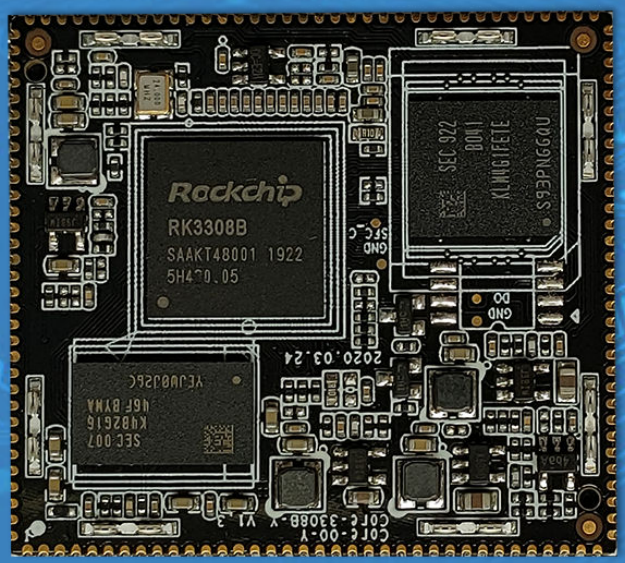
T-CHIP TECHNOLOGY

Core-3308Y

IoT Quad-Core 64-bit Core Board

V1.0



T-CHIP INTELLIGENCE TECHNOLOGY CO.,LTD.

www.t-firefly.com

Update history

Version	Date	Details
V1.0	2021-5-11	Original version

Firefly

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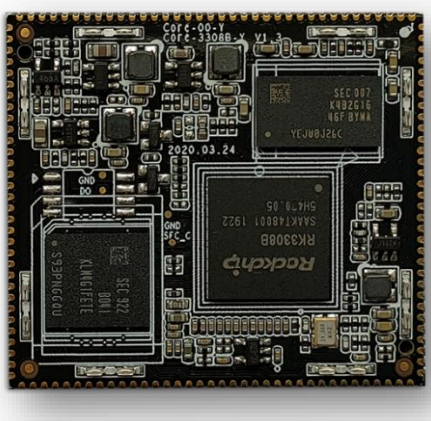
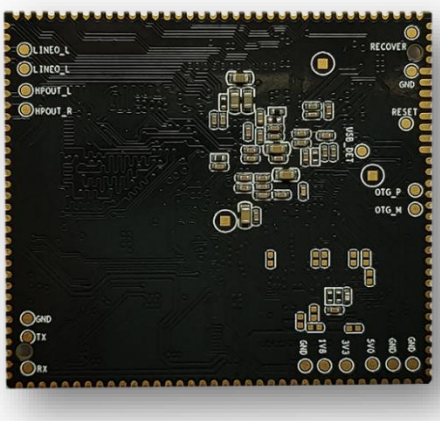
1. Product Overview

As a small-scale high-performance IoT core board, Core-3308BY adopts 136 pin stamp hole design and is equipped with Rockchip RK3308B that is dedicated IoT processor. It supports multiple operating systems, speech systems and services, as well as has rich expansion interfaces and strong display drive capability. Core-3308BY is suitable for the field of Internet of Things(IoT).





1. Quad-core 64-bit Processor

Adopts Rockchip RK3308B dedicated IoT processor which based on ARM quad-core 64-bit Cortex-A35 architecture, frequency up to 1.3GHz, integrated high-performance Codec and Hardware VAD. It can directly support up to 8 channel analog MIC arrays.

2. Powerful Display Capability

With strong display drive capacity, it supports 4-inch or 7-inch RGB/MCU display and supports resolution ratio up to 1280×720, suitable for scenes regarding screen display application such as human-computer interaction, smart home, etc.

3. Support IoT Systems And Services

It can support a variety of voice systems and services, such as Buildroot（Linux/QT）embedded system, ROS(Robot os), and iFLYTEK, Amazon Alexa. Rich operating systems/services support can use for IoT, intelligent speech recognition and other products easily.

4. Support Multi-touch

It supports multi-touch, quick response, sensitive touch, stable and smooth operation.

5. Small-scale Core Board

Equipped 136 pin stamp hole interface allows fast data transmission and great expansion performance. With only 45mm x 40.2mm, it is beneficial to save more space.

6. Form IoT Main Board

Core-3308BY can be combined with high-performance backplane to form the IOT industry motherboard, which can be used after power on, with richer interfaces and wider applicability, and can be directly applied to the project.

7. Rich Expansion Interfaces

With multiple expansion interfaces such as PWM×11 (including multiplexing), I2C×4、UART×5、SPI×1、I2S×1、ADC×6、LineOut, and digital audio interface (8CH I2S/TDM x 2, 8CH PDM, 2CH I2S/PCM). It also supports modules such as acceleration sensor, temperature humidity sensor, distance sensor, GPRS, and NB-IOT.

8. Voice Call

Not limited by transmission distance, keep the call in the place with network, realize functions such as sensitive word filtering and the automatic storage of call recording. It widely used in fields such as finance, education, transportation, medical treatment.

9. Smart Home

Equipped with touch screen, realize human-computer interaction, supports functions such as voice control and remote management. It's great for scenes such as entrance guard, kitchen, appliances and bathroom to construct smart and convenient living conditions.

10. Smart Sweeping Robot

It with interfaces such as PWM, I2C, SPI, etc., which can be connected with components such as lidar sensor, ultrasonic sensor, infrared sensor, hall sensor and LED indicator, etc., to realize functions of accurate positioning, obstacle avoidance, fall prevention, intelligent path planning, smart alarming, automatic recharging detection,.

11. Open SDK

Equipped source code, tutorial, technical materials, and development tools are provided, making development easier and more convenient.

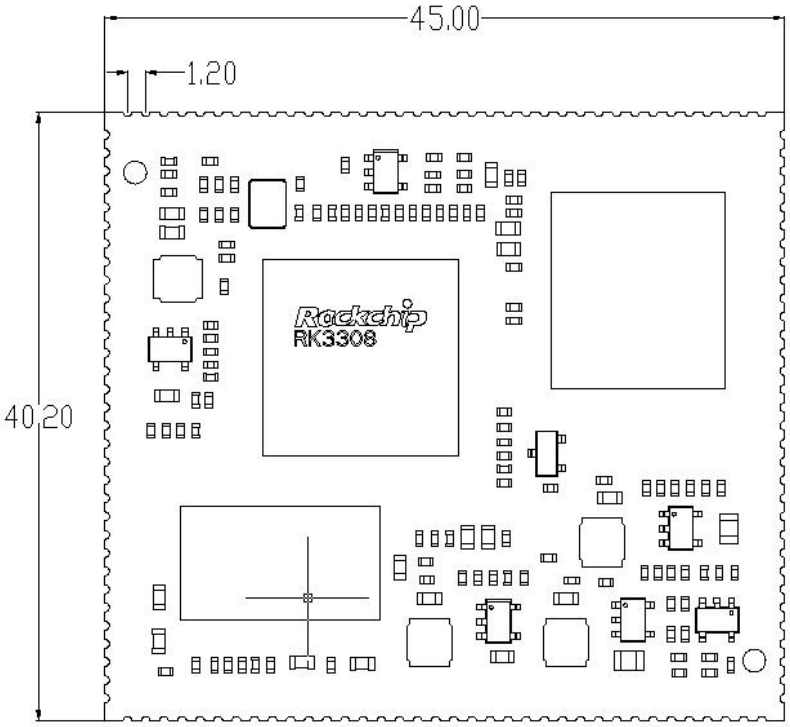
12. Application

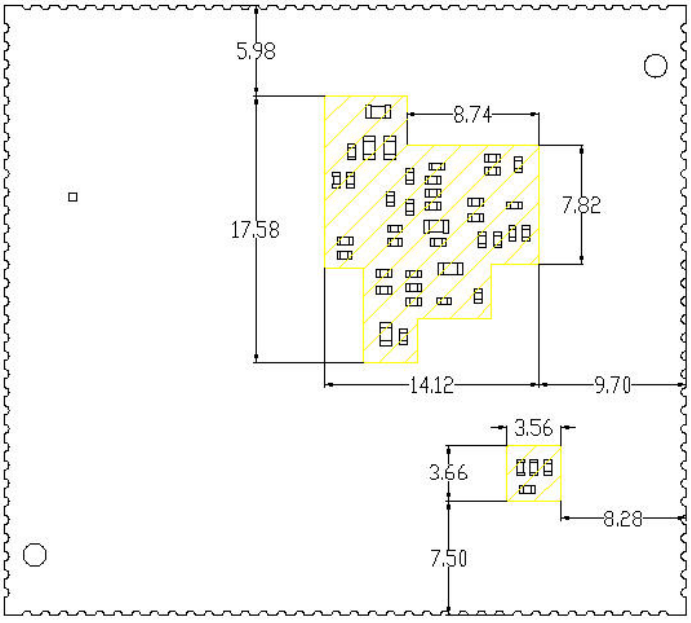
Widely used in scenes such as IoT, intelligent voice interaction, audio input or output,. etc. Smart speaker,Intelligent home appliances,Intelligent vehicle, Sweeping robot,Voice recognition,Speech translation,Smart player,Human–Computer interaction

2. Specifications

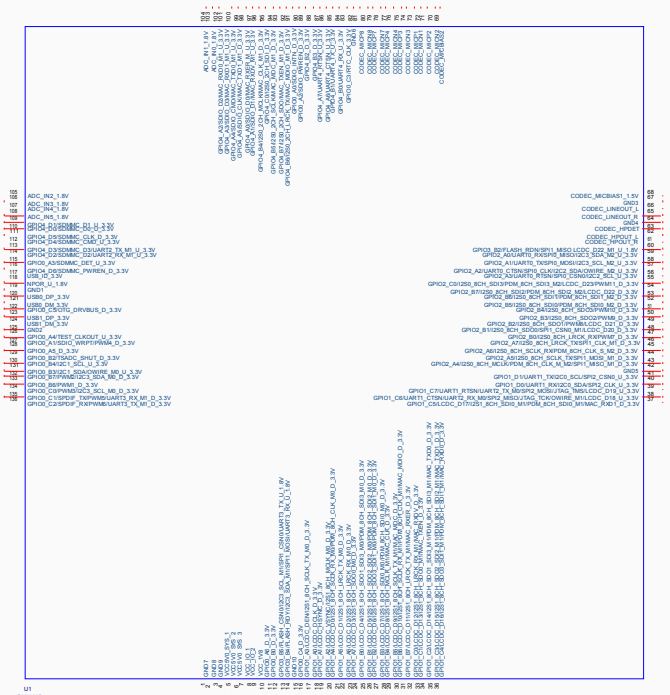
Specifications	
SOC	RK3308B (28nm process)
CPU	Quad-core 64-bit ARM Cortex-A35, frequency up to 1.3GHz
RAM	256M DDR3 (128MB ~ 512MB)
Storage	4GB eMMC : support 4G/8G/16G/32G/64G/128G NandFlash : support 128MB/256MB SPI Flash：16MB ~ 512 MB Support MicroSD (TF) Card Slot extension
Hardware Features	
Ethernet	10M/100M bps Ethernet (RJ45 interface)
WiFi	Provide SDIO 3.0 signal, support 2.4GHz WiFi, support 802.11/b/g/n Support Bluetooth 4.2
Display	Support RGB / MCU display (up to 720P)
Audio	With built-in audio CODEC, including ADC x 6 Integrated high-performance Codec and Hardware VAD, supporting up to 8-channel MIC array Support digital audio interface(8CH I2S/TDM x 2, 8CH PDM, 2CH I2S/PCM)
USB	USB 2.0 × 1、USB2.0 × 1（OTG）
Debug	Debug UART × 1, be used for development and debugging
Interface	Support PWM×11 (including multiplexing), UART×5, ADC×6, I2C×4, SPI×1, I2S×1, LineOut Support digital audio interface (8CH I2S/TDM x 2, 8CH PDM, 2CH I2S/PCM) support modules such as acceleration sensor, temperature humidity sensor, distance sensor, GPRS, and NB-IOT
OS/Software	
OS	Support multiple operating systems, such as Buildroot, Linux + MiniGUI/QT, ROS(Robot Operating System) Support multiple speech systems and services, such as Baidu DuerOS, AISpeech, iFLYTEK, and Amazon Alexa
Appearance	
Size	45mm × 40.2 mm
Type	Interface (136Pin, 1.2mm pitch)
PCB	6-layer board design

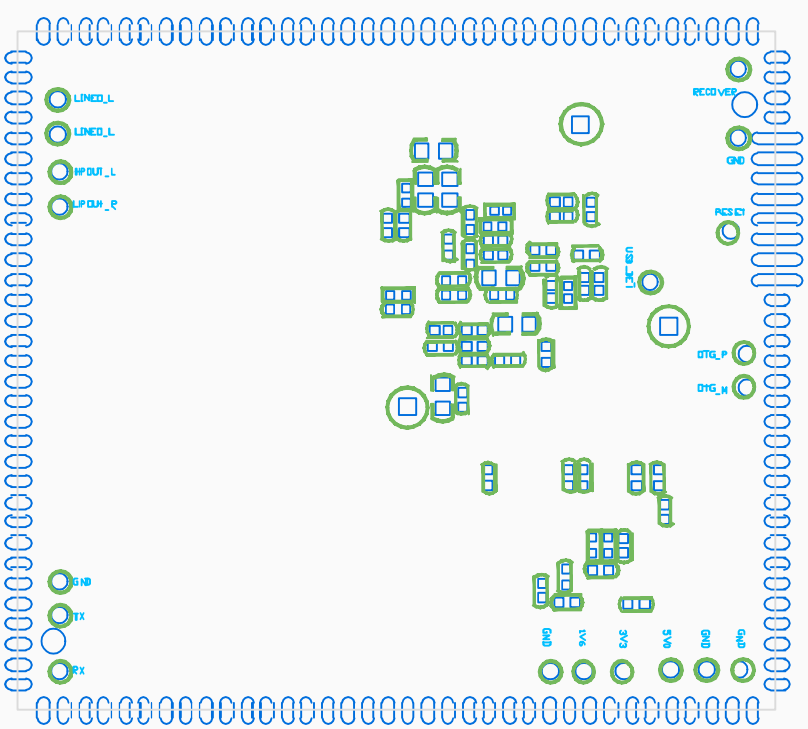
3. PCB Size


45.00
1.20
40.20
Rockchip
RK3308

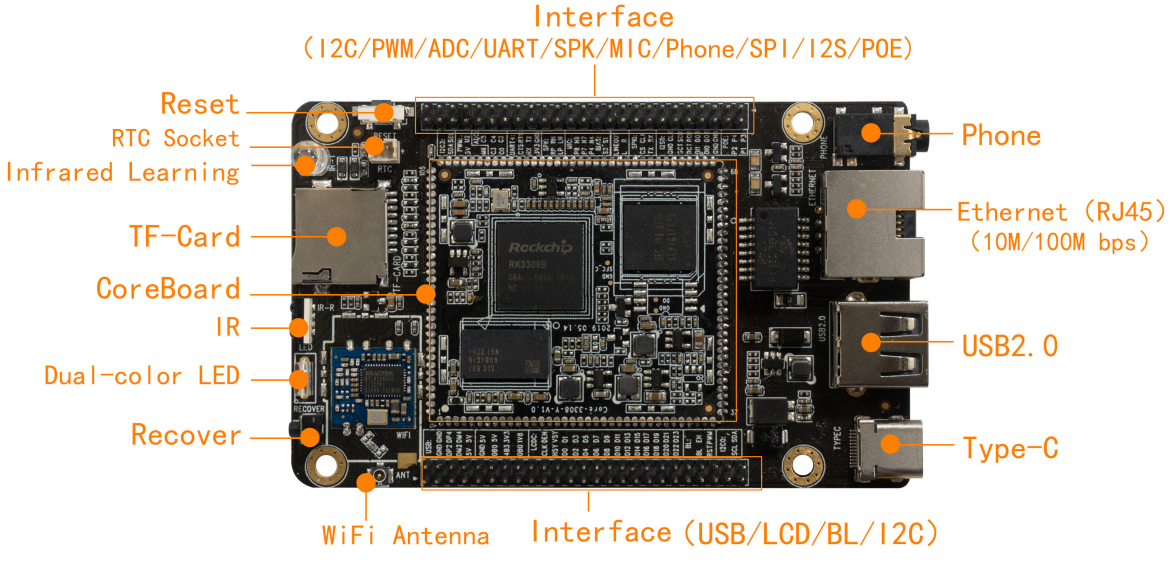

5.98
8.74
7.82
17.58
14.12
9.70
3.56
3.66
8.28
7.50

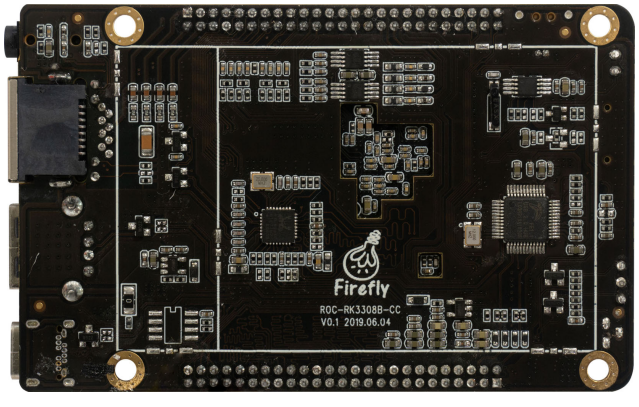
4. Interface description





4. Interface description





5. Interface definitions

Notes1:
① : Pad types: I = input, O = output, I/O = input/output (bidirectional) , I/GPIO = When used as GPIO port, it is input (I) ,
A = Analog , G= Ground , P = power supply , DOWN = Internal pull down , UP = Internal pull UP

0 = Lowe Level 1 = High level

Part A	pin	Core board pin definition	Pad type	IO Pull	Reset State	function for ROC-RK3308B-CC	Default function description	IO Power domain	RK3308B Pin Number	RK3308B Pin Name
	1	GND7	G		GND	GND	Power ground	GND		GND7
	2	GND8	G		GND	GND		GND		GND8
	3	GND9	G		GND	GND		GND		GND9
	4	VCC5V0_SYS_1	P			VCC5V0_SYS	System Power supply Input Voltag : Min 4.8V,Typ 5V, Max 5.2V Input current: Typ 500mA ;Max 1000mA	5V		VCC5V0_SYS_1
	5	VCC5V0_SYS_2	P			VCC5V0_SYS		5V		VCC5V0_SYS_2
	6	VCC5V0_SYS_3	P			VCC5V0_SYS		5V		VCC5V0_SYS_3
	7	VCC_IO_1	P			VCC_IO	DCDC Output Voltage 3.3V, Output current MAX 500mA	3.3V		VCC_IO_1
	8	VCC_IO_2	P			VCC_IO		3.3V		VCC_IO_2
	9	VCC_1V8	P			VCC_1V8	LDO Output Voltage 1.8V , Output current Max 100mA	1.8V		VCC_1V8
	10	GPIO0_A6_d_3.3V	I/O	DOWN	I/GPIO	POWER_LED	POWER LED DriveIC enable (output) 1:Enable 0:Disable	3.3V	T5	GPIO0_A6
	11	GPIO0_B0_d_3.3V	I/O	DOWN	I/GPIO	MIC_LED_EN	Array MIC LED DriveIC enable (output) 1:Enable 0:Disable	3.3V	T3	GPIO0_B0
	12	GPIO3_B5/FLASH_CSN0/I2C3_SCL_M1/SPI1_CSN0/UART3_TX_u_1.8V	I/O	UP	I/GPIO	I2C3_SCL/UART3_TX	I2C serial port 3	1.8V	T12	GPIO3_B5/FLASH_CSN0/I2C3_SCL_M1/SPI1_CSN0/UART3_TX
	13	GPIO3_B4/FLASH_RDY/I2C3_SDA_M1/SPI1_MOSI/UART3_RX_u_1.8V	I/O	UP	I/GPIO	I2C3_SDA/UART3_RX	I2C serial port 3	1.8V	W12	GPIO3_B4/FLASH_RDY/I2C3_SDA_M1/SPI1_MOSI/UART3_RX
	14	GND10	GND		GND	GND	GND	GND		GND10
	15	GPIO0_C4_d_3.3V	I/O	DOWN	I/GPIO	LCD_RST	LCD Reset (output)	3.3V	T2	GPIO0_C4
	16	GPIO1_A3/LCDC_DEN/I2S1_8CH_SCLK_TX_M0_d_3.3V	I/O	DOWN	I/GPIO	LCDC_DEN/I2S1_SCLK_TX_M0	LCDC RGB interface data enable, MCU i80 interface REN signal	3.3V	W4	GPIO1_A3/LCDC_DEN/I2S1_8CH_SCLK_TX_M0
	17	GPIO1_A0/LCDC_DCLK_d_3.3V	I/O	DOWN	I/GPIO	LCDC_CLK	LCDC RGB interface display clock out, MCU i80 interface RS signal	3.3V	Y5	GPIO1_A0/LCDC_DCLK
	18	GPIO1_A1/LCDC_HSYNC_d_3.3V	I/O	DOWN	I/GPIO	LCDC_HSYNC	LCDC RGB interface horizontal sync pulse, MCU i80 interface WEN signal	3.3V	V4	GPIO1_A1/LCDC_HSYNC
	19	GPIO1_A2/LCDC_VSYNC/I2S1_8CH_MCLK_M0_d_3.3V	I/O	DOWN	I/GPIO	LCDC_VSYNC/I2S1_MCLK_M0	LCDC RGB interface vertical sync pulse, MCU i80 interface CSN signal	3.3V	U4	GPIO1_A2/LCDC_VSYNC/I2S1_8CH_MCLK_M0
	20	GPIO1_A4/LCDC_D0/I2S1_8CH_SCLK_RX_M0/PDM_8CH_CLK_M0_d_3.3V	I/O	DOWN	I/GPIO	LCDC_D0/I2S1_SCLK_RX_M0/PDM_CLK_M0	LCDC data output	3.3V	W5	GPIO1_A4/LCDC_D0/I2S1_8CH_SCLK_RX_M0/PDM_8CH_CLK_M0
	21	GPIO1_A5/LCDC_D1/I2S1_8CH_LRCK_TX_M0_d_3.3V	I/O	DOWN	I/GPIO	LCDC_D1/I2S1_LRCK_TX_M0	LCDC data output	3.3V	V5	GPIO1_A5/LCDC_D1/I2S1_8CH_LRCK_TX_M0
	22	GPIO1_A6/LCDC_D2/I2S1_8CH_LRCK_RX_M0_d_3.3V	I/O	DOWN	I/GPIO	LCDC_D2/I2S1_LRCK_RX_M0	LCDC data output	3.3V	U5	GPIO1_A6/LCDC_D2/I2S1_8CH_LRCK_RX_M0
	23	GPIO1_A7/LCDC_D3/I2S1_8CH_SDO0_M0_d_3.3V	I/O	DOWN	I/GPIO	LCDC_D3/I2S1_SDO0_M0	LCDC data output	3.3V	W6	GPIO1_A7/LCDC_D3/I2S1_8CH_SDO0_M0
	24	GPIO1_B0/LCDC_D4/I2S1_8CH_SDO1_SDI3_M0/PDM_8CH_SDI3_M0_d_3.3V	I/O	DOWN	I/GPIO	LCDC_D4/I2S1_SDO1_SDI3_M0/PDM_SDI3_M0	LCDC data output	3.3V	V6	GPIO1_B0/LCDC_D4/I2S1_8CH_SDO1_SDI3_M0/PDM_8CH_SDI3_M0
	25	GPIO1_B1/LCDC_D5/I2S1_8CH_SDO2_SDI2_M0/PDM_8CH_SDI2_M0_d_3.3V	I/O	DOWN	I/GPIO	LCDC_D5/I2S1_SDO2_SDI2_M0/PDM_SDI2_M0	LCDC data output	3.3V	U6	GPIO1_B1/LCDC_D5/I2S1_8CH_SDO2_SDI2_M0/PDM_8CH_SDI2_M0
	26	GPIO1_B2/LCDC_D6/I2S1_8CH_SDO3_SDI1_M0/PDM_8CH_SDI1_M0_d_3.3V	I/O	DOWN	I/GPIO	LCDC_D6/I2S1_SDO3_SDI1_M0/PDM_SDI1_M0	LCDC data output	3.3V	T6	GPIO1_B2/LCDC_D6/I2S1_8CH_SDO3_SDI1_M0/PDM_8CH_SDI1_M0
	27	GPIO1_B3/LCDC_D7/I2S1_8CH_SDI0_M0/PDM_8CH_SDI0_M0_d_3.3V	I/O	DOWN	I/GPIO	LCDC_D7/I2S1_SDI0_M0/PDM_SDI0_M0	LCDC data output	3.3V	U7	GPIO1_B3/LCDC_D7/I2S1_8CH_SDI0_M0/PDM_8CH_SDI0_M0
	28	GPIO1_B4/LCDC_D8/I2S1_8CH_MCLK_M1/MAC_CLK_d_3.3V	I/O	DOWN	I/GPIO	LCDC_D8/I2S1_MCLK_M1/MAC_CLK	LCDC data output	3.3V	V7	GPIO1_B4/LCDC_D8/I2S1_8CH_MCLK_M1/MAC_CLK
	29	GPIO1_B5/LCDC_D9/I2S1_8CH_SCLK_TX_M1/MAC_MDC_d_3.3V	I/O	DOWN	I/GPIO	LCDC_D9/I2S1_SCLK_TX_M1/MAC_MDC	LCDC data output	3.3V	T8	GPIO1_B5/LCDC_D9/I2S1_8CH_SCLK_TX_M1/MAC_MDC
	30	GPIO1_B6/LCDC_D10/I2S1_8CH_SCLK_RX_M1/PDM_8CH_CLK_M1/MAC_MDIO_d_3.3V	I/O	DOWN	I/GPIO	LCDC_D10/I2S1_SCLK_RX_M1/PDM_CLK_M1/MAC_MDIO	LCDC data output	3.3V	W7	GPIO1_B6/LCDC_D10/I2S1_8CH_SCLK_RX_M1/PDM_8CH_CLK_M1/MAC_MDIO
	31	GPIO1_B7/LCDC_D11/I2S1_8CH_LRCK_TX_M1/MAC_RXER_d_3.3V	I/O	DOWN	I/GPIO	LCDC_D11/I2S1_LRCK_TX_M1/MAC_RXER	LCDC data output	3.3V	Y7	GPIO1_B7/LCDC_D11/I2S1_8CH_LRCK_TX_M1/MAC_RXER
	32	GPIO1_C0/LCDC_D12/I2S1_8CH_LRCK_RX_M1/MAC_RXDV_d_3.3V	I/O	DOWN	I/GPIO	LCDC_D12/I2S1_LRCK_RX_M1/MAC_RXDV	LCDC data output	3.3V	V9	GPIO1_C0/LCDC_D12/I2S1_8CH_LRCK_RX_M1/MAC_RXDV
	33	GPIO1_C1/LCDC_D13/I2S1_8CH_SDO0_M1/MAC_TXEN_d_3.3V	I/O	DOWN	I/GPIO	LCDC_D13/I2S1_SDO0_M1/MAC_TXEN	LCDC data output	3.3V	V8	GPIO1_C1/LCDC_D13/I2S1_8CH_SDO0_M1/MAC_TXEN
	34	GPIO1_C2/LCDC_D14/I2S1_8CH_SDO1_SDI3_M1/PDM_8CH_SDI3_M1/MAC_TXD0_d_3.3V	I/O	DOWN	I/GPIO	LCDC_D14/I2S1_SDO1_SDI3_M1/PDM_SDI3_M1/MAC_TXD0	LCDC data output	3.3V	U8	GPIO1_C2/LCDC_D14/I2S1_8CH_SDO1_SDI3_M1/PDM_8CH_SDI3_M1/MAC_TXD0
	35	GPIO1_C3/LCDC_D15/I2S1_8CH_SDO2_SDI2_M1/PDM_8CH_SDI2_M1/MAC_TXD1_d_3.3V	I/O	DOWN	I/GPIO	LCDC_D15/I2S1_SDO2_SDI2_M1/PDM_SDI2_M1/MAC_TXD1	LCDC data output	3.3V	U9	GPIO1_C3/LCDC_D15/I2S1_8CH_SDO2_SDI2_M1/PDM_8CH_SDI2_M1/MAC_TXD1
	36	GPIO1_C4/LCDC_D16/I2S1_8CH_SDO3_SDI1_M1/PDM_8CH_SDI1_M1/MAC_RXD0_d_3.3V	I/O	DOWN	I/GPIO	LCDC_D16/I2S1_SDO3_SDI1_M1/PDM_SDI1_M1/MAC_RXD0	LCDC data output	3.3V	R9	GPIO1_C4/LCDC_D16/I2S1_8CH_SDO3_SDI1_M1/PDM_8CH_SDI1_M1/MAC_RXD0
Part B	**pin**	**Core board pin definition**	**Pad type**	**IO Pull**	**Reset State**	**Default function**	**Default function description**	**IO Power domain**	**RK3308B Pin Number**	**Core board pin definition**
	37	GPIO1_C5/LCDC_D17/I2S1_8CH_SDI0_M1/PDM_8CH_SDI0_M1/MAC_RXD1_d_3.3V	I/O	DOWN	I/GPIO	LCDC_D17/I2S1_SDI0_M1/PDM_SDI0_M1/MAC_RXD1	LCDC data output	3.3V	Y9	GPIO1_C5/LCDC_D17/I2S1_8CH_SDI0_M1/PDM_8CH_SDI0_M1/MAC_RXD1
	38	GPIO1_C6/UART1_CTSN/UART2_RX_M0/SPI2_MISO/JTAG_TCK/OWIRE_M1/LCDC_D18_u_3.3V	I/O	UP	I/GPIO	LCDC_D18/UART2_RX_M0/UART1_CTSN/SPI2_MISO	LCDC data output	3.3V	W9	GPIO1_C6/UART1_CTSN/UART2_RX_M0/SPI2_MISO/JTAG_TCK/OWIRE_M1/LCDC_D18

	39	GPIO1_C7/UART1_RTSN/UART2_TX_M0/SPI2_MOSI/JTAG_TMS/LCDC_D19_u_3.3V	I/O	UP	I/GPIO	LCDC_D19/UART2_TX_M0/UART1_RTSN/SPI2_MOSI	LCDC data output	3.3V	T9	GPIO1_C7/UART1_RTSN/UART2_TX_M0/SPI2_MOSI/JTAG_TMS/LCDC_D19
	40	GPIO1_D0/UART1_RX/I2C0_SDA/SPI2_CLK_u_3.3V	I/O	UP	I/GPIO	I2C0_SDA/UART1_RX/SPI2_CLK/HDMI_SDA	I2C serial port 0	3.3V	V10	GPIO1_D0/UART1_RX/I2C0_SDA/SPI2_CLK
	41	GPIO1_D1/UART1_TX/I2C0_SCL/SPI2_CSN0_u_3.3V	I/O	UP	I/GPIO	I2C0_SCL/UART1_TX/SPI2_CSN0/HDMI_SCL	I2C serial port 0	3.3V	T10	GPIO1_D1/UART1_TX/I2C0_SCL/SPI2_CSN0
	42	GND5	G		GND	GND	GND	GND		GND5
	43	GPIO2_A4/I2S0_8CH_MCLK/PDM_8CH_CLK_M_M2/SPI1_MISO_M1_d_3.3V	I/O	DOWN	I/GPIO	I2S0_MCLK/PDM_CLK_M	I2S clock source	3.3V	T15	GPIO2_A4/I2S0_8CH_MCLK/PDM_8CH_CLK_M_M2/SPI1_MISO_M1
	44	GPIO2_A5/I2S0_8CH_SCLK_TX/SPI1_MOSI_M1_d_3.3V	I/O	DOWN	I/GPIO	I2S0_SCLK_TX	I2S transmitting serial clock	3.3V	R15	GPIO2_A5/I2S0_8CH_SCLK_TX/SPI1_MOSI_M1
	45	GPIO2_A6/I2S0_8CH_SCLK_RX/PDM_8CH_CLK_S_M2_d_3.3V	I/O	DOWN	I/GPIO	I2S0_SCLK_RX/PDM_CLK_S	I2S receiving serial clock	3.3V	T16	GPIO2_A6/I2S0_8CH_SCLK_RX/PDM_8CH_CLK_S_M2
	46	GPIO2_A7/I2S0_8CH_LRCK_TX/SPI1_CLK_M1_d_3.3V	I/O	DOWN	I/GPIO	I2S0_LRCK_TX	I2S left & right channel signal for transmitting serial data	3.3V	V17	GPIO2_A7/I2S0_8CH_LRCK_TX/SPI1_CLK_M1
	47	GPIO2_B0/I2S0_8CH_LRCK_RX/PWM7_d_3.3V	I/O	DOWN	I/GPIO	I2S0_LRCK_RX	I2S left & right channel signal for receiving serial data	3.3V	R16	GPIO2_B0/I2S0_8CH_LRCK_RX/PWM7
	48	GPIO2_B1/I2S0_8CH_SDO0/SPI1_CSN0_M1/LCDC_D20_d_3.3V	I/O	DOWN	I/GPIO	LCDC_D20/I2S0_SDO0	LCDC data output	3.3V	V14	GPIO2_B1/I2S0_8CH_SDO0/SPI1_CSN0_M1/LCDC_D20
	49	GPIO2_B2/I2S0_8CH_SDO1/PWM8/LCDC_D21_d_3.3V	I/O	DOWN	I/GPIO	LCDC_D21/I2S0_SDO1	LCDC data output	3.3V	V15	GPIO2_B2/I2S0_8CH_SDO1/PWM8/LCDC_D21
	50	GPIO2_B3/I2S0_8CH_SDO2/PWM9_d_3.3V	I/O	DOWN	I/GPIO	I2S0_SDO2	I2S serial data output	3.3V	U16	GPIO2_B3/I2S0_8CH_SDO2/PWM9
	51	GPIO2_B4/I2S0_8CH_SDO3/PWM10_d_3.3V	I/O	DOWN	I/GPIO	I2S0_SDO3	I2S serial data output	3.3V	T17	GPIO2_B4/I2S0_8CH_SDO3/PWM10
	52	GPIO2_B5/I2S0_8CH_SDI0/PDM_8CH_SDI0_M2_d_3.3V	I/O	DOWN	I/GPIO	I2S0_SDI0/PDM_SDI0	I2S serial data input	3.3V	T14	GPIO2_B5/I2S0_8CH_SDI0/PDM_8CH_SDI0_M2
	53	GPIO2_B6/I2S0_8CH_SDI1/PDM_8CH_SDI1_M2_d_3.3V	I/O	DOWN	I/GPIO	I2S0_SDI1/PDM_SDI1	I2S serial data input	3.3V	U15	GPIO2_B6/I2S0_8CH_SDI1/PDM_8CH_SDI1_M2
	54	GPIO2_B7/I2S0_8CH_SDI2/PDM_8CH_SDI2_M2/LCDC_D22_d_3.3V	I/O	DOWN	I/GPIO	LCDC_D22/I2S0_SDI2/PDM_SDI2	LCDC data output	3.3V	W14	GPIO2_B7/I2S0_8CH_SDI2/PDM_8CH_SDI2_M2/LCDC_D22
	55	GPIO2_C0/I2S0_8CH_SDI3/PDM_8CH_SDI3_M2/LCDC_D23/PWM11_d_3.3V	I/O	DOWN	I/GPIO	LCDC_D23/I2S0_SDI3/PDM_SDI3	LCDC data output	3.3V	Y14	GPIO2_C0/I2S0_8CH_SDI3/PDM_8CH_SDI3_M2/LCDC_D23/PWM11
	56	GPIO2_A3/UART0_RTSN/SPI0_CSN0/I2C2_SCL_u_3.3V	I/O	UP	I/GPIO	SPI0_CS/I2C2_SCL/CAN_TXD	SPI chip select signal, low active	3.3V	W16	GPIO2_A3/UART0_RTSN/SPI0_CSN0/I2C2_SCL
	57	GPIO2_A2/UART0_CTSN/SPI0_CLK/I2C2_SDA/OWIRE_M2_u_3.3V	I/O	UP	I/GPIO	SPI0_CLK/I2C2_SDA/CAN_RXD	SPI serial clock	3.3V	Y16	GPIO2_A2/UART0_CTSN/SPI0_CLK/I2C2_SDA/OWIRE_M2
	58	GPIO2_A1/UART0_TX/SPI0_MOSI/I2C3_SCL_M2_u_3.3V	I/O	UP	I/GPIO	SPI0_TX	SPI transmitting serial data	3.3V	V16	GPIO2_A1/UART0_TX/SPI0_MOSI/I2C3_SCL_M2
	59	GPIO2_A0/UART0_RX/SPI0_MISO/I2C3_SDA_M2_u_3.3V	I/O	UP	I/GPIO	SPI0_RX	SPI receiving serial data	3.3V	U14	GPIO2_A0/UART0_RX/SPI0_MISO/I2C3_SDA_M2
	60	GPIO3_B2/FLASH_RDN/SPI1_MISO/LCDC_D22_M1_u_1.8V	I/O	UP	I/GPIO	GPIO3_B2	USB HOST Power enable 1:Enable 0:Disable	1.8V	U13	GPIO3_B2/FLASH_RDN/SPI1_MISO/LCDC_D22_M1
	61	CODEC_HPOUT_R	A			HPOUT_R	Right DAC channel headphone output		W18	CODEC_HPOUT_R
	62	CODEC_HPOUT_L	A			HPOUT_L	Left DAC channel headphone output		Y19	CODEC_HPOUT_L
	63	CODEC_HPDET	A			HP_DET	Codec Headphone DET	1.8V	V18	CODEC_HPDET
	64	GND4	G		GND	GND	GND	GND		GND4
	65	CODEC_LINEOUT_R	A			LINEOUT_R	Right DAC channel Line output		W19	CODEC_LINEOUT_R
	66	CODEC_LINEOUT_L	A			LINEOUT_L	Left DAC channel Line output		W20	CODEC_LINEOUT_L
	67	GND3	G		GND	GND	GND	GND		GND3
	68	CODEC_MICBIAS1	A			MICBIAS1	Microphone bias voltage1		Y18	CODEC_MICBIAS1
Part C	**pin**	**Core board pin definition**	**Pad type**	**IO Pull**	**Reset State**	**Default function**	**Default function description**	**IO Power domain**	**RK3308B Pin Number**	**Core board pin definition**
	69	CODEC_MICBIAS2	A			MICBIAS2	MIC bias voltage2		U18	CODEC_MICBIAS2
	70	CODEC_MICN2	A			MICN2	ADC channel 2 Microphone input		U19	CODEC_MICN2
	71	CODEC_MICP2	A			MICP2	ADC channel 2 Microphone input		U20	CODEC_MICP2
	72	CODEC_MICN1	A			MICN1	ADC channel 1 Microphone input		V19	CODEC_MICN1
	73	CODEC_MICP1	A			MICP1	ADC channel 1 Microphone input		V20	CODEC_MICP1
	74	CODEC_MICN3	A			MICN3	ADC channel 3 Microphone input		P17	CODEC_MICN3
	75	CODEC_MICP3	A			MICP3	ADC channel 3 Microphone input		P18	CODEC_MICP3
	76	CODEC_MICN4	A			MICN4	ADC channel 4 Microphone inpu		R19	CODEC_MICN4
	77	CODEC_MICP4	A			MICP4	ADC channel 4 Microphone inpu		R20	CODEC_MICP4
	78	CODEC_MICN7	A			MICN7	ADC channel 7 Microphone input		N19	CODEC_MICN7
	79	CODEC_MICP7	A			MICP7	ADC channel 7 Microphone input		N20	CODEC_MICP7
	80	CODEC_MICN8	A			MICN8	ADC channel 8 Microphone input		M19	CODEC_MICN8
	81	CODEC_MICP8	A			MICP8	ADC channel 8 Microphone input		M20	CODEC_MICP8
	82	GND6	G		GND	GND	GND	GND		GND6
	83	GPIO0_C3/RTC_CLK_3.3V	I/O	High-Z	I/GPIO	CLK_32K_OUT	32K RTC clock (output)	3.3V	Y2	GPIO0_C3/RTC_CLK

	84	GPIO4_B0/UART4_RX_u_3.3V	I/O	UP	I/GPIO	UART4_RXD	UART serial data input	3.3V	F17	GPIO4_B0/UART4_RX
	85	GPIO4_B1/UART4_TX_u_3.3V	I/O	UP	I/GPIO	UART4_TXD	UART serial data output	3.3V	J16	GPIO4_B1/UART4_TX
	86	GPIO4_A6/UART4_CTSN_u_3.3V	I/O	UP	I/GPIO	UART4_CTS	UART clear to send modem status input	3.3V	K19	GPIO4_A6/UART4_CTSN
	87	GPIO4_A7/UART4_RTSN_u_3.3V	I/O	UP	I/GPIO	UART4_RTS	UART modem control request to send output	3.3V	K18	GPIO4_A7/UART4_RTSN
	88	GPIO4_B3_d_3.3V	I/O	DOWN	I/GPIO	BT_REG_ON	BT module power enable (output)	3.3V	F19	GPIO4_B3
	89	GPIO4_B2_d_3.3V	I/O	DOWN	I/GPIO	HUB_RST	HUB reset (output)	3.3V	G16	GPIO4_B2
	90	GPIO0_A2/SDIO_PWREN_d_3.3V	I/O	DOWN	I/GPIO	WIFI_PWREN	WIFI Power enable	3.3V	P3	GPIO0_A2/SDIO_PWREN
	91	GPIO0_A0/SDIO_INTN_d_3.3V	I/O	DOWN	I/GPIO	WIFI_WAKE_HOST	WIFI module wake up AP	3.3V	N3	GPIO0_A0/SDIO_INTN
	92	GPIO4_B6/I2S0_2CH_LRCK_TX/MAC_MDIO_M1_d_3.3V	I/O	DOWN	I/GPIO	MAC_MDIO/PCM_SYNC	MAC management interface data	3.3V	J15	GPIO4_B6/I2S0_2CH_LRCK_TX/MAC_MDIO_M1
	93	GPIO4_B7/I2S0_2CH_SDO/MAC_TXEN_M1_d_3.3V	I/O	DOWN	I/GPIO	MAC_TXEN/PCM_OUT	MAC TX data enable	3.3V	H15	GPIO4_B7/I2S0_2CH_SDO/MAC_TXEN_M1
	94	GPIO4_B5/I2S0_2CH_SCLK/MAC_MDC_M1_d_3.3V	I/O	DOWN	I/GPIO	MAC_MDC/PCM_CLK	MAC management interface clock	3.3V	F18	GPIO4_B5/I2S0_2CH_SCLK/MAC_MDC_M1
	95	GPIO4_C0/I2S0_2CH_SDI_d_3.3V	I/O	DOWN	I/GPIO	LCD_BL	LCD panel backlight brightness control output	3.3V	H14	GPIO4_C0/I2S0_2CH_SDI
	96	GPIO4_B4/I2S0_2CH_MCLK/MAC_CLK_M1_d_3.3V	I/O	DOWN	I/GPIO	MAC_CLK/BT_WAKE_HOST	MAC REC_CLK output or external clock input	3.3V	H16	GPIO4_B4/I2S0_2CH_MCLK/MAC_CLK_M1
	97	GPIO4_A1/SDIO_D1/MAC_RXDV_M1_u_3.3V	I/O	UP	I/GPIO	MAC_RXDV/SDIO_D1	MAC RX data valid signal	3.3V	J17	GPIO4_A1/SDIO_D1/MAC_RXDV_M1
	98	GPIO4_A0/SDIO_D0/MAC_RXER_M_u_3.3V	I/O	UP	I/GPIO	MAC_RXER/SDIO_D0	MAC RX error signal	3.3V	J19	GPIO4_A0/SDIO_D0/MAC_RXER_M
	99	GPIO4_A5/SDIO_CLK/MAC_TXD1_M1_d_3.3V	I/O	UP	I/GPIO	MAC_TXD1/SDIO_CLK	MAC TX data	3.3V	J18	GPIO4_A5/SDIO_CLK/MAC_TXD1_M1
	100	GPIO4_A4/SDIO_CMD/MAC_TXD0_M1_u_3.3V	I/O	UP	I/GPIO	MAC_TXD0/SDIO_CMD	MAC TX data	3.3V	H18	GPIO4_A4/SDIO_CMD/MAC_TXD0_M1
	101	GPIO4_A3/SDIO_D3/MAC_RXD1_M1_u_3.3V	I/O	UP	I/GPIO	MAC_RXD1/SDIO_D3	MAC RX data	3.3V	G17	GPIO4_A3/SDIO_D3/MAC_RXD1_M1
	102	GPIO4_A2/SDIO_D2/MAC_RXD0_M1_u_3.3V	I/O	UP	I/GPIO	MAC_RXD0/SDIO_D2	MAC RX data	3.3V	G18	GPIO4_A2/SDIO_D2/MAC_RXD0_M1
	103	ADC_IN0_1.8V				ADC_IN0	ADC input , Core board interiorl pull up Resistor 10K	1.8V	A19	ADC_IN0
	104	ADC_IN1_1.8V				RECOVERY	RECOVERY , Core board interiorl pull up Resistor 10K	1.8V	B19	ADC_IN1
Part D	**pin**	**Core board pin definition**	**Pad type**	**IO Pull**	**Reset State**	**Default function**	**Default function description**	**IO Power domain**	**RK3308B Pin Number**	**Core board pin definition**
	105	ADC_IN2_1.8V				ADC_IN2	ADC input , Core board interiorl pull up Resistor 10K	1.8V	C18	ADC_IN2
	106	ADC_IN3_1.8V				ADC_IN3	ADC input	1.8V	A18	ADC_IN3
	107	ADC_IN4_1.8V				ADC_IN4	ADC input	1.8V	B18	ADC_IN4
	108	ADC_IN5_1.8V				ADC_IN5	ADC input	1.8V	D18	ADC_IN5
	109	GPIO4_D1/SDMMC_D1_u_3.3V	I/O	UP	I/GPIO	SDMMC_D1	SDMMC_D1 data port,for TF Card	Note 2	A17	GPIO4_D1/SDMMC_D1
	110	GPIO4_D0/SDMMC_D0_u_3.3V	I/O	UP	I/GPIO	SDMMC_D0	SDMMC_D0 data port,for TF Card		B17	GPIO4_D0/SDMMC_D0
	111	GPIO4_D5/SDMMC_CLK_d_3.3V	O	DOWN	I/GPIO	SDMMC_CLK	SDMMC clock output,for TF Card		B16	GPIO4_D5/SDMMC_CLK
	112	GPIO4_D4/SDMMC_CMD_u_3.3V	I/O	UP	I/GPIO	SDMMC_CMD	SDMMC command output,for TF Card		C16	GPIO4_D4/SDMMC_CMD
	113	GPIO4_D3/SDMMC_D3/UART2_TX_M1_u_3.3V	I/O	UP	I/GPIO	SDMMC_D3	SDMMC_D3 data port,for TF Card		A15	GPIO4_D3/SDMMC_D3/UART2_TX_M1
	114	GPIO4_D2/SDMMC_D2/UART2_RX_M1_u_3.3V	I/O	UP	I/GPIO	SDMMC_D2	SDMMC_D2 data port,for TF Card		B15	GPIO4_D2/SDMMC_D2/UART2_RX_M1
		Note 2:Default is 3.3V; VCCIO5 Domain 1.8V or 3.3V Power supply, Voltage configure by GPIO0_A7; H = 3.3V, L = 1.8V.								
	115	GPIO0_A3/SDMMC_DET_u_3.3V	I	UP	I/GPIO	SDMMC_DET	Sdmmc card detect signal, 0: TF card insert 1: TF card no insert	3.3V	P4	GPIO0_A3/SDMMC_DET
	116	GPIO4_D6/SDMMC_PWREN_d_3.3V	I/O	DOWN	I/GPIO	SDMMC_PWREN	Sdmmc power enable 1:Enable 0:Disable	Note 2	B14	GPIO4_D6/SDMMC_PWREN
	117	USB_ID_3.3V	I			USB_OTG_ID	OTG Role switching(Input) 0: HOST Mode 1: Slave Mode	3.3V	C12	USB_ID
	118	NPOR_u_1.8V	I	fix up	I/GPIO	RESET	Core board pull up 10K, System reset signal input. 0 : System Reset 1 : Normal	1.8V	B20	NPOR
	119	GND1	G		GND	GND	GND	GND		GND1
	120	USB0_DP_3.3V	I/O			USB_OTG_DP	OTG_DP	3.3V	B13	USB0_DP
	121	USB0_DM_3.3V	I/O			USB_OTG_DM	OTG_DM	3.3V	A13	USB0_DM

122	GPIO0_C5/OTG_DRVBUS_d_3.3V	I/O	DOWN	I/GPIO	USB_DRV	USB HOST Power enable 1:Enable 0:Disable	3.3V	N2	GPIO0_C5/OTG_DRVBUS
123	USB1_DP_3.3V	I/O			USB_HOST_DP	USB 2.0 Data signal DP	3.3V	B12	USB1_DP
124	USB1_DM_3.3V	I/O			USB_HOST_DM	USB 2.0 Data signal DM	3.3V	A12	USB1_DM
125	GND2	GND		GND	GND	GND	GND		GND2
126	GPIO0_A4/TEST_CLKOUT_u_3.3V	I/O	UP	I/GPIO	LCD_EN	LCD panel power enable	3.3V	R3	GPIO0_A4/TEST_CLKOUT
127	GPIO0_A1/SDIO_WRPT/PWM4_d_3.3V	I/O	DOWN	I/GPIO	PHONE_CTL	Earphone control (output) 1:Enable 0:Disable	3.3V	N4	GPIO0_A1/SDIO_WRPT/PWM4
128	GPIO0_A5_d_3.3V	I/O	DOWN	I/GPIO	SPK_MUTE	Speaker control (output) 1:Enable 0:Disable	3.3V	R4	GPIO0_A5
129	GPIO0_B2/TSADC_SHUT_d_3.3V	I/O	DOWN	I/GPIO	WORK_LED	System LED control 1:Enable 0:Disable	3.3V	U3	GPIO0_B2/TSADC_SHUT
130	GPIO0_B4/I2C1_SCL_u_3.3V	I/O	UP	I/GPIO	I2C1_SCL	I2C serial port 1 , Core board interiorl pull up Resistor 2.2K	3.3V	V1	GPIO0_B4/I2C1_SCL
131	GPIO0_B3/I2C1_SDA/OWIRE_M0_u_3.3V	I/O	UP	I/GPIO	I2C1_SDA	I2C serial port 1 , Core board interiorl pull up Resistor 2.2K	3.3V	V2	GPIO0_B3/I2C1_SDA/OWIRE_M0
132	GPIO0_B7/PWM2/I2C3_SDA_M0_d_3.3V	I/O	DOWN	I/GPIO	PWM2	Pulse Width Modulation input and output	3.3V	W1	GPIO0_B7/PWM2/I2C3_SDA_M0
133	GPIO0_B6/PWM1_d_3.3V	I/O	DOWN	I/GPIO	PWM1	Pulse Width Modulation input and output	3.3V	W2	GPIO0_B6/PWM1
134	GPIO0_C0/PWM3/I2C3_SCL_M0_d_3.3V	I/O	DOWN	I/GPIO	PWM3	Pulse Width Modulation input and output, used for IR application recommended	3.3V	U2	GPIO0_C0/PWM3/I2C3_SCL_M0
135	GPIO0_C1/SPDIF_TX/PWM5/UART3_RX_M1_d_3.3V	I/O	DOWN	I/GPIO	PWM5	Pulse Width Modulation input and output	3.3V	T1	GPIO0_C1/SPDIF_TX/PWM5/UART3_RX_M1
136	GPIO0_C2/SPDIF_RX/PWM6/UART3_TX_M1_d_3.3V	I/O	DOWN	I/GPIO	PWM6	Pulse Width Modulation input and output	3.3V	W3	GPIO0_C2/SPDIF_RX/PWM6/UART3_TX_M1

Company profile

T-Chip Intelligent Technology (Zhongshan) Co., Ltd. , established in 2005, has more than ten years of technological product research and development capabilities, and has nearly 100 patents and software copyrights. As a national high-tech enterprise, we focus on the research and development, production and sales of open source smart hardware, Internet of Things, and digital audio products, while also provide overall solutions with smart hardware products.

T-Chip is an IDH (Independent Design House) officially authorized by Rockchip in Fuzhou, and also a strategic partner of Rockchip, with a close cooperative relationship for more than 10 years.

Firefly is a brand established by T-Chip, with open source community and online store. Firefly products include core boards, mainboards, embedded computers, cluster servers, development kits and other products. Currently, we have more than 100,000 users, including more than 10,000 enterprise users such as Arm, Google, Baidu, Tencent and Alibaba.

Firefly team has more than 70 R&D members, with excellent research and development capabilities of schematic design, PCB layout, board mass production, embedded development, system development, application development and so on. We accelerate the research and development process for many technology entrepreneurs and start-ups, and provide professional technical services.

Make technology simpler, Make life smarter - is the idea of Firefly team. We hope that through Firefly's open source products and technical services, the research and development of various technological products will become efficient and simple, and intelligent technology can be integrated into life.

Firefly is committed to providing enterprise customers with long-term stable and reliable industrial products and services, and continuously creating value for customers.

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