



Firefly-RK3128

Product Specifications

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Company Profile

T-Chip Intelligent Technology Co., Ltd. was founded in 2005. It has more than 10 years of research and development experience in scientific and technological products, has 6 invention patents and more than 30 computer software copyrights, and is a national high-tech enterprise. We focus on the research and development, design, production and sales of open source intelligent hardware, internet of things and digital audio products, and provide the overall solution for intelligent hardware products meanwhile.



Firefly is a brand owned by T-chip Technology. It operates open source products, open source communities and online stores. It has a large number of enterprise users and developer users, and its products are well received by users. Firefly open source products include open source boards, core boards, industry mainboards, etc. The open-source board series is the recommended board card by chip original factory Rockchip and obtain the support of native SDK. The core boards and industrial mainboards are widely used in commercial displays, advertisement integrated machines, intelligent POS, face recognition terminals, internet of things, intelligent cities, etc. At present, there are more than 100,000 users, including over 2,000 enterprise users. And well-known users include ARM, Google, Baidu, Tencent, Alibaba, etc.

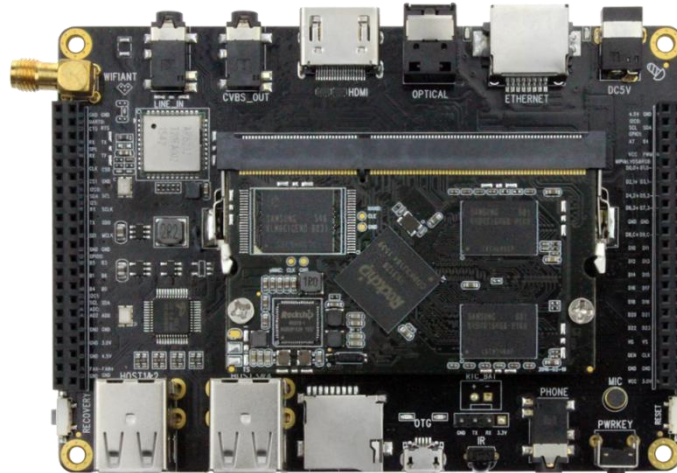
Firefly team has more than 60 research and development members and has the research and development capabilities in schematic design, PCB layout, mainboard production, embedded development, system development, application program development, etc., which accelerates the research and development process for many technology entrepreneurs and start-ups, and provides professional technical services..

" **Make technology more simple, Make life more intelligent** " is the idea of Firefly team. We hope to make the research and development of various technology products efficient and simple, and let intelligent technology integrate in our lives through the open source products and technical services of Firefly.

1. Product Overview

1.1 Overview

Firefly-RK3128 adopts Cortex-A7 quad core 1.3GHz structure, integrates with Mali-400MP2 GPU, support OpenGL ES1.1/2.0, Embedded high-performance 2D acceleration hardware, has excellent operation and graphics processing. It offers Gigabit Ethernet , 2.4GHz Wi-Fi and Buletooth4.0.









Firefly-RK3128 equipped with abundant interface: HDMI , CVBS、LCD、SPDIF、Camera、Ethernet、USB HOST、USB OTG、UART、GPIO、TF card、I2C、SPI、ADC、PWM etc. , it has a strong interface performance and extensibility.

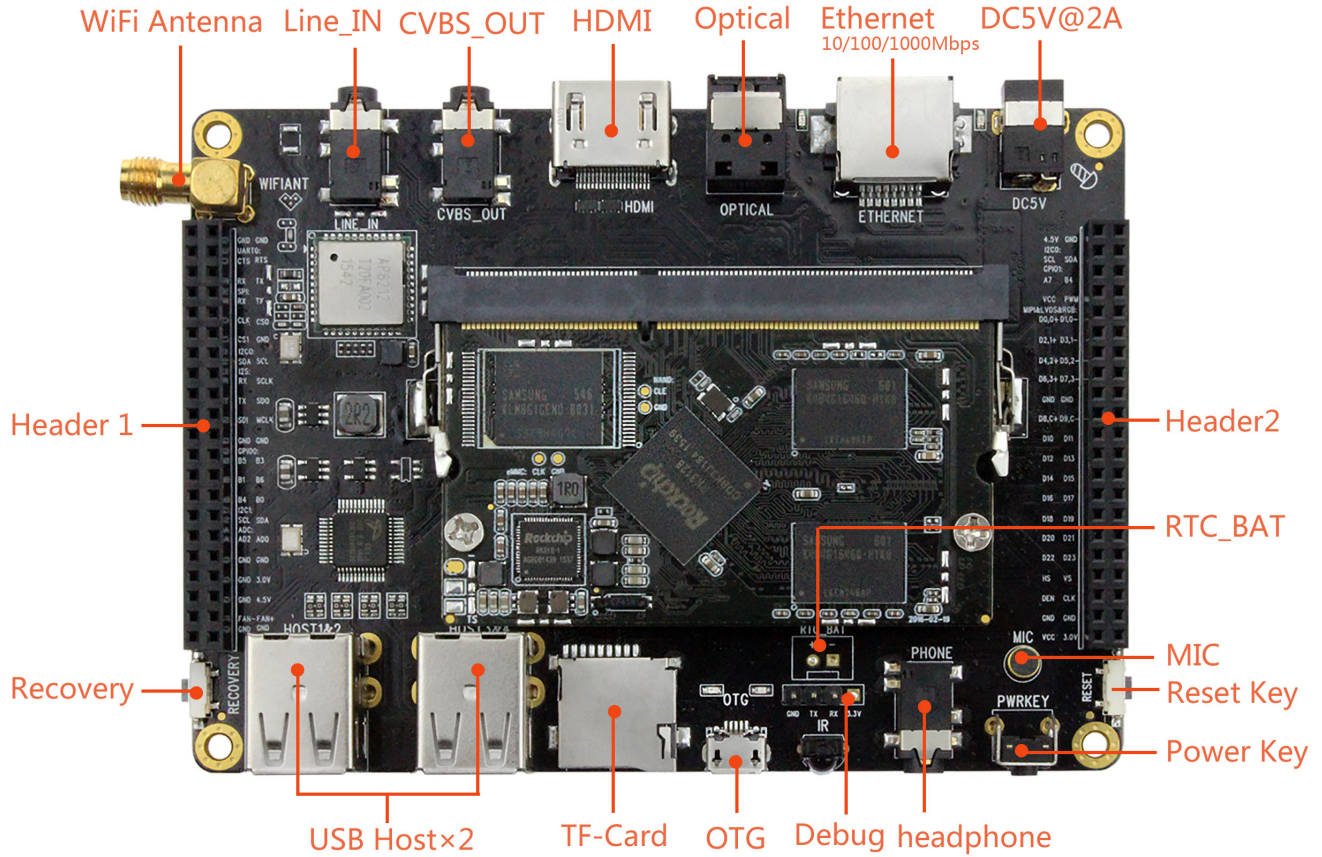
Firefly-RK3128 supports Android and Ubuntu system , it can be used to work, study, game, entertainment, server building, software developing, intelligent embedding, etc.

Its open source feature allows secondary development for enterprises, facilitating R&D and shortening the product development cycle.

1.2 Application Scenarios

		
<p>Vehicle Equipment</p>	<p>Smart Home</p>	<p>Education</p>
		
<p>Advertising Equipment</p>	<p>Medical Equipment</p>	<p>TV-Box</p>

2. Interface description

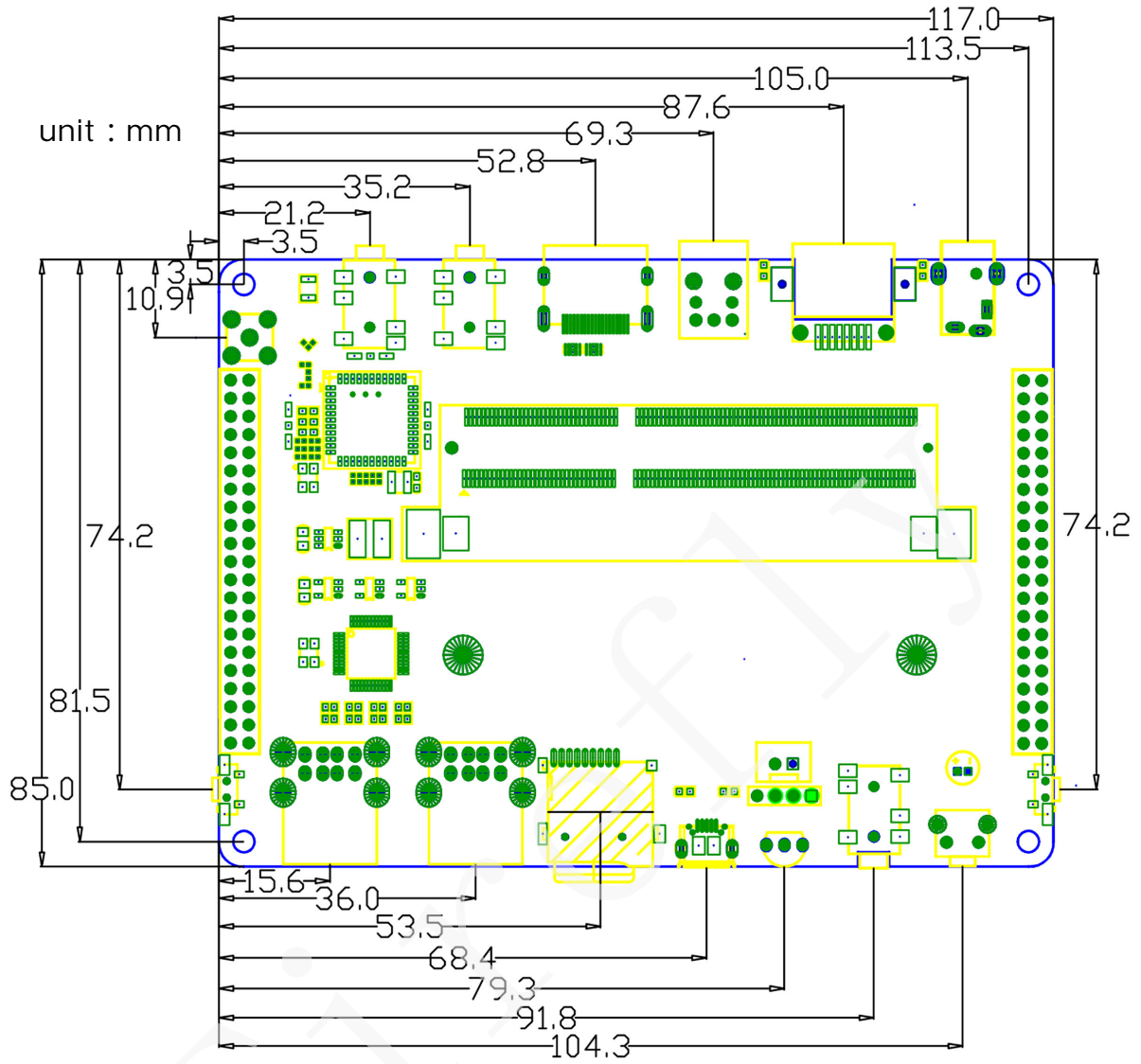




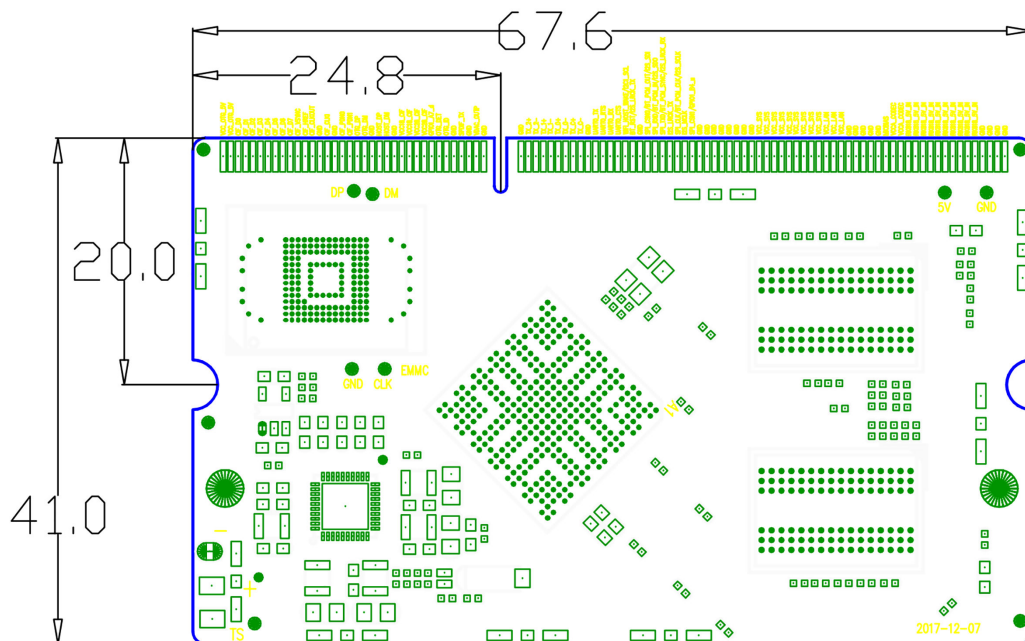
3. Hardware Specifications

Types	Specifications
CPU	Rockchip RK3128 , ARM® Cortex™-A7 Quad-core 1.3GHz
GPU	ARM Mali-400MP2 GPU, Support OpenGL ES1.1/2.0 Embedded high-performance 2D hardware 1080P multi-format video decoding, including H.265 1080P hardware decoding 1080P video encoding, support H.264
PMU	RK818 PMU Chip
RAM	1GB、2GB DDR3
Storage	8GB eMMC 、MicroSD (TF) Card Slot
Wireless	Integrated WiFi Combo Module (AP6212) : WiFi 2.4GHz , Support 802.11a/b/g/n Bluetooth 4.0 (Support BLE)
Ethernet	10/100/1000Mbps Ethernet (Realtek RTL8211E)
Display	Supports multi-channel display: 1 x HDMI, 1 x CVBS, 1 x MIPI or LVDS display interface (DSI) for LCD panels
Audio	1 x HDMI audio output 1 x CVBS (via 3.5mm jack shared with composite video out) 1 x Analog audio (via 3.5mm Combo Audio Jack for audio input and output) 1 x LINE_IN for audio input 1 x SPDIF for audio output 1 x On-board microphone for audio input 1 x I2S for audio input and output
Camera	1 x Camera Interface (Maximum 5Mpixel)
USB	4 x USB2.0 HOST, 1 x USB2.0 OTG
IR	1 x IR Receiver Module, Support self defined IR remote
LED	1 x Status LED (Blue), 1 x User Defined LED (Green)
Button	1 x Reset button, 1 x Power button, 1 x Recover button
Debugging	1 x Serial Console, for debugging
Interface	84 Pins header: MIPI、LVDS、PWM、SPI、UART、ADC、GPIO、I2C、I2S
Power	DC5V-2A (via DC4.0*1.7mm Jack)
OS	Android 5.1 / Ubuntu 15.04
Size	Core-Board: 67.6mm*40mm Backplane: 117mm*85mm
Weight	91g

4. PCB Size



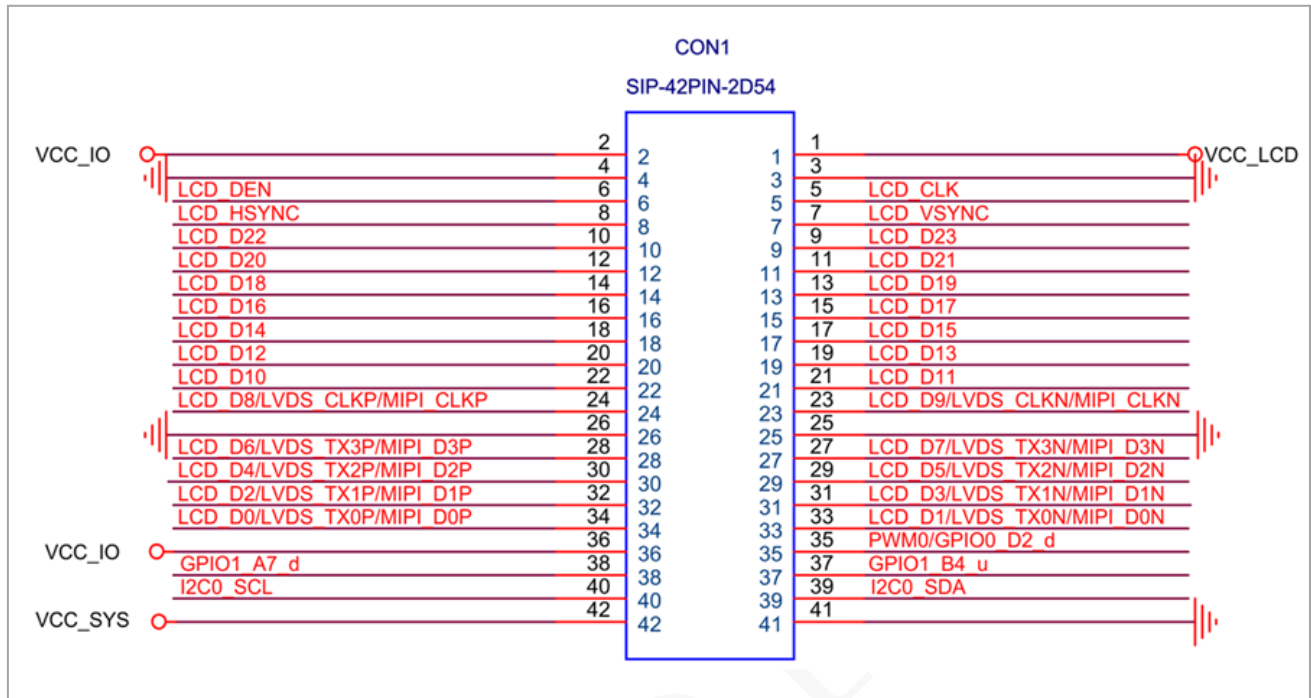
Core board size:





5. Pin definition

5.1 CON1 SIP-42PIN-2D54



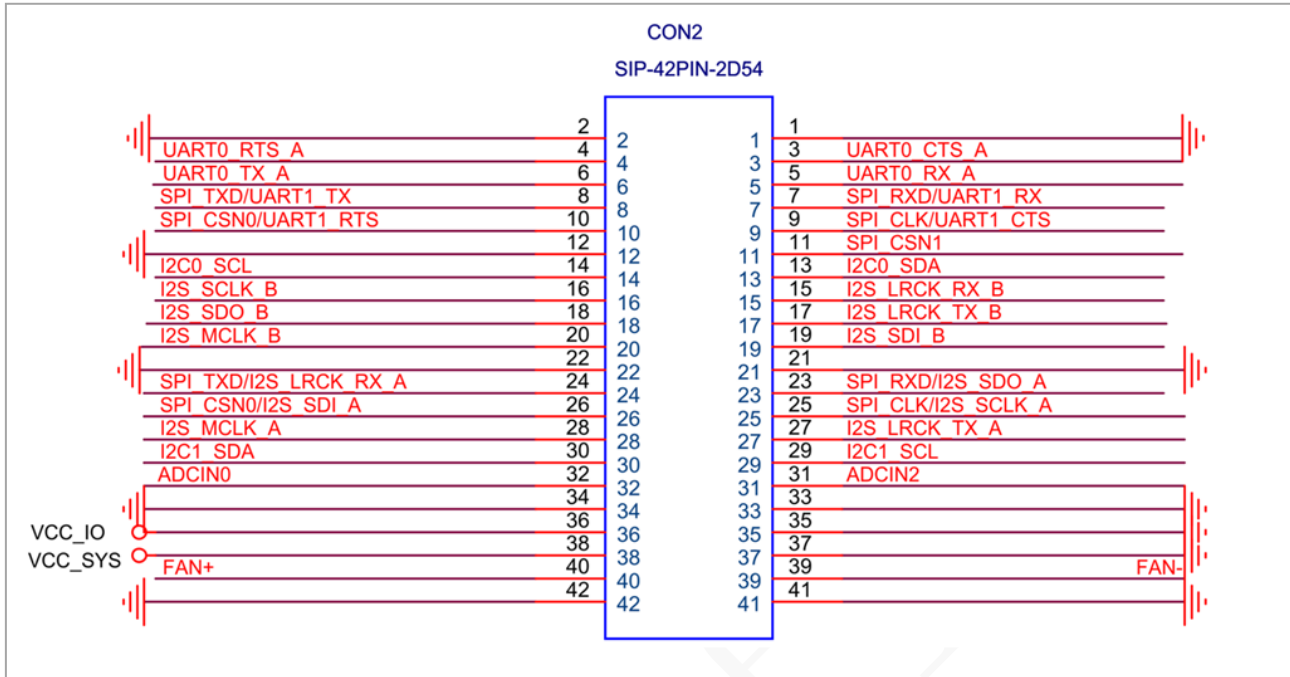
No.	Definition	Attribute	Description
1	VCC_IO	Power Output	3.3V Output
2	VCC_IO	Power Output	3.3V Output
3	GND	GND	GND
4	GND	GND	GND
5	LCD_CLK	signal output	LCD clock
6	LCD_DEN	signal output	LCD pixel
7	LCD_VSYNC	signal output	LCD synchronization
8	LCD_HSYNC	signal output	LCD synchronization
9	LCD_D23	signal output	LCD data
10	LCD_D22	signal output	LCD data
11	LCD_D21	signal output	LCD data
12	LCD_D20	signal output	LCD data
13	LCD_D19	signal output	LCD data
14	LCD_D18	signal output	LCD data



15	LCD_D17	signal output	LCD data
16	LCD_D16	signal output	LCD data
17	LCD_D15	signal output	LCD data
18	LCD_D14	signal output	LCD data
19	LCD_D13	signal output	LCD data
20	LCD_D12	signal output	LCD data
21	LCD_D11	signal output	LCD data
22	LCD_D10	signal output	LCD data
23	LCD_D9/LVDS_CLKN/MIPI_CLKN	signal output	LCD data Or MIPI、LVDS clock-
24	LCD_D8/LVDS_CLKP/MIPI_CLKP	signal output	LCD data Or MIPI、LVDS clock+
25	GND	GND	GND
26	GND	GND	GND
27	LCD_D7/LVDS_TX3N/MIPI_D3N	signal output	LCD data/MIPI、LVDS data-
28	LCD_D6/LVDS_TX3P/MIPI_D3P	signal output	LCD data/MIPI、LVDS data+
29	LCD_D5/LVDS_TX2N/MIPI_D2N	signal output	LCD data/MIPI、LVDS data-
30	LCD_D4/LVDS_TX2P/MIPI_D2P	signal output	LCD data/MIPI、LVDS data+
31	LCD_D3/LVDS_TX1N/MIPI_D1N	signal output	LCD data/MIPI、LVDS data-
32	LCD_D2/LVDS_TX1P/MIPI_D1P	signal output	LCD data/MIPI、LVDS data+
33	LCD_D1/LVDS_TX0N/MIPI_D0N	signal output	LCD data/MIPI、LVDS data-
34	LCD_D0/LVDS_TX0P/MIPI_D0P	signal output	LCD data/MIPI、LVDS data+
35	PWM0/GPIO0_D2_d	signal output	I/O Or PWM
36	VCC_IO	Power Output	3.3V Output
37	GPIO1_B4_u	I/O	I/O
38	GPIO1_A7_d	I/O	I/O
39	I2C0_SDA	signal output	I2C data
40	I2C0_SCL	signal output	I2C clock
41	GND	GND	GND
42	VCC_SYS	Power Output	4.5V Output



5.2 CON2 SIP-42PIN-2D54



No.	Definition	Attribute	Description
1	GND	GND	GND
2	GND	GND	GND
3	UART0_CTS_A	signal output	UART0 clear-to-send
4	UART0_RTS_A	signal input	UART0 Request to send
5	UART0_RX_A	signal input	UART0 data acceptance
6	UART0_TX_A	signal output	UART0 Data Send
7	SPI_RXD/UART1_RX	signal input	SPI data acceptance Or UART1 data acceptance
8	SPI_TXD/UART1_TX	signal output	SPI Data Send Or UART1 Data Send
9	SPI_CLK/UART1_CTS	signal output	SPI clock Or UART1 clear-to-send
10	SPI_CSN0/UART1_RTS	signal input	SPI chip selection or UART1 Request to send
11	SPI_CSN1	signal output	SPI chip selection
12	GND	GND	GND
13	I2C0_SDA	signal output	I2C0
14	I2C0_SCL	signal output	I2C0



15	I2S_LRCK_RX_B	signal input	I2S Frame clock receiving
16	I2S_SCLK_B	signal output	I2S serial clock
17	I2S_LRCK_TX_B	signal output	I2S Frame clock send
18	I2S_SDO_B	signal output	I2S serial data
19	I2S_SDI_B	signal output	I2S serial data
20	I2S_MCLK_B	signal output	I2S master clock
21	GND	GND	GND
22	GND	GND	GND
23	SPI_RXD/I2S_SDO_A	signal output	SPI data acceptance Or I2S serial data
24	SPI_TXD/I2S_LRCK_RX_A	signal input	SPI Data Send Or I2S Frame clock receiving
25	SPI_CLK/I2S_SCLK_A	signal output	SPI clock or I2S serial clock
26	SPI_CSN0/I2S_SDI_A	signal output	SPI chip selection or I2S serial data
27	I2S_LRCK_TX_A	signal output	I2S Frame clock send
28	I2S_MCLK_A	signal output	I2S master clock
29	I2C1_SCL	signal output	I2C clock
30	I2C1_SDA	signal output	I2C data
31	ADCIN2	signal output	digital to analog conversion
32	ADCIN0	signal output	digital to analog conversion
33	GND	GND	GND
34	GND	GND	GND
35	GND	GND	GND
36	VCC_IO	Power Output	3.0V Output
37	GND	GND	GND
38	VCC_SYS	Power Output	4.5V Output
39	FAN-	signal output	Fan -
40	FAN+	signal output	Fan +
41	GND	GND	GND
42	GND	GND	GND

6. Appendix

6.1 Source code acquisition

Please visit the official website "Resource Download": ([please click here](#))

6.2 Contact us

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