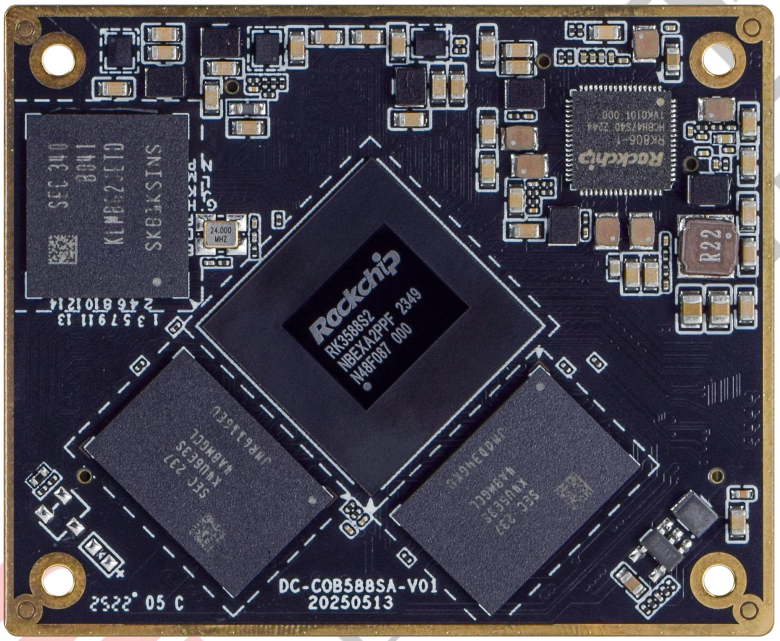
DC-COB588SA-V01

产品规格书



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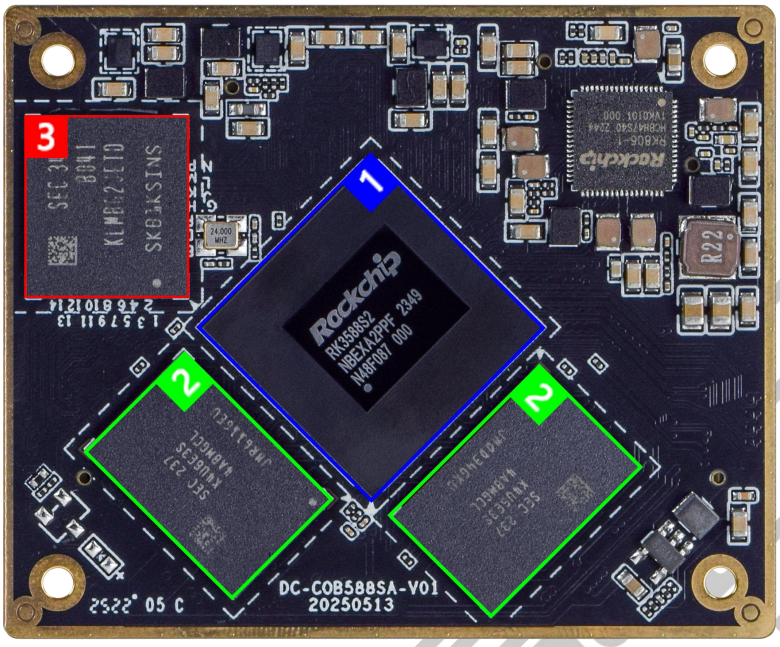
第一章 产品概述

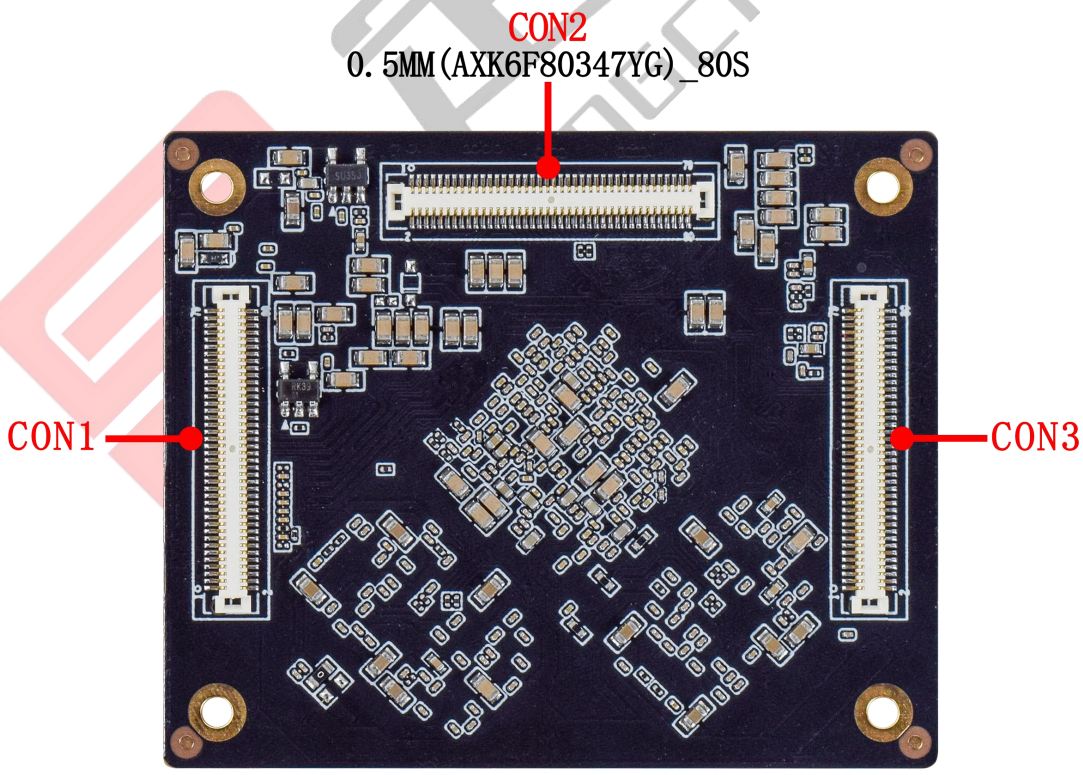
1.1、概述

DC-COB588SA 板，采用瑞芯微 高性能 RK3588S2 新一代旗舰级八核 64 位处理器，主频高达 2.256GHz；8nm LP 制程工艺；集成 ARM Mali-G610 MP4 四核 GPU，支持 OpenGL ES3.2/OpenCL 2.2/Vulkan1.1，450 GFLOPS；内置 NPU 算力高达 6 TOPS，支持 INT4/INT8/INT16 混合运算，可实现基于 TensorFlow/MXNet/PyTorch/Caffe 等系列框架的网络模型转换。

第二章 外观示意图



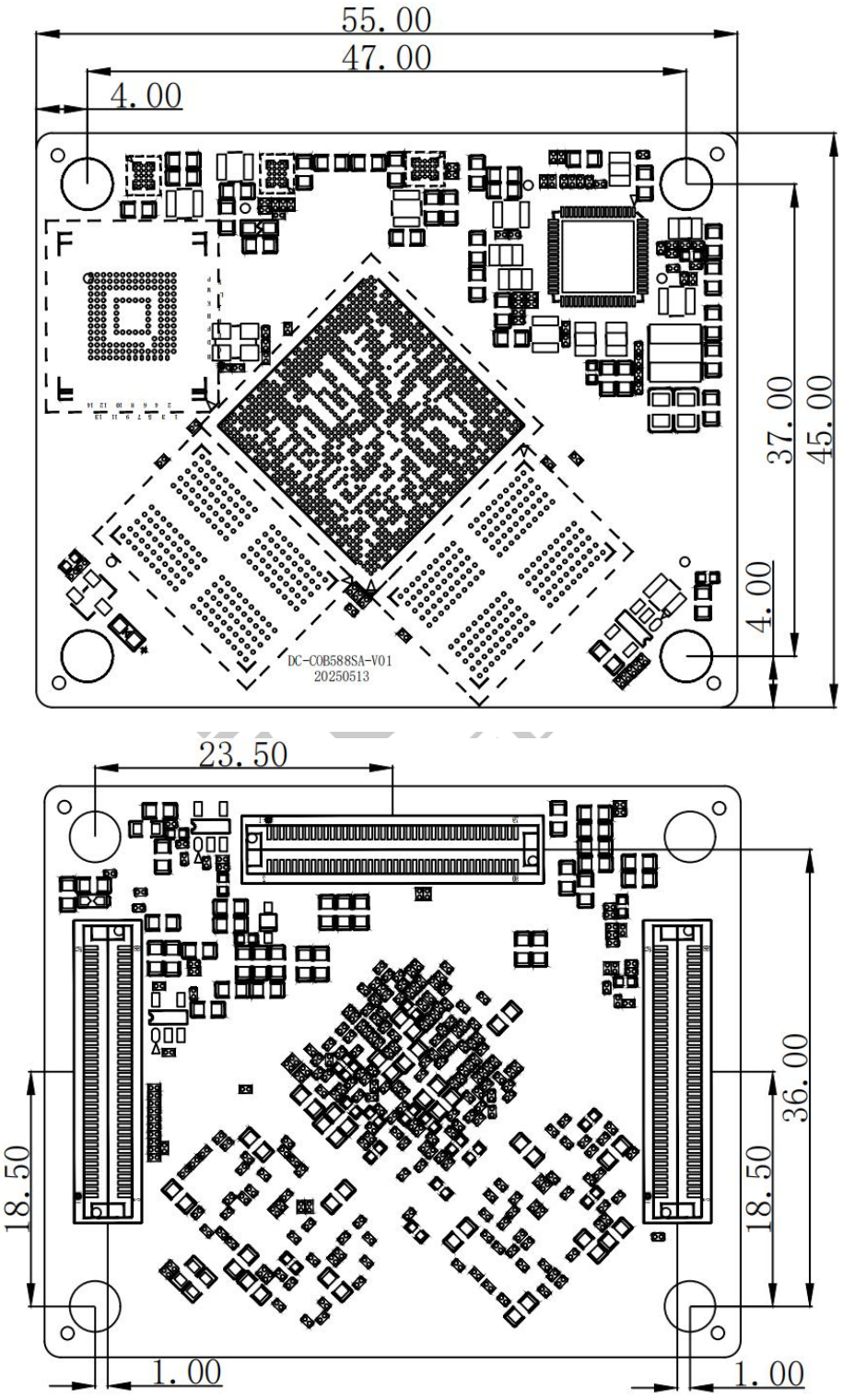
1 RK3588S2 2 LPDDR4X 3 eMMC



第三章 主板规格

3.1、PCB 尺寸图

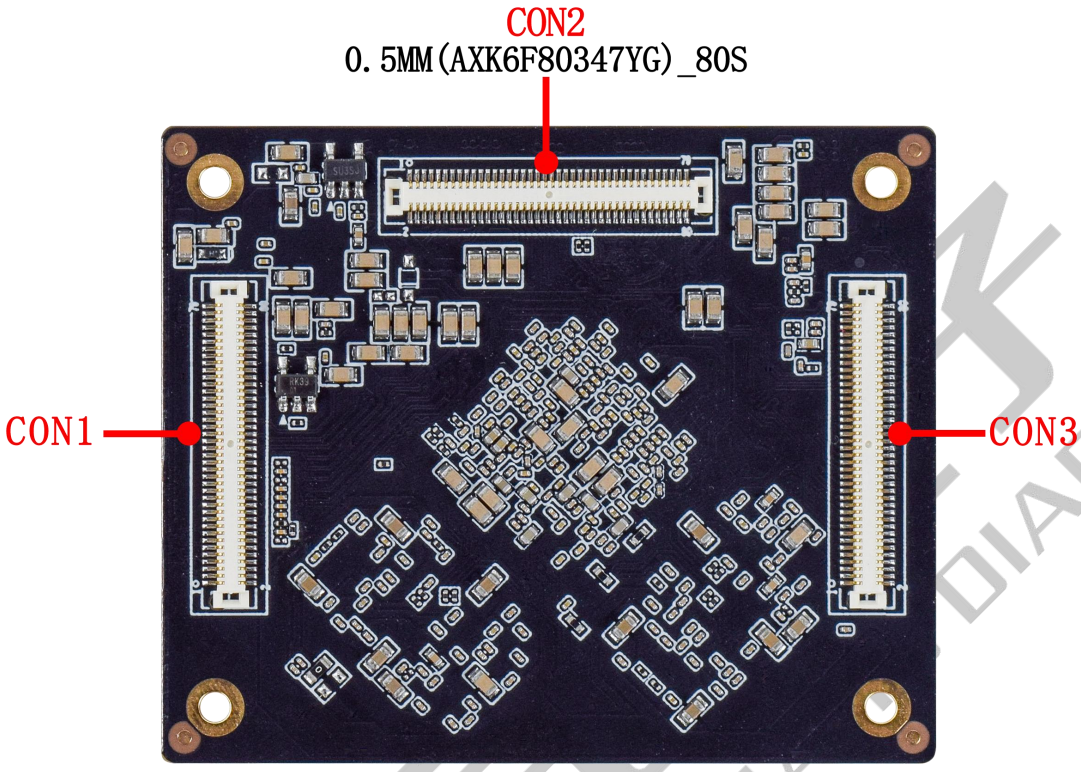
单位：mm



3.2、规格参数

主板尺寸： 55*45*5mm
主板高度： 正面≤1.5mm，背面≤1.5mm
PCB 层数： 8 层
PCB 尺寸： 55*45*1.6mm
PCB 颜色： 黑色
PCB 工艺： 沉金

第四章 引脚定义



4.1.1、 CON1 接口

Pin	Net Name	Pad type	IO Pull	Default function description	IO Power domain
1	GND	G		GND	
2	GND	G		GND	
3	EDP_TX0_AUXN/HDMI0_TX_SBDN	I		HDMI0_TX_SBDN/eDP0_TX_AUXN	
4	SDMMC0_D0/GPIO4_D0_u	I/O		SDMMC0_D0	
5	EDP_TX0_AUXP/HDMI0_TX_SBDP	I		HDMI0_TX_SBDP/eDP0_TX_AUXP	
6	SDMMC0_D1/GPIO4_D1_u	I/O		SDMMC0_D1	
7	EDP_TX0_D0N/HDMI0_TX0N	O		HDMI0_TX0N_PORT/eDP0_TX_D0N	
8	SDMMC_D2/JTAG_TCK_M0/GPIO4_D2_u	I/O		SDMMC0_D2	
9	EDP_TX0_D0P/HDMI0_TX0P	O		HDMI0_TX0P_PORT/eDP0_TX_D0P	
10	SDMMC_D3/JTAG_TMS_M0/GPIO4_D3_u	I/O		SDMMC0_D3	
11	EDP_TX0_D1N/HDMI0_TX1N	O		HDMI0_TX1N_PORT/eDP0_TX_D1N	
12	SDMMC_CMD/MCU_JTAG_TCK_M0/GPIO4_D4_u	I/O		SDMMC0_CMD	
13	EDP_TX0_D1P/HDMI0_TX1P	O		HDMI0_TX1P_PORT/eDP0_TX_D1P	
14	SDMMC_CLK/MCU_JTAG_TMS_M0/GPIO4_D5_d	I/O		SD_CLK	
15	EDP_TX0_D2N/HDMI0_TX2N	O		HDMI0_TX2N_PORT/eDP0_TX_D2N	

16	SARADC_VIN0_BOOT	I		BOOT_SARADC_IN0	
17	EDP_TX0_D2P/HDMI0_TX2P	O		HDMI0_TX2P_PORT/eDP0_TX_D2P	
18	SARADC_VIN1_KEY/RECOVERY	I		SARADC_VIN1_KEY/RECOVERY	
19	EDP_TX0_D3N/HDMI0_TX3N	O		HDMI0_TX3N_PORT/eDP0_TX_D3N	
20	SARADC_VIN2	I		NC	
21	EDP_TX0_D3P/HDMI0_TX3P	O		HDMI0_TX3P_PORT/eDP0_TX_D3P	
22	SARADC_VIN3_HP_HOOK	I		SARADC_VIN3	
23	GND	G		GND	
24	SARADC_VIN4_BATT_TC_L	I		SARADC_VIN4	
25	TYPEC0_OTG_DP	I/O		TYPEC0_OTG_DP	
26	SARADC_VIN5	I		SARADC_VIN5	
27	TYPEC0_OTG_DM	I/O		TYPEC0_OTG_DM	
28	GND	G		GND	
29	TYPEC0_OTG_VBUSDET	I		TYPEC0_USB20_VBUSDET	
30	TYPEC0_SBU1	O		TYPEC0_SBU1	
31	TYPEC0_OTG_ID			NC	
32	TYPEC0_SBU2	O		TYPEC0_SBU2	
33	USB20_HOST0_DP	I/O		USB20_HOST0_DP	
34	TYPEC0_SSRX1P	I		TYPEC0_SSRX1P	
35	USB20_HOST0_DM	I/O		USB20_HOST0_DM	
36	TYPEC0_SSRX1N	I		TYPEC0_SSRX1N	
37	USB20_HOST1_DP	I/O		USB20_HOST1_DP	
38	TYPEC0_SSTX1P	O		TYPEC0_SSTX1P	
39	USB20_HOST1_DM	I/O		USB20_HOST1_DM	
40	TYPEC0_SSTX1N	O		TYPEC0_SSTX1N	
41	GND	G		GND	
42	TYPEC0_SSRX2P	I		TYPEC0_SSRX2P	
43	MIPI_DPHY1_TX_D3N	O		MIPI_DPHY1_TX_D3N	
44	TYPEC0_SSRX2N	I		TYPEC0_SSRX2N	
45	MIPI_DPHY1_TX_D3P	O		MIPI_DPHY1_TX_D3P	
46	TYPEC0_SSTX2P	O		TYPEC0_SSTX2P	
47	MIPI_DPHY1_TX_D2N	O		MIPI_DPHY1_TX_D2N	
48	TYPEC0_SSTX2N	O		TYPEC0_SSTX2N	
49	MIPI_DPHY1_TX_D2P	O		MIPI_DPHY1_TX_D2P	
50	RK806_VDC	I		RK806_VDC	
51	MIPI_DPHY1_TX_CLKN	O		MIPI_DPHY1_TX_CLKN	
52	GND	G		GND	
53	MIPI_DPHY1_TX_CLKP	O		MIPI_DPHY1_TX_CLKP	
54	GPIO4_A5_d	O		UART3_TX_M2	3.3V
55	MIPI_DPHY1_TX_D1N	O		MIPI_DPHY1_TX_D1N	
56	GPIO4_B2_u	O		HDMI0_TX_ON_H	3.3V
57	MIPI_DPHY1_TX_D1P	O		MIPI_DPHY1_TX_D1P	
58	GPIO4_A6_d	I		UART3_RX_M2	3.3V

59	MIPI_DPHY1_TX_DON	O		MIPI_DPHY1_TX_DON	
60	GPIO4_A1_d	O		PCIE20X1_1_WAKEN_M1	3.3V
61	MIPI_DPHY1_TX_DOP	O		MIPI_DPHY1_TX_DOP	
62	GPIO4_A3_d	O		UART0_TX_M2	3.3V
63	GND	G		GND	
64	GPIO4_A4_d	O		UART0_RX_M2	3.3V
65	GND	G		GND	
66	GPIO4_A0_d	O		PCIE20x1_1_CLKREQn_M0	3.3V
67	GND	G		GND	
68	I2C6_SCL_M3/GPIO4_B1_u	O		I2C6_SCL_M3	3.3V
69	GND	G		GND	
70	I2C6_SDA_M3/GPIO4_B0_d	I/O		I2C6_SDA_M3	3.3V
71	VCC_SYSIN	P		VCC4V0_SYS	4V
72	HDMI_TX0_SCL_M0	O		HDMI_TX0_SCL_M0	
73	VCC_SYSIN	P		VCC4V0_SYS	4V
74	HDMI0_TX_ON_H/GPIO4_B2_u	O		HDMI0_TX_ON_H	3.3V
75	VCC_SYSIN	P		VCC4V0_SYS	4V
76	PMIC_EXT_EN_OUT	I		PMIC_EXT_EN_OUT	
77	VCC_SYSIN	P		VCC4V0_SYS	4V
78	GND	G		GND	
79	VCC_SYSIN	P		VCC4V0_SYS	4V
80	VCC_1V8_S3	P		VCC_1V8_S3	1.8V

4.1.2、 CON2 接口

Pin	Net Name	Pad type	IO Pull	Default function description	IO Power domain
1	GND	G		GND	
2	PWRON_L	O		PWRON_L	
3	MIPI_DPHY1_RX_D3N	I		MIPI_DPHY1_TX_D3N	
4	HDMI_TX0_SDA_M0/GPIO4_C0_u	I/O		HDMI_TX0_SDA_M0	3.3V
5	MIPI_DPHY1_RX_D3P	I		MIPI_DPHY1_TX_D3P	
6	GPIO4_B3_u	O		TYPEC0_SBU1_DC	3.3V
7	MIPI_DPHY1_RX_D2N	I		MIPI_DPHY1_TX_D2N	
8	GPIO4_B5_d	O		TYPEC0_SBU2_DC	3.3V
9	MIPI_DPHY1_RX_D2P	I		MIPI_DPHY1_TX_D2P	
10	GPIO4_A2_d	O		PCIE20x1_1_PERSTn_M0	3.3V
11	MIPI_DPHY1_RX_CLKN	I		MIPI_DPHY1_TX_CLKN	
12	GPIO4_A7_d	O		LVDS_BL_EN	3.3V
13	MIPI_DPHY1_RX_CLKP	I		MIPI_DPHY1_TX_CLKP	
14	HDMI_TX0_CEC_M0/GPIO4_C1_d	O		HDMI_TX0_CEC_M0	3.3V
15	MIPI_DPHY1_RX_D1N	I		MIPI_DPHY1_TX_D1N	
16	GPIO4_B4_u	O		TPINT_L	3.3V
17	MIPI_DPHY1_RX_D1P	I		MIPI_DPHY1_TX_D1P	
18	PCIE20x1_2_CLKREQn_M0/GPIO3_C7_u	I		PCIE20x1_2_CLKREQn_M0	3.3V

19	MIPI_DPHY1_RX_DON	I		MIPI_DPHY1_TX_DON	
20	PCIE20x1_2_PERSTn_M0/GPIO3_D1_d			PCIE20x1_2_PERSTn_M0	
21	MIPI_DPHY1_RX_DOP	O		MIPI_DPHY1_TX_DOP	
22	GPIO3_C6_u	O		TPRST_L	
23	GND	G		GND	
24	UART9_TX_M2_BT/GPIO3_D5_d	O		UART9_TX_M2_BT	3.3V
25	MIPI_DPHY0_TX_D3N/MIPI_CPHY0_TX_TRIO2_C	O		MIPI_DPHY0_TX_D3N	
26	UART9_RX_M2_BT/GPIO3_D4_d	I		UART9_RX_M2_BT	3.3V
27	MIPI_DPHY0_TX_D3P	O		MIPI_DPHY0_TX_D3P	
28	GND	G		GND	
29	MIPI_DPHY0_TX_D2N/MIPI_CPHY0_TX_TRIO2_A	O		MIPI_DPHY0_TX_D2N	
30	UART9_RTSN_M2_BT/GPIO3_D2_d	O		UART9_RTSN_M2_BT	3.3V
31	MIPI_DPHY0_TX_D2P/MIPI_CPHY0_TX_TRIO2_B	O		MIPI_DPHY0_TX_D2P	
32	UART9_CTSN_M2_BT/GPIO3_D3_d	I		UART9_CTSN_M2_BT	3.3V
33	MIPI_DPHY0_TX_CLKN/MIPI_CPHY0_TX_TRIO1_B	O		MIPI_DPHY0_TX_CLKN	
34	PCIE20x1_2_WAKEn_M0/GPIO3_D0_u	I		PCIE20x1_2_WAKEn_M0	
35	MIPI_DPHY0_TX_CLKP/MIPI_CPHY0_TX_TRIO1_C	O		MIPI_DPHY0_TX_CLKP	
36	GPIO3_C4_u	O		UART5_TX_M1_CAN2_RX_M0	3.3V
37	MIPI_DPHY0_TX_D1N/MIPI_CPHY0_TX_TRIO0_C	O		MIPI_DPHY0_TX_D1N	
38	GPIO3_C5_u	O		UART5_RX_M1_CAN2_TX_M0	3.3V
39	MIPI_DPHY0_TX_D1P/MIPI_CPHY0_TX_TRIO1_A	O		MIPI_DPHY0_TX_D1P	
40	LCD_RESET_L/GPIO0_C7_d	I		LCD_RESET_L	1.8V
41	MIPI_DPHY0_TX_D0N/MIPI_CPHY0_TX_TRIO0_A	O		MIPI_DPHY0_TX_D0N	
42	GPIO3_B7_d	O		LCS4110RST	3.3V
43	MIPI_DPHY0_TX_D0P/MIPI_CPHY0_TX_TRIO0_B	O		MIPI_DPHY0_TX_D0P	
44	GPIO3_C0_d	I/O		UART7_TX_M1	3.3V
45	GND	G		GND	
46	GPIO3_C1_d	I		UART7_RX_M1	3.3V
47	MIPI_CSI0_RX_D3N	I		NC	
48	GND	G		GND	
49	MIPI_CSI0_RX_D3P	I		NC	
50	I2C2_SCL_M0	O		NC	
51	MIPI_CSI0_RX_D2N	I		NC	
52	I2C2_SDA_M0	I/O		NC	
53	MIPI_CSI0_RX_D2P	I		NC	
54	MIPI_CSI1_RX_D3N	I		MIPI_CSI1_RX_D3N	
55	MIPI_CSI0_RX_CLK0N	I		MIPI_CSI0_RX_CLK0N	

56	MIPI_CSI1_RX_D3P	I		MIPI_CSI1_RX_D3P	
57	MIPI_CSI0_RX_CLK0P	I		MIPI_CSI0_RX_CLK0P	
58	MIPI_CSI1_RX_D2N	I		MIPI_CSI1_RX_D2N	
59	MIPI_CSI0_RX_D1N	I		MIPI_CSI0_RX_D1N	
60	MIPI_CSI1_RX_D2P	I		MIPI_CSI1_RX_D2P	
61	MIPI_CSI0_RX_D1P	I		MIPI_CSI0_RX_D1P	
62	MIPI_CSI1_RX_CLK1P	I		MIPI_CSI1_RX_CLK1P	
63	MIPI_CSI0_RX_D0N	I		MIPI_CSI0_RX_D0N	
64	MIPI_CSI1_RX_CLK1N	I		MIPI_CSI1_RX_CLK1N	
65	MIPI_CSI0_RX_D0P	I		MIPI_CSI0_RX_D0P	
66	GND	G		GND	
67	GND	G		GND	
68	MIPI_CSI1_RX_D1N	I		MIPI_CSI1_RX_D1N	
69	GPIO0_D5_u	I		USB_OTG_PWR_RN	1.8V
70	MIPI_CSI1_RX_D1P	I		MIPI_CSI1_RX_D1P	
71	GPIO0_C7_d	O		LCD_RESET_L	1.8V
72	MIPI_CSI1_RX_D0N	I		MIPI_CSI1_RX_D0N	
73	GPIO0_D4_u	O		SYS_PWR_EN_H	1.8V
74	MIPI_CSI1_RX_D0P	I		MIPI_CSI1_RX_D0P	
75	GPIO0_C4_d	I		5G_LTE_EN	1.8V
76	MIPI_CSI1_RX_CLK0N	I			
77	UART2_RX_M0_1V8/GPIO0_B6_d	I		UART2_RX_M0_1V8	1.8V
78	MIPI_CSI1_RX_CLK0P	I			
79	UART2_TX_M0_1V8/GPIO0_B5_d	O		UART2_TX_M0_1V8	1.8V
80	GND	G		GND	

4.1.3、 CON3 接口

Pin	Net Name	Pad type	IO Pull	Default function description	IO Power domain
1	GPIO1_A0_d	I		UART6_RX_M1_1V8	1.8V
2	GND	G		GND	
3	GPIO1_A1_d	O		UART6_TX_M1_1V8	1.8V
4	PCIE20_0_RXN	I		PCIE20_0_RXN	
5	HDMI_TX0_HPD_M0/GPIO1_A5_d	I		HDMI_TX0_HPD_M0	1.8V
6	PCIE20_0_RXP	I		PCIE20_0_RXP	
7	GND	G		GND	
8	PCIE20_0_TXN	O		PCIE20_0_TXN	
9	GPIO1_A6_d	O		GPIO1_A6_d	1.8V
10	PCIE20_0_TXP	O		PCIE20_0_TXP	
11	I2C4_SDA_M3/GPIO1_A2_d	O		I2C4_SDA_M3	1.8V
12	PCIE20_0_REFCLKN	O		PCIE20_0_REFCLKN	
13	I2C4_SCL_M3/GPIO1_A3_d	O		I2C4_SCL_M3	1.8V
14	PCIE20_0_REFCLKP	O		PCIE20_0_REFCLKP	
15	GPIO1_D7_u	I/O		MIPI_CAMERA4_CLK_M0	1.8V

16	GND	G		GND	
17	GPIO1_D6_u	O		MIPI_CAMERA3_CLK_M0	1.8V
18	USB30_2_SSTXP	O		USB30_2_SSTXP	
19	GPIO1_B7_u	I/O		I2C5_SDA_M3	1.8V
20	USB30_2_SSTXN	O		USB30_2_SSTXN	
21	GPIO1_B6_u	O		I2C5_SCL_M3	1.8V
22	USB30_2_SSRXP	I		USB30_2_SSRXP	
23	GND	G		GND	
24	USB30_2_SSRXN	I		USB30_2_SSRXN	
25	GMAC0_TXEN/GPIO3_B5_u	O		UART3_TX_M1_CAN1_RX_M0	3.3V
26	PCIE20_2_REFCLKP	O		PCIE20_2_REFCLKP	
27	I2S0_SCLK_TX/GPIO1_C3_d	O		I2S0_SCLK_TX	1.8V
28	PCIE20_2_REFCLKN	O		PCIE20_2_REFCLKN	
29	I2S0_SDI0/GPIO1_D4_d	I		I2S0_SDI0	1.8V
30	GND	G		GND	
31	I2S0_SDO0/GPIO1_C7_d	O		I2S0_SDO0	1.8V
32	GPIO1_B5_u	I		GPIO1_B5_u	1.8V
33	I2S0_LRCK_TX/GPIO1_C5_d	O		I2S0_LRCK_TX	1.8V
34	GPIO1_A4_d	O		GPIO1_A4_d	1.8V
35	GPIO1_D2_d	I		UART4_TX_M0_1V8	1.8V
36	GPIO1_B1_d	O		GPIO1_B1_d	1.8V
37	I2C3_SCL_M0/GPIO1_C1_z	I		PHONE_CTL	1.8V
38	GPIO1_B0_u	O		GPIO1_B0_u	1.8V
39	GPIO1_B3_d	O		GPIO1_B3_d	1.8V
40	GPIO1_A7_u	O		GPIO1_A7_u	1.8V
41	GPIO1_D5_d	I		GPIO1_D5_d	1.8V
42	GPIO1_C6_d	O		USB_HOST1_EN	1.8V
43	GPIO1_D3_d	I		UART4_RX_M0_1V8	1.8V
44	GPIO1_B4_u	O		USB_HOST2_EN	1.8V
45	I2C3_SDA_M0/GPIO1_C0_z	I		HP_DET_L	1.8V
46	GPIO1_B2_d	O		USB_HOST3_EN	1.8V
47	GPIO1_C4_d	O		GPIO1_C4_d	1.8V
48	GND	G		GND	
49	GND	G		GND	
50	GMAC0_MDC	I		I2C8_SCL_M4	3.3V
51	I2C7_SDA_M0_CODEC/GPIO1_D1_d	I/O		I2C7_SDA_M0_CODEC	1.8V
52	GMAC0_MDIO	O		I2C8_SDA_M4	3.3V
53	I2C7_SCL_M0_CODEC/GPIO1_D0_d	O		I2C7_SCL_M0_CODEC	1.8V
54	GMAC0_TXD3/GPIO3_A1_u	I/O		SDIO_D1_M1_WIFI	3.3V
55	I2S0_MCLK/GPIO1_C2_d	O		I2S0_MCLK	1.8V
56	GMAC0_TXD2/GPIO3_A0_u	I/O		SDIO_D0_M1_WIFI	3.3V
57	GPIO0_A0_d	I		GPIO0_A0_d	1.8V
58	GMAC0_TXD1/GPIO3_B4_u	O		SPK_CTL_H	3.3V

59	GPIO0_A4_u	O		SDMMC_DET_L	1.8V
60	GMAC0_TXD0/GPIO3_B3_u	O		BT_REG_ON_H	3.3V
61	GPIO0_B2_u	I		LCD_PWREN_H	1.8V
62	GPIO3_B2_d	I		PWM3_IR_M1	3.3V
63	GPIO0_B0_z	I		RTC_INT_L	1.8V
64	GMAC0_TXCLK/GPIO3_A4_d	I/O		SDIO_CMD_M1_WIFI	3.3V
65	GPIO0_D3_u	I		CC_INT_L	1.8V
66	GMAC0_RXD3/GPIO3_A3_u	I/O		SDIO_D3_M1_WIFI	3.3V
67	GPIO0_C5_u	I		WIFI_WAKE_HOST_H	1.8V
68	GMAC0_RXD2/GPIO3_A2_u	I/O		SDIO_D2_M1_WIFI	3.3V
69	GPIO0_D0_d	I		BT_WAKE_HOST_H	1.8V
70	GMAC0_RXD1/GPIO3_B0_u	O		WIFI_REG_ON_H	3.3V
71	GPIO0_C6_u	O		GPIO0_C6_u	1.8V
72	GMAC0_RXD0/GPIO3_A7_u	O		LVDS_ADJ_PWM	3.3V
73	TSADC_TEST_OUT_TS	O		NC	
74	GMAC0_RXDV_CRS/GPIO3_B1_d	O		LVDS_PWR_EN	3.3V
75	NC			NC	
76	GMAC0_RXCLK/GPIO3_A5_d	O		SDIO_CLK_M1_WIFI	3.3V
77	NC			NC	
78	GMAC0_MCLKINOUT/GPIO3_B6_d	O		UART3_RX_M1_CAN1_TX_M0	3.3V
79	GND	G		GND	
80	ETH0_REFCLKO_25M/GPIO3_A6_d			HOST_WAKE_BT_H	3.3V

第五章 注意事项

- 接触主板时请佩戴静电手环等静电防护工具（要有良好接地）；
- 请勿带电组装、接线等操作；
- 请核对主板接口定义和外设接口定义，不能出现接错、接反；
- 请用 M3 平圆头螺丝固定主板，请勿使用沉头、规格较大的螺丝；扭螺丝时注意避免主板发生变形、弯曲；
- 注意 IO 口、串口、使能脚等电平匹配；
- 注意外接屏幕的功率，功率较大的请考虑外部供电；
- 注意产品的整体功率，选择功率足够的电源；
- 注意 CON1、CON2、CON3 座子皆是使用 PANASONIC(松下)品牌的座子 0.5MM(AXK6F80347YG)_80S，底板设计座子推荐使用同品牌下的座子 0.5MM(AXK5F80347YG)_80S；