

# GPIO ASSIGNMENT

| PIN  | Define     | CFG | Function |
|------|------------|-----|----------|
| PA0  | UART0_TX   | 5   | UPGRADE  |
| PA1  | UART0_RX   | 5   |          |
| PA2  | UART1-TX   | 5   | DEBUG    |
| PA3  | UART1-RX   | 5   |          |
| PA4  | CAN0-TX    | 4   | CAN      |
| PA5  | CAN0-RX    | 4   |          |
|      |            |     |          |
|      |            |     |          |
| PA8  | RTP-XP-SCL | 2/4 | RTP/CTP  |
| PA9  | RTP-YP-SDA | 2/4 |          |
| PA10 | RTP-XN-RST | 2/1 |          |
| PA11 | RTP-YN-INT | 2/1 |          |

| PIN  | Define    | CFG | Function     |
|------|-----------|-----|--------------|
| PB0  | SPI0-WP   | 2   | NOR/<br>NAND |
| PB1  | SPI0-MISO | 2   |              |
| PB2  | SPI0-CS   | 2   |              |
| PB3  | SPI0-HOLD | 2   |              |
| PB4  | SPI0-CLK  | 2   |              |
| PB5  | SPI0-MOSI | 2   | WIFI         |
| PB6  | SDC0-CMD  | 2   |              |
| PB7  | SDC0-CLK  | 2   |              |
| PB8  | SDC0-D3   | 2   |              |
| PB9  | SDC0-D0   | 2   |              |
| PB10 | SDC0-D1   | 2   |              |
| PB11 | SDC0-D2   | 2   |              |

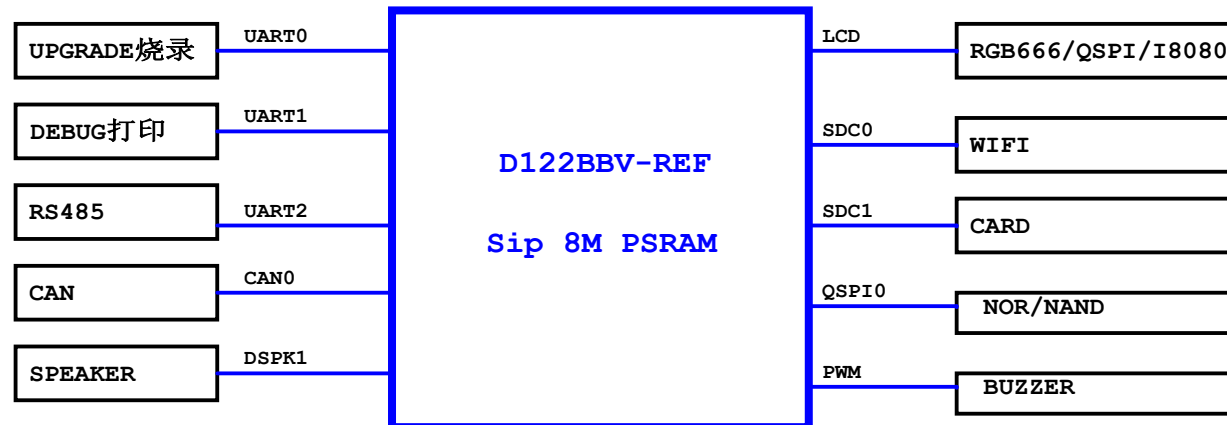
| PIN  | Define    | Define    | CFG | Function |
|------|-----------|-----------|-----|----------|
| PD0  |           | SPI_SCL   | 1   |          |
| PD1  |           | SPI_SDA   | 1   |          |
| PD2  |           | SPI_CS    | 1   |          |
| PD3  |           | PA_SHDN   | 1   |          |
| PD4  |           | UART2_TX  | 5   |          |
| PD5  |           | UART2_RX  | 5   | RS485    |
| PD6  | LCD0-B2   |           | 2   | RGB      |
| PD7  | LCD0-B3   |           | 2   |          |
| PD8  | LCD0-B4   | LCD0-B3   | 2   |          |
| PD9  | LCD0-B5   | LCD0-B4   | 2   |          |
| PD10 | LCD0-B6   | LCD0-B5   | 2   |          |
| PD11 | LCD0-B7   | LCD0-B6   | 2   |          |
| PD12 | LCD0-G2   | LCD0-B7   | 2   |          |
| PD13 | LCD0-G3   | LCD0-G2   | 2   |          |
| PD14 | LCD0-G4   | LCD0-G3   | 2   |          |
| PD15 | LCD0-G5   | LCD0-G4   | 2   |          |
| PD16 | LCD0-G6   | LCD0-G5   | 2   |          |
| PD17 | LCD0-G7   | LCD0-G6   | 2   |          |
| PD18 | LCD0-R2   | LCD0-G7   | 2   |          |
| PD19 | LCD0-R3   | LCD0-R3   | 2   |          |
| PD20 | LCD0-R4   | LCD0-R4   | 2   |          |
| PD21 | LCD0-R5   | LCD0-R5   | 2   |          |
| PD22 | LCD0-R6   | LCD0-R6   | 2   |          |
| PD23 | LCD0-R7   | LCD0-R7   | 2   |          |
| PD24 | LCD0-DCLK | LCD0-DCLK | 2   |          |
| PD25 | LCD0-HS   | LCD0-HS   | 2   |          |
| PD26 | LCD0-VS   | LCD0-VS   | 2   |          |
| PD27 | LCD0-DE   | LCD0-DE   | 2   |          |

RGB666      RGB565

| PIN  | Define | CFG | Function |
|------|--------|-----|----------|
| PE12 | DSPK1  | 5   | SPEAKER  |
| PE13 | PWM0_A | 3   | LCD_PWM  |
|      |        |     |          |

| PIN | Define   | CFG | Function |
|-----|----------|-----|----------|
| PC0 | SDC1-D1  | 2   | CARD     |
| PC1 | SDC1-D0  | 2   |          |
| PC2 | SDC1-CLK | 2   |          |
| PC3 | SDC1-CMD | 2   |          |
| PC4 | SDC1-D3  | 2   |          |
| PC5 | SDC1-D2  | 2   |          |
| PC6 | SDC1-DET | 2   |          |
| PC7 | PWM1_B   | 3   | BUZZER   |

| Ver. | Change list     | Date       |
|------|-----------------|------------|
| V1.0 | Initial Version | 2023.11.18 |
|      |                 |            |
|      |                 |            |



UART0 BootLoader阶段烧录使用，  
烧录后可配置用于其他功能

|     |      |                |    |
|-----|------|----------------|----|
| 5   | PA0  | UART0 TX UPG   | 56 |
| 4.5 | PA1  | UART0 RX UPG   | 57 |
| 5   | PA2  | UART1 TX DEBUG | 58 |
| 5   | PA3  | UART1 RX DEBUG | 59 |
| 5   | PA4  | CAN0 TX        | 60 |
| 5   | PA5  | CAN0 RX        | 61 |
| 4   | PA8  | RTP_XP_SCL     | 62 |
| 4   | PA9  | RTP_YP_SDA     | 63 |
| 4.5 | PA10 | RTP_XN_RST     | 64 |
| 4.5 | PA11 | RTP_YN_INT     | 65 |

**RTP/CTP**

**NAND/NOR**

|   |     |           |    |
|---|-----|-----------|----|
| 3 | PB0 | SPI0_WP   | 40 |
| 3 | PB1 | SPI0_MISO | 41 |
| 3 | PB2 | SPI0_CS   | 42 |
| 3 | PB3 | SPI0_HOLD | 43 |
| 3 | PB4 | SPI0_CLK  | 44 |
| 3 | PB5 | SPI0_MOSI | 45 |

**SDC0\_CMD**

|   |      |          |    |
|---|------|----------|----|
| 6 | PB6  | SDC0_CMD | 46 |
| 6 | PB7  | SDC0_CLK | 47 |
| 6 | PB8  | SDC0_D3  | 48 |
| 6 | PB9  | SDC0_D0  | 49 |
| 6 | PB10 | SDC0_D1  | 50 |
| 6 | PB11 | SDC0_D2  | 51 |

**WIFI**

**TF-CARD**

|   |     |          |    |
|---|-----|----------|----|
| 3 | PC0 | SDC1_D1  | 66 |
| 3 | PC1 | SDC1_D0  | 67 |
| 3 | PC2 | SDC1_CLK | 68 |
| 3 | PC3 | SDC1_CMD | 1  |
| 3 | PC4 | SDC1_D3  | 2  |
| 3 | PC5 | SDC1_D2  | 3  |
| 3 | PC6 | SDC1_DET | 4  |

**SPK1**

|   |      |         |    |
|---|------|---------|----|
| 7 | PE12 | SPK1    | 38 |
| 4 | PE13 | LCD_PWM | 39 |

|                                              |    |
|----------------------------------------------|----|
| <b>GPADC/RTP/I2C0~2/UART0~2/CIR/CAN0</b>     |    |
| GPA_P0/GPADC0/IR_TX/I2C0_SCL/UART0_T/CPU_NMI | 56 |
| GPA_P1/GPADC1/IR_RX/I2C0_SDA/UART0_RXDE_TE   | 57 |
| GPA_P2/GPADC2/I2C1_SCL/UART1_T/UART2_CTS     | 58 |
| GPA_P3/GPADC3/I2C1_SDA/UART1_RX/UART2_RTS    | 59 |
| GPA_P4/GPADC4/CAN0_TX/UART2_TX               | 60 |
| GPA_P5/GPADC5/CAN0_RX/UART2_RX/RTC_32K       | 61 |
| GPA_P8/RTP_XP/I2C2_SCL                       | 62 |
| GPA_P9/RTP_YP/I2C2_SDA                       | 63 |
| GPA_P10/RTP_XN/IR_R/JTAG_MS                  | 64 |
| GPA_P11/RTP_YN/IR_TX/JTAG_CK                 | 65 |

|                                                |    |
|------------------------------------------------|----|
| <b>SPI0~2/SDC0/UART4~7</b>                     |    |
| GPB_P0/SPI0_WP/SPI1_WP/UART4_TX                | 40 |
| GPB_P1/SPI0_MISO/SPI1_MISO/UART6_TX            | 41 |
| GPB_P2/SPI0_CS/SPI1_CS/UART6_RX                | 42 |
| GPB_P3/SPI0_HOLD/SPI1_HOLD/UART4_RX            | 43 |
| GPB_P4/SPI0_CLK/SPI1_CLK/UART6_RTS             | 44 |
| GPB_P5/SPI0_MOSI/SPI1_MOSI/UART4_RTS/UART6_CTS | 45 |

**SDC0\_CMD**

|                                                         |    |
|---------------------------------------------------------|----|
| GPB_P6/SDC0_CMD/SPI2_CS/UART5_TX/FLASH_CS               | 46 |
| GPB_P7/SDC0_CLK/SPI2_MISO/UART5_RX/FLASH_MISO           | 47 |
| GPB_P8/SDC0_D3/SPI2_MOSI/UART5_RTS/UART7_CTS/FLASH_MOSI | 48 |
| GPB_P9/SDC0_D0/SPI2_CLK/UART7_RTS/FLASH_CLK             | 49 |
| GPB_P10/SDC0_D1/SPI2_HOLD/UART7_TX                      | 50 |
| GPB_P11/SDC0_D2/SPI2_WP/SPI0_CS1/UART7_RX               | 51 |

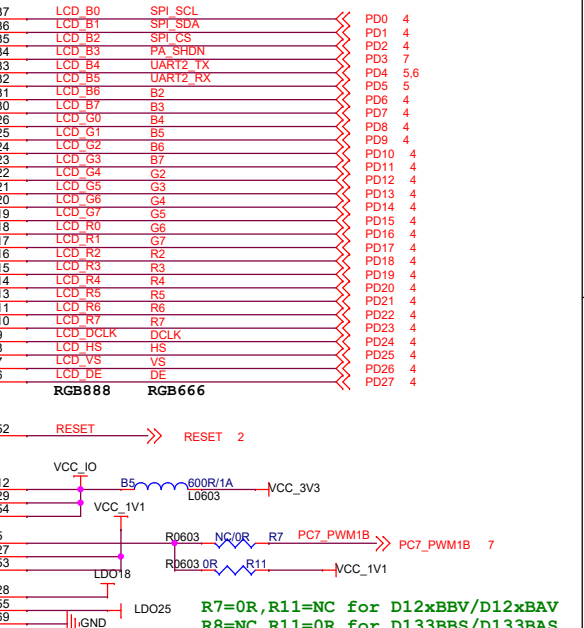
  

|                                                    |    |
|----------------------------------------------------|----|
| <b>SDC1/I2C1~2/UART0&amp;3</b>                     |    |
| GPC_P0/SDC1_D1/I2C2_SCL/UART3_RTS/JTAG_MS          | 66 |
| GPC_P1/SDC1_D0                                     | 67 |
| GPC_P2/SDC1_CLK/UART0_TX                           | 68 |
| GPC_P3/SDC1_CMD                                    | 1  |
| GPC_P4/SDC1_D3/I2C1_SCL/UART3_TX/UART0_RX          | 2  |
| GPC_P5/SDC1_D2/I2C1_SDA/UART3_RX/JTAG_CK           | 3  |
| GPC_P6/SDC1_DET/CAP0/I2C2_SDA/UART3_CTS/DE_CLK_OUT | 4  |

|                                         |    |
|-----------------------------------------|----|
| <b>PWM/DSPK</b>                         |    |
| GPE_P12/SPI2_CLK/PWM1_B/I2S0_BCLK/DSPK1 | 38 |
| GPE_P13/SPI2_CS/PWM2_A/I2S0_DOUT/DSPK0  | 39 |

|                                                             |    |
|-------------------------------------------------------------|----|
| <b>LCD/LVDS/MIPI-DSI/SPI1&amp;3/I2S/UART0~2</b>             |    |
| GPD_P0/LCD_D0/SPI3_CLK/I2C0_SCL/UART0_TX/PBUS_ADD0/EPWM11_B | 37 |
| GPD_P1/LCD_D1/SPI3_CS/I2C0_SDA/UART0_RX/PBUS_AD1/EPWM11_A   | 38 |
| GPD_P2/LCD_D2/SPI3_MOSI/I2C1_SCL/UART1_TX/PBUS_AD2/EPWM10_B | 39 |
| GPD_P3/LCD_D3/SPI3_MISO/I2C1_SDA/UART1_RX/PBUS_AD3/EPWM10_A | 40 |
| GPD_P4/LCD_D4/SPI1_CS/I2C2_SCL/UART2_TX/PBUS_AD4            | 41 |
| GPD_P5/LCD_D5/SPI1_MOSI/I2C2_SDA/UART2_RX/PBUS_AD5          | 42 |
| GPD_P6/LCD_D6/SPI1_MOSI/PWM0_A/DSPK0/PBUS_AD6               | 43 |
| GPD_P7/LCD_D7/SPI1_CLK/PWM0_B/DSPK1/PBUS_AD7                | 44 |
| GPD_P8/LCD_D8/SPI1_HOLD/PWM1_A/PBUS_CLK/EPWM9_B             | 45 |
| GPD_P9/LCD_D9/SPI1_WP/PBUS_NCS/EPWM9_A                      | 46 |
| GPD_P10/LCD_D10/CAP5/PBUS_NAD/EPWM8_B                       | 47 |
| GPD_P11/LCD_D11/CAP4/I2S_DIN/PBUS_NW/EPWM8_A                | 48 |
| GPD_P12/LCD_D12/CAP3/I2S_DOUT/PBUS_NOE/EPWM7_B              | 49 |
| GPD_P13/LCD_D13/CAP2/I2S_LRCK/CLK_OUT0/EPWM7_A              | 50 |
| GPD_P14/LCD_D14/CAP1/I2S_BCLK/PBUS_AD8/EPWM6_B              | 51 |
| GPD_P15/LCD_D15/CAP0/I2S_MCLK/PBUS_AD9/EPWM6_A              | 52 |
| GPD_P16/LCD_D16/PWM1_B/DMIC_CLK/UART2_TX/PBUS_AD10/EPWM5_B  | 53 |
| GPD_P17/LCD_D17/PWM2_A/DMIC_D0/UART2_RX/PBUS_AD11/EPWM5_A   | 54 |
| GPD_P18/LCD_D18/LVDS_D0/DSI_D0/PBUS_AD12/EPWM4_B            | 55 |
| GPD_P19/LCD_D19/LVDS_D0P/DSI_D0P/PBUS_AD13/EPWM4_A          | 56 |
| GPD_P20/LCD_D20/LVDS_D1N/DSI_D1N/PBUS_AD14/EPWM3_B          | 57 |
| GPD_P21/LCD_D21/LVDS_D1P/DSI_D1P/PBUS_AD15/EPWM3_A          | 58 |
| GPD_P22/LCD_D22/LVDS_D2N/DSI_CKN/EPWM2_B                    | 59 |
| GPD_P23/LCD_D23/LVDS_D2P/DSI_CKP/EPWM2_A                    | 60 |
| GPD_P24/LCD_D24/LVDS_CKN/DSI_D2N/EPWM1_B                    | 61 |
| GPD_P25/LCD_HS/LVDS_CK/P/DSI_D2P/PWM2_B/EPWM1_A             | 62 |
| GPD_P26/LCD_VS/LVDS_D3N/DSI_D3N/PWM3_A/EPWM0_B              | 63 |
| GPD_P27/LCD_DE/LVDS_D3P/DSI_D3P/PWM3_B/EPWM0_A              | 64 |

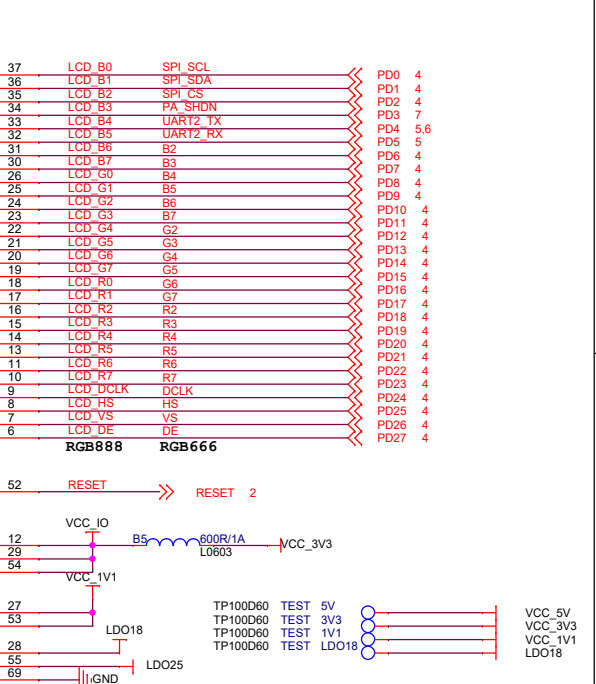
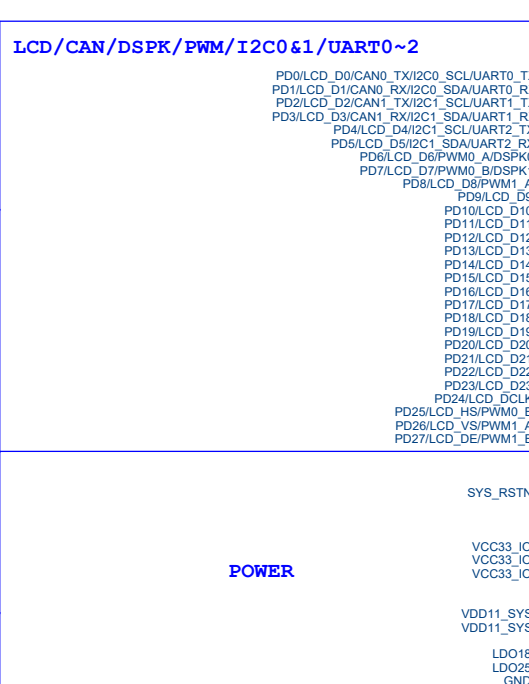
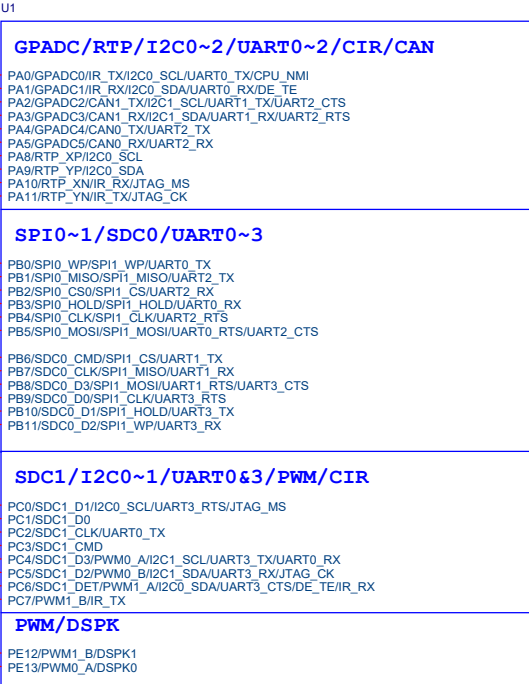
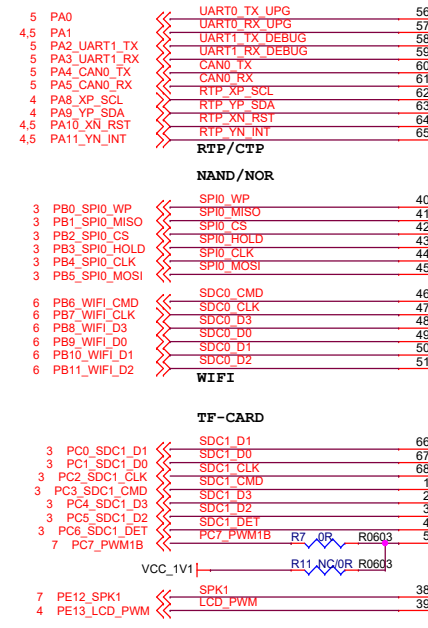


POWER

CPU底部GND焊盘加强散热

D133BBS

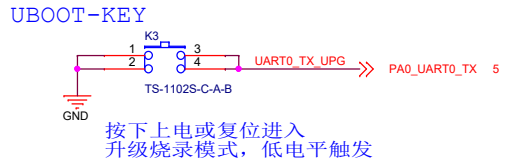
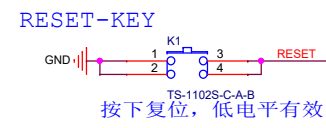
UART0 BootLoader阶段烧录使用，烧录后可配置用于其他功能



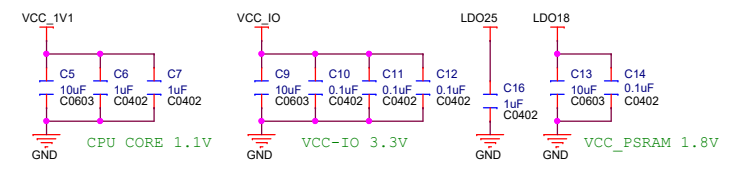
R7=0R, R11=NC for D12xBBV/D12xBAV  
R8=NC, R11=0R for D133BBS/D133BAS

D122BBV

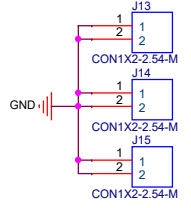
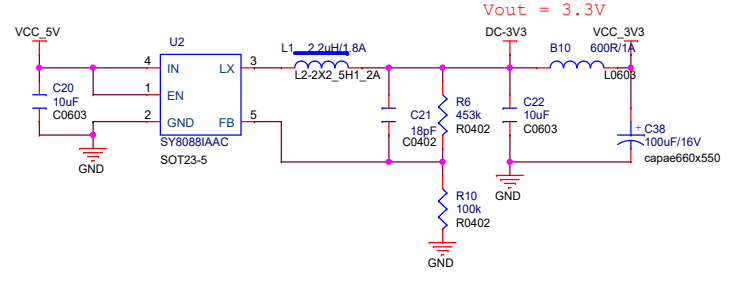
CPU底部GND焊盘加强散热



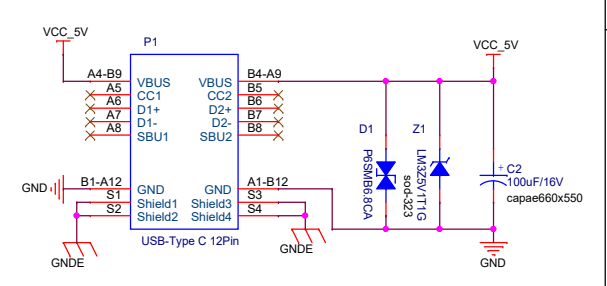
**CPU decouple cap**



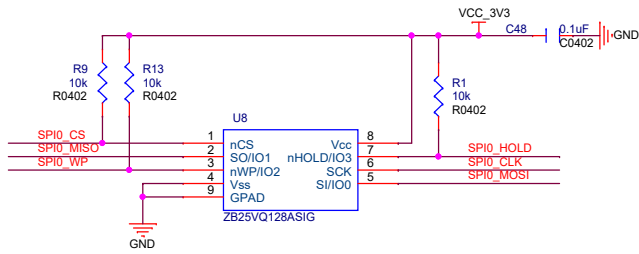
**3.3V for VCC-IO**



**DC5V POWER**

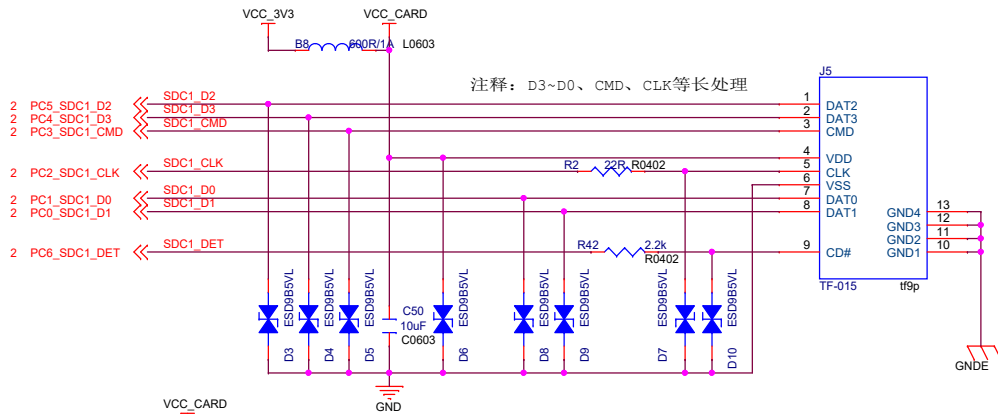


# QSPI NOR/NAND



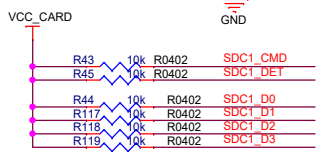
- 2 PB0\_SPI0\_WP <<> SPI0\_WP
- 2 PB1\_SPI0\_MISO <<> SPI0\_MISO
- 2 PB2\_SPI0\_CS <<> SPI0\_CS
- 2 PB3\_SPI0\_HOLD <<> SPI0\_HOLD
- 2 PB4\_SPI0\_CLK <<> SPI0\_CLK
- 2 PB5\_SPI0\_MOSI <<> SPI0\_MOSI

# TF-CARD

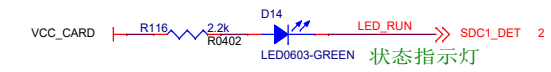


注释: D3~D0、CMD、CLK等长处理


- 2 PC5\_SDC1\_D2 <<> SDC1\_D2
- 2 PC4\_SDC1\_D3 <<> SDC1\_D3
- 2 PC3\_SDC1\_CMD <<> SDC1\_CMD
- 2 PC2\_SDC1\_CLK <<> SDC1\_CLK
- 2 PC1\_SDC1\_D0 <<> SDC1\_D0
- 2 PC0\_SDC1\_D1 <<> SDC1\_D1
- 2 PC6\_SDC1\_DET <<> SDC1\_DET



D0~D3增加上拉电阻

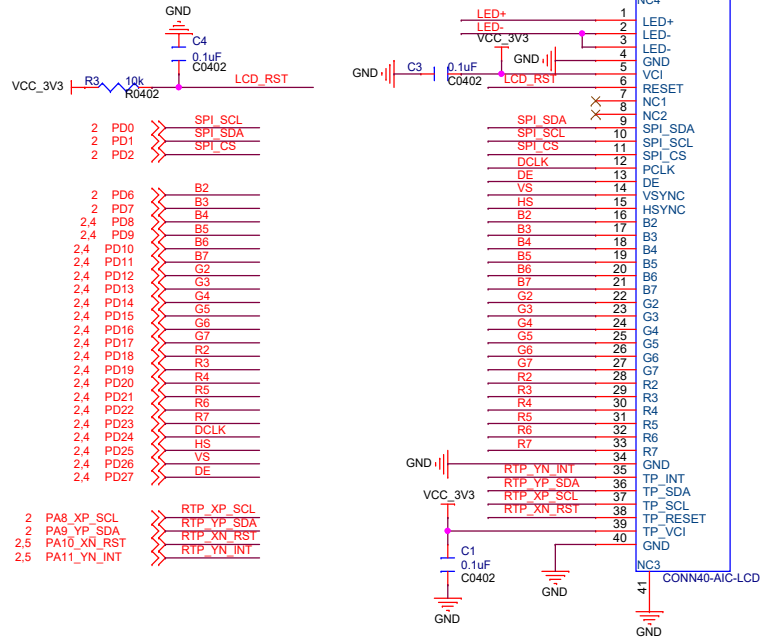


<Variant Name>

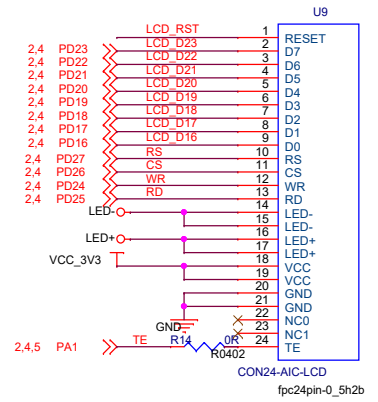
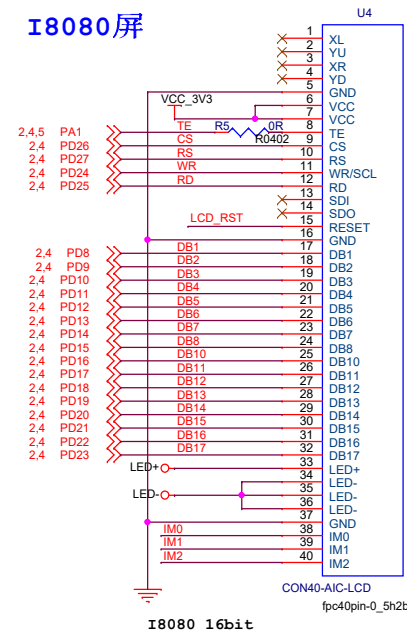
|                                                                                       |                                   |                                      |  |
|---------------------------------------------------------------------------------------|-----------------------------------|--------------------------------------|--|
|  |                                   | <b>ArtInChip Technology Co., Ltd</b> |  |
|                                                                                       |                                   | Design Name<br><b>D122BBV-REF</b>    |  |
| Size<br>A3                                                                            | Page Name<br><b>NAND/NOR/CARD</b> | Rev<br>V1.0                          |  |
| Date:<br>2023-12-14                                                                   | Sheet<br>3                        | of<br>8                              |  |

## LCD (RGB666+SPI初始化)

注释: 1、RGB666 R/G/B可整组互换  
2、SPI初始化采用GPIO模拟

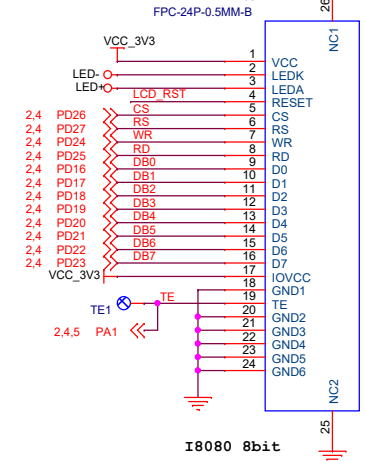


## I8080屏



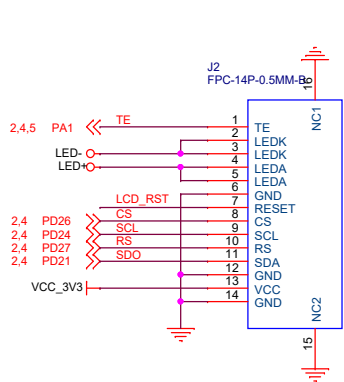
I8080 8bit

## 2.83" I8080

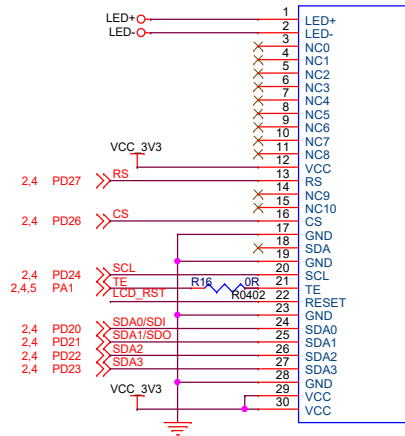


I8080 8bit

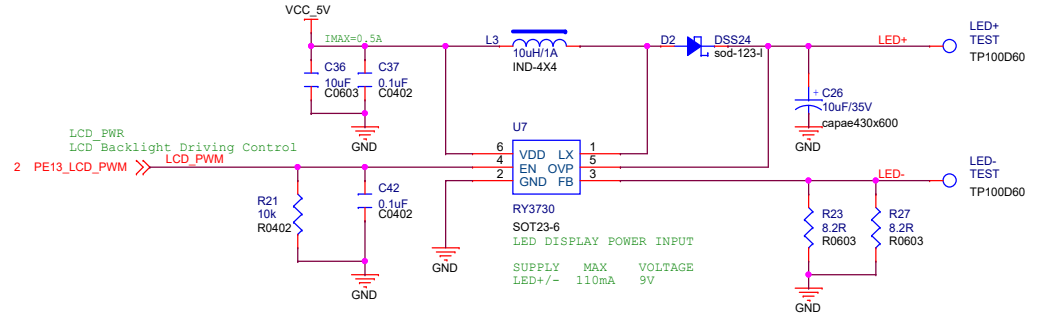
## 2.83" SPI屏



## 4 SPI屏



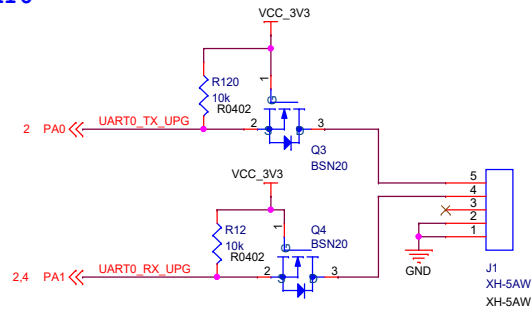
## LCD BACKLIGHT



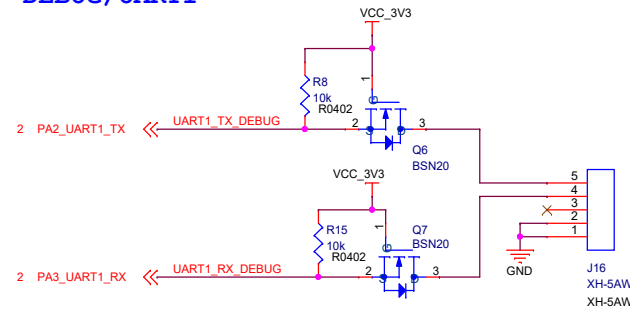
<Variant Name>

|       |            |                                      |                    |
|-------|------------|--------------------------------------|--------------------|
|       |            | <b>ArtInChip Technology Co., Ltd</b> |                    |
|       |            | Design Name                          | <b>D122BBV-REF</b> |
| Size  | Page Name  | <b>RGB/QSPI/I8080/CTP</b>            |                    |
| Date: | 2023-12-14 | Sheet                                | 4 of 8             |
|       |            |                                      | Rev V1.0           |

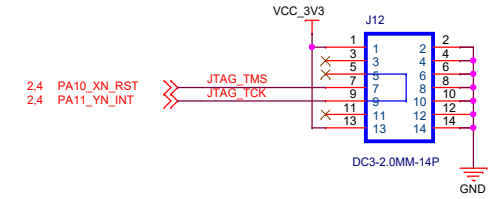
### UPGRADE/UART0



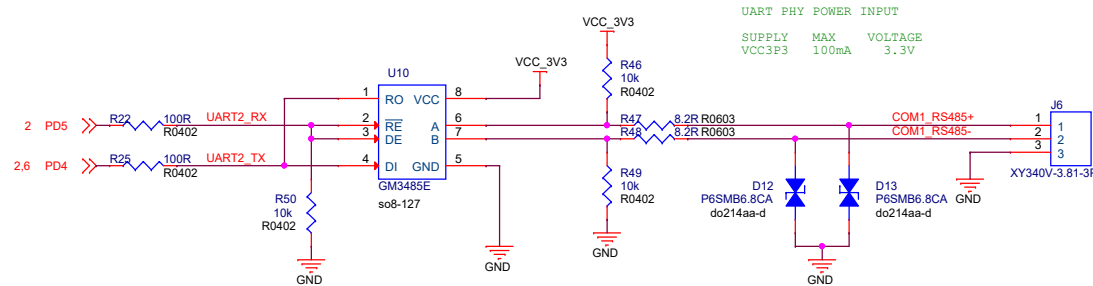
### DEBUG/UART1



### JTAG (Option)

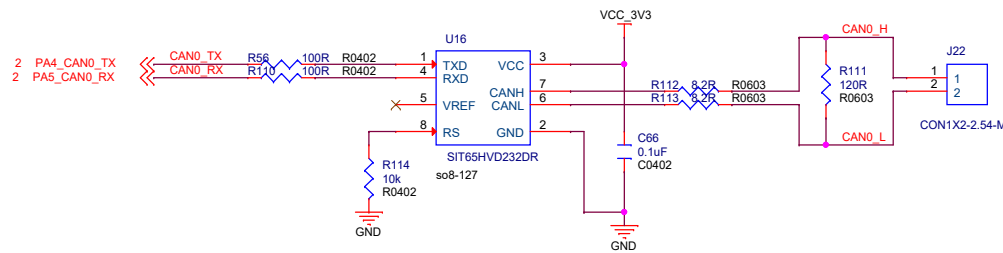


### RS485/UART2




RS485 两线制模式接法, 可节省1个PIN, 自动控制收发  
半双工: TX管脚既当发送又当接收; RX管脚自动控制收发方向

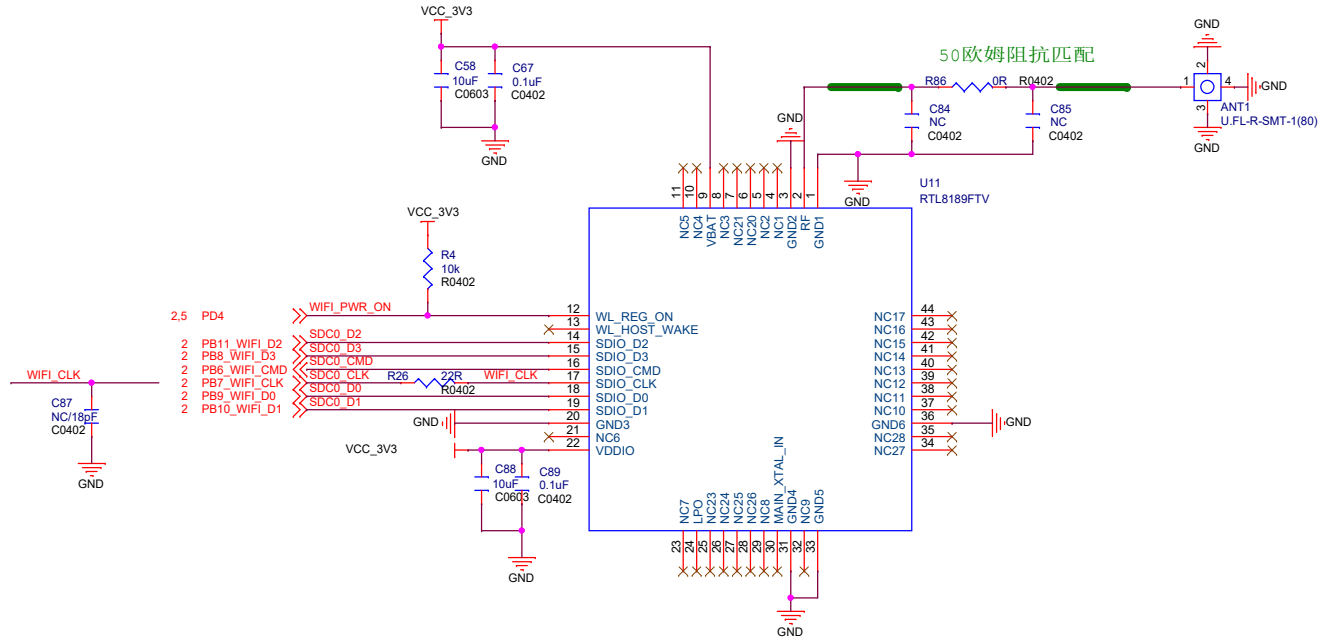
### CAN




<Variant Name>

|                                                                                       |            |                                      |                 |
|---------------------------------------------------------------------------------------|------------|--------------------------------------|-----------------|
|  |            | <b>ArtInChip Technology Co., Ltd</b> |                 |
|                                                                                       |            | Design Name                          | D122BBV-REF     |
| Size                                                                                  | A3         | Page Name                            | DEBUG/RS485/CAN |
| Date:                                                                                 | 2023-12-14 | Sheet                                | 5 of 8          |
|                                                                                       |            | Rev                                  | V1.0            |

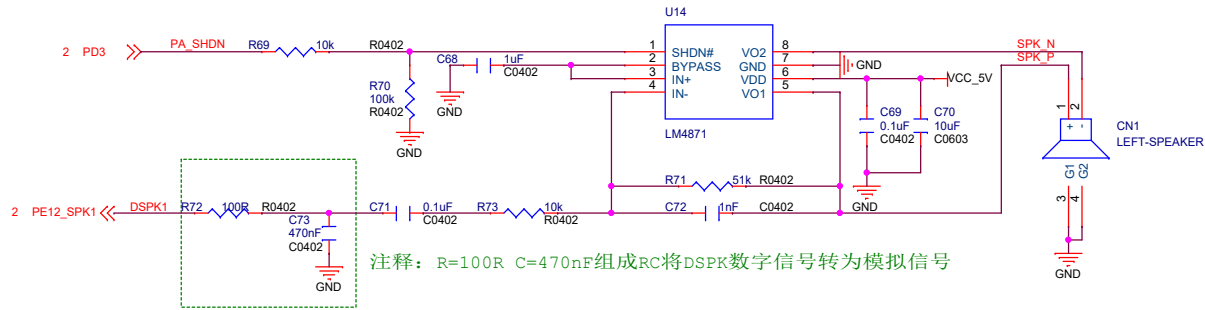
# WIFI



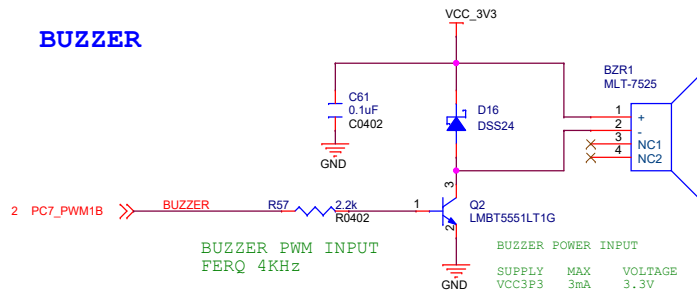
<Variant Name>

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|  |                        | <b>ArtInChip Technology Co., Ltd</b> |           |
|                                                                                       |                        | Design Name: <b>D122BBV-REF</b>      |           |
| Size: A3                                                                              | Page Name: <b>WIFI</b> |                                      | Rev: V1.0 |
| Date: 2023-12-14                                                                      |                        | Sheet 6 of 8                         |           |


# SPEAKER



# BUZZER



<Variant Name>

|                                                                                       |            |                                      |                    |
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|  |            | <b>ArtInChip Technology Co., Ltd</b> |                    |
|                                                                                       |            | Design Name                          | <b>D122BBV-REF</b> |
| Size<br>A3                                                                            | Page Name  | <b>SPEAKER/BUZZER</b>                |                    |
| Date:                                                                                 | 2023-12-14 | Sheet                                | 7 of 8             |
|                                                                                       |            |                                      | Rev<br>V1.0        |