

AD158M Datasheet

Zhuhai Jieli Technology Co.,LTD

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AD158M Features

CPU Core

- 32-bit CPU, Built-in ICACH, can be connected to Flash for expansion of code
- The main frequency is up to 120MHz

Memory

- On-chip SRAM 20kbyte
- Built-in Flash memory

Clock Source

- RC Clock frequency about 16MHz
- LRC clock frequency about 200KHz

Digital I/O

- 3 programmable digital I/O pins
- General the IO supports pull-up(10k), pull-down(60k), strong, weak output, input and high impedance
- 3 external interrupt/wake-up source (low power available, can be multiplexed to any I/O, with hardware filter)
- Input channel and Output channel, provide arbitrary IO input and output options for some modules

Digital peripherals

- Two UART Controllers (UART0/1) supports DMA and Flow Control
- Two SPI Controllers with DMA (SPI1) support master mode and slave mode

- Built-in Spi Flash to run code
- Three 32-bit Asynchronous Divider
- Timers
- One IIC Controller
- Three channel PWM output
- Infrared remote control decoder
- Watchdog

Analog Peripherals

- 0.5 watt Class-D audio amplifier output
- Low voltage protection
- Power on reset

PMU

- Soft off current: <2uA
- Power down current: <30uA
- Music mode: <6mA
- LVD range (3bit): 1.8V~2.5V, step 100mV
- VDD range : 2.0V~5.5V
- IOVDD range : 2.0V~3.4V

Temperature

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

Package

- SOP8

Application

- Sound Toy
- Audio player

1 Block Diagram

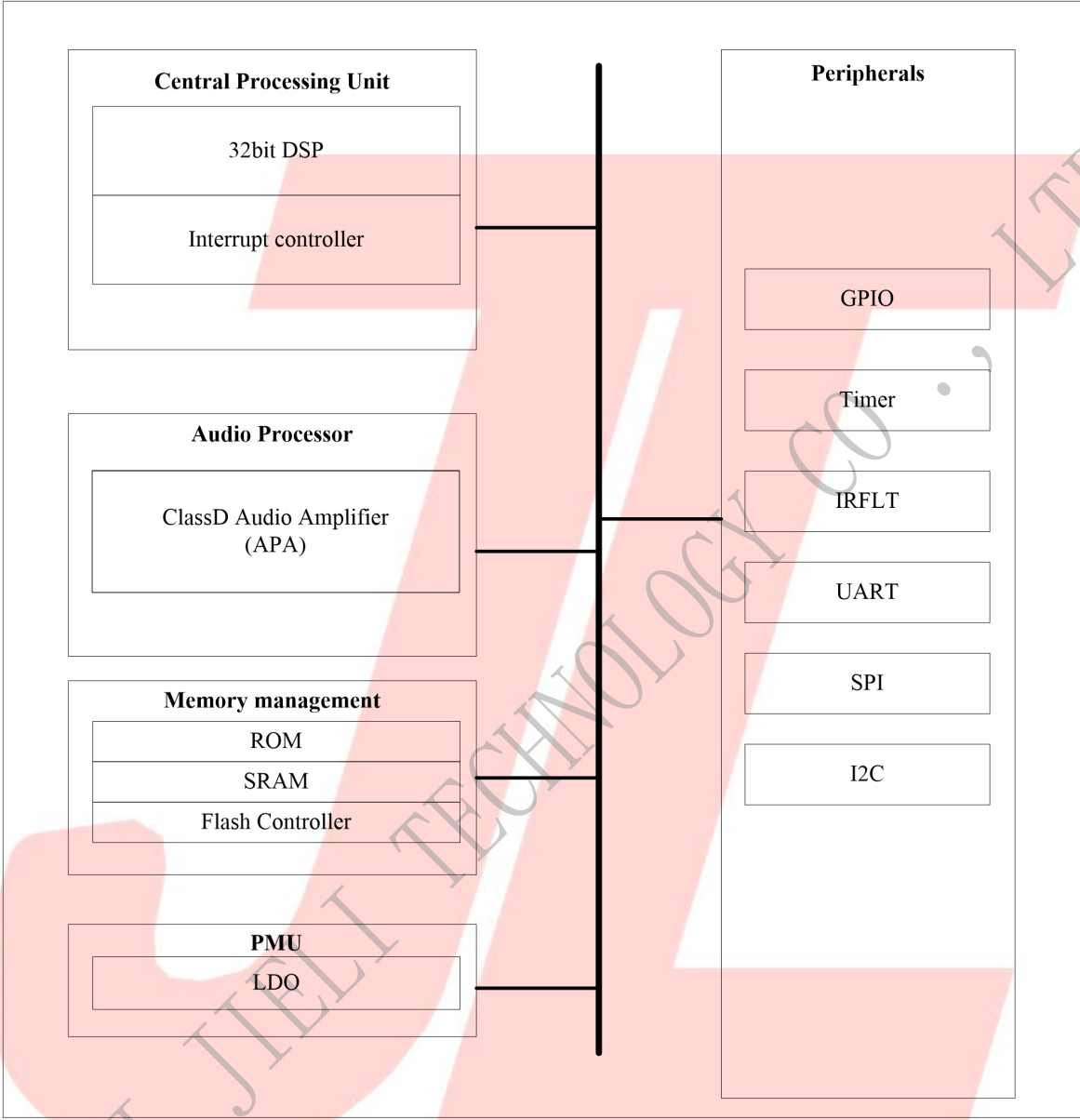


Figure 1-1 AD158M Block Diagram

2 Pin Definition

2.1 Pin Assignment

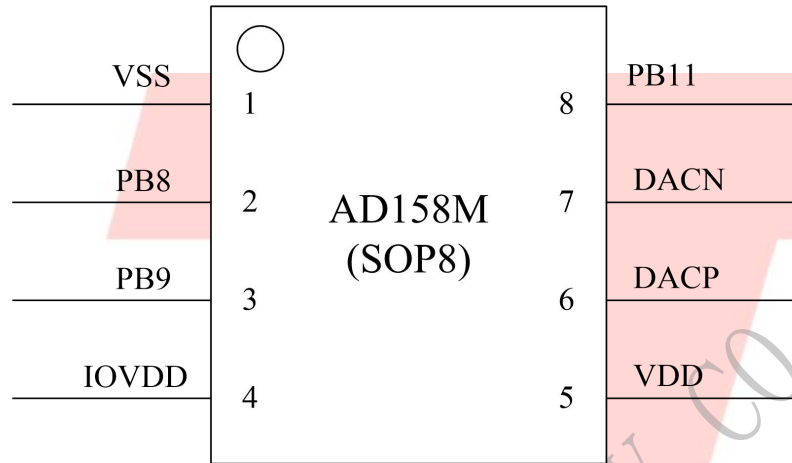


Figure 2-1 AD158M_SOP8 Package Diagram

2.2 Pin Description

Table 2-1 AD158M_SOP8 Pin Description

PIN NO.	Name	Type	Drive (mA)	Function	Description
1	VSS	G	/		Ground;
2	PB8	I/O	8	GPIO (High Voltage Resistance)	SPI1CLKD:SPI1 Clock(D); I2C_SCL(D); OSCIA:Crystal Oscillator Input(A);
3	PB9	I/O	8	GPIO (High Voltage Resistance)	UART1TRXB:Uart1 Data In/Out(B); SPI1DOD:SPI1 Data Out(D); I2C_SDA(D); CAP1:Timer1 Capture;
4	IOVDD	P	/		Digital Power; (Internal linear regulator output)
5	VDD	P	/		Battery Power Supply;
6	DACP	O	/		Class-D APA Positive Output;
7	DACN	O	/		Class-D APA Negative Output;
8	PB11	I/O	8	GPIO (High Voltage Resistance)	OSCIB:Crystal Oscillator Input(B);

3 Electrical Characteristics

3.1 Absolute Maximum Ratings

Table 3-1

Symbol	Parameter	Min	Max	Unit
T _{amb}	Ambient Temperature	-40	+85	°C
T _{stg}	Storage temperature	-65	+150	°C
V _{DD}	Supply Voltage	-0.3	5.5	V
V _{IOVDD33}	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 PMU Characteristics

Table 3-2

Symbol	Parameter	Min	Typ	Max	Unit	Test Conditions
V _{DD}	Voltage Input	2.0	3.7	5.5	V	—
V _{IOVDD}	Voltage output	2.0	3.0	3.4	V	V _{DD} = 3.7V, 100mA loading
I _{IOVDD}	Loading current	—	—	100	mA	V _{DD} =3.7V

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* IOVDD	V	IOVDD = 3.3V
V _{IH}	High-Level Input Voltage	0.7* IOVDD	—	IOVDD+0.3	V	IOVDD = 3.3V
IO output characteristics						
V _{OL}	Low-Level Output Voltage	—	—	0.33	V	IOVDD = 3.3V
V _{OH}	High-Level Output Voltage	2.7	—	—	V	IOVDD = 3.3V

3.4 Internal Resistor Characteristics

Table 3-4

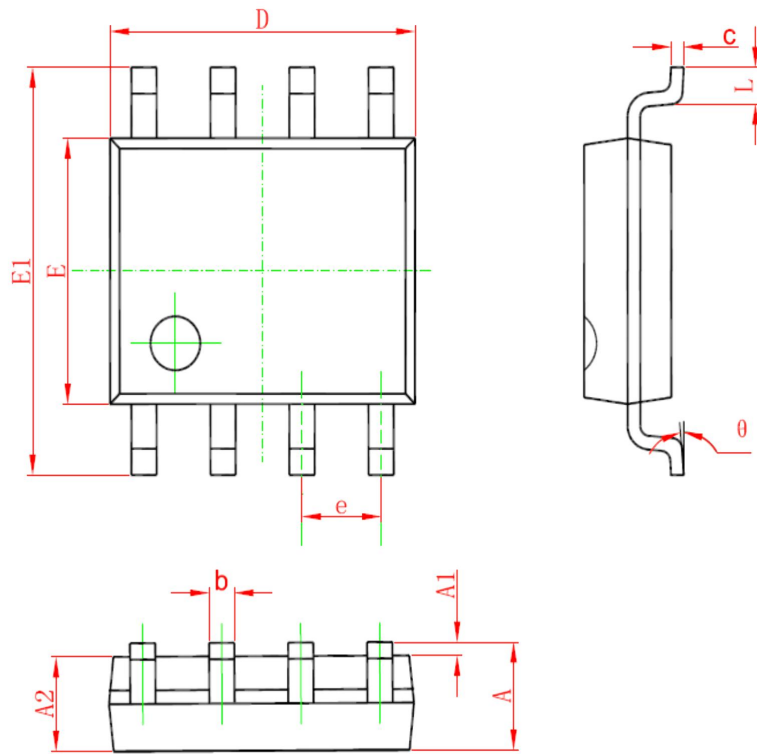
Port	General Output	High Drive	Internal Pull-Up Resistor	Internal Pull-Down Resistor	Comment
PB8,PB9,PB11	8mA	—	10K	60K	1、internal pull-up/pull-down resistance accuracy $\pm 20\%$

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4 Package Information

4.1 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°	8°	0°	8°

Figure 4-1. AD158M_SOP8 Package

5 Package Type Specification



① Represents different packages

② Represents different memory sizes

2: 2Mbit Flash

4: 4Mbit Flash

6 Storage Condition

6.1 Moisture Sensitivity Level

AD158M is qualified to moisture sensitivity level MSL3 in accordance with JEDEC J-STD-033.

6.2 Storage Alert

1. Calculated shelf life in sealed bag 12 months at $<40^{\circ}\text{C}$ and 90% relative humidity (RH).
 2. Peak package body temperature $\leq 260^{\circ}\text{C}$.
 3. After bag is opened, devices that will be subjected to reflow solder or other high temperature process must be mounted within 168 hours of factory conditions $\leq 30^{\circ}\text{C}/60\%\text{RH}$ or stored per J-STD-033.
 4. Devices require bake before mounting if humidity indicator card reads $\geq 10\%$ for level 2a-5a devices or $>60\%$ for level 2 devices when read at $23 \pm 5^{\circ}\text{C}$, or 3a or 3b are not met.
- Please refer to IPC/JEDEC J-STD-033 for baking procedure if necessary.

7 Revision History

Date	Revision	Description
2025.05.19	V1.0	Initial Release

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