



Firefly-PX3-SE

Product Specifications

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Directory

1. Product Overview	4
1.1 Overview	4
1.2 Application Scenarios	4
2. Interface description	5
3. Hardware Specifications	6
4. PCB Size	7
5. Pin definition	8
5.1 CON1 SIP-42PIN-2D54	8
5.2 CON2 SIP-42PIN-2D54	10
5.3 J10 Front-Camera	12
6. system software	13
7. Electrical Performance	13
8. Appendix	14
8.1 Source code acquisition	14
8.2 Contact us	14

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.

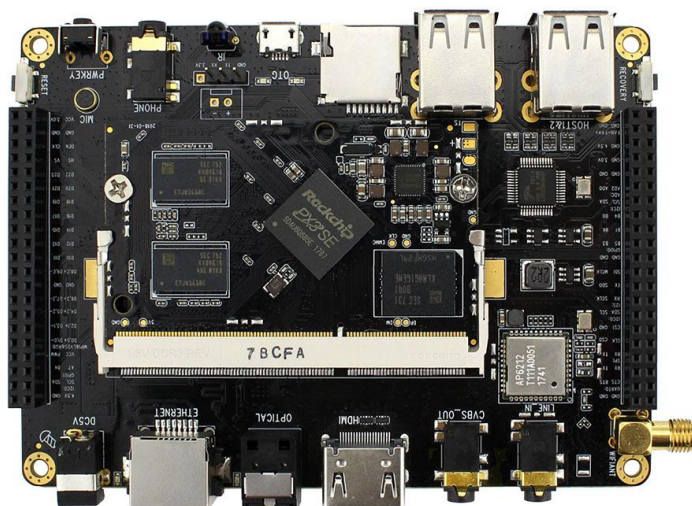
Firefly team has more than 60 research and development members and has the research and development capabilities in schematic design, PCB layout, mainboard production, embedded development, system development, application program development, etc., which accelerates the research and development process 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-PX3-SE is an industrial open source main board, With PX3-SE quad-core processor, frequency up to 1.3GHz, industrial-grade stability, build-in graphics processor Mail-400MP2 and 2D accelerator, supports OpenGL ES1.1/2.0, H.265 hardware decoding and 1080P play. operating temperature -20°C ~ 80°C, 7×24 hours stable operation, the gold finger of core board is anti-corrosion, double stud fixed, solid and reliable.



Firefly-PX3-SE uses backplane and core board combination, provides a variety of core board configurations, Minimum configuration 256M+4G can run Linux industrial applications smoothly, easy to control product costs, make products more market competitiveness.

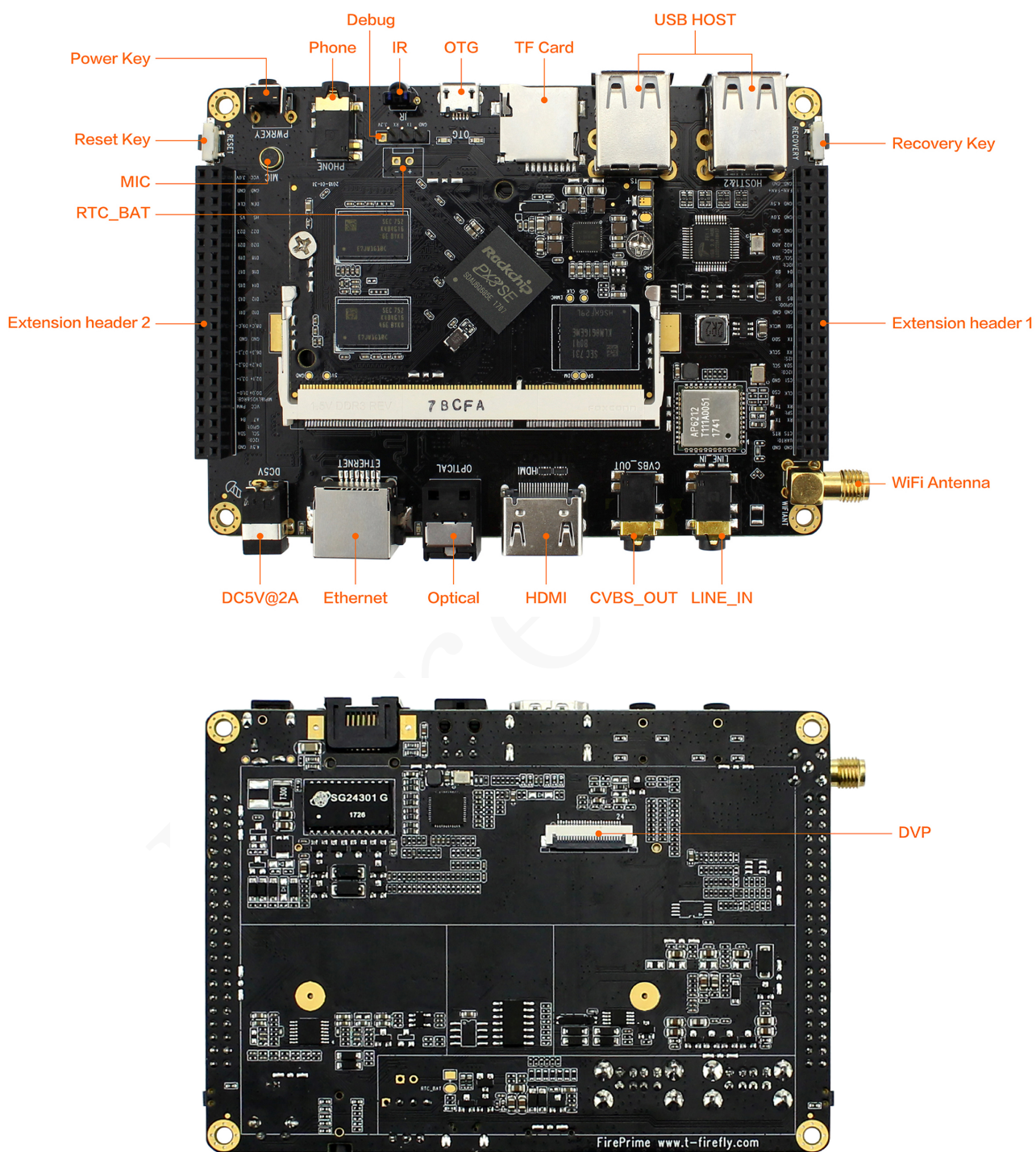
Equipped with 2.4GHz Wi-Fi, Bluetooth 4.0 and Gigabit Ethernet, with powerful network expansion and transmission capabilities. The Firefly-PX3SE with rich expansion interfaces, including MIPI, LVDS, PWM, SPI, UART, ADC, GPIO, I2C, I2S, etc.

Provide SDK source code, development tools, tutorials, technical documents, etc, the second development more convenient and speed up product development process.

1.2 Application Scenarios

			
Digital signage	Vending machine	Elevator display terminal	Intelligent POS
			
Intelligent vehicle	Industrial host	Self-service equipment	Thin client

2. Interface description

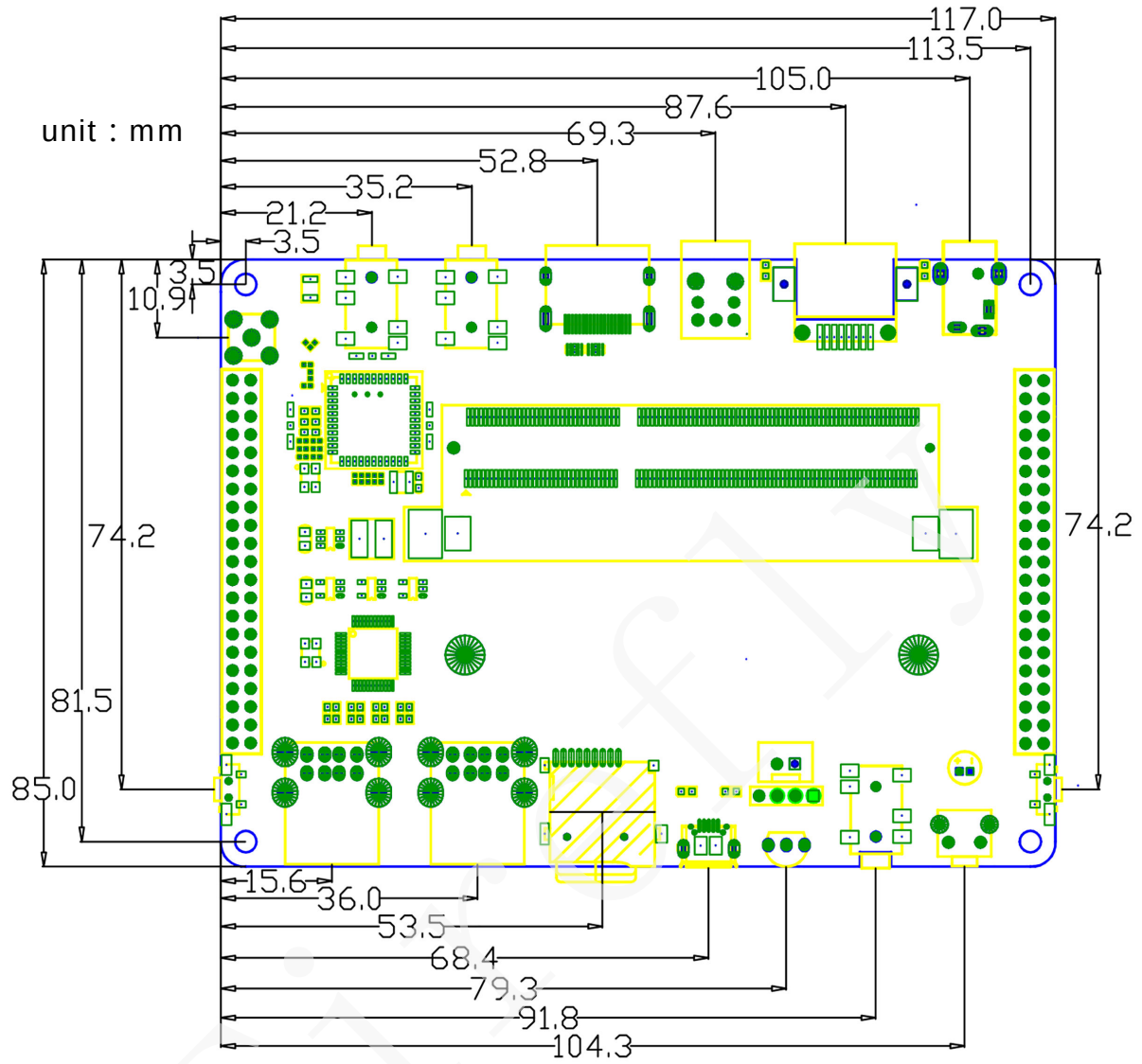




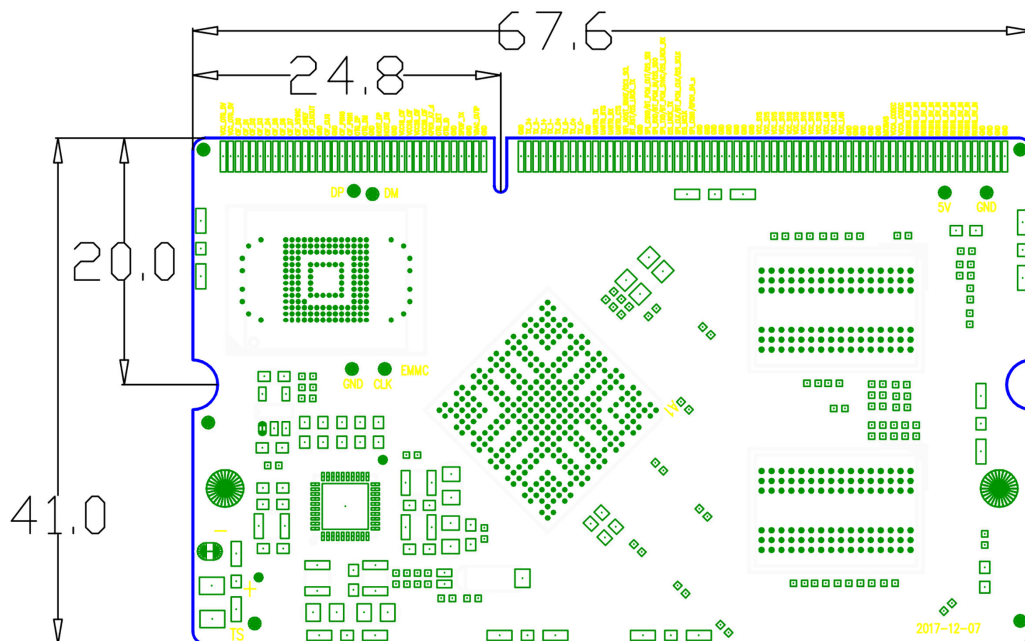
3. Hardware Specifications

Types	Specifications
CPU	Firefly PX3-SE, ARM® Cortex™-A7 Quad-Core up to 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	RK816 PMU Chip
RAM	DDR3 (256MB / 512MB /1G /2G)
Storage	eMMC (4GB / 8GB)
Ethernet	10/100/1000Mbps Ethernet (Realtek RTL8211E)
Network	WiFi 2.4GHz , Support 802.11a/b/g/n protocol; Bluetooth 4.0 (support BLE)
Display	Support multi-channel video output: 1 x HDMI 、 1 x CVBS 1 x MIPI or LVDS LCD display interface
Audio	1 x HDMI audio output 、 1 x CVBS, Audio and video composite output 1 x Phone , for audio input and output、 1 x LINE_IN , for audio input 1 x SPDIF, for audio output 1 x MIC, 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
Button	1 x Reset button, 1 x Power button, 1 x Recover button
Debug	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	Linux QT
Size	Core-Board: 67.6mm*40mm Backplane: 117mm*85mm

4. PCB Size



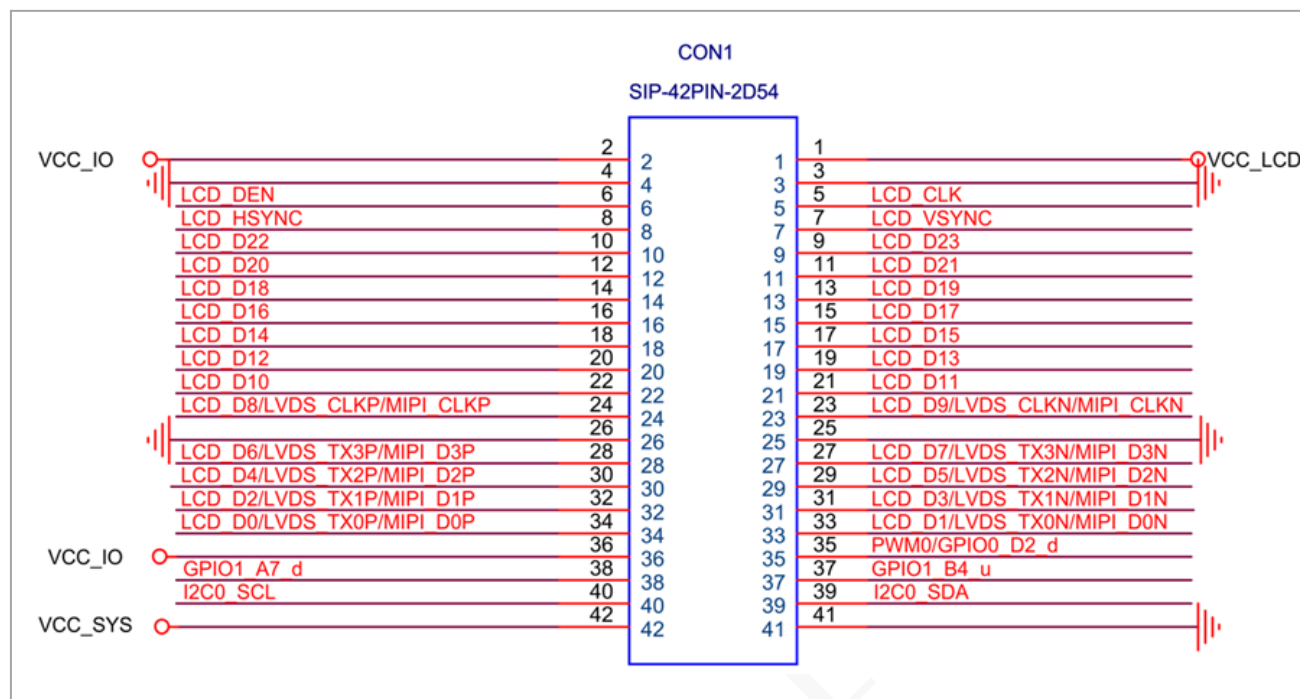
Core board size:





5. Pin definition

5.1 CON1 SIP-42PIN-2D54



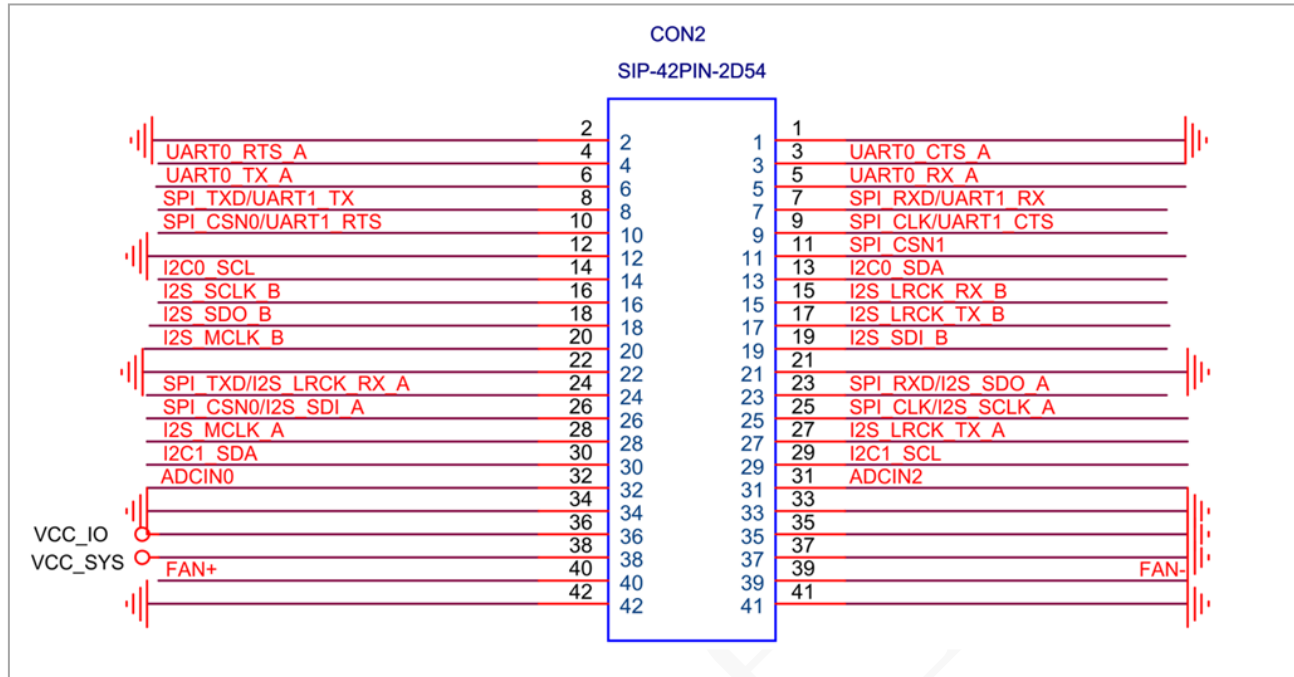
No.	Definition	Attribute	Description
1	VCC_IO	Power Output	3.3V Output
2	VCC_IO	Power Output	3.3V Output
3	GND	GND	GND
4	GND	GND	GND
5	LCD_CLK	signal output	LCD clock
6	LCD_DEN	signal output	LCD pixel
7	LCD_VSYNC	signal output	LCD synchronization
8	LCD_HSYNC	signal output	LCD synchronization
9	LCD_D23	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



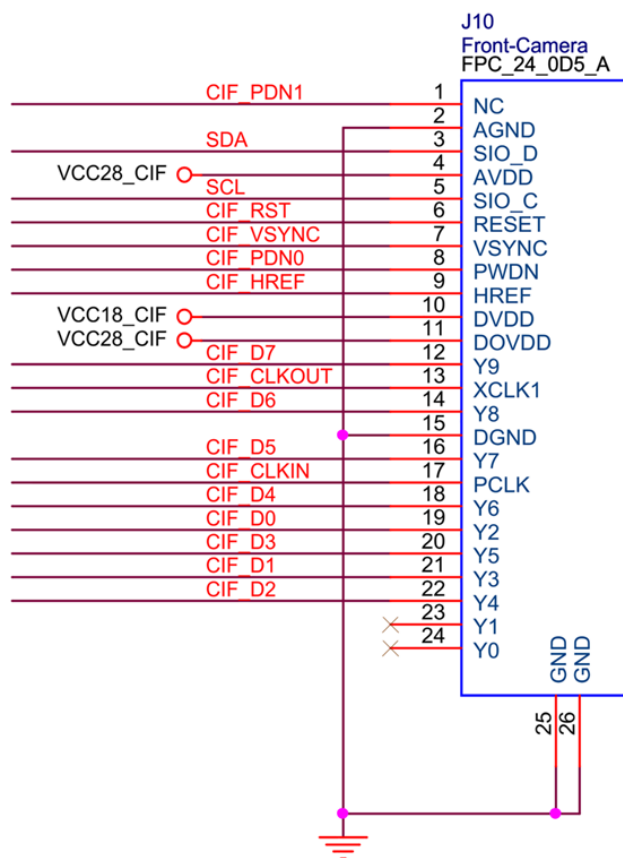
No.	Definition	Attribute	Description
1	GND	GND	GND
2	GND	GND	GND
3	UART0_CTS_A	signal output	UART0 clear-to-send
4	UART0_RTS_A	signal input	UART0 Request to send
5	UART0_RX_A	signal input	UART0 data acceptance
6	UART0_TX_A	signal output	UART0 Data Send
7	SPI_RXD/UART1_RX	signal input	SPI data acceptance 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



5.3 J10 Front-Camera



No.	Definition	Attribute	Describe
1	CIF_PDN1	I/O	Camera enabled
2	GND	GND	GND
3	I2C0_SDA	Signal Output	I2C Data
4	VCC28_CIF	Power Output	2.8V Output
5	I2C0_SCL	Signal input / Output	I2C Clock
6	CIF_RST	Power Output	Camera reset
7	CIF_VSYNC	Power Output	Camera Synchronization
8	CIF_PDN0	I/O	Camera enabled
9	CIF_HREF	Power Output	Camera Synchronization
10	VCC18_CIF	Power Output	1.8V output
11	VCC28_CIF	Power Output	2.8V output
12	CIF_D7	Signal Output	Camera data
13	CIF_CLKOUT	Signal Output	Camera clock output
14	CIF_D6	Signal Output	Camera data



15	GND	GND	GND
16	CIF_D5	Signal Output	Camera data
17	CIF_CLKIN	Signal input	Camera clock input
18	CIF_D4	Signal Output	Camera data
19	CIF_D0	Signal Output	Camera data
20	CIF_D3	Signal Output	Camera data
21	CIF_D1	Signal Output	Camera data
22	CIF_D2	Signal Output	Camera data

6. system software

Types	Specifications
OS	linux QT
Programming support	C、C++、Qt、Shell、Python

7. Electrical Performance

Items		Minimum	Typical	Maximum
Direct current	Working voltage	4.9V	5.3V	6V
5V DC (Matching)	Power ripple	---	50	---
Supply current	Operating current	122mA	132 mA	139 mA
power consumption (5V DC power supply)	Shut Down Current	---	2mA	---
Operating temperature	Celsius	-20 °C	---	80 °C

8. Appendix

8.1 Source code acquisition

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

8.2 Contact us



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