AC6318A Datasheet

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AC6318A Features

High performance 32-bit RISC CPU

- RISC 32-bit CPU
- DC-120MHz operation
- 56KB data RAM
- 8KB Icache 4way
- 64 Vectored interrupts
- 4 Levels interrupt priority

Flexible I/O

- 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
- One full-duplex advanced UART(DMA)
- One SPI interface supports host and device mode
- 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
- 1 channel 8 levels Low Power Detector

Embedded PMU support low power mode
- Embedded PMU support low power mode
- Watchdog
- Power-on reset

Bluetooth Feature

- CMOS single-chip fully-integrated radio and baseband
- Compliant with Bluetooth V5.1+BR+EDR+BLE specification
- Bluetooth Piconet and Scatternet support
- Meet class2 and class3 transmitting power requirement
- Support GFSK and π/4 DQPSK all paket types
- Provides +8dbm transmitting power
- Receiver with -92dBm sensitivity
- Support a2dp\avctp\avdtp\avrcp\hfp\ spp\smp\ gatt\gap\gatt\rfcomm\sdp\l2cap profile

Power Supply

- VBAT is 1.8V to 3.4V
- VDDIO is 1.8V to 3.4V

Packages

- SOP8

Temperature

- Operating temperature:-40°C to +85°C
- Storage temperature: -65°C to +150°C
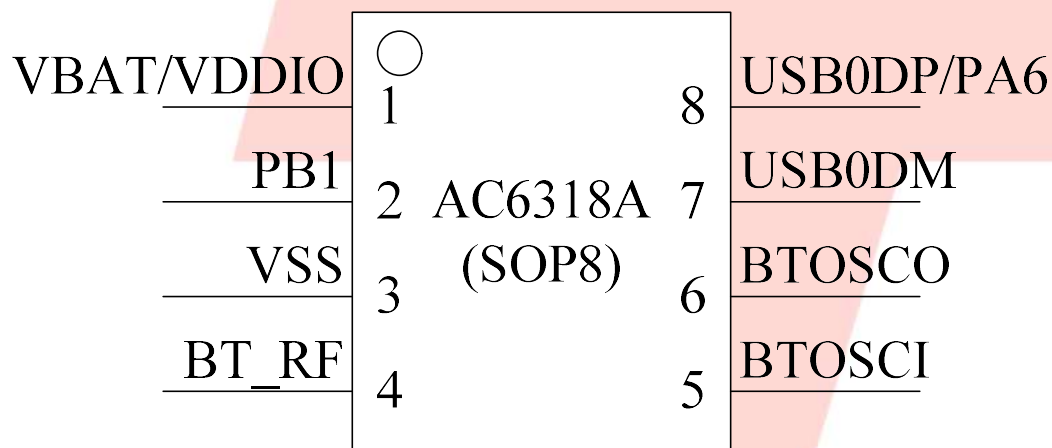
1. Pin Definition

1.1 Pin Assignment

VBAT/VDDIO	1		8	USB0DP/PA6
PB1	2	AC6318A	7	USB0DM
VSS	3	(SOP8)	6	BTOSCO
BT_RF	4		5	BTOSCI

Figure 1-1   AC6318A_SOP8 Package Diagram

1.2 Pin Description

Table 1-1　AC6318A_SOP8 Pin Description

PIN NO.	Name	I/O Type	Function	Other Function
1	VBAT	P	LDO Power	-
	VDDIO	P	IO Power 3.3V	-
2	PB1	I/O	GPIO (pull up)	PWM2: Timer2 PWM Output ADC7: ADC Channel 7 UART1_RXB: Uart1 Data In(B) Long Press Reset
3	VSS	P	Ground	-
4	BT_RF	-	RF Antenna	-
5	BTOSCI	I	BTOSCI	-
6	BTOSCO	O	BTOSCO	-
7	USB0DM	I/O	GPIO (pull down)	IIC_SDA_A: IIC SDA(A) SPI2_DOB: SPI2 Data Out(B) ADC11: ADC Channel 11 UART1_RXD: Uart1 Data In(D)
8	PA6	I/O	GPIO	CAP0: Timer0 Capture UART0_RXA: Uart0 Data In(A) TMR1CK
	USB0DP	I/O	GPIO (pull down)	IIC_SCL_A: IIC SCL(A) SPI2_CLKB: SPI2 Clock(B) ADC10: ADC Channel 10 UART1_TXD: Uart1 Data Out(D)

2. Electrical Characteristics

2.1 Absolute Maximum Ratings

Table 2-1

Symbol	Parameter	Min	Max	Unit
Topt	Operating temperature	-40	+85	°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 Recommended Operating Conditions

Table 2-2

Symbol	Parameter	Min	Typ	Max	Unit	Test Conditions
VBAT	Voltage Input	1.8	3.0	3.4	V	_
VDDIO	Voltage Input	1.8	3.0	3.4	V	_

2.3 IO Input/Output Electrical Logical Characteristics

Table 2-3

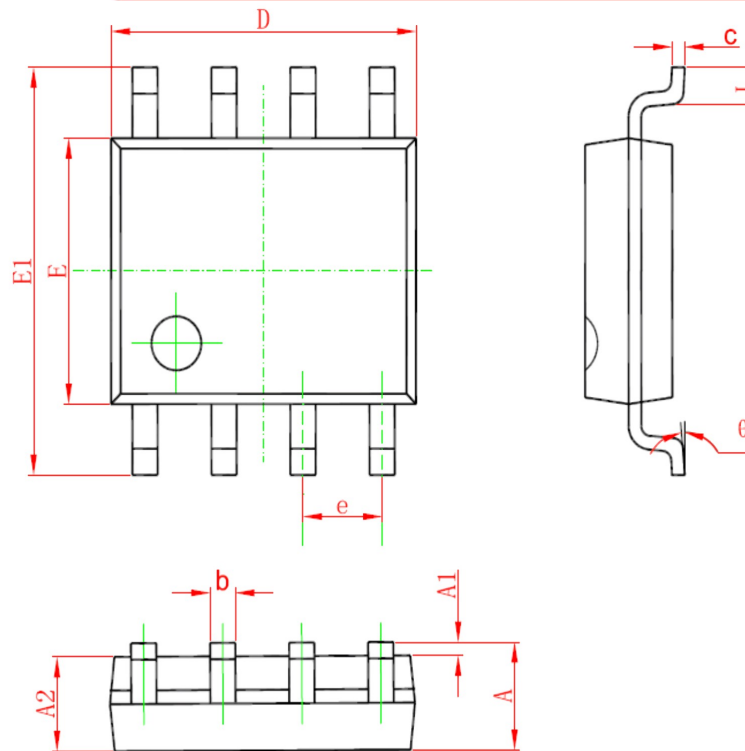| IO input characteristics						
Symbol	Parameter	Min	Typ	Max	Unit	Test Conditions
V_{IL}	Low-Level Input Voltage	-0.3	_	0.3* VDDIO	V	VDDIO = 3.3V
V_{IH}	High-Level Input Voltage	0.7* VDDIO	_	VDDIO+0.3	V	VDDIO = 3.3V
IO output characteristics						
V_{OL}	Low-Level Output Voltage	_	_	0.33	V	VDDIO = 3.3V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

2.4 Internal Resistor Characteristics

Table 2-4

Port	Drive Strength	Internal Pull-Up Resistor	Internal Pull-Down Resistor	Comment
PB1	drive_select[11] 24mA; drive_select[10] 16mA; drive_select[01] 8mA; drive_select[00] 2.4mA （with 120ohm res）;	10K	10K	1. PB1 default pull up 2. USB0DM&USB0DP default pull down 3. Internal pull-up/pull-down resistance	accuracy ±20%
USB0DP	4mA	1.5K	15K	
USB0DM	4mA	180K	15K	

3. Package Information

3.1 SOP8

Symbol	Dimension In Millimeters		Dimension In Inches	
	Min	Max	Min	Max
A	1.350	1.750	0.053	0.069
A1	0.100	0.250	0.004	0.010
A2	1.350	1.550	0.053	0.061
b	0.330	0.510	0.013	0.020
c	0.170	0.250	0.007	0.010
D	4.700	5.100	0.185	0.201
E	3.800	4.000	0.150	0.157
E1	5.800	6.200	0.228	0.244
e	1.27TYP		0.050TYP	
L	0.400	1.270	0.016	0.050
θ	0^0	8^0	0^0	8^0

Figure 3-1. AC6318A_SOP8 Package

4. Package Type Specification

AC6318<u>A4</u>
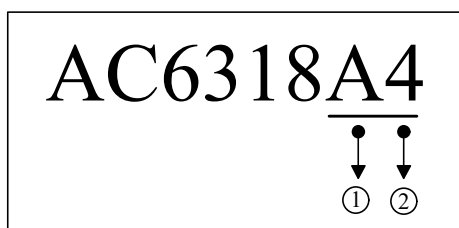
①Represents different packages

②Represents different memory sizes

    0: No memory

    2: 2Mbit Flash

    4: 4Mbit Flash

    8: 8Mbit Flash

5. Revision History

Date	Revision	Description
2020.05.14	V1.0	Initial Release
2020.07.13	V1.1	Update I/O Description