AC6379B Datasheet

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AC6379B Features

CPU

- 32-bit DSP supports hardware Float Point Unit(FPU)
- Up to 160MHz programmable processor
- 64Vectored 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 π/4 DQPSK all packet types
- Provides amaximum+8dbm transmitting power
- receiver with -94dBm sensitivity
- Fast AGC for enhanced dynamic range
- Supports a2dp\avctp\avdtp\avrcp\hfp\spp\smp\att\gapgatt\rfcomm\sdp\l2cap 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, support DMA mode
- One hardware IIC interface supports host and device mode
- One Built-in low power Cap Sense Keys
- Built-in Cap Sense Key controller
- 10-bit ADC for analog sampling
- External wake up/interrupt on all GPIOs

PMU

- Low voltage LDO and DC-DC for internal digital and analog circuit supply
- 2uA current consumption in the soft-off mode
- Built-in LDO and DC-DC for the core, I/O, Bluetooth and flash
- VDDIO is 2.0V to 3.4V

Packages

- SOP16

Temperature

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

Applications

- Bluetooth　IOT

1、Pin Definition

1.1 Pin Assignment

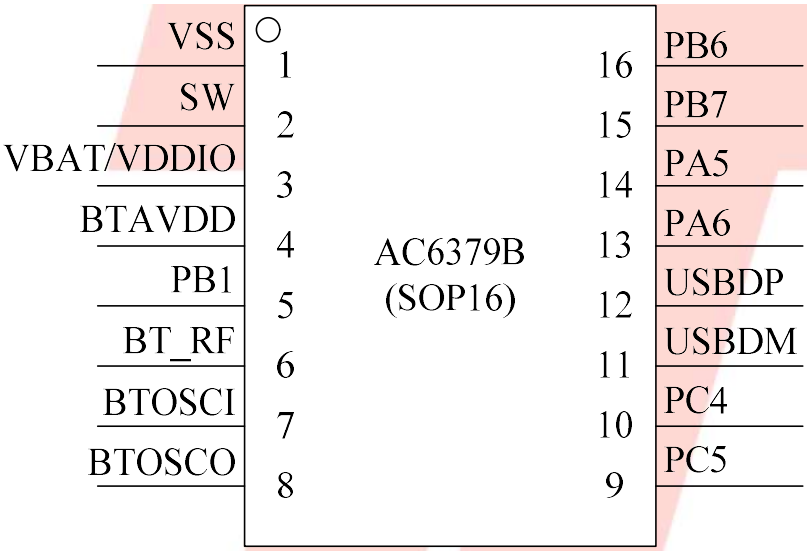


Figure 1-1 AC6379B Package Diagram

1.2 Pin Description

Table 1-1 AC6379B Pin Description

PIN NO.	Name	I/O Type	Drive (mA)	Function	Other Function
1	VSS	P	/		
2	SW	P	/	DCDC output	DCDC switch output, connected to inductor
3	VBAT	P	/		connect to battery
	VDDIO	P	/		IO Power 3.3v
4	BTAVDD	P	/		BT Power
5	PB1	I/O	8/24	GPIO (pull up)	Long Press Reset UART2TXC：Uart2 Data Output(C) ADC6：ADC Input Channel 6 LP_TH0：Low Power Touch Channel 0
6	BT_RF	/	/		BT Antenna
7	BTOSCI	I	/		BTOSC In
8	BTOSCO	O	/		BTOSC Out
9	PC5	I/O	8/24	GPIO	UART2RXD：Uart2 Data Input(D) SPI1DOB：SPI1 Data Out(B) IIC_SDA_B：IIC SDA(B) ADC5：ADC Input Channel 5
10	PC4	I/O	8/24	GPIO	UART2TXD：Uart2 Data Output(D) SPI1CLKB：SPI1 Clk(B) IIC_SCL_B：IIC SCL(B) ADC4：ADC Input Channel 4 PWM4：Timer4 PWM Output；
11	USBDM	I/O	4	USB Negative Data (pull down)	UART1RXD：Uart1 Data Input(D) SPI2DOB：SPI2 Data Out(B) IIC_SDA_A：IIC SDA(A) ADC11：ADC Input Channel 11
12	USBDP	I/O	4	USB Positive Data (pull down)	UART1TXD：Uart1 Data Output(D) SPI2CLKB：SPI2 Clk(B) IIC_SCL_A：IIC SCL(A) ADC10：ADC Input Channel 10
13	PA6	I/O	8/24	GPIO	IIC_SDA_D：IIC SDA(D) UART0RXA：Uar0 Data Input(A) SPI2DOA：SPI2 Data Out(A) ADC2：ADC Input Channel 2 Touch3：Touch Input Channel 3

14	PA5	I/O	8/24	GPIO	IIC_SCL_D：IIC SCL(D) UART0TXA：Uart0 Data Output(A) SPI2CLKA：SPI2 Clk(A ADC1：ADC Input Channel 1 Touch2：Touch Input Channel2
15	PB7	I/O	8/24	GPIO	UART0TXB：Uart0 Data Output(B) SPI1DOA：SPI1 Data Out(A) Q-decoder1
16	PB6	I/O	8/24	GPIO	UART1RXA：Uart1 Data Input(A) SPI1CLKA：SPI1 Clk(A) PWM2：Timer2 PWM Output ADC9：ADC Input Channel 9 Touch7：Touch Input Channel 7 Q-decoder0

2、Electrical Characteristics

2.1 Absolute Maximum Ratings

Table 2-1

Symbol	Parameter	Min	Max	Unit
Tamb	Ambient Temperature	-40	+85	℃
Tstg	Storage temperature	-65	+150	℃
VBAT	Supply Voltage	-0.3	4.5	V
LDO_IN	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	3.0	3.4	V	
$V_{3.3}$	Voltage output	2.0	3.0	3.4	V	
V_{BT_AVDD}	Voltage output	1.2	1.25	1.35	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
PA3, PB1,PB4, PB6~PB8, PC4,PC5, PD5,PD6,	8mA	24mA	10K	10K	1、PB1 default pull up 2、USBDM & USBDP default pull down 3、internal pull-up/pull-down resistance | accuracy ±20%
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			6	8	dBm	25℃, Power Supply VBAT=5V 2441MHz
RF Power Control Range			20		dB	
20dB Bandwidth			950		KHz	
Adjacent Channel Transmit Power	+2MHz		-40		dBm	
	-2MHz		-38		dBm	
	+3MHz		-44		dBm	
	-3MHz		-35		dBm	

Enhanced Data Rate **Table 2-6**

Parameter		Min	Typ	Max	Unit	Test Conditions
Relative Power			-1		dB	25℃, Power Supply VBAT=5V 2441MHz
π/4 DQPSK Modulation Accuracy	DEVM RMS		6		%	
	DEVM 99%		10		%	
	DEVM Peak		15		%	
Adjacent Channel Transmit Power	+2MHz		-40		dBm	
	-2MHz		-38		dBm	
	+3MHz		-44		dBm	
	-3MHz		-35		dBm	

2.6.2 Receiver

Basic Data Rate Table 2-7

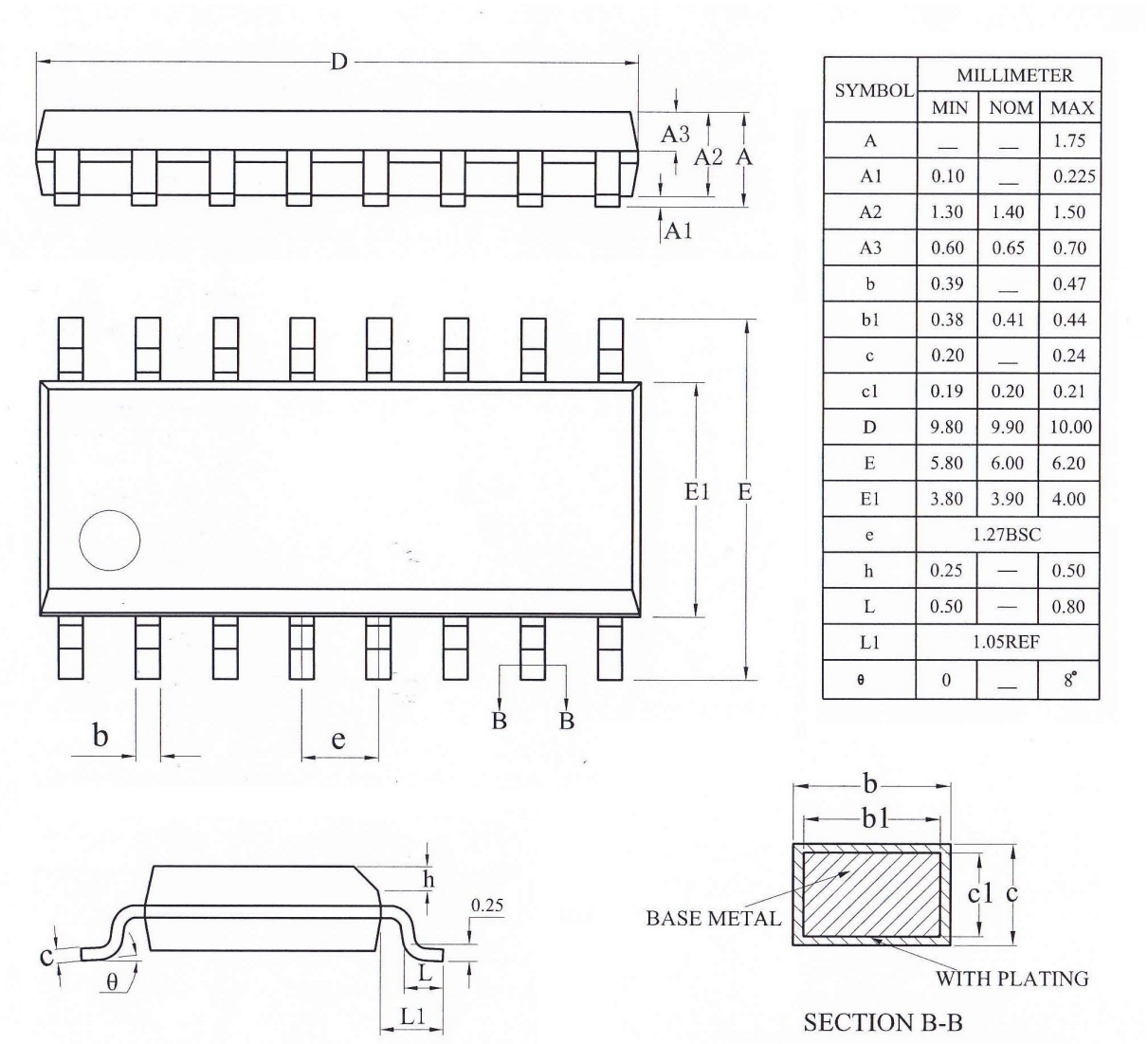
Parameter		Min	Typ	Max	Unit	Test Conditions
Sensitivity			-94		dBm	25℃, Power Supply VBAT=5V 2441MHz
Co-channel Interference Rejection			-13		dB	
Adjacent Channel Interference Rejection	+1MHz		+5		dB	
	-1MHz		+2		dB	
	+2MHz		+37		dB	
	-2MHz		+36		dB	
	+3MHz		+40		dB	
	-3MHz		+35		dB	

Enhanced Data Rate Table 2-8

Parameter		Min	Typ	Max	Unit	Test Conditions
Sensitivity			-94		dBm	25℃, 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 SOP16



SYMBOL	MILLIMETER		
	MIN	NOM	MAX
A	—	—	1.75
A1	0.10	—	0.225
A2	1.30	1.40	1.50
A3	0.60	0.65	0.70
b	0.39	—	0.47
b1	0.38	0.41	0.44
c	0.20	—	0.24
c1	0.19	0.20	0.21
D	9.80	9.90	10.00
E	5.80	6.00	6.20
E1	3.80	3.90	4.00
e	1.27BSC		
h	0.25	—	0.50
L	0.50	—	0.80
L1	1.05REF		
θ	0	—	8°

Figure 3-1 AC6379B Package

4、Revision History

Date	Revision	Description
2020.10.12	V1.0	Initial Release