

AC7923A Datasheet

Zhuhai Jieli Technology Co.,LTD

Version 1.4

Date 2025.01.09

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Revision History

Date	Revision	Author	Description
2024.05.15	V1.0	zh-jieli	Initial Release
2024.05.30	V1.1	zh-jieli	Pin Adjustment
2024.09.30	V1.2	zh-jieli	Add Power Domain Information
2024.12.07	V1.3	zh-jieli	Modify Audio DAC Characteristics, IO Characteristics and Operating Temperature
2025.01.09	V1.4	zh-jieli	Update Feature_Bluetooth, Update Block Diagram

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AC7923A Features

SYSTEM

- Dual Core 32bit DSP 320MHz
- With IEEE754 Single precision FPU
- Support jieli TEE
- Support FFT / MATRIX / MATH
- 2 x I-cache and D-cache
- On-chip SRAM 352kbyte
- Support SDTAP / EMU / ETM
- Support MMU
- Support MPU
- Built-in SDRAM/DDR (Maximum 64Mbyte)
- SPI FLASH Controller (Maximum 64Mbyte)
- 24MHz crystal oscillator
- 32KHz RTC crystal oscillator
- Internal RC oscillator, PLL

Video Input

- Internal Image Signal Processor
- Support DVP, BT656, SPI interface
- Support 1 lane MIPI-CSI interface
- Support RAW, YUV422 formats
- Support video resize an time mark
- 2 x JPEG codec

Video output

- Support display color enhancement
- Support DPI, DBI, BT656 interface
- Support 4 lane MIPI-DSI interface
- Support RGB, YUV formats

Graphics

- Internal 2D DMA
- Internal 2.5D GPU
- Support vector graphics rendering
- Support image resize, rotation, projection
- Support multiple blending mode
- Support ARGB, RGB, YUV, Lx, Ax formats

DSP Audio Processing

- SBC/AAC/LDAC/LHDC/LC3/CVSD/mSBC codec
- mSBC voice codec supported for BT phone
- PLC for voice processing
- Single/Multi MIC ENC
- Multi-band DRC
- Multi-band EQ
- Support spatial sound

Audio

- 2 x 16bit DAC
 - ❖ SNR 103dB
 - ❖ Noise 6.4uVrms
 - ❖ Supports differential mode
 - ❖ Sampling rate 8~96kHz
- 2 x 16bit ADC
 - ❖ SNR 95dB
 - ❖ Sampling rate 8~48kHz
- I2S/PDM AUDIO Master/Slave interface

Bluetooth

- Dual-mode BT6.0 with LE Audio (DN Q332415)
- Support AoA/AoD
- Support LE audio BIS/CIS
- Support long range BLE
- Maximum transmitting power 19 dBm
- Receiver sensitivity
 - ❖ -95.5 dBm @BR
 - ❖ -96 dBm @EDR $\pi/4$ DQPSK
 - ❖ -88 dBm @EDR 8DPSK

IEEE 802.11b/g/n

- 1T1R in 2.4 GHz band
- 20 MHz and 40 MHz bandwidth
- Data rate up to 150 Mbps
- Security: WFA/WPA3 personal, WPS2.0, WAPI
- QoS: WFA WMM, WMM PS
- Support STBC, A-MPDU, A-MSDU, BLK-ACK
- Support Station, SoftAP, Station+SoftAP, Promiscuous mode
- Maximum transmitting power
 - ❖ 19 dBm @1Mbps, DSSS
 - ❖ 17 dBm @HT20, MCS0
 - ❖ 13 dBm @HT20, MCS7
- Receiver sensitivity
 - ❖ -97 dBm @1Mbps, DSSS
 - ❖ -93 dBm @HT20, MCS0
 - ❖ -74 dBm @HT20, MCS7

Peripherals

- 1 x High speed USB
- 2 x SD host controller
- 6 x Multi-function 32bit timer
- 5 x UART interface
- 3 x I²C Master/Slave interface
- 3 x SPI Master/Slave interface
- 1 x QDEC
- 1 x CAN Controller
- 8 x MCPWM
- 1 x PAP Interface
- 3 x Light strip Controller
- 1 x 10bit ADC(5 Channel)
- 33 x GPIO Support function remapping
- Built-in RTC with alarm, wakeup

PMU

- 1 x Buck DC-DC converter
- 2 x IO power domain
- WIFI PA support external power supply
- RTCVDD33 support external power supply
- Support temperature sensor
- VBAT range 2.7V to 5.5V
- IOVDD range 2.7V to 3.6V

Packages

- QFN80(8mm*8mm)

Temperature

- Operating temperature
TC = -20°C to +85°C (standard range)
- Storage temperature -65°C to +150°C

Applications

- IPC
- Driving recorder
- WIFI Appliances

1 Block Diagram

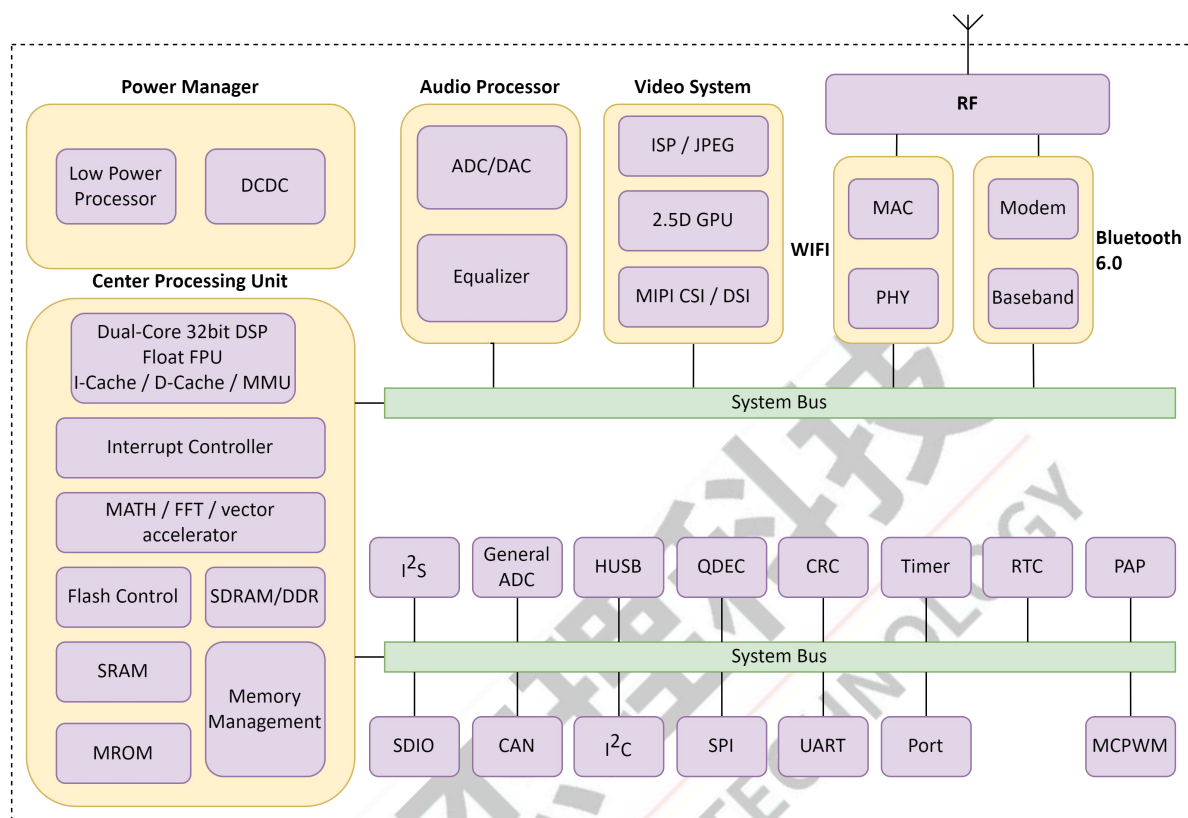


Figure 1-1 AC7923A Block Diagram

2 Pin Definition

2.1 Pin Assignment

	WFVDD14	ANTP	WFVDD33	WFVDD14	WFVSS	DSI_D0N	DSI_D0P	DSI_D1N	DSI_D1P	DSI_D2N	DSI_D2P	DSI_D3N	DSI_D3P	DSI_D4N	DSI_D4P	AVD12	CSI_D0N	CSI_D0P	CSI_D1N	CSI_D1P		
EVSS	80	79	78	77	76	75	74	73	72	71	70	69	68	67	66	65	64	63	62	61		
XOSCI	1																				60	IOVDD/AVD33
XOSCO	2																				59	DVDD
PE13	3																				58	PA12
PE12	4																				57	PA13
PE11	5																				56	PA14
PE10	6																				55	PA15
IOVDD2	7																				54	PB0
PE4	8																				53	PB1
PE0	9																				52	PB2
PD15	10																				51	PB3
PD14	11																				50	PB4
PD13	12																				49	PB5
PD12	13																				48	PB6
PD11	14																				47	PB7
PD10	15																				46	PC6
PD9	16																				45	PC8/PC7
IOVDD/USBAVDD	17																				44	PC9
HUSBDM	18																				43	VCM
HUSBDP	19																				42	AUVSS
PD8	20																				41	PC10
		21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	
		DVDD	PF5	PF4	PF3	FSPG/PC13	PF2	PF1	PF0	PR1	PR0	RTCVDD33	PV1	PV0	IOVDD	DCVDD	VBAT	SW	PGND	PC12	PC11	

AC7923A
QFN80(8*8)

Figure 2-1 AC7923A Pin Assignment

2.2 Pin Description

Table 2-2-1 AC7923A Pin Description

Pin No.	Name	Type	IO Initial State	Description
1	XOSCI	I	--	Crystal Oscillator Input
2	XOSCO	O	--	Crystal Oscillator Output
3	PE13	I/O	Z	--
4	PE12	I/O	Z	--
5	PE11	I/O	Z	--
6	PE10	I/O	Z	--
7	IOVDD2	P	--	IO Power for PE10~PE13
8	PE4	I/O	Z	ADC7(ADC Input Channel 7) IO Wakeup Channel 7
9	PE0	I/O	Z	SD1_CLK(B)
10	PD15	I/O	Z	SD1_CMD(B)
11	PD14	I/O	Z	SD1_DATA0(B)
12	PD13	I/O	Z	SD1_DATA1(B)
13	PD12	I/O	Z	SD1_DATA2(B)
14	PD11	I/O	Z	SD1_DATA3(B)
15	PD10	I/O	Z	ADC6(ADC Input Channel 6) IO Wakeup Channel 6
16	PD9	I/O	Z	ADC5(ADC Input Channel 5) IO Wakeup Channel 5
17	USBAVDD	P	--	High Speed USB Power
	IOVDD	P	--	IO Power for PA12~PA15, PB0~PB7, PC6~PC13, PD8~PD15, PE0, PE4, PF0~PF5, PV0~PV1
18	HUSBDM	I/O	15kΩ Pull-down	High Speed USB Negative Data
19	HUSBDP	I/O	15kΩ Pull-down	High Speed USB Positive Data
20	PD8	I/O	10kΩ Pull-up	MCLR(Device Reset) ADC4(ADC Input Channel 4) SD Power IO Wakeup Channel 4
21	DVDD	P	--	Digital Logic Power
22	PF5	I/O	Z	SFCTZ_DO SPITZ_DO
23	PF4	I/O	Z	SFCTZ_CLK SPITZ_CLK
24	PF3	I/O	Z	SFCTZ_DATA3 SPITZ_DATA3
25	FSPG	I/O	Z	Flash Power Output

Pin No.	Name	Type	IO Initial State	Description
	PC13	I/O	Z	ADC13(ADC Input Channel 13) IO Wakeup Channel 13
26	PF2	I/O	Z	SFCTZ_DATA2 SPITZ_DATA2
27	PF1	I/O	Z	SFCTZ_DI SPITZ_DI
28	PF0	I/O	Z	SFCTZ_CS SPITZ_CS
29	PR1	I/O	Z	32k Crystal Oscillator Output
30	PR0	I/O	Z	32k Crystal Oscillator Input
31	RTCVDD33	P	--	RTC Power for PR0~PR1
32	PV1	I/O	Z	AVDD18
33	PV0	I/O	Z	AVDD28
34	IOVDD	P	--	IO Power
35	DCVDD	P	--	DCDC Power
36	VBAT	P	--	Battery Input
37	SW	P	--	Buck DCDC Switch Port
38	PGND	G	--	Ground of Buck DC-DC converter
39	PC12	I/O	Z	AIN_BN0(Audio ADC Negative Input)
40	PC11	I/O	Z	AIN_BP0(Audio ADC Positive Input)
41	PC10	I/O	10kΩ Pull-down	LVD(External Low Voltage Detection Input) MICBIASB (MIC Bias Output)
42	AUVSS	G	--	Audio Ground
43	VCM	P	--	Audio Reference Power
44	PC9	I/O	Z	MICBIASA (MIC Bias Output) Right Channel DAC Output
45	PC8	I/O	Z	Left Channel DAC Output
	PC7	I/O	Z	AIN_AP0(Audio ADC Positive Input)
46	PC6	I/O	Z	AIN_AN0(Audio ADC Negative Input)
47	PB7	I/O	Z	LCD_DATA15(A/B) Sensor1_D7(A) PAP_D15(A/B) SD0_CLK(D)
48	PB6	I/O	Z	LCD_DATA14(A/B) Sensor1_D6(A) PAP_D14(A/B) SD0_CMD(D)

Pin No.	Name	Type	IO Initial State	Description
49	PB5	I/O	Z	LCD_DATA13(A/B) Sensor1_D5(A) PAP_D13(A/B) SD0_DATA0(D)
50	PB4	I/O	Z	LCD_DATA12(A/B) Sensor1_D4(A) PAP_D12(A/B) SD0_DATA1(D)
51	PB3	I/O	Z	LCD_DATA11(A/B) Sensor1_D3(A) PAP_D11(A/B) SD0_DATA2(D)
52	PB2	I/O	Z	LCD_DATA10(A/B) Sensor1_D2(A) PAP_D10(A/B) SD0_DATA3(D)
53	PB1	I/O	Z	LCD_DATA9(A/B) Sensor1_D1(A) PAP_D9(A/B)
54	PB0	I/O	Z	LCD_DATA8(A/B) Sensor1_D0(A) PAP_D8(A/B)
55	PA15	I/O	Z	LCD_SYNC2(A/B) Sensor1_SYNC1(A)
56	PA14	I/O	Z	LCD_SYNC1(A/B) Sensor1_SYNC0(A) PAP_RD(A/B)
57	PA13	I/O	Z	LCD_DCLK(A/B) Sensor1_CLK(A)
58	PA12	I/O	Z	LCD_SYNC0(A/B) PAP_WR(A/B)
59	DVDD	P	--	Digital Logic Power
60	IOVDD	P	--	IO Power
	AVD33	P	--	Analog 3.3V Power
61	CSI_D1P	I	--	MIPI CSI D1P
62	CSI_D1N	I	--	MIPI CSI D1N
63	CSI_D0P	I	--	MIPI CSI D0P
64	CSI_D0N	I	--	MIPI CSI D0N
65	AVD12	P	--	Analog 1.2V Power
66	DSI_D4P	I/O	--	MIPI DSI D4P
67	DSI_D4N	I/O	--	MIPI DSI D4N

Pin No.	Name	Type	IO Initial State	Description
68	DSI_D3P	I/O	--	MIPI DSI D3P
69	DSI_D3N	I/O	--	MIPI DSI D3N
70	DSI_D2P	I/O	--	MIPI DSI D2P
71	DSI_D2N	I/O	--	MIPI DSI D2N
72	DSI_D1P	I/O	--	MIPI DSI D1P
73	DSI_D1N	I/O	--	MIPI DSI D1N
74	DSI_D0P	I/O	--	MIPI DSI D0P
75	DSI_D0N	I/O	--	MIPI DSI D0N
76	WVSS	G	--	Ground of Wireless
77	WVDD14	P	--	Wireless 1.4V Power
78	WVDD33	P	--	Wireless 3.3V Power
79	ANTP	RF	--	Antenna Positive Port
80	WVDD14	P	--	Wireless 1.4V Power

Note

1. IO initial state abbreviations Z--High resistance, H--High level, L--Low level, X--May be changed during power on.

2. Timer, CAN, MCPWM, QDEC, UART, LEDC, I²C, I²S and SPI functions can be remapped to any I/O (except PF/PR/PV/CSI/DSI).

Table 2-2-2 Pin Types Description

Pin Type	Description	Pin Type	Description
P	Power	I/O	Input or Output
G	Ground	I	Input
RF	RF antenna	O	Output

3 Electrical Characteristics

3.1 Absolute Maximum Ratings

Table 3-1 Absolute Maximum Ratings

Symbol	Parameter	Min	Max	Unit
T _{opt}	Operating temperature	-20	+85	°C
T _{stg}	Storage temperature	-65	+150	°C
VBAT	Supply Voltage	-0.3	5.5	V
IOVDD		-0.3	3.6	V
IOVDD2		-0.3	3.6	V
RTCVDD33		-0.3	3.6	V
DCVDD		-0.3	1.54	V
WVDD33		-0.3	3.6	V
WVDD14		-0.3	1.54	V
USBAVDD		-0.3	3.6	V
AVD33		-0.3	3.6	V
AVD12		-0.3	1.54	V
GPIO	Input voltage of GPIO	-0.3	3.6	V

Note

1. Stresses beyond those listed under absolute maximum ratings may cause permanent damage to the device.

3.2 ESD Ratings

Table 3-2 ESD Ratings

Parameter	Typ	Test pin	Reference standard
Human Body Mode	±4kV	All pins	JEDEC EIA/JESD22-A114
Machine Mode	±300V	All pins	JEDEC EIA/JESD22-A115
Charge Device Model	±1kV	All pins	ANSI/ESDA/JEDEC JS-002-2022

3.3 PMU Characteristics

Table 3-3 PMU Characteristics

Symbol	Parameter	Conditions	Min	Typ	Max	Unit
VBAT	Power supply	--	2.7	3.7	5.5	V
Operating mode						
Symbol	Parameter	Conditions	Min	Typ	Max	Unit
IOVDD	Voltage output	--	2.4	3.3	3.4	V
	Loading current	IOVDD=3.3V@VBAT = 3.9V	--	--	200	mA
AVDD28	Voltage output	--	2.5	2.8	3.2	V
	Loading current	AVDD28=2.8V@IOVDD = 3.3V	--	--	100	mA
AVDD18	Voltage output	--	1.5	1.8	2.2	V

Symbol	Parameter	Conditions	Min	Typ	Max	Unit
	Loading current	AVDD18=1.8V@IOVDD = 3.3V	--	--	60	mA
DCVDD	Voltage output	--	--	1.4	--	V
	Loading current	DCVDD=1.4V@IOVDD = 3.3V, LDO mode	--	--	60	mA
		DCVDD=1.4V@VBAT = 3.7V, DCDC mode	--	--	180	mA
Low Power mode						
Symbol	Parameter	Conditions	Min	Typ	Max	Unit
IOVDD	Loading current	IOVDD=3.0V@VBAT = 3.7V	--	--	10	mA

3.4 IO Characteristics

Table 3-4 IO Characteristics

Input Characteristics						
Symbol	Parameter	Conditions	IO	Min	Max	Unit
V _{IL}	Low-Level Input Voltage	IOVDD2 = 3.0V	PE10~PE13	-0.3	1.4	V
		IOVDD2 = 1.8V	PE10~PE13	-0.3	0.7	V
		IOVDD = 3.0V	PA12~PA15 PB0~PB7 PC6~PC13 PD8~PD15 PE0, PE4 PF0~PF5 HUSBDP HUSBDM PR0~PR1 PV0~PV1	-0.3	1.4	V
V _{IH}	High-Level Input Voltage		IOVDD2 = 3.0V	PE10~PE13	1.7	3.3
		IOVDD2 = 1.8V	PE10~PE13	1.1	2.0	V
		IOVDD = 3.0V	PA12~PA15 PB0~PB7 PC6~PC13 PD8~PD15 PE0, PE4 PF0~PF5 HUSBDP HUSBDM PR0~PR1 PV0~PV1	1.7	3.3	V
Output Characteristics						
Symbol	Parameter	Conditions	IO	Typ		Unit
I _{OL}	Output Current	IOVDD2 = 3.0V Voutput = 0.3V	PE10~PE13	2.5(HD=0) 8(HD=1)		mA

		IOVDD2 = 1.8V Voutput = 0.2V		18.5(HD=2) 24(HD=3)	
		IOVDD = 3.0V Voutput = 0.3V	PA12~PA15 PB0~PB7 PC6~PC13 PD8~PD15 PE0, PE4 PF0~PF5	2.5(HD=0) 8(HD=1) 18.5(HD=2) 24(HD=3)	mA
			PR0~PR1 PV0~PV1	2.5(HD=0) 18.5(HD=1)	mA
			HUSBDP HUSBDM	8	mA
I _{OH}	Output Current	IOVDD2 = 3.0V Voutput = 2.7V	PE10~PE13	2.5(HD=0) 8(HD=1) 18.5(HD=2) 24(HD=3)	mA
		IOVDD2 = 1.8V Voutput = 1.6V			
		IOVDD = 3.0V Voutput = 2.7V	PA12~PA15 PB0~PB7 PC6~PC13 PD8~PD15 PE0, PE4 PF0~PF5	2.5(HD=0) 8(HD=1) 18.5(HD=2) 24(HD=3)	mA
			PR0~PR1 PV0~PV1	2.5(HD=0) 18.5(HD=1)	mA
			HUSBDP HUSBDM	8	mA
Internal Resistance Characteristics					
Symbol	Parameter	Conditions	IO	Typ	Unit
R _{pu}	Pull-up Resistance	IOVDD = 3.0V IOVDD2 = 3.0V/1.8V	PA12~PA15 PB0~PB7 PC6~PC13 PD8~PD15 PE0, PE4 PE10~PE13 PF0~PF5	10k	Ω
			HUSBDP	1.5k(PU=1) 1k(PU=2/3)	Ω
R _{pd}	Pull-down Resistance	IOVDD = 3.0V IOVDD2 = 3.0V/1.8V	PA12~PA15 PB0~PB7 PC6~PC13 PD8~PD15	10k	Ω

			PE0, PE4 PE10~PE13 PF0~PF5		
			HUSBDP HUSBDM	15k	Ω

Note1.Internal pull-up/pull-down resistance accuracy $\pm 20\%$.**3.5 Audio DAC Characteristics****Table 3-5 Stereo DAC Characteristics**

Parameter	Conditions	Min	Typ	Max	Unit
Resolution	--	--	16	--	bits
Output Sample Rate	--	8	--	96	kHz
SNR	Differential Mode Fin=1kHz@0dBFS Fs=44.1kHz B/W=20Hz~20kHz A-Weighted load=10k Ω	--	103	--	dB
	Single Mode Fin=1kHz@0dBFS Fs=44.1kHz B/W=20Hz~20kHz A-Weighted load=10k Ω	--	100	--	dB
Dynamic Range	Differential Mode Fin=1kHz@-60dBFS Fs=44.1kHz B/W=20Hz~20kHz A-Weighted load=10k Ω	--	103	--	dB
	Single Mode Fin=1kHz@-60dBFS Fs=44.1kHz B/W=20Hz~20kHz A-Weighted load=10k Ω	--	100	--	dB
THD+N	Differential Mode Fin=1kHz@0dBFS Fs=44.1kHz B/W=20Hz~20kHz A-Weighted load=10k Ω	--	-87	--	dB
	Single Mode Fin=1kHz@0dBFS Fs=44.1kHz	--	-75	--	dB

Parameter	Conditions	Min	Typ	Max	Unit
	B/W=20Hz~20kHz A-Weighted load=10kΩ				
Noise Floor	Differential Mode B/W=20Hz~20kHz A-Weighted load=10kΩ	--	6.4	--	uVrms
	Single Mode B/W=20Hz~20kHz A-Weighted load=10kΩ	--	5.4	--	uVrms

3.6 Audio ADC Characteristics

Table 3-6 Audio ADC Characteristics

Parameter	Conditions	Min	Typ	Max	Unit
Resolution	--	--	16	--	bits
Input Sample Rate	--	8	--	48	kHz
SNR	Differential input Mode Fin=1kHz@0dBFS Fs=44.1kHz B/W=20Hz~20kHz A-Weighted ADC gain=0dB	--	95	--	dB
	Single-ended input Mode Fin=1kHz@0dBFS Fs=44.1kHz B/W=20Hz~20kHz A-Weighted ADC gain=0dB	--	92	--	dB
Dynamic Range	Differential input Mode Fin=1kHz@-60dBFS Fs=44.1kHz B/W=20Hz~20kHz A-Weighted ADC gain=0dB	--	95	--	dB
	Single-ended input Mode Fin=1kHz@-60dBFS Fs=44.1kHz B/W=20Hz~20kHz A-Weighted ADC gain=0dB	--	92	--	dB
THD+N	Differential input Mode Fin=1kHz@0dBFS Fs=44.1kHz B/W=20Hz~20kHz A-Weighted ADC gain=0dB	--	-87	--	dB
	Single-ended input Mode Fin=1kHz@0dBFS	--	-81	--	dB

Parameter	Conditions	Min	Typ	Max	Unit
	Fs=44.1kHz B/W=20Hz~20kHz A-Weighted ADC gain=0dB				
Analogue Gain		-6	--	28	dB
Max Input Level	Differential input Mode ADC gain=0dB	--	0.7	--	Vrms
	Single-ended input Mode ADC gain=0dB	--	0.35	--	Vrms

3.7 BT Characteristics

3.7.1 Transmitter

Table 3-7-1 Transmitter characteristics

Parameter	Conditions	Min	Typ	Max	Unit
Maximum RF Transmit Power	BR	--	19	--	dBm
Maximum RF Transmit Power	EDR $\pi/4$ DQPSK EDR 8DPSK	--	19	--	dBm
Relative Transmit Power	EDR $\pi/4$ DQPSK EDR 8DPSK	--	1.5	--	dB
Maximum RF Transmit Power	BLE-1Mbps	--	19	--	dBm

3.7.2 Receiver

Table 3-7-2 Receiver characteristics

Parameter	Conditions	Min	Typ	Max	Unit
Sensitivity	BR	--	-95.5	--	dBm
	EDR $\pi/4$ DQPSK	--	-96	--	dBm
	EDR 8DPSK	--	-88	--	dBm
	BLE-1Mbps	--	-98	--	dBm
	BLE-2Mbps	--	-95	--	dBm
	BLE-S2	--	-101	--	dBm
	BLE-S8	--	-106	--	dBm

3.8 WiFi Characteristics

3.8.1 Transmitter

TX Power with Spectral Mask and EVM Meeting 802.11 Standards.

Table 3-8-1 Transmitter characteristics

Parameter	Conditions	Min	Typ	Max	Unit
TX Power	802.11b, 1 Mbps, DSSS	--	19	--	dBm
	802.11b, 11 Mbps, CCK	--	19	--	dBm
	802.11g, 6 Mbps, OFDM	--	17	--	dBm

Parameter	Conditions	Min	Typ	Max	Unit
	802.11g, 54 Mbps, OFDM	--	14	--	dBm
	802.11n, HT20, MCS0	--	17	--	dBm
	802.11n, HT20, MCS7	--	13	--	dBm
	802.11n, HT40, MCS0	--	17	--	dBm
	802.11n, HT40, MCS7	--	12	--	dBm

3.8.2 Receiver

For RX tests, the PER (packet error rate) limit is 8% for 802.11b, and 10% for 802.11g/n.

Table 3-8-2 Receiver characteristics

Parameter	Conditions	Min	Typ	Max	Unit
Sensitivity	802.11b, 1 Mbps, DSSS	--	-97	--	dBm
	802.11b, 2 Mbps, DSSS	--	-94.5	--	dBm
	802.11b, 5.5 Mbps, CCK	--	-93	--	dBm
	802.11b, 11 Mbps, CCK	--	-90	--	dBm
	802.11g, 6 Mbps, OFDM	--	-93	--	dBm
	802.11g, 9 Mbps, OFDM	--	-92	--	dBm
	802.11g, 12 Mbps, OFDM	--	-91	--	dBm
	802.11g, 18 Mbps, OFDM	--	-89	--	dBm
	802.11g, 24 Mbps, OFDM	--	-86	--	dBm
	802.11g, 36 Mbps, OFDM	--	-83	--	dBm
	802.11g, 48 Mbps, OFDM	--	-79	--	dBm
	802.11g, 54 Mbps, OFDM	--	-77	--	dBm
	802.11n, HT20, MCS0	--	-93	--	dBm
	802.11n, HT20, MCS1	--	-90.5	--	dBm
	802.11n, HT20, MCS2	--	-88	--	dBm
	802.11n, HT20, MCS3	--	-84.5	--	dBm
	802.11n, HT20, MCS4	--	-81.5	--	dBm
	802.11n, HT20, MCS5	--	-77	--	dBm
	802.11n, HT20, MCS6	--	-75	--	dBm
	802.11n, HT20, MCS7	--	-74	--	dBm
	802.11n, HT40, MCS0	--	-89	--	dBm
	802.11n, HT40, MCS1	--	-86	--	dBm
	802.11n, HT40, MCS2	--	-84	--	dBm
	802.11n, HT40, MCS3	--	-80	--	dBm
	802.11n, HT40, MCS4	--	-77.5	--	dBm
	802.11n, HT40, MCS5	--	-72.5	--	dBm
	802.11n, HT40, MCS6	--	-71.5	--	dBm
	802.11n, HT40, MCS7	--	-70	--	dBm
	802.11n, HT40, MCS32	--	-89	--	dBm

4 Package Information

4.1 QFN80_8*8mm

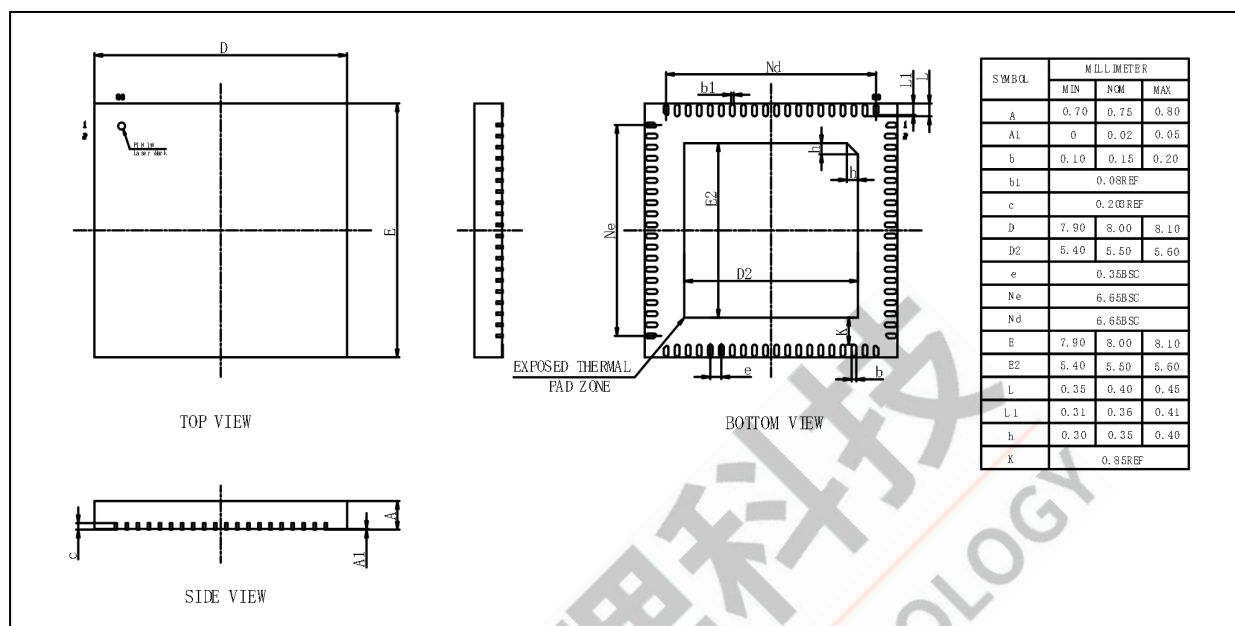


Figure 4-1 AC7923A Package

5 IC Marking Information

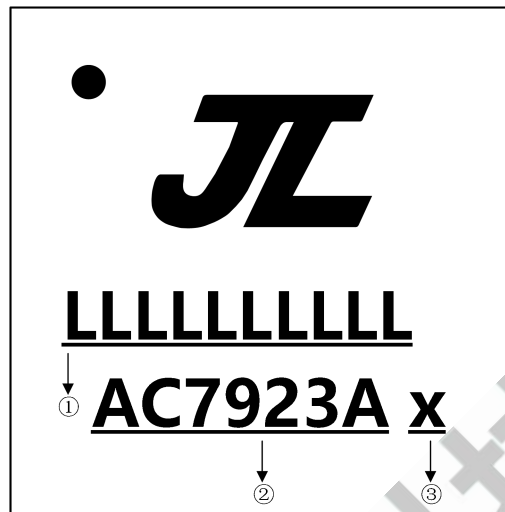


Figure 5-1 AC7923A Package Outline

- ① Production Batch
- ② Chip Model
- ③ Built-in DDR size
 - 0 No Flash Memory
 - 2 2Mbit flash
 - 4 4Mbit flash
 - 8 8Mbit flash
 - 6 16Mbit flash
 - 3 32Mbit flash
 - 5 64Mbit flash
 - 7 128Mbit flash
 - A 1Mx16 SDRAM
 - B 4Mx16 SDRAM
 - E 4Mx16bit DDR1
 - F 8Mx16bit DDR1
 - G 16Mx16bit DDR1

6 Solder-Reflow Condition

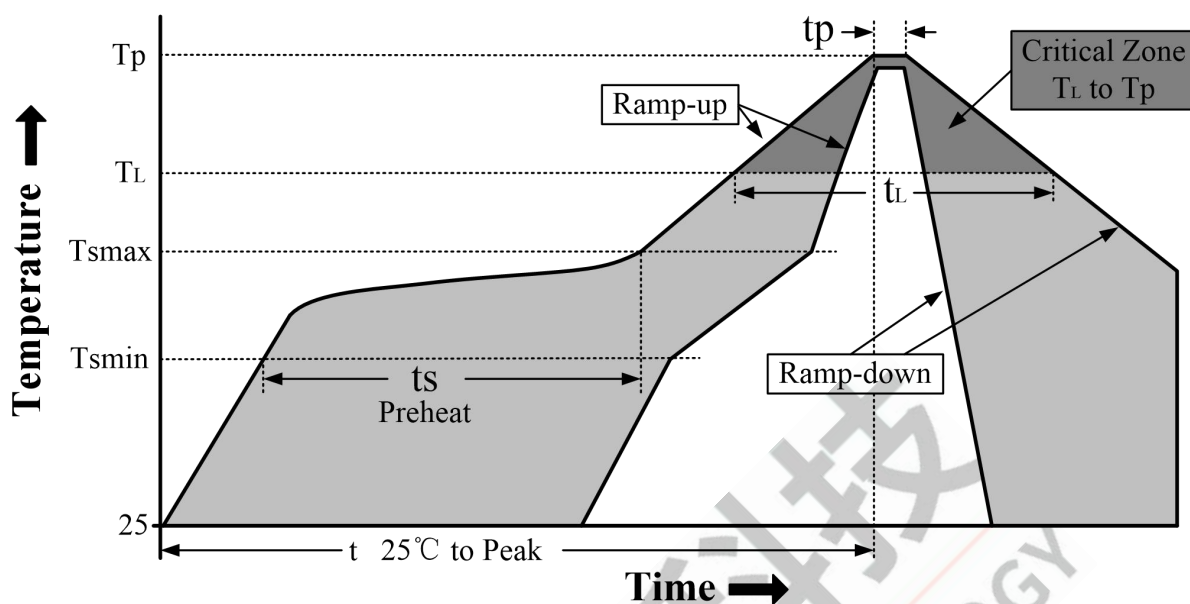


Figure 6-1 Classification Reflow Profile

Table 6-1 Classification Profiles

Profile Feature		Sn-Pb Eutectic Assembly	Pb-Free Assembly
Preheat/Soak	Temperature Min (T_{smin})	100°C	150°C
	Temperature Max (T_{smax})	150°C	200°C
	Time (ts) from (T_{smin} to T_{smax})	60-120 seconds	60-180 seconds
Average ramp-up rate (T_{smax} to T_p)		3°C/second max	3°C/second max
Liquidous temperature (T_L)		183°C	217°C
Time (t_L) maintained above T_L		60-150 seconds	60-150 seconds
Peak package body temperature (T_p)		See Table 6-2	See Table 6-3
Time within 5°C of actual Peak Temperature (tp) ²		10-30 seconds	20-40 seconds
Ramp-down rate (T_p to T_L)		6°C/second max	6°C/second max
Time 25°C to peak temperature		6 minutes max	8 minutes max

Note

- 1.All temperatures refer to topside of the package, measured on the package body surface
- 2.Time within 5°C of actual peak temperature (tp) specified for the reflow profiles is a "supplier" and "user" maximum.

Table 6-2 SnPb Classification Temperature

Package Thickness	Volume mm ³ < 350	Volume mm ³ ≥ 350
<2.5 mm	240 +0/-5°C	225 +0/-5°C
≥2.5 mm	225 +0/-5°C	225 +0/-5°C

Table 6-3 Pb-free - Classification Temperature

Package Thickness	Volume mm ³ < 350	Volume mm ³ 350 - 2000	Volume mm ³ > 2000
< 1.6mm	260°C	260°C	260°C
1.6 mm - 2.5mm	260°C	250°C	245°C
> 2.5mm	250°C	245°C	245°C

Note

1.*Tolerance The device manufacturer/supplier shall assure process compatibility up to and including the stated classification temperature (this means Peak reflow temperature +0°C.For example 260°C+0°C)at the rated MSL level.