JL7034A Datasheet

Zhuhai Jieli Technology Co.,LTD

Version 2.3

Date 2025.06.13

Revision History

Date	Revision	Description
2023.04.03	V1.0	Initial Release
2023.04.28	V1.1	Update resource description
2023.05.29	V1.2	Update resource description
2023.12.04	V1.3	Update BT_Features Update FM Characteristics Add IC Marking Information
2024.02.21	V1.4	Update Feature_Audio Codec
2024.07.12	V1.5	Use New Datasheet Format Update DSP Audio Processing_Feature(Support Hi-Res Audio) Add PIN PC6 Note(PC6 input can not be Low in power on) Update IC Marking Information
2024.07.26	V1.6	Update Pin Description(Update FMIP IO Type)
2024.08.22	V1.7	Update BT characteristics
2024.09.27	V1.8	Update Pin Description(Update FMIP IO Type)
2024.11.26	V2.0	Update Feature_Audio(Add I²S&TDM&SPDIF&PDM Description) Update Feature_Peripherals(Add IR RX)
2025.01.16	V2.1	Update Features_Bluetooth Update Block Diagram
2025.04.25	V2.2	Update Datasheet Format Update Audio ADC Characteristics Update Package Information
2025.06.13	V2.3	Update Features_Audio

Table of Contents

JL7034A Features

SYSTEM
- Dual Core 32bit DSP 320MHz
- With IEEE754 Single precision FPU
- Support FFT/MATRIX/MATH
- 2 x I-cache and D-cache
- Support SDTAP/EMU
- On-chip SRAM 528kbyte
- Support MMU
- Support MPU
- Support External PSRAM
- Built-In Flash
- 24MHz crystal oscillator
- 32.768kHz crystal oscillator
- Internal RC oscillator,PLL

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

Audio
- 4 x 24bit DAC
  - ❖ SNR 113dB
  - ❖ Noise 3uVrms
  - ❖ Supports differential mode
  - ❖ Supports VCMO mode
  - ❖ Sampling rate 8~96kHz
- 4 x 24bit ADC
  - ❖ SNR 105dB
  - ❖ Sampling rate 8~48kHz
  - ❖ Support AMUX
- 2 x I²S AUDIO Master/Slave interface
  - ❖ Sampling rate 8~384kHz
  - ❖ Support TX and RX
  - ❖ Support multi-slot mode(TDM)
- 1 x SPDIF AUDIO Master/Slave interface
  - ❖ Sampling rate 8~384kHz
  - ❖ Support TX and RX
- 1 x PDM AUDIO Slave interface
  - ❖ Sampling rate 8~192kHz
  - ❖ 2 x DMIC input

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 10dBm
- Receiver sensitivity
  - ❖ -95 dBm @BR
  - ❖ -95 dBm @EDR П/4 DQPSK
  - ❖ -87 dBm @EDR 8DPSK

Peripherals
- 1 x Full speed USB
- 2 x SD host controller
- 6 x Multi-function 32bit timer
- 3 x UART interface
- 1 x I²C Master/Slave interface
- 3 x SPI Master/Slave interface
- 3 x QDEC
- 1 x 10bit ADC(15 Channels)
- 30 x GPIO Support function remapping
- 1 x VLCD driver
- 3 x Light strip controller
- 12 x MCPWM
- 9 x LP_Touch with low power wake up
- 1 x IR RX

FM
- FM RX sensitivity minimum 4dBuV,Support mono/stereo
- FM TX power maximum 6dBm,Support mono/stereo

NFC

➢ NFC with low power wakeup

PMU

➢ Integrated battery charger up to 350mA
➢ Support temperature sensor
➢ VPWR range 4.5V to 5.5V
➢ VBAT range 2.7V to 4.5V
➢ IOVDD range 2.2V to 3.4V

Packages

➢ QFN52(6mm*6mm)

Temperature

➢ Operating temperature
   TC = -20℃ to +85℃(standard range)
   TC = -40℃ to +105℃(extended range)
➢ Storage temperature -65℃ to +150℃

Applications

➢ Bluetooth live sound card
➢ Bluetooth soundbar
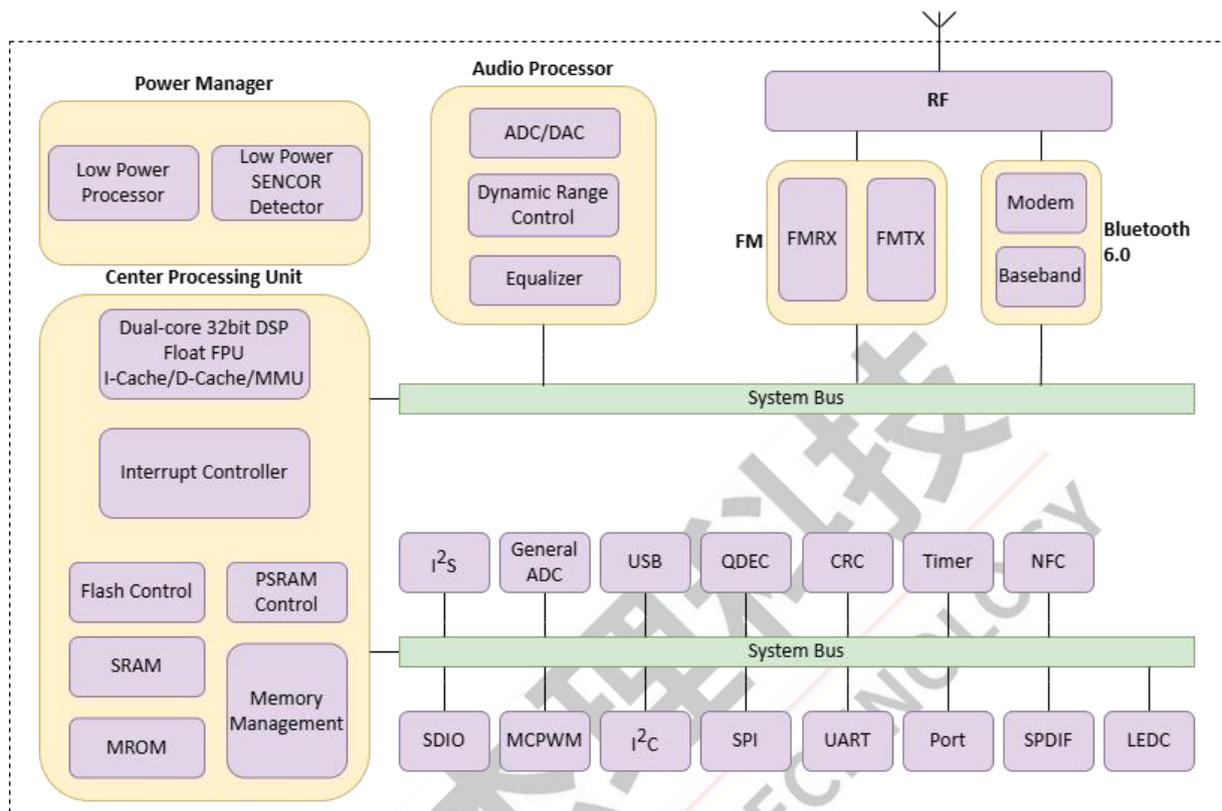➢ Bluetooth TV Soundbar
➢ Bluetooth Party Speaker

1 Block Diagram

Figure 1-1 JL7034A Block Diagram

2 Pin Definition

2.1 Pin Assignment

Figure 2-1 JL7034A Pin Assignment

2.2 Pin Description

Table 2-2-1 JL7034A Pin Description

Pin No.	Name	Type	IO Initial State	Description
1	VBAT	P	--	Battery Input
2	VPWR	I/O	Z	Charge Power Input
3	IOVDD	P	--	IO Power
4	DCVDD	P	--	DCDC power
5	PR0	I/O	Z	32.768k Crystal Oscillator Input LP_TOUCHA3(TOUCH_CHA3)
6	PR1	I/O	Z	32.768k Crystal Oscillator Output LP_TOUCHA4(TOUCH_CHA4)
	PB15	I/O	Z	--
7	PB3	I/O	Z	ADC6(ADC Input Channel 6) LP_TOUCHA2(TOUCH_CHA2) NFC_TX
8	PB2	I/O	Z	LP_TOUCHA1(TOUCH_CHA1) NFC_RX
9	PB1	I/O	10kΩ Pull-up	Hold down 0 to reset ADC5(ADC Input Channel 5) LP_TOUCHA0(TOUCH_CHA0)
10	PB0	I/O	Z	--
11	BTVDD1	P	--	BT Power
12	BTVDD	P	--	BT Power
13	BTRF	RF	--	Bluetooth RF Antenna
14	XOSCI	I	--	Crystal Oscillator Input
15	XOSCO	O	--	Crystal Oscillator Output
16	PC6	I/O	10kΩ Pull-up	ADC15(ADC Input Channel 15) LCD SEG19
17	PC5	I/O	Z	ADC14(ADC Input Channel 14) LCD COM0 PSRAM_D3A
18	PC4	I/O	Z	ADC13(ADC Input Channel 13) LCD COM1 PSRAM_CKA
19	PC3	I/O	Z	ADC12(ADC Input Channel 12) LCD COM2 PSRAM_CSA

Pin No.	Name	Type	IO Initial State	Description
20	PC2	I/O	Z	ADC11(ADC Input Channel 11) LCD COM3 LCD SEG18 PSRAM_D1A SPDIF_IN_AMP_D
21	PC1	I/O	Z	LCD COM4 LCD SEG17 PSRAM_D2A
22	PC0	I/O	Z	LCD COM5 LCD SEG16 PSRAM_D0A SPDIF_IN_AMP_C
23	DVDD	P	--	digital Power
24	USBDM	I/O	15kΩ Pull-down	USB Negative Data
25	USBDP	I/O	15kΩ Pull-down	USB Positive Data
26	PA10	I/O	Z	ADC3(ADC Input Channel 3) LCD SEG10 PAP_WR LCD_SPI_D3
	PA8	I/O	Z	LCD SEG8 PAP_D6 LCD_SPI_D1 SPDIF_IN_AMP_B
27	PA7	I/O	Z	LCD SEG7 PAP_D5 LCD_SPI_D0
28	PA6	I/O	Z	ADC2(ADC Input Channel 2) LCD SEG6 PAP_D4 LCD_SPI_CLK SPDIF_IN_AMP_A
29	PA5	I/O	Z	ADC1(ADC Input Channel 1) LCD SEG5 PAP_D3 MICBIASD(MIC Bias Output)
30	PA4	I/O	Z	LCD SEG4 PAP_D2 AIN_DN(Audio ADC Negative Input)
31	PA3	I/O	Z	LCD SEG3 PAP_D1 AIN_D1(Audio ADC Positive Input)

Pin No.	Name	Type	IO Initial State	Description
32	PA2	I/O	Z	ADC0(ADC Input Channel 0) LCD SEG2 PAP_D0 AIN_D0(Audio ADC Positive Input)
33	PA1	I/O	Z	LCD SEG1 AIN_B2(Audio ADC Positive Input) MICBIASB(MIC Bias Output)
34	PA0	I/O	Z	LCD SEG0 AIN_A2(Audio ADC Positive Input) MICBIASA(MIC Bias Output)
35	PC11	I/O	Z	LCD SEG24 AIN_C0N(Audio ADC Negative Input)
	PC10	I/O	Z	LCD SEG23 AIN_C1(Audio ADC Positive Input) MICBIASC(MIC Bias Output)
36	PC9	I/O	Z	LCD SEG22 AIN_C0(Audio ADC Positive Input)
37	AVSS	G	--	Audio Ground
38	VREF	P	--	Audio Power
39	VCM	P	--	Audio Reference Voltage
40	DACRR	O	--	Rear Right Channel DAC Output
41	DACRL (VCMO)	O	--	Rear Left Channel DAC Output Audio Common-mode Output voltage
42	DACFR	O	--	Front Right Channel DAC Output
43	DACFL	O	--	Front Left Channel DAC Output
44	FMIP	RF	--	FM Positive Input
45	FMVDD	P	--	FM Power
46	PB11	I/O	Z	ADC10(ADC Input Channel 10) SD Power FM_TX_B
47	PB10	I/O	Z	ADC9(ADC Input Channel 9) AIN_B0(Audio ADC Positive Input) FM_TX_A
48	PB9	I/O	Z	AIN_A0(Audio ADC Positive Input)
49	PB8	I/O	Z	ADC8(ADC Input Channel 8) LP_TOUCHB4(TOUCH_CHB4) AIN_B1(Audio ADC Positive Input)
50	PB7	I/O	Z	LP_TOUCHB3(TOUCH_CHB3) AIN_A1(Audio ADC Positive Input)
51	PB6	I/O	Z	LP_TOUCHB2(TOUCH_CHB2) AIN_BN(Audio ADC Negative Input)

Pin No.	Name	Type	IO Initial State	Description
52	PB5	I/O	Z	LP_TOUCHB1(TOUCH_CHB1) LVD(External Low Voltage Detection Input) AIN_AN(Audio ADC Negative Input)
	PB4	I/O	Z	LP_TOUCHB0(TOUCH_CHB0) ADC7(ADC Input Channel 7)

Note

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

2.Timer, MCPWM, QDEC, UART, LEDC, I²C, I²S, SPI,IR RX and SD functions can be remapped to any I/O.

3.PC6 input can not be Low in power on.

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		-0.3	4.5	V
VPWR		-0.3	6	V
IOVDD		-0.3	3.6	V
DCVDD	Supply Voltage	-0.3	1.4	V
BTVDD		-0.3	3	V
BTVDD1		-0.3	1.4	V
FMVDD		-0.3	3.6	V
GPIO	Input voltage of GPIO (except PB0)	-0.3	3.6	V
HVTIO	Input voltage of HVT-IO (PB0)	-0.3	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	±400V	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	Voltage Input	--	2.7	3.7	4.5	V
VPWR	Charger supply Voltage	--	4.5	5.0	5.5	V
Operating mode						
Symbol	Parameter	Conditions	Min	Typ	Max	Unit
IOVDD	Voltage output	VBAT = 4.2V, 10mA loading	--	3	--	V
	Loading current	IOVDD=3.0V@VBAT = 3.7V or VPWR=5V	--	--	300	mA
DCVDD	Voltage output	--	--	1.2	--	V
	Loading current	DCVDD=1.2V@IOVDD=3.0V on LDO mode	--	--	150	mA

Symbol	Parameter	Conditions	Min	Typ	Max	Unit
		DCVDD=1.2V@VBAT=3.7V on DCDC mode	--	--	180	mA
Low Power mode						
Symbol	Parameter	Conditions	Min	Typ	Max	Unit
IOVDD	Loading current	IOVDD=3.0V@VBAT = 3.7V	--	--	20	mA

3.4 Battery Charge

Table 3-4 Charger Characteristics

Symbol	Parameter	Min	Typ	Max	Unit
VPWR	Charge Input Voltage	4.5	5	5.5	V
CV	CV Mode Voltage Accuracy	4.175	4.2	4.225	V
		4.325	4.35	4.375	V
CC	CC Mode Current	15	--	350	mA
I_{end}	End Of Charge Current	1.5	--	35	mA
V_{Trikl}	Trickle Charge Voltage	--	3	--	V

3.5 IO Characteristics

Table 3-5 IO Characteristics

Input Characteristics						
Symbol	Parameter	Conditions	IO	Min	Max	Unit
V_{IL}	Low-Level Input Voltage	IOVDD = 3.0V	PA0~PA8,PA10 PB0~PB11,PB15 PC0~PC6,PC9~PC11 PR0~PR1 USBDP USBDM VPWR	-0.3	1.4	V
V_{IH}	High-Level Input Voltage	IOVDD = 3.0V	PA0~PA8,PA10 PB1~PB11,PB15 PC0~PC6,PC9~PC11 PR0~PR1 USBDP USBDM	1.7	3.3	V
		IOVDD = 3.0V	PB0 VPWR	1.7	5.5	V
Output Characteristics						
Symbol	Parameter	Conditions	IO	Typ		Unit
|I_{OL}|	Output Current	IOVDD = 3.0V Voutput = 0.3V	PA0~PA8,PA10 PB1~PB11,PB15	2(HD=0) 8(HD=1)		mA

			PC0~PC6,PC9~PC11	26(HD=2)	
			PR0~PR1	50(HD=3)	
			PB0		mA
			USBDP	8	
			USBDM		
			VPWR	2	mA
|IOH|	Output Current	IOVDD = 3.0V Voutput = 2.7V	PA0~PA8,PA10	2(HD=0)	mA
			PB1~PB11,PB15	8(HD=1)	
			PC0~PC6,PC9~PC11	26(HD=2)	
			PR0~PR1	50(HD=3)	
			PB0		mA
			USBDP	8	
			USBDM		
			VPWR	2	mA

Internal Resistance Characteristics					
Symbol	Parameter	Conditions	IO	Typ	Unit
R_pu	Pull-up Resistance	IOVDD = 3.0V	PA0~PA8,PA10 PB0~PB11,PB15 PC0~PC6,PC9~PC11 VPWR PR0~PR1	10k(PU=1) 100k(PU=2) 1M(PU=3)	Ω
			USBDP USBDM	1.5k(PU=1) 1k(PU=3)	Ω
R_pd	Pull-down Resistance	IOVDD = 3.0V	PA0~PA8,PA10 PB0~PB11,PB15 PC0~PC6,PC9~PC11 VPWR PR0~PR1	10k(PD=1) 100k(PD=2) 1M(PD=3)	Ω
			USBDP USBDM	15k(PD=1)	Ω

Note

1.Internal pull-up/pull-down resistance accuracy ±20%.

3.6 Audio DAC Characteristics

Table 3-6 Stereo DAC Characteristics

Parameter	Conditions	Min	Typ	Max	Unit
Resolution	--	--	--	24	bit
Output Sample Rate	--	8	--	96	kHz
SNR[①]	Differential Mode Fin=1kHz@0dBFS Fs=44.1kHz B/W=20Hz~20kHz A-Weighted load=10kΩ	--	113	--	dB
	VCMO Mode Fin=1kHz@0dBFS Fs=44.1kHz B/W=20Hz~20kHz A-Weighted load=10kΩ	--	107	--	dB
	Single-ended Mode Fin=1kHz@0dBFS Fs=44.1kHz B/W=20Hz~20kHz A-Weighted load=10kΩ	--	110	--	dB
Dynamic Range	Differential Mode Fin=1kHz@-60dBFS Fs=44.1kHz B/W=20Hz~20kHz A-Weighted load=10kΩ	--	109	--	dB
	VCMO Mode Fin=1kHz@-60dBFS Fs=44.1kHz B/W=20Hz~20kHz A-Weighted load=10kΩ	--	104	--	dB
	Single-ended Mode Fin=1kHz@-60dBFS Fs=44.1kHz B/W=20Hz~20kHz A-Weighted load=10kΩ	--	106	--	dB
THD+N	Differential Mode Fin=1kHz@0dBFS Fs=44.1kHz B/W=20Hz~20kHz A-Weighted load=32Ω	--	-86	--	dB
	VCMO Mode Fin=1kHz@0dBFS	--	-85	--	dB

	Fs=44.1kHz B/W=20Hz~20kHz A-Weighted load=32Ω				
	Single-ended Mode Fin=1kHz@0dBFS Fs=44.1kHz B/W=20Hz~20kHz A-Weighted load=32Ω	--	-86	--	dB
Noise Floor	Differential Mode B/W=20Hz~20kHz A-Weighted load=10kΩ	--	7	--	uVrms
	VCMO Mode B/W=20Hz~20kHz A-Weighted load=10kΩ	--	6	--	uVrms
	Single-ended Mode B/W=20Hz~20kHz A-Weighted load=10kΩ	--	5	--	uVrms
Noise Floor with MUTE	Differential Mode B/W=20Hz~20kHz A-Weighted load=10kΩ	--	4	--	uVrms
	VCMO Mode B/W=20Hz~20kHz A-Weighted load=10kΩ	--	4	--	uVrms
	Single-ended Mode B/W=20Hz~20kHz A-Weighted load=10kΩ	--	3	--	uVrms
Stereo Crosstalk	VCMO Mode Fin=1kHz@0dBFS Fs=44.1kHz B/W=20Hz~20kHz A-Weighted load=10kΩ	--	-108	--	dB
	Single-ended Mode Fin=1kHz@0dBFS Fs=44.1kHz B/W=20Hz~20kHz A-Weighted load=10kΩ	--	-108	--	dB
Max Output Power	Differential Mode Fin=1kHz@0dBFS Fs=44.1kHz B/W=20Hz~20kHz A-Weighted load=16Ω THD+N＜0.1%	--	30	85	mW
	VCMO Mode	--	30	38	mW

| | Fin=1kHz@0dBFS
Fs=44.1kHz
B/W=20Hz~20kHz A-Weighted
load=16Ω
THD+N＜0.1% | | | | |
| | Single-ended Mode
Fin=1kHz@0dBFS
Fs=44.1kHz
B/W=20Hz~20kHz A-Weighted
load=16Ω
THD+N＜0.1% | -- | 30 | 38 | mW |

Note

1.①SNR is the ratio of output level with a 1kHz full-scale input to output level with MUTE on.

3.7 Audio ADC Characteristics

Table 3-7 Audio ADC Characteristics

Parameter	Conditions	Min	Typ	Max	Unit
Resolution	--	--	--	24	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=-3dB	--	105	--	dB
	Single-ended input Mode Fin=1kHz@0dBFS Fs=44.1kHz B/W=20Hz~20kHz A-Weighted ADC gain=-3dB	--	102	--	dB
Dynamic Range	Differential input Mode Fin=1kHz@-60dBFS Fs=44.1kHz B/W=20Hz~20kHz A-Weighted ADC gain=-3dB	--	105	--	dB
	Single-ended input Mode Fin=1kHz@-60dBFS Fs=44.1kHz B/W=20Hz~20kHz A-Weighted ADC gain=-3dB	--	102	--	dB
THD+N	Differential input Mode Fin=1kHz@0dBFS Fs=44.1kHz	--	-90	--	dB

Parameter	Conditions	Min	Typ	Max	Unit
	B/W=20Hz~20kHz A-Weighted ADC gain=-3dB				
	Single-ended input Mode Fin=1kHz@0dBFS Fs=44.1kHz B/W=20Hz~20kHz A-Weighted ADC gain=-3dB	--	-90	--	dB
Analogue Gain	--	-9	--	32	dB
Max Input Level	Differential input Mode ADC gain=-3dB	--	2	--	Vrms
	Single-ended input Mode ADC gain=-3dB	--	1	--	Vrms

3.8 BT Characteristics

3.8.1 Transmitter

Table 3-8-1 Transmitter characteristics

Parameter	Conditions	Min	Typ	Max	Unit
Maximum RF Transmit Power	BR	--	10	--	dBm
Maximum RF Transmit Power	EDR Π/4 DQPSK EDR 8DPSK	--	10	--	dBm
Relative Transmit Power	EDR Π/4 DQPSK EDR 8DPSK	--	-3	--	dB
Maximum RF Transmit Power	BLE-1Mbps	--	10	--	dBm

3.8.2 Receiver

Table 3-8-2 Receiver characteristics

Parameter	Conditions	Min	Typ	Max	Unit
Sensitivity	BR	--	-95	--	dBm
	EDR Π/4 DQPSK	--	-95	--	dBm
	EDR 8DPSK	--	-87	--	dBm
	BLE-1Mbps	--	-98.5	--	dBm
	BLE-2Mbps	--	-95.5	--	dBm
	BLE-S2	--	-101	--	dBm
	BLE-S8	--	-106	--	dBm

3.9 FM Characteristics

Table 3-9-1 FM Transmitter Characteristics

Parameter	Conditions	Min	Typ	Max	Unit
Frequency range	--	64	--	108	MHz
RF Transmit Power	--	--	6	--	dBm

Table 3-9-2 FM Receiver Characteristics

Parameter	Conditions	Min	Typ	Max	Unit
Frequency range	--	64	--	108	MHz
RF Mono sensitivity	(S+N)/N=26dB	--	4	--	dBuV
Mono Audio SNDR	--	--	75	--	dB
Stereo Audio SNDR	--	--	64	--	dB
Stereo channel separation	--	--	54	--	dB

4 Package Information

4.1 QFN52_6x6mm

SYMBOL	MILLIMETER		
	MIN	NOM	MAX
A	0.65	0.80	0.95
A1	—	0.035	0.05
b	0.15	0.20	0.25
c	0.18	0.20	0.25
D	5.90	6.00	6.10
D2	4.40	4.50	4.60
e	0.40BSC		
Nd	4.80BSC		
E	5.90	6.00	6.10
E2	4.40	4.50	4.60
Ne	4.80BSC		
L	0.35	0.40	0.45
L1	0.31	0.36	0.41
L2	0.13	0.18	0.23
h	0.25	0.30	0.35
L/F载体尺寸 (mil)	185*185		
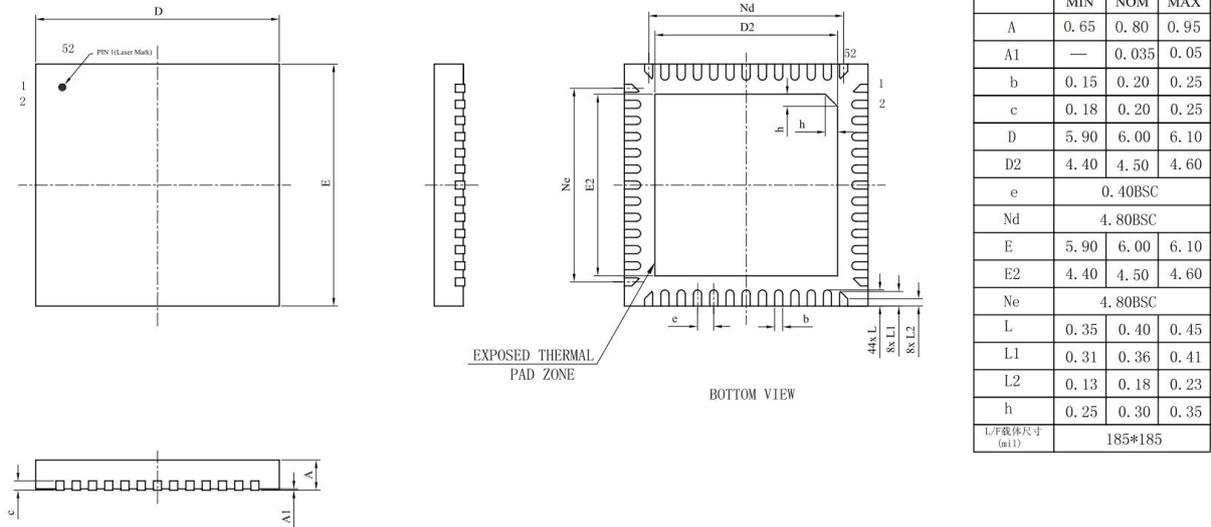
Figure 4-1 JL7034A Package

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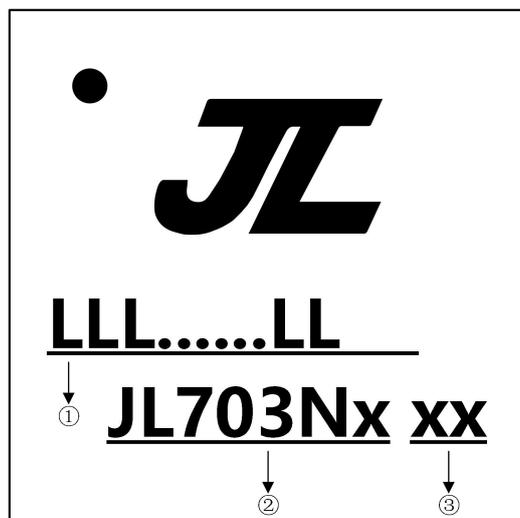
5 IC Marking Information

Figure 5-1 JL7034A Package Outline

① LLL......LL LOT No. , It contains 7 to 18 alphanumerics

② JL703Nx Chip Model

③ xx Built-in Memory

    0 No Flash Memory

    2 2Mbit Flash

    4 4Mbit Flash

    8 8Mbit Flash

    6 16Mbit Flash

    3 32Mbit Flash

nS memory is flash plus PSRAM, n represents the flash capacity, S represents 16Mbit PSRAM

nT memory is flash plus PSRAM, n represents the flash capacity, T represents 64Mbit PSRAM
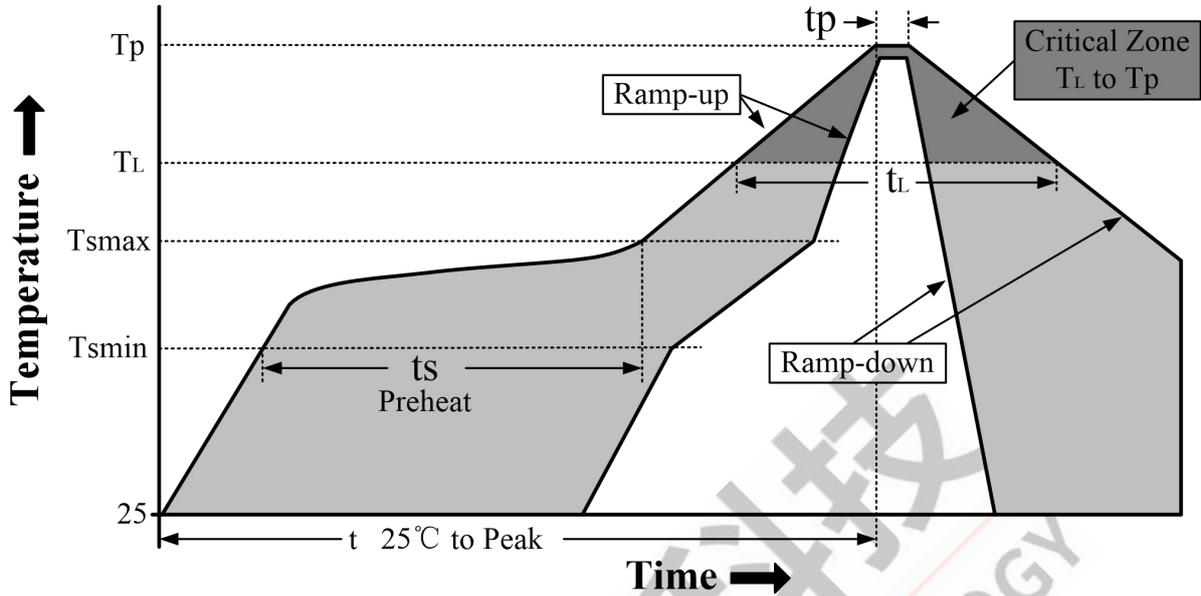
6 Solder-Reflow Condition

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)		183℃	217℃
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℃ 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 mm³ < 350	Volume mm³ ≥ 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.