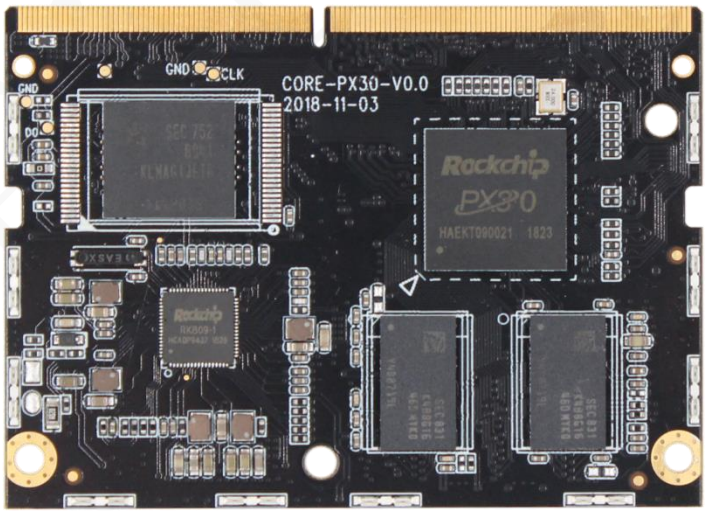
Firefly 天启科技

Core-PX30-JD4

核心板产品规格书

V1.0



版本	更新日期	更新内容
V11.0	2019-04-28	原始版本

目 录

一、产品简介

一、工业级四核处理器

采用 PX30 工业级 64 位低功耗处理器，拥有四核 Cortex-A35，双核 Mali-G31 GPU。提供多种存储配置选择，用户仅需扩展功能底板即可快速实现项目研产。

二、丰富的扩展接口

I2C、UART、SPI、SDIO3.0、USB2.0、PWM、RMII、I2S（支持 8 路数字麦克风阵列输入）

三、沉金接口，稳固可靠、布局紧凑美观

采用 SODIMM 260P 接口，数据传输和扩展性能得到最好发挥，沉金工艺引脚，耐腐蚀，2 螺柱固定，牢固可靠。设计尺寸仅有 69.6mm x 49.6mm，节约更多宝贵的空间。工作温度 0℃-80℃，长时间运行性能稳定。

四、强大的硬件编解码能力

多格式 1080P 60fps 视频解码 (H.265,H.264,VC-1, MPEG-1/2/4, VP8)

1080P 视频编码，支持 H.264,VP8

五、支持多种显示接口

支持支持 RGB/LVDS/MIPI-DSI 接口，支持双 VOP（双屏显示）

六、支持多操作系统：Android、Linux+QT 系统

七、开放资料

提供配套的源代码、教程、技术资料和开发工具，让开发变得更加简单方便

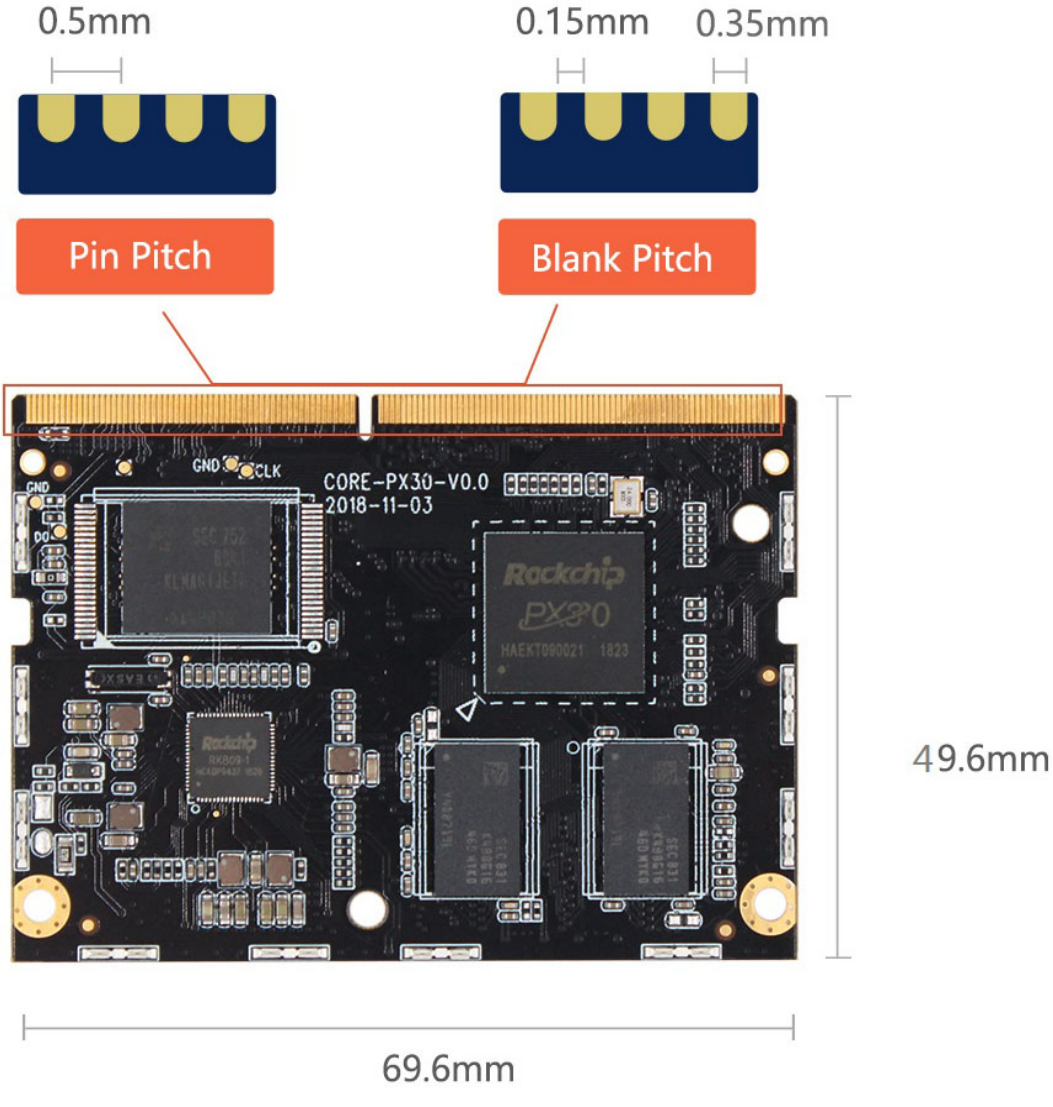
八、应用广泛，可应用到各种行业的产品中

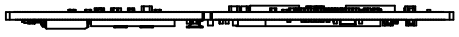
AIOT 物联网设备、车载中控、游艺/游戏设备、商显一体设备、医疗健康设备、自动售货机、工业电脑

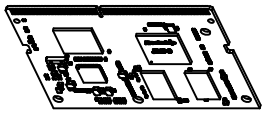
二、规格参数

基 本 参 数	
主控芯片	Rockchip PX30
处理器	4 核 ARM® Cortex-A35 处理器
图形处理器	Mali-G31 GPU，支持 OpenGL ES3.2, Vulkan 1.0, OpenCL 2.0 内嵌高性能 2D 加速硬件
视频处理器	多格式 1080P 60fps 视频解码 (H.265、H.264、VC-1、MPEG-1/2/4、VP8) 1080P 视频编码，支持 H.264、VP8
内存	DDR3（1GB/2GB 可选）
存储器	eMMC 5.1（8GB/16GB/32GB/64GB/128GB 可选）、 支持 NAND Flash、支持 TF 卡扩展
硬 件 特 性	
以太网	100 M bps 以太网接口
WiFi	提供 SDIO 3.0 信号，支持 2.4GHz / 5GHz 双频 WiFi，802.11a/b/g/n/ac 协议
显示	支持支持 RGB/LVDS/MIPI-DSI 接口， 支持双 VOP（双屏显示）,分辨率最高 1920x1080
音频	支持 1 x 8ch I²S /TDM、1×8ch PDM、1×2ch I²S/PCM 1 x Speaker 喇叭（8Ω，1.3W） 1 x 耳机输出 1 x Mic 音频输入
USB	1 x OTG，1 x USB2.0 HOST
红外	支持红外遥控功能
扩展接口	4×I2C，6×UART，2×SPI，8×PWM、支持 SDIO3.0
电源	DC 输入电压 5V
系 统 软 件	
系统支持	Android 、Linux+QT
外 观 规 格	
核心板尺寸	69.6mm × 49.6 mm
接口类型	金手指（SODIMM 标准 260P 接口， 0.5mm 间距）
PCB 规格	6 层板设计

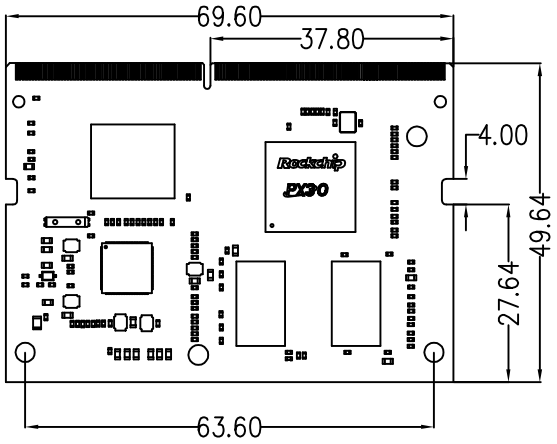
三、规格尺寸

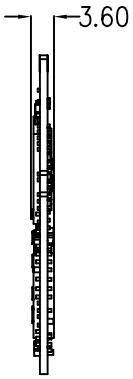

0.5mm
0.15mm
0.35mm
Pin Pitch
Blank Pitch
GND
CLK
GND
DQ
CORE-PX30-V0.0
2018-11-03
Rockchip
PX30
HAEKT090021 1823
49.6mm
69.6mm

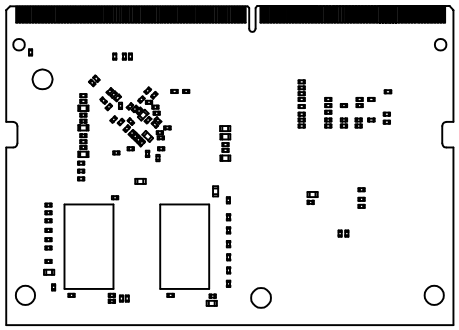




比例 0.500



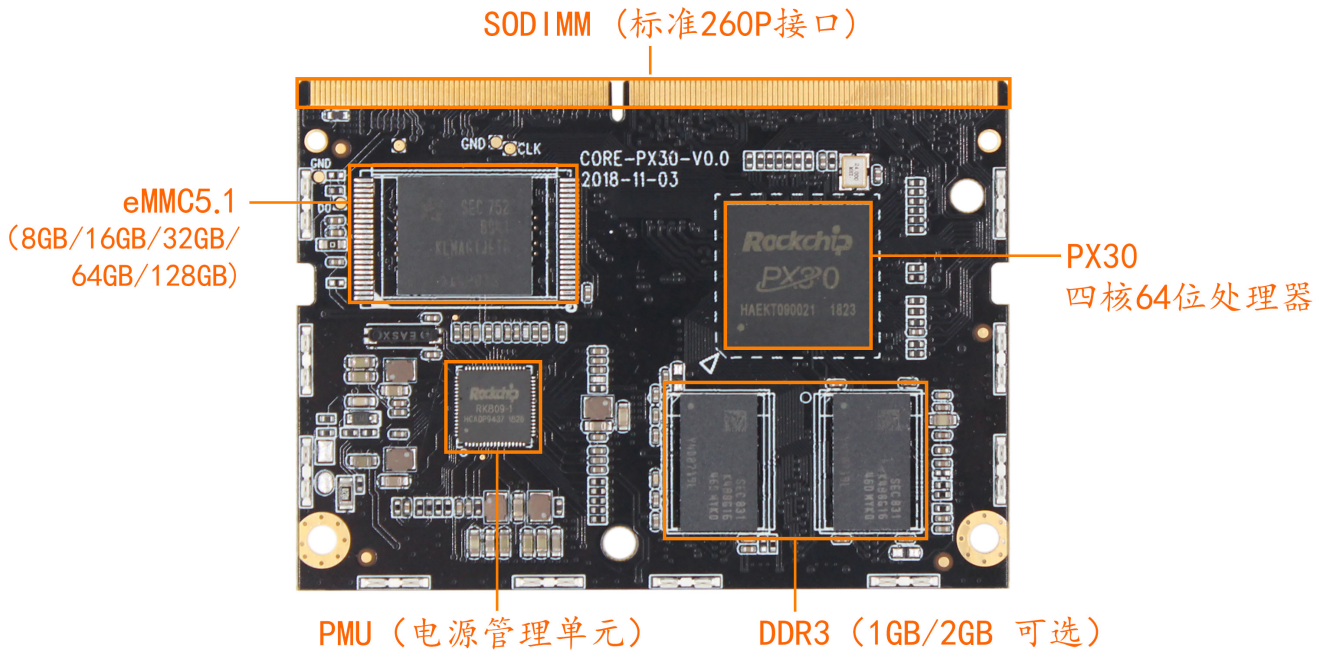




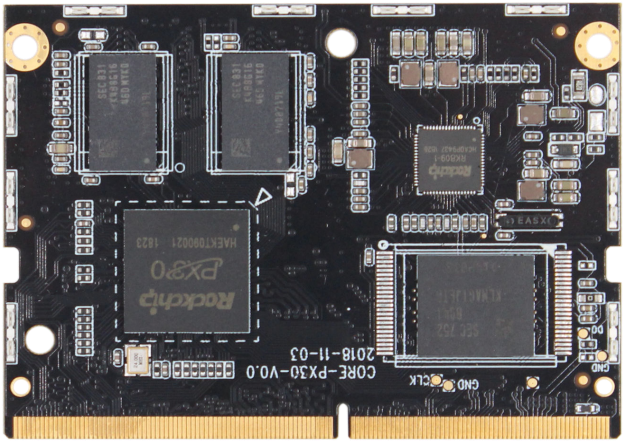
更改内容	日期		CORE-PX30-JD4
	2019.04		
			mm
			>A2<

天启智能科技有限公司
T-CHIP INTELLIGENT TECHNOLOGY CO.,LTD.

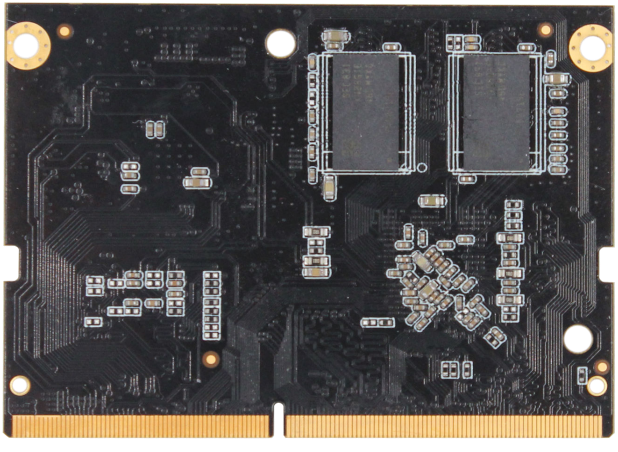
四、接口定义


SODIMM （标准260P接口）
eMMC5.1
（8GB/16GB/32GB/
64GB/128GB）
PX30
四核64位处理器
PMU（电源管理单元）
DDR3（1GB/2GB 可选）
CORE-PX30-V0.0
2018-11-03
GND
CLK
Rockchip
PX30

核心板管脚序号标示

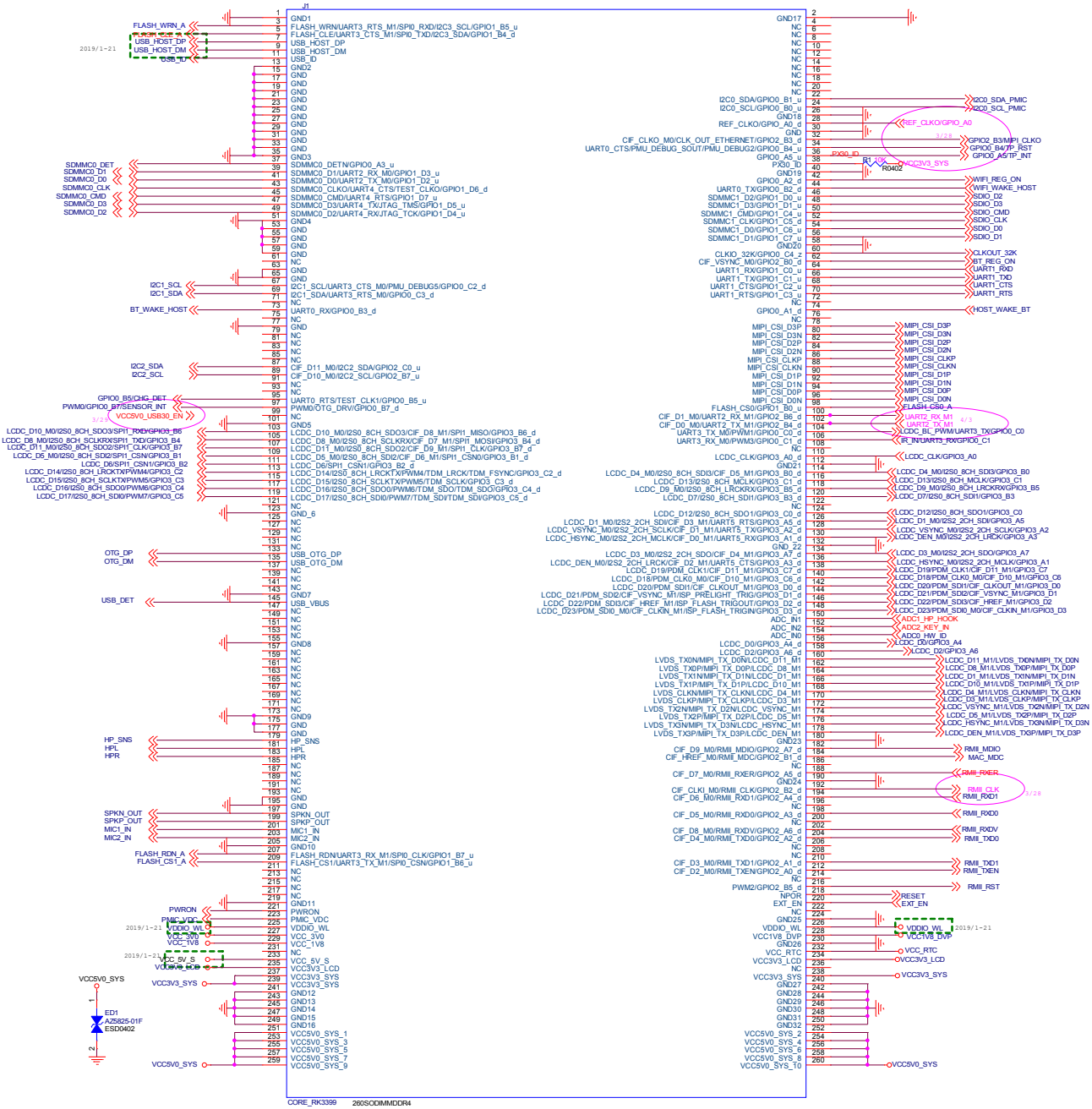


1、3、5、7、9、11 . . . . . 253、255、257、259



260、258、256、254 . . . . . 12、10、8、6、4、2

（请放大查看详图）


J1
CORE_RK3399
260SODIMMDDR4
FLASH_WRN_A
USB_HOST_DP
USB_HOST_DM
SDMMC0_DET
SDMMC0_D1
SDMMC0_D0
SDMMC0_CLK
SDMMC0_CMD
SDMMC0_D3
SDMMC0_D2
I2C1_SCL
I2C1_SDA
BT_WAKE_HOST
I2C2_SDA
I2C2_SCL
GPIO0_B5/CHG_DET
PWM0/GPIO0_B7/SENSOR_INT
VCC5V0_USB30_EN
OTG_DP
OTG_DM
USB_DET
HP_SNS
HPL
HPR
SPKN_OUT
SPKP_OUT
MIC1_IN
MIC2_IN
FLASH_RDN_A
FLASH_CS1_A
PWRON
PMIC_VDC
VDDIO_WL
VCC_3V0
VCC_1V8
VCC_5V_S
VCC3V3_LCD
VCC3V3_SYS
VCC5V0_SYS
ED1
AZ5825-01F
ESD0402
I2C0_SDA_PMIC
I2C0_SCL_PMIC
REF_CLKO/GPIO_A0
GPIO0_B3/MIPI_CLKO
GPIO0_B4/TP_RST
GPIO0_A5/TP_INT
PX30_ID
R1 10K
R0402
VCC3V3_SYS
WIFI_REG_ON
WIFI_WAKE_HOST
SDIO_D2
SDIO_D3
SDIO_CMD
SDIO_CLK
SDIO_D0
SDIO_D1
CLKOUT_32K
BT_REG_ON
UART1_RXD
UART1_TXD
UART1_CTS
UART1_RTS
HOST_WAKE_BT
MIPI_CSI_D3P
MIPI_CSI_D3N
MIPI_CSI_D2P
MIPI_CSI_D2N
MIPI_CSI_CLKP
MIPI_CSI_CLKN
MIPI_CSI_D1P
MIPI_CSI_D1N
MIPI_CSI_D0P
MIPI_CSI_D0N
FLASH_CS0-A
UART2_RX_M1
UART2_TX_M1
LCDC_BL_PWM/UART5_TX/GPIO0_C0
IR_IN/UART3_RXG/GPIO0_C1
LCDC_CLK/GPIO3_A0
LCDC_D4_M0/I2S0_8CH_SDI3/GPIO3_B0
LCDC_D13/I2S0_8CH_MCLK/GPIO3_C1
LCDC_D9_M0/I2S0_8CH_LRCRX/GPIO3_B5
LCDC_D7/I2S0_8CH_SDI1/GPIO3_B3
LCDC_D12/I2S0_8CH_SDO1/GPIO3_C0
LCDC_D1_M0/I2S2_2CH_SDI/GPIO3_A5
LCDC_VSYNC_M0/I2S2_2CH_SCLK/GPIO3_A2
LCDC_DEN_M0/I2S2_2CH_LRCK/GPIO3_A3
LCDC_D3_M0/I2S2_2CH_SDO/GPIO3_A7
LCDC_HSYNC_M0/I2S2_2CH_MCLK/GPIO3_A1
LCDC_D19/PDM_CLK1/CIF_D11_M1/GPIO3_C7
LCDC_D18/PDM_CLK0_M0/CIF_D10_M1/GPIO3_C6
LCDC_D20/PDM_SDI1/CIF_CLKOUT_M1/GPIO3_D0
LCDC_D21/PDM_SDI2/CIF_VSYNC_M1/GPIO3_D1
LCDC_D22/PDM_SDI3/CIF_HREF_M1/GPIO3_D2
LCDC_D23/PDM_SDI0_M0/CIF_CLKIN_M1/GPIO3_D3
ADC_IN1
ADC_IN2
ADC_IN3
LCDC_D0/GPIO3_A4
LCDC_D2/GPIO3_A6
LCDC_D11_M1/LVDS_TXDN/MIPI_TX_DON
LCDC_D8_M1/LVDS_TXDP/MIPI_TX_DOP
LCDC_D1_M1/LVDS_TX1N/MIPI_TX_D1N
LCDC_D10_M1/LVDS_TX1P/MIPI_TX_D1P
LCDC_D4_M1/LVDS_CLKN/MIPI_TX_CLKN
LCDC_D3_M1/LVDS_CLKP/MIPI_TX_CLKP
LCDC_VSYNC_M1/LVDS_TX2N/MIPI_TX_D2N
LCDC_D5_M1/LVDS_TX2P/MIPI_TX_D2P
LCDC_HSYNC_M1/LVDS_TX3N/MIPI_TX_D3N
LCDC_DEN_M1/LVDS_TX3P/MIPI_TX_D3P
RMII_MDIO
MAC_MDC
RMII_RXER
RMII_CLK
RMII_RXD1
RMII_RXD0
RMII_RXDV
RMII_TXD0
RMII_TXD1
RMII_TXEN
RMII_RST
RESET
EXT_EN
VDDIO_WL
VCC1V8_DVP
VCC_RTC
VCC3V3_LCD
VCC3V3_SYS
ADC1_HP_HOOK
ADC2_KEY_IN
ADC0_HW_ID

PIN	Core board pin definition	Default function	Defual function description	IO Power domain	Pad type IO Pull
1	GND	Power ground	Power ground		
3	FLASH_WRN/UART3_RTS_M1/SPI0_RXD/I2C3_SCL/GPIO1_B5_u	WORK_LED	System working state refers to LED	1.8V	I/O UP
5	FLASH_CLE/UART3_CTS_M1/SPI0_TXD/I2C3_SDA/GPIO1_B4_d	DIY_LED	User Defines LED	1.8V	I/O DOWN
7	USB_HOST_DP	USB_HOST_DP	USB HOST Data Plus port		
9	USB_HOST_DM	USB_HOST_DM	USB HOST Data Minus port		
11	USB_ID	USB_ID	USB ID detect input		
13	GND	GND	GND		
15	GND	GND	GND		
17	GND	GND	GND		
19	GND	GND	GND		
21	GND	GND	GND		
23	GND	GND	GND		
25	GND	GND	GND		
27	GND	GND	GND		
29	GND	GND	GND		
31	GND	GND	GND		
33	GND	GND	GND		
35	GND	GND	GND		
37	SDMMC0_DETN/GPIO0_A3_u	SDMMC0_DET	SDMMC0 detect input	3.0V	I/O UP
39	SDMMC0_D1/UART2_RX_M0/GPIO1_D3_u	SDMMC0_D1	SDMMC0 data port	1.8V/3.3V auto	I/O UP
41	SDMMC0_D0/UART2_TX_M0/GPIO1_D2_u	SDMMC0_D0	SDMMC0 data port	1.8V/3.3V auto	I/O UP
43	SDMMC0_CLKO/UART4_CTS/TEST_CLKO/GPIO1_D6_d	SDMMC0_CLK	SDMMC0 clock output JTAG TCK for MCU	1.8V/3.3V auto	I/O DOWN
45	SDMMC0_CMD/UART4_RTS/GPIO1_D7_u	SDMMC0_CMD	SDMMC0 command output JTAG TMS for MCU	1.8V/3.3V auto	I/O UP
47	SDMMC0_D3/UART4_TX/JTAG_TMS/GPIO1_D5_u	SDMMC0_D3	SDMMC0 data port JTAG TMS for AP	1.8V/3.3V auto	I/O UP
49	SDMMC0_D2/UART4_RX/JTAG_TCK/GPIO1_D4_u	SDMMC0_D2	SDMMC0 data port JTAG TCK for AP	1.8V/3.3V auto	I/O UP
51	GND4	GND	GND		

53	GND	GND	GND		
55	GND	GND	GND		
57	GND	GND	GND		
59	GND	GND	GND		
61	NC	NC	NC		
63	GND	GND	GND		
65	GND	GND	GND		
67	I2C1_SCL/UART3_CTS_M0/PMU_DEBUG5/GPIO0_C2_d	I2C1_SCL	I2C serial port 1,for TP/Sensor , Core board internal pull up Resistor 2.2K	3.0V	I/O DOWN
69	I2C1_SDA/UART3_RTS_M0/GPIO0_C3_d	I2C1_SDA	I2C serial port 1, for TP/Sensor, Core board i internal pull up Resistor 2.2K	3.0V	I/O DOWN
71	NC	NC	NC		
73	UART0_RX/GPIO0_B3_d	BT_WAKE_HOST	AP wake up BT module	3.0V	I/O DOWN
75	NC	NC	NC		
77	GND	Power ground	Power ground		
79	NC	NC	NC		
81	NC	NC	NC		
83	NC	NC	NC		
85	NC	NC	NC		
87	CIF_D11_M0/I2C2_SDA/GPIO2_C0_u	I2C2_SDA	I2C serial port 2, Core board internal pull up Resistor 2.2K	3.0V	I/O UP
89	CIF_D10_M0/I2C2_SCL/GPIO2_B7_u	I2C2_SCL	I2C serial port 2 , Core board internal pull up Resistor 2.2K	3.0V	I/O UP
91	NC	NC	NC		
93	NC	NC	NC		
95	UART0_RTS/TEST_CLK1/GPIO0_B5_u	BL_EN	LCD panel backlight power enable	3.0V	I/O UP
97	PWM0/OTG_DRV/GPIO0_B7_d	PWM0	LCD panel backlight brightness control output	3.0V	I/O DOWN
99	NC	NC	NC		
101	GND	Power ground	Power ground		

103	LCDC_D10_M0/I2S0_8CH_SDO3/CIF_D8_M1/SPI1_MISO/GPIO3_B6_d	LCDC_D10_M0/I2S0_8CH_SDO3/CIF_D8_M1/SPI1_MISO/GPIO3_B6	LCDC data port	3.0V	I/O DOWN
105	LCDC_D8_M0/I2S0_8CH_SCLKRX/CIF_D7_M1/SPI1_MOSI/GPIO3_B4_d	LCDC_D8_M0/I2S0_8CH_SCLKRX/SPI1_TXD/GPIO3_B4	LCDC data port	3.0V	I/O DOWN
107	LCDC_D11_M0/I2S0_8CH_SDO2/CIF_D9_M1/SPI1_CLK/GPIO3_B7_d	LCDC_D11_M0/I2S0_8CH_SDO2/SPI1_CLK/GPIO3_B7	LCDC data port	3.0V	I/O DOWN
109	LCDC_D5_M0/I2S0_8CH_SDI2/CIF_D6_M1/SPI1_CSN0/GPIO3_B1_d	LCDC_D5_M0/I2S0_8CH_SDI2/SPI1_CSN/GPIO3_B1	LCDC data port	3.0V	I/O DOWN
111	LCDC_D6/SPI1_CSN1/GPIO3_B2_d	LCDC_D6/SPI1_CSN1/GPIO3_B2	LCDC data port	3.0V	I/O DOWN
113	LCDC_D14/I2S0_8CH_LRCKTX/PWM4/TDM_LRCK/TDM_FSYNC/GPIO3_C2_d	LCDC_D14/I2S0_8CH_LRCKTX/PWM4/GPIO3_C2	LCDC data port	3.0V	I/O DOWN
115	LCDC_D15/I2S0_8CH_SCLKTX/PWM5/TDM_SCLK/GPIO3_C3_d	LCDC_D15/I2S0_8CH_SCLKTX/PWM5/GPIO3_C3	LCDC data port	3.0V	I/O DOWN
117	LCDC_D16/I2S0_8CH_SDO0/PWM6/TDM_SDO/TDM_SDO/GPIO3_C4_d	LCDC_D16/I2S0_8CH_SDO0/PWM6/GPIO3_C4	LCDC data port	3.0V	I/O DOWN
119	LCDC_D17/I2S0_8CH_SDI0/PWM7/TDM_SDI/TDM_SDI/GPIO3_C5_d	LCDC_D17/I2S0_8CH_SDI0/PWM7/GPIO3_C5	LCDC data port	3.0V	I/O DOWN
121	NC	NC	NC		
123	GND_	GND	GND		
125	NC	NC	NC		
127	NC	NC	NC		
129	NC	NC	NC		
131	NC	NC	NC		
133	USB_OTG_DP	OTG_DP	USB OTG Data Plus port		
135	USB_OTG_DM	OTG_DM	USB OTG Data Minus port		
137	NC	NC	NC		
139	NC	NC	NC		
141	NC	NC	NC		
143	GND	Power ground	Power ground		
145	USB_VBUS	USB_DET	TYPEC0 connected/vbus power detect for USB2.0		
147	NC	NC	NC		
149	NC	NC	NC		

151	NC	NC	NC		
153	NC	NC	NC		
155	GND	GND	GND		
157	NC	NC	NC		
159	NC	NC	NC		
161	NC	NC	NC		
163	NC	NC	NC		
165	NC	NC	NC		
167	NC	NC	NC		
169	NC	NC	NC		
171	NC	NC	NC		
173	GND	GND	GND		
175	GND	GND	GND		
177	GND	GND	GND		
179	HP_SNS	HP_SNS	Reference ground for the headphone		
181	HPL	HPL	Left channel output of the headphone		
183	HPR	HPR	Right channel output of the headphone		
185	NC	NC	NC		
187	NC	NC	NC		
189	NC	NC	NC		
191	NC	NC	NC		
193	GND	GND	GND		
195	GND	GND	GND		
197	SPKN_OUT	SPKN_OUT	Speak negative out		
199	SPKP_OUT	SPKP_OUT	Speak positive out		
201	MIC1_IN	MIC1_IN	Negative input of the Microphone		
203	MIC2_IN	MIC2_IN	Positive input of the Microphone		

205	GND1	GND	GND		
207	FLASH_RDN/UART3_RX_M1/SPI0_CLK/GPIO1_B7_u	GPIO1_B7	GPIO	1.8V	I/O UP
209	FLASH_CS1/UART3_TX_M1/SPI0_CSN/GPIO1_B6_u	GPIO1_B6	GPIO	1.8V	I/O UP
211	NC	NC	NC		
213	NC	NC	NC		
215	NC	NC	NC		
217	NC	NC	NC		
219	GND	Power ground	Power ground		
221	PWRON	PWRON	Power on key input, active low		
223	PMIC_VDC	Adapter voltage detect input	Input Voltage 3V–12V		
225	VDDIO_WL	3.3V or 1.8V Power supply	Input Voltage 3.3V or 1.8V, Rated Input current 100mA		
227	VCC_3V0	3V Power supply(DCDC)	Output Voltage 3V, Rated output current 300mA		
229	VCC_1V8	1.8V Power supply(LDO)	Output Voltage 1.8V, Rated output current 200mA		
231	NC	NC	NC		
233	VCC_5V_S	5V System power supply	Input Voltage 4.8V–5.5V		
235	VCC3V3_LCD	3V3 Power supply (DCDC)	Output Voltage 3.3V, Rated output current 1A		
237	VCC3V3_SYS	3V3 Power supply(DCDC)	Output Voltage 3.3V, Rated output current 1.2A		
239	VCC3V3_SYS	3V3 Power supply(DCDC)	Output Voltage 3.3V, Rated output current 1.2A		
241	GND	Power ground	Power ground		
243	GND	Power ground	Power ground		
245	GND	Power ground	Power ground		
247	GND	Power ground	Power ground		
249	GND	Power ground	Power ground		
251	VCC5V0_SYS_1	5V System power supply	Input Voltage 4.8V–5.5V		
253	VCC5V0_SYS_3	5V System power supply	Input Voltage 4.8V–5.5V		
255	VCC5V0_SYS_5	5V System power supply	Input Voltage 4.8V–5.5V		
257	VCC5V0_SYS_7	5V System power supply	Input Voltage 4.8V–5.5V		

259	VCC5V0_SYS_9	5V System power supply	Input Voltage 4.8V–5.5V		
2	GND	GND	GND		
4	NC	NC	NC		
6	NC	NC	NC		
8	NC	NC	NC		
10	NC	NC	NC		
12	NC	NC	NC		
14	NC	NC	NC		
16	NC	NC	NC		
18	NC	NC	NC		
20	NC	NC	NC		
22	I2C0_SDA/GPIO0_B1_u	I2C0_SDA_PMIC	I2C serial port 0,for PMIC, Core board internal pull up Resistor 2.2K	3.0V	I/O UP
24	I2C0_SCL/GPIO0_B0_u	I2C0_SCL_PMIC	I2C serial port 0, for PMIC, core board internal pull up Resistor 2.2K	3.0V	I/O UP
26	GND	GND	GND		
28	REF_CLKO/GOIO_A0_d	REF_CLKO/GOIO_A0	Reference clock output	3.0V	I/O DOWN
30	GND	GND	GND		
32	CIF_CLKO_M0/CLK_OUT_ETHERNET/GPIO2_B3_d	MIPI_CLKO	Camera clock output	3.0V	I/O DOWN
34	UART0_CTS/PMU_DEBUG_SOUT/PMU_DEBUG2/GPIO0_B4_u	TP_RST	Touch panel reset	3.0V	I/O UP
36	GPIO0_A5_u	TP_INT	Touch panel interrupt	3.0V	I/O UP
38	PX30ID	PX30_ID	Core board interiorl pull up Resistor 10K to 3.3V		
40	GND	GND	GND		
42	GPIO0_A2_d	WIFI_REG_ON	WIFI module power enable	3.0V	I/O DOWN
44	UART0_TX/GPIO0_B2_d	WIFI_WAKE_HOST	WIFI module wake up AP	3.0V	I/O DOWN
46	SDMMC1_D2/GPIO1_D0_u	SDIO_D2	SDIO0 data port ,for WIFI module	3.3V	I/O UP
48	SDMMC1_D3/GPIO1_D1_u	SDIO_D3	SDIO0 data port ,for WIFI module	3.3V	I/O UP
50	SDMMC1_CMD/GPIO1_C4_u	SDIO_CMD	SDIO0 command output ,for WIFI module	3.3V	I/O UP

52	SDMMC1_CLK/GPIO1_C5_d	SDIO_CLK	SDIO0 clock output, for WIFI module	3.3V	I/O DOWN
54	SDMMC1_D0/GPIO1_C6_u	SDIO_D0	SDIO0 data port ,for WIFI module	3.3V	I/O UP
56	SDMMC1_D1/GPIO1_C7_u	SDIO_D1	SDIO0 data port ,for WIFI module	3.3V	I/O UP
58	GND	GND	GND		
60	CLKIO_32K/GPIO0_C4_z	CLKOUT_32K	32KHz real time clock input or output		
62	CIF_VSYNC_M0/GPIO2_B0_d	BT_REG_ON	BT module power enable	3.0V	I/O DOWN
64	UART1_RX/GPIO1_C0_u	UART1_RXD	UART1 serial port, for BT module	3.3V	I/O UP
66	UART1_TX/GPIO1_C1_u	UART1_TXD	UART1 serial port, for BT module	3.3V	I/O UP
68	UART1_CTS/GPIO1_C2_u	UART1_CTS	UART1 serial port, for BT module	3.3V	I/O UP
70	UART1_RTS/GPIO1_C3_u	UART1_RTS	UART1 serial port, for BT module	3.3V	I/O UP
72	NC	NC	NC		
74	GPIO0_A1_d	HOST_WAKE_BT	BT module wake up AP	3.0V	I/O DOWN
76	NC	NC	NC		
78	MIPI_CSI_D3P	MIPI_CSI_D3P	MIPI–CSI0 differential lane 3 positive		
80	MIPI_CSI_D3N	MIPI_CSI_D3N	MIPI–CSI0 differential lane 3 negative		
82	MIPI_CSI_D2P	MIPI_CSI_D2P	MIPI–CSI0 differential lane 2 positive		
84	MIPI_CSI_D2N	MIPI_CSI_D2N	MIPI–CSI0 differential lane 2 negative		
86	MIPI_CSI_CLKP	MIPI_CSI_CLKP	MIPI–CSI0 differential clock lane positive		
88	MIPI_CSI_CLKN	MIPI_CSI_CLKN	MIPI–CSI0 differential clock lane negative		
90	MIPI_CSI_D1P	MIPI_CSI_D1P	MIPI–CSI0 differential lane 1 positive		
92	MIPI_CSI_D1N	MIPI_CSI_D1N	MIPI–CSI0 differential lane 1 negative		
94	MIPI_CSI_D0P	MIPI_CSI_D0P	MIPI–CSI0 differential lane 0 positive		
96	MIPI_CSI_D0N	MIPI_CSI_D0N	MIPI–CSI0 differential lane 0 negative		
98	FLASH_CS0/GPIO1_B0_u	HP_DET	Headphone detect input	1.8V	I/O UP
100	CIF_D1_M0/UART2_RX_M1/GPIO2_B6_d	UART2_RX	UART1 serial port	3.0V	I/O DOWN
102	CIF_D0_M0/UART2_TX_M1/GPIO2_B4_d	UART2_TX	UART1 serial port	3.0V	I/O DOWN
104	UART3_TX_M0/PWM1/GPIO0_C0_d	LCDC_BL_PWM	LCD panel backlight brightness control	3.0V	I/O DOWN

106	UART3_RX_M0/PWM3/GPIO0_C1_d	IR_IN	IR receiver input	3.0V	I/O DOWN
108	NC	NC	NC		
110	LCDC_CLK/GPIO3_A0_d	LCDC_CLK/GPIO3_A0	LCDC_CLK(LCDC pixel clock output)	3.0V	I/O DOWN
112	GND	GND	GND		
114	LCDC_D4_M0/I2S0_8CH_SDI3/CIF_D5_M1/GPIO3_B0_d	LCDC_D4_M0/I2S0_8CH_SDI3/GPIO3_B0	LCDC data port	3.0V	I/O DOWN
116	LCDC_D13/I2S0_8CH_MCLK/GPIO3_C1_d	LCDC_D13/I2S0_8CH_MCLK/GPIO3_C1	LCDC data port	3.0V	I/O DOWN
118	LCDC_D9_M0/I2S0_8CH_LRCKRX/GPIO3_B5_d	LCDC_D9_M0/I2S0_8CH_LRCKRX/GPIO3_B5	LCDC data port	3.0V	I/O DOWN
120	LCDC_D7/I2S0_8CH_SDI1/GPIO3_B3_d	LCDC_D7/I2S0_8CH_SDI1/GPIO3_B3	LCDC data port	3.0V	I/O DOWN
122	NC	NC	NC		
124	LCDC_D12/I2S0_8CH_SDO1/GPIO3_C0_d	LCDC_D12/I2S0_8CH_SDO1/GPIO3_C0	LCDC data port	3.0V	I/O DOWN
126	LCDC_D1_M0/I2S2_2CH_SDI/CIF_D3_M1/UART5_RTS/GPIO3_A5_d	LCDC_D1_M0/I2S2_2CH_SDI/GPIO3_A5	LCDC data port	3.0V	I/O DOWN
128	LCDC_VSYNC_M0/I2S2_2CH_SCLK/CIF_D1_M1/UART5_TX/GPIO3_A2_d	LCDC_VSYNC_M0/I2S2_2CH_SCLK/GPIO3_A2	LCDCV SYNC_M0	3.0V	I/O DOWN
130	LCDC_HSYNC_M0/I2S2_2CH_MCLK/CIF_D0_M1/UART5_RX/GPIO3_A1_d	LCDC_DEN_M0/I2S2_2CH_LRCK/GPIO3_A3	L CDCV HSYNC_M0	3.0V	I/O DOWN
132	GND	GND	GND		
134	LCDC_D3_M0/I2S2_2CH_SDO/CIF_D4_M1/GPIO3_A7_d	LCDC_D3_M0/I2S2_2CH_SDO/GPIO3_A7	LCDC data port	3.0V	I/O DOWN
136	LCDC_DEN_M0/I2S2_2CH_LRCK/CIF_D2_M1/UART5_CTS/GPIO3_A3_d	LCDC_HSYNC_M0/I2S2_2CH_MCLK/GPIO3_A1	LCDC data enable	3.0V	I/O DOWN
138	LCDC_D19/PDM_CLK1/CIF_D11_M1/GPIO3_C7_d	LCDC_D19/PDM_CLK1/CIF_D11_M1/GPIO3_C7	LCDC data port	3.0V	I/O DOWN
140	LCDC_D18/PDM_CLK0_M0/CIF_D10_M1/GPIO3_C6_d	LCDC_D18/PDM_CLK0_M0/CIF_D10_M1/GPIO3_C6	LCDC data port	3.0V	I/O DOWN
142	LCDC_D20/PDM_SDI1/CIF_CLKOUT_M1/GPIO3_D0_d	LCDC_D20/PDM_SDI1/CIF_CLKOUT_M1/GPIO3_D0	LCDC data port	3.0V	I/O DOWN
144	LCDC_D21/PDM_SDI2/CIF_VSYNC_M1/ISP_PRELIGHT_TRIG/GPIO3_D1_d	LCDC_D21/PDM_SDI2/CIF_VSYNC_M1/GPIO3_D1	LCDC data port	3.0V	I/O DOWN
146	LCDC_D22/PDM_SDI3/CIF_HREF_M1/ISP_FLASH_TRIGOUT/GPIO3_D2_d	LCDC_D22/PDM_SDI3/CIF_HREF_M1/GPIO3_D2	LCDC data port	3.0V	I/O DOWN
148	LCDC_D23/PDM_SDI0_M0/CIF_CLKIN_M1/ISP_FLASH_TRIGIN/GPIO3_D3_d	LCDC_D23/PDM_SDI0_M0/CIF_CLKIN_M1/GPIO3_D3	LCDC data port	3.0V	I/O DOWN
150	ADC_IN1	ADC1_IN	Battery voltage input, Board ID detect input,Core board interiorl pull up Resistor 10K	1.8V	
152	ADC_IN2	RECOVER	AD keyboard input, Core board interiorl pull up Resistor 10K	1.8V	

154	ADC_IN0	ADC0_IN	ADC input, Core board interiorl pull up Resistor 10K	1.8V	
156	LCDC_D0/GPIO3_A4_d	LCDC_D0/GPIO3_A4	LCDC data port	3.0V	I/O DOWN
158	LCDC_D2/GPIO3_A6_d	LCDC_D2/GPIO3_A6	LCDC data port	3.0V	I/O DOWN
160	LVDS_TX0N/MIPI_TX_D0N/LCDC_D11_M1	LVDS_TX0N/MIPI_TX_D0N	LVDS/MIPI differential lane 0 negative		
162	LVDS_TX0P/MIPI_TX_D0P/LCDC_D8_M1	LVDS_TX0P/MIPI_TX_D0P	LVDS/MIPI differential lane 0 positive		
164	LVDS_TX1N/MIPI_TX_D1N/LCDC_D1_M1	LVDS_TX1N/MIPI_TX_D1N	LVDS/MIPI differential lane 1 negative		
166	LVDS_TX1P/MIPI_TX_D1P/LCDC_D10_M1	LVDS_TX1P/MIPI_TX_D1P	LVDS/MIPI differential lane 1 positive		
168	LVDS_CLKN/MIPI_TX_CLKN/LCDC_D4_M1	LVDS_CLKN/MIPI_TX_CLKN	LVDS/MIPI differential clock negative		
170	LVDS_CLKP/MIPI_TX_CLKP/LCDC_D3_M1	LVDS_CLKP/MIPI_TX_CLKP	LVDS/MIPI differential clock positive		
172	LVDS_TX2N/MIPI_TX_D2N/LCDC_VSYNC_M1	LVDS_TX2N/MIPI_TX_D2N	LVDS/MIPI differential lane 2 negative		
174	LVDS_TX2P/MIPI_TX_D2P/LCDC_D5_M1	LVDS_TX2P/MIPI_TX_D2P	LVDS/MIPI differential lane 2positive		
176	LVDS_TX3N/MIPI_TX_D3N/LCDC_HSYNC_M1	LVDS_TX3N/MIPI_TX_D3N	LVDS/MIPI differential lane 3 negative		
178	LVDS_TX3P/MIPI_TX_D3P/LCDC_DEN_M1	LVDS_TX3P/MIPI_TX_D3P	LVDS/MIPI differential lane 3 positive		
180	GND	GND	GND		
182	CIF_D9_M0/RMII_MDIO/GPIO2_A7_d	*RMII_MDIO*	RMII management command and data	3.0V	I/O DOWN
184	CIF_HREF_M0/RMII_MDC/GPIO2_B1_d	MAC_MDC	RMII management clock	3.0V	I/O DOWN
186	NC	NC	NC		
188	CIF_D7_M0/RMII_RXER/GPIO2_A5_d	RMII_RXER	RMII receive error	3.0V	I/O DOWN
190	GND	GND	GND		
192	CIF_CLKI_M0/RMII_CLK/GPIO2_B2_d	RMII_CLK	RMII transmit clock	3.0V	I/O DOWN
194	CIF_D6_M0/RMII_RXD1/GPIO2_A4_d	RMII_RXD1	RMII receive data	3.0V	I/O DOWN
196	NC	NC	NC		
198	CIF_D5_M0/RMII_RXD0/GPIO2_A3_d	RMII_RXD0	RMII receive data	3.0V	I/O DOWN
200	NC	NC	NC		
202	CIF_D8_M0/RMII_RXDV/GPIO2_A6_d	RMII_RXDV	RMII receive data valid	3.0V	I/O DOWN
204	CIF_D4_M0/RMII_TXD0/GPIO2_A2_d	RMII_TXD0	RMII transmit data	3.0V	I/O DOWN
206	NC	NC	NC		

208	NC	NC	NC		
210	CIF_D3_M0/RMII_TXD1/GPIO2_A1_d	RMII_TXD1	RMII transmit data	3.0V	I/O DOWN
212	CIF_D2_M0/RMII_TXEN/GPIO2_A0_d	RMII_TXEN	RMII transmit enable	3.0V	I/O DOWN
214	NC	NC	NC		
216	PWM2/GPIO2_B5_d	RMII_RST	RMII reset	3.0V	I/O DOWN
218	NPOR	RESET	system reset signal Input, External connection Reset key, active low		
220	EXT_EN	EXT_EN	External Power enable output, Voltage 5V		
222	NC	NC	NC		
224	GND25	Power ground	Power ground		
226	VDDIO_WL	3.3V or 1.8V Power supply	Input Voltage 3.3V or 1.8V, Rated Input current 100mA		
228	VCC1V8_DVP	1.8V Power supply(LDO)	Output Voltage 1.8V, Rated output current 400mA		
230	GND	Power ground	Power ground		
232	VCC_RTC	RTC Power supply	Input Voltage 3V–5.5V		
234	VCC3V3_LCD	3V3 Power supply(DCDC)	Output Voltage 3.3V, Rated output current 1A		
236	NC	NC	NC		
238	VCC3V3_SYS	3V3 Power supply(DCDC)	Output Voltage 3.3V, Rated output current 1.2A		
240	GND27	Power ground	Power ground		
242	GND28	Power ground	Power ground		
244	GND29	Power ground	Power ground		
246	GND30	Power ground	Power ground		
248	GND31	Power ground	Power ground		
250	GND32	Power ground	Power ground		
252	VCC5V0_SYS_2	5V System power supply	Input Voltage 4.8V–5.5V		
254	VCC5V0_SYS_4	5V System power supply	Input Voltage 4.8V–5.5V		
256	VCC5V0_SYS_6	5V System power supply	Input Voltage 4.8V–5.5V		
258	VCC5V0_SYS_8	5V System power supply	Input Voltage 4.8V–5.5V		
260	VCC5V0_SYS_10	5V System power supply	Input Voltage 4.8V–5.5V		

附录：

1、公司简介

天启智能科技有限公司，成立于 2005 年，是国家高新技术企业。拥有超过 10 年科技产品的研发经验、6 项发明专利、30 多项软件著作权，专注于开源智能硬件，物联网、数字音频产品的研发设计、生产和销售，同时提供了智能硬件产品的整体解决方案。

Firefly 是天启科技旗下的品牌，经营开源产品、开源社区与网上商城，拥有庞大的企业用户与开发者用户，产品深受用户好评。Firefly 开源产品包括开源板、核心板、行业主板等。开源板是瑞芯微公司 （Rockchip）推荐板卡，获得原生 SDK 支持。 核心板与行业主板广泛应用于商业显示、广告一体机、智能 POS、人脸识别终端、物联网、智慧城市等领域。目前有超过 10 万用户，包括 2000 多家企业用户，知名用户有 ARM、Google、百度、腾讯、阿里巴巴等。

Firefly 团队研发成员超过 60 人，拥有原理图设计、PCB Layout、主板量产、嵌入式开发、系统开发、应用程序开发等研发能力，为众多科技创业者与初创企业加速研发进程，并提供专业的技术服务。

“让科技更简单，让生活更智能”是 Firefly 团队的理念，我们希望能通过 Firefly 的开源产品与技术服务，让各种科技产品的研发变得高效简单，让智能科技融入生活。

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