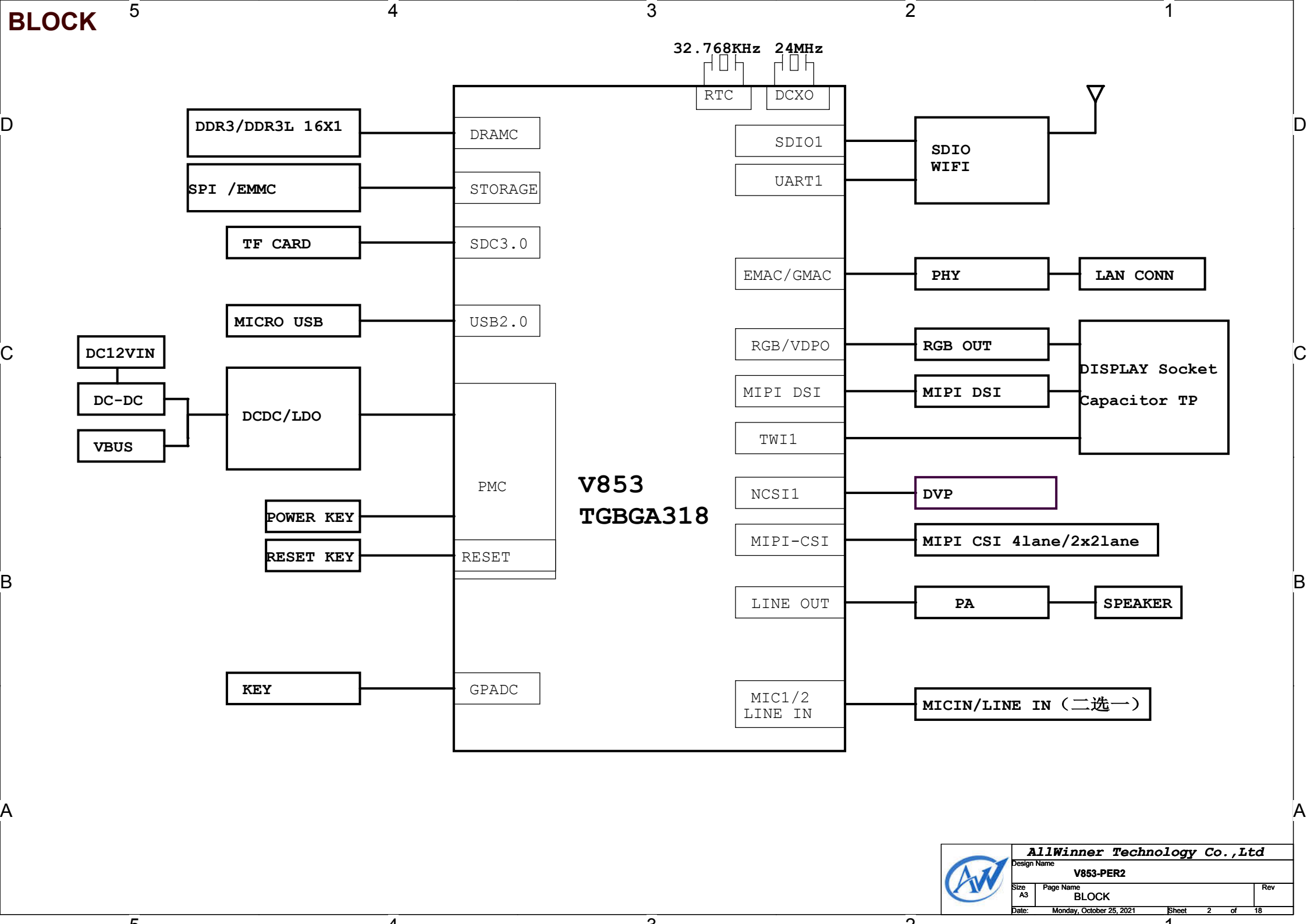


REVISION HISTORY

Schematics Index:

- P01: REVISION HISTORY
- P02: BLOCK
- P03: POWER TREE
- P04: GPIO ASSIGNMENT
- P05: POWER
- P06: CPU
- P07: PF/PG/PH/PI
- P08: DDR3 16X1
- P09: eMMC/NOR
- P10: CARD/JTAG/UART
- P11: AUDIO/KEY/ADC
- P12: LCD/CTP/DSI
- P13: MIPI CSI/PI
- P14: CSI/RGMII/RMII
- P15: SENSOR/USB
- P16: WIFI
- P17: POWER2
- P18: POWER TEST

Revision	Description	Date	Drawn	Checked
Ver 0.1	Initial Version	2021-05-30	ZQ	
Ver 0.2	分立器件默认使用PMC, 支持surperstandby	2021-06-10	ZQ	
Ver 0.3	UART3 串口作为E907 串口使用	2021-06-17	ZQ	
Ver 0.4	根据PER1板更新记录更新 增加SOC 3.3V和1.8V功耗测试电路; 增加各路电流标记	2021-06-30	ZQ	
Ver 0.5	根据PER1板更新记录更新	2021-07-22	ZQ	
Ver 1.0	NC-统一修改为NC/ LED-REC网络连接到SOC SNESOR MOS电平转换改为WNM2021, 电压改为VCC-1V8	2021-08-31	ZQ	
Ver 1.0	eMMC-D0 增加预留上拉电阻 (for test) MIPI-CSI接口SOC端增加测试点	2021-09-15	ZQ	
Ver 1.0	VCC-PI供电改为1.8V MIPI-CSI的DVDD-CSI的控制改为IOVDD-CSI 并口CSI的AVDD-CSI的控制改为IOVDD-CSI	2021-09-26	ZQ	
Ver 1.0	纽扣电池方案更新 VCC-PL 改为VCC-PE	2021-10-25	ZQ	

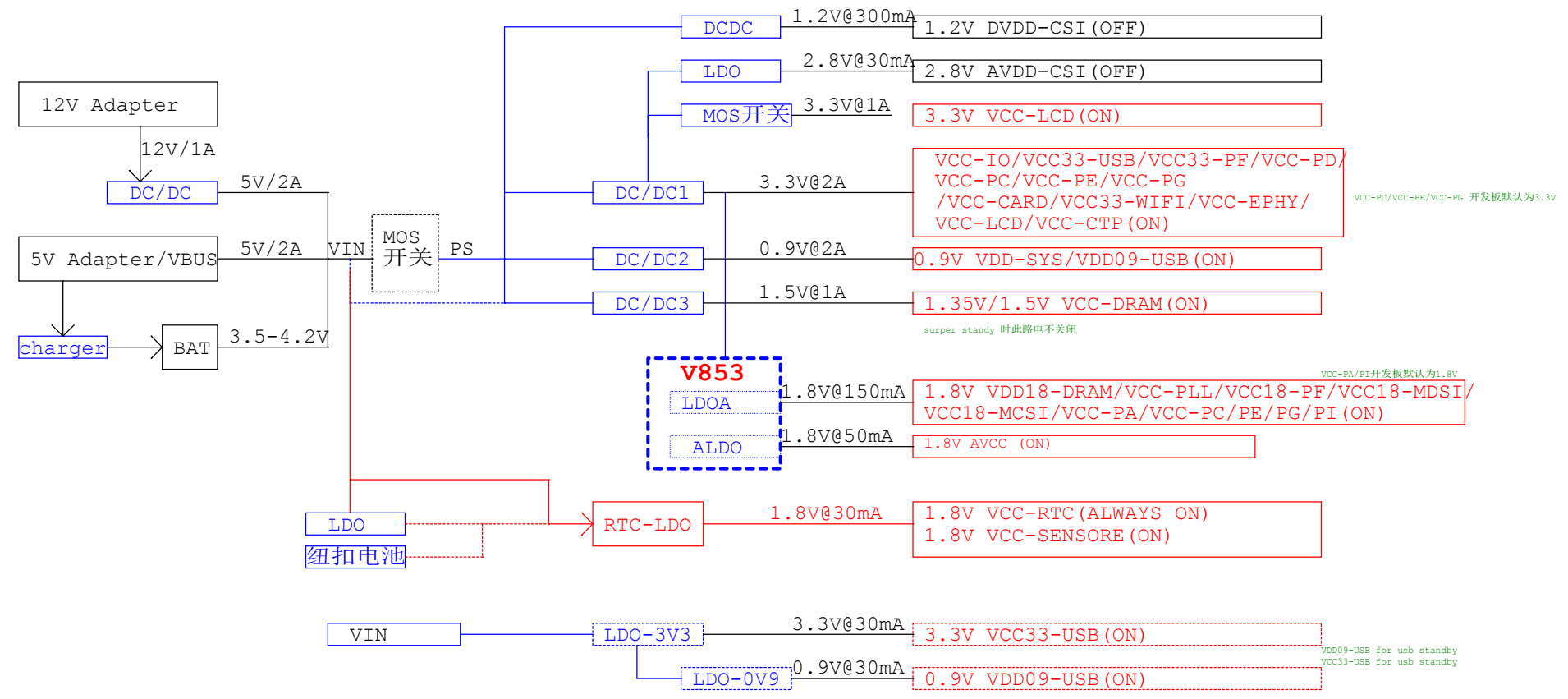


BLOCK

**V853
TGBGA318**

POWER TREE

DEFAULT POWER ON
 DEFAULT POWER OFF



GPIO ASSIGNMENT

4

3

2

1

D

D

C


C

B

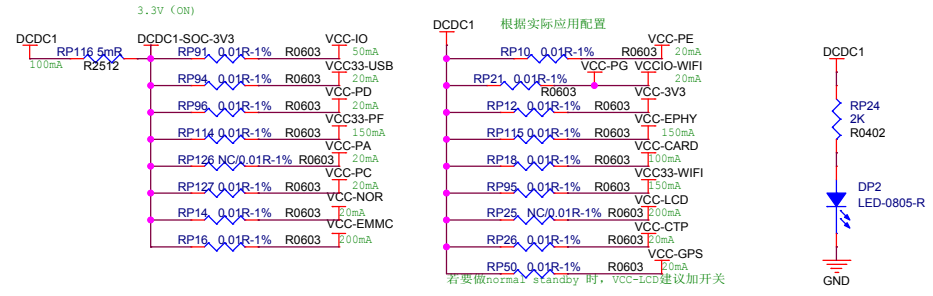
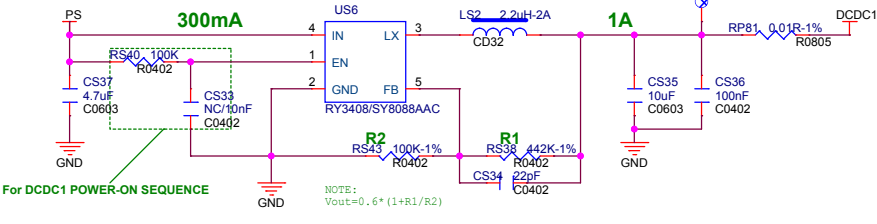
B

A

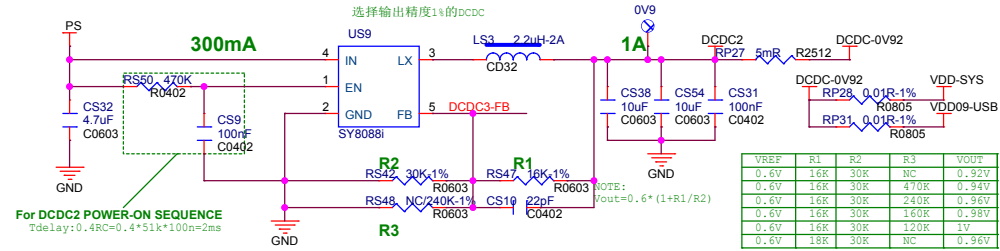
A

	AllWinner Technology Co., Ltd		
	Design Name V853-PER2		
Size A3	Page Name GPIO ASSIGNMENT	Rev	
Date:	Monday, October 25, 2021	Sheet	4 of 18

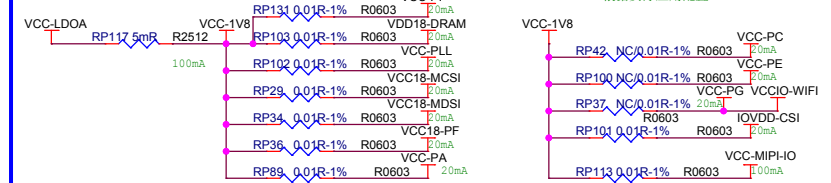
VCC-3V3



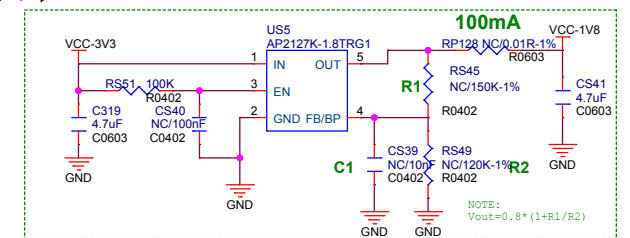
VDD-SYS-0.92V



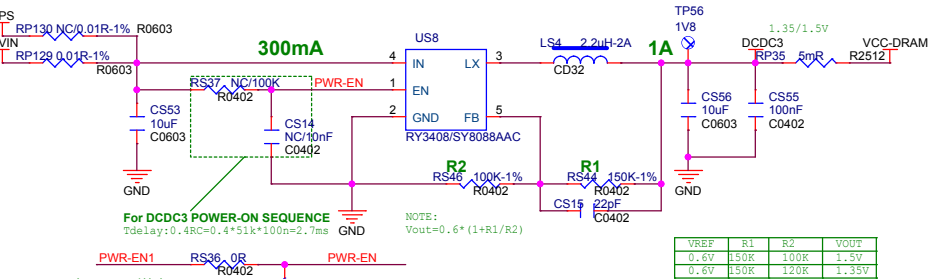
内部LDOA-1.8V



外部LDOA-1.8V for TEST

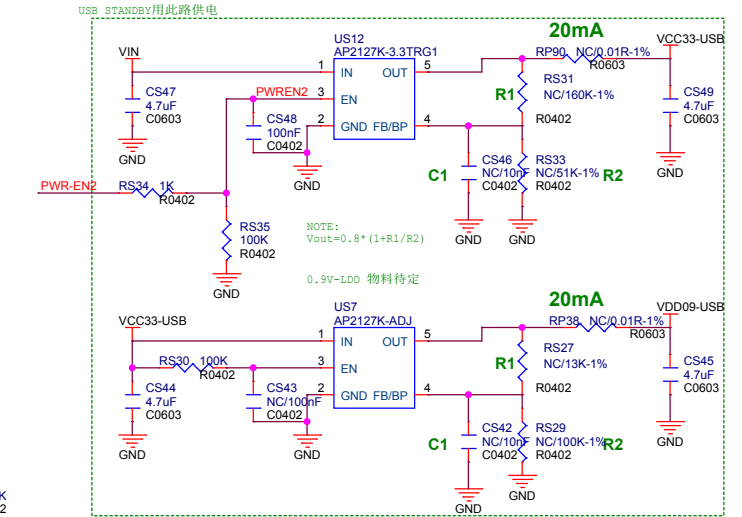


DRAM-1.35/1.5V

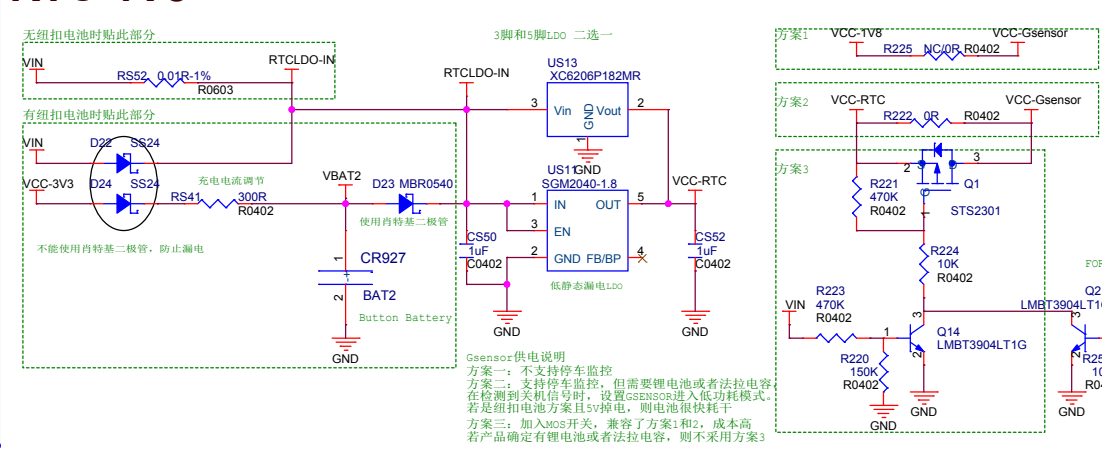


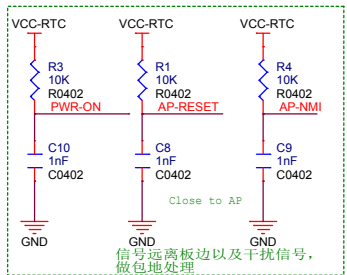
SUPPER STANDBY时，DRAM 不掉电
需要VIN 作为DRAM DCDC输入，使用PWR-EN1控制，
开机时PWR-EN1为高电平1.8V，待机时保留1.8V，
关机处于高阻状态，需靠外部下拉电阻关闭。

USB standby

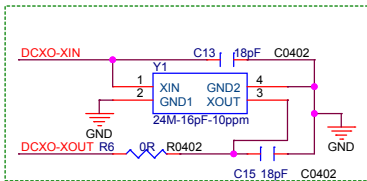


RTC-1V8



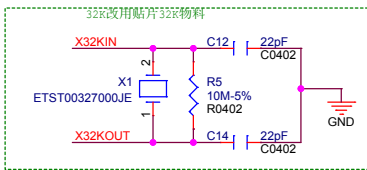


DCXO-24Mhz

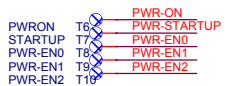
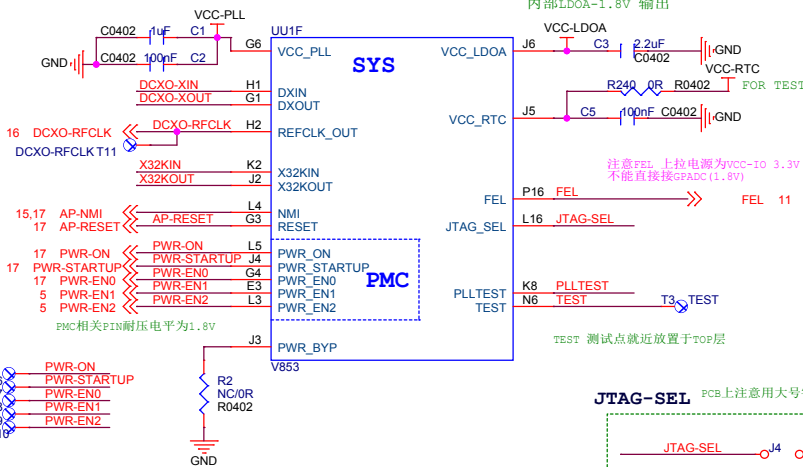
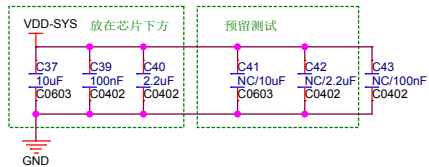


使用全志物料24Mhz-E3S24E004304E

32.768KHz



DECOUPLE CAP



PMC 模块功能由RESET-BYP决定, 配置说明如下:

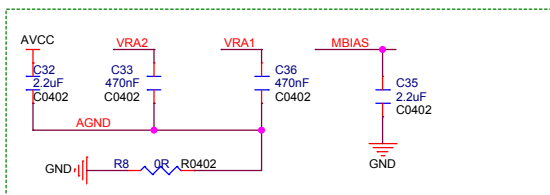
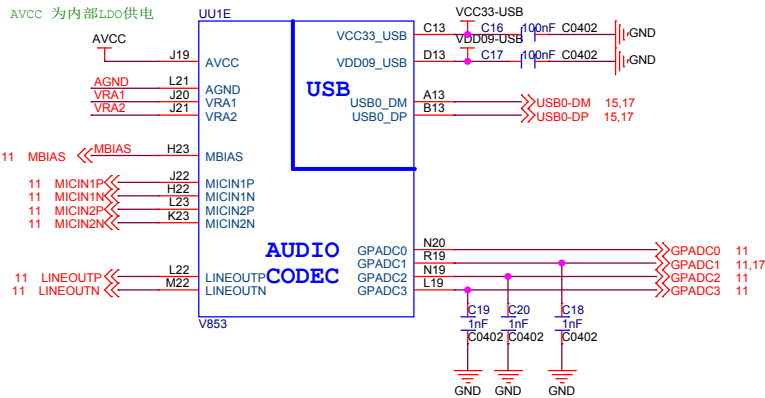
RESET-BYP	浮空为高电平	1. PMC 功能PIN有效;
	接地为低电平	2. 上电内部复位有效 (需要外接高电平);
		3. 工作时支持外部复位PMC来复位SOC;
		4. PMC 功能PIN无效; 只有NMI/RESET信号有效;
		5. 上电内部复位有效; 也可外接PMU_PWROR信号复位;
		6. 工作时支持外部复位(需要软件配置);

开发板默认使用PMC功能, 采用内部复位

reset-byp悬空, 使用PMC模块验证说明如下:

1. AP-reset->PMC复位信号, 外接上拉电阻上拉;
 - 1) 开机状态下按下, 可复位PMC寄存器;
 - 2) 关机状态下, 接高电平触发PWR-EN输出高;
2. PWR-STARTUP->开机使能
 - 1) 关机状态下, 接高电平触发PWR-EN输出高;
 - 2) 开机后, 可通过寄存器读写开机;
3. PWR-on->开/关机按钮, 外接上拉;
 - 1) 关机状态下, 接低电平触发PWR-EN输出高;
 - 2) 开机状态下, 接低电平识别短按长按, 读寄存器;
4. AP-NMI->IRQ开机信号
 - 1) 关机状态下, 接低电平触发PWR-EN输出高;

AVCC 为内部LDO供电



内部LDOA-1.8V 输出

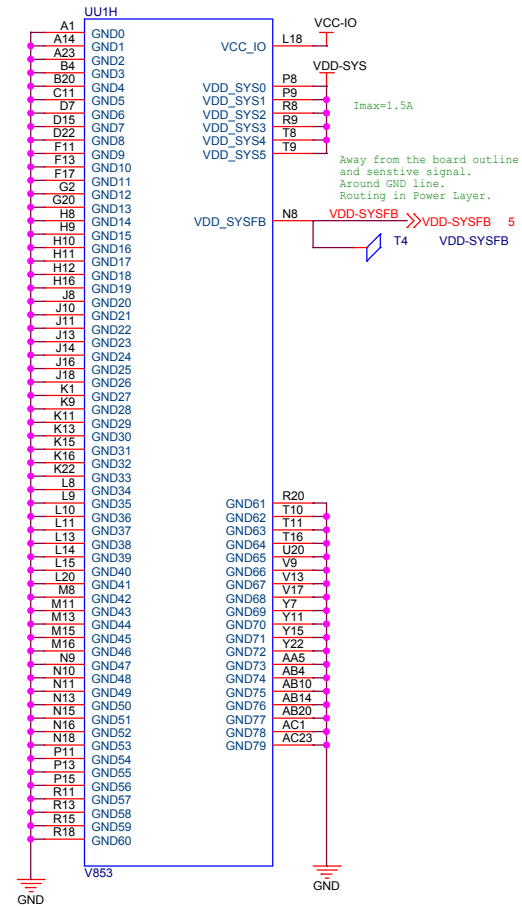
注意FEL 上拉电源为VCC-IO 3.3V 不能直接接GPADC(1.8V)

TEST 测试点就近放置于TOP层

JTAG-SEL PCB上注意用大号字体标注, 放置于板边

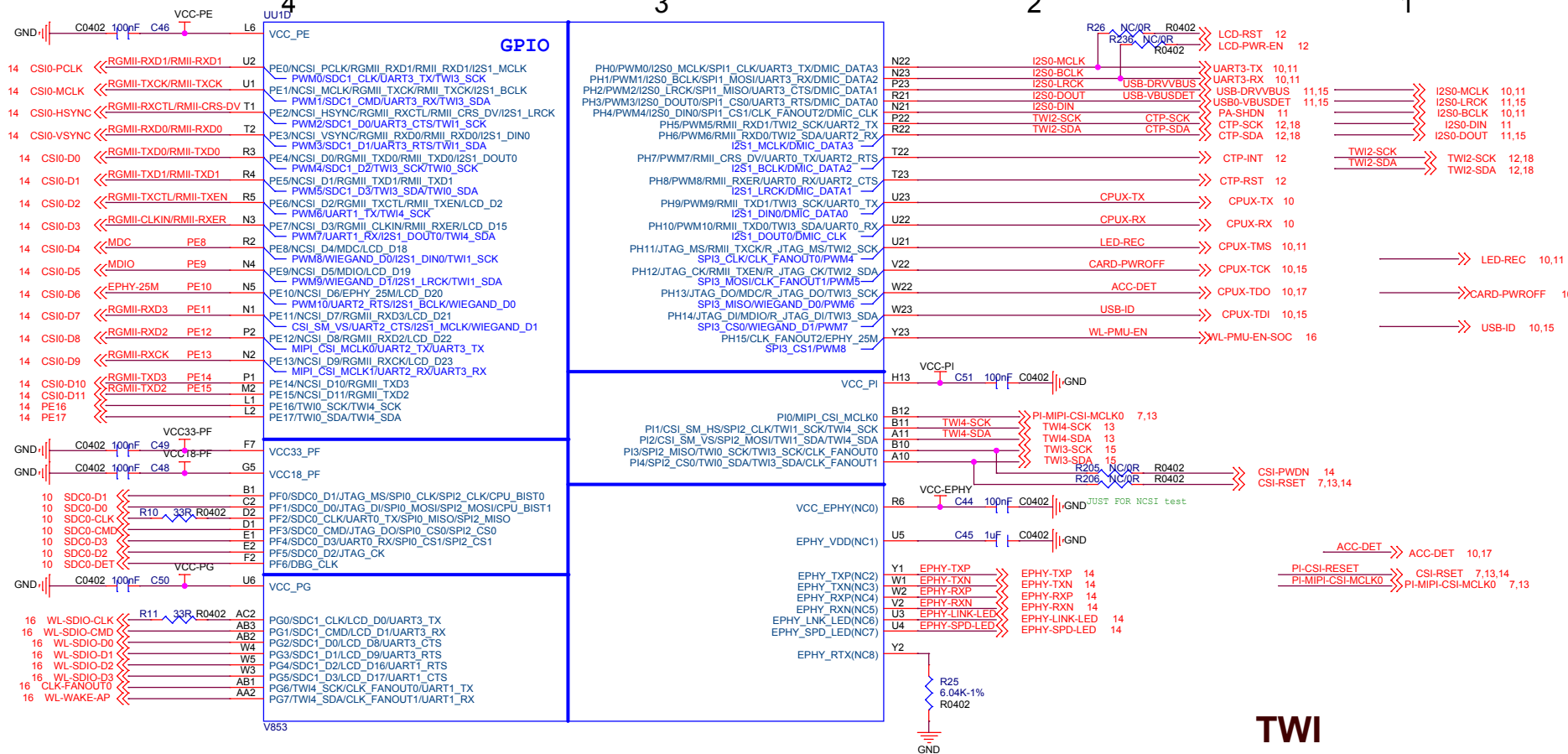
PLL-TEST

connect oscilloscope probe

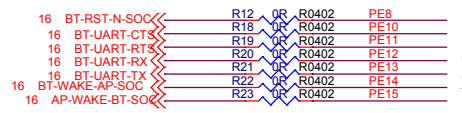


Close to IC

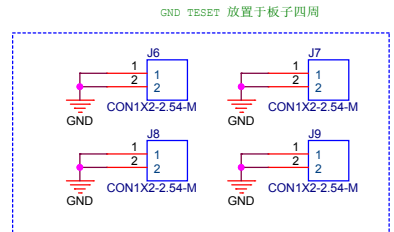
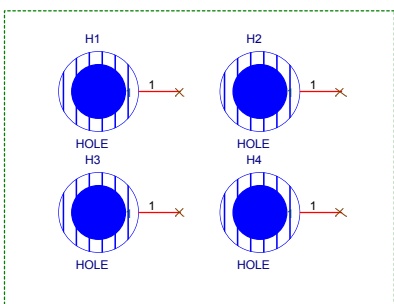
SOC



PE OR 电阻默认贴上, 验证时可将其其他模块电阻去掉

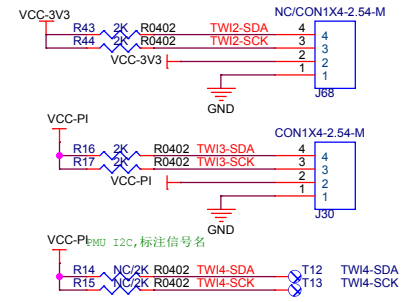


串口注意反向
蓝牙BT和RGMII/DVP不能同时使用

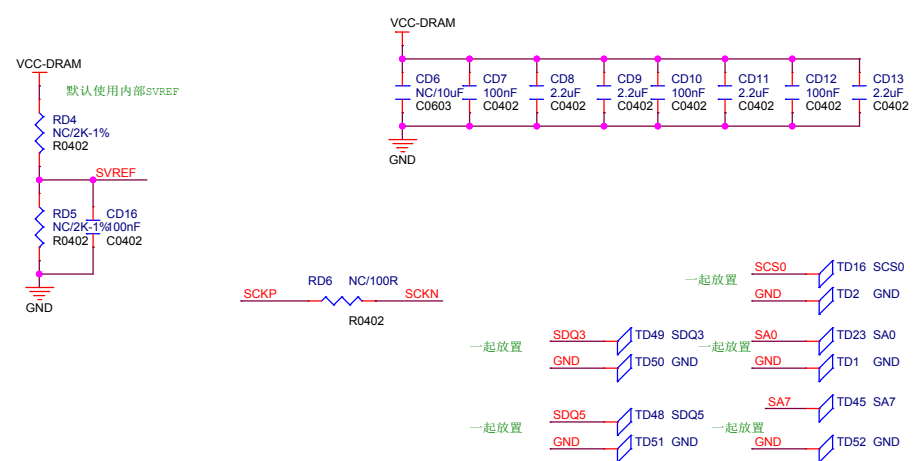
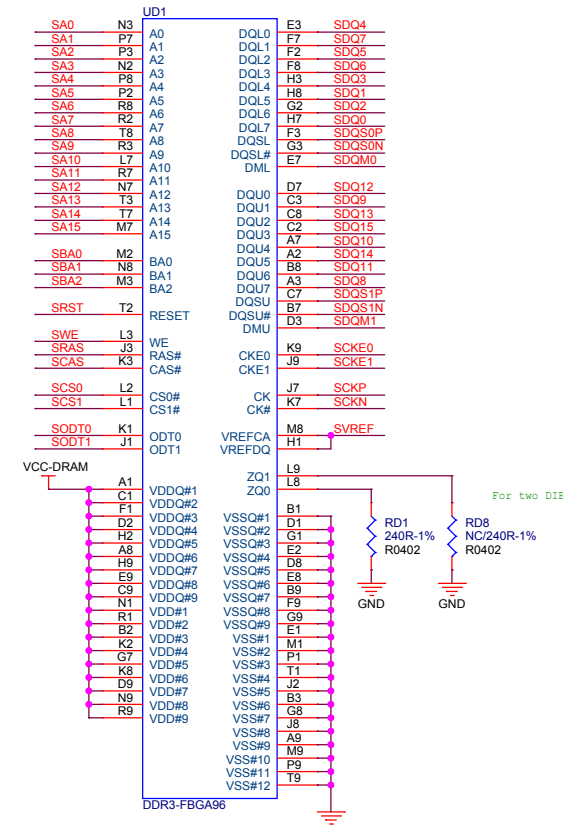
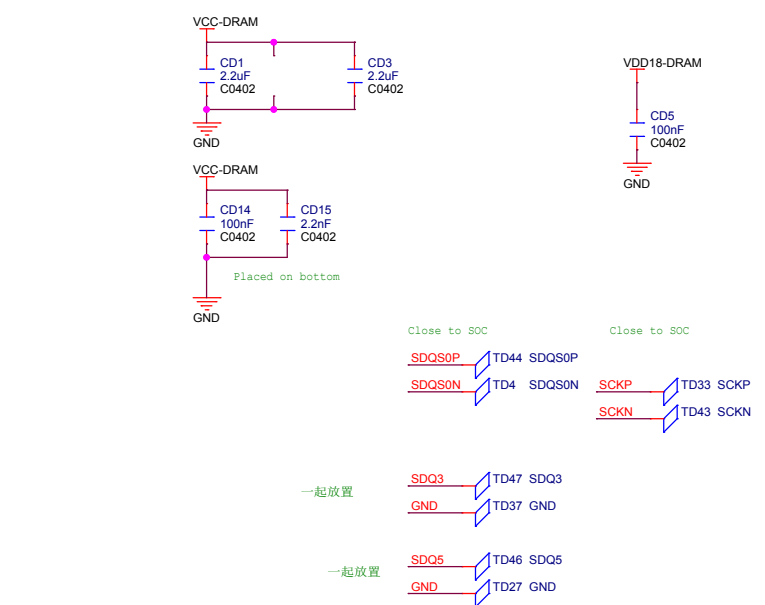
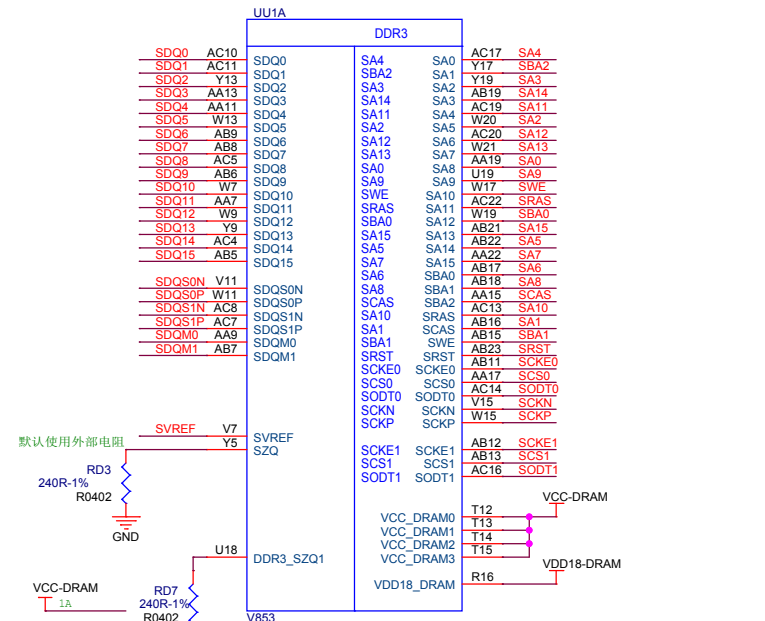


GND TEST 放置于板子四周

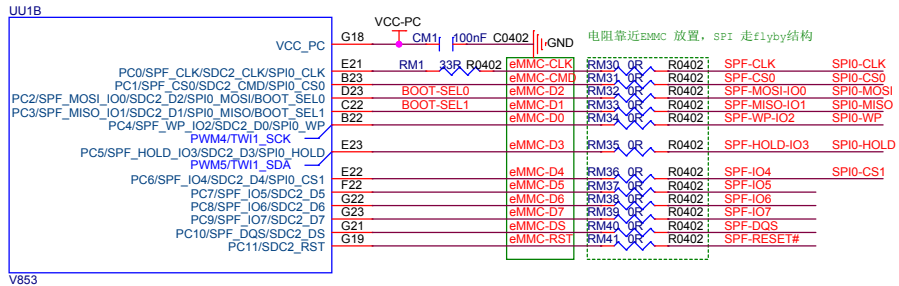
TWI



DDR3 16X1



FLASH



摆放成一排或者一列，便于拆料

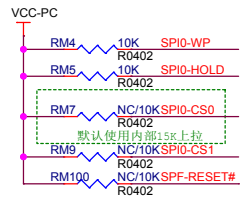
BOOT-SEL



电阻靠近信号分叉点放置，以免影响信号质量

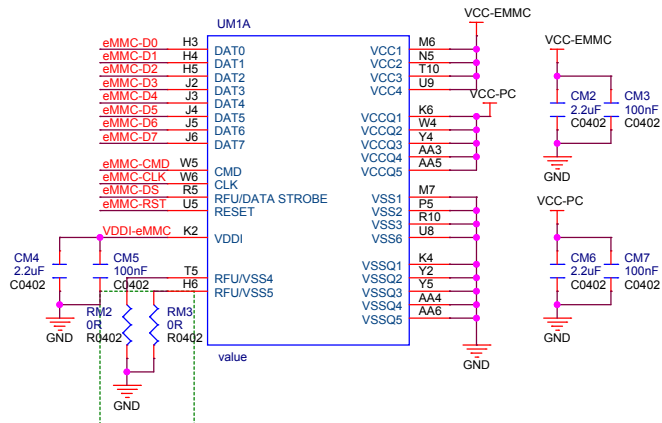
```
boot_sel[1:0]
0 0 SPI NAND->SPI NOR(4线)->SPI NOR(1线)->USB
0 1 SPI NOR(4线)->SPI NOR(1线)->SPI NAND->USB (快起)
1 0 SDC0->SPI NAND->SPI NOR(4线)->SPI NOR(1线)->UART BRUN->USB
1 1 (默认) SDC0->SPI NOR(4线)->SPI NOR(1线)->eMMC2_USR->eMMC2_BOOT->
SPI NAND->UART BRUN->USB
```

PC-SPI0

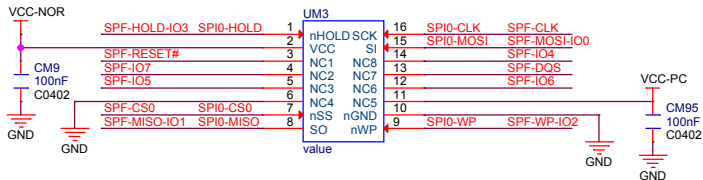
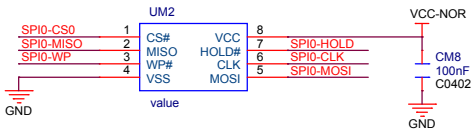
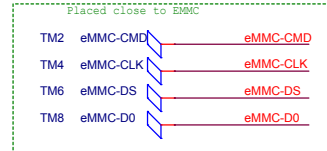
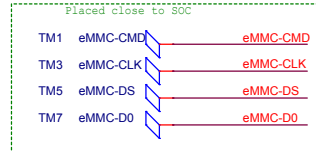
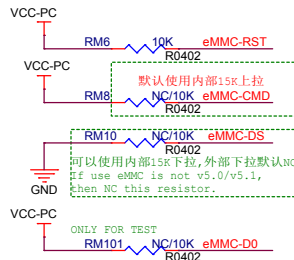


默认使用内部15k上拉

eMMC



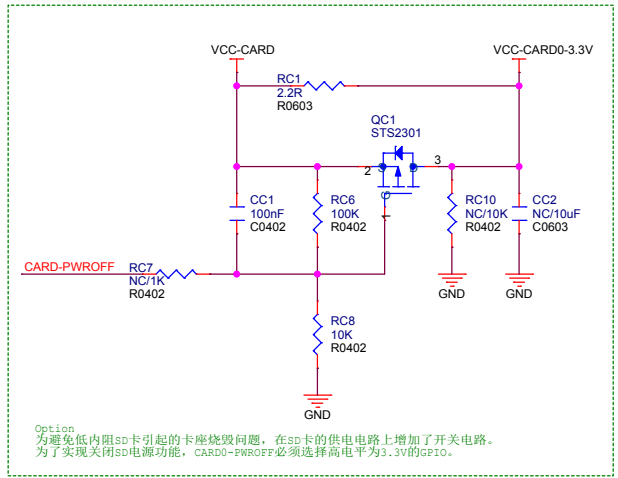
If eMMC is not v5.0/v5.1, then NC this two resistors.



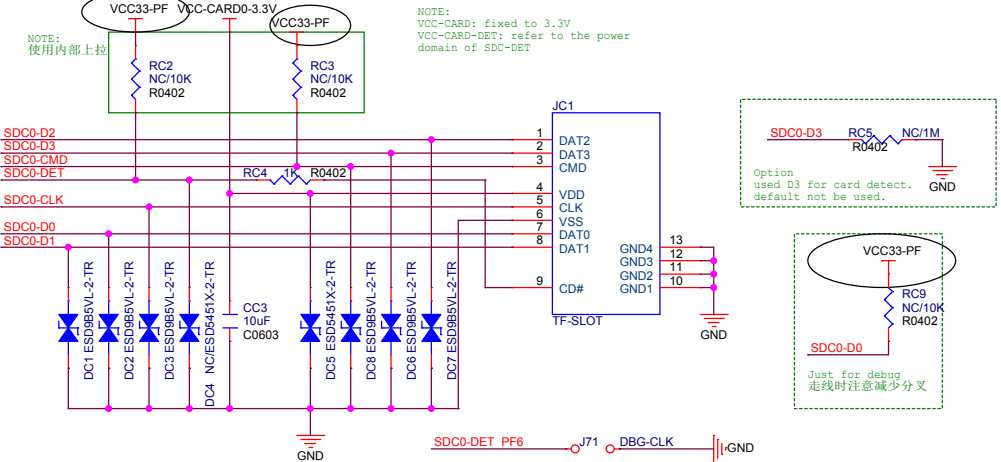


5

CARD



4



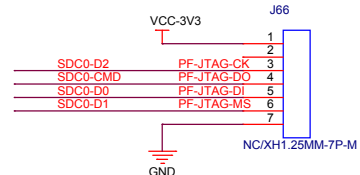
3

2

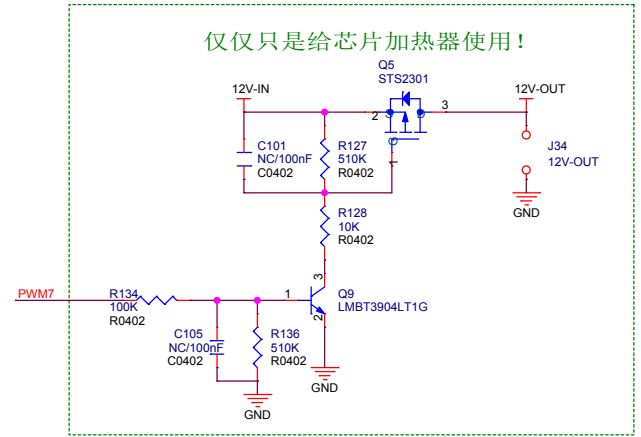
1



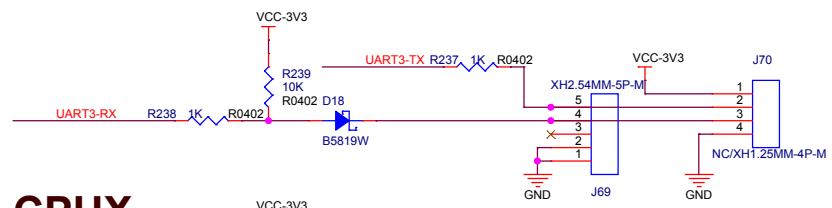
DEBUG



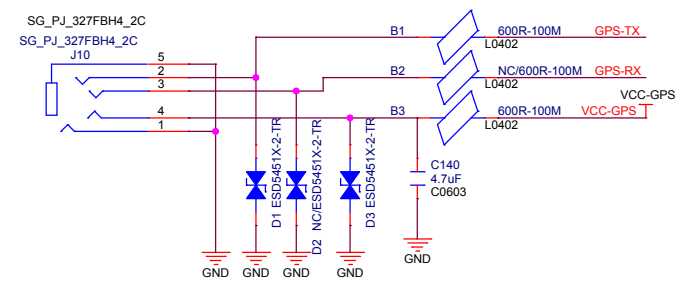
仅仅只是给芯片加热器使用!



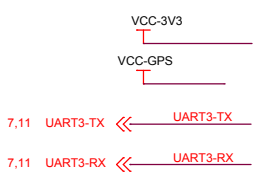
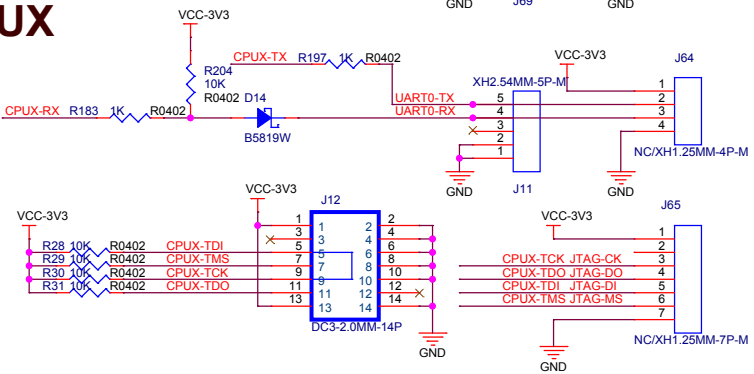
E907-UART



GPS



CPUX



5

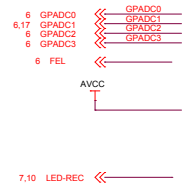
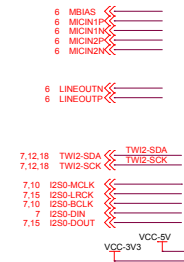
4

3

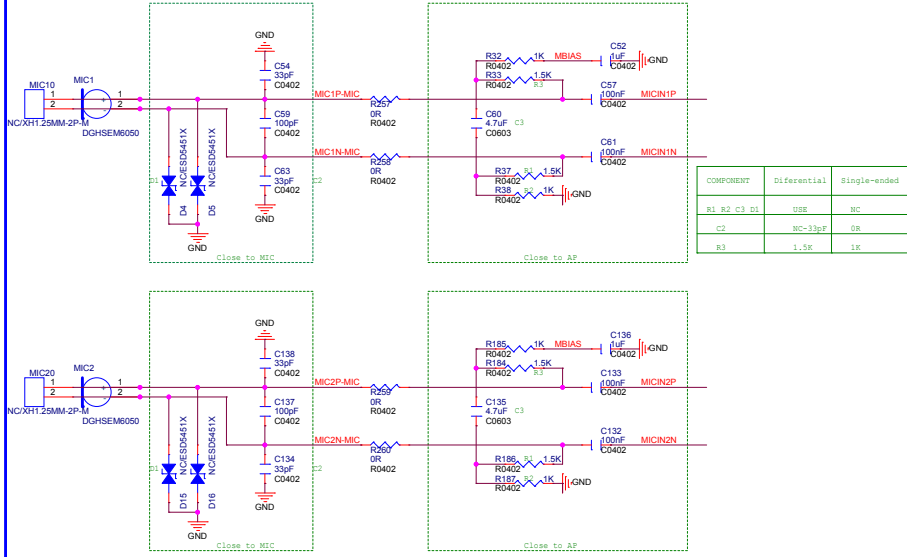
2

1

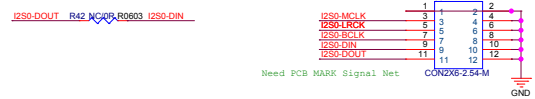
AUDIO/KEY



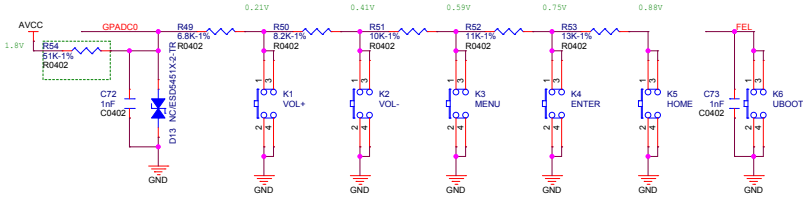
MIC



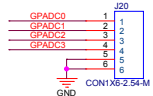
I2S



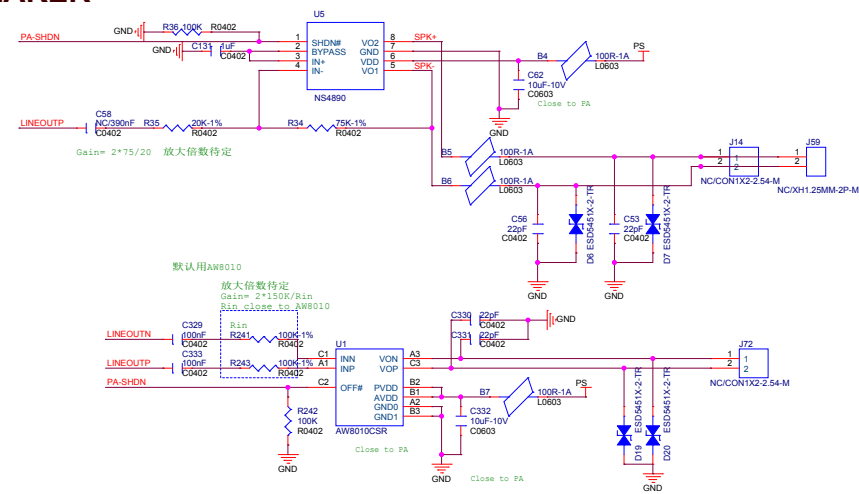
KEY



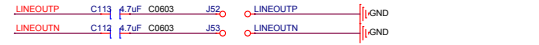
GPADC



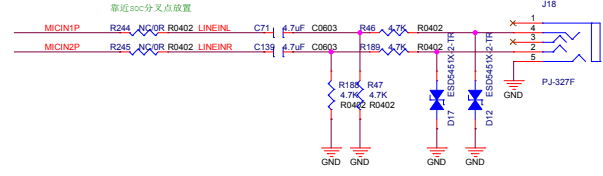
SPEAKER



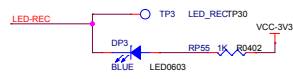
LINE OUT



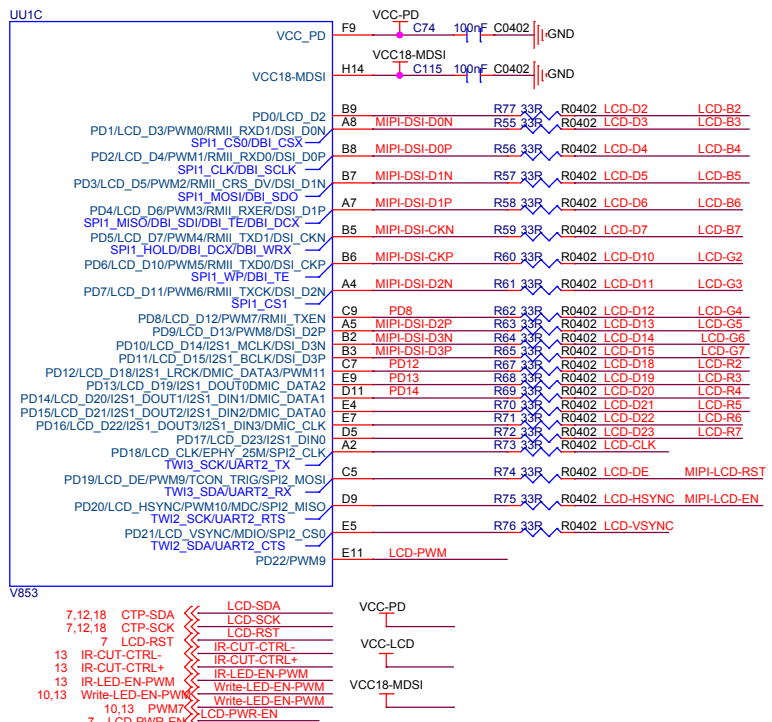
LINE IN



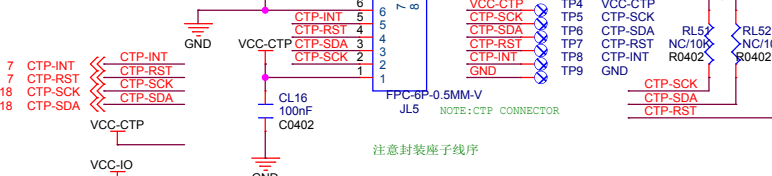
LED



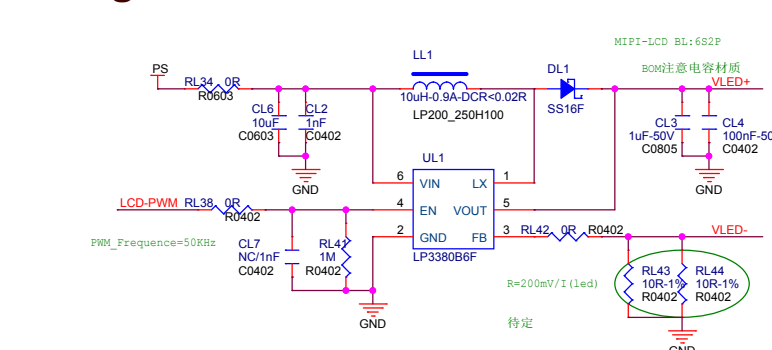
LCD/PWM



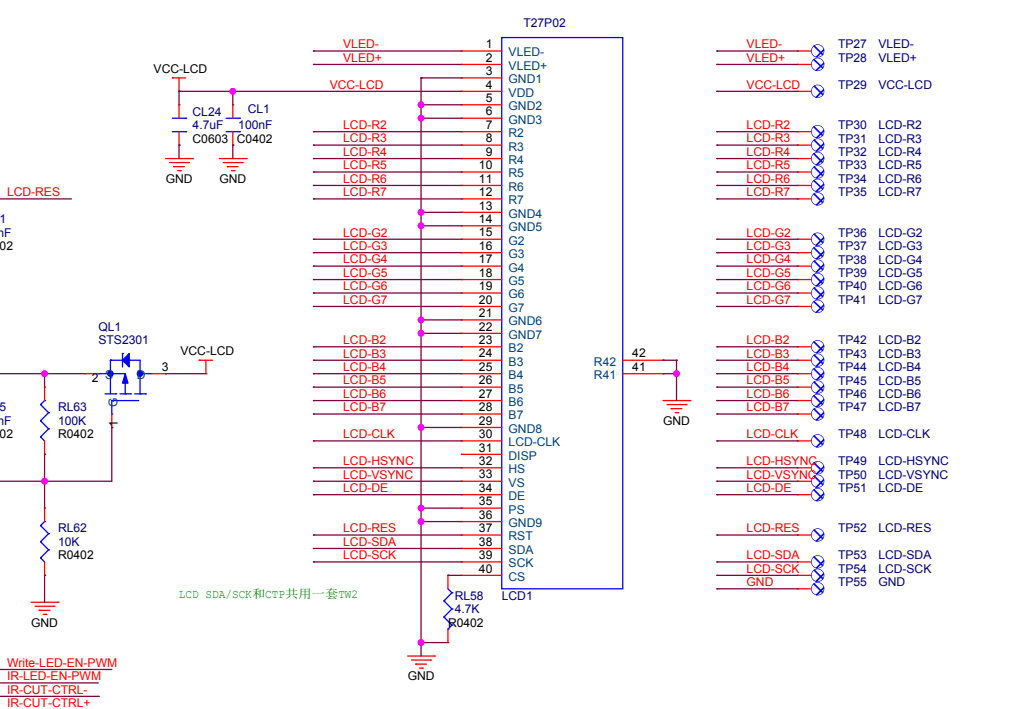
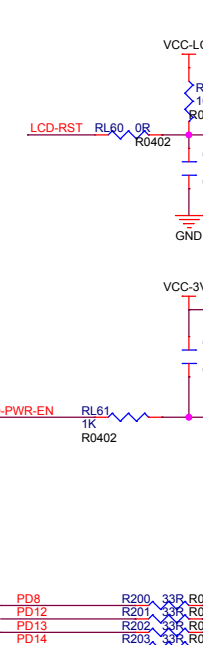
CTP CN



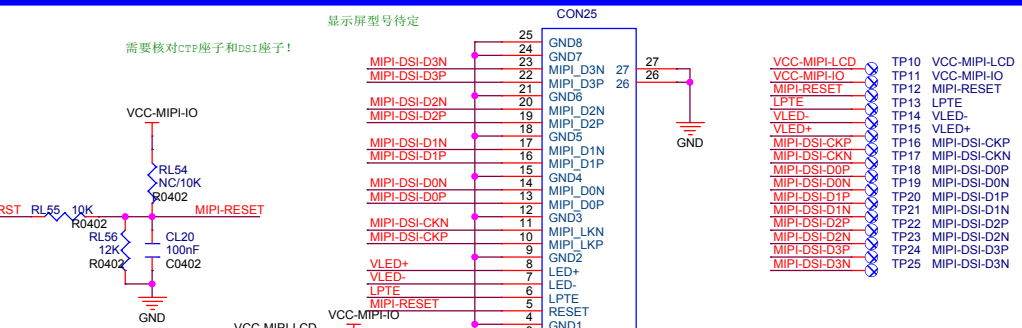
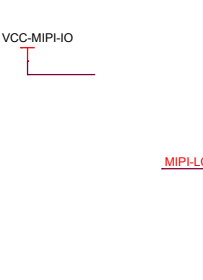
Backlight



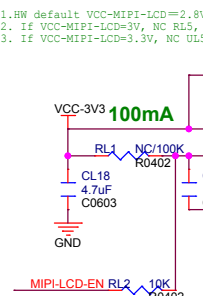
RGB LCD 4.3" 480x854



MIPI

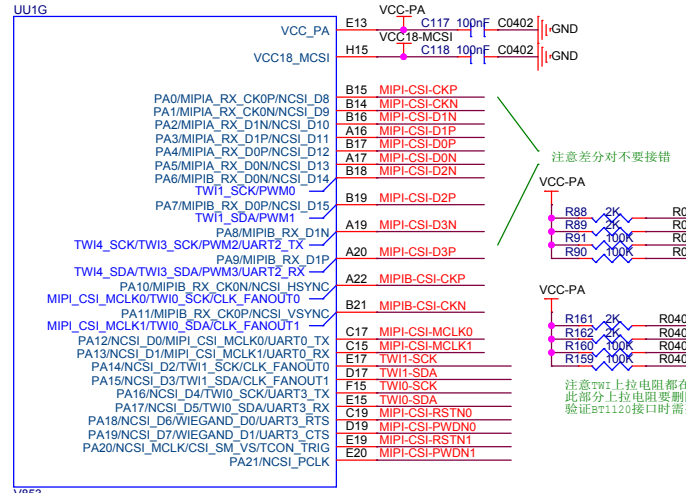


VCC-MIPI-LCD



1到26PIN可以接IMX278/imx386 sensor

接IMX278子板



注意差分对不要接错

注意TWI上拉电阻都在主板上, 此部分上拉电阻要删除减少走线长度! 验证BT1120接口时需要保留电阻

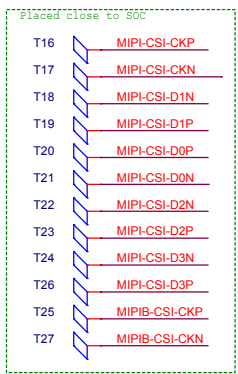
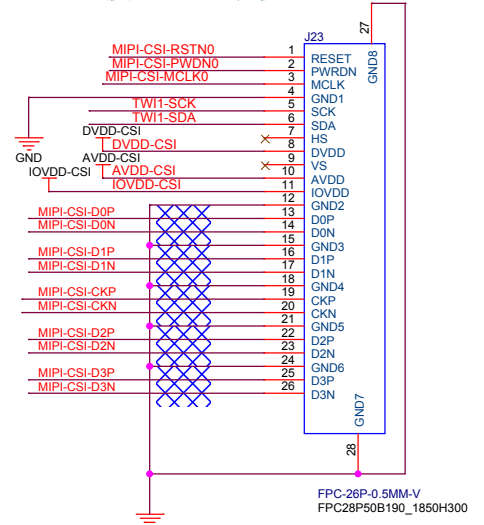
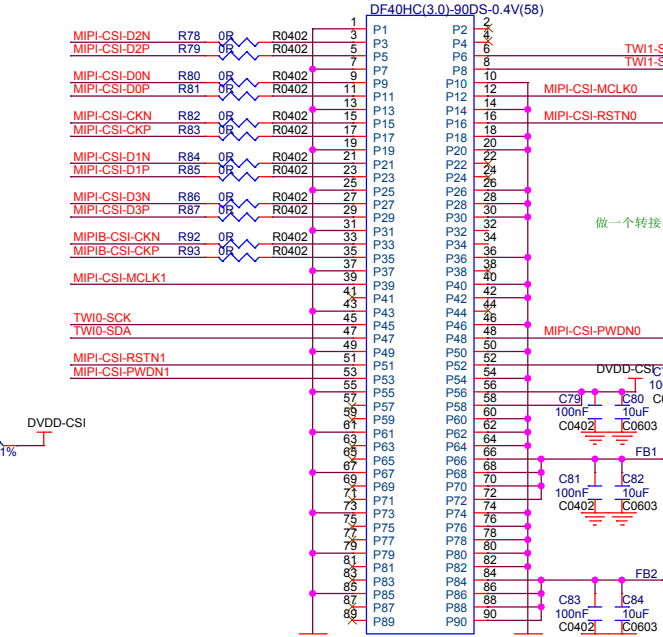
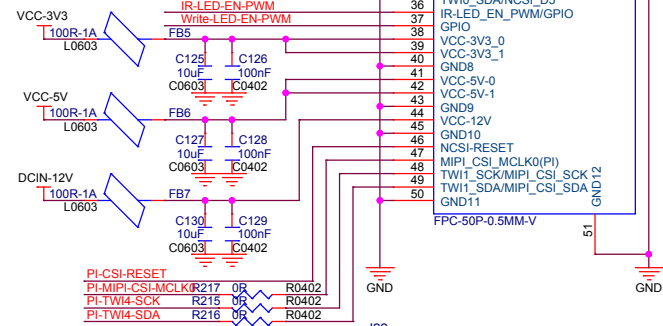
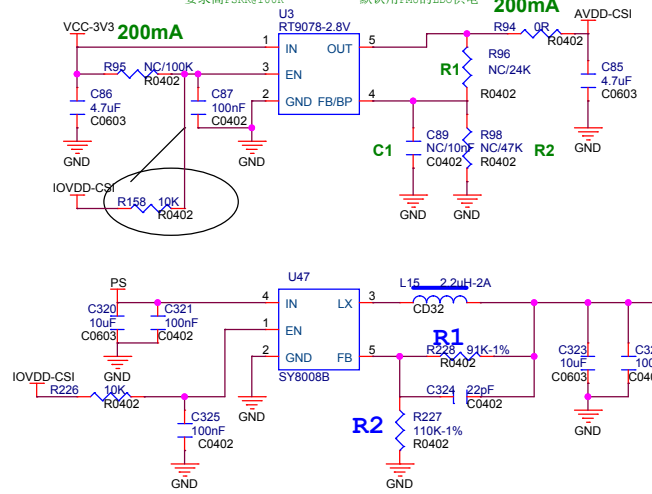
IO	两组MIPI-2lane	MIPI-4lane
PA0	MIPI-TA-CSI-CKOP	MIPI-CSI-CKP
PA1	MIPI-TA-CSI-CKON	MIPI-CSI-CKN
PA2	MIPI-TA-CSI-D1N	MIPI-CSI-D1N
PA3	MIPI-TA-CSI-D1P	MIPI-CSI-D1P
PA4	MIPI-TA-CSI-D0P	MIPI-CSI-D0P
PA5	MIPI-TA-CSI-D0N	MIPI-CSI-D0N
PA6	MIPI-TB-CSI-DON	MIPI-CSI-D2N
PA7	MIPI-TB-CSI-DOP	MIPI-CSI-D2P
PA8	MIPI-TB-CSI-D1N	MIPI-CSI-D1N
PA9	MIPI-TB-CSI-D1P	MIPI-CSI-D1P
PA10	MIPI-TB-CSI-CKON	MIPI-CSI-CKN
PA11	MIPI-TB-CSI-CKOP	MIPI-CSI-CKP

- 12 IR-CUT-CTRL- IR-CUT-CTRL-
- 12 IR-CUT-CTRL+ IR-CUT-CTRL+
- 12 IR-LED-EN-PWM IR-LED-EN-PWM
- 10,12 Write-LED-EN-PWM Write-LED-EN-PWM
- 7,14 CSI-RSET PI-MIPI-CSI-MCLK0
- 7 PI-MIPI-CSI-MCLK0 PI-TWI4-SCK
- 7 TWI4-SCK PI-TWI4-SDA

前置摄像头AVDD供电

要求高PSRR@100K

默认用PMU的LDO供电 200mA

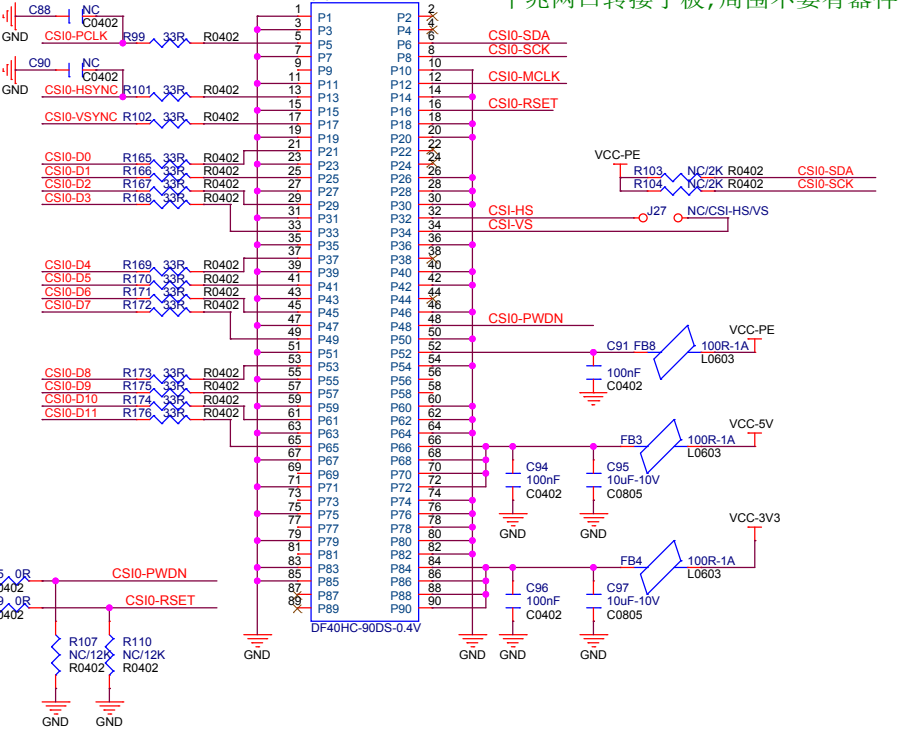


做一个转接子板90 PIN 装两个90PIN

PE CSI&RGMI

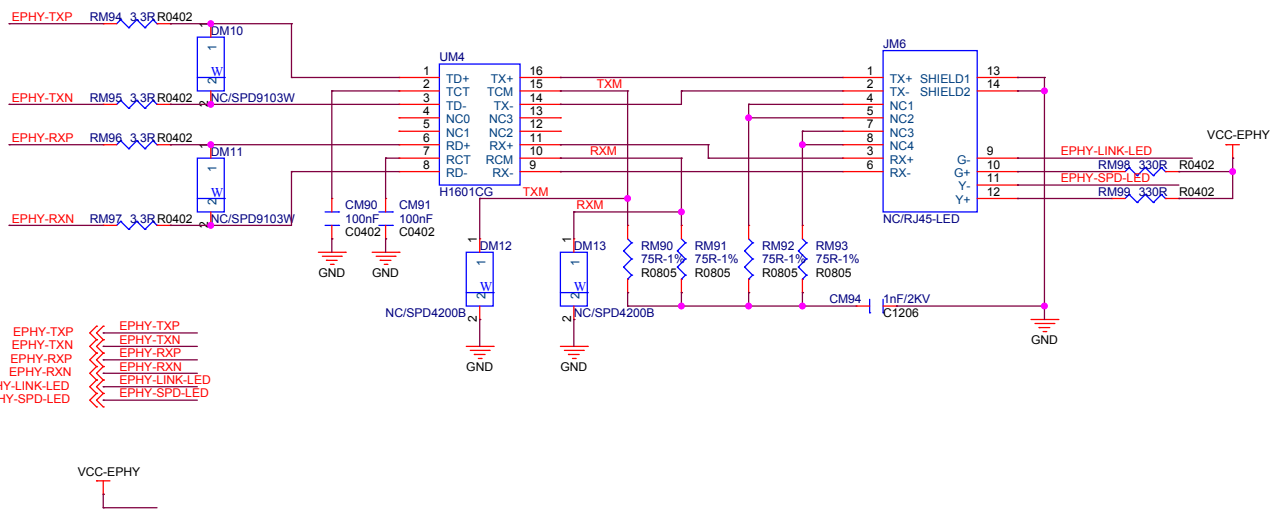
- 7 CSIO-PCLK <<< RGMII-RXD1/RMII-RXD1
- 7 CSIO-MCLK <<< RGMII-TXCK/RMII-TXCK
- 7 CSIO-HSYNC <<< RGMII-RXCTL/RMII-CRS-DV
- 7 CSIO-VSYNC <<< RGMII-RXD0/RMII-RXD0
- 7 CSIO-D0 <<< RGMII-TXD0/RMII-TXD0
- 7 CSIO-D1 <<< RGMII-TXD1/RMII-TXD1
- 7 CSIO-D2 <<< RGMII-TXCTL/RMII-TXEN
- 7 CSIO-D3 <<< RGMII-CLKIN/RMII-RXER
- 7 CSIO-D4 <<< MDC
- 7 CSIO-D5 <<< MDIO
- 7 CSIO-D6 <<< EPHY-25M
- 7 CSIO-D7 <<< RGMII-RXD3
- 7 CSIO-D8 <<< RGMII-RXD2
- 7 CSIO-D9 <<< RGMII-RXCK
- 7 CSIO-D10 <<< RGMII-TXD3
- 7 CSIO-D11 <<< RGMII-TXD2
- 7 PE16 <<< CSIO-SDA RGMII/RMII-RESET
- 7 PE17 <<< CSIO-SCK
- 7 CSI-PWDN <<< CSI-PWDN
- 7,13 CSI-RSET <<< CSI-RSET

删除了field信号

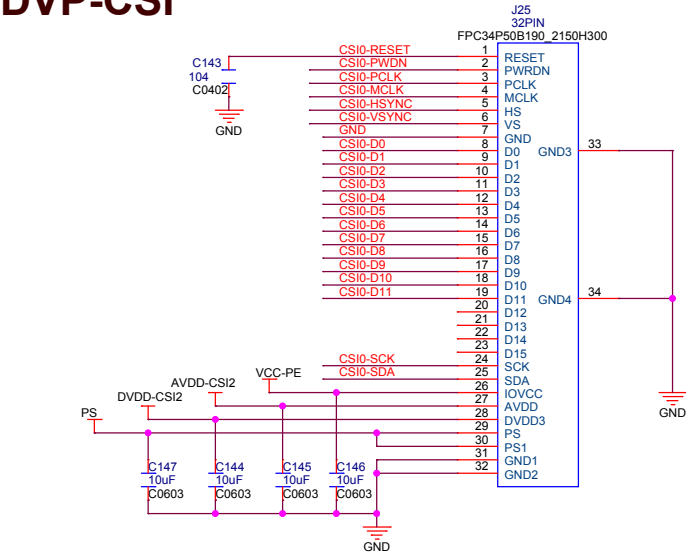


千兆网口转接子板,周围不要有器件

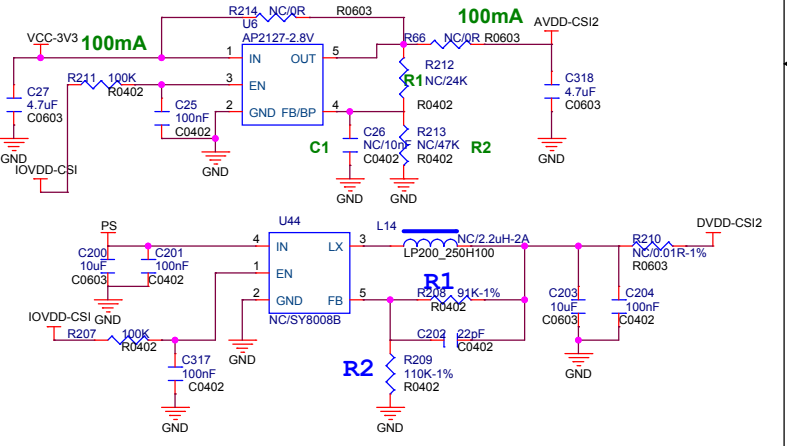
JUST FOR TEST



DVP-CSI



CSI2-POWER



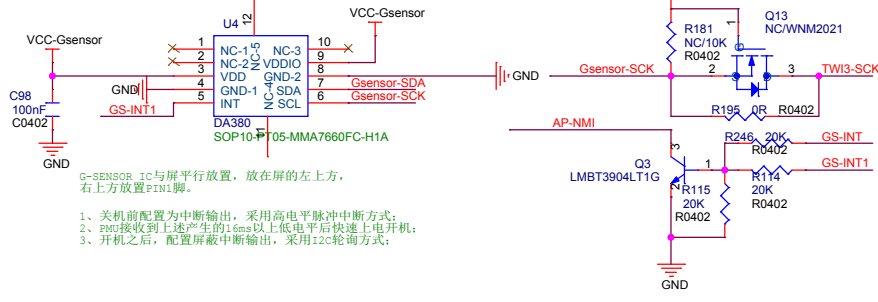
AllWinner Technology Co., Ltd	
Design Name	V853-PER2
Size A3	Page Name NCSI&RGMII
Date: Monday, October 25, 2021	Sheet 14 of 18

7 TWI3-SDA
7 TWI3-SCK
6,17 AP-NMI

VCC-RTC
VCC-PI

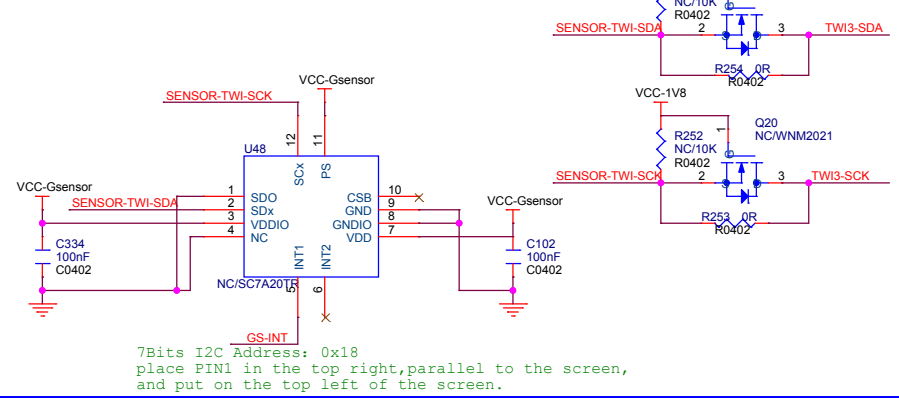
G-SENSOR (DA380)

注：停车监控开机电路
GSENSOR 需要用1.8V的I2C



- G-SENSOR IC与屏平行放置，放在屏的左上方，右上方放置PIN1脚。
- 1、关机前配置为中断输出，采用高电平脉冲中断方式；
 - 2、PMU接收到上述产生的11ms以上低电平后快速上电开机；
 - 3、开机之后，配置屏蔽中断输出，采用I2C轮询方式；

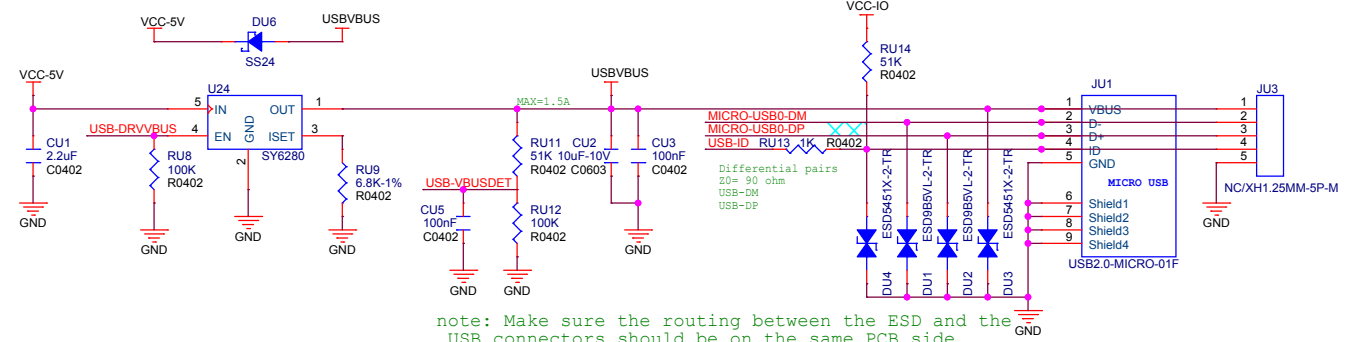
SC7A20TR/DA217



7Bits I2C Address: 0x18
place PIN1 in the top right, parallel to the screen, and put on the top left of the screen.

microUSB

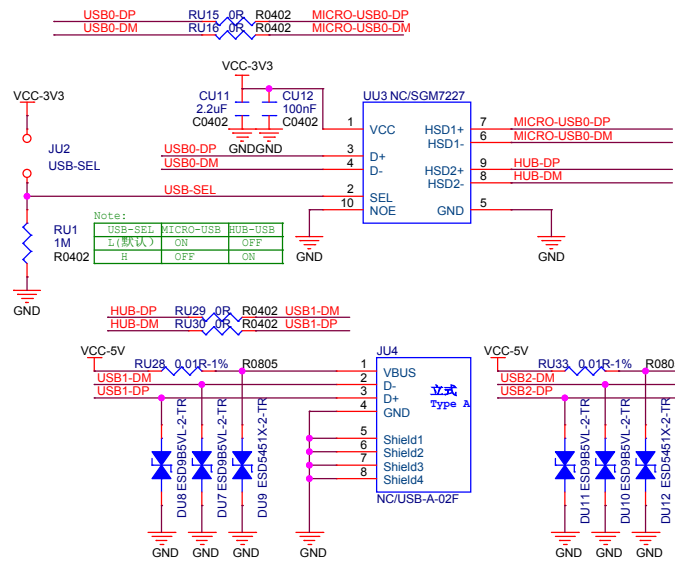
上拉电压与所配置ic的电源域保持一致，防止漏电问题！



note: Make sure the routing between the ESD and the USB connectors should be on the same PCB side

USB switch

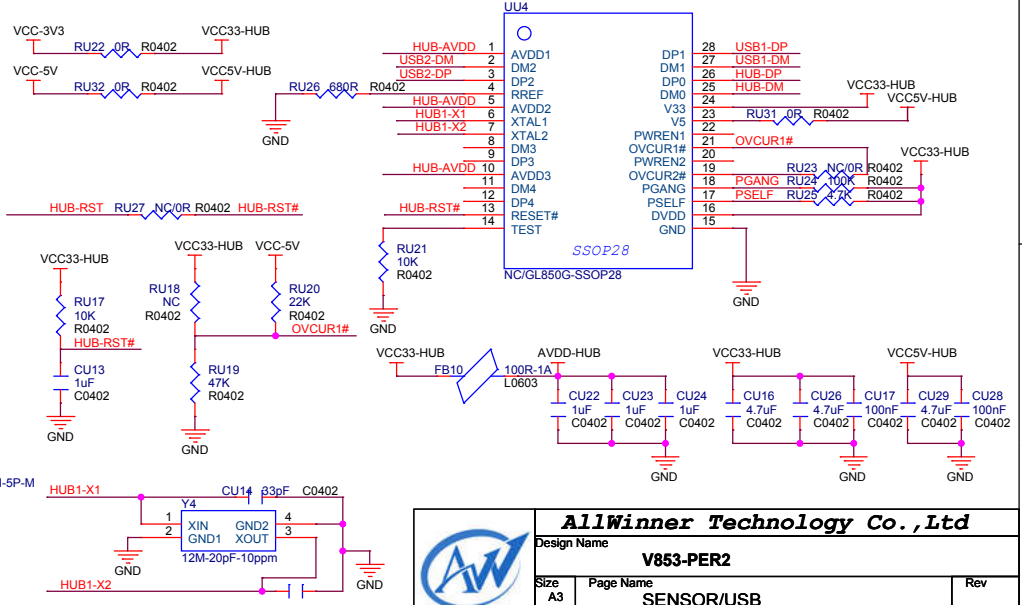
默认直通



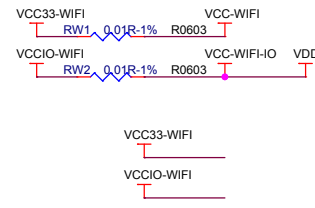
Notes:

USB-SEL	MICRO-USB	HUB-USB
L(默认)	ON	OFF
H	OFF	ON

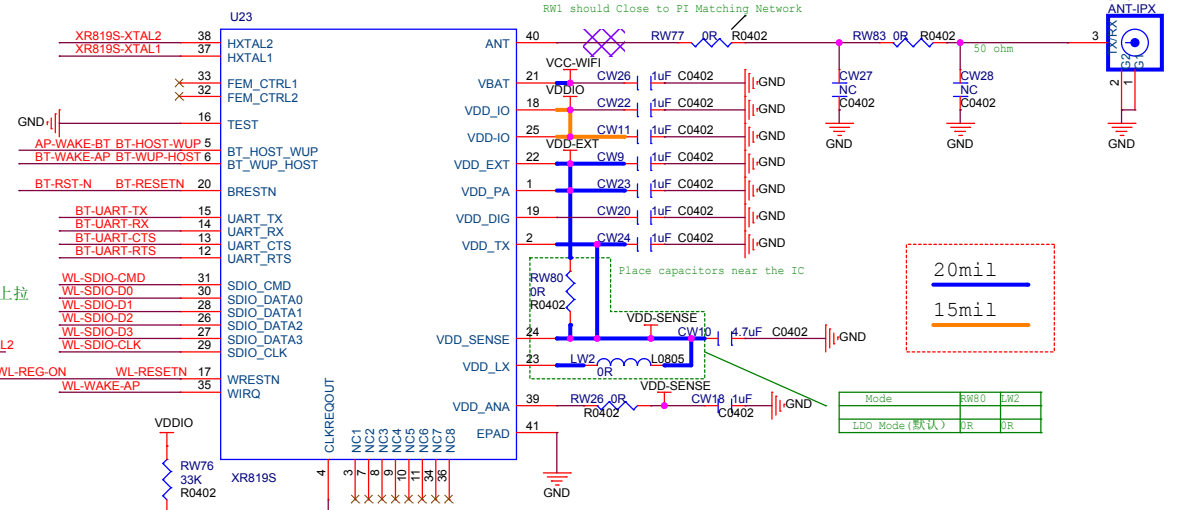
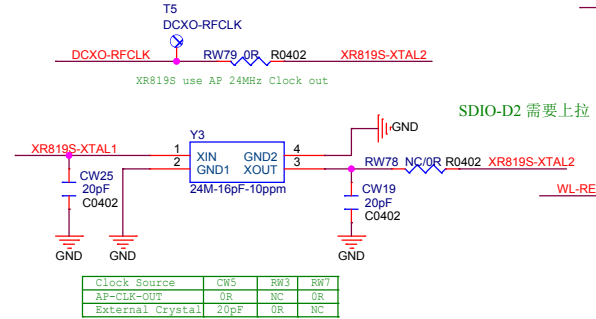
HUB



SDIOWIFI

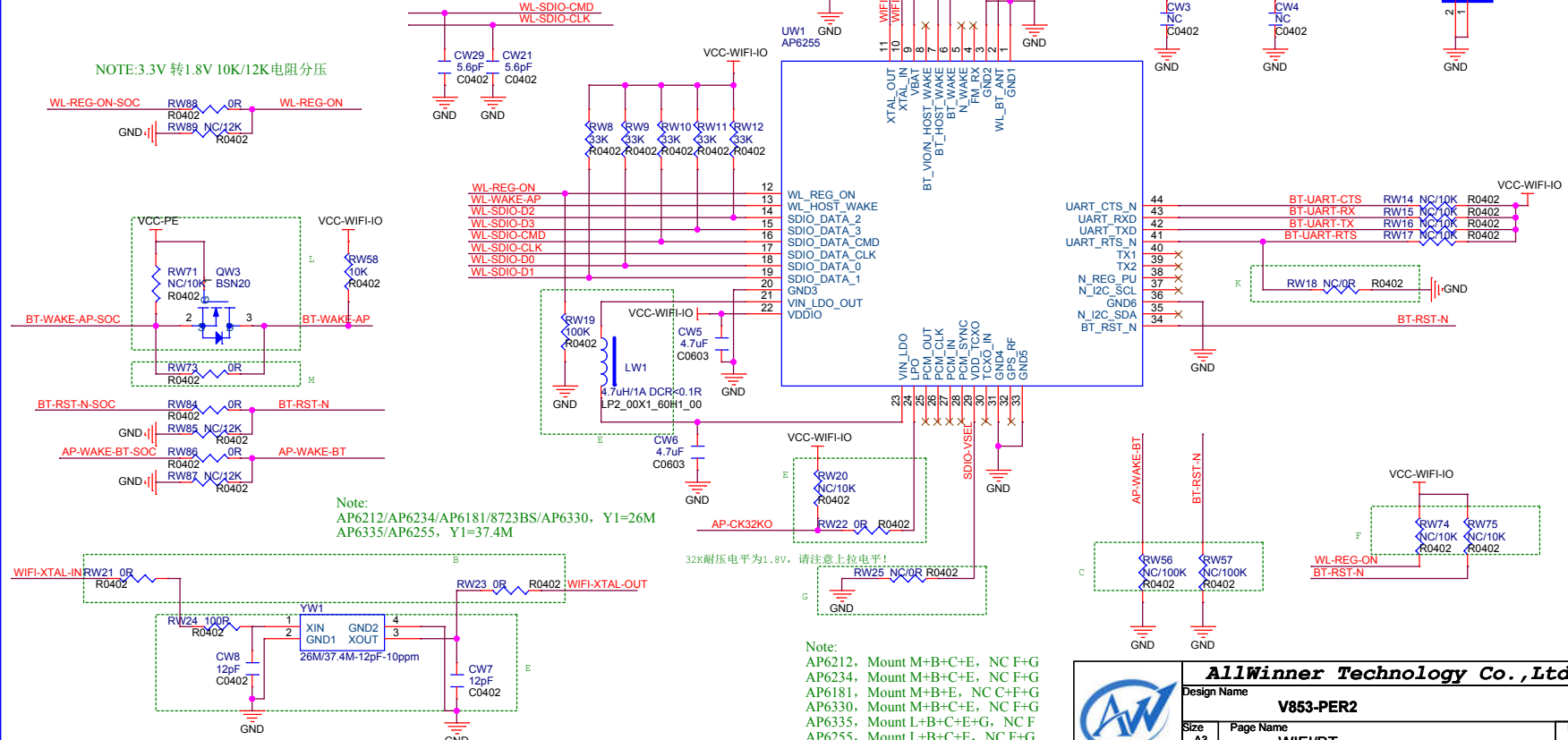


XR819S ON BOARD



APXXX/XR819S Retlak8919ftv BL-M8189FS

NOTE: 注意SOC端GPIO和WiFi-IO电平匹配



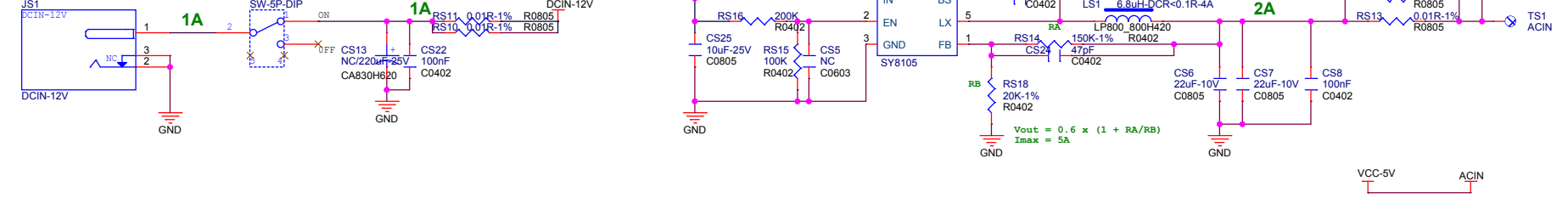
Allwinner Technology Co., Ltd

Design Name: **V853-PER2**

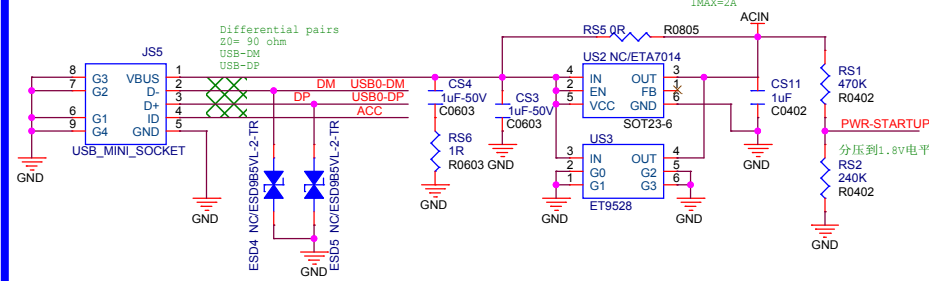
Size: A3 Page Name: **WIFI/BT** Rev: _____

Date: Monday, October 25, 2021 Sheet: 16 of 18

DC IN-12V



5V-IN



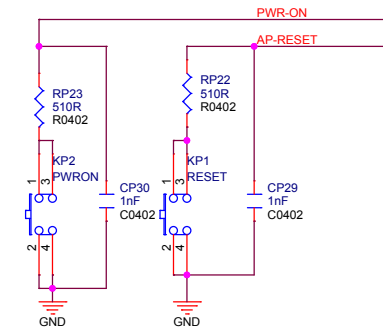
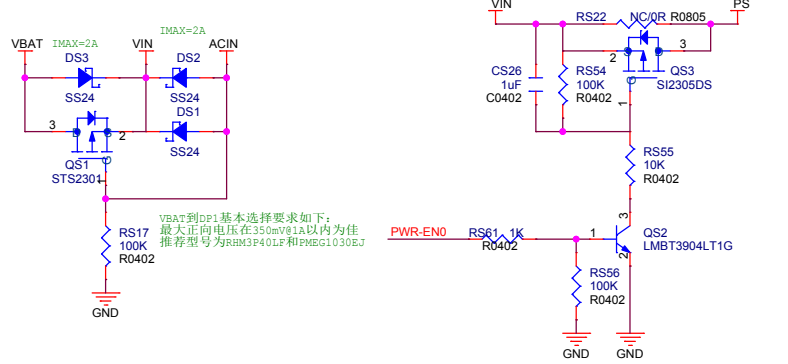
6.15 USB0-DP
6.15 USB0-DM

6.11 GPADC1

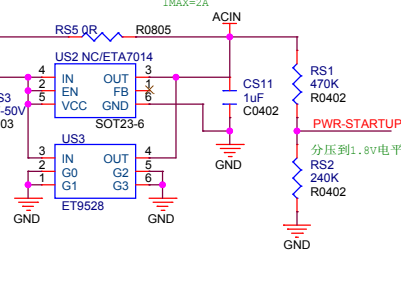
6 PWR-ON
6 PWR-STARTUP
6 PWR-EN0
6 AP-RESET
6 AP-NMI

7.10 ACC-DET

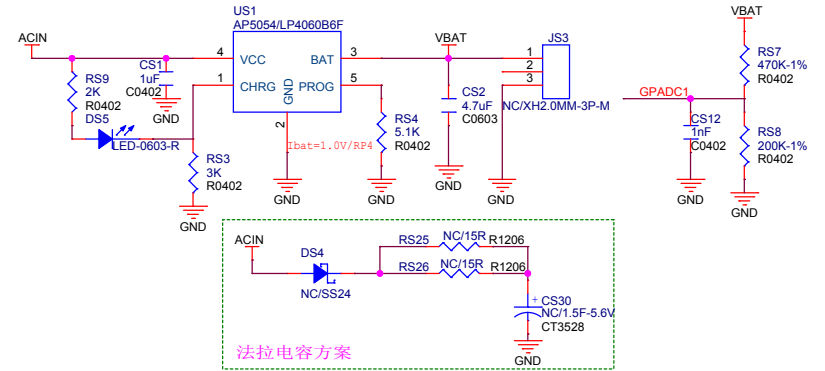
VBAT&VBUS



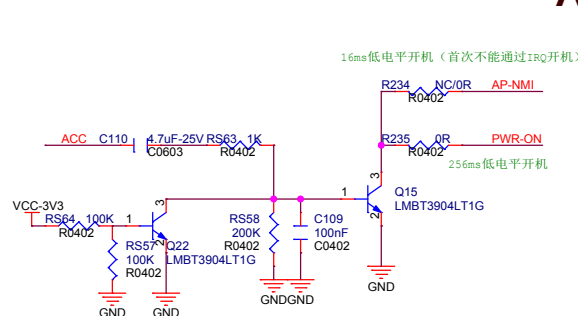
OVP



Charger&BAT

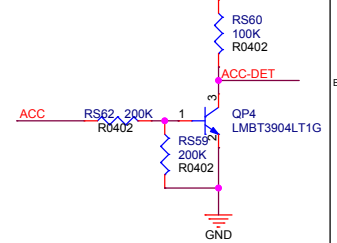


ACC-ON



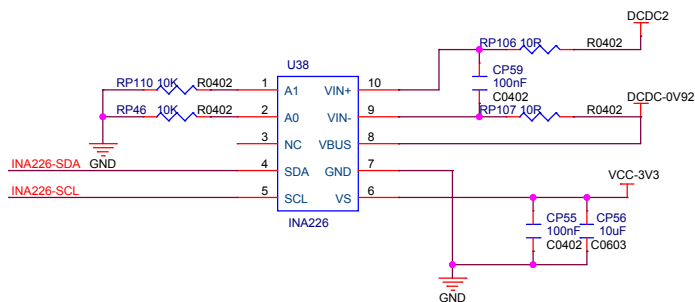
ACC开机方案一：ACC通过产生256ms低电平脉冲给PWR-ON 信号开机。
ACC开机方案二：ACC通过产生16ms低电平脉冲给IRQ信号开机。

ACC-DET



Allwinner Technology Co., Ltd			
Design Name: V853-PER2			
Size: A3	Page Name: PMIC	Rev	
Date: Monday, October 25, 2021	Sheet: 17	of 18	

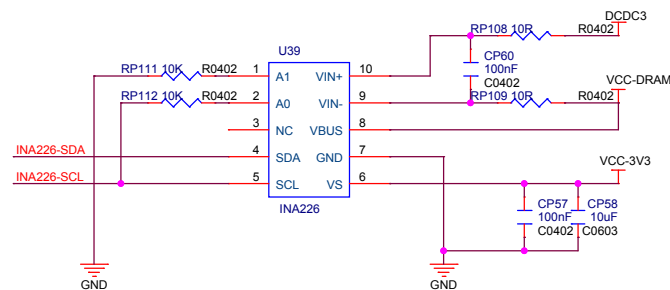
测试VDD-SYS 功耗



address:1000000

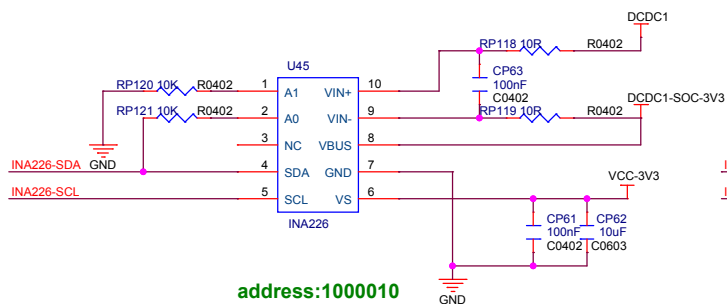
7.12 TWI2-SDA << INA226-SDA
7.12 TWI2-SCK << INA226-SCL

测试VCC-DRAM功耗



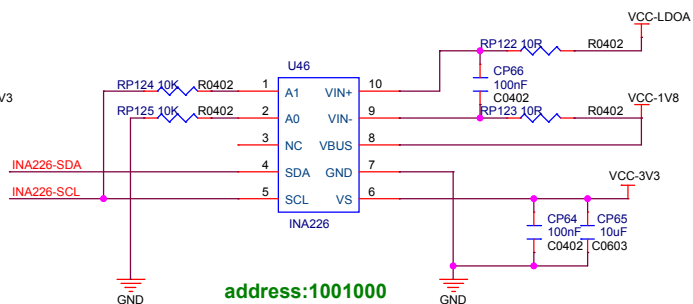
address:1000011

测试VCC-3V3-SOC功耗



address:1000010

测试VCC-1V8-SOC功耗



address:1001000