Core-3288J

Core Board

Specifications

Author	T-chip Intelligent Technology Co.,Ltd.
Version	V1.0
Date	2018-06-12

Version	Date	Updated content
V1.0	2018-06-12	Original version

Directory

1. Product Overview 4

1.1 Overview 4

1.2 Application Scenarios 4

2. Hardware Specifications 5

3. Port description 7

4. Port definition 9

5. Appendix 22

5.1 Source code acquisition 22

5.2 Contact us 22

Firefly

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.

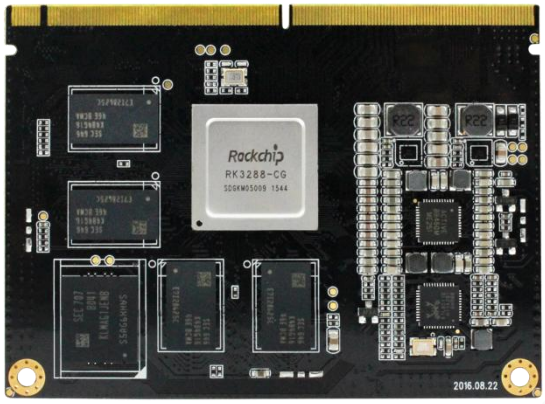
Firefly team has more than 60 research and development members and has the research and development capabilities in schematic design, PCB layout, mainboard production, embedded development, system development, application program development, etc., which accelerates the research and development process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

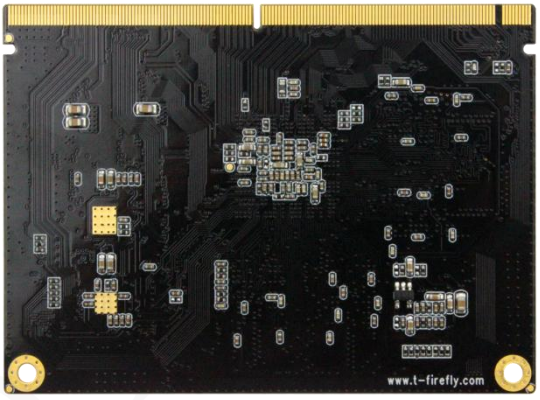
" Make technology more simple, Make life more intelligent " is the idea of Firefly team. We hope to make the research and development of various technology products efficient and simple, and let intelligent technology integrate in our lives through the open source products and technical services of Firefly.

1. Product Overview

1.1 Overview

Core-3288J core-board adopts Rockchip RK3399 6-core 64-bit (A72×2 + A53×4) 2.0GHz processor, and the core-board adopts 6-layer craft board with the size of 82mm x 60mm, characterized by high performance, low cost, rich expansion interface, and small size. It can be embedded into any system as a stand-alone module. It is particularly suitable for companies to use in embedded product development, which can save engineers' development time, significantly reduce the risk of enterprise product development, and accelerate the listing cycle of product.





Core-3288J core-board supports Android, Linux and other operation system, equipped with complete software support. At the same time, there are many ready-made applications, which makes user development easier and more convenient. It can be widely used in various industries such as vending machines, smart POS machines, all-in-one machines, and industrial computers. The core-board has been subjected to strict electromagnetic, temperature, high-voltage pulse, aging and other tests, the performance is stable and reliable, and can be supplied in large quantities.

1.2 Application Scenarios

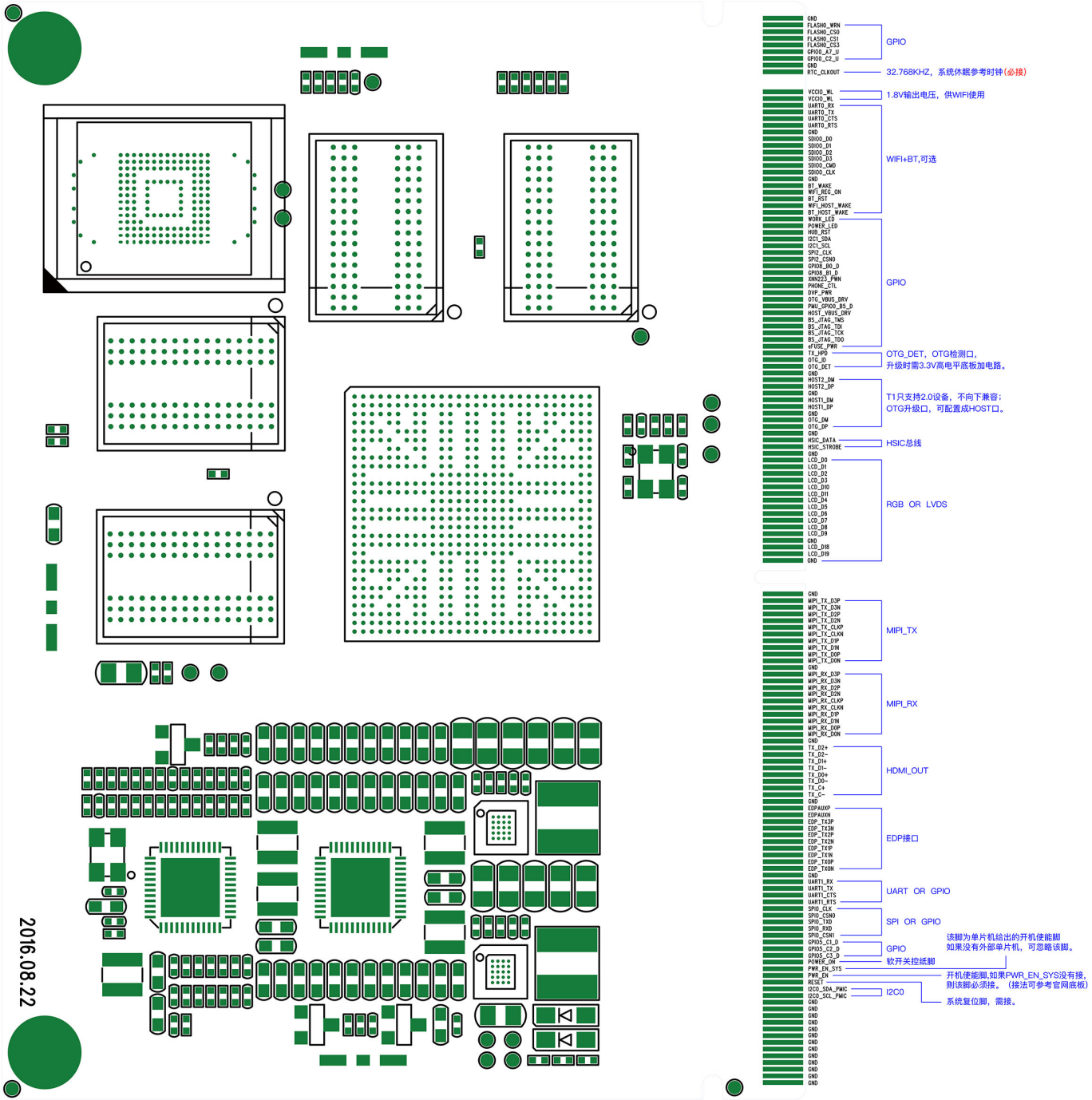
Amusement equipment	Commercial display equipment	Medical / health equipment	Vending machines
mobile POS machines	Interactive printer	Smart robot	Industrial computer

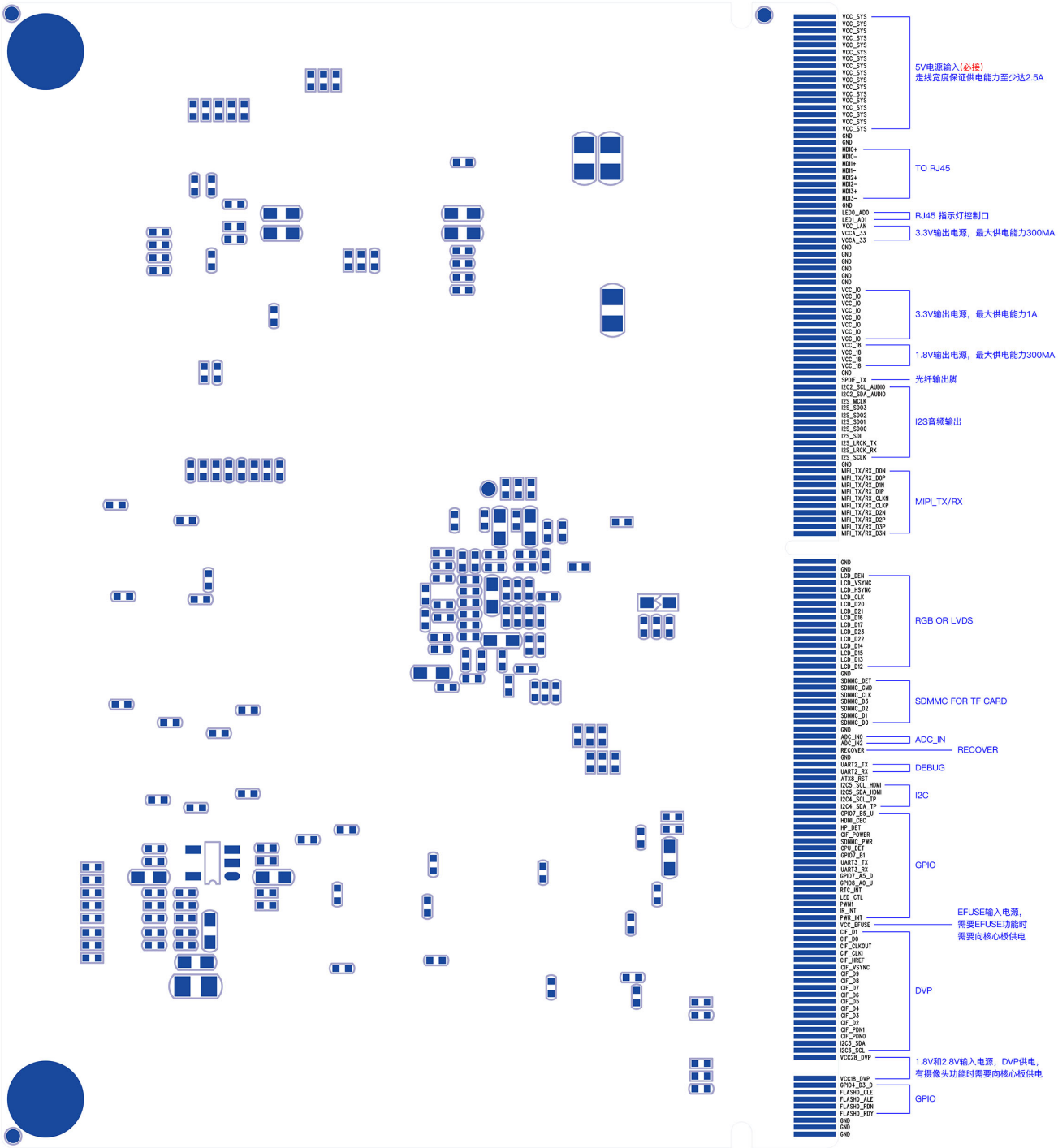
2. Hardware Specifications

Types	Specification parameters
CPU	Rockchip RK3288 (28nm HKMG process)
Processor	ARM® Cortex-A17 Quad-core processor, clocked up to 1.8GHz
GPU	ARM® Mali-T760 MP4 Quad-core GPU with AFBC (Frame Buffer Compression) Support OpenGL ES1.1/2.0/3.0/3.1, OpenVG1.1, OpenCL, DX11 Embedded high-performance 2D acceleration hardware
Video	Support 4K 10bits VP9/H265/H264 video decoding up to 60fps 1080P multi-format video decoding (VC-1, MPEG-1/2/4, VP8) 1080P video encoding, support H.264, VP8 format Video post processor: deinterlacing, denoising, edge/detail/color optimization
PMU	ACT8846 PMU Power Management Unit
DDR	Dual channel 64Bit DDR3-1333MHz （1GB/2GB/4GB Optional）
Memory	High-speed eMMC 5.1 （8GB/16GB/32GB/128GBOptional）
System	Android 5.1 / Ubuntu 14.04 / Ubuntu 16.04 / Linux
Power	Input voltage 5V, peak current 2.5A
WiFi	With SDIO interface for extending WiFi & Bluetooth combo module
Network	Onboard 10/100/1000Mbps Ethernet controller（Realtek RTL8211E）
Display	Video output interface: : - 1 x HDMI 2.0 , Support 4K@60fpsOutput and HDCP 1.4/2.2 Display interface (supports dual-screen display, dual-screen display): - 1 x dual channel MIPI-DSI

	- 1 x dual channel LVDS or RGB - 1 x eDP
Audio	1 x HDMI audio output 1 x SPDIF digital audio interface for audio output 1 x I2S for audio input and output, (support 8 channels)
Camera	1 x MIPI-CSI Camera Interface (Built-in Hardware ISP up to 13Mpixel) 1 x DVP Camera Interface (up to 5Mpixel)
USB	1 x USB 2.0 ， 1 x USB 1.0 ，1 x USB 2.0 OTG
Extension ports	SDMMC、I2C、I2S、SPI、UART、ADC、PWM、GPIO
Infrared	1 x infrared receiver interface (occupied PWM0 pin)
Others	4 x UART (UART2 defaults to Debug Serial) 2 x SDIO (SDIO0 is used to extend the WiFi module) 1 x SDMMC (for expansion TF card) 4 x PWM (PWM0 is used for infrared reception, and PWM2~3 is multiplexed with UART2) 5 x I2C, 3 x I2S, 2 x SPI, GPIO up to 55
Size	The size of core-board： 82mm x 60mm
Interface Type	MXM3.0 （314 PIN， 0.5mm interval）
PCB specifications	Board thickness 1.2mm, 6-layer board design, gold sinking process
Weight	21g

3. Port description




VCC_SYS
VCC_SYS
VCC_SYS
VCC_SYS
VCC_SYS
VCC_SYS
VCC_SYS
VCC_SYS
VCC_SYS
VCC_SYS
VCC_SYS
VCC_SYS
VCC_SYS
VCC_SYS
VCC_SYS
VCC_SYS
VCC_SYS
5V电源输入(必接)
走线宽度保证供电能力至少达2.5A
GND
GND
MDI0+
MDI0-
MDI1+
MDI1-
MDI2+
MDI2-
MDI3+
MDI3-
TO RJ45
GND
LED0_ADO
LED1_ADO
RJ45 指示灯控制口
VCC_LAN
VCCA_33
VCCA_33
3.3V输出电源，最大供电能力300MA
GND
GND
GND
GND
GND
GND
VCC_IO
VCC_IO
VCC_IO
VCC_IO
VCC_IO
VCC_IO
VCC_IO
VCC_IO
3.3V输出电源，最大供电能力1A
VCC_1B
VCC_1B
VCC_1B
VCC_1B
1.8V输出电源，最大供电能力300MA
GND
SPDIF_TX
光纤输出脚
I2C2_SCL_AUDIO
I2C2_SDA_AUDIO
I2S_MCLK
I2S_SDO3
I2S_SDO2
I2S_SDO1
I2S_SDO0
I2S_SDI
I2S_LRCK_TX
I2S_LRCK_RX
I2S_SCLK
I2S2音频输出
GND
MIPI_TX/RX_DON
MIPI_TX/RX_DOP
MIPI_TX/RX_D1N
MIPI_TX/RX_D1P
MIPI_TX/RX_CLKN
MIPI_TX/RX_CLKP
MIPI_TX/RX_D2N
MIPI_TX/RX_D2P
MIPI_TX/RX_D3P
MIPI_TX/RX_D3N
MIPI_TX/RX
GND
GND
LCD_DEN
LCD_VSYNC
LCD_HSYNC
LCD_CLK
LCD_D20
LCD_D21
LCD_D16
LCD_D17
LCD_D23
LCD_D22
LCD_D14
LCD_D15
LCD_D13
LCD_D12
RGB OR LVDS
GND
SDMMC_DET
SDMMC_CMD
SDMMC_CLK
SDMMC_D3
SDMMC_D2
SDMMC_D1
SDMMC_D0
SDMMC FOR TF CARD
GND
ADC_IN0
ADC_IN2
ADC_IN
RECOVER
RECOVER
GND
UART2_TX
UART2_RX
DEBUG
ATXB_RST
I2C5_SCL_HDMI
I2C5_SDA_HDMI
I2C4_SCL_TP
I2C4_SDA_TP
I2C
GPIO7_B5_U
HDMI_CEC
HP_DET
CIF_POWER
SDMMC_PWR
CPU_DET
GPIO7_B1
UART3_TX
UART3_RX
GPIO7_A5_D
GPIO8_A0_U
RTC_INT
LED_CTL
PWM1
IR_INT
PWR_INT
GPIO
VCC_EFUSE
EFUSE输入电源，
需要EFUSE功能时
需要向核心板供电
CIF_D1
CIF_D0
CIF_CLKOUT
CIF_CLKI
CIF_HREF
CIF_VSYNC
CIF_D9
CIF_D8
CIF_D7
CIF_D6
CIF_D5
CIF_D4
CIF_D3
CIF_D2
CIF_PDN1
CIF_PDN0
I2C3_SDA
I2C3_SCL
DVP
VCC28_DVP
1.8V和2.8V输入电源，DVP供电，
有摄像头功能时需要向核心板供电
VCC18_DVP
GPIO4_D3_D
FLASH0_CLE
FLASH0_ALE
FLASH0_RDN
FLASH0_RDY
GPIO
GND
GND
GND

4. Port definition

PIN	Core board pin definition	Default function	Defual function description	Pad type IO Pull
1	GND	GND	GND	
2	GND	GND	GND	
3	GND	GND	GND	
4	FLASH0_WRN	FLASH0_WRN /GPIO3_B5	FLASH0_WRN /GPIO3_B5_U	I/O UP
5	GND	GND	GND	
6	FLASH0_CS0	FLASH0_CS0/GPIO3_B6	FLASH0_CS0/GPIO3_B6_U	I/O UP
7	FLASH0_RDY	FLASH0_RDY /GPIO3_B0	FLASH0_RDY /GPIO3_B0_U	I/O UP
8	FLASH0_CS1	FLASH0_CS1/GPIO3_B7	FLASH0_CS1/GPIO3_B7_U	I/O UP
9	FLASH0_RDN	FLASH0_RDN /GPIO3_B2	FLASH0_RDN /GPIO3_B2_U	I/O UP
10	FLASH0_CS3	FLASH0_CS3/EMMC_RSTNOUT/GPIO3_C1_U	EMMC reset output	I/O UP
11	FLASH0_ALE	FLASH0_ALE /GPIO3_B3	FLASH0_ALE /GPIO3_B3_D	I/O DOWN
12	GPIO0_A7_U	PMUGPIO0_A7	Charge interrupt input	I/O UP
13	FLASH0_CLE	FLASH0_CLE/GPIO3_B4	FLASH0_CLE/GPIO3_B4_D	I/O DOWN
14	GPIO0_C2_U	PMUGPIO0_C2_U	USB insert detect input	I/O UP
15	GPIO4_D3_D	SDIO0_WP/GPIO4_D3	BT module internal regulators power enable output	I/O DOWN
16	GND	GND	GND	
17	VCC18_DVP	DVPIO_VDD	DVP Digital IO Power Supply	Input 1.8V
18	RTC_CLKOUT	RTC_CLKOUT	32KHz clock input	I/O DOWN
19	VCC28_DVP	VCC28_DVP	DVP Digital IO Power Supply	Input 2.8V
20	VCCIO_WL	VCCIO_WL	APIO3 digital IO power supply	Input 1.8V
21	I2C3_SCL	I2C3_SCL/GPIO2_C0	I2C serial port 3,for camera need external pull-up	I/O UP
22	VCCIO_WL	VCCIO_WL	APIO3 digital IO power supply	Input 1.8V
23	I2C3_SDA	I2C3_SDA/GPIO2_C1	I2C serial port 3,for camera need external pull-up	I/O DOWN
24	UART0_RX	UART0_RXD/GPIO4_C0	UART0 serial port, for BT module	I/O UP

25	CIF_PDN0	CIF_D10/GPIO2_B6_d	Camera power down control output for front	I/O DOWN
26	UART0_TX	UART0_TXD/GPIO4_C1	UART0 serial port, for BT module	I/O DOWN
27	CIF_PDN1	CIF_D11/GPIO2_B7_d	Camera power down control output for rear	I/O DOWN
28	UART0_CTS	UART0_CTSn/GPIO4_C2	UART0 serial port, for BT module	I/O UP
29	CIF_D2	HOST_D0/TS_D0/CIF_D2/GPIO2_A0	Camera data port	I/O DOWN
30	UART0_RTS	UART0_RTSn/GPIO4_C3	UART0 serial port, for BT module	I/O UP
31	CIF_D3	HOST_D1/TS_D1/CIF_D3/GPIO2_A1	Camera data port	I/O DOWN
32	GND	GND	GND	
33	CIF_D4	HOST_D2/TS_D2/CIF_D4/GPIO2_A2	Camera data port	I/O DOWN
34	SDIO0_D0	SDIO0_D0/GPIO4_C4	SDIO0 data port, for WIFI module	I/O UP
35	CIF_D5	HOST_D3/TS_D3/CIF_D5/GPIO2_A3	Camera data port	I/O DOWN
36	SDIO0_D1	SDIO0_D1/GPIO4_C5	SDIO0 data port, for WIFI module	I/O UP
37	CIF_D6	HOST_CKINP/TS_D4/CIF_D6/GPIO2_A4	Camera data port	I/O DOWN
38	SDIO0_D2	SDIO0_D2/GPIO4_C6	SDIO0 data port, for WIFI module	I/O UP
39	CIF_D7	HOST_CKINN/TS_D5/CIF_D7/GPIO2_A5	Camera data port	I/O DOWN
40	SDIO0_D3	SDIO0_D3/GPIO4_C7	SDIO0 data port, for WIFI module	I/O UP
41	CIF_D8	HOST_D4/TS_D6/CIF_D8/GPIO2_A6	Camera data port	I/O DOWN
42	SDIO0_CMD	SDIO0_CMD/GPIO4_D0	SDIO0 command output, for WIFI module	I/O UP
43	CIF_D9	HOST_D5/TS_D7/CIF_D9/GPIO2_A7	Camera data port	I/O DOWN
44	SDIO0_CLK	SDIO0_CLKOUT/GPIO4_D1	SDIO0 clock output, for WIFI module	I/O DOWN
45	CIF_VSYNC	HOST_D6/TS_SYNC/CIF_VSYNC/GPIO2_B0	Camera vsync input	I/O DOWN
46	GND	GND	GND	
47	CIF_HREF	HOST_D7/TS_VALID/CIF_HREF/GPIO2_B1	Camera href input	I/O DOWN
48	BT_WAKE	SDIO0_DET/GPIO4_D2	CPU wake up BT module	I/O UP
49	CIF_CLKI	HOST_WKACK/GPS_CLK/TS_CLKOUT/CIF_CLKIN/GPIO2_B2	Camera clock input	I/O DOWN
50	WIFI_REG_ON	SDIO0_PWR/GPIO4_D4	WIFI module internal regulators power enable output	I/O DOWN

51	CIF_CLKOUT	HOST_WKREQ/TS_FAIL/CIF_CLKOUT/GPIO2_B3	Camera clock output	I/O DOWN
52	BT_RST	SDIO0_BKPWR/GPIO4_D5	BT module reset output	I/O DOWN
53	CIF_D0	CIF_D0/GPIO2_B4	Camera power down control output for front	I/O DOWN
54	WIFI_HOST_WAKE	SDIO0_INTn/GPIO4_D6	WIFI module wake up CPU	I/O UP
55	CIF_D1	CIF_D1/GPIO2_B5	Camera power down control output for rear	I/O DOWN
56	BT_HOST_WAKE	GPIO4_D7	BT module wake up CPU	I/O DOWN
57	VCC_EFUSE	EFUSE_VQPS	EFUSE digital IO supply default connect to VSS	Input 1.5V
58	WORK_LED	PS2_DATA/GPIO8_A1	Compass interrupt input	I/O UP
59	PWR_INT	GPIO7_A6	Touch panel & Touch key interrupt input	I/O UP
60	POWER_LED	SC_DET/GPIO8_A2	POWER_LED	I/O UP
61	IR_INT	PWM0/GPIO7_A0	LCD panel backlight brightness control output	I/O UP
62	HUB_RST	SPI2_CSn1/SC_IO/GPIO8_A3	Light sensor IC interrupt input	I/O UP
63	PWM1	PWM1/GPIO7_A1	PMIC power dynamic voltage scaling control for LOG_PWM	I/O DOWN
64	I2C1_SDA	I2C1_SDA/SC_RST/GPIO8_A4	I2C serial port 1,for Sensor need external pull-up	I/O UP
65	LED_CTL	GPIO7_A2	LCD panel backlight enable output	I/O DOWN
66	I2C1_SCL	I2C1_SCL/SC_CLK/GPIO8_A5	I2C serial port 1,for Sensor need external pull-up	I/O UP
67	RTC_INT	GPIO7_A4	LCD panel chip select output & LCD panel reset output	I/O UP
68	SPI2_CLK	SPI2_CLK/SC_IO_T1/GPIO8_A6	SPI2_CLK/SC_IO_T1/GPIO8_A6	I/O DOWN
69	GPIO8_A0_U	PS2_CLK/GPIO8_A0	G-Sensor interrupt input	I/O UP
70	SPI2_CSN0	SPI2_CSn0/SC_DET_T1/GPIO8_A7	SPI2_CSn0/SC_DET_T1/GPIO8_A7	I/O UP
71	GPIO7_A5_D	GPIO7_A5	Touch panel reset output	I/O DOWN
72	GPIO8_B0_D	SPI2_RXD/SC_RST_T1/GPIO8_B0	SPI2_RXD/SC_RST_T1/GPIO8_B0	I/O DOWN
73	UART3_RX	GPS_MAG/HSADC_D0_T1/UART3_RX/GPIO7_A7	headphone insert detect input	I/O UP

74	GPIO8_B1_D	SPI2_TXD/SC_CLK_T1/GPIO8_B1	SPI2_TXD/SC_CLK_T1/GPIO8_B1	I/O DOWN
75	UART3_TX	GPS_SIG/HSADC_D1_T1/UART3_TX/GPIO7_B0	3G module power enable output	I/O DOWN
76	XNN223_PWN	TEST_CLKO/CLK_27M_T1/PMUGPIO0_C1	DVP power control output	I/O DOWN
77	GPIO7_B1	GPS_RFCLK/GPS_CLK_T1/UART3_CTSn/GPIO7_B1	WIFI module power enable output	I/O UP
78	PHONE_CTL	OTP_OUT/PMUGPIO0_B2	Over-temperature protection reset power	I/O DOWN
79	CPU_DET	UART3_RTSn/GPIO7_B2	UART3_RTSn/GPIO7_B2	I/O UP
80	DVP_PWR	PMUGPIO0_B3	Headphone out mute control	I/O DOWN
81	SDMMC_PWR	eDP_HOTPLUG/GPIO7_B3	SDMMC0 power control output	I/O DOWN
82	OTG_VBUS_DRV	PMUGPIO0_B4	USB OTG power control output	I/O DOWN
83	CIF_POWER	ISP_SHUTTEREN/SPI1_CLK/GPIO7_B4	5V boost power enable	I/O DOWN
84	PMU_GPIO0_B5_D	CLK27M_IN/PMUGPIO0_B5	Charge current control output	I/O DOWN
85	HP_DET	ISP_SHUTTERTRIG/SPI1_TXD/GPIO7_B7_d	headphone insert detect input	I/O DOWN
86	HOST_VBUS_DRV	PMUGPIO0_B6	USB HOST power control output	I/O DOWN
87	HDMI_CEC	ISP_FLASHTRIGIN/EDPHDMI_CEC_T1/GPIO7_C0	HDMI CEC communication	I/O UP
88	BS_JTAG_TMS	BS_JTAG_TMS	BS_JTAG_TMS	I UP
89	GPIO7_B5_U	ISP_FLASHTRIGOUT/SPI1_CSN0/GPIO7_B5	Flash LED trig output	I/O UP
90	BS_JTAG_TDI	BS_JTAG_TDI	BS_JTAG_TDI	I UP
91	I2C4_SDA_TP	I2C4_SDA/GPIO7_C1	I2C serial port 4,for Touch panel need external pull-up	I/O UP
92	BS_JTAG_TCK	BS_JTAG_TCK	BS_JTAG_TCK	I UP
93	I2C4_SCL_TP	I2C4_SCL/GPIO7_C2	I2C serial port 4,for Touch panel need external pull-up	I/O UP
94	BS_JTAG_TDO	BS_JTAG_TDO	BS_JTAG_TDO	O N/A
95	I2C5_SDA_HDMI	I2C5_SDA/EDPHDMI_I2C_SDA/GPIO7_C3	I2C serial port 5,for eDP and HDMI need external pull-up	I/O UP
96	EFUSE_PWR	DDRIO1_RETEN/PMUGPIO0_A3	EFUSE VPQS power control output	I/O UP

97	I2C5_SCL_HDMI	I2C5_SCL/EDPHDMI_I2C_SCL/GPIO7_C4	I2C serial port 5,for eDP and HDMI need external pull-up	I/O UP
98	TX_HPD	HDMI_HPD	HDMI Hot Plug Detection interrupt	
99	ATX8_RST	GPIO7_C5	Vibration control output	I/O DOWN
100	OTG_ID	OTG_ID	USB OTG ID detect input need external pull-up	
101	UART2_RX	UART2_RX/IR_RX/PWM2/GPIO7_C6	Uart2 serial port data input for debug	I/O UP
102	OTG_DET	OTG_VBUS	USB OTG connected detect input	
103	UART2_TX	UART2_TX/IR_TX/PWM3/EDPHDMI_CEC/GPIO7_C7	Uart2 serial port data output for debug	I/O UP
104	GND	GND	GND	
105	GND	GND	GND	
106	HOST2_DM	HOST2_DM	USB HOST2 Data Minus port	
107	RECOVER	ADC_IN1	AD keyboard input	RECOVER
108	HOST2_DP	HOST2_DP	USB HOST2 Data Plus port	
109	ADC_IN2	ADC_IN2	GPS VTUNE ADC input	
110	GND	GND	GND	
111	ADC_IN0	ADC_IN0	Battery voltage input	
112	HOST1_DM	HOST1_DM	USB HOST1 Data Minus port	No support USB1.1
113	GND	GND	GND	
114	HOST1_DP	HOST1_DP	USB HOST1 Data Plus port	No support USB1.1
115	SDMMC_D0	JTAG_TMS/SDMMC0_D0/GPIO6_C0	SDMMC0 data port	I/O UP
116	GND	GND	GND	
117	SDMMC_D1	JTAG_TRSTn /SDMMC0_D1/GPIO6_C1	SDMMC0 data port	I/O UP
118	OTG_DM	OTG_DM	USB OTG Data Minus port	
119	SDMMC_D2	JTAG_TDI/SDMMC0_D2/GPIO6_C2	SDMMC0 data port	I/O UP
120	OTG_DP	OTG_DP	USB OTG Data Plus port	
121	SDMMC_D3	JTAG_TCK/SDMMC0_D3/GPIO6_C3	SDMMC0 data port	I/O UP

122	GND	GND	GND	
123	SDMMC_CLK	JTAG_TDO/SDMMC0_CLKOUT/GPIO6_C4	SDMMC0 clock output	O DOWN
124	HSIC_DATA	HSIC_DATA	HSIC DDR data signal	
125	SDMMC_CMD	SDMMC0_CMD/GPIO6_C5	SDMMC0 command output	I/O UP
126	HSIC_STROBE	HSIC_STROBE	HSIC data strobe signal	
127	SDMMC_DET	SDMMC0_DET/GPIO6_C6	SDMMC0 detect input	I/O UP
128	GND	GND	GND	
129	GND	GND	GND	
130	LCD_D0	TRACE_D0/LCDC0_D0/LVDS_D0P	LCDC data port	Output (3.3V)
131	LCD_D12	TRACE_D12/LCDC0_D12/LVDS_D5P	LCDC data port	Output (3.3V)
132	LCD_D1	TRACE_D1/LCDC0_D1/LVDS_D0N	LCDC data port	Output (3.3V)
133	LCD_D13	TRACE_D13/LCDC0_D13/LVDS_D5N	LCDC data port	Output (3.3V)
134	LCD_D2	TRACE_D2/LCDC0_D2/LVDS_D1P	LCDC data port	Output (3.3V)
135	LCD_D15	TRACE_D15/LCDC0_D15/LVDS_D6N	LCDC data port	Output (3.3V)
136	LCD_D3	TRACE_D3/LCDC0_D3/LVDS_D1N	LCDC data port	Output (3.3V)
137	LCD_D14	TRACE_D14/LCDC0_D14/LVDS_D6P	LCDC data port	Output (3.3V)
138	LCD_D10	TRACE_D10/LCDC0_D10/LVDS_CLK0P	LCDC data port	Output (3.3V)
139	LCD_D22	LCDC0_D22/LVDS_CLK1P	LCDC data port	Output (3.3V)
140	LCD_D11	TRACE_D11/LCDC0_D11/LVDS_CLK0N	LCDC data port	Output (3.3V)
141	LCD_D23	LCDC0_D23/LVDS_CLK1N	LCDC data port	Output (3.3V)
142	LCD_D4	TRACE_D4/LCDC0_D4/LVDS_D2P	LCDC data port	Output (3.3V)
143	LCD_D17	TRACE_CTL/LCDC0_D17/LVDS_D7N	LCDC data port	Output (3.3V)
144	LCD_D5	TRACE_D5/LCDC0_D5/LVDS_D2N	LCDC data port	Output (3.3V)
145	LCD_D16	TRACE_CLK/LCDC0_D16/LVDS_D7P	LCDC data port	Output (3.3V)
146	LCD_D6	TRACE_D6/LCDC0_D6/LVDS_D3P	LCDC data port	3Output (3.3V)
147	LCD_D21	LCDC0_D21/LVDS_D9N	LCDC data port	Output (3.3V)
148	LCD_D7	TRACE_D7/LCDC0_D7/LVDS_D3N	LCDC data port	Output (3.3V)

149	LCD_D20	LCDC0_D20/LVDS_D9P	LCDC data port	Output (3.3V)
150	LCD_D8	TRACE_D8/LCDC0_D8/LVDS_D4P	LCDC data port	Output (3.3V)
151	LCD_CLK	LCDC0_DCLK/GPIO1_D3	LCDC pixel clk output	I/O DOWN
152	LCD_D9	TRACE_D9/LCDC0_D9/LVDS_D4N	LCDC data port	Output (3.3V)
153	LCD_HSYNC	LCDC0_HSYNC/GPIO1_D0	LCDC horizontal sync signal output	I/O DOWN
154	GND	GND	GND	
155	LCD_VSYNC	LCDC0_VSYNC/GPIO1_D1	LCDC vertical sync signal output	I/O DOWN
156	LCD_D18	LCDC0_D18/LVDS_D8P	LCDC data port	Output (3.3V)
157	LCD_DEN	LCDC0_DEN/GPIO1_D2	LCDC data enable	I/O DOWN
158	LCD_D19	LCDC0_D19/LVDS_D8N	LCDC data port	Output (3.3V)
159	GND	GND	GND	
160	GND	GND	GND	
161	GND	GND	GND	
162	GND	GND	GND	
163	MIPI_TX/RX_D3N	MIPI_TX/RX_D3N	MIPI-DSI/CSI differential lane 3 negative	Output(1.8V)
164	MIPI_TX_D3P	MIPI_TX_D3P	MIPI-DSI differential lane 3 positive	Output(1.8V)
165	MIPI_TX/RX_D3P	MIPI_TX/RX_D3P	MIPI-DSI/CSI differential lane 3 positive	Output(1.8V)
166	MIPI_TX_D3N	MIPI_TX_D3N	MIPI-DSI differential lane 3 negative	Output(1.8V)
167	MIPI_TX/RX_D2P	MIPI_TX/RX_D2P	MIPI-DSI/CSI differential lane 2 positive	Output(1.8V)
168	MIPI_TX_D2P	MIPI_TX_D2P	MIPI-DSI differential lane 2 positive	Output(1.8V)
169	MIPI_TX/RX_D2N	MIPI_TX/RX_D2N	MIPI-DSI/CSI differential lane 2 negative	Output(1.8V)
170	MIPI_TX_D2N	MIPI_TX_D2N	MIPI-DSI differential lane 2 negative	Output(1.8V)
171	MIPI_TX/RX_CLKP	MIPI_TX/RX_CLKP	MIPI-DSI/CSI differential clock lane positive	Output(1.8V)
172	MIPI_TX_CLKP	MIPI_TX_CLKP	MIPI-DSI differential clock lane positive	Output(1.8V)
173	MIPI_TX/RX_CLKN	MIPI_TX/RX_CLKN	MIPI-DSI/CSI differential clock lane negative	Output(1.8V)
174	MIPI_TX_CLKN	MIPI_TX_CLKN	MIPI-DSI differential clock lane negative	Output(1.8V)
175	MIPI_TX/RX_D1P	MIPI_TX/RX_D1P	MIPI-DSI/CSI differential lane 1 positive	Output(1.8V)

176	MIPI_TX_D1P	MIPI_TX_D1P	MIPI-DSI differential lane 1 positive	Output(1.8V)
177	MIPI_TX/RX_D1N	MIPI_TX/RX_D1N	MIPI-DSI/CSI differential lane 1 negative	Output(1.8V)
178	MIPI_TX_D1N	MIPI_TX_D1N	MIPI-DSI differential lane 1 negative	Output(1.8V)
179	MIPI_TX/RX_D0P	MIPI_TX/RX_D0P	MIPI-DSI/CSI differential lane 0 positive	Output(1.8V)
180	MIPI_TX_D0P	MIPI_TX_D0P	MIPI-DSI differential lane 0 positive	Output(1.8V)
181	MIPI_TX/RX_D0N	MIPI_TX/RX_D0N	MIPI-DSI/CSI differential lane 0 negative	Output(1.8V)
182	MIPI_TX_D0N	MIPI_TX_D0N	MIPI-DSI differential lane 0 negative	Output(1.8V)
183	GND	GND	GND	
184	GND	GND	GND	
185	I2S_SCLK	I2S_SCLK/GPIO6_A0	I2S port, for audio part	I/O DOWN
186	MIPI_RX_D3P	MIPI_RX_D3P	MIPI-CSI differential lane 3 positive	Output(1.8V)
187	I2S_LRCK_RX	I2S_LRCK_RX/GPIO6_A1	I2S port, for audio part	I/O DOWN
188	MIPI_RX_D3N	MIPI_RX_D3N	MIPI-CSI differential lane 3 negative	Output(1.8V)
189	I2S_LRCK_TX	I2S_LRCK_TX/GPIO6_A2	I2S port, for audio part	I/O DOWN
190	MIPI_RX_D2P	MIPI_RX_D2P	MIPI-CSI differential lane 2 positive	Output(1.8V)
191	I2S_SDI	I2S_SDI/GPIO6_A3	I2S port, for audio part	I/O DOWN
192	MIPI_RX_D2N	MIPI_RX_D2N	MIPI-CSI differential lane 2 negative	Output(1.8V)
193	I2S_SDO0	I2S_SDO0/GPIO6_A4	I2S port, for audio part	I/O DOWN
194	MIPI_RX_CLKP	MIPI_RX_CLKP	MIPI-CSI differential clock lane positive	Output(1.8V)
195	I2S_SDO1	I2S_SDO1/GPIO6_A5	I2S port, for audio part	I/O DOWN
196	MIPI_RX_CLKN	MIPI_RX_CLKN	MIPI-CSI differential clock lane negative	Output(1.8V)
197	I2S_SDO2	I2S_SDO2/GPIO6_A6	I2S port, for audio part	I/O DOWN
198	MIPI_RX_D1P	MIPI_RX_D1P	MIPI-CSI differential lane 1 positive	Output(1.8V)
199	I2S_SDO3	I2S_SDO3/GPIO6_A7	I2S port, for audio part	I/O DOWN
200	MIPI_RX_D1N	MIPI_RX_D1N	MIPI-CSI differential lane 1 negative	Output(1.8V)
201	I2S_MCLK	I2S_CLK/GPIO6_B0	I2S port, for audio part	I/O DOWN
202	MIPI_RX_D0P	MIPI_RX_D0P	MIPI-CSI differential lane 0 positive	Output(1.8V)

203	I2C2_SDA_AUDIO	I2C2_SDA/GPIO6_B1	I2C serial port 2,for Audio need external pull-up	I/O UP
204	MIPI_RX_D0N	MIPI_RX_D0N	MIPI-CSI differential lane 0 negative	Output(1.8V)
205	I2C2_SCL_AUDIO	I2C2_SCL/GPIO6_B2	I2C serial port 2,for Audio need external pull-up	I/O UP
206	GND	GND	GND	
207	SPDIF_TX	SPDIF_TX/GPIO6_B3	HDMI Digital audio optical output	I/O DOWN
208	TX_D2+	HDMI_TX2P	HDMI channel 2 differential serial data positive	Output(1.8V)
209	GND	GND	GND	
210	TX_D2-	HDMI_TX2N	HDMI channel 2 differential serial data negative	Output(1.8V)
211	VCC_18	VCC_18	Output voltage 1.8V	Output(1.8V)
212	TX_D1+	HDMI_TX1P	HDMI channel 1 differential serial data positive	Output(1.8V)
213	VCC_18	VCC_18	Output voltage 1.8V	Output(1.8V)
214	TX_D1-	HDMI_TX1N	HDMI channel 1 differential serial data negative	Output(1.8V)
215	VCC_18	VCC_18	Output voltage 1.8V	Output(1.8V)
216	TX_D0+	HDMI_TX0P	HDMI channel 0 differential serial data positive	Output(1.8V)
217	VCC_18	VCC_18	Output voltage 1.8V	Output(1.8V)
218	TX_D0-	HDMI_TX0N	HDMI channel 0 differential serial data negative	Output(1.8V)
219	VCC_IO	VCC_IO	Output voltage 3.3V	Output(3.3V)
220	TX_C+	HDMI_TXCP	HDMI differential pixel clock positive	Output(1.8V)
221	VCC_IO	VCC_IO	Output voltage 3.3V	Output(3.3V)
222	TX_C-	HDMI_TXCN	HDMI differential pixel clock negative	Output(1.8V)
223	VCC_IO	VCC_IO	Output voltage 3.3V	Output(3.3V)
224	GND	GND	GND	
225	VCC_IO	VCC_IO	Output voltage 3.3V	Output(3.3V)
226	EDPAUXP	eDP_AXUP	eDP differential AUX channel positive output	Output(1.8V)
227	VCC_IO	VCC_IO	Output voltage 3.3V	Output(3.3V)
228	EDPAUXN	eDP_AXUN	eDP differential AUX channel negative output	Output(1.8V)
229	VCC_IO	VCC_IO	Output voltage 3.3V	Output(3.3V)

230	EDP_TX3P	EDP_TX3P	eDP differential lane 3 positive output	Output(1.8V)
231	VCC_IO	VCC_IO	Output voltage 3.3V	Output(3.3V)
232	EDP_TX3N	EDP_TX3N	eDP differential lane 3 negative output	Output(1.8V)
233	VCC_IO	VCC_IO	Output voltage 3.3V	Output 3.3V
234	EDP_TX2P	EDP_TX2P	eDP differential lane 2 positive output	Output(1.8V)
235	GND	GND	GND	
236	EDP_TX2N	EDP_TX2N	eDP differential lane 2 negative output	Output(1.8V)
237	GND	GND	GND	
238	EDP_TX1P	EDP_TX1P	eDP differential lane 1 positive output	Output(1.8V)
239	GND	GND	GND	
240	EDP_TX1N	EDP_TX1N	eDP differential lane 1 negative output	Output(1.8V)
241	GND	GND	GND	
242	EDP_TX0P	EDP_TX0P	eDP differential lane 0 positive output	Output(1.8V)
243	GND	GND	GND	
244	EDP_TX0N	EDP_TX0N	eDP differential lane 0 negative output	Output(1.8V)
245	GND	GND	GND	
246	GND	GND	GND	
247	VCCA_33	VCCA_33	Output voltage 3.3V	Output (3.3V)
248	UART1_RX	UART1_RX	UART1_RX/TS0_D0/GPIO5_B0	I/O UP
249	VCCA_33	VCCA_33	Output voltage 3.3V	Output (3.3V)
250	UART1_TX	UART1_TX	UART1_TX/TS0_D1/GPIO5_B1	I/O DOWN
251	VCC_LAN	VCC_LAN	Output Ethernet power supply 3.3V	Output (3.3V)
252	UART1_CTS	UART1_CTSn/TS0_D2/GPIO5_B2	UART1 serial port, for 3G module	I/O UP
253	LED1_AD1	RTL8211E LED1/PHYAD1	Ethernet output indicator LED1	
254	UART1_RTS	UART1_RTSn/TS0_D3/GPIO5_B3	UART1 serial port, for 3G module	I/O UP
255	LED0_AD0	RTL8211E LED0/PHYAD0	Ethernet output indicator LED0	
256	SPI0_CLK	SPI0_CLK/UART4_CTSn/TS0_D4/GPIO5_B4	CPU wakeup 3G module	I/O UP

257	GND	GND	GND	
258	SPI0_CSN0	SPI0_CSn0/UART4_RTSn/TS0_D5/GPIO5_B5	3G_WAKEUP_OUT	I/O UP
259	MDI3-	RTL8211E MDI3- Signal	In MDI crossover mode, this pair acts as the BI_DC+/- pair.	Gigabit Ethernet
260	SPI0_TXD	SPI0_TXD/UART4_TX/TS0_D6/GPIO5_B6	3G module disable output	I/O DOWN
261	MDI3+	RTL8211E MDI3+ Signal	In MDI mode, this is the fourth pair in 1000Base-T, i.e., the BI_DD+/- pair.	Gigabit Ethernet
262	SPI0_RXD	SPI0_RXD/UART4_RX/TS0_D7/GPIO5_B7	AP ready status output	I/O UP
263	MDI2-	RTL8211E MDI2- Signal	In MDI crossover mode, this pair acts as the BI_DD+/- pair.	Gigabit Ethernet
264	SPI0_CSN1	SPI0_CSn1/TS0_SYNC/GPIO5_C0	BP ready status input	I/O UP
265	MDI2+	RTL8211E MDI2+ Signal	In MDI mode, this is the third pair in 1000Base-T, i.e., the BI_DC+/- pair.	Gigabit Ethernet
266	GPIO5_C1_D	TS0_VALID/GPIO5_C1	TS0_VALID/GPIO5_C1	I/O DOWN
267	MDI1-	RTL8211E MDI1- Signal	In MDI crossover mode, this pair acts as the BI_DA+/- pair, and is thetransmit pair in 10Base-T and 100Base-TX.	Gigabit Ethernet
268	GPIO5_C2_D	TS0_CLK/GPIO5_C2	3G module reset output	I/O DOWN
269	MDI1+	RTL8211E MDI1+ Signal	In MDI mode, this is the second pair in 1000Base-T, i.e., the BI_DB+/- pair,and is the receive pair in 10Base-T and 100Base-TX.	Gigabit Ethernet
270	GPIO5_C3_D	TS0_ERR/GPIO5_C3	3G module internal regulators power enable output	I/O DOWN

271	MDI0-	RTL8211E MDI0- Signal	In MDI crossover mode, this pair acts as the BI_DB+/- pair, and is the receive pair in 10Base-T and 100Base-TX.	Gigabit Ethernet
272	POWER_ON	POWER_ON	Power_on Signal Input	
273	MDI0+	RTL8211E MDI0+ Signal	In MDI mode, this is the first pair in 1000Base-T, i.e., the BI_DA+/- pair, andis the transmit pair in 10Base-T and 100Base-TX.	Gigabit Ethernet
274	PWR_EN_SYS	PWR_EN_SYS	System power enable signal input	
275	GND	GND	GND	
276	PWR_EN	PWR_EN	System power enable signal input	
277	GND	GND	GND	
278	RESET	RESET	Input system reset signal	
279	VCC_SYS	VCC_SYS	Input Voltage 5V	
280	I2C0_SDA_PMIC	I2C0_SDA_PMIC	I2C0 DATA /GPIO	
281	VCC_SYS	VCC_SYS	Input Voltage 5V	
282	I2C0_SCL_PMIC	I2C0_SCL_PMIC	I2C0 CLOCK/GPIO	
283	VCC_SYS	VCC_SYS	Input Voltage 5V	
284	GND	GND	GND	
285	VCC_SYS	VCC_SYS	Input Voltage 5V	
286	GND	GND	GND	
287	VCC_SYS	VCC_SYS	Input Voltage 5V	
288	GND	GND	GND	
289	VCC_SYS	VCC_SYS	Input Voltage 5V	

290	GND	GND	GND	
291	VCC_SYS	VCC_SYS	Input Voltage 5V	
292	GND	GND	GND	
293	VCC_SYS	VCC_SYS	Input Voltage 5V	
294	GND	GND	GND	
295	VCC_SYS	VCC_SYS	Input Voltage 5V	
296	GND	GND	GND	
297	VCC_SYS	VCC_SYS	Input Voltage 5V	
298	GND	GND	GND	
299	VCC_SYS	VCC_SYS	Input Voltage 5V	
300	GND	GND	GND	
301	VCC_SYS	VCC_SYS	Input Voltage 5V	
302	GND	GND	GND	
303	VCC_SYS	VCC_SYS	Input Voltage 5V	
304	GND	GND	GND	
305	VCC_SYS	VCC_SYS	Input Voltage 5V	
306	GND	GND	GND	
307	VCC_SYS	VCC_SYS	Input Voltage 5V	
308	GND	GND	GND	
309	VCC_SYS	VCC_SYS	Input Voltage 5V	
311	VCC_SYS	VCC_SYS	Input Voltage 5V	

5. Appendix

5.1 Source code acquisition

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

or call the national service hotline of **4001-511-533** for consultation and acquisition.

5.2 Contact us

	Company	T-chip Intelligent Technology Co.,Ltd.
	Address	Room 2101,No.1Hongyu Building, #57 Zhongshan 4Rd, East District, Zhongshan, Guangdong
	Mobile	(+86) 186 8811 7175
	National service hotline	4001-511-533
	Telephone	0760-89881218
	Zip code	528400
	Business	sales@t-firefly.com
	Website	www.t-firefly.com