AC7922A Datasheet

Zhuhai Jieli Technology Co.,LTD

Version 1.5

Date 2025.10.16

Revision History

Date	Revision	Author	Description
2024.05.30	V1.0	zh-jieli	Initial Release
2024.09.30	V1.1	zh-jieli	Add Power Domain Information
2024.12.07	V1.2	zh-jieli	Modify Audio DAC Characteristics, IO Characteristics and Operating Temperature
2025.01.09	V1.3	zh-jieli	Update Feature_Bluetooth, Update Block Diagram
2025.07.09	V1.4	zh-jieli	Update IO V_{IL}、V_{IH}
2025.10.16	V1.5	zh-jieli	Update the thickness parameters of the chip packaging, Update the parameters of the table 3-1

Table of Contents

AC7922A 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 Π/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 I^2C Master/Slave interface
- 3 x SPI Master/Slave interface
- 1 x QDEC
- 1 x CAN Controller
- 1 x Ethernet Mac
- 8 x MCPWM
- 1 x PAP Interface
- 3 x Light strip Controller
- 1 x 10bit ADC(6 Channel)
- 49 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

- QFN96(10mm*10mm)

Temperature

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

Applications

- IPC
- Driving recorder
- WIFI Appliances

1 Block Diagram

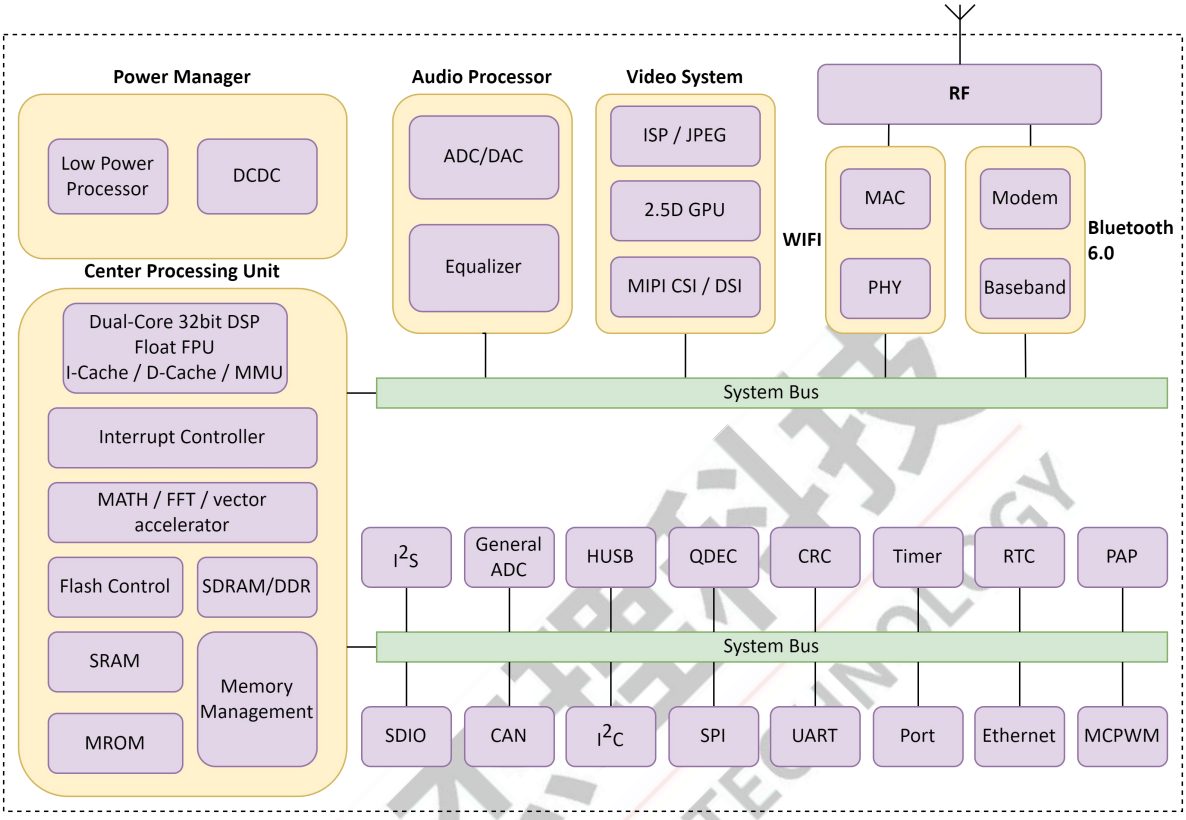


Figure 1-1 AC7922A Block Diagram

2 Pin Definition

2.1 Pin Assignment

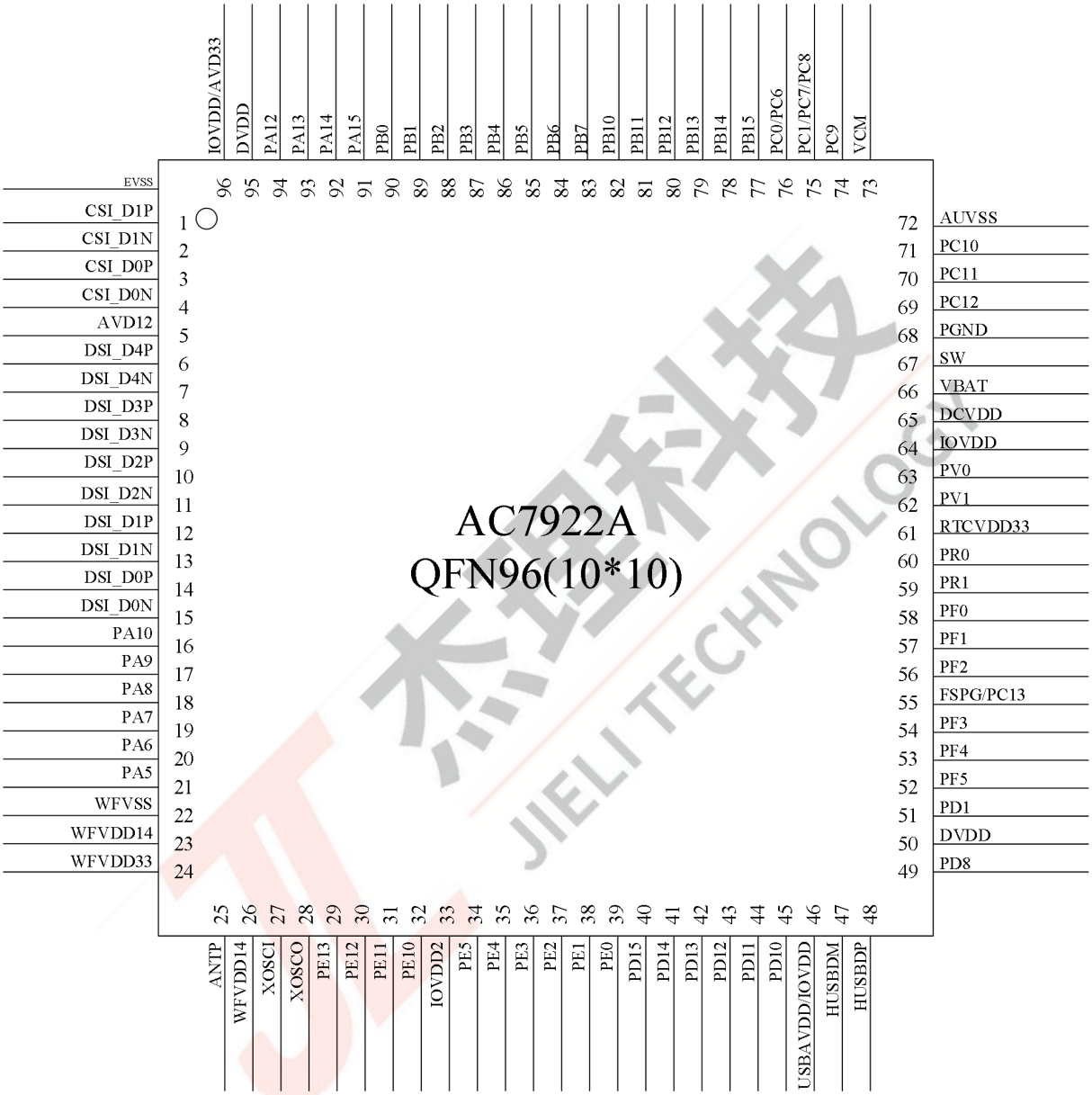


Figure 2-1 AC7922A Pin Assignment

2.2 Pin Description

Table 2-2-1 AC7922A Pin Description

Pin No.	Name	Type	IO Initial State	Description
1	CSI_D1P	I	--	MIPI CSI D1P
2	CSI_D1N	I	--	MIPI CSI D1N
3	CSI_D0P	I	--	MIPI CSI D0P
4	CSI_D0N	I	--	MIPI CSI D0N
5	AVD12	P	--	Analog 1.2V Power
6	DSI_D4P	I/O	--	MIPI DSI D4P
7	DSI_D4N	I/O	--	MIPI DSI D4N
8	DSI_D3P	I/O	--	MIPI DSI D3P
9	DSI_D3N	I/O	--	MIPI DSI D3N
10	DSI_D2P	I/O	--	MIPI DSI D2P
11	DSI_D2N	I/O	--	MIPI DSI D2N
12	DSI_D1P	I/O	--	MIPI DSI D1P
13	DSI_D1N	I/O	--	MIPI DSI D1N
14	DSI_D0P	I/O	--	MIPI DSI D0P
15	DSI_D0N	I/O	--	MIPI DSI D0N
16	PA10	I/O	Z	SD0_DATA3(B)
17	PA9	I/O	Z	SD0_DATA2(B)
18	PA8	I/O	Z	SD0_DATA1(B)
19	PA7	I/O	Z	SD0_CLK(B)
20	PA6	I/O	Z	SD0_CMD(B)
21	PA5	I/O	Z	SD0_DATA0(B)
22	WFVSS	G	--	Ground of Wireless
23	WFVDD14	P	--	Wireless 1.4V Power
24	WFVDD33	P	--	Wireless 3.3V Power
25	ANTP	RF	--	Antenna Positive Port
26	WFVDD14	P	--	Wireless 1.4V Power
27	XOSCI	I	--	Crystal Oscillator Input
28	XOSCO	O	--	Crystal Oscillator Output
29	PE13	I/O	Z	--
30	PE12	I/O	Z	--
31	PE11	I/O	Z	--
32	PE10	I/O	Z	--
33	IOVDD2	P	--	IO Power for PE10~PE13
34	PE5	I/O	Z	ADC8(ADC Input Channel 8) IO Wakeup Channel 8 Sensor0_SYNC1(A)

Pin No.	Name	Type	IO Initial State	Description
35	PE4	I/O	Z	ADC7(ADC Input Channel 7) IO Wakeup Channel 7 Sensor0_SYNC0(A)
36	PE3	I/O	Z	SensorX_CLK Sensor0_CLK(A)
37	PE2	I/O	Z	SensorX_D7 Sensor0_D9(A) Ethnet RMII_RX1(A)
38	PE1	I/O	Z	SensorX_D6 Sensor0_D8(A) Ethnet RMII_RX0(A)
39	PE0	I/O	Z	SensorX_D5 Sensor0_D7(A) Ethnet RMII_CRSDV(A) SD1_CLK(B)
40	PD15	I/O	Z	SensorX_D4 Sensor0_D6(A) Ethnet RMII_REFCLK(A) SD1_CMD(B)
41	PD14	I/O	Z	SensorX_D3 Sensor0_D5(A) Ethnet RMII_RXERR(A) SD1_DATA0(B)
42	PD13	I/O	Z	SensorX_D2 Sensor0_D4(A) Ethnet RMII_TXEN(A) SD1_DATA1(B)
43	PD12	I/O	Z	SensorX_D1 Sensor0_D3(A) Ethnet RMII_TX1(A) SD1_DATA2(B)
44	PD11	I/O	Z	SensorX_D0 Sensor0_D2(A) Ethnet RMII_TX0(A) SD1_DATA3(B)
45	PD10	I/O	Z	ADC6(ADC Input Channel 6) IO Wakeup Channel 6 Sensor0_D1(A)
46	USBAVDD	P	--	High Speed USB Power
	IOVDD	P	--	IO Power for PA5~PA10, PA12~PA15, PB0~PB7, PB10~PB15, PC0, PC1, PC6~PC13,PD1,PD8, PD10~PD15, PE0~PE5, PF0~PF5,PV0~PV1

Pin No.	Name	Type	IO Initial State	Description
47	HUSBDM	I/O	15kΩ Pull-down	High Speed USB Negative Data
48	HUSBDP	I/O	15kΩ Pull-down	High Speed USB Positive Data
49	PD8	I/O	10kΩ Pull-up	MCLR(Device Reset) ADC4(ADC Input Channel 4) SD Power IO Wakeup Channel 4
50	DVDD	P	--	Digital Logic Power
51	PD1	I/O	10kΩ Pull-up	Hold down 0 to reset ADC1(ADC Input Channel 1) IO Wakeup Channel 1
52	PF5	I/O	Z	SFCTZ_DO SPITZ_DO
53	PF4	I/O	Z	SFCTZ_CLK SPITZ_CLK
54	PF3	I/O	Z	SFCTZ_DATA3 SPITZ_DATA3
55	FSPG	I/O	Z	Flash Power Output
	PC13	I/O	Z	ADC13(ADC Input Channel 13) IO Wakeup Channel 13
56	PF2	I/O	Z	SFCTZ_DATA2 SPITZ_DATA2
57	PF1	I/O	Z	SFCTZ_DI SPITZ_DI
58	PF0	I/O	Z	SFCTZ_CS SPITZ_CS
59	PR1	I/O	Z	32k Crystal Oscillator Output
60	PR0	I/O	Z	32k Crystal Oscillator Input
61	RTCVDD33	P	--	RTC Power for PR0~PR1
62	PV1	I/O	Z	AVDD18
63	PV0	I/O	Z	AVDD28
64	IOVDD	P	--	IO Power
65	DCVDD	P	--	DCDC Power
66	VBAT	P	--	Battery Input
67	SW	P	--	Buck DCDC Switch Port
68	PGND	G	--	Ground of Buck DC-DC converter
69	PC12	I/O	Z	AIN_BN0(Audio ADC Negative Input)
70	PC11	I/O	Z	AIN_BP0(Audio ADC Positive Input)
71	PC10	I/O	10kΩ Pull-down	LVD(External Low Voltage Detection Input) MICBIASB (MIC Bias Output)
72	AUVSS	G	--	Audio Ground

Pin No.	Name	Type	IO Initial State	Description
73	VCM	P	--	Audio Reference Power
74	PC9	I/O	Z	MICBIASA (MIC Bias Output) Right Channel DAC Output
75	PC8	I/O	Z	Left Channel DAC Output
	PC7	I/O	Z	AIN_AP0(Audio ADC Positive Input)
	PC1	I/O	Z	LCD_DATA7(B) PAP_D7(B)
76	PC6	I/O	Z	AIN_AN0(Audio ADC Negative Input)
	PC0	I/O	Z	LCD_DATA6(B) PAP_D6(B)
77	PB15	I/O	Z	LCD_DATA5(B) PAP_D5(B) SD1_CLK(A)
78	PB14	I/O	Z	LCD_DATA4(B) PAP_D4(B) SD1_CMD(A)
79	PB13	I/O	Z	LCD_DATA3(B) PAP_D3(B) SD1_DATA0(A)
80	PB12	I/O	Z	LCD_DATA2(B) PAP_D2(B) SD1_DATA1(A)
81	PB11	I/O	Z	LCD_DATA1(B) PAP_D1(B) SD1_DATA2(A)
82	PB10	I/O	Z	LCD_DATA0(B) PAP_D0(B) SD1_DATA3(A)
83	PB7	I/O	Z	LCD_DATA15(A/B) Sensor1_D7(A) PAP_D15(A/B) SD0_CLK(D)
84	PB6	I/O	Z	LCD_DATA14(A/B) Sensor1_D6(A) PAP_D14(A/B) SD0_CMD(D)
85	PB5	I/O	Z	LCD_DATA13(A/B) Sensor1_D5(A) PAP_D13(A/B) SD0_DATA0(D)

Pin No.	Name	Type	IO Initial State	Description
86	PB4	I/O	Z	LCD_DATA12(A/B) Sensor1_D4(A) PAP_D12(A/B) SD0_DATA1(D)
87	PB3	I/O	Z	LCD_DATA11(A/B) Sensor1_D3(A) PAP_D11(A/B) SD0_DATA2(D)
88	PB2	I/O	Z	LCD_DATA10(A/B) Sensor1_D2(A) PAP_D10(A/B) SD0_DATA3(D)
89	PB1	I/O	Z	LCD_DATA9(A/B) Sensor1_D1(A) PAP_D9(A/B)
90	PB0	I/O	Z	LCD_DATA8(A/B) Sensor1_D0(A) PAP_D8(A/B)
91	PA15	I/O	Z	LCD_SYNC2(A/B) Sensor1_SYNC1(A)
92	PA14	I/O	Z	LCD_SYNC1(A/B) Sensor1_SYNC0(A) PAP_RD(A/B)
93	PA13	I/O	Z	LCD_DCLK(A/B) Sensor1_CLK(A)
94	PA12	I/O	Z	LCD_SYNC0(A/B) PAP_WR(A/B)
95	DVDD	P	--	Digital Logic Power
96	AVD33	P	--	Analog 3.3V Power
	IOVDD	P	--	IO 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, I^2C, I^2S 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
Topt	Operating temperature	-20	+85	℃
Tstg	Storage temperature	-65	+150	℃
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	1.6	V
WFVDD33		-0.3	3.6	V
WFVDD14		-0.3	1.6	V
USBAVDD		-0.3	3.6	V
AVD33		-0.3	3.6	V
AVD12		-0.3	1.6	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	1.0	V
		IOVDD2 = 1.8V	PE10~PE13	-0.3	0.5	V
		IOVDD = 3.0V	PA5~PA10 PA12~PA15 PB0~PB7 PB10~PB15 PC0, PC1 PC6~PC13 PD1, PD8 PD10~PD15 PE0~PE5 PF0~PF5 HUSBDP HUSBDM PR0~PR1 PV0~PV1	-0.3	1.0	V
V_{IH}	High-Level Input Voltage	IOVDD2 = 3.0V	PE10~PE13	2.0	3.3	V
		IOVDD2 = 1.8V	PE10~PE13	1.3	2.0	V
		IOVDD = 3.0V	PA5~PA10 PA12~PA15 PB0~PB7 PB10~PB15 PC0, PC1 PC6~PC13 PD1, PD8 PD10~PD15 PE0~PE5 PF0~PF5 HUSBDP	2.0	3.3	V

			HUSBDM PR0~PR1 PV0~PV1			
Output Characteristics						
Symbol	**Parameter**	**Conditions**	**IO**	**Typ**		**Unit**
| I_{OL} |	Output Current	IOVDD2 = 3.0V Voutput = 0.3V IOVDD2 = 1.8V Voutput = 0.2V	PE10~PE13	2.5(HD=0) 8(HD=1) 18.5(HD=2) 24(HD=3)		mA
		IOVDD = 3.0V Voutput = 0.3V	PA5~PA10 PA12~PA15 PB0~PB7 PB10~PB15 PC0, PC1 PC6~PC13 PD1, PD8 PD10~PD15 PE0~PE5 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 IOVDD2 = 1.8V Voutput = 1.6V	PE10~PE13	2.5(HD=0) 8(HD=1) 18.5(HD=2) 24(HD=3)		mA
		IOVDD = 3.0V Voutput = 2.7V	PA5~PA10 PA12~PA15 PB0~PB7 PB10~PB15 PC0, PC1 PC6~PC13 PD1, PD8 PD10~PD15 PE0~PE5 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	PA5~PA10 PA12~PA15 PB0~PB7 PB10~PB15 PC0, PC1 PC6~PC13 PD1, PD8 PD10~PD15 PE0~PE5 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	PA5~PA10 PA12~PA15 PB0~PB7 PB10~PB15 PC0, PC1 PC6~PC13 PD1, PD8 PD10~PD15 PE0~PE5 PE10~PE13 PF0~PF5	10k	Ω
			HUSBDP HUSBDM	15k	Ω

Note

1.Internal pull-up/pull-down resistance accuracy ±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=10kΩ	--	103	--	dB
	Single Mode Fin=1kHz@0dBFS Fs=44.1kHz B/W=20Hz~20kHz A-Weighted load=10kΩ	--	100	--	dB
Dynamic Range	Differential Mode Fin=1kHz@-60dBFS Fs=44.1kHz B/W=20Hz~20kHz A-Weighted load=10kΩ	--	103	--	dB
	Single Mode Fin=1kHz@-60dBFS Fs=44.1kHz B/W=20Hz~20kHz A-Weighted load=10kΩ	--	100	--	dB
THD+N	Differential Mode Fin=1kHz@0dBFS Fs=44.1kHz B/W=20Hz~20kHz A-Weighted load=10kΩ	--	-87	--	dB
	Single Mode Fin=1kHz@0dBFS Fs=44.1kHz B/W=20Hz~20kHz A-Weighted load=10kΩ	--	-75	--	dB
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 Fs=44.1kHz B/W=20Hz~20kHz A-Weighted ADC gain=0dB	--	-81	--	dB
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 Π/4 DQPSK EDR 8DPSK	--	19	--	dBm
Relative Transmit Power	EDR Π/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 Π/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
	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

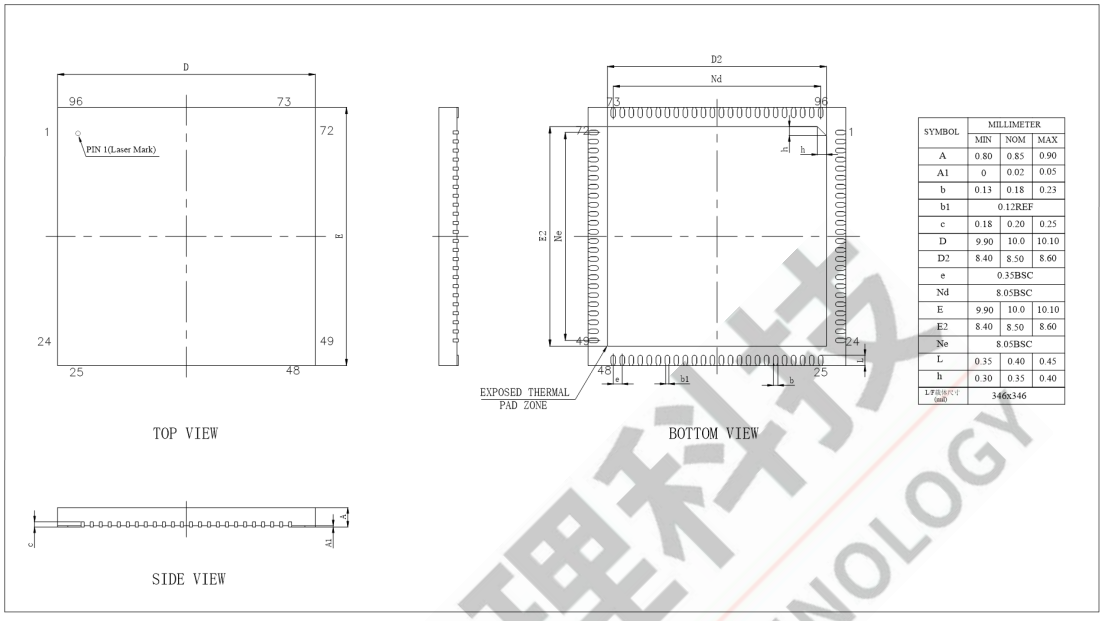
For RX tests, the PER (packet error rate) limit is 8% for 802.11b, and 10% for 802.11g/n.

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 QFN96_10*10mm



SYMBOL	MILLIMETER		
	MIN	NOM	MAX
A	0.80	0.85	0.90
A1	0	0.02	0.05
b	0.13	0.18	0.23
b1		0.12REF	
c	0.18	0.20	0.25
D	9.90	10.0	10.10
D2	8.40	8.50	8.60
e		0.35BSC	
Nd		8.05BSC	
E	9.90	10.0	10.10
E2	8.40	8.50	8.60
Ne		8.05BSC	
L	0.35	0.40	0.45
h	0.30	0.35	0.40
L/F载体尺寸 (mil)		346x346	

Figure 4-1 AC7922A Package

5 IC Marking Information

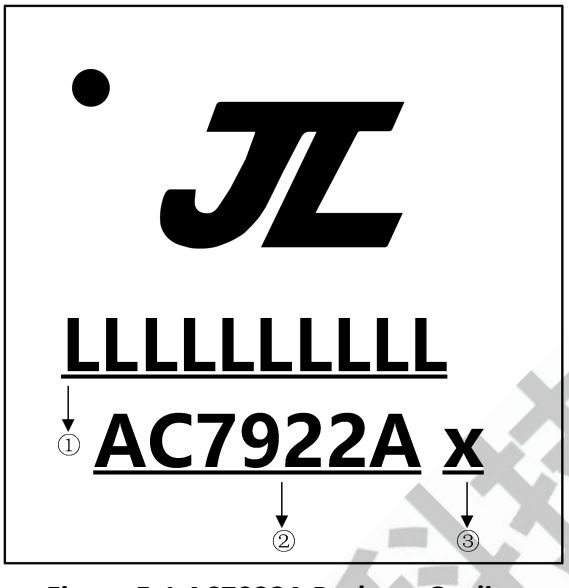


Figure 5-1 AC7922A Package Outline

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

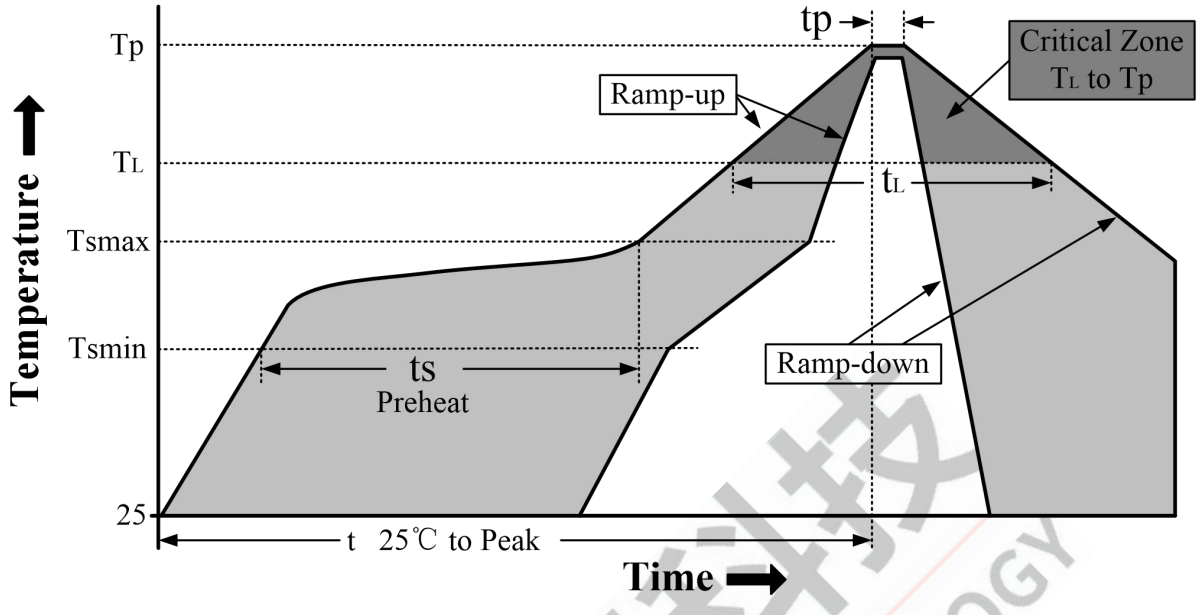


Figure 6-1 Classification Reflow Profile

Table 6-1 Classification Profiles

Profile Feature		Sn-Pb Eutectic Assembly	Pb-Free Assembly
Preheat/Soak	Temperature Min (T_{smin})	100℃	150℃
	Temperature Max (T_{smax})	150℃	200℃
	Time (ts) from (T_{smin} to T_{smax})	60-120 seconds	60-180 seconds
Average ramp-up rate (T_{smax} to T_p)		3℃/second max	3℃/second max
Liquidous temperature (T_L) Time (t_L) maintained above T_L		183℃ 60-150 seconds	217℃ 60-150 seconds
Peak package body temperature (T_p)		See Table 6-2	See Table 6-3
Time within 5℃ of actual Peak Temperature (tp)[2]		10-30 seconds	20-40 seconds
Ramp-down rate (T_p to T_L)		6℃/second max	6℃/second max
Time 25℃ 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℃ 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℃	225 +0/-5℃
≥2.5 mm	225 +0/-5℃	225 +0/-5℃

Table 6-3 Pb-free - Classification Temperature

Package Thickness	Volume mm³ < 350	Volume mm³ 350 - 2000	Volume mm³ > 2000
< 1.6mm	260℃	260℃	260℃
1.6 mm - 2.5mm	260℃	250℃	245℃
> 2.5mm	250℃	245℃	245℃

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℃.For example 260℃+0℃)at the rated MSL level.