# Demo Board For RV1106G

## RV1106G_BAT_IPC_DEMO_V1.0

| Reference Design Main Functions Introduction | |
|---|---|
| **Power** | Discrete |
| **RAM** | SPI FLASH |
| **Interface** | SDMMC/SDIO/MIPI_CSI/I2S/USB/ADC |



| | | | | | |
|---|---|---|---|---|---|
| Rockchip | Rockchip Electronics Co., Ltd | | | | |
| **Project:** | **RV1106G_BAT_IPC_DEMO** | | | | |
| **File:** | **00.Cover Page** | | | | |
| Date: | Tuesday, July 12, 2022 | | | Rev: | V1.0 |
| Designed by: | whb | Reviewed by: | Default | Sheet: | 1 of 18 |

# Index and Notes

## Catalogue



## Note

**NOTE 1:**
**Component parameter description**
**1. DNP stands for component not mounted temporarily**
**2. If Value or option is DNP, which means the area is reserved without being mounted**

**NOTE 2:**
**Please use our recommended components to avoid too many changes.**
**For more informations about the second source,please refer to our AVL.**

## Generate Bill of Materials

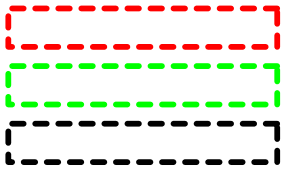
**Header:**

*Item\tPart\tDescription\tPCB Footprint\tReference\tQuantity\tOption*

**Combined property string:**

*{Item}\t{Value}\t{Description}\t{PCB Footprint}\t{Reference}\t{Quantity}\t{Option}*

## Graphic Description



*Note*

*Option*

*Description*

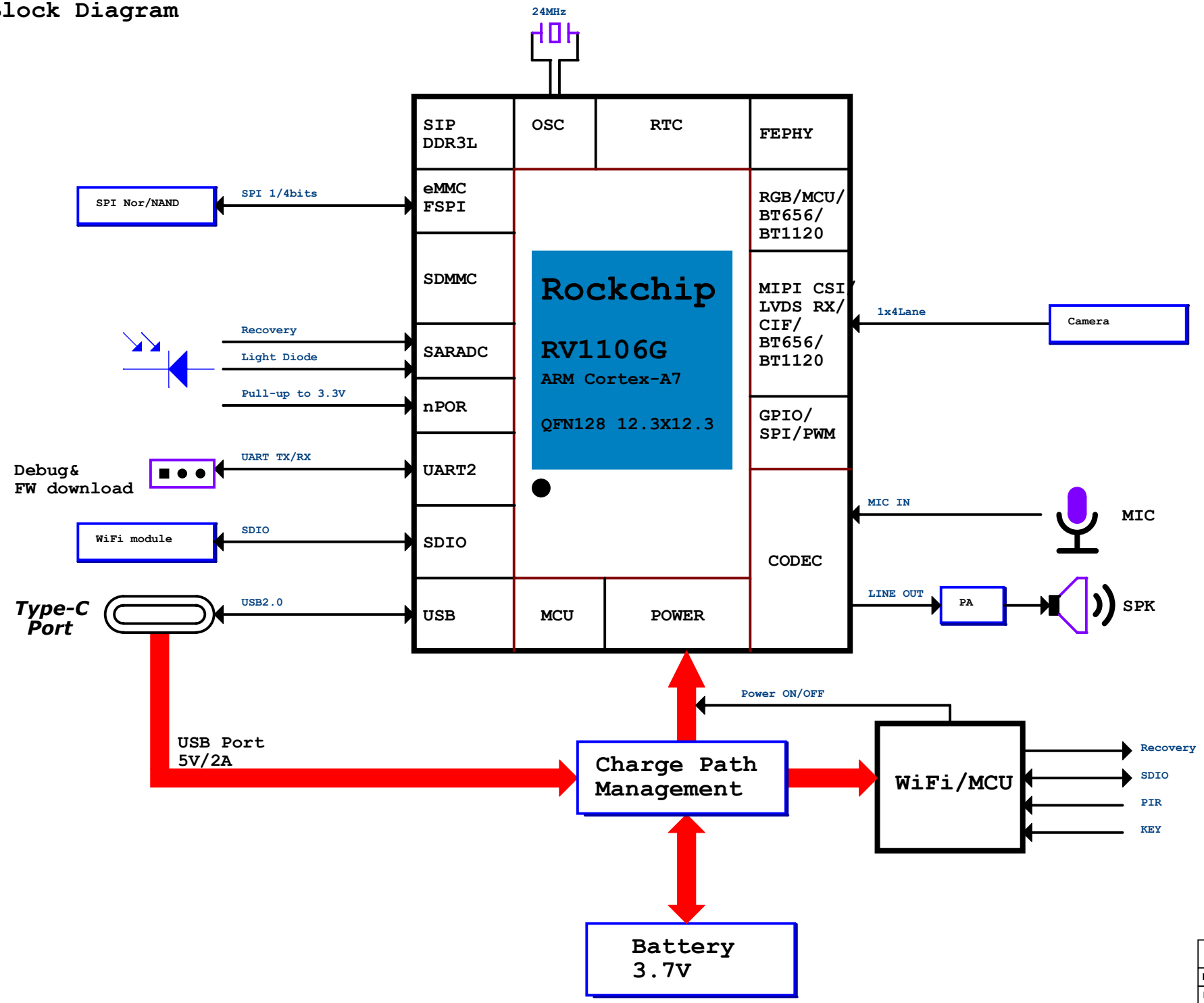
**Rockchip Confidential**

| | | | | | |
|---|---|---|---|---|---|
| Rockchip | Rockchip Electronics Co., Ltd | | | | |
| Project: | RV1106G_BAT_IPC_DEMO | | | | |
| File: | 01.Index and Notes | | | | |
| Date: | Tuesday, July 12, 2022 | | | Rev: | V1.0 |
| Designed by: | whb | Reviewed by: | Default | Sheet: | 2 of 18 |

# Revision History

| Version | Date | Author | Change Note | Approved |
|---|---|---|---|---|
| V1.0 | 2022.07.12 | whb | First edition | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |

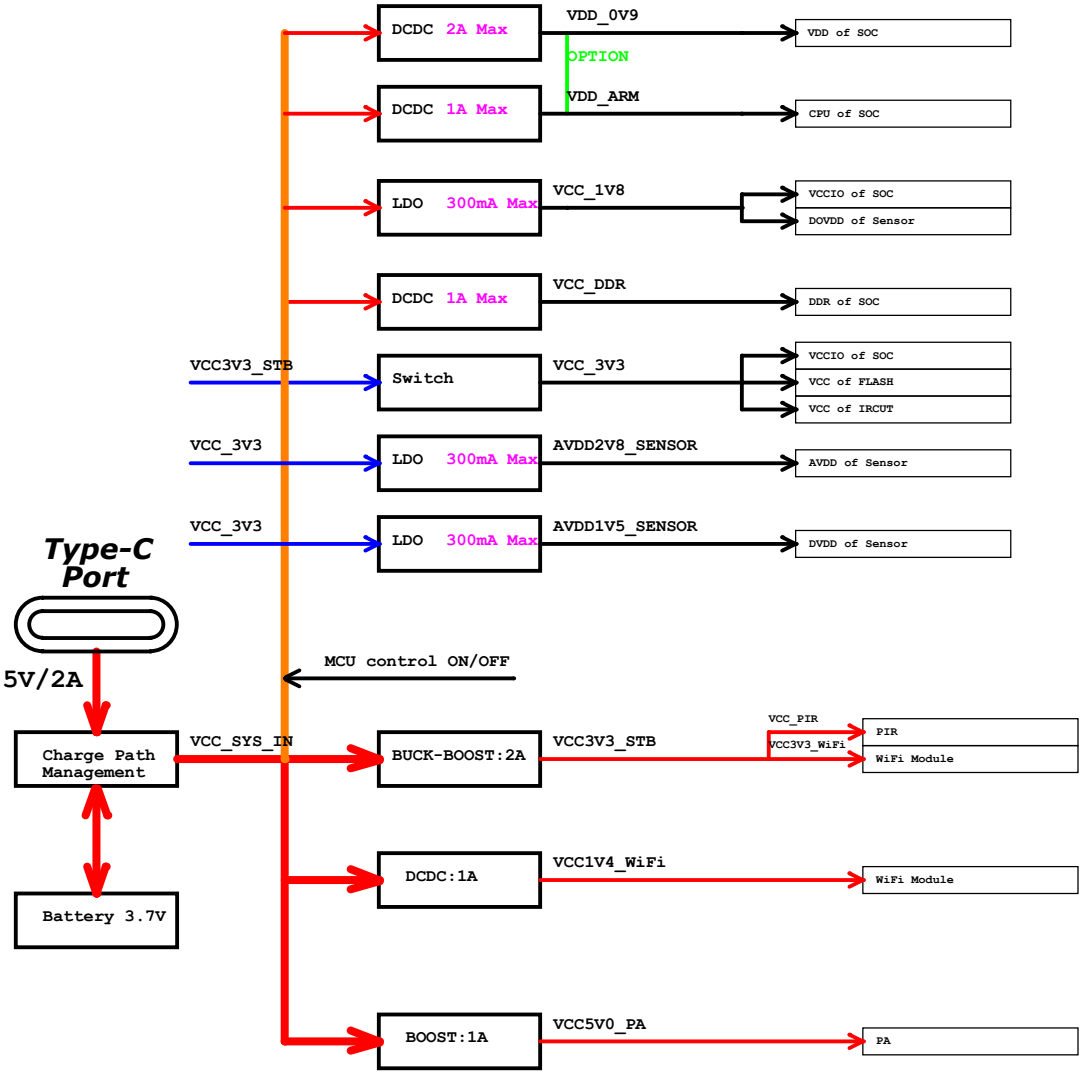
# Block Diagram




Rockchip Confidential

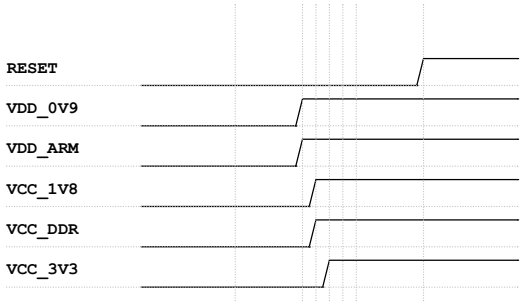
| | | | | | |
|---|---|---|---|---|---|
| Rockchip | Rockchip Electronics Co., Ltd | | | | |
| Project: | RV1106G_BAT_IPC_DEMO | | | | |
| File: | 03.Block Diagram | | | | |
| Date: | Tuesday, July 12, 2022 | | | Rev: | V1.0 |
| Designed by: | whb | Reviewed by: | Default | Sheet: | 4 of 18 |

# Power Diagram and Sequence




Power-on Sequence

| Power Name | PMIC Channel | Time Slot | Default voltage | Peak Current |
|---|---|---|---|---|
| VDD_0V9 | DC-DC BUCK | Slot: 1 | 0.85V | 2.0A |
| VDD_ARM | DC-DC BUCK | Slot: 1 | 0.882V | 1.0A |
| VCC_DDR | DC-DC BUCK | Slot: 2 | 1.35V | 0.6A |
| VCC_1V8 | LDO | Slot: 2 | 1.8V | |
| VCC_3V3 | Switch | Slot: 3 | 3.3V | |
| | | | | |
| RESET | Finally , nPOR RESET 10ms after VCC_3V3 is ready | | | |



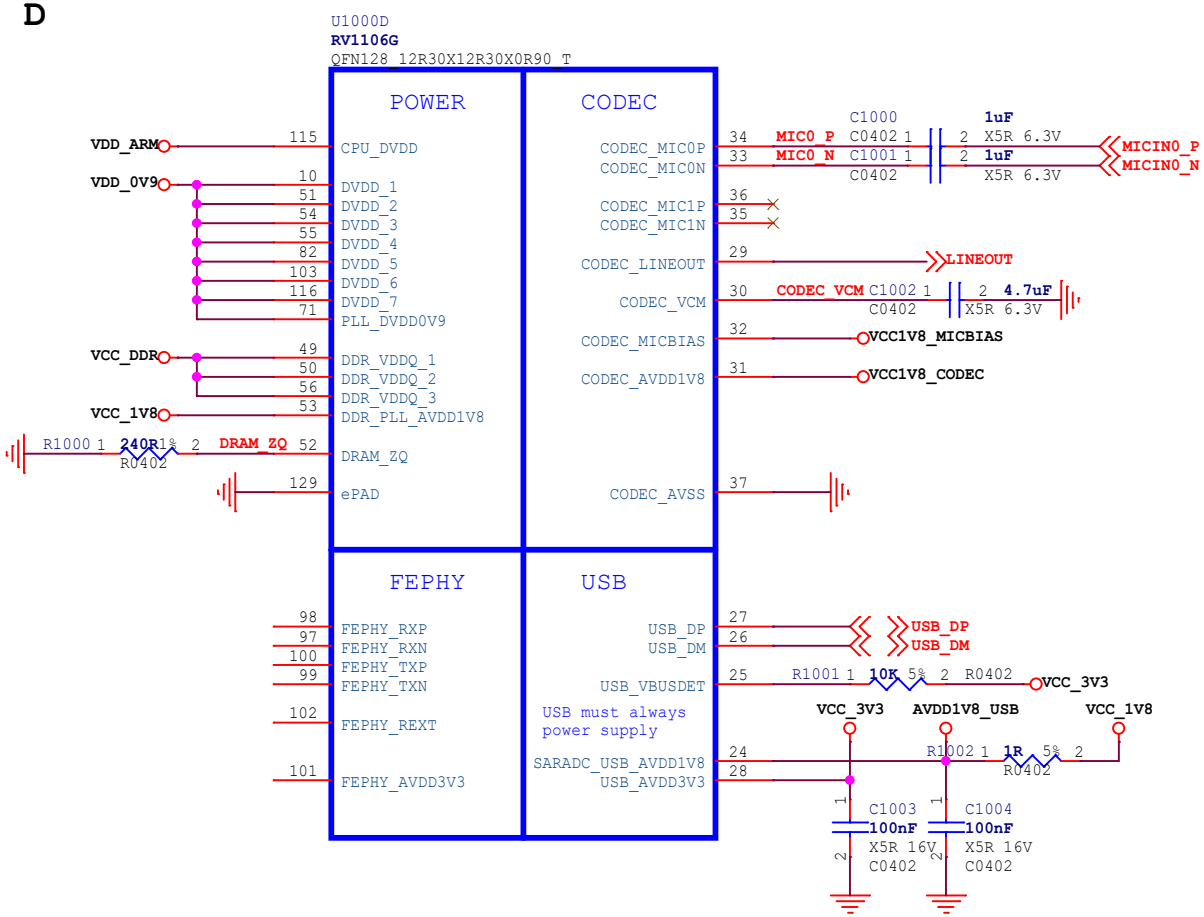



| | | | | | |
|---|---|---|---|---|---|
| Rockchip | Rockchip Electronics Co., Ltd | | | | |
| Project: | RV1106G_BAT_IPC_DEMO | | | | |
| File: | 04.Power Diagram and Sequence | | | | |
| Date: | Tuesday, July 12, 2022 | | | Rev: | V1.0 |
| Designed by: | whb | Reviewed by: | Default | Sheet: | 5 of 18 |

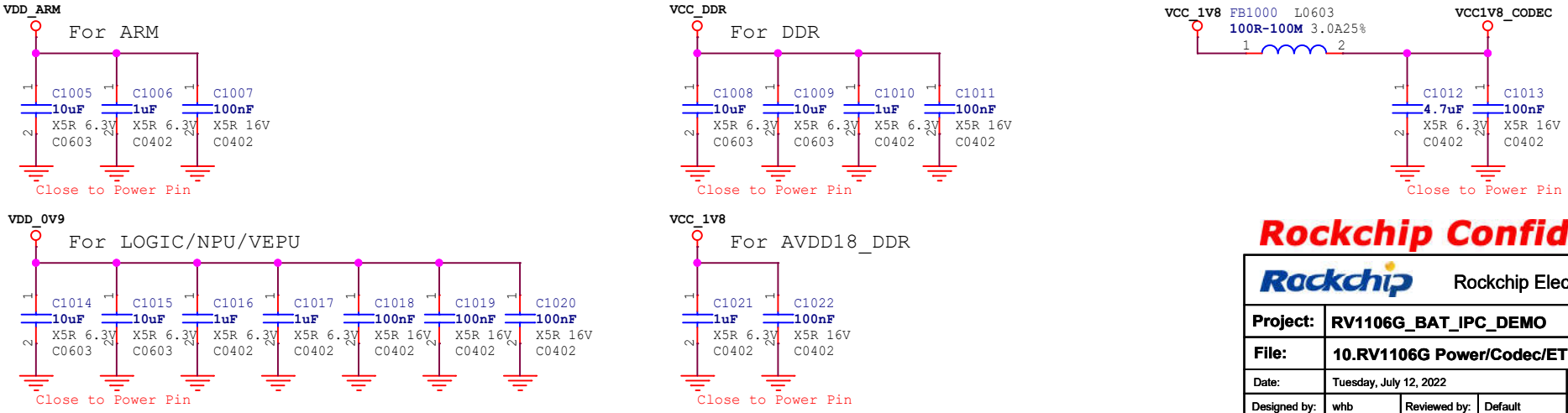
# IO Power Domain Map

| IO Domain | IO Group | Support of IO Voltage | | Default Actual assigned IO Domain Voltage | | | Remark |
|---|---|---|---|---|---|---|---|
| | | 1.8V | 3.3V | Net Name of Power Supply | Power Source | Voltage | |
| **PMU** | Group GPIO0_A | | ✓ | VCC_3V3 | | 3.3V | |
| **VCCIO1** | Group GPIO1_AB | | ✓ | VCC_3V3 | | 3.3V | |
| **VCCIO2** | Group GPIO4_C | ✓ | | VCC_1V8 | | 1.8V | |
| **VCCIO3** | Group GPIO4_AB | ✓ | ✓ | VCCIO_FLASH | | 1.8/3.3V | |
| **VCCIO4** | Group GPIO3_A | ✓ | ✓ | VCC_3V3 | | 3.3V | |
| **VCCIO5** | Group GPIO2_AB | ✓ | ✓ | | | | |
| **VCCIO6** | Group GPIO1_CD | ✓ | ✓ | VCC_3V3 | | 3.3V | |
| **VCCIO7** | Group GPIO3_BCD | ✓ | | VCC_1V8 | | 1.8V | |

# PART D



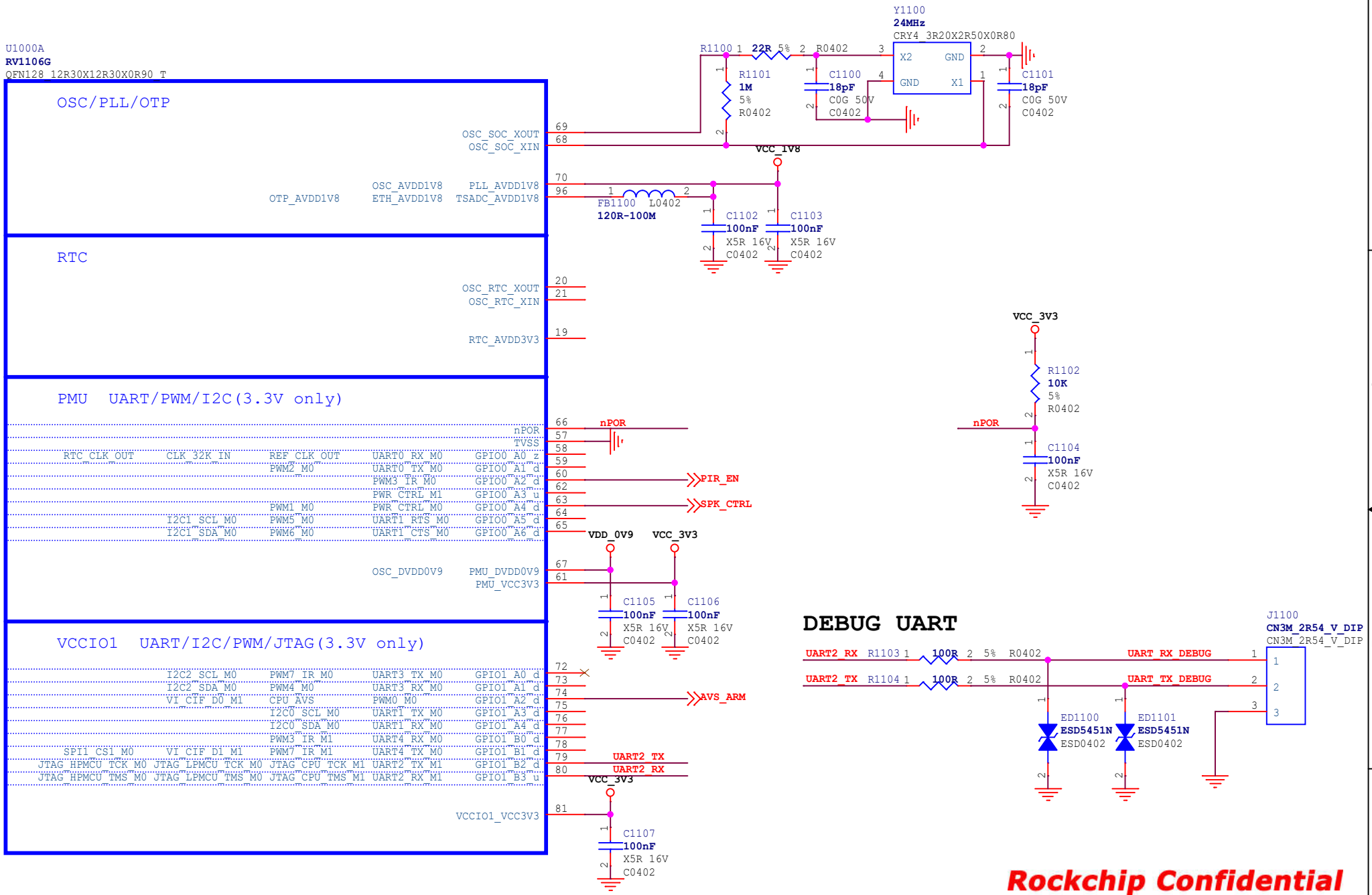

# POWER




**Rockchip Confidential**

| | | | | | |
|---|---|---|---|---|---|
| Rockchip | Rockchip Electronics Co., Ltd | | | | |
| Project: | RV1106G_BAT_IPC_DEMO | | | | |
| File: | 10.RV1106G Power/Codec/ETH/USB | | | | |
| Date: | Tuesday, July 12, 2022 | | | Rev: | V1.0 |
| Designed by: | whb | Reviewed by: | Default | Sheet: | 7 of 18 |

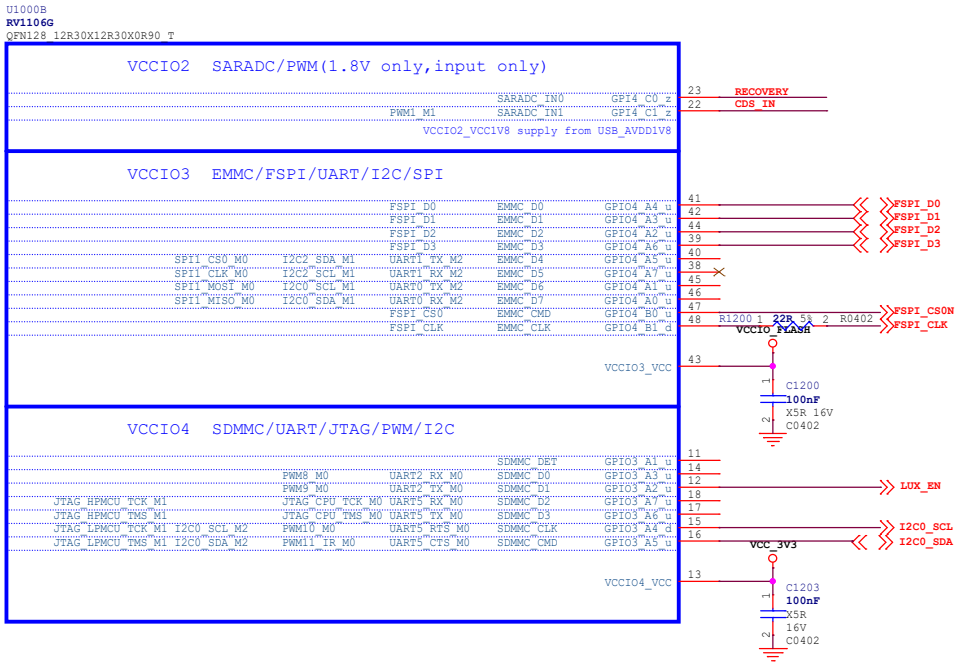
# PART A




Rockchip Confidential

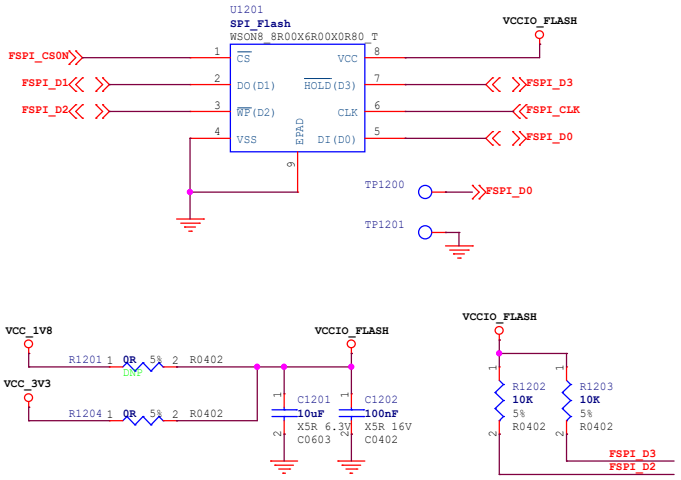
| | | | | | |
|---|---|---|---|---|---|
| Rockchip | Rockchip Electronics Co., Ltd | | | | |
| Project: | RV1106G_BAT_IPC_DEMO | | | | |
| File: | 11.RV1106G OSC/RTC/PMU/VCCIO | | | | |
| Date: | Tuesday, July 12, 2022 | | | Rev: | V1.0 |
| Designed by: | whb | Reviewed by: | Default | Sheet: | 8 of 18 |

# PART B

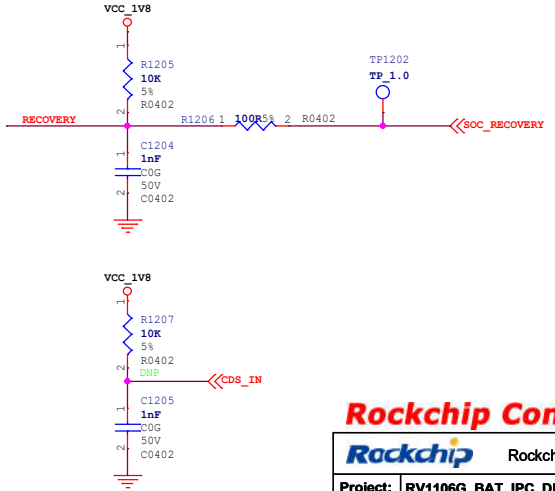



# SPI Flash

NOTE:
Refer to the latest AVL for parts selection.




# SARADC




Rockchip Confidential

| | | | | | |
|---|---|---|---|---|---|
| Rockchip | Rockchip Electronics Co., Ltd | | | | |
| Project: | RV1106G_BAT_IPC_DEMO | | | | |
| File: | 12.RV1106G ADC/FLASH/SDMMC | | | | |
| Date: | Tuesday, July 12, 2022 | | | Rev: | V1.0 |
| Designed by: | whb | Reviewed by: | Default | Sheet: | 9 of 18 |

# PART C

U1000C
**RV1106G**
QFN128_12R30X12R30X0R90_T

## VCCIO5 SDIO/I2S/VO_LCDC/UART/PWM/I2C

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | | I2C4_SCL_M0 | UART1_RTS_M1 | VO_LCDC_D9 | I2S0_LRCK | SDIO_D0_M0 | GPIO2_A1_d | 110 |
| | | I2C4_SDA_M0 | UART1_CTS_M1 | VO_LCDC_D8 | I2S0_SCLK | SDIO_D1_M0 | GPIO2_A0_d | 109 |
| | | | UART1_RX_M1 | VO_LCDC_D13 | I2S0_SDI0 | SDIO_D2_M0 | GPIO2_A5_d | 114 |
| | | | UART1_TX_M1 | VO_LCDC_D12 | I2S0_SDO0 | SDIO_D3_M0 | GPIO2_A4_d | 113 |
| | | | | VO_LCDC_D10 | I2S0_MCLK | SDIO_CLK_M0 | GPIO2_A2_d | 111 |
| | | | | VO_LCDC_D11 | I2S0_SDO3_SDI1 | SDIO_CMD_M0 | GPIO2_A3_d | 112 |
| | FLASH_TRIGOUT | I2C3_SCL_M0 | PWM2_M1 | VO_LCDC_D14 | I2S0_SDO2_SDI2 | UART0_RTS_M1 | GPIO2_A6_d | 107 |
| | PRELIGHT_TRIGOUT | I2C3_SDA_M0 | PWM4_M1 | VO_LCDC_D15 | I2S0_SDO1_SDI3 | UART0_CTS_M1 | GPIO2_A7_d | 106 |
| | | | PWM5_M1 | VO_LCDC_D16 | I2C1_SCL_M1 | UART0_RX_M1 | GPIO2_B0_d | 105 |
| | | | PWM6_M1 | VO_LCDC_D17 | I2C1_SDA_M1 | UART0_TX_M1 | GPIO2_B1_d | 104 |
| | | | | | | | VCCIO5_VCC | 108 |

## VCCIO6 VO_LCDC/VI_CIF/PWM/UART/I2C/SDIO/SPI/AUD_DSM/VI_BT656

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| VI_BT656_D0_M1 | | SDIO_D1_M1 | SPI0_CS0_M0 | PWM2_M2 | VI_CIF_D2_M1 | VO_LCDC_D7 | GPIO1_C0_d | 95 |
| VI_BT656_D1_M1 | | SDIO_D0_M1 | SPI0_CLK_M0 | PWM4_M2 | VI_CIF_D3_M1 | VO_LCDC_D6 | GPIO1_C1_d | 94 |
| VI_BT656_D2_M1 | I2C4_SCL_M1 | SDIO_CLK_M1 | SPI0_MOSI_M0 | PWM5_M2 | VI_CIF_D4_M1 | VO_LCDC_D5 | GPIO1_C2_d | 93 |
| VI_BT656_D3_M1 | I2C4_SDA_M1 | SDIO_CMD_M1 | SPI0_MISO_M0 | PWM6_M2 | VI_CIF_D5_M1 | VO_LCDC_D4 | GPIO1_C3_d | 92 |
| VI_BT656_D4_M1 | | SDIO_D3_M1 | UART4_RX_M1 | PWM8_M1 | VI_CIF_D6_M1 | VO_LCDC_D3 | GPIO1_C4_d | 91 |
| VI_BT656_D5_M1 | | SDIO_D2_M1 | UART4_TX_M1 | PWM9_M1 | VI_CIF_D7_M1 | VO_LCDC_D2 | GPIO1_C5_d | 90 |
| VI_BT656_D6_M1 | | | UART4_RTS_M1 | PWM10_M1 | VI_CIF_D8_M1 | VO_LCDC_D1 | GPIO1_C6_d | 83 |
| VI_BT656_D7_M1 | | | UART4_CTS_M1 | PWM11_IR_M1 | VI_CIF_D9_M1 | VO_LCDC_D0 | GPIO1_C7_d | 84 |
| VI_BT656_CLK_M1 | | UART3_TX_M1 | UART5_RTS_M1 | PWM3_IR_M2 | VI_CIF_CLKI_M1 | VO_LCDC_DEN | GPIO1_D0_d | 89 |
| | | UART3_RX_M1 | UART5_CTS_M1 | PWM10_M2 | VI_CIF_HREF_M1 | VO_LCDC_HSYNC | GPIO1_D1_d | 87 |
| SPI0_CS1_M0 | I2C3_SDA_M1 | AUD_DSM_P | UART5_RX_M1 | PWM0_M1 | VI_CIF_VSYNC_M1 | VO_LCDC_VSYNC | GPIO1_D2_d | 86 |
| | I2C3_SCL_M1 | AUD_DSM_N | UART5_TX_M1 | PWM11_IR_M2 | VI_CIF_CLKO_M1 | VO_LCDC_CLK | GPIO1_D3_d | 85 |
| | | | | | | | VCCIO6_VCC | 88 |

R13001 22R 5% 2 R0402

SDIO_D1
SDIO_D0
SDIO_CLK
SDIO_CMD
SDIO_D3
SDIO_D2
PWM_W_LED
PWM_IR_LED
PWR_W_LED_EN
IRC_AIN
PWR_IR_LED_EN
IRC_BIN

VCC_3V3

C1300
100nF
X5R 16V
C0402

## VCCIO7 VI_CIF/MIPI_CSI/LVDS_RX/UART/I2C/VI_BT1120/VI_BT656 (1.8V only,some for input only)

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | | | VI_BT1120_D0 | LVDS_RX_D3N | MIPI_CSI_RX_D3N | VI_CIF_D0_M0 | GPI3_B0_d | 117 |
| | | | VI_BT1120_D1 | LVDS_RX_D3P | MIPI_CSI_RX_D3P | VI_CIF_D1_M0 | GPI3_B1_d | 118 |
| | | | VI_BT1120_D2 | LVDS_RX_CLK1N | MIPI_CSI_RX_CLK1N | VI_CIF_D2_M0 | GPI3_B2_d | 119 |
| | | | VI_BT1120_D3 | LVDS_RX_CLK1P | MIPI_CSI_RX_CLK1P | VI_CIF_D3_M0 | GPI3_B3_d | 120 |
| | | | VI_BT1120_D4 | LVDS_RX_D2N | MIPI_CSI_RX_D2N | VI_CIF_D4_M0 | GPI3_B4_d | 121 |
| | | | VI_BT1120_D5 | LVDS_RX_D2P | MIPI_CSI_RX_D2P | VI_CIF_D5_M0 | GPI3_B5_d | 122 |
| | | | VI_BT1120_D6 | LVDS_RX_D1N | MIPI_CSI_RX_D1N | VI_CIF_D6_M0 | GPI3_B6_d | 123 |
| | | | VI_BT1120_D7 | LVDS_RX_D1P | MIPI_CSI_RX_D1P | VI_CIF_D7_M0 | GPI3_B7_d | 124 |
| | | VI_BT656_D0_M0 | VI_BT1120_D8 | LVDS_RX_CLK0N | MIPI_CSI_RX_CLK0N | VI_CIF_D8_M0 | GPI3_C0_d | 125 |
| | | VI_BT656_D1_M0 | VI_BT1120_D9 | LVDS_RX_CLK0P | MIPI_CSI_RX_CLK0P | VI_CIF_D9_M0 | GPI3_C1_d | 126 |
| | | VI_BT656_CLK_M0 | VI_BT1120_CLK | LVDS_RX_D0N | MIPI_CSI_RX_D0N | VI_CIF_CLKI_M0 | GPI3_C2_d | 127 |
| | | | | LVDS_RX_D0P | MIPI_CSI_RX_D0P | VI_CIF_HREF_M0 | GPI3_C3_d | 128 |
| | | | | MIPI_CLK0_OUT | | VI_CIF_CLKO_M0 | GPIO3_C4_d | 2 |
| | | | | | | VI_CIF_VSYNC_M0 | GPIO3_C5_d | 3 |
| | | VI_BT656_D2_M0 | VI_BT1120_D10 | PWM7_IR_M2 | MIPI_CLK1_OUT | VI_CIF_D10 | GPIO3_C6_d | 4 |
| | | VI_BT656_D3_M0 | VI_BT1120_D11 | UART5_TX_M2 | I2C4_SCL_M2 | VI_CIF_D11 | GPIO3_C7_d | 5 |
| | | VI_BT656_D4_M0 | VI_BT1120_D12 | UART5_RX_M2 | I2C4_SDA_M2 | VI_CIF_D12 | GPIO3_D0_d | 7 |
| | | VI_BT656_D5_M0 | VI_BT1120_D13 | UART5_RTS_M2 | I2C3_SCL_M2 | VI_CIF_D13 | GPIO3_D1_d | 6 |
| | | VI_BT656_D6_M0 | VI_BT1120_D14 | UART5_CTS_M2 | I2C3_SDA_M2 | VI_CIF_D14 | GPIO3_D2_d | 8 |
| | | VI_BT656_D7_M0 | VI_BT1120_D15 | | PWM1_M2 | VI_CIF_D15 | GPIO3_D3_d | 9 |
| | | | | | | | MIPI_AVDD1V8_VCCIO7_VCC1V8 | 1 |

MIPI_LVDS_D3N
MIPI_LVDS_D3P
MIPI_LVDS_D2N
MIPI_LVDS_D2P
MIPI_LVDS_D1N
MIPI_LVDS_D1P
MIPI_LVDS_CLKN
MIPI_LVDS_CLKP
MIPI_LVDS_D0N
MIPI_LVDS_D0P
MIPI_LVDS_MCLK0
MIPI_LVDS_RST
MIPI_LVDS_PDN
MIPI_I2C_SCL
MIPI_I2C_SDA

MIPI_CLK R1303 1 22R 5% 2 R0402

VCC_1V8

R1301 4.7K 5% R0402
R1302 4.7K 5% R0402

MIPI_I2C_SCL
MIPI_I2C_SDA

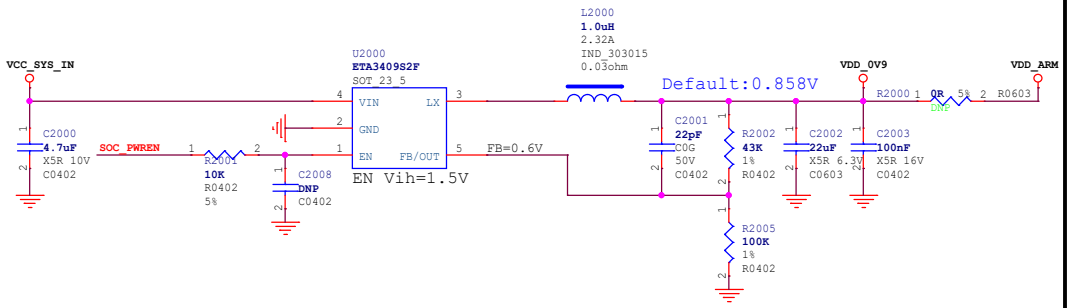
MIPI_CSI_AVDD_1V8 R1304 1 1R 5% 2 R0402 VCC_1V8

C1301
100nF
X5R 16V
C0402

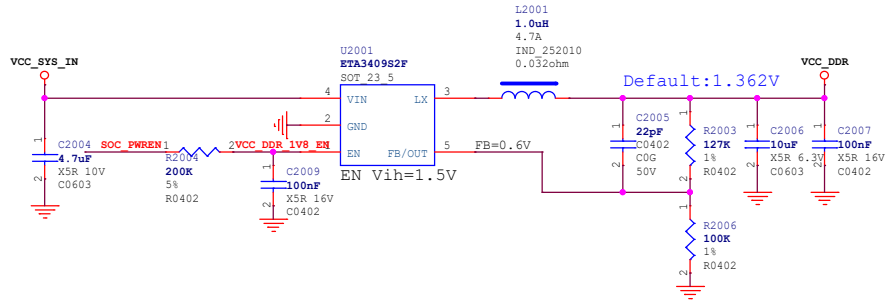
Rockchip Confidential

| | | | | |
|---|---|---|---|---|
| Rockchip | Rockchip Electronics Co., Ltd | | | |
| Project: | RV1106G_BAT_IPC_DEMO | | | |
| File: | 13.RV1106G SDIO/LCD/VICAP/MIPI | | | |
| Date: | Tuesday, July 12, 2022 | | Rev: | V1.0 |
| Designed by: | whb | Reviewed by: Default | Sheet: | 10 of 18 |

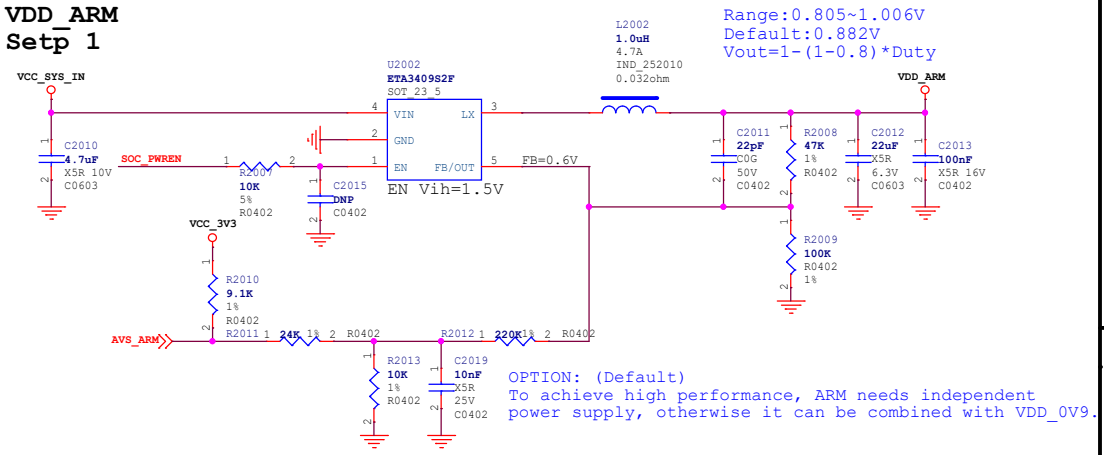
## VDD_0V9 Setp 1



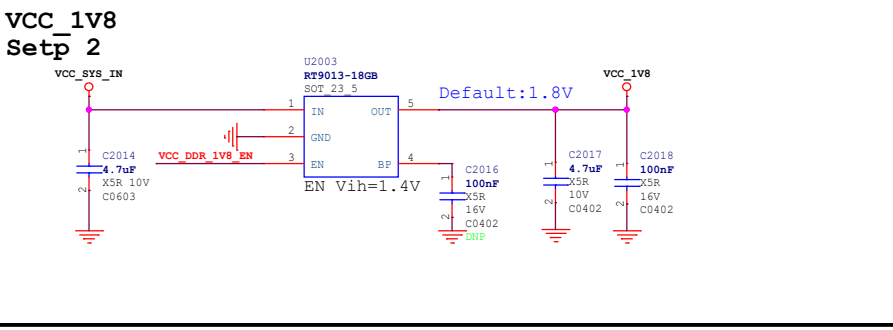

## VCC_DDR Setp 2



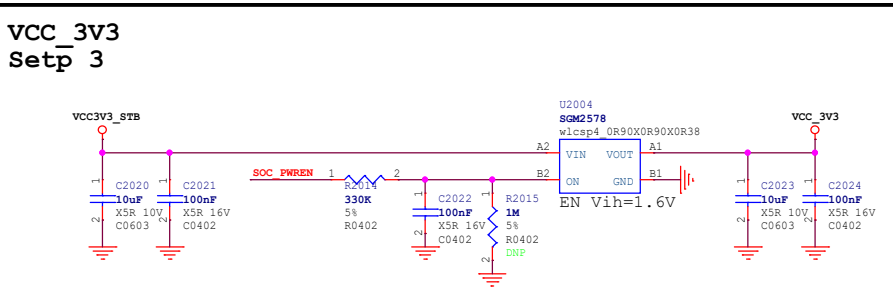

## VDD_ARM Setp 1

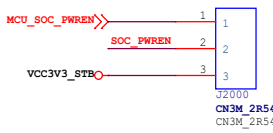



## VCC_1V8 Setp 2



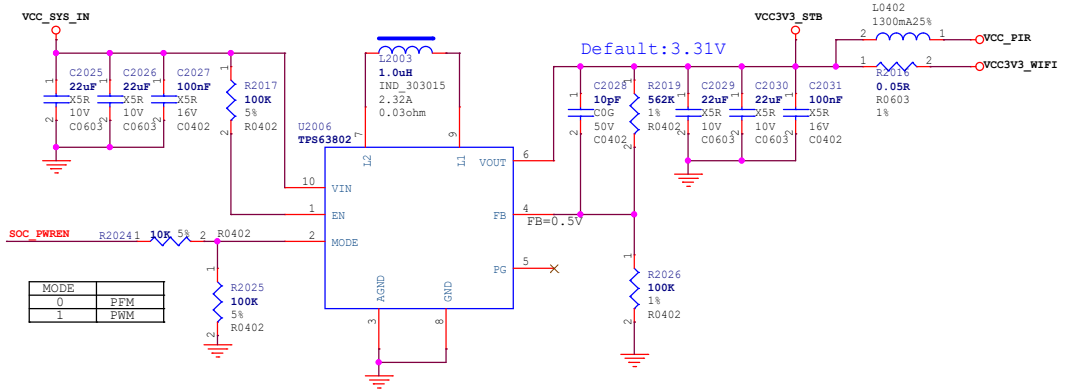

## VCC_3V3 Setp 3

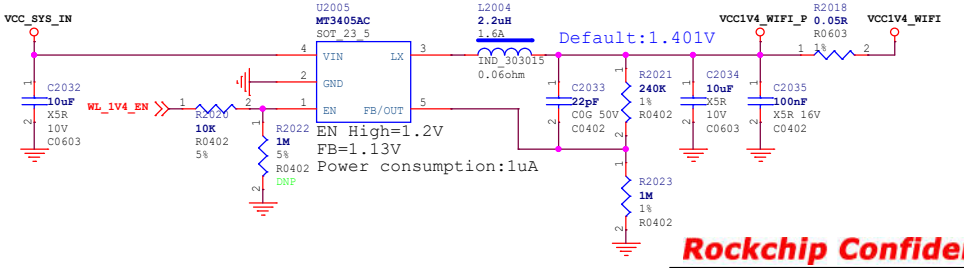



Note:
When SOC_PWREN is connected to MCU_SOC_PWREN,
the SOC is controlled by MCU to power on;
Connect the SOC_PWREN to the VCC3V3_STB,
and power on the SOC directly.

## WIFI POWER

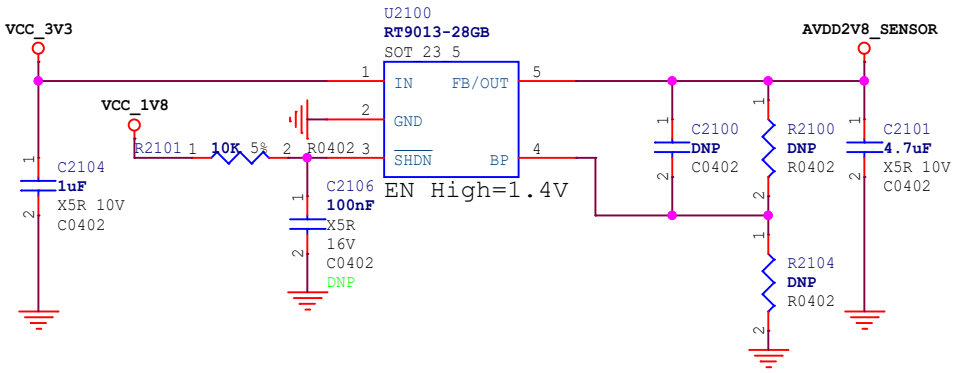


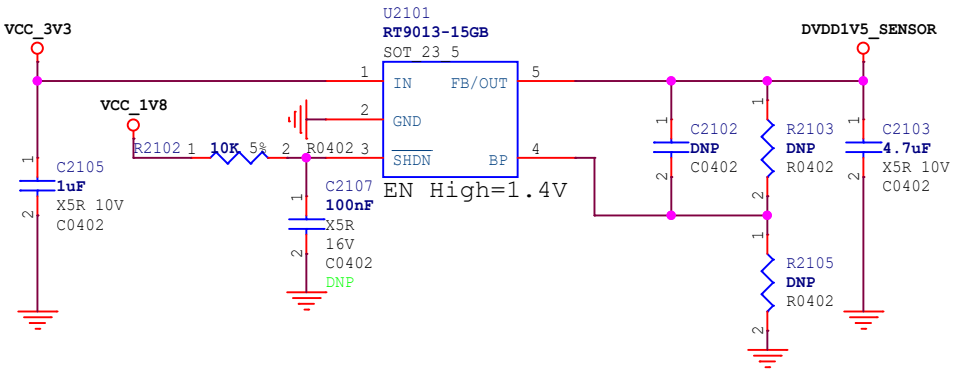



| | | | | | |
|---|---|---|---|---|---|
| Rockchip | Rockchip Electronics Co., Ltd | | | | |
| Project: | RV1106G_BAT_IPC_DEMO | | | | |
| File: | 20.Power-System | | | | |
| Date: | Tuesday, July 12, 2022 | | | Rev: | V1.0 |
| Designed by: | whb | Reviewed by: | Default | Sheet: | 11 of 18 |

## AVDD2V8_SENSOR

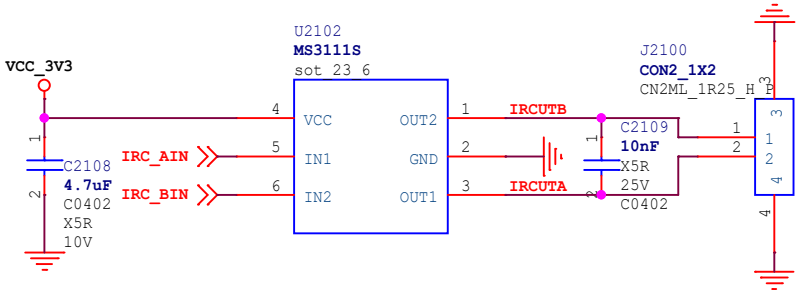



## DVDD1V5_SENSOR




Note:
Default power-on timing:
All three power on at the same time.
Or DOVDD(1V8)-->DVDD(1V5)-->AVDD(2V8)

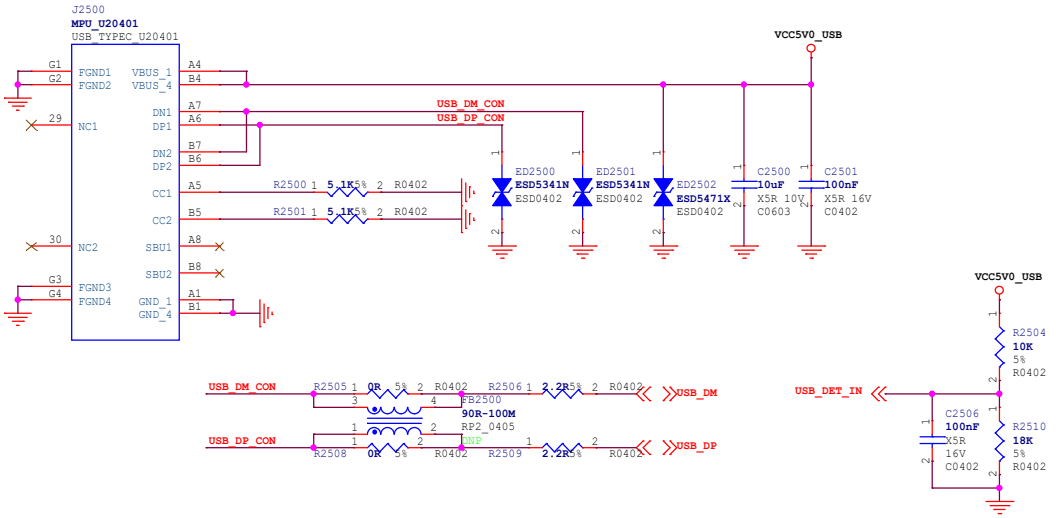
## IR-CUT



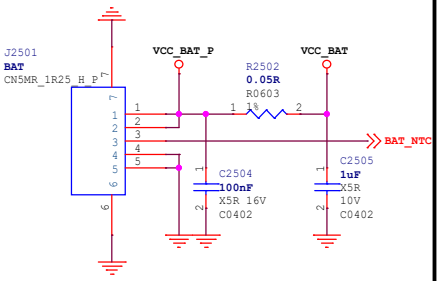

**Rockchip Confidential**

| | | | | | |
|---|---|---|---|---|---|
| Rockchip | Rockchip Electronics Co., Ltd | | | | |
| Project: | RV1106G_BAT_IPC_DEMO | | | | |
| File: | 21.VI-Camera Power | | | | |
| Date: | Tuesday, July 12, 2022 | | | Rev: | V1.0 |
| Designed by: | whb | Reviewed by: | Default | Sheet: | 12 of 18 |

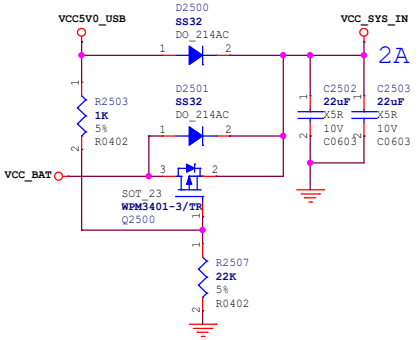
## USB HOST



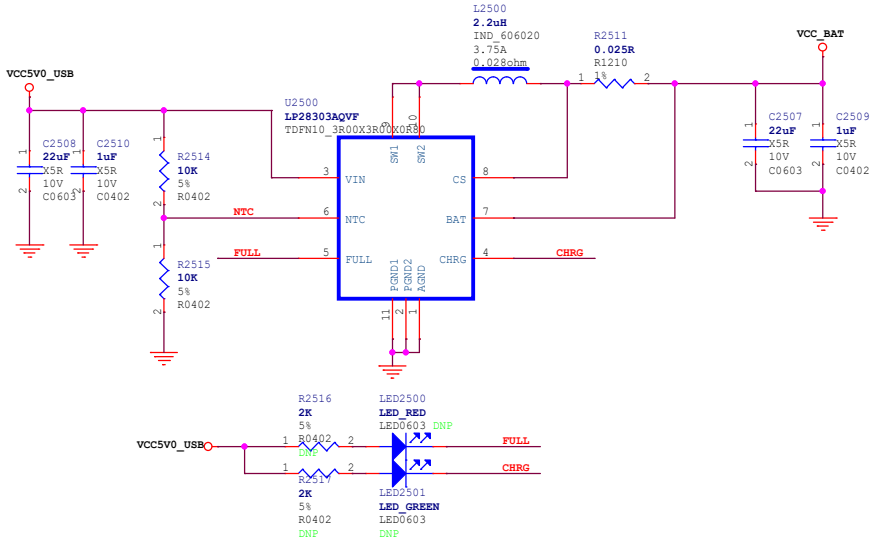

## BATTERY



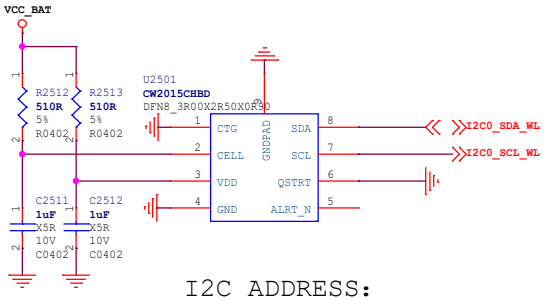

## SYS_POWER




## CHARGE



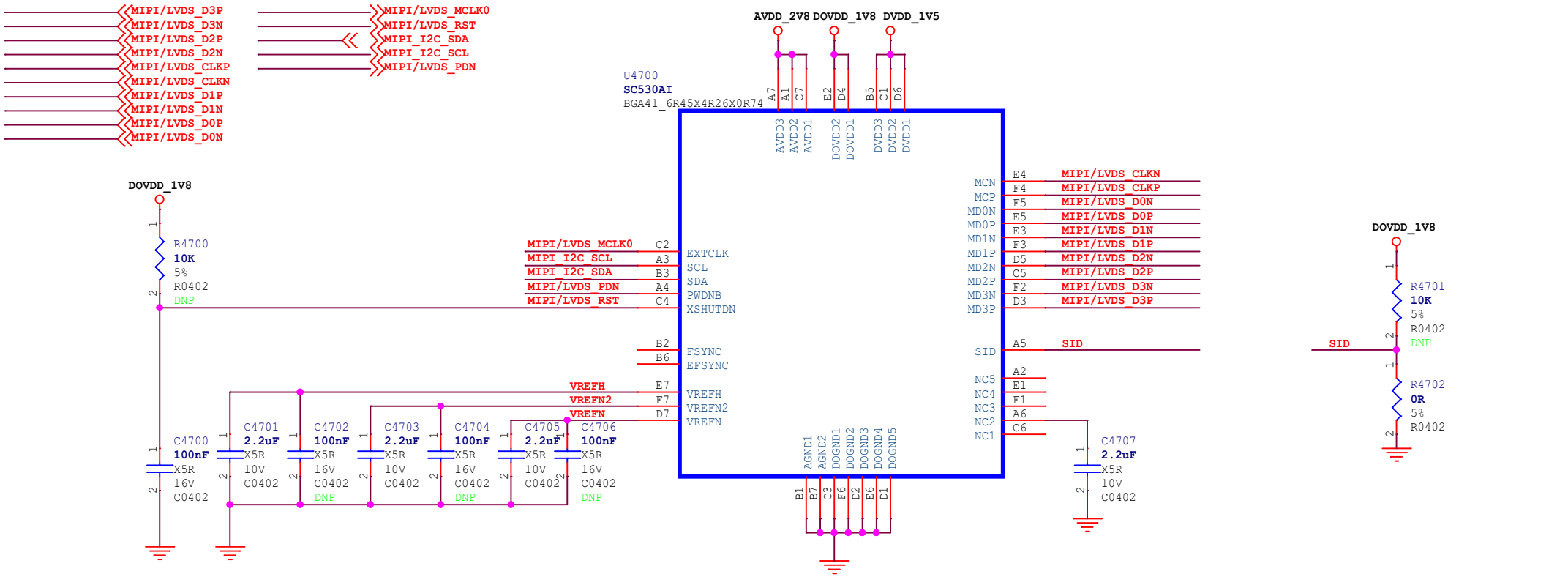

## FUEL GAUGES




I2C_ADDRESS:
R:0xC5
W:0xC4

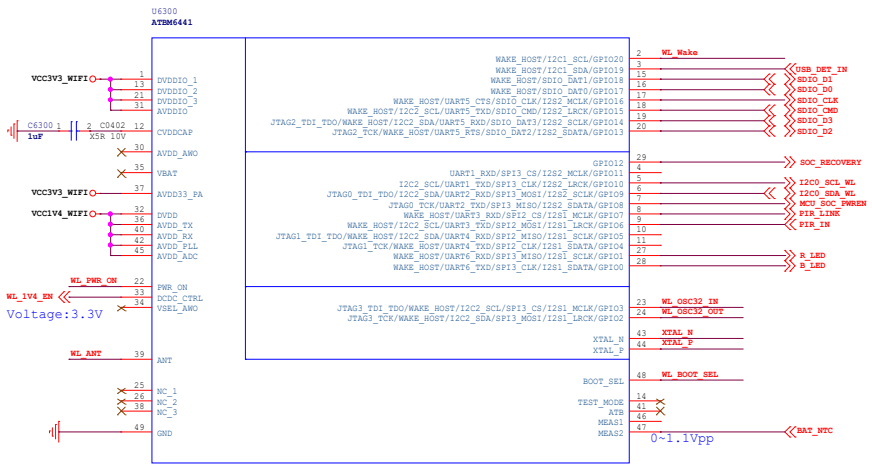
Rockchip Confidential

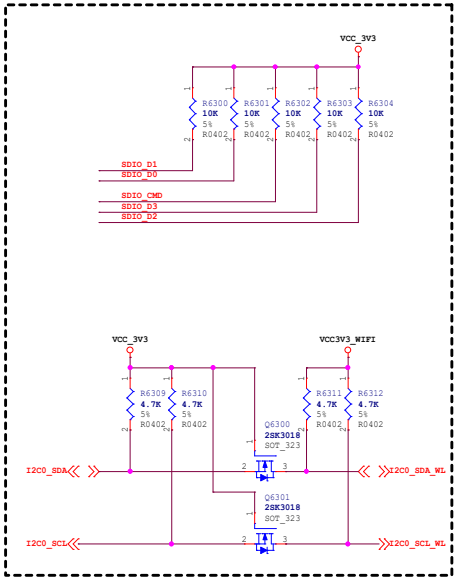
| | | | | | |
|---|---|---|---|---|---|
| Rockchip | Rockchip Electronics Co., Ltd | | | | |
| Project: | RV1106G_BAT_IPC_DEMO | | | | |
| File: | 25.USB&CHARGE | | | | |
| Date: | Tuesday, July 12, 2022 | | | Rev: | V1.0 |
| Designed by: | whb | Reviewed by: | Default | Sheet: | 13 of 18 |



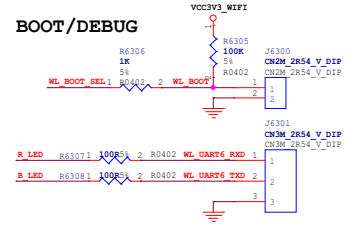

Rockchip Confidential

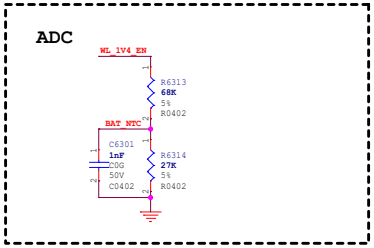
| | | | | | |
|---|---|---|---|---|---|
| Rockchip | Rockchip Electronics Co., Ltd | | | | |
| Project: | RV1106G_BAT_IPC_DEMO | | | | |
| File: | 47.VI-Camera | | | | |
| Date: | Tuesday, July 12, 2022 | | | Rev: | V1.0 |
| Designed by: | whb | Reviewed by: | Default | Sheet: | 14 of 18 |

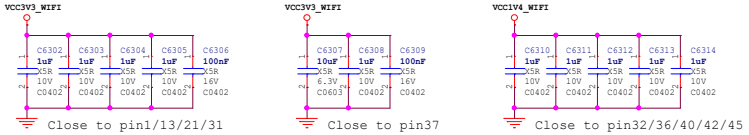


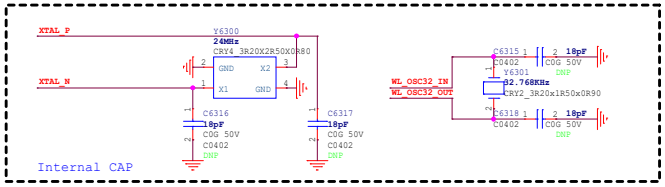



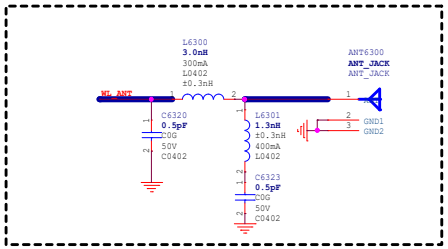

| WL_BOOT_SEL | boot mode |
|---|---|
| 1 | Loading Flash |
| 0 | Bootloader |

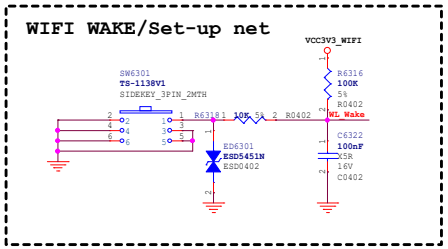


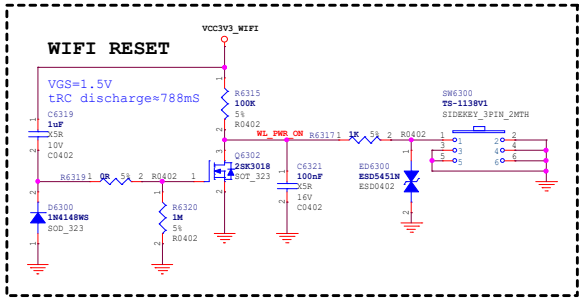



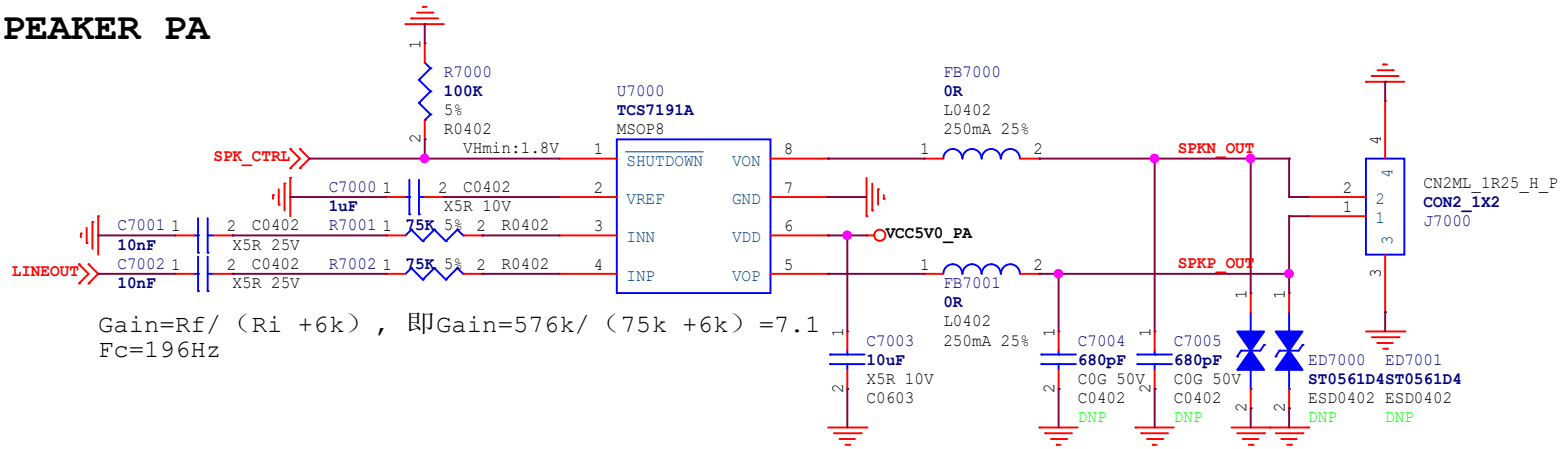



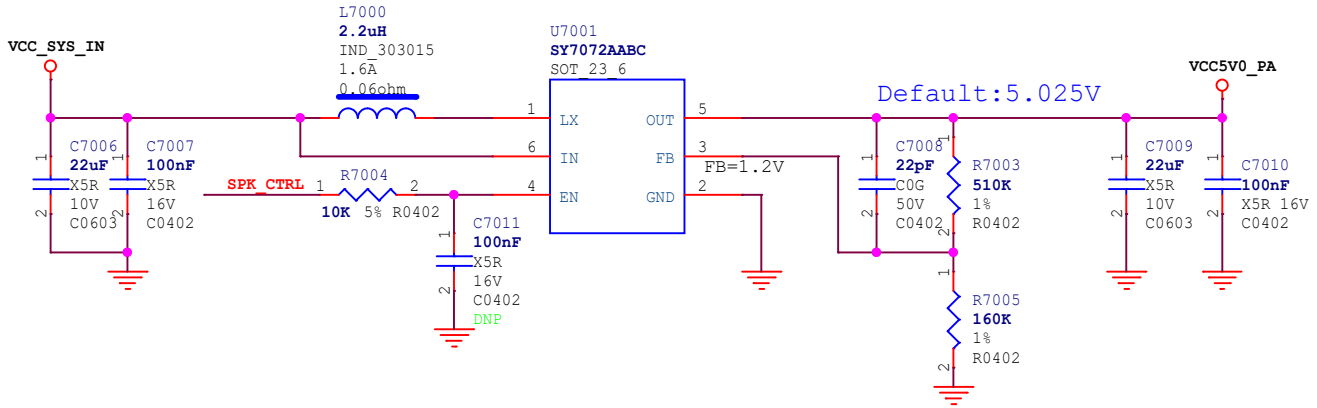





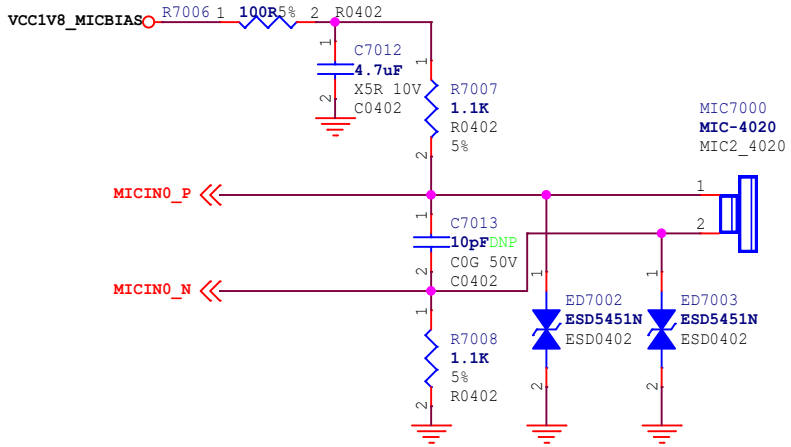

| | | | | | |
|---|---|---|---|---|---|
| Rockchip | Rockchip Electronics Co., Ltd | | | | |
| Project: | RV1106G_BAT_IPC_DEMO | | | | |
| File: | 63.WIFI | | | | |
| Date: | Tuesday, July 12, 2022 | | | Rev: | V1.0 |
| Designed by: | whb | Reviewed by: | Default | Sheet: | 15 of 18 |

# SPEAKER PA



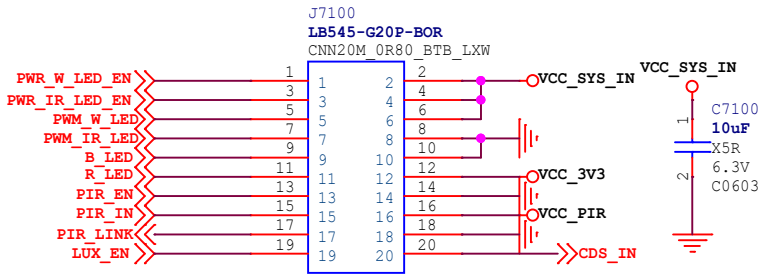



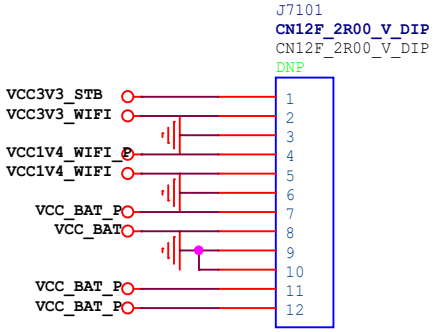

# MIC




Rockchip Confidential

| | | | | | |
|---|---|---|---|---|---|
| Rockchip | Rockchip Electronics Co., Ltd | | | | |
| Project: | RV1106G_BAT_IPC_DEMO | | | | |
| File: | 70.Audio | | | | |
| Date: | Wednesday, July 13, 2022 | | | Rev: | V1.0 |
| Designed by: | whb | Reviewed by: | Default | Sheet: | 16 of 18 |

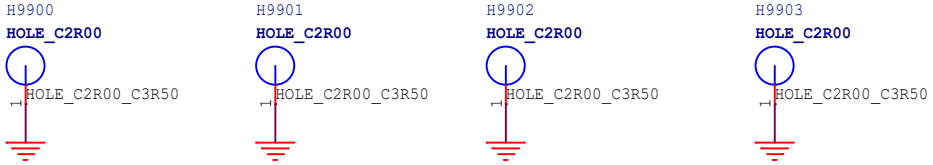



Rockchip Confidential

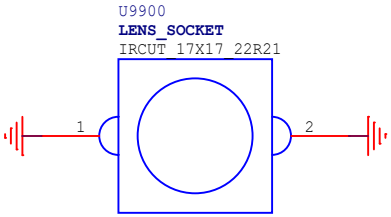
| | | | | | |
|---|---|---|---|---|---|
| Rockchip | Rockchip Electronics Co., Ltd | | | | |
| Project: | RV1106G_BAT_IPC_DEMO | | | | |
| File: | 71.PIR/LED/Power_test Interface | | | | |
| Date: | Tuesday, July 12, 2022 | | | Rev: | V1.0 |
| Designed by: | whb | Reviewed by: | Default | Sheet: | 17 of 18 |

## HOLE




## MARK


## LENS




**Rockchip Confidential**

| | | | | | |
|---|---|---|---|---|---|
| Rockchip | Rockchip Electronics Co., Ltd | | | | |
| Project: | RV1106G_BAT_IPC_DEMO | | | | |
| File: | 99.Mark/Hole | | | | |
| Date: | Tuesday, July 12, 2022 | | | Rev: | V1.0 |
| Designed by: | whb | Reviewed by: | Default | Sheet: | 18 of 18 |