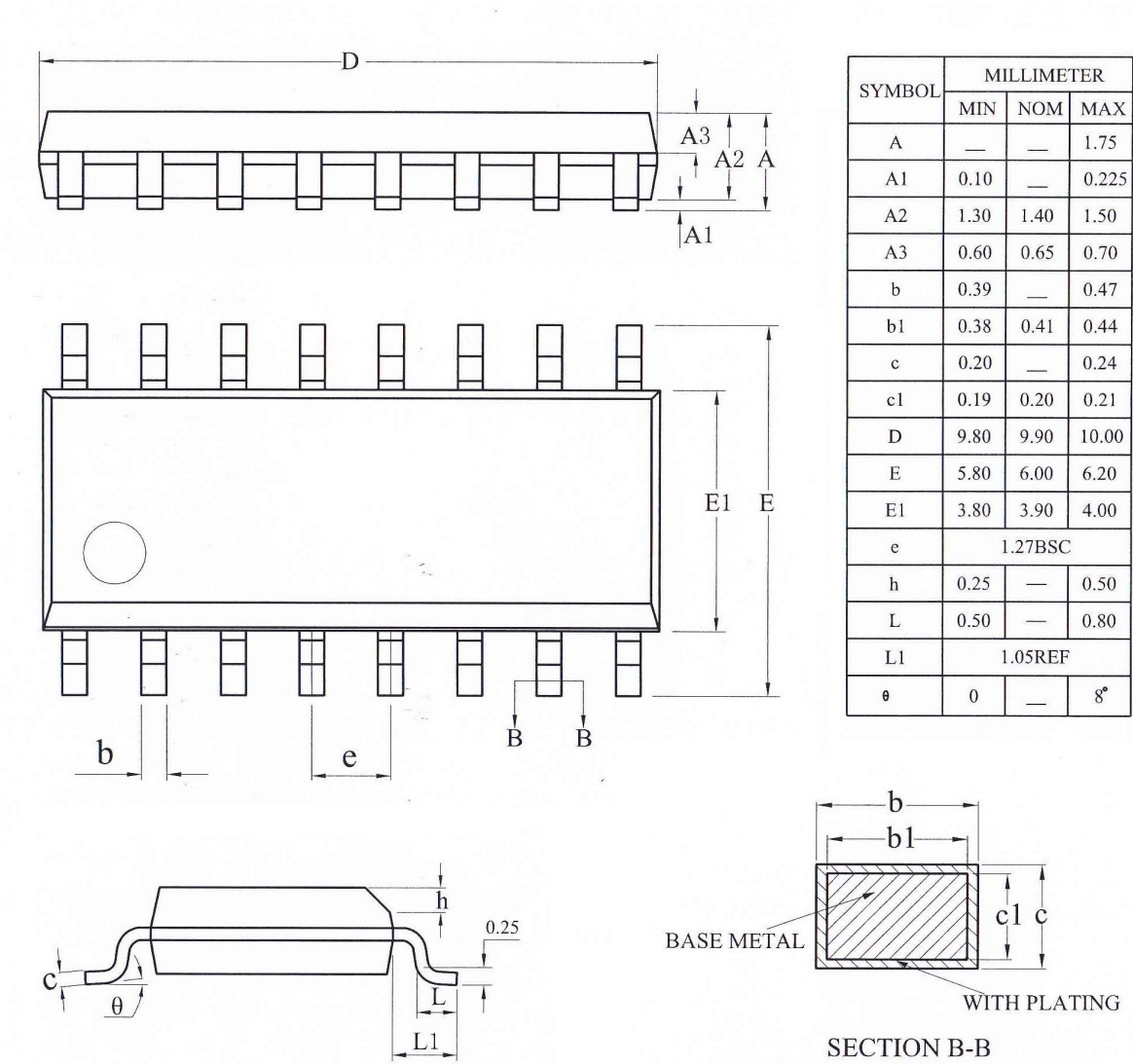


Figure 3-1 AC6369F Package

4、Revision History

Date	Revision	Description
2020.07.20	V1.0	Initial Release

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