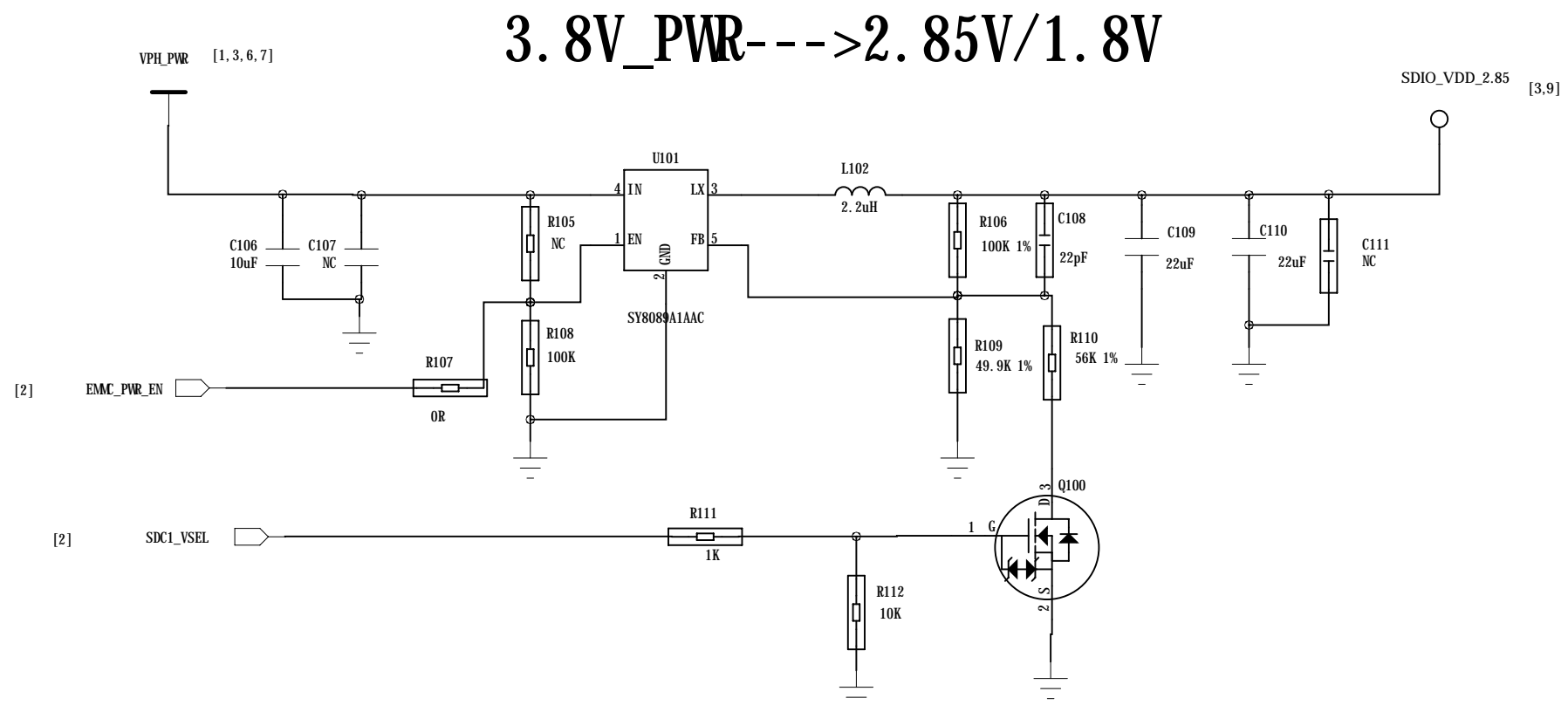
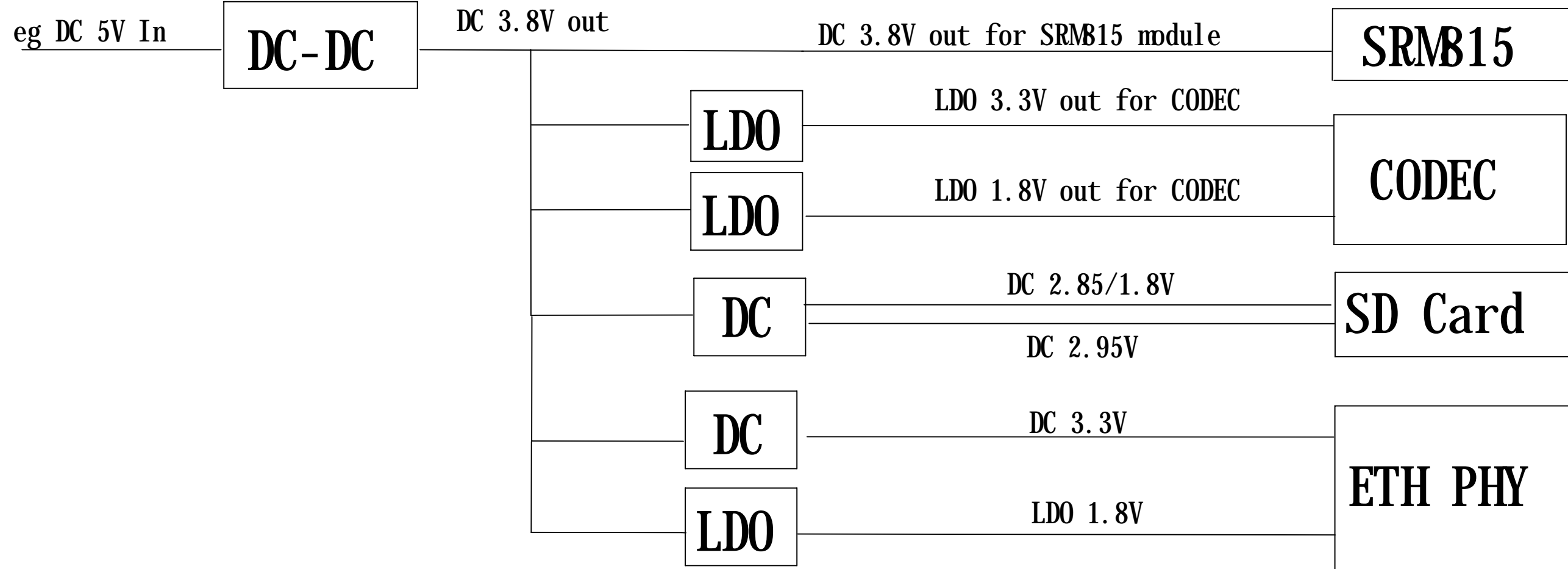


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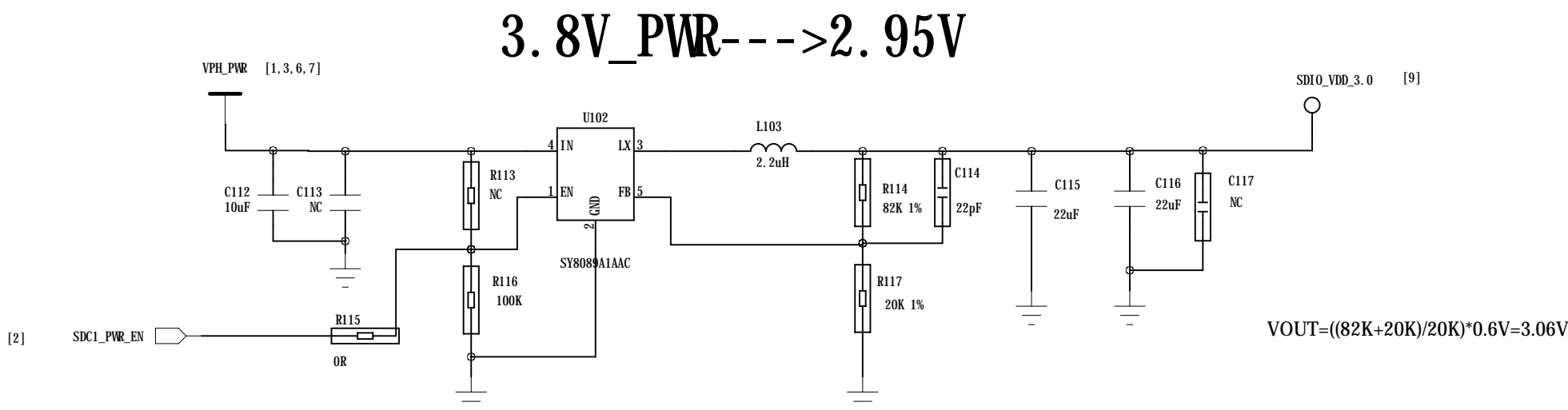


SDIO

SDC1\_VSEL=0 VOUT=((100K+49.9K)/49.9K)\*0.6V=1.8V  
SDC1\_VSEL=1 VOUT=((100K+49.9K)/56K)/(49.9K/56K)\*0.6V=2.85V

NOTE:

- When the SDIO be used to SD card and card's voltage is 2.85V, SDC1\_VSEL=1 , DCDC U101 output 2.85V.  
When the SDIO be used to SD card and card's voltage is 1.8V, SDC1\_VSEL=0 , DCDC U101 output 1.8V.
- When the SDIO be used to eMMC, SDC1\_VSEL=0 , DCDC U101 output 1.8V.

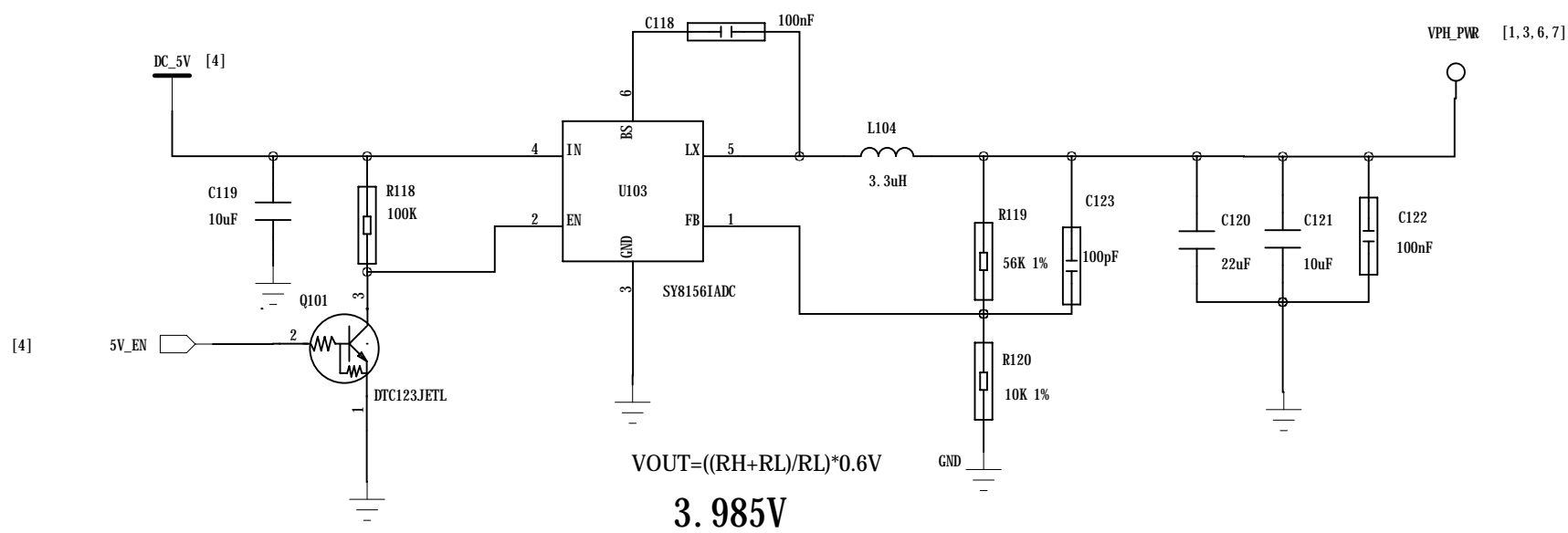


Input voltage is 5V,and then 3.8V,2.85V,2.95V,3.3V and 1.8V typical Voltages.

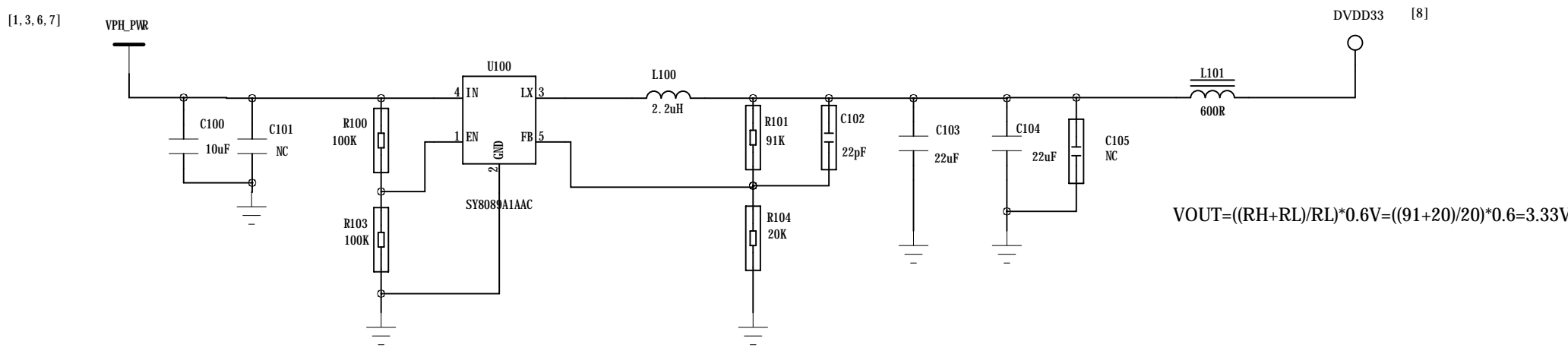
RGM I

MODULE (4V)

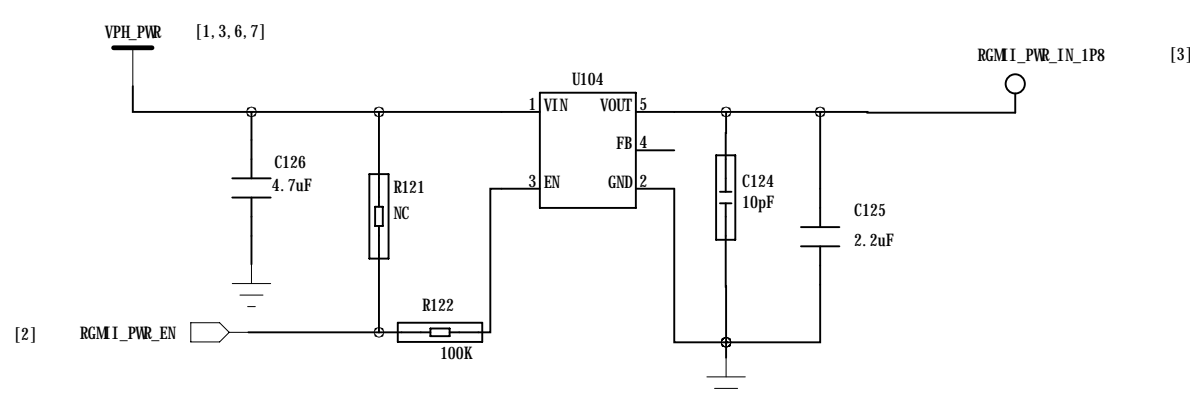
5V---&gt;3.8V



3.8V\_PWR---&gt;3.3V

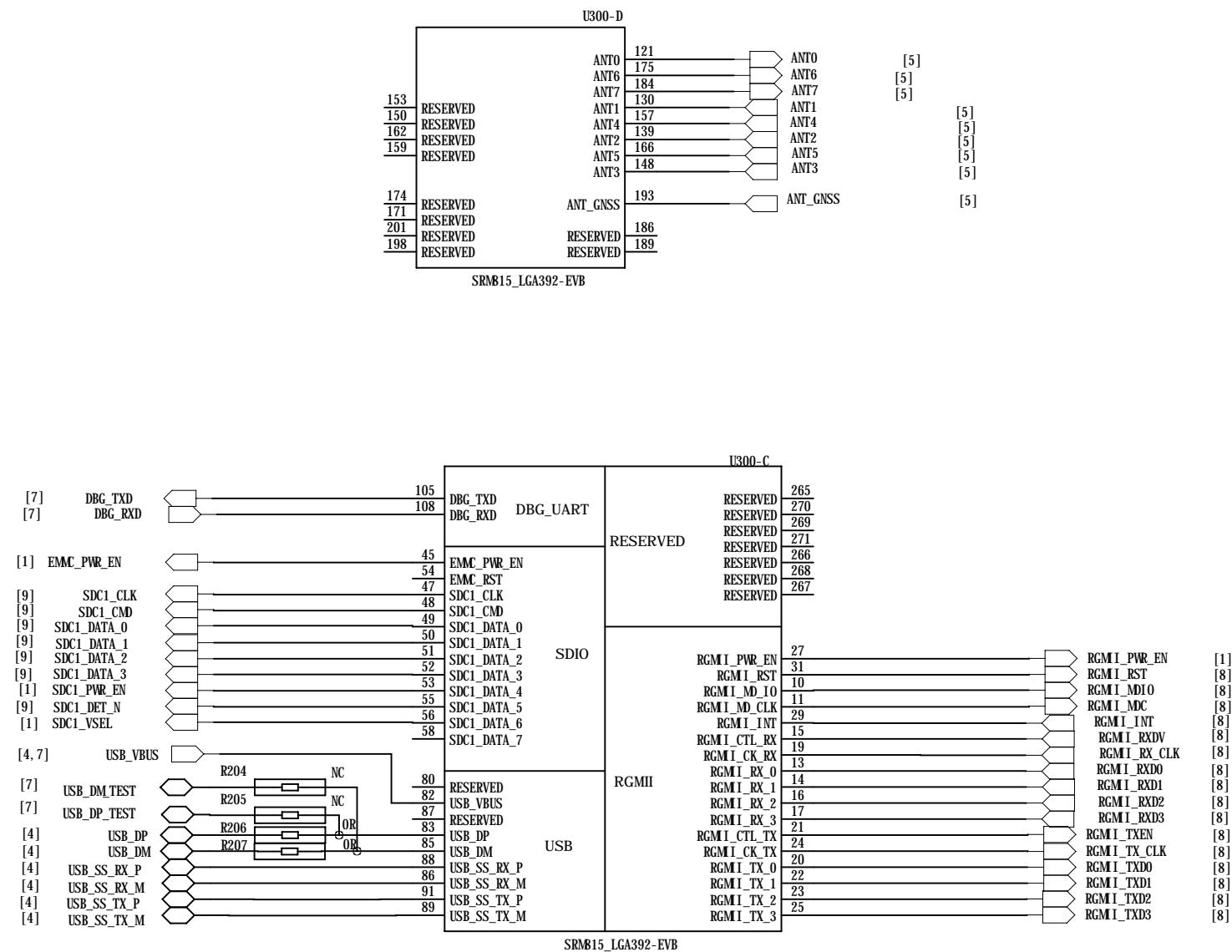
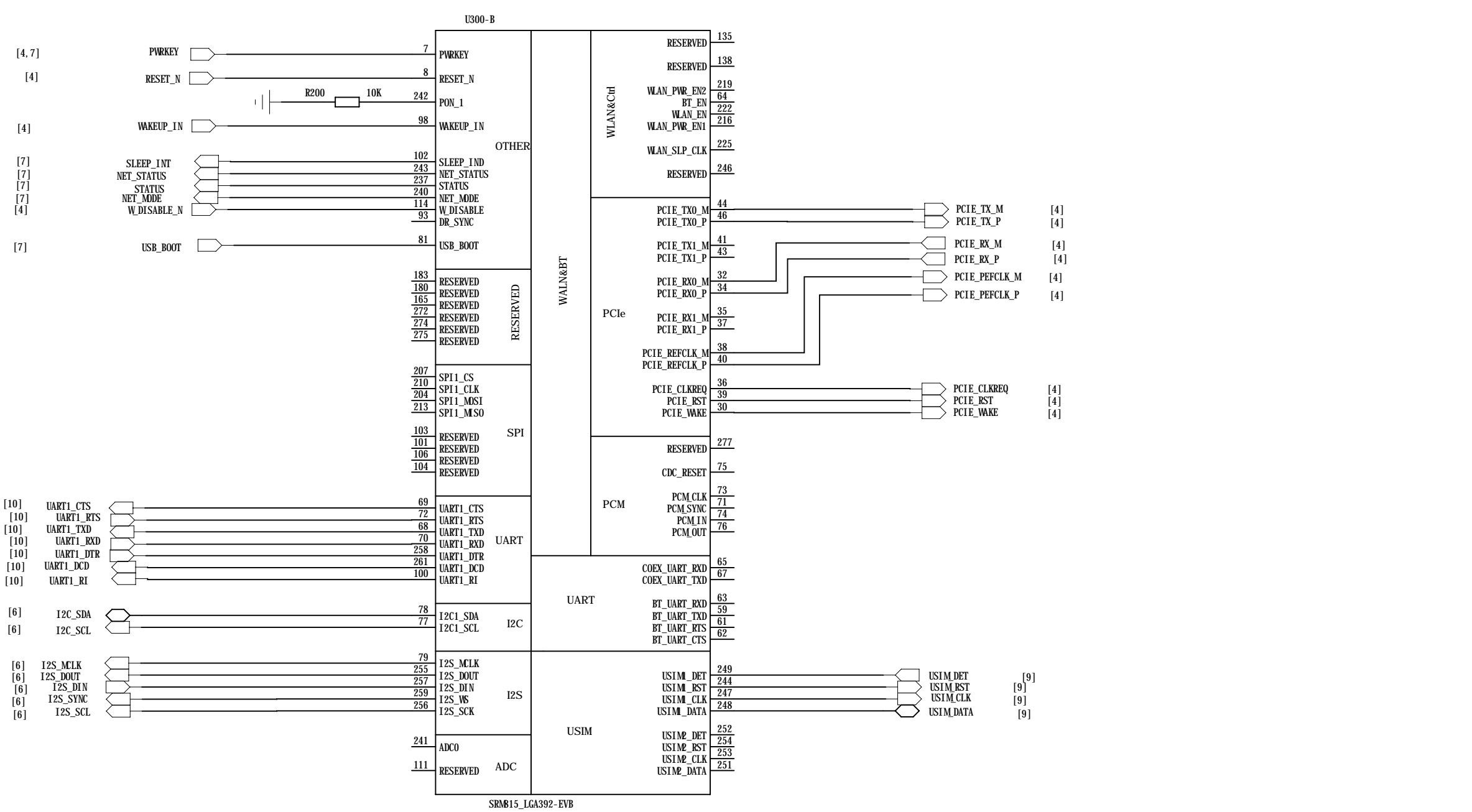


3.8V\_PWR---&gt;1.8V



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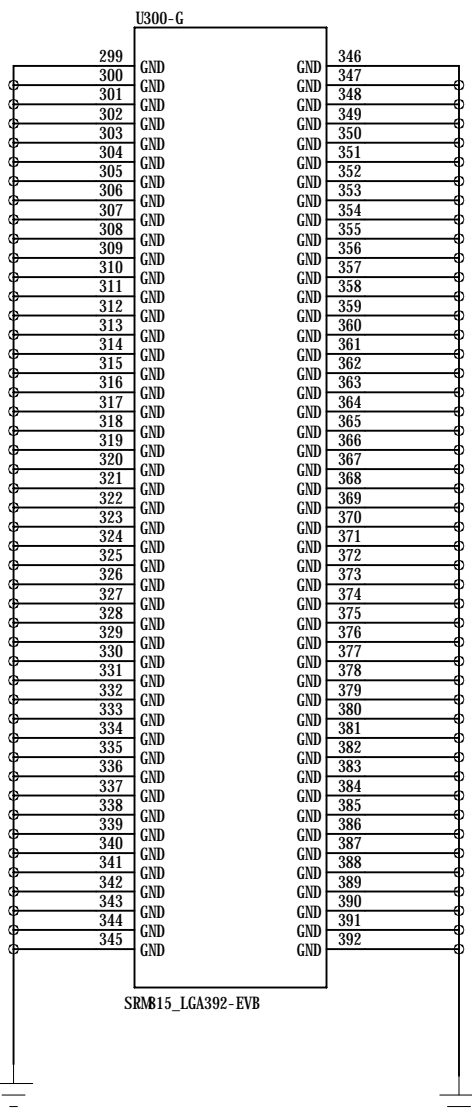
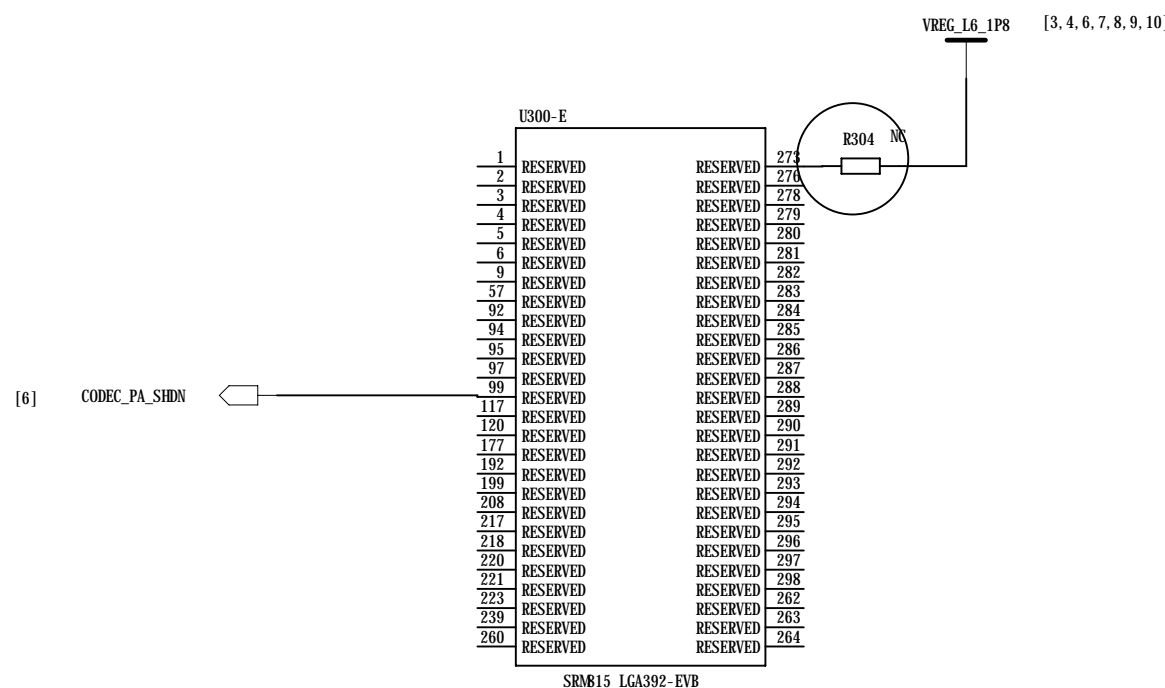
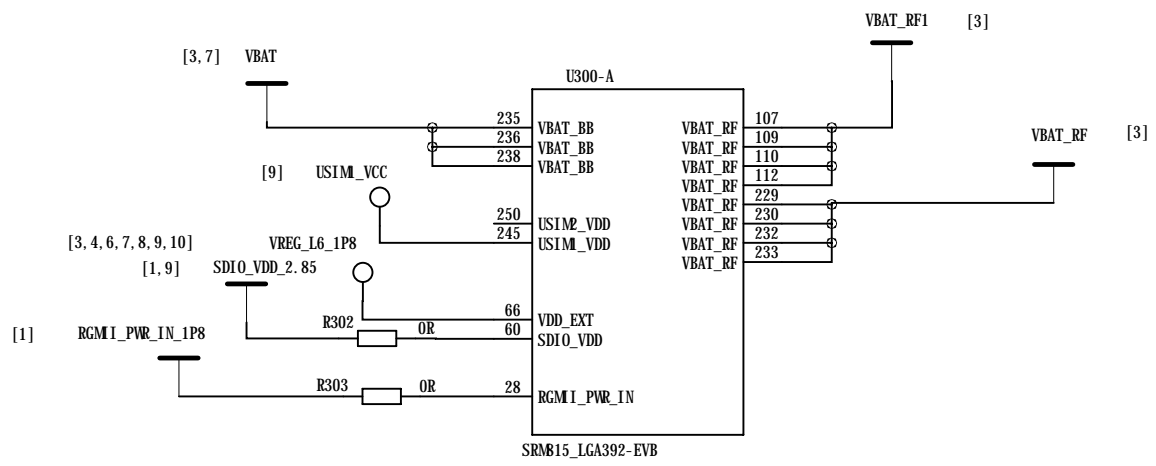
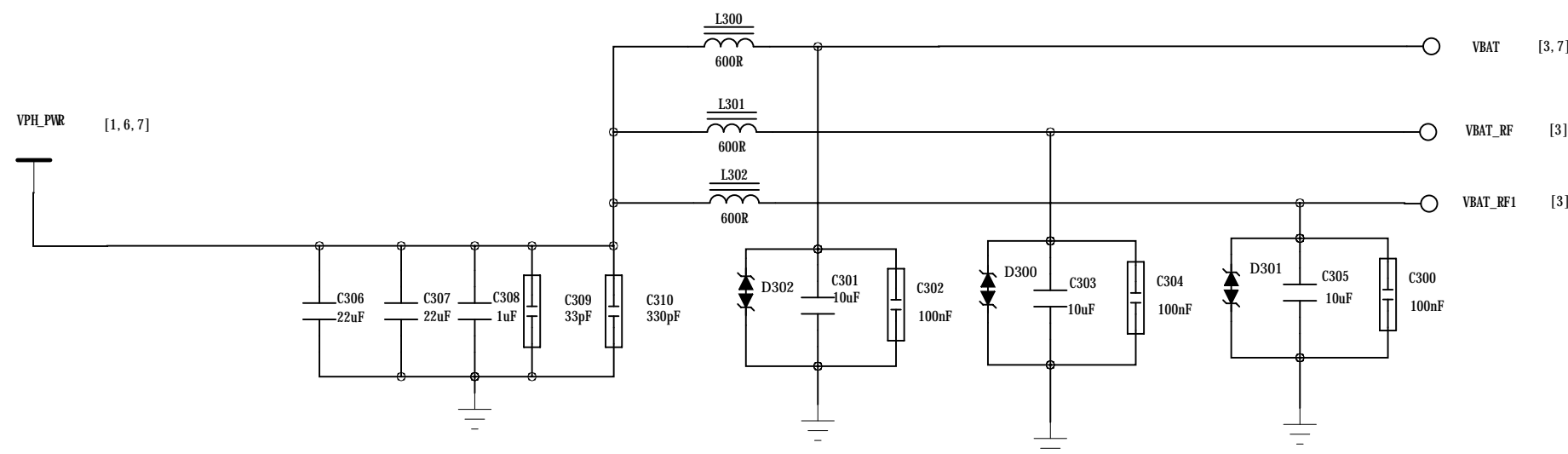
**NOTE:**

- 1.Keep all RESERVED and unused,and ensure all GND pins are connected to the ground network.
- 2.It is recommended to reserve the test points for upgrading the firmware over USB interface and minimizing the stub length of USB test signals,only for USB2.0 communication system.  
  
If USB3.0 is used in the system, the USB3.0 switch needs to be added.
3. When NET\_STATUS is not used,it needs to be connected to GND through a 10K resistor.
- 4.ADC pins can not be directly connected to the power supply and must not exceed the voltage range.

ADC pins voltage range: 0V~1.875V.

|                                       |                                    |   |          |   |                     |
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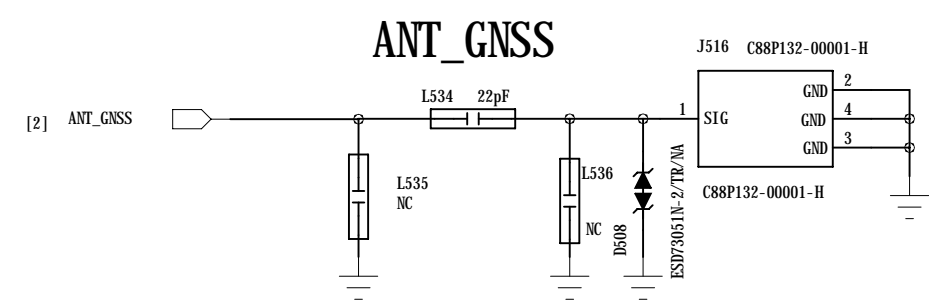
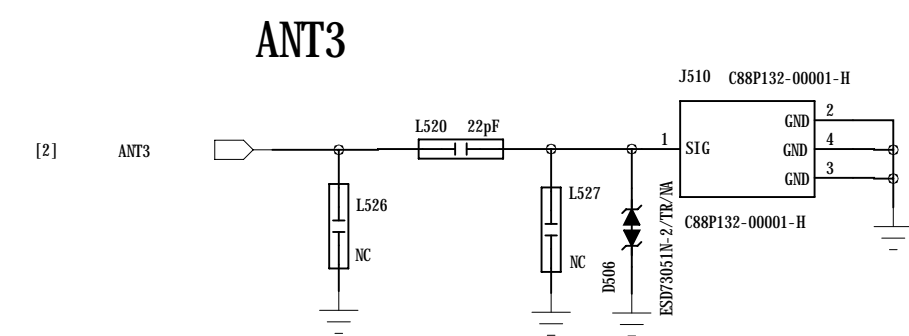
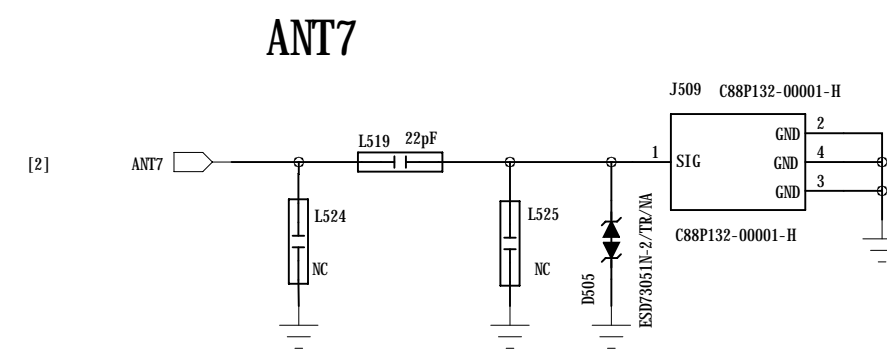
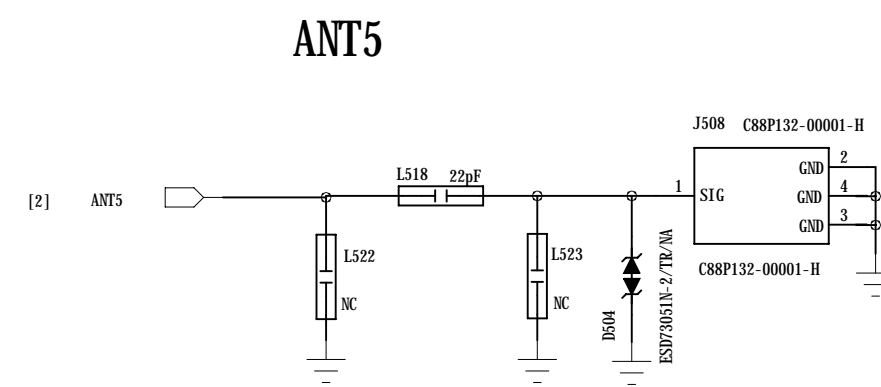
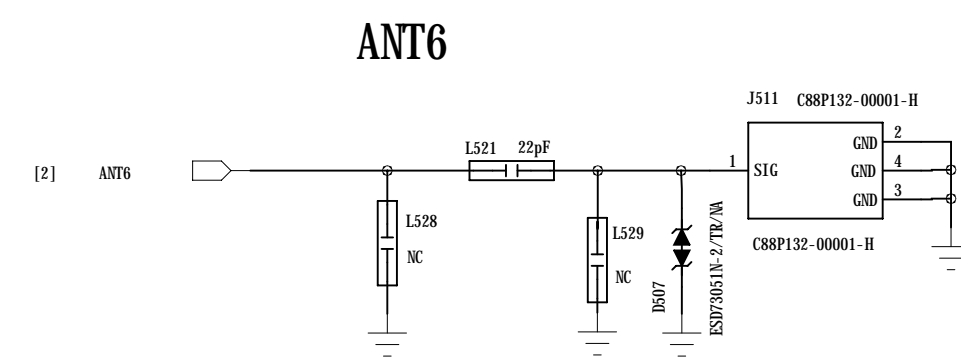
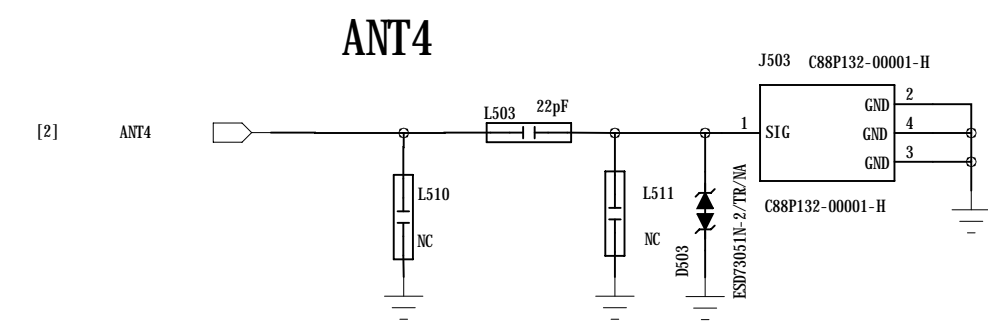
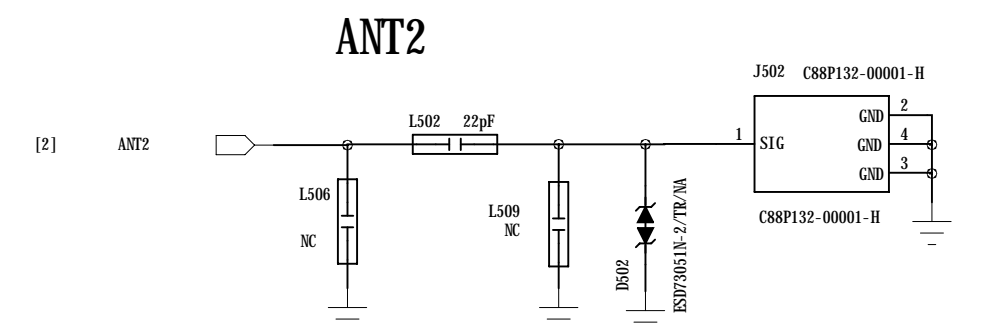
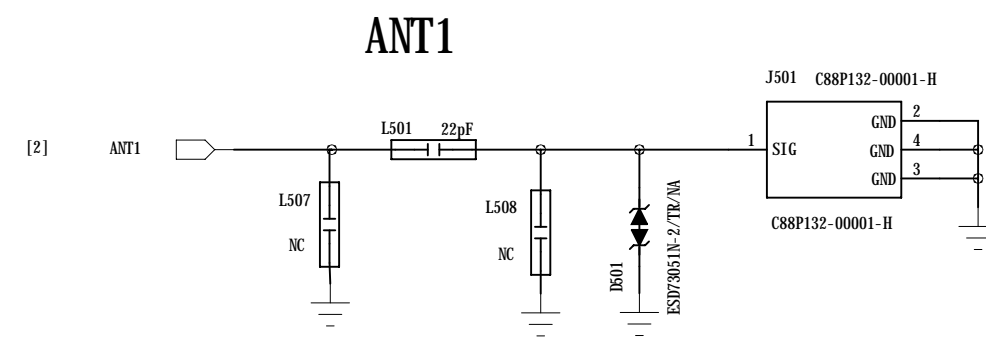
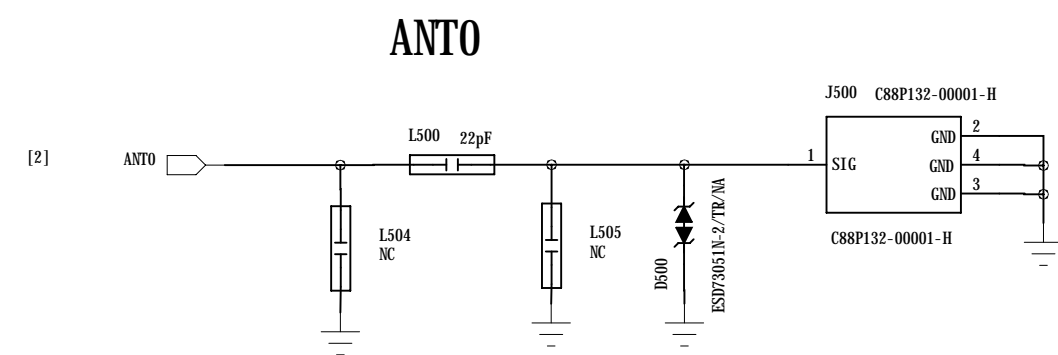
NOTE:

- When SD card function is not used,SDIO\_VDD needs to be connected to VREG\_L6\_1P8.  
When SD card function is used,SDIO\_VDD needs to be connected to SDIO\_VDD\_2.85.
- When RGMII function is not used,RGMII\_PWR\_IN needs to be connected to VREG\_L6\_1P8.  
When RGMII function is used,RGMII\_PWR\_IN needs to be connected to RGMII\_PWR\_IN\_1P8.
- The recommended operating of VBAT\_BB/VBAT\_RF/VBAT\_RF1 is 3.3V~4.3V.
- The TVS and decoupling capacitances should be planed close to the module's VBAT pins.
- If module is without PCIe function ,SDX\_RESOUT\_N needs to be connected to VREG\_L6\_1P8  
When PCIe function is used,SDX\_RESOUT\_N(LCC 273PIN) should remain suspended.

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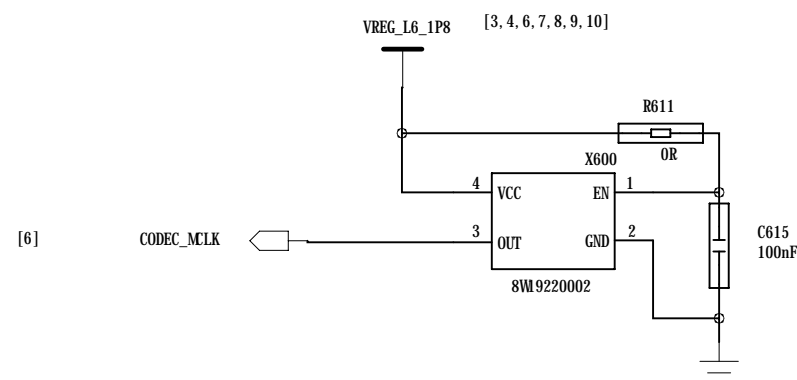
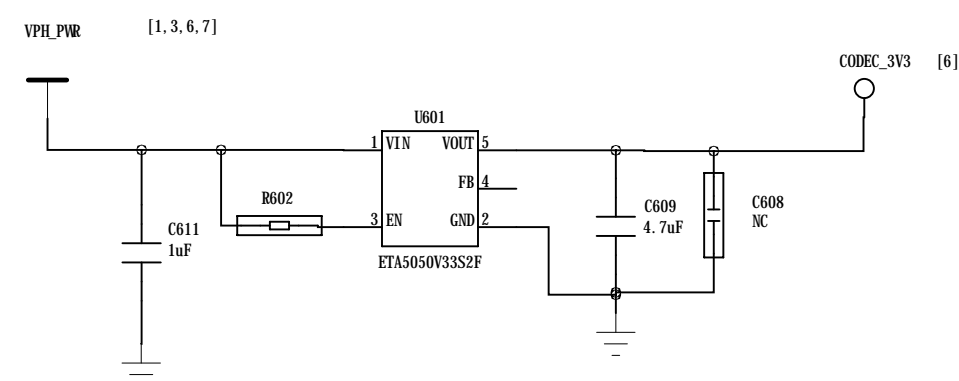
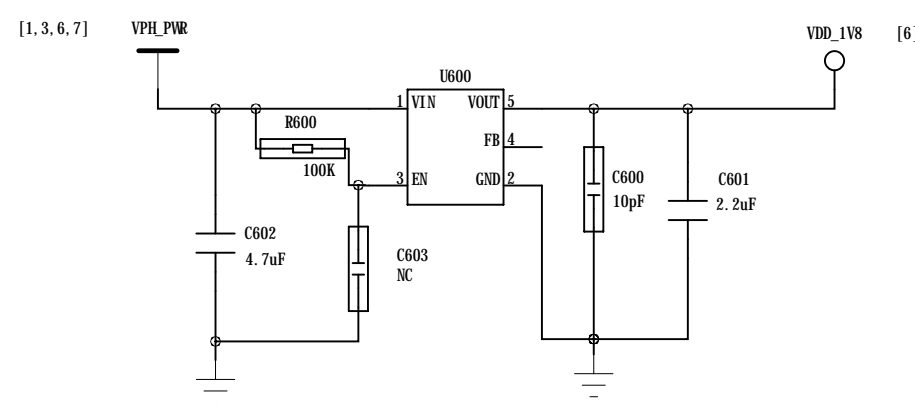
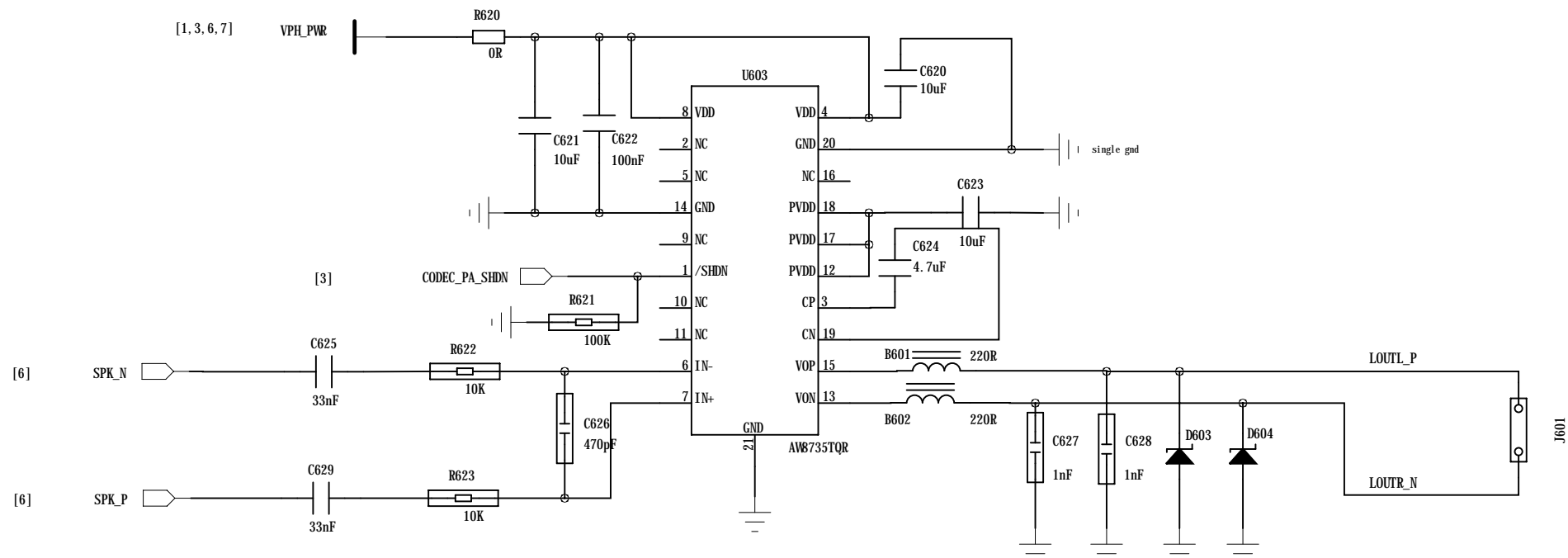
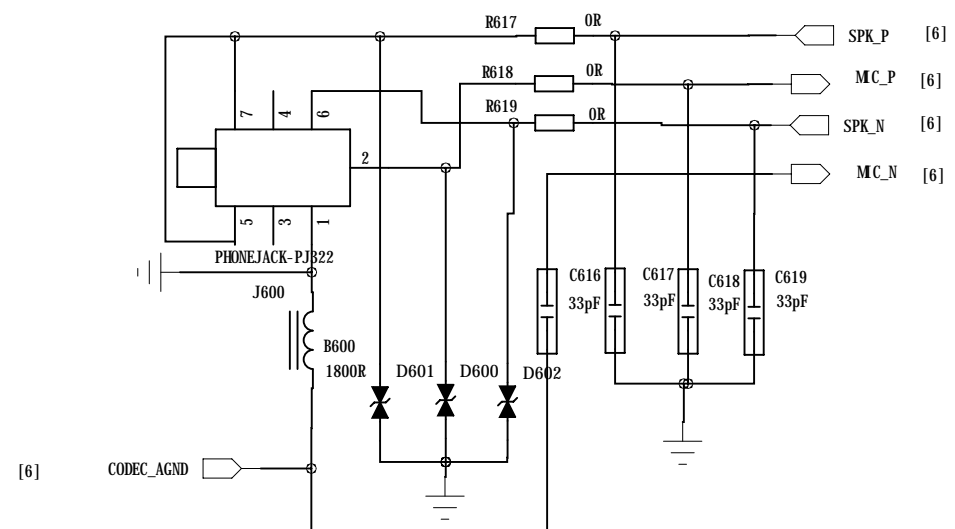
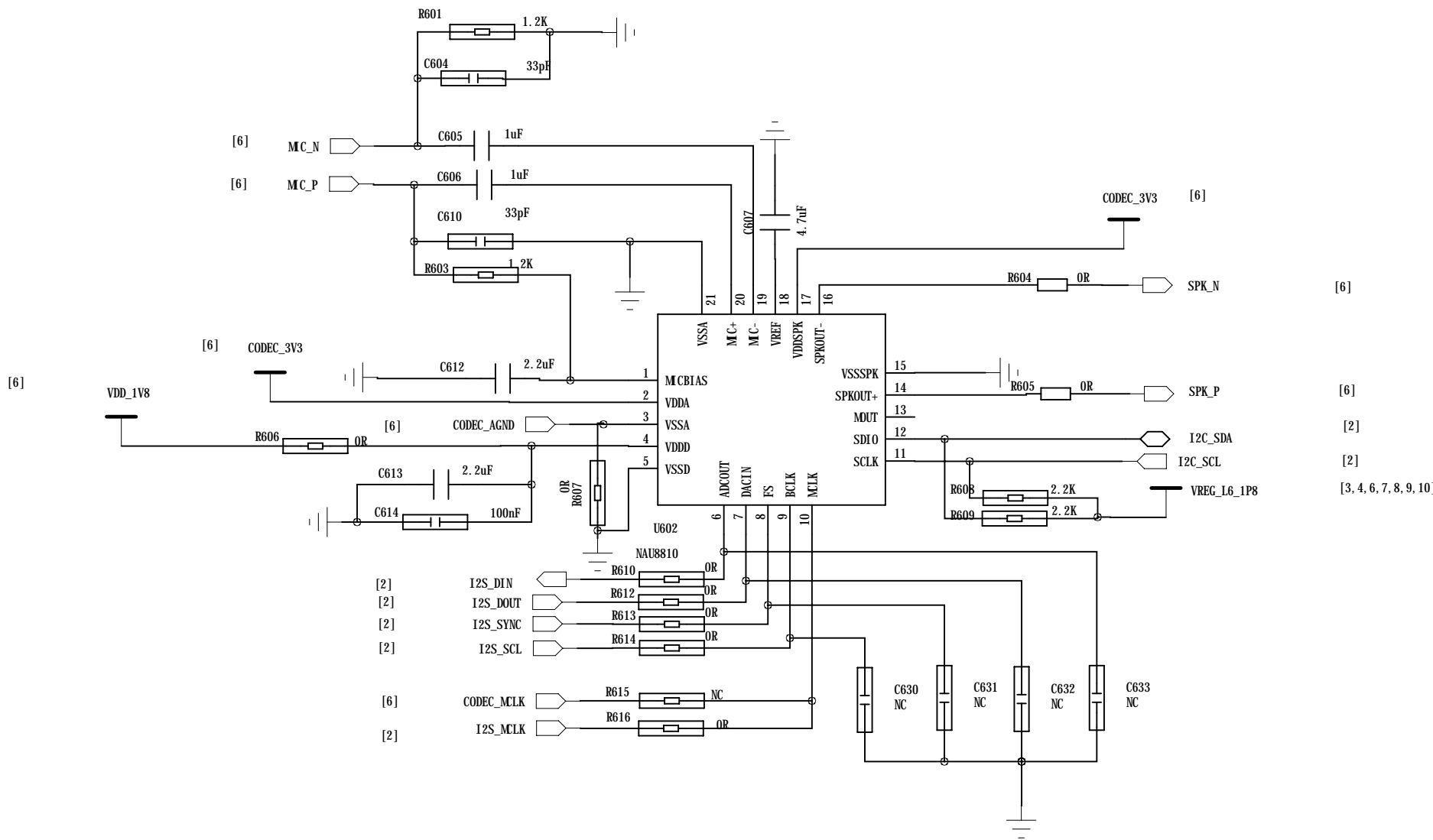


|        |            |          |                            |                   |                   |          |          |                 |                 |
|--------|------------|----------|----------------------------|-------------------|-------------------|----------|----------|-----------------|-----------------|
| top    | ANT_GNSS   | ANT7     | ANT6                       | ANT5              | ANT4              | ANT3     | ANT2     | ANT1            | ANT0            |
| bottom | GNSS L1/L5 | n77_DRX1 | n77_DRX0/n41_DRX0/DRX_mimo | n77_TRX1/n41_TRX0 | n77_TRX0/PRX_mimo | n79_TRX0 | n79_DRX0 | 4G_DRX/n79_TRX1 | 4G_TRX/n79_DRX1 |

1. ESD protection devices should be added to all antenna interface, and the parasitic capacitance should be less than 0.05pF.

|                                       |                                    |  |                |   |                              |
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|                                       |                                    | TITLE: <b>5G_LGA_Reference_Design</b>          |                |   |                              |
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Codec



NOTE:

1. The CODEC IC's MCLK signal needs to be connect to an external crystal or Module output of I2S\_MCLK. default MCLK comes from the Module.
2. The analog ground and digital ground of audio codec must be separated first and then connected together at a distant end, so as to avoid noise interference to analog ground.
- 3.The analog output only drives headphone and handfree. The Codec chip can be directly connected to the speaker. If you want more sound, you can connect an external SPK PA, such as the U602 reference design.
4. In the headphone/handfree application, both MC and HLH\_L/R, LOUTR\_P/N signals require differential walking.
5. In the headphone application, the MC signal requires differential walking.

COMPANY: MiG Smart Technology Co., Ltd

TITLE: 5G\_LGA\_Reference\_Design

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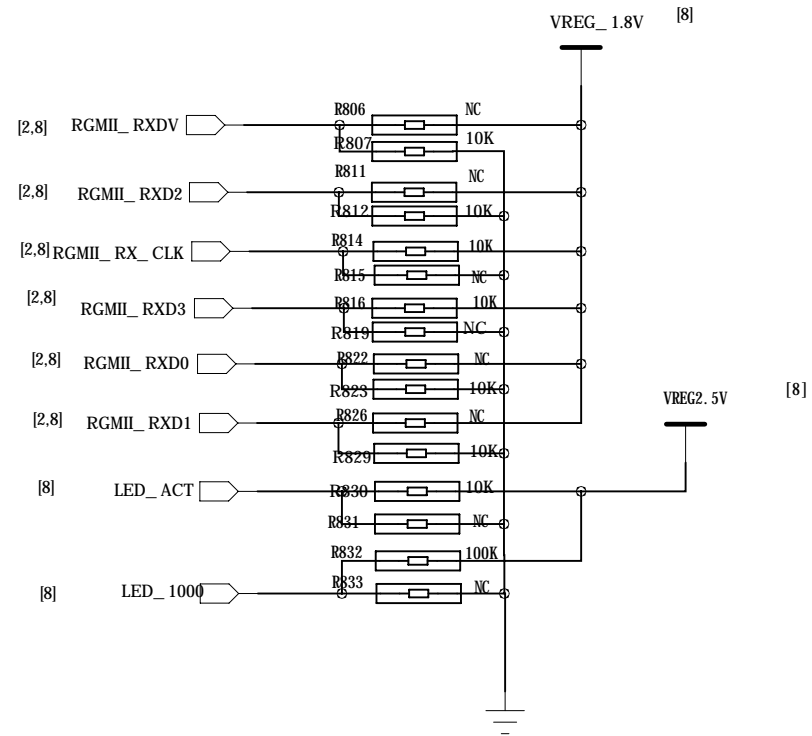
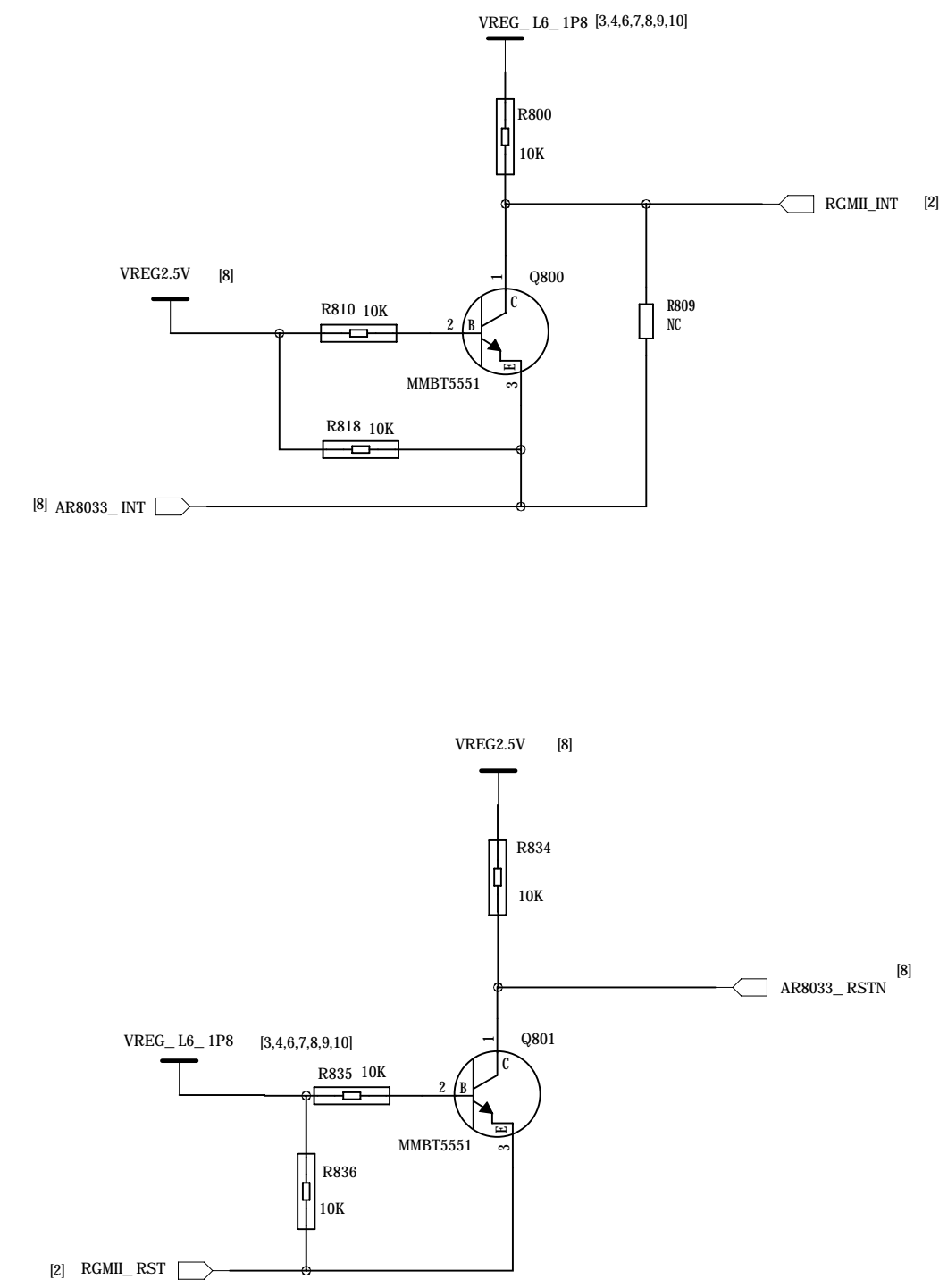
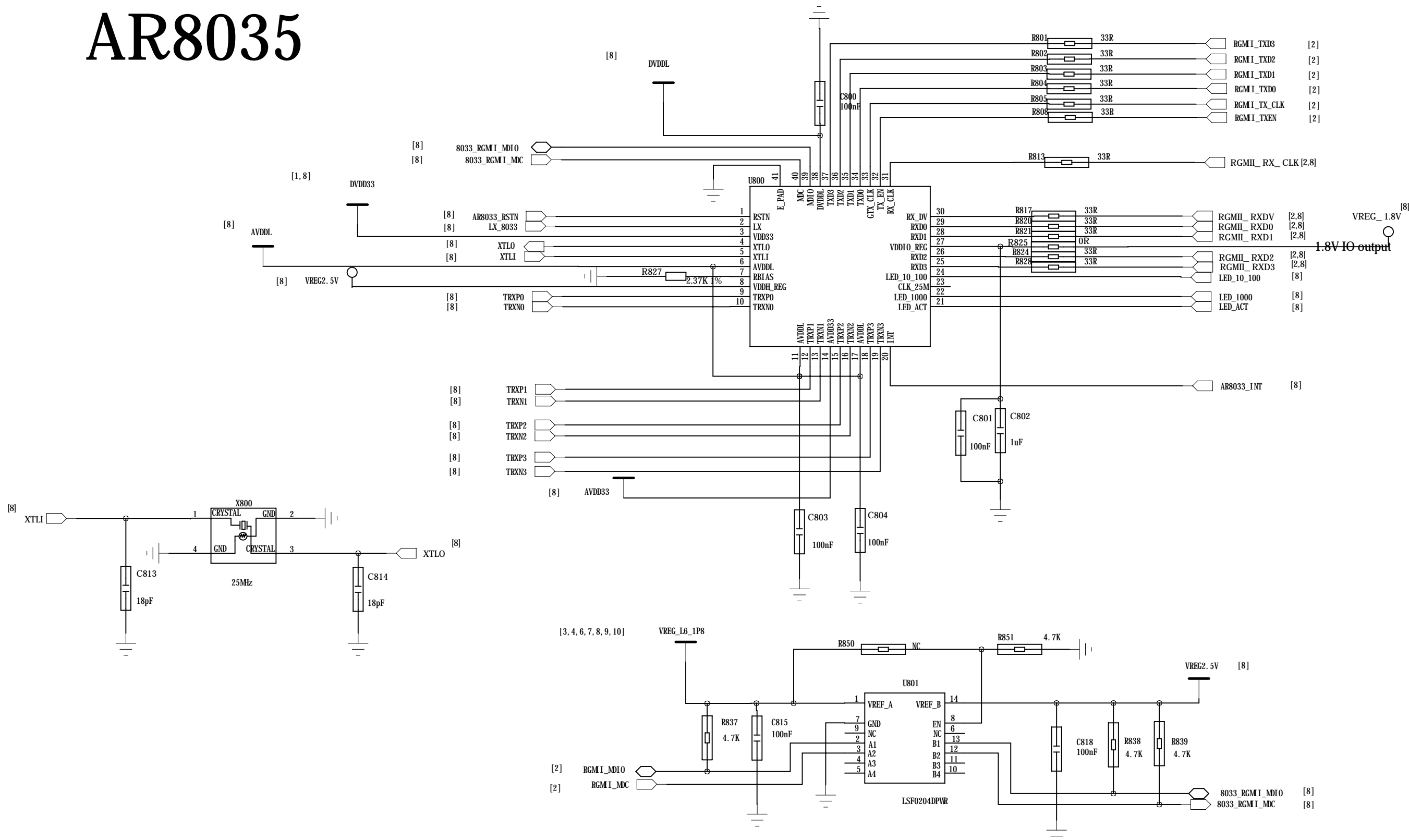
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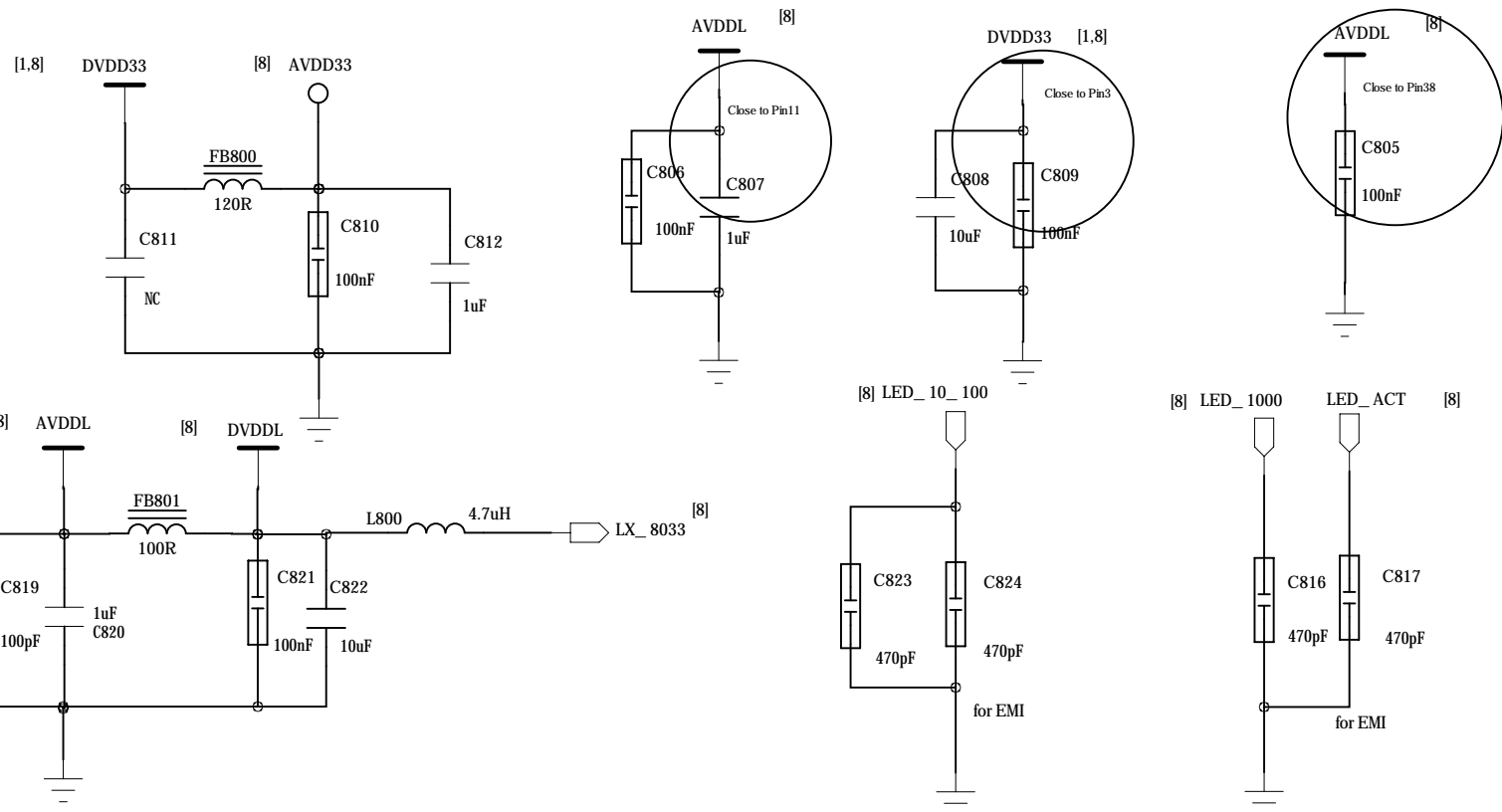




# AR8035



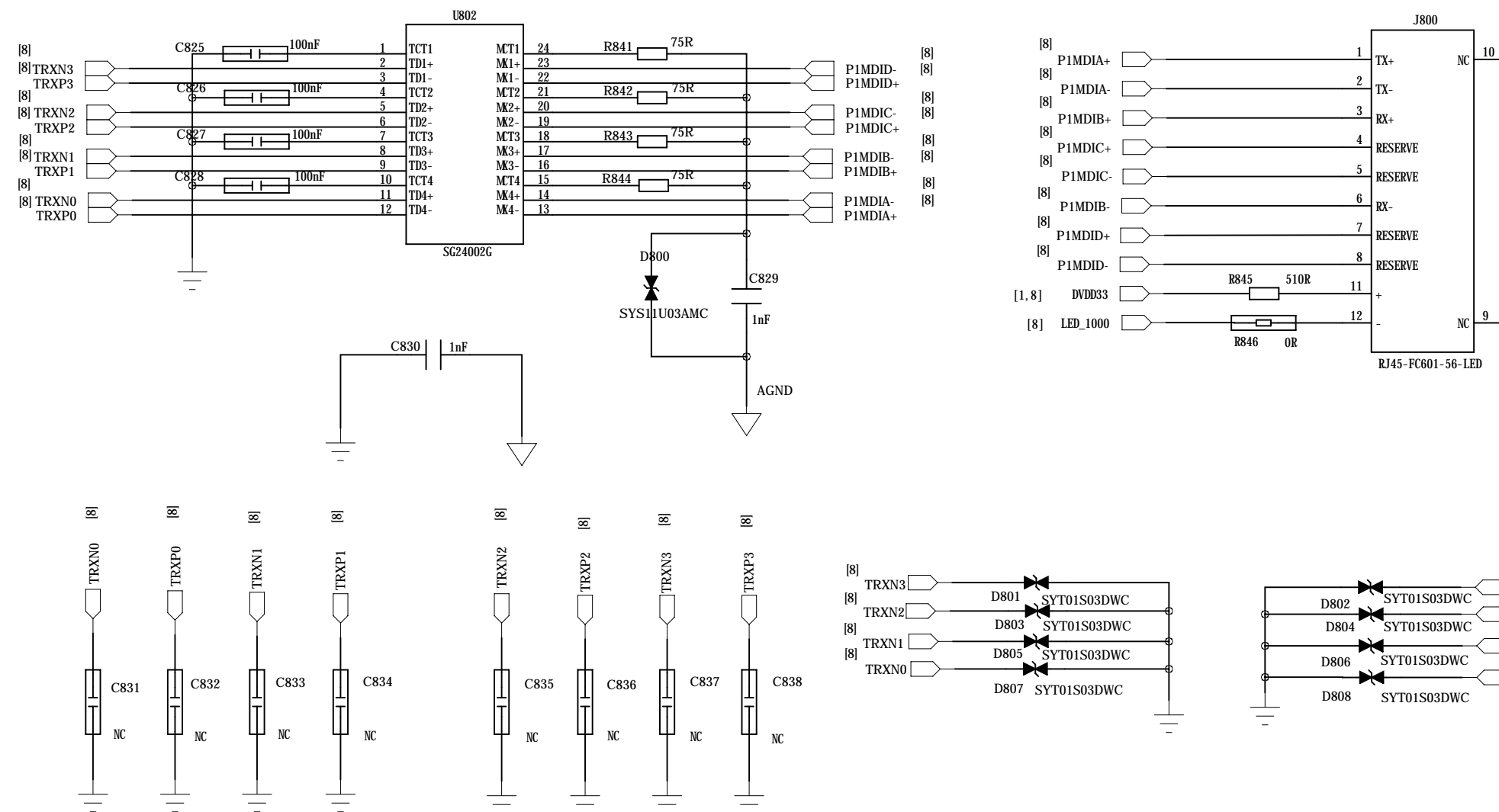
| PHY Pin  | PHY Core Config Signal | Description  | Default Internal Weak Pull-up/Pull-down |
|----------|------------------------|--|---|
|          |                        |  |   |
| RXD0     | PHYADDRESS0            | LED_ACT, RXD[1:0] sets the lower three bits of the physical address. The upper two bits of the physical address are set to the default, "00" | 0                                       |
| RXD1     | PHYADDRESS1            |  | 0                                       |
| LED_ACT  | PHYADDRESS2            |  | 1                                       |
| RX_DV    | MODE0                  | mode select bit 0  | 0                                       |
| RXD2     | MODE1                  | mode select bit 1  | 0                                       |
| LED_1000 | MODE2                  | mode select bit 2  | 1                                       |
| RXD3     | MODE3                  | mode select bit 3  | 0                                       |
| RX_CLK   | 1.8V/1.5V              | Select the RGMII/RMII I/O voltage level<br>1: 1.8V I/O<br>0: 1.5V I/O  | 0                                       |



## Notes:

- MDIO\_DATA should be connected to the VREG\_L6\_1P8 beside the module with a 4.7K pull-up resistor.
- RGMII I/O Pads voltage are 1.8V, The default 1.8v external power supply is required in the design.
- RGMII RX and TX tarces Between groups Impedance control 50 ohms.

# RJ45



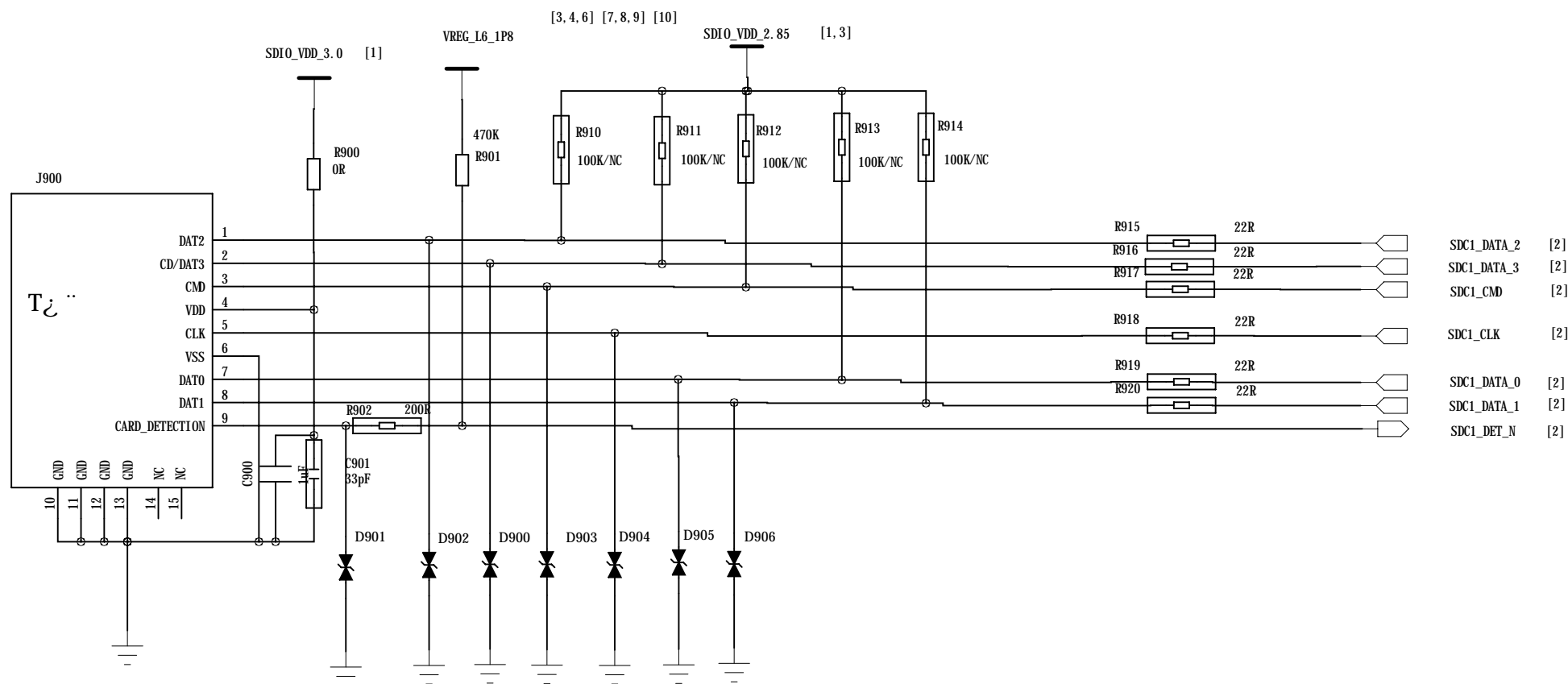
## Notes:

- Differential pair P/N skew must be less than 20 mils, and the maximum trace length must be less than 10 inches.
- Using the 100 ohm à 10% differential impedance with 50 ohm à 10% single-ended impedance.
- To minimize crosstalk, the distance between separate adjacent pairs that are on the same layer must be equal to or larger than 40 mils.
- Copper filling around transformers is prohibited for better ESD protection performance.
- For better EM suppression performance, do not route in top layer.
- C823, C824 must be close to pin24 for EM consideration.
- C817, C840 must be close to pin21 for EM consideration.
- C816 must be close to pin22 for EM consideration.
- Bypass CAPs close to PHY DVDDL/AVDDL power pins.

|                             |  |                          |  |                         |                |   |  |      |
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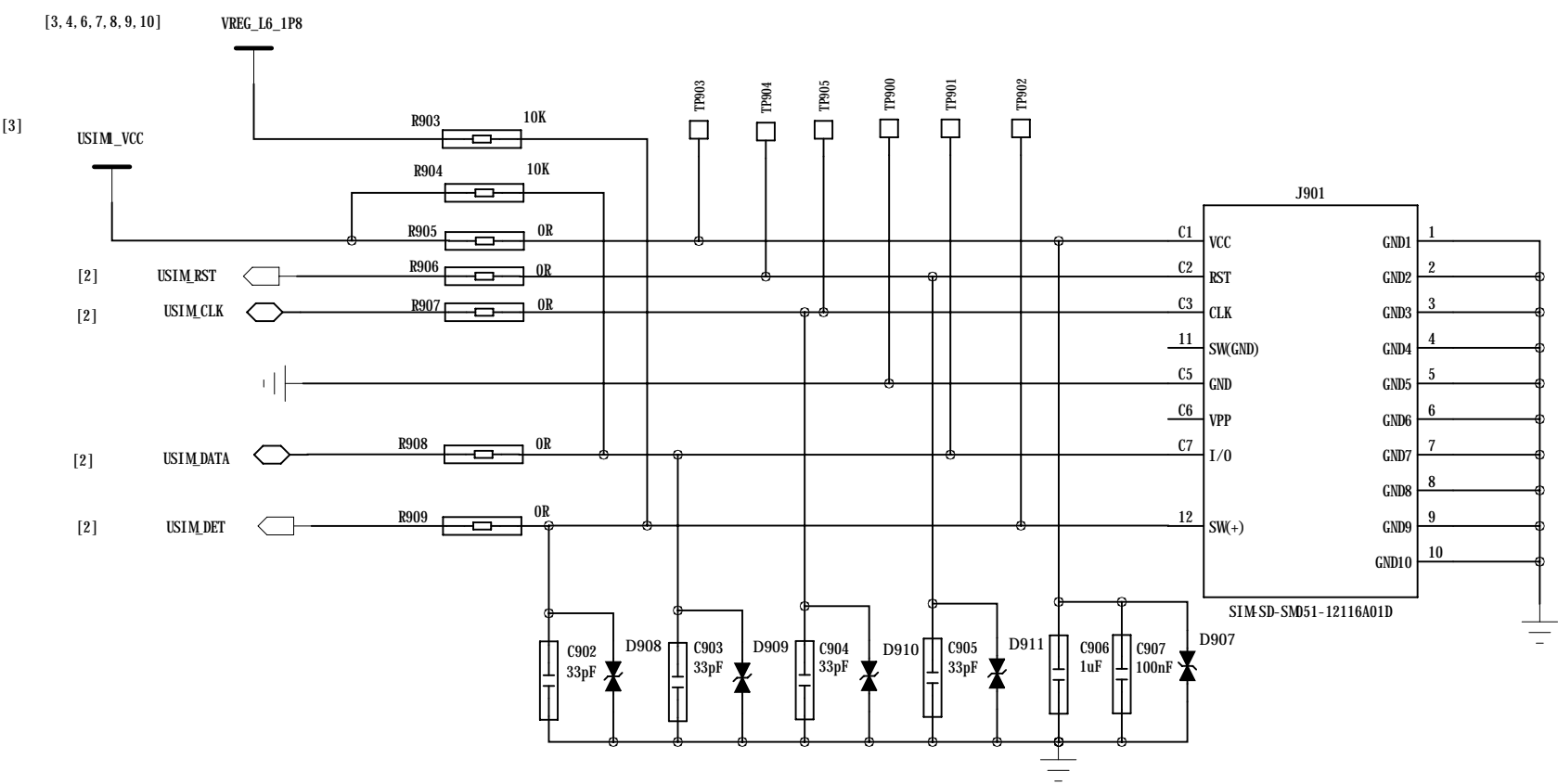
# SD



## Notes:

1. The parasitic capacitance of ESD components should be smaller than 15pF.
2. Spacing to all other signals with more than 2x line width.
3. Total routing length < 100mm is recommended. The SDIO signal line needs to be treated with equal length (the difference is less than 1mm), and the length of the outer line should be less than 23mm
4. Route SD lines with 50ohm trace impedance.
5. The voltage range of the SD card power supply VDD is 2.7v ~ 3.6v, and it needs to provide at least 800mA current.
6. The SD card supports hot plugging.

# SIM



## Notes:

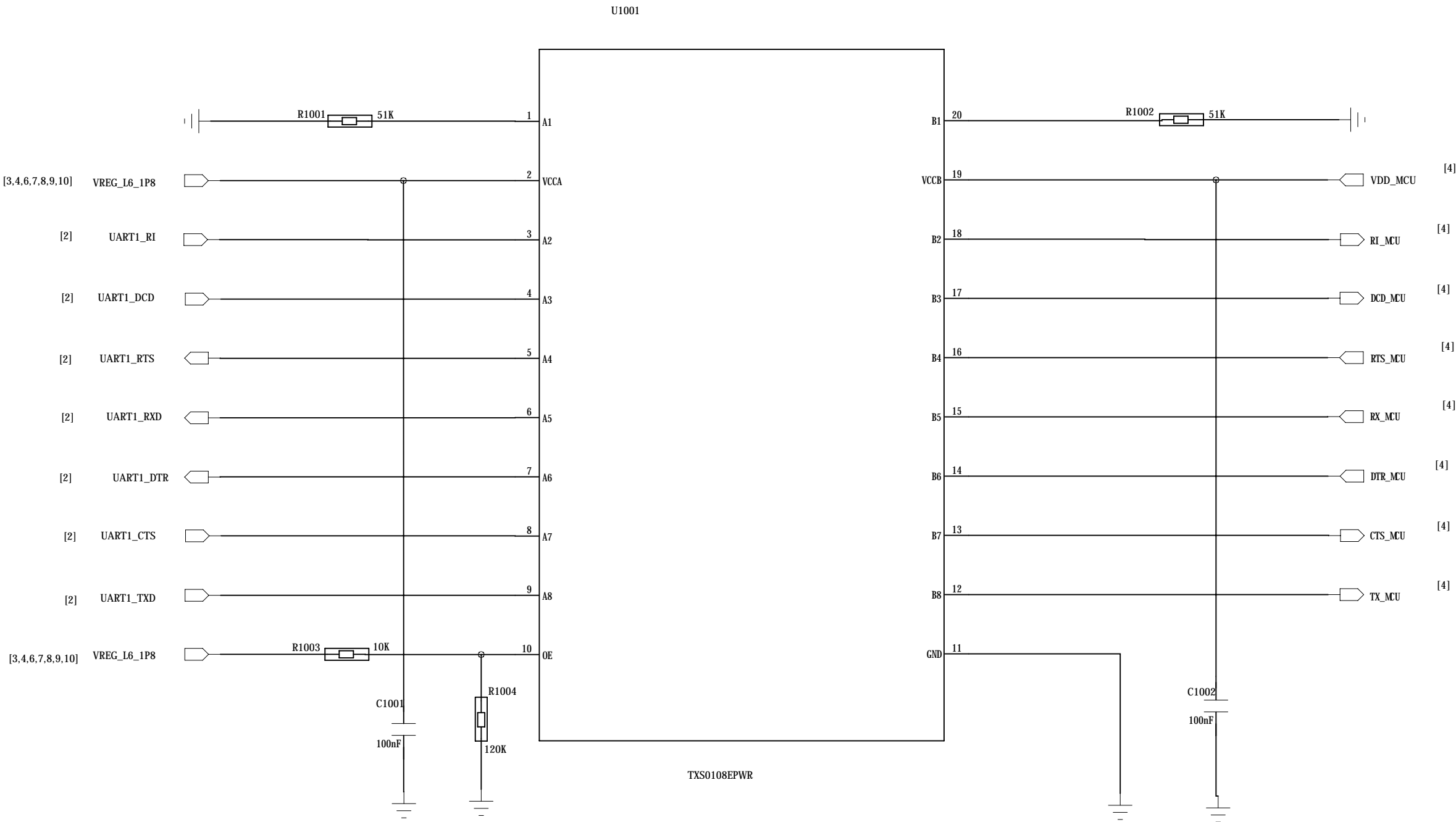
1. R905-R909 are applied to suppress the EM spurious transmission and enhance the ESD protection.
2. It is recommended to take electrostatic discharge (ESD) protection measures near the USIM card socket.
3. R904 can improve anti-jamming capability of the USIM circuit, and it should be placed close to the USIM connector.
4. The SIM card supports hot plugging.

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# UART Translation - IC Solution (Recommended)



## Notes:

- 1.It is recommended to use an IC conversion chip for UART translation.
- 2.VCCA should not exceed VCCB. For more information about TXS0108EPWR/SGM4553YN8G/TR, please refer to the datasheet from TI and SGMICRO website .

|  |                       |                              |                 |
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| RELEASED: <Released By>                | DATED: <Release Date> | SHEET: 10 10                 |                 |