

AC6329B Datasheet

Zhuhai Jieli Technology Co.,LTD

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AC6329B Features

High performance 32-bit RISC CPU

- RISC 32-bit CPU
- DC-96MHz operation
- 73KB data RAM
- 8KB I-cache 2way
- 1KB Rocache 1way
- 64 Vectored interrupts
- 8 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 OTG controller
- Four Multi-function 32-bit timers, support capture and PWM mode
- Three full-duplex advanced UART(DMA)
- One IIC interface supports host and device mode
- RTC,with alarm clock and time base to wake up the chip
- 16-bit PWM generator for motor driving
- Three IQ Encoder
- 7 channels 10-bit ADC

- 1 channel 8 levels Low Power Detector
- Embedded PMU support low power mode
- 1 Crystal Oscillator
- Watchdog
- Power-on reset

Bluetooth Feature

- CMOS single-chip fully-integrated radio and baseband
- Compliant with Bluetooth V5.4+BR+EDR+BLE specification
- Bluetooth Piconet and Scatternet support
- Meet class2 and class3 transmitting power requirement
- Support GFSK and $\pi/4$ DQPSK all packet types
- Maximum +8dBm transmitting power
- EDR receiver with -93dBm sensitivity
- Support a2dp\avctp\avdtp\avrcp\hfp\spp\smp\att\gap\gatt\rfcomm\sdpl2cap profile

Power Supply

- VDDIO is 1.8V to 3.4V

Packages

- SOP16

Temperature

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

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1. Block Diagram

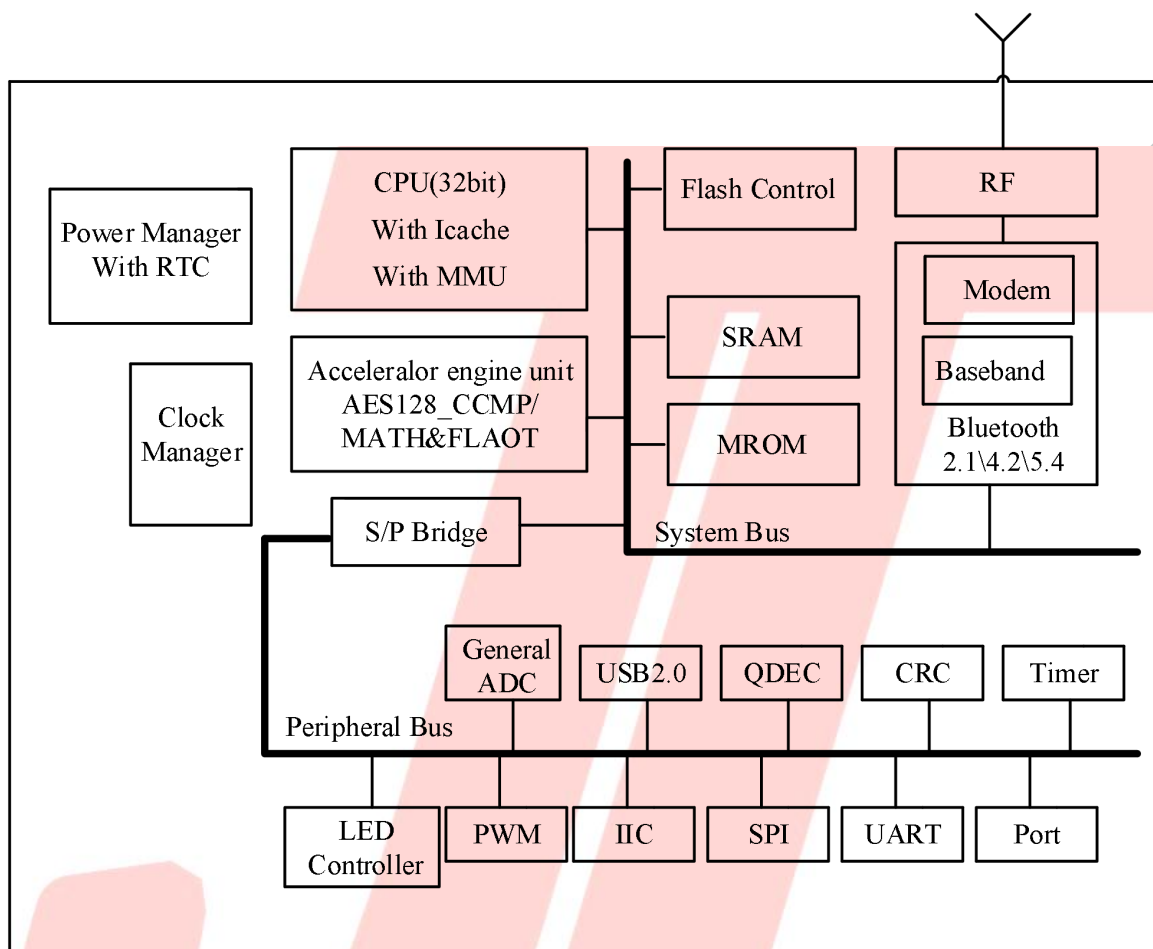


Figure 1-1 AC6329B_SOP16 Block Diagram

2. Pin Definition

2.1 Pin Assignment

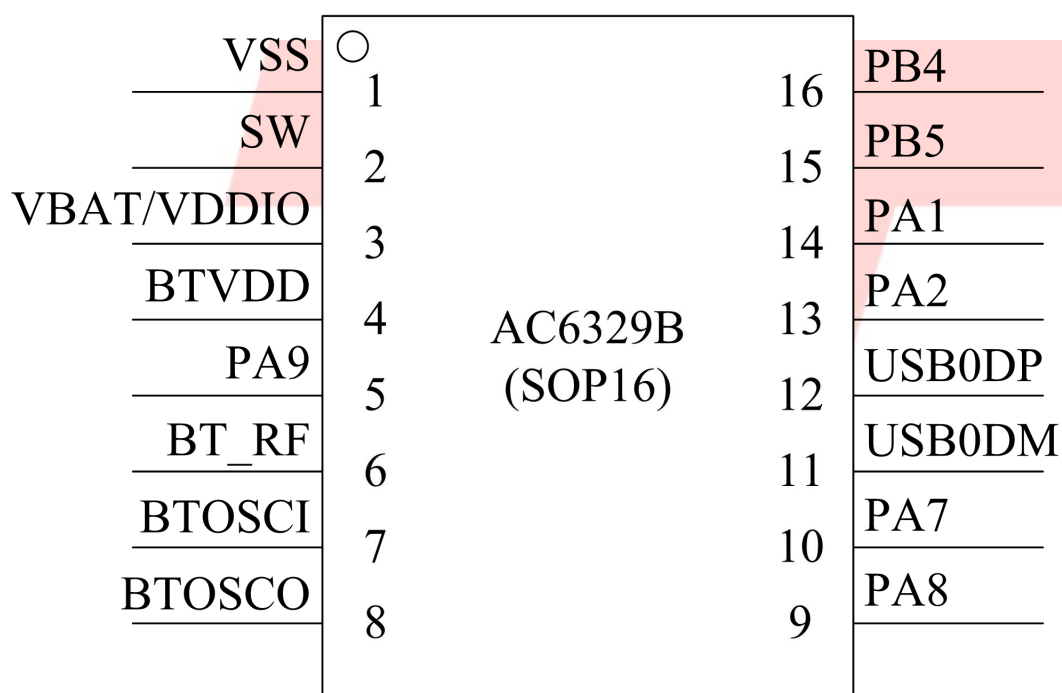


Figure 2-1 AC6329B_SOP16 Package Diagram

2.2 Pin Description

Table 2-1 AC6329B_SOP16 Pin Description

PIN NO.	Name	I/O Type	Function	Other Function
1	VSS	P	GND	
2	SW	P	DC-DC Switch Pin	-
3	VBAT	P	LDO Power	-
	VDDIO	P	IO Power 3.3V	-
4	BTAVDD	P	Core Power 1.3V	-
5	PA9	I/O	GPIO (pull up)	Long Press Reset; ADC8: ADC Channel 8;
6	BT_RF	-	RF Antenna	-
7	BTOSCI	I	BTOSCI	-
8	BTOSCO	O	BTOSCO	-
9	PA8	I/O	GPIO	TMR3: Timer3 Clock In; IIC_SDA_C: IIC SDA(C); ADC4: ADC Channel 4; UART1_RXC: Uart1 Data In(C); PWMCH1L;
10	PA7	I/O	GPIO	TMR1: Timer1 Clock In; IIC_SCL_C: IIC SCL(C); ADC3: ADC Channel 3; UART1_TXC: Uart1 Data Out(C); PWMCH1H;
11	USB0DM	I/O	GPIO (pull down)	IIC_SDA_A: IIC SDA(A); ADC11: ADC Channel 11; UART1_RXD: Uart1 Data In(D);
12	USB0DP	I/O	GPIO (pull down)	IIC_SCL_A: IIC SCL(A); ADC10: ADC Channel 10; UART1_TXD: Uart1 Data Out(D);
13	PA2	I/O	GPIO	CAP3: Timer3 Capture; Q-decoder0_1; UART0_RXC: Uart0 Data In(C); UART1_RTS;

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14	PA1	I/O	GPIO	PWM0: Timer0 PWM Output; Q-decoder0_0; ADC0: ADC Channel 0; UART0_TXC: Uart0 Data Out(C); UART1_CTS;
15	PB5	I/O	GPIO (High Voltage)	UART1_RXA: Uart1 Data In(A); Q-decoder2_1; PWMCH3L;
16	PB4	I/O	GPIO	TMR2: Timer2 Clock In; Q-decoder2_0; ADC9: ADC Channel 9; UAR1_TXA: Uart1 Data Out(A); PWMCH3H;

3. Electrical Characteristics

3.1 Absolute Maximum Ratings

Table 3-1

Symbol	Parameter	Min	Max	Unit
T _{opt}	Operating temperature	-40	+85	°C
T _{stg}	Storage temperature	-65	+150	°C
V _{DDIO}	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

3.2 Recommended Operating Conditions

Table 3-2

Symbol	Parameter	Min	Typ	Max	Unit	Test Conditions
V _{DDIO}	Voltage input	1.8	3.0	3.4	V	
BTA _{VDD}	Voltage output	1	1.3	1.4	V	DC-DC mode: 40mA loading
I _{VDDIO}	Loading current	—	—	60	mA	

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3.3 IO Input/Output Electrical Logical Characteristics

Table 3-3

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

3.4 Internal Resistor Characteristics

Table 3-4

Port	Drive Strength	Internal Pull-Up Resistor	Internal Pull-Down Resistor	Comment
PA1-PA9, PB4	drive_select[11] 24mA drive_select[10] 24mA (with 120ohm res)	10K	10K	1. PA9 default pull up 2. USB0DM&USB0DP default pull down 3. Internal pull-up/pull-down resistance accuracy ±20% 5.PB5 can pull-up resistance to 5V
PB5	8mA	10K	10K	
USB0DP	4mA	1.5K	15K	
USB0DM	4mA	180K	15K	

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3.5 BT Characteristics

3.5.1 Transmitter

Basic Rate

Table 3-5

Parameter		Min	Typ	Max	Unit	Test Conditions
RF Transmit Power		-	4	6	dBm	25°C, Power Supply VBAT=3.7V
RF Power Control Range		-	20	-	dB	
20dB Bandwidth		-	950	-	KHz	
In-band spurious Emissions (BQB Test Mode RF_Tx Power=4dBm)	F=F ₀ ±1MHz	-	-20	-	dBm	
	F=F ₀ ±2MHz	-	-45	-	dBm	
	F=F ₀ ±3MHz	-	-35	-	dBm	
	F=F ₀ ±>3MHz	-	-40	-	dBm	

Enhanced Data Rate

Table 3-6

Parameter		Min	Typ	Max	Unit	Test Conditions
Relative Power		-	-1	-	dB	25°C, Power Supply VBAT=3.7V
$\pi/4$ DQPSK Modulation Accuracy	DEVM RMS	-	4	-	%	
	DEVM 99%	-	12	-	%	
	DEVM Peak	-	9	-	%	
In-band spurious Emissions (BQB Test Mode RF_Tx Power=4dBm)	F=F ₀ ±1MHz	-	-4	-	dBm	2441MHz 2DH5
	F=F ₀ ±2MHz	-	-30	-	dBm	
	F=F ₀ ±3MHz	-	-30	-	dBm	
	F=F ₀ ±>3MHz	-	-37	-	dBm	

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3.5.2 Receiver

Basic Rate

Table 3-7

Parameter		Min	Typ	Max	Unit	Test Conditions
Sensitivity		-	-91	-	dBm	25°C, Power Supply VBAT=3.7V 2441MHz DH5
Co-channel Interference Rejection		-	6	-	dB	
Adjacent Channel selectivity C/I	+1MHz	-	-7	-	dB	
	-1MHz	-	-7	-	dB	
	+2MHz	-	-37	-	dB	
	-2MHz	-	-39	-	dB	
	+3MHz	-	-32	-	dB	
	-3MHz	-	-43	-	dB	

Enhanced Data Rate

Table 3-8

Parameter		Min	Typ	Max	Unit	Test Conditions
Sensitivity		-	-93	-	dBm	25°C, Power Supply VBAT=3.7V 2441MHz 2DH5
Co-channel Interference Rejection		-	8	-	dB	
Adjacent Channel selectivity C/I	+1MHz	-	-14	-	dB	
	-1MHz	-	-15	-	dB	
	+2MHz	-	-36	-	dB	
	-2MHz	-	-39	-	dB	
	+3MHz	-	-29	-	dB	
	-3MHz	-	-43	-	dB	

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3.5.3 BLE

1M Data Rate

Table 3-9

Parameter		Min	Typ	Max	Unit	Test Conditions
Sensitivity		-	-95	-	dBm	25°C Power Supply VBAT=3.7V 2440MHz
RF Transmit Power		-	6.5	8	dBm	
In-band Spurious Emission	M-N =2MHz	-	-35	-	dBm	
	M-N ≥3MHz	-	-33	-	dBm	
Modulation Characteristics	Δf1 avg	-	250	-	KHz	
	Δf2 99%	-	210	-	KHz	
	Δf1avg/Δf2avg	-	0.9	-	/	
Carrier Frequency Offset		-15	-	+15	KHz	
Frequency Drift		-25	-	+25	KHz	
Frequency Drift Rate		-5	-	+5	KHz/50us	

2M Data Rate

Table 3-10

Parameter		Min	Typ	Max	Unit	Test Conditions
Sensitivity		-	-92	-	dBm	25°C Power Supply VBAT=3.7V 2440MHz
RF Transmit Power		-	6.5	8	dBm	
In-band Spurious Emission	M-N =4MHz	-	-40	-	dBm	
	M-N =5MHz	-	-40	-	dBm	
	M-N ≥6MHz	-	-40	-	dBm	
Modulation Characteristics	Δf1 avg	-	500	-	KHz	
	Δf2 99%	-	430	-	KHz	
	Δf1avg/Δf2avg	-	0.9	-	/	
Carrier Frequency Offset		-20	-	+20	KHz	
Frequency Drift		-25	-	+25	KHz	
Frequency Drift Rate		-5	-	+5	KHz/50us	

Long Range

Table 3-11

Parameter	Min	Typ	Max	Unit	Test Conditions
Sensitivity LE 125K(S8)	-	-102	-	dBm	VBAT=3.7V,25°C
Sensitivity LE 500K(S2)	-	-99	-	dBm	2440MHz

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4. Package Information

4.1 SOP16(9.9mm*6mm)

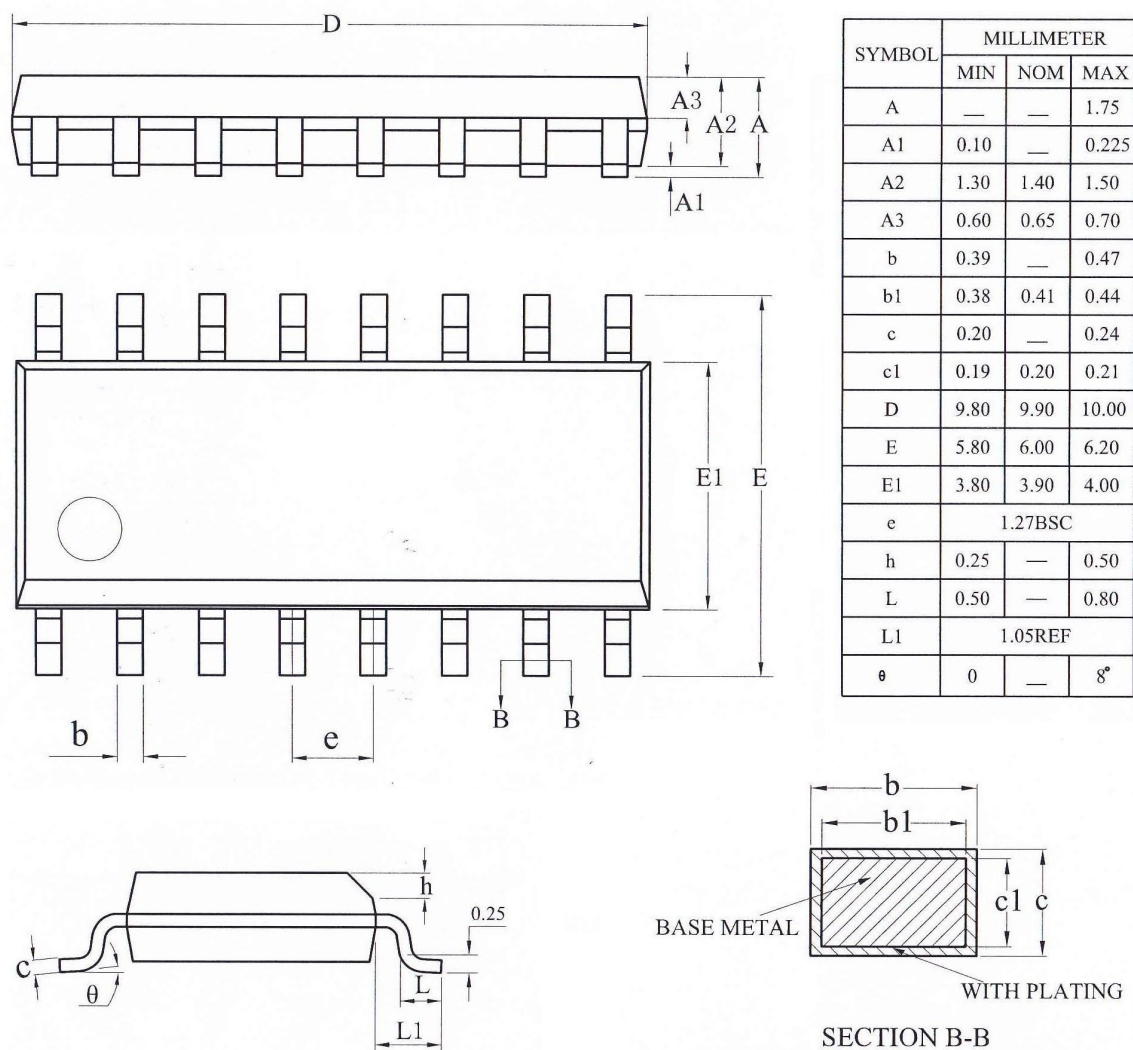
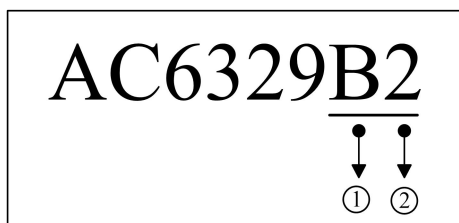


Figure 4-1 AC6329B_SOP16 Package

5. Package Type Specification



- ① Represents different packages
- ② Represents different memory sizes
2: 2Mbit Flash

6. Revision History

Date	Revision	Description
2021.03.12	V1.0	Initial Release
2022.07.19	V1.1	Update Bluetooth Feature
2023.11.28	V1.2	Add BLE parameter
2023.12.13	V1.3	Update Bluetooth Feature