

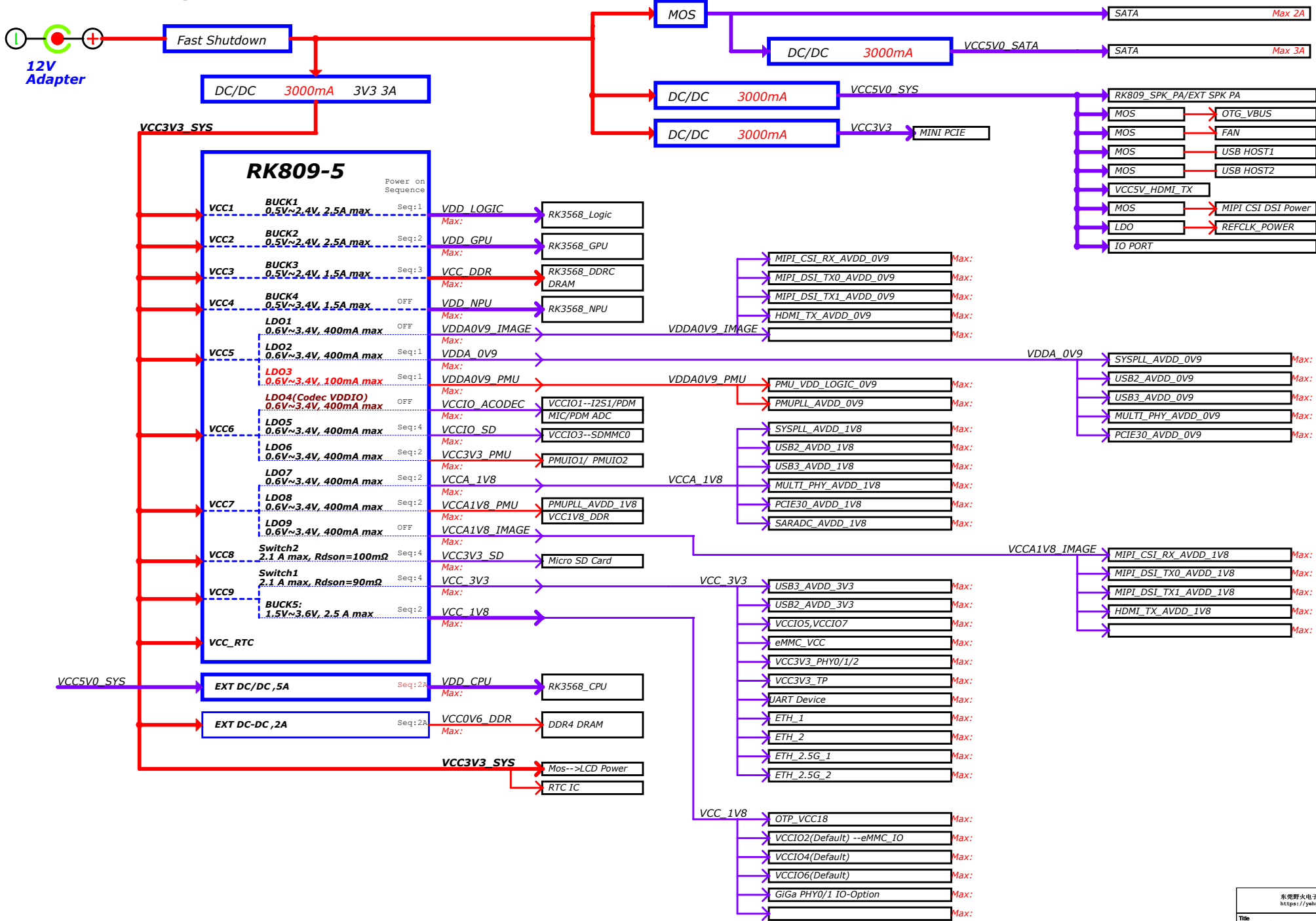
# 野火\_RK3568 LubanCat 2 N\_原理图\_V1.0

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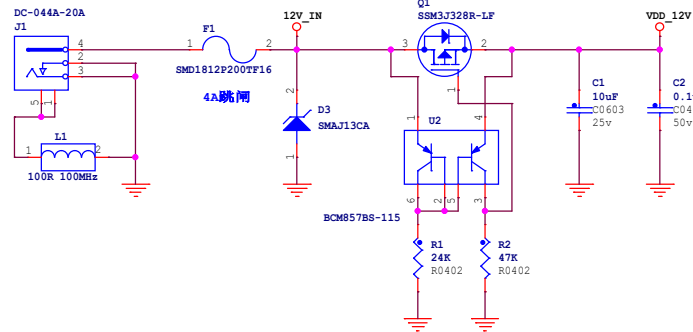
|      |            |     |                            |  |
|------|------------|-----|----------------------------|--|
| 历史版本 |            |     |                            |  |
| 版本号  | 日期         | 设计  | 描述                         |  |
| V0.1 | 2022-05-05 | ghs | 初始版本                       |  |
| V1.0 | 2022-09-09 | ghs | 修正U27开启信号接反的问题，解决调试接口漏电的问题 |  |
|      |            |     |                            |  |
|      |            |     |                            |  |
|      |            |     |                            |  |

Default Power Diagram

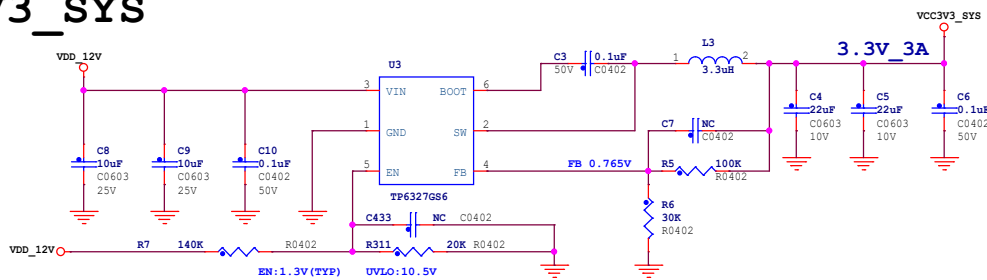


## DC 12V 3A POWER IN

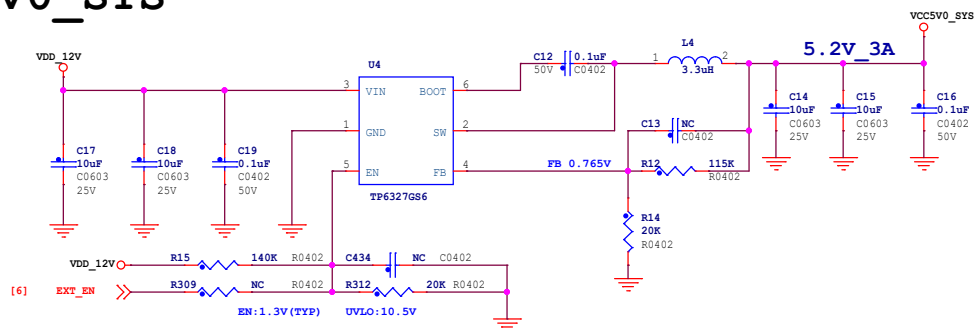
12V/3A



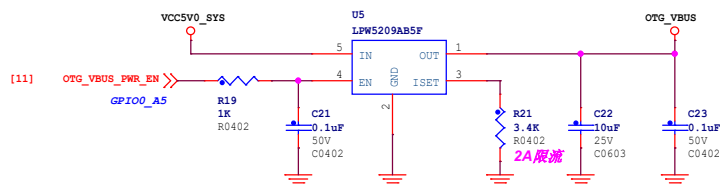
## 3V3\_SYS



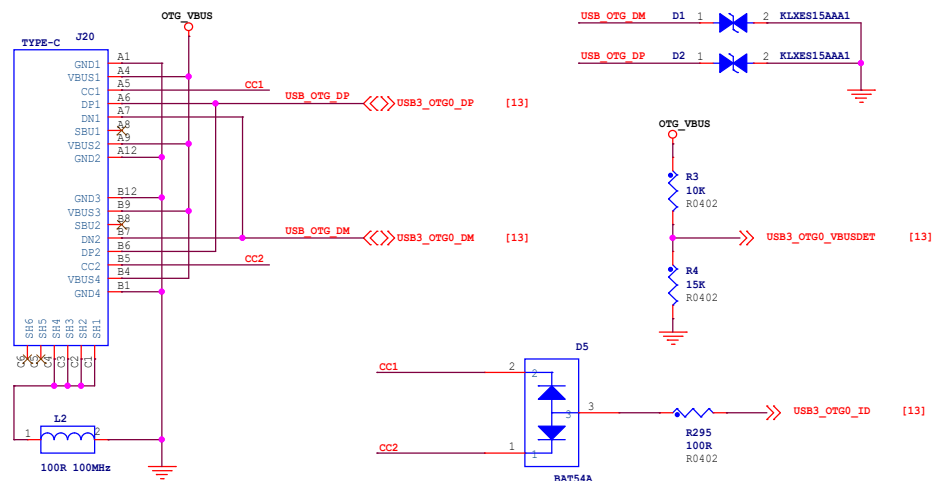
## 5V0\_SYS



## OTG POWER

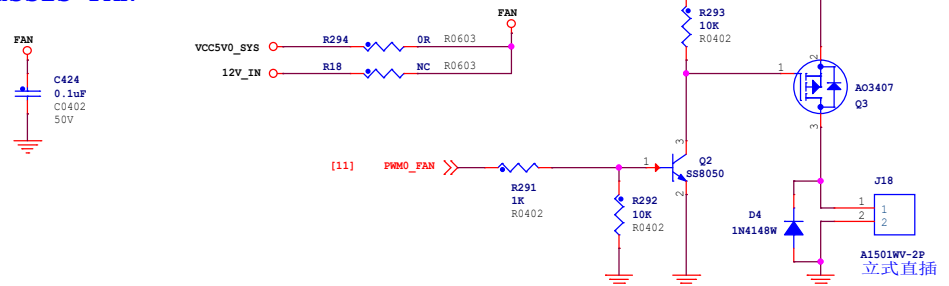


## OTG/Download



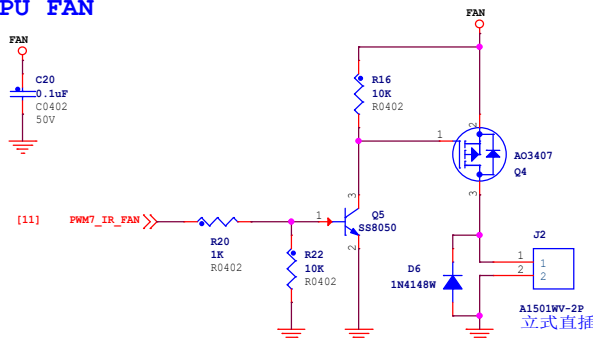
## Active Cooling

Chassis FAN



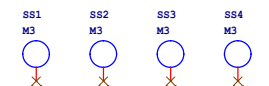
## Active Cooling

CPU FAN

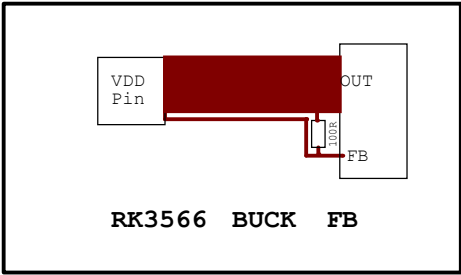
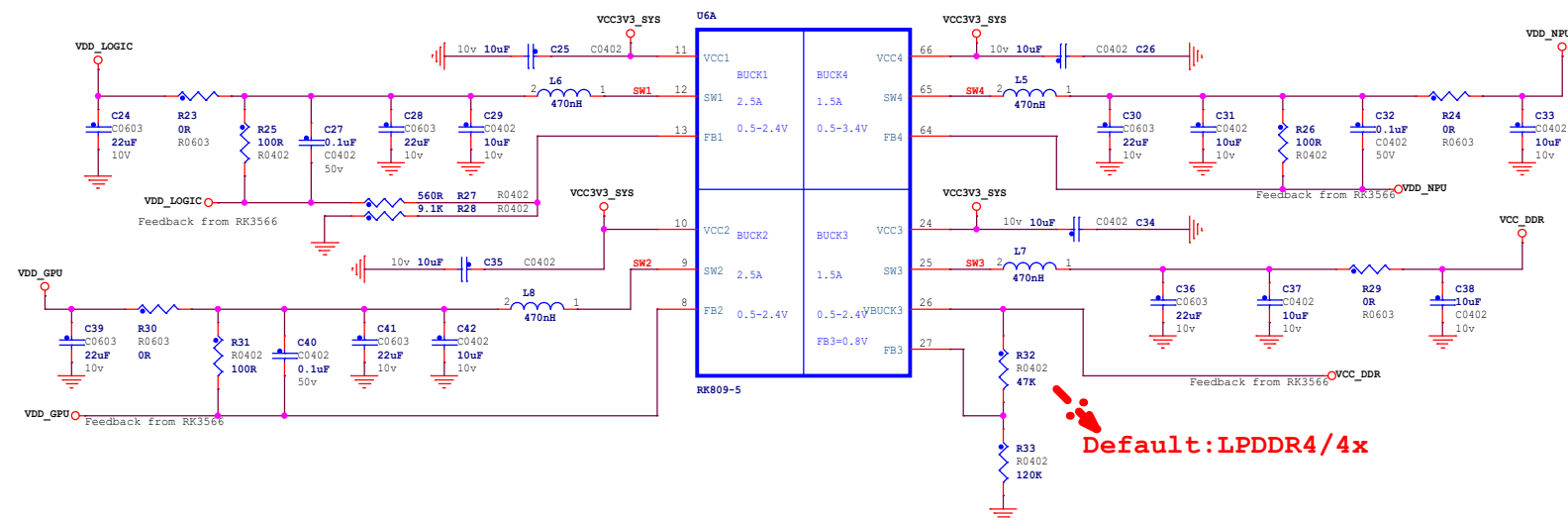


## Fix Hole

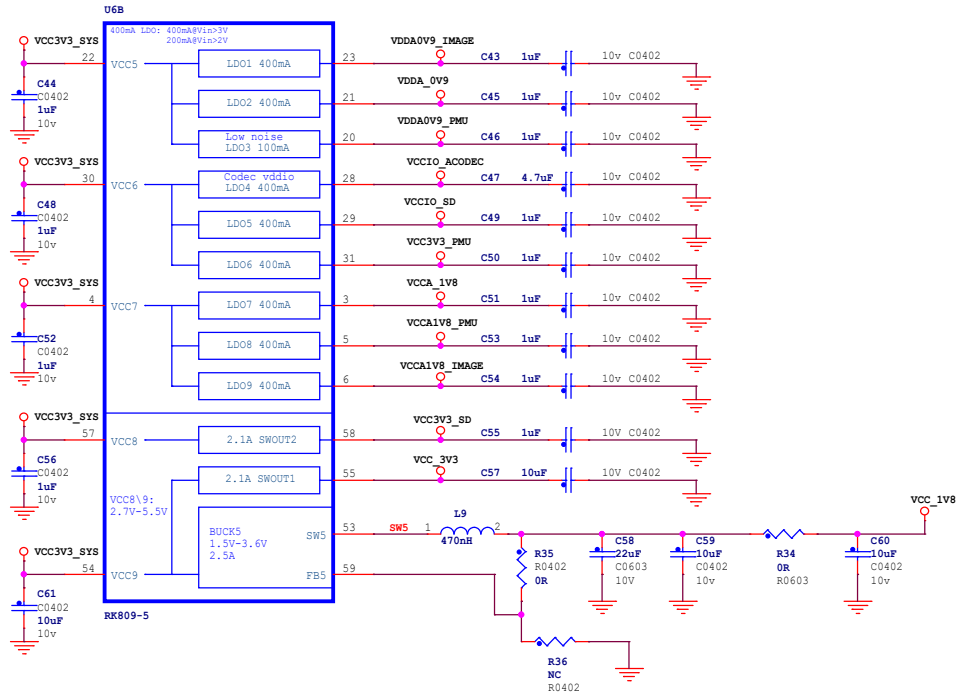
4\*M3



PMIC RK809 DCDC

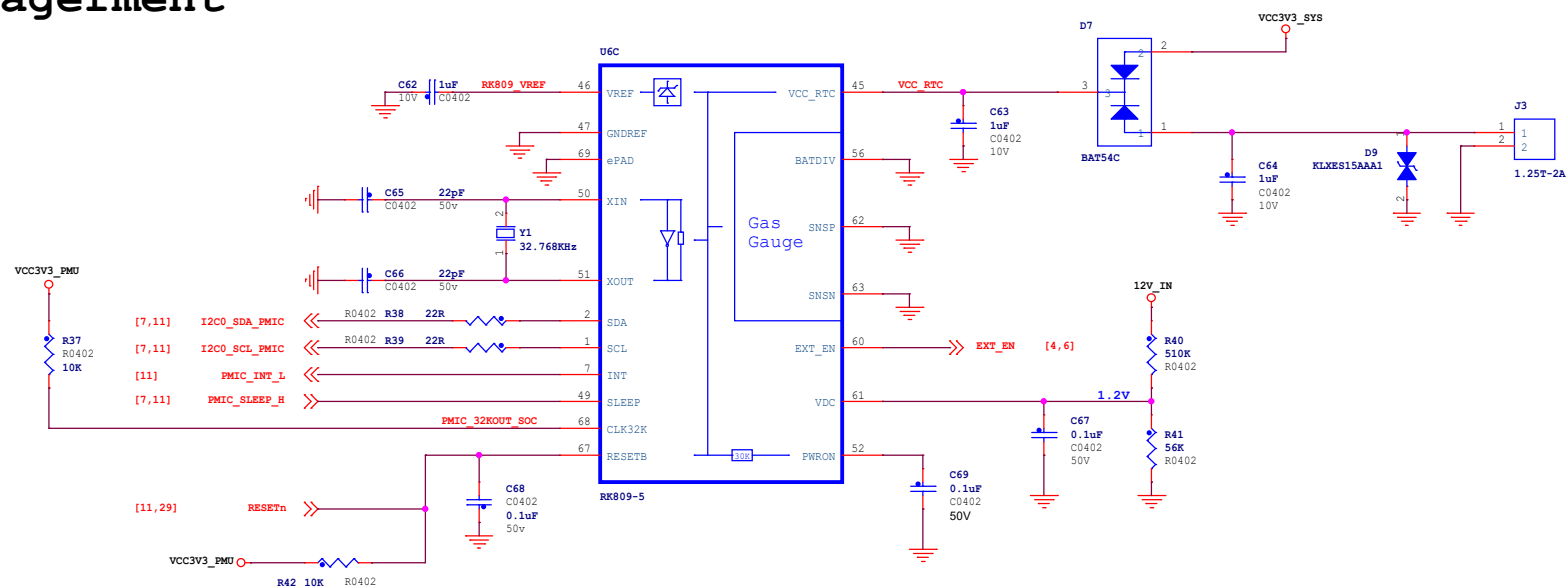


PMIC RK809 LDO

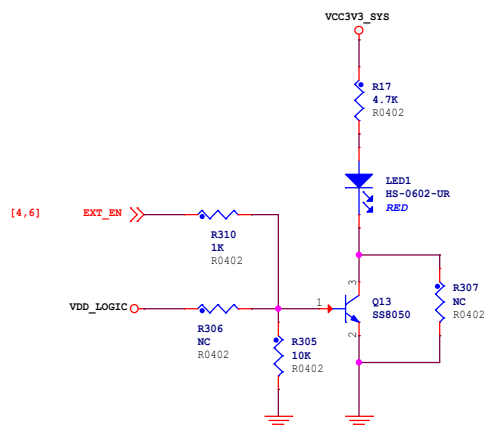


|                                           |                                 |       |
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| Title                                     | 野火_RK3568 LubanCat 2 H_原理图_V1.0 |       |
| Size                                      | Document Number                 | Rev   |
| A3                                        | PMIC_DCDC/LDO                   | V1.0  |
| Date: Thursday, October 27, 2022          | Sheet 5                         | of 29 |

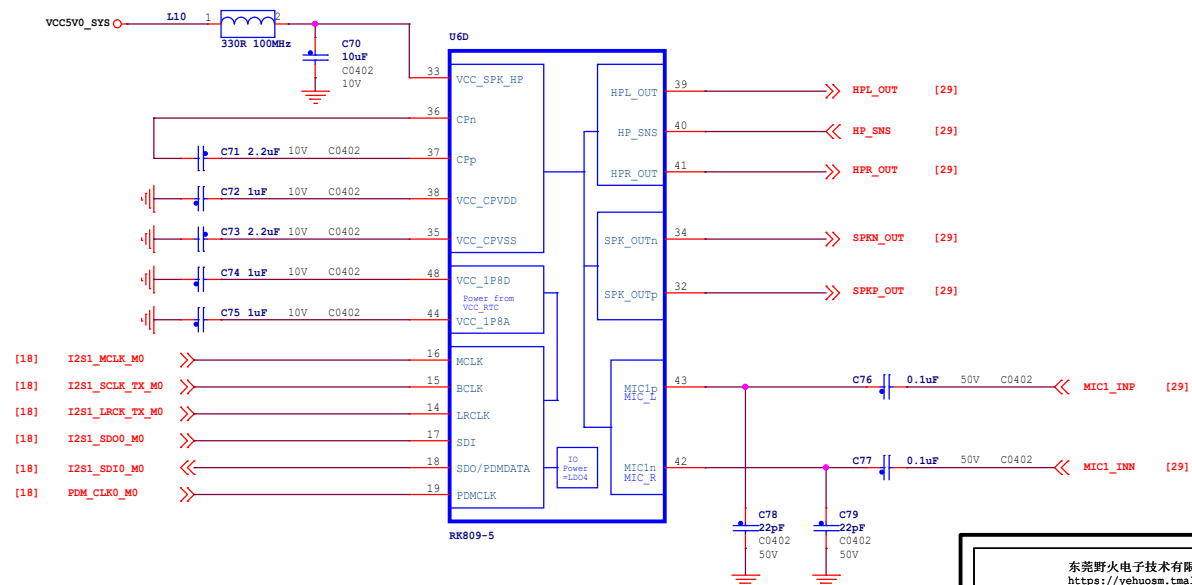
# PMIC RK809 Managerment



**PWR LED**



# PMIC RK809 CODEC

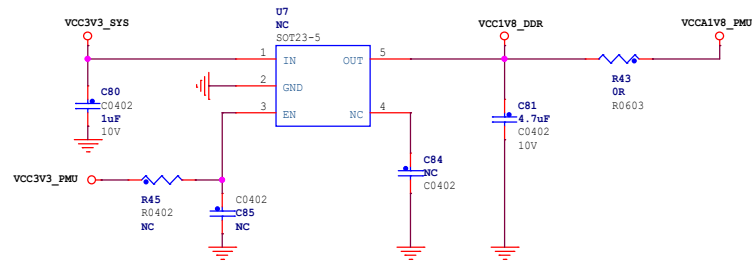


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|                                 |                                         |               |
|---------------------------------|-----------------------------------------|---------------|
| Title                           |                                         |               |
| 野火_RK3568 LubanCat 2 N_原理图_V1.0 |                                         |               |
| Size<br>A3                      | Document Number<br>PMIC_Management/CODE | Rev<br>V1.0   |
| Date:                           | Thursday, October 27, 2022              | Sheet 6 of 29 |

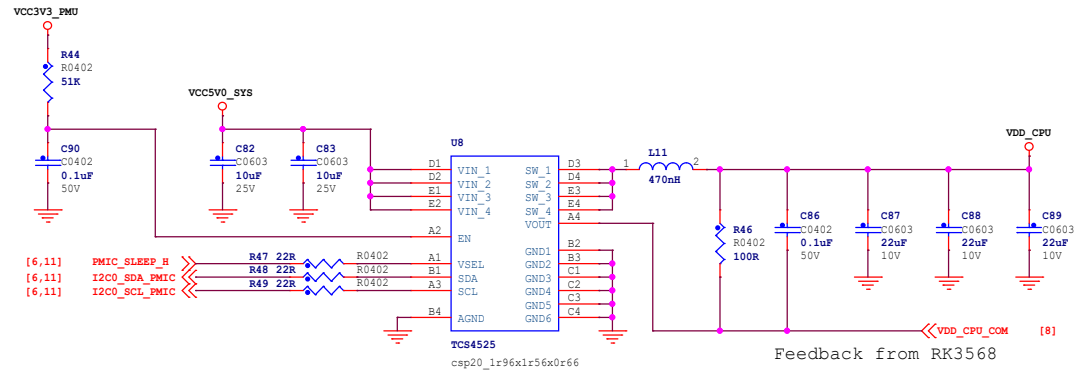
# Auxiliary power supply

LPDDR4\_VCC1V8\_DDR



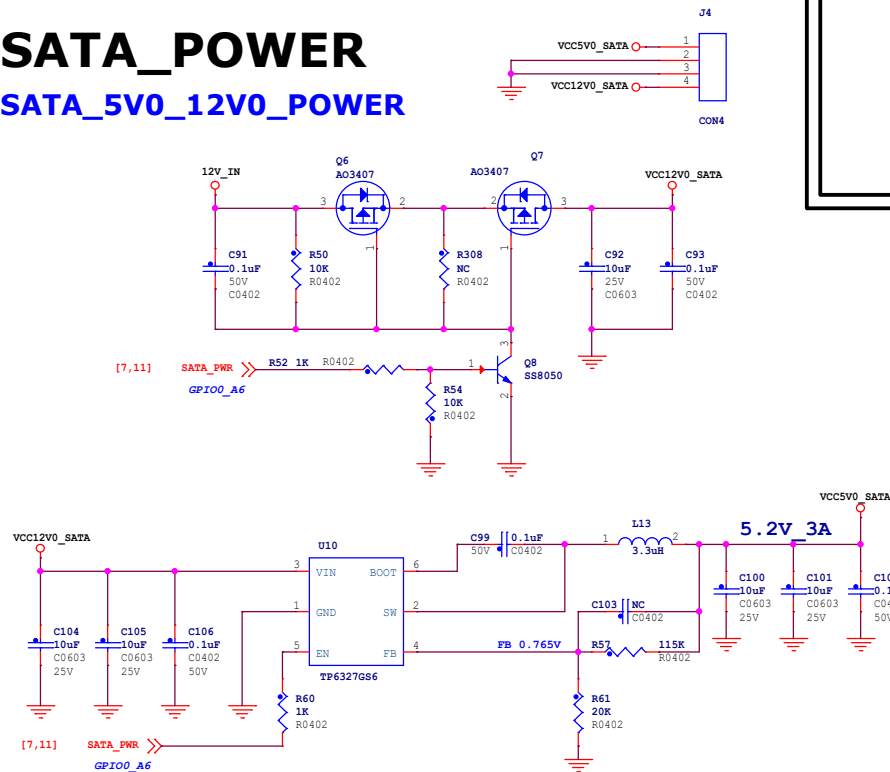
# RK3568 CPU Power

VDD\_CPU\_EXT



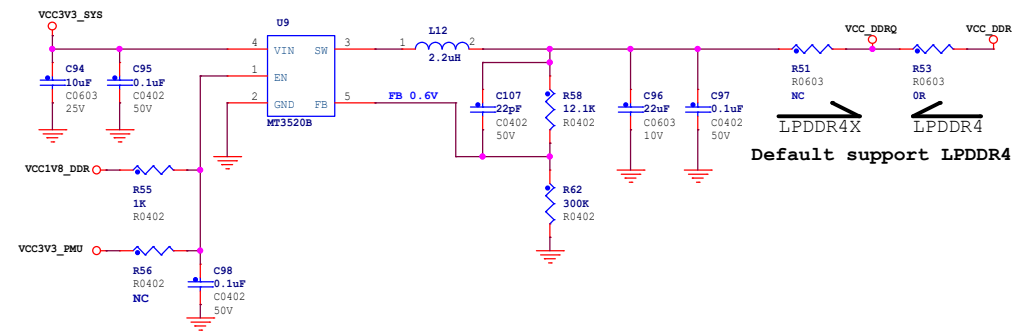
# SATA\_POWER

SATA\_5V0\_12V0\_POWER



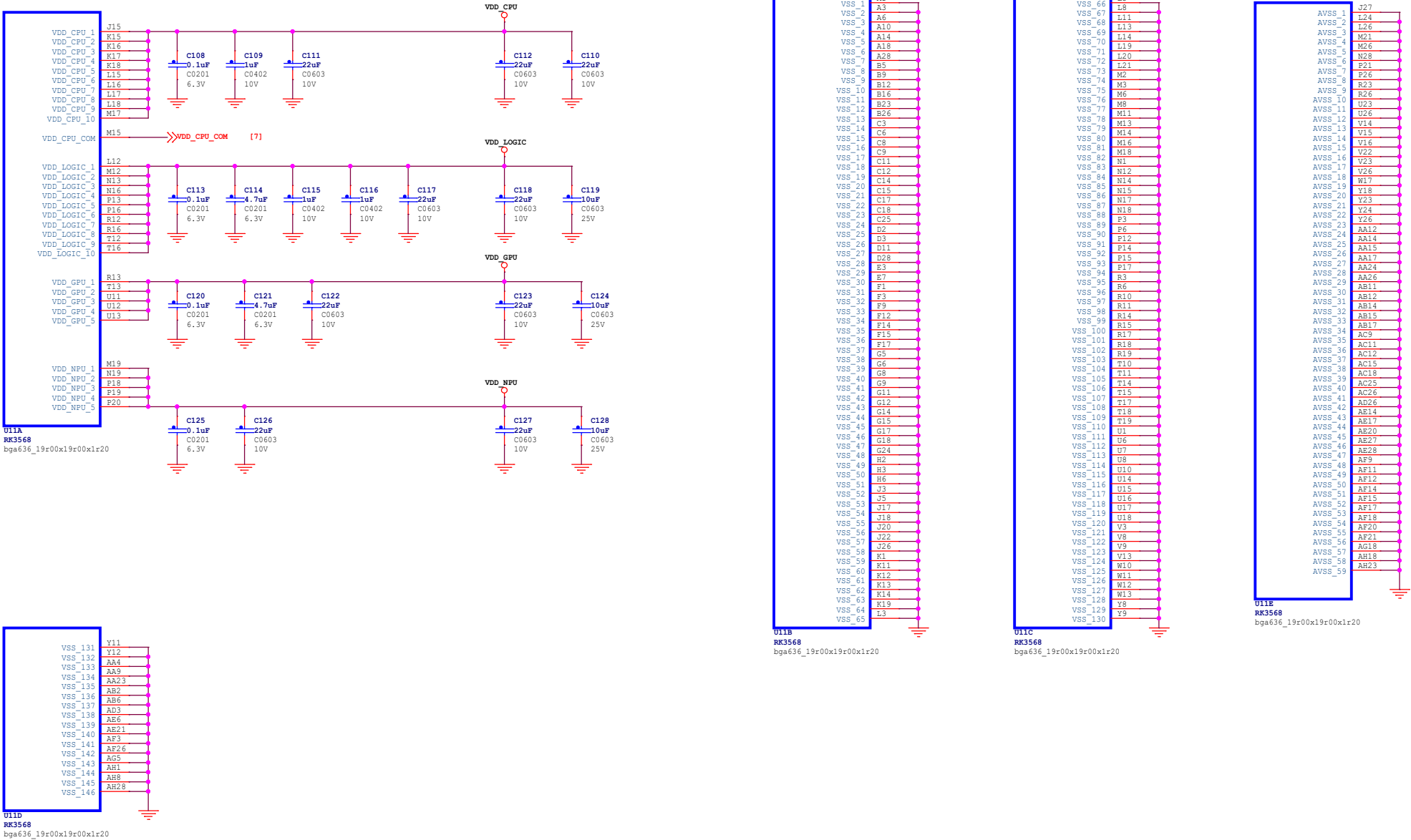
# LPDDR4x Power

output: 0.6V

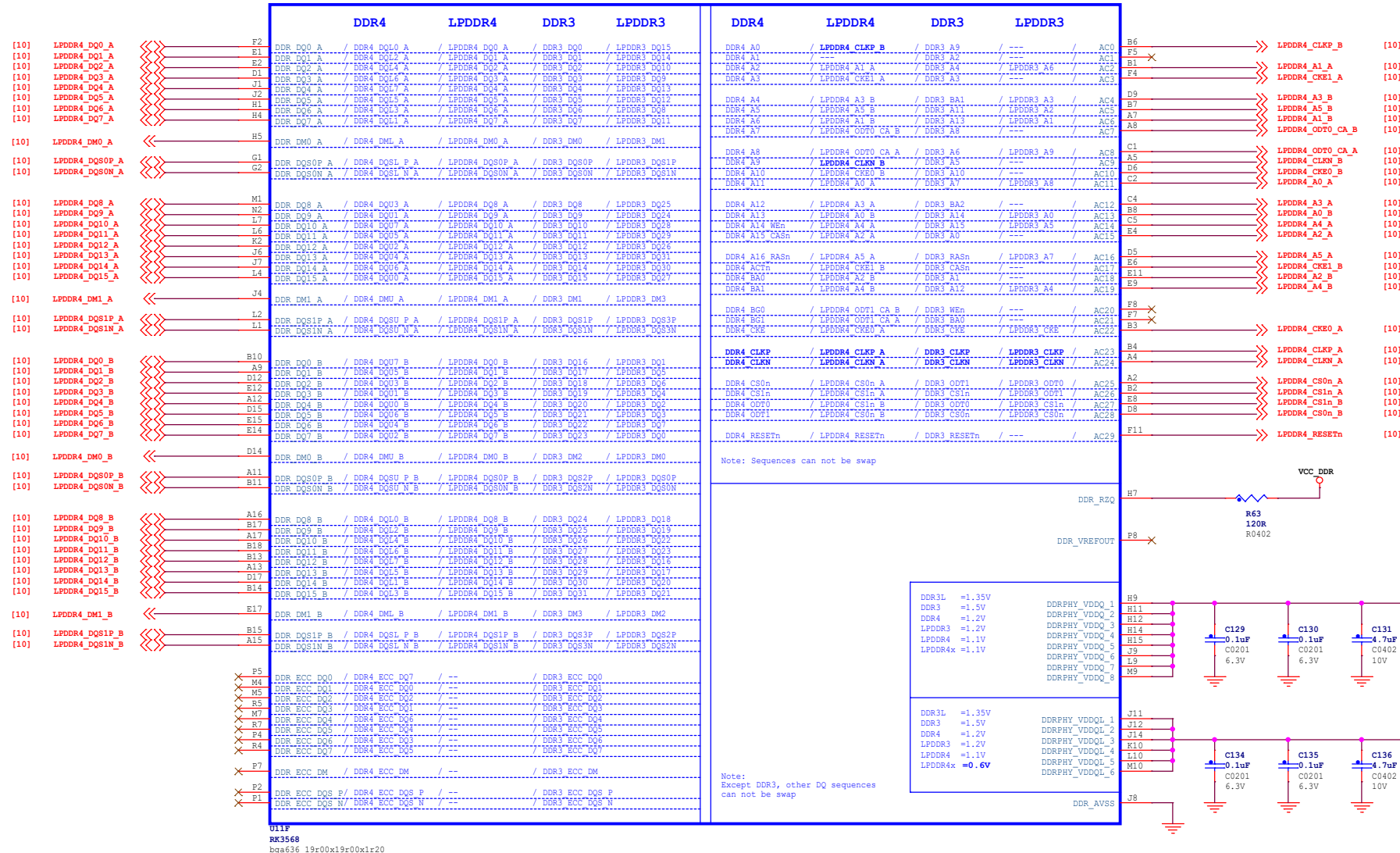


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|------------------------------------------|--------------------------------|-------------|
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| Title<br>野火_RK3568_LubanCat 2_N_原理图_v1.0 |                                |             |
| Size<br>A3                               | Document Number<br>Power_other | Rev<br>V1.0 |
| Date: Friday, October 28, 2022           | Sheet 7                        | of 29       |

RK3568 Power/GND

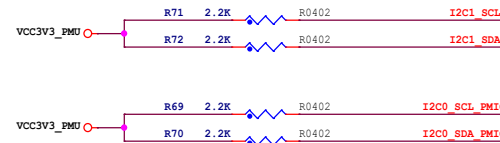
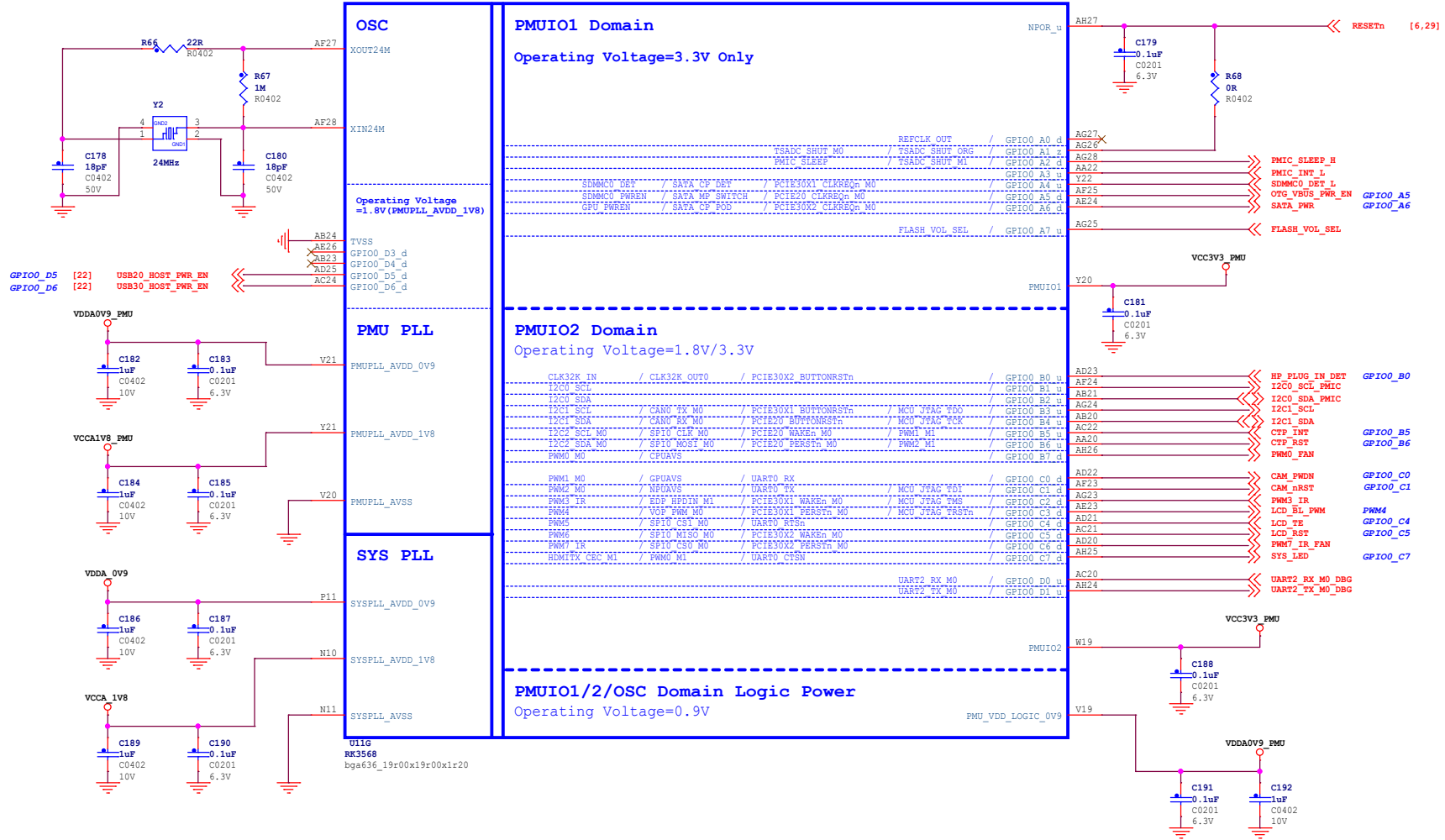


# RK3568 DDR PHY





# RK3568 OSC/PLL/PMUIO

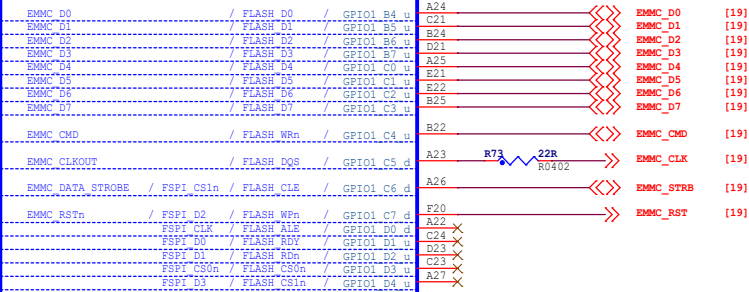


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|------------------------------------------|-------------------------------|----------|
| 东莞野火电子有限公司<br>https://yehuoem.taobao.com |                               |          |
| Title 野火_RK3568 LubanCat 2 N_原理图_V1.0    |                               |          |
| Size A3                                  | Document Number OSC/PLL/PMUIO | Rev V1.0 |
| Date: Monday, October 10, 2022           | Sheet 11 of 29                |          |

## RK3568 VCCIO2 Domain

### VCCIO2 Domain

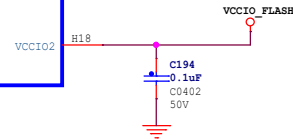
Operating Voltage=1.8V/3.3V



Default is determined by Pin  
FLASH VOL\_SEL/GPIO0 A7 u:  
L:VCCIO2 must supply 3.3V  
H:VCCIO2 must supply 1.8V

U117  
RK3568  
bga636\_19r00x19r00x1r20

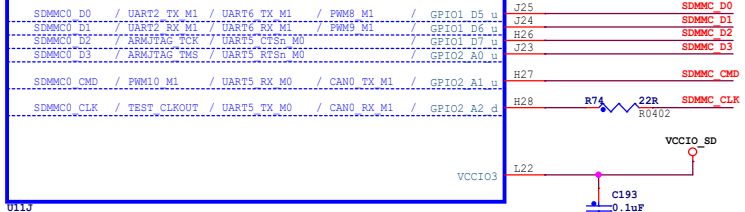
Resistor close to SOC  
terminal



## RK3568 VCCIO3 Domain

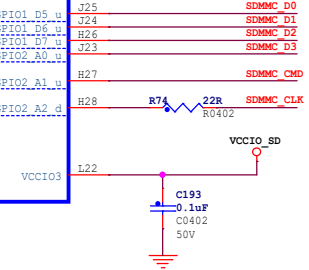
### VCCIO3 Domain

Operating Voltage=1.8V/3.3V

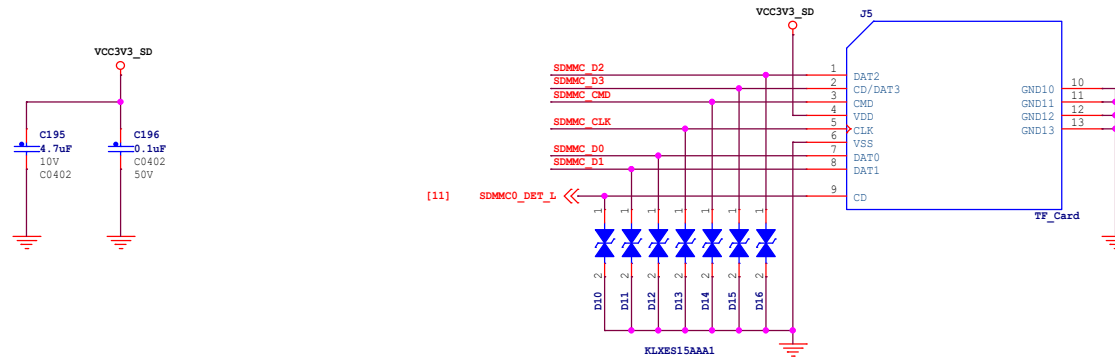


U117  
RK3568  
bga636\_19r00x19r00x1r20

Resistor close to SOC  
terminal



## TF\_CARD



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Title  
野火\_RK3568 LubanCat 2 N\_原理图\_V1.0

Size  
A3

Document Number  
Flash/SD Controller

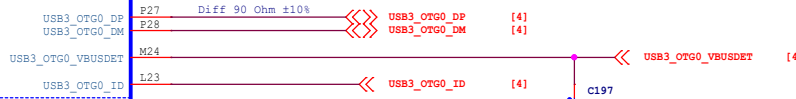
Date: Monday, October 10, 2022

Rev  
V1.0

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# RK3568 USB3.0/SATA/QSGMII/PCIe2.0 x1

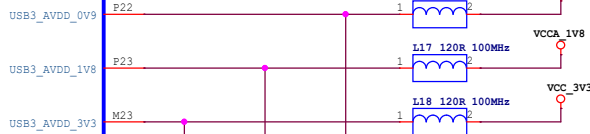
## USB3.0 OTG0\_HS/FS/LS (USB Download)



## USB3.0 HOST1\_HS/FS/LS

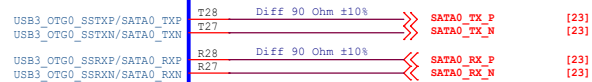


## USB3.0 OTG0/HOST1\_ HS/FS/LS Power

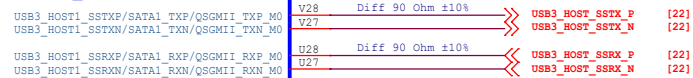


## MULTI\_PHY0/1/2

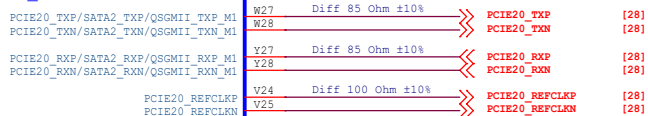
### USB3.0 OTG0\_SS and SATA0 Mux



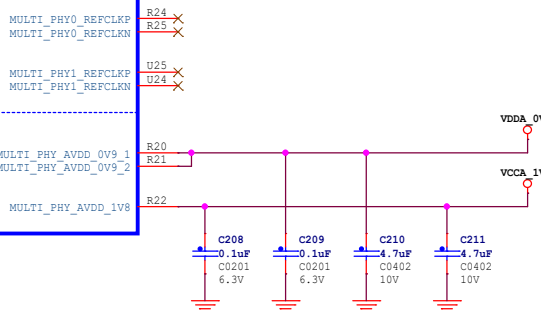
### USB3.0 HOST1\_SS and SATA1 and QSGMII\_M0 Mux



### PCIe2.0 and SATA2 and QSGMII\_M1 Mux



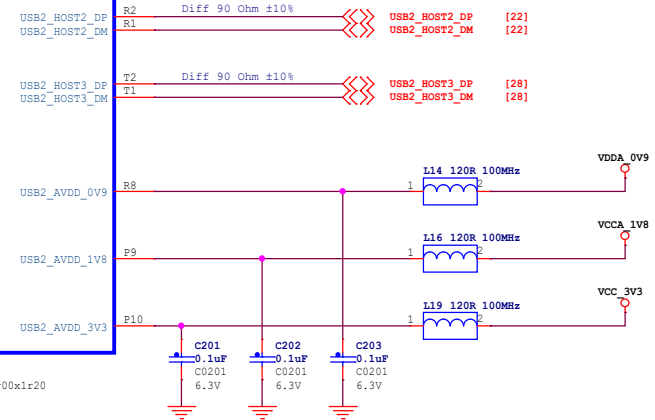
## MULTI\_PHY REFCLK



U110  
RK3568  
bga636\_19r00x19r00x1r20

# RK3568 USB2.0 HOST

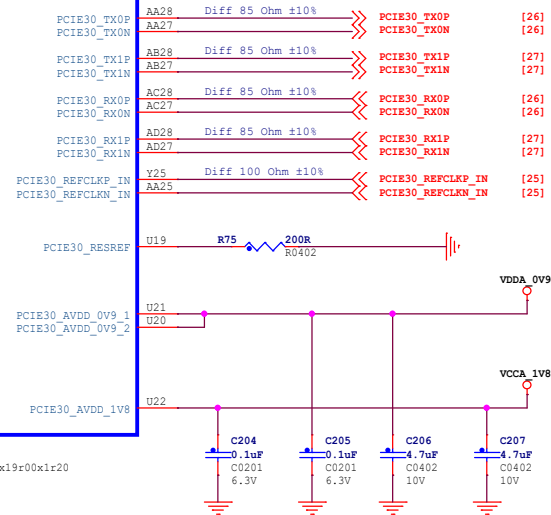
## USB2.0 HOST



U11V  
RK3568  
bga636\_19r00x19r00x1r20

# RK3568 PCIe3.0 x2

## PCIe3.0 x 2



U11W  
RK3568  
bga636\_19r00x19r00x1r20

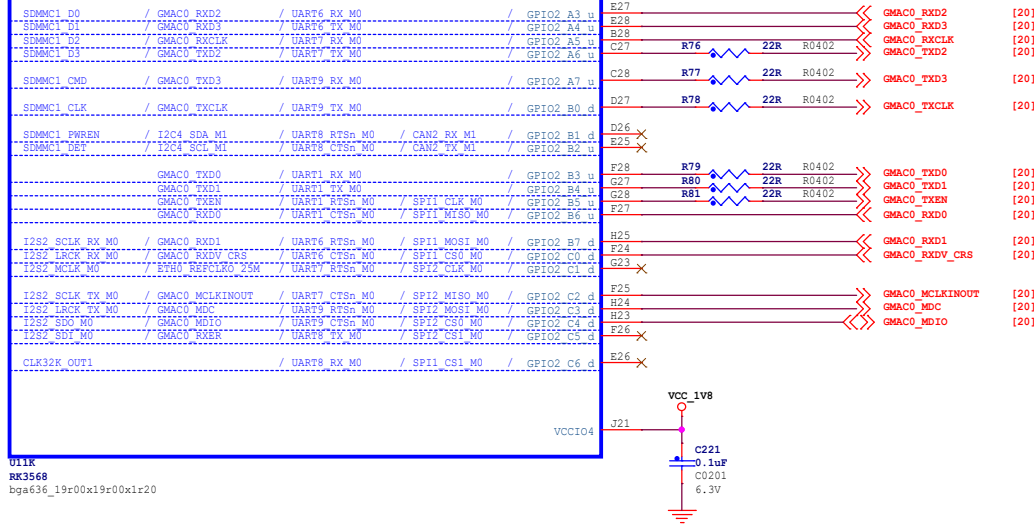
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Title  
野火\_RK3568 LubanCat 2 N\_原理图\_V1.0  
Size  
A3  
Document Number  
USB/PCIe/STAT PHY  
Rev  
V1.0  
Date: Monday, October 10, 2022  
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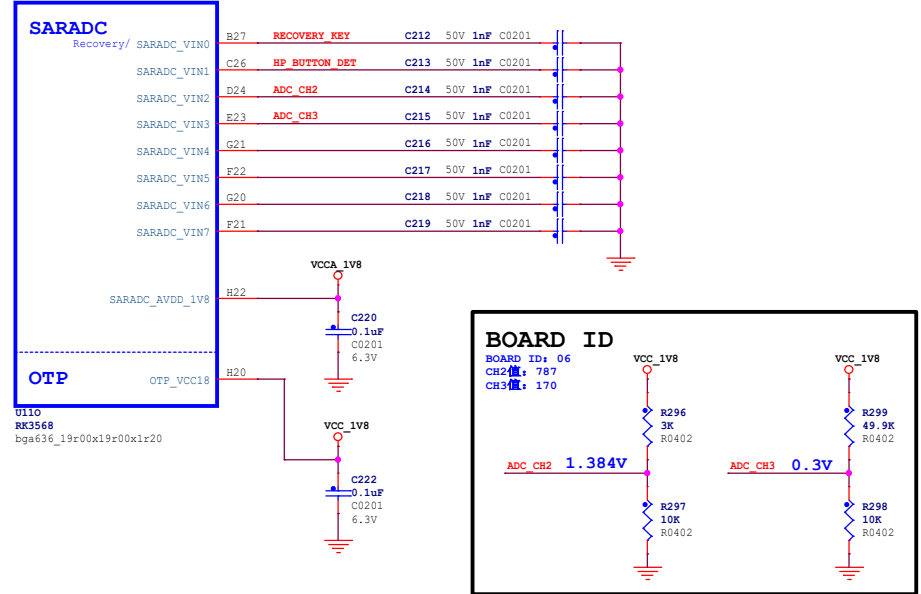
## RK3568 VCCIO4 Domain

### VCCIO4 Domain

Operating Voltage=1.8V/3.3V



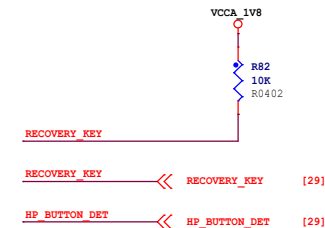
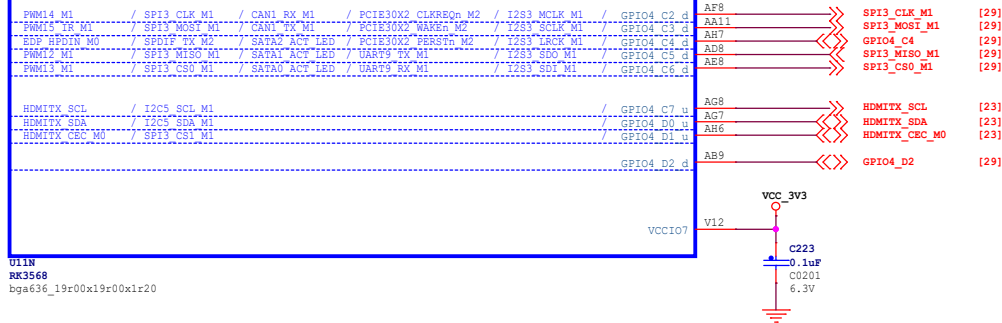
## RK3568 SARADC/OTP



## RK3568 VCCIO7 Domain

### VCCIO7 Domain

Operating Voltage=1.8V/3.3V

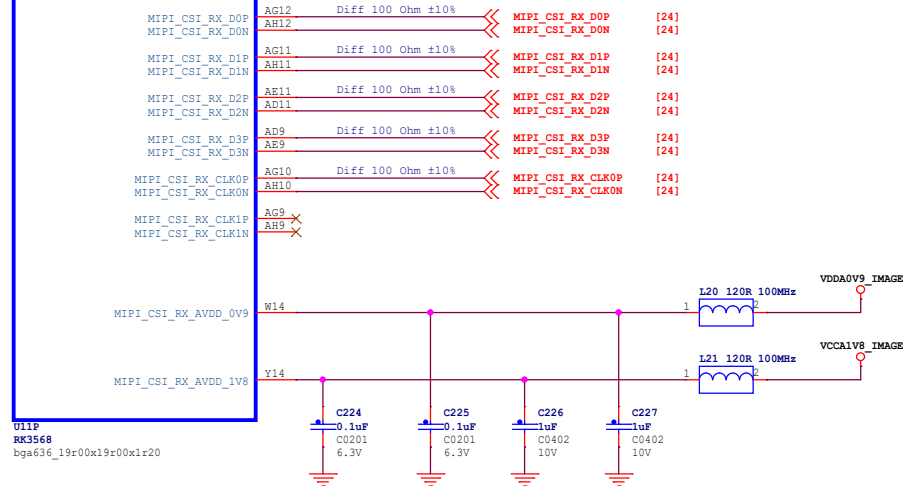


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|                                 |                 |                |
|---------------------------------|-----------------|----------------|
| Title                           |                 |                |
| 野火_RK3568 LubanCat 2 N_原理图_V1.0 |                 |                |
| Size                            | Document Number | Rev            |
| A3                              | SARADC/GPIO     | V1.0           |
| Date: Monday, October 10, 2022  |                 | Sheet 14 of 29 |

# RK3568 MIPI\_CSI\_RX

## MIPI CSI RX

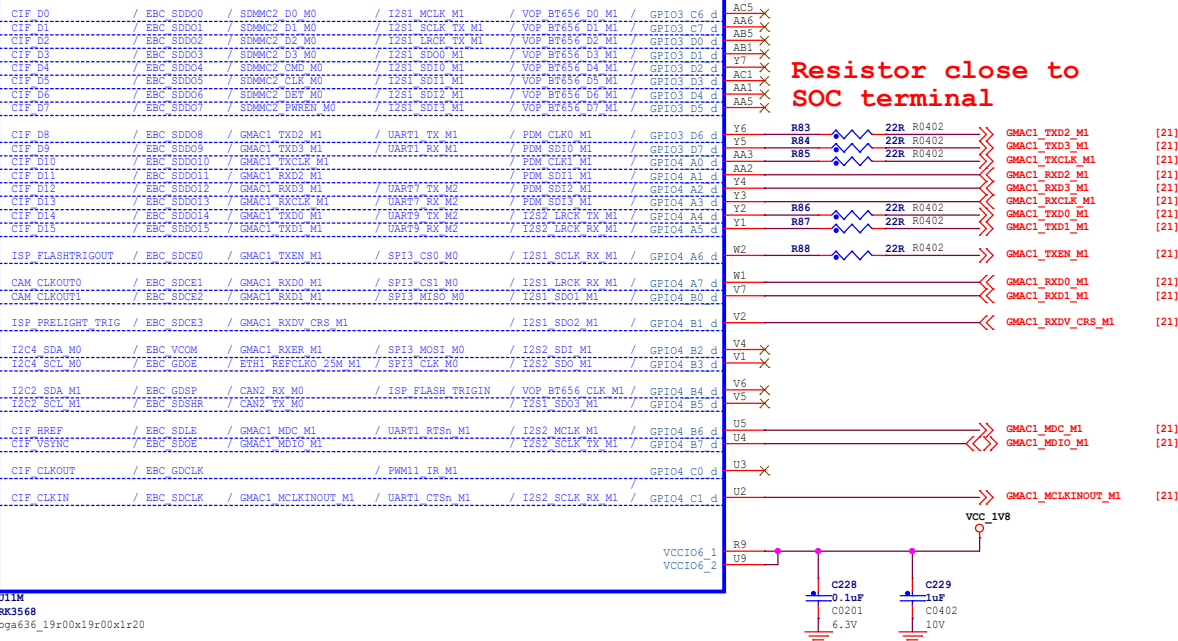


|         |                                       |                                                                              |
|---------|---------------------------------------|------------------------------------------------------------------------------|
| Option1 | Sensor1 x4Lane                        | MIPI_CSI_RX_D0-3<br>MIPI_CSI_RX_CLK0                                         |
| Option2 | Sensor1 x2Lane<br>+<br>Sensor2 x2Lane | MIPI_CSI_RX_D0-1<br>MIPI_CSI_RX_CLK0<br>MIPI_CSI_RX_D2-3<br>MIPI_CSI_RX_CLK1 |

# RK3568 VCCIO6 Domain

## VCCIO6 Domain

Operating Voltage=1.8V/3.3V

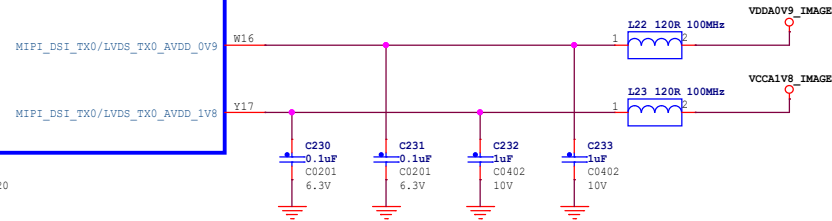


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| Title<br>野火_RK3568 Iubancat 2 N_原理图_V1.0   |                                 |                |
| Size<br>A3                                 | Document Number<br>VI Interface | Rev<br>V1.0    |
| Date: Monday, October 10, 2022             |                                 | Sheet 15 of 29 |

# RK3568 MIPI\_DSI\_TX0/LVDS\_TX0

## MIPI DSI TX0/LVDS TX0

MIPI\_DSI\_TX0\_D0P/LVDS\_TX0\_D0P AH17 Diff 100 Ohm ±10% MIPI\_DSI\_TX0\_D0P [24]  
 MIPI\_DSI\_TX0\_D0N/LVDS\_TX0\_D0N AG17 MIPI\_DSI\_TX0\_D0N [24]  
 MIPI\_DSI\_TX0\_D1P/LVDS\_TX0\_D1P AH16 Diff 100 Ohm ±10% MIPI\_DSI\_TX0\_D1P [24]  
 MIPI\_DSI\_TX0\_D1N/LVDS\_TX0\_D1N AG16 MIPI\_DSI\_TX0\_D1N [24]  
 MIPI\_DSI\_TX0\_D2P/LVDS\_TX0\_D2P AH14 Diff 100 Ohm ±10% MIPI\_DSI\_TX0\_D2P [24]  
 MIPI\_DSI\_TX0\_D2N/LVDS\_TX0\_D2N AG14 MIPI\_DSI\_TX0\_D2N [24]  
 MIPI\_DSI\_TX0\_D3P/LVDS\_TX0\_D3P AH13 Diff 100 Ohm ±10% MIPI\_DSI\_TX0\_D3P [24]  
 MIPI\_DSI\_TX0\_D3N/LVDS\_TX0\_D3N AG13 MIPI\_DSI\_TX0\_D3N [24]  
 MIPI\_DSI\_TX0\_CLKP/LVDS\_TX0\_CLKP AH15 Diff 100 Ohm ±10% MIPI\_DSI\_TX0\_CLKP [24]  
 MIPI\_DSI\_TX0\_CLKN/LVDS\_TX0\_CLKN AG15 MIPI\_DSI\_TX0\_CLKN [24]

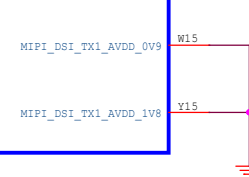


U11R  
 RK3568  
 bga636\_19r00x19r00x1r20

# RK3568 MIPI\_DSI\_TX1

## MIPI DSI TX1

MIPI\_DSI\_TX1\_D0P AD18  
 MIPI\_DSI\_TX1\_D0N AE18  
 MIPI\_DSI\_TX1\_D1P AD17  
 MIPI\_DSI\_TX1\_D1N AC17  
 MIPI\_DSI\_TX1\_D2P AD14  
 MIPI\_DSI\_TX1\_D2N AC14  
 MIPI\_DSI\_TX1\_D3P AD12  
 MIPI\_DSI\_TX1\_D3N AE12  
 MIPI\_DSI\_TX1\_CLKP AD15  
 MIPI\_DSI\_TX1\_CLKN AE15

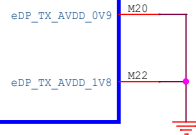


U11S  
 RK3568  
 bga636\_19r00x19r00x1r20

# RK3568 eDP TX

## eDP\_TX

eDP\_TX\_D0P J28  
 eDP\_TX\_D0N K27  
 eDP\_TX\_D1P K28  
 eDP\_TX\_D1N L27  
 eDP\_TX\_D2P L28  
 eDP\_TX\_D2N M27  
 eDP\_TX\_D3P M28  
 eDP\_TX\_D3N N27  
 eDP\_TX\_AUXP L25  
 eDP\_TX\_AUXN M25



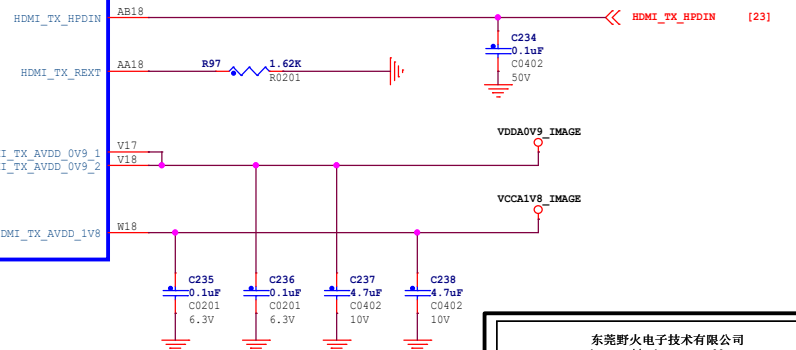
U11T  
 RK3568  
 bga636\_19r00x19r00x1r20

# RK3568 HDMI2.0 TX

Resistor close to SOC terminal

## HDMI2.0 TX

HDMI\_TX\_D2P AG22 2.2R R0402 Diff 100 Ohm ±10% HDMI\_TX\_D2P [23]  
 HDMI\_TX\_D2N AH22 2.2R R0402 Diff 100 Ohm ±10% HDMI\_TX\_D2N [23]  
 HDMI\_TX\_D1P AG21 2.2R R0402 Diff 100 Ohm ±10% HDMI\_TX\_D1P [23]  
 HDMI\_TX\_D1N AH21 2.2R R0402 Diff 100 Ohm ±10% HDMI\_TX\_D1N [23]  
 HDMI\_TX\_D0P AG20 2.2R R0402 Diff 100 Ohm ±10% HDMI\_TX\_D0P [23]  
 HDMI\_TX\_D0N AH20 2.2R R0402 Diff 100 Ohm ±10% HDMI\_TX\_D0N [23]  
 HDMI\_TX\_CLKP AH19 2.2R R0402 Diff 100 Ohm ±10% HDMI\_TX\_CLKP [23]  
 HDMI\_TX\_CLKN AG19 2.2R R0402 Diff 100 Ohm ±10% HDMI\_TX\_CLKN [23]

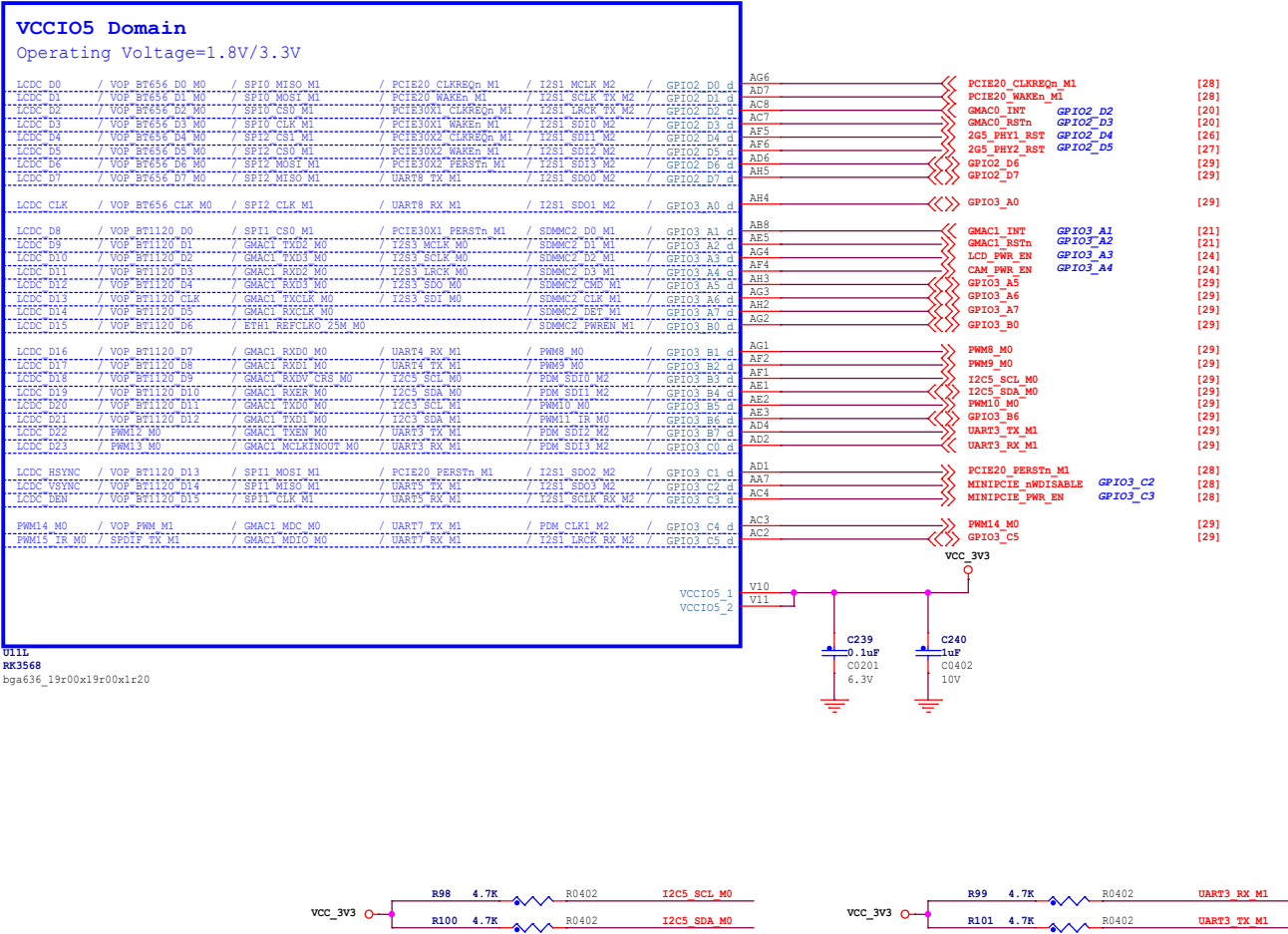


U11Q  
 RK3568  
 bga636\_19r00x19r00x1r20

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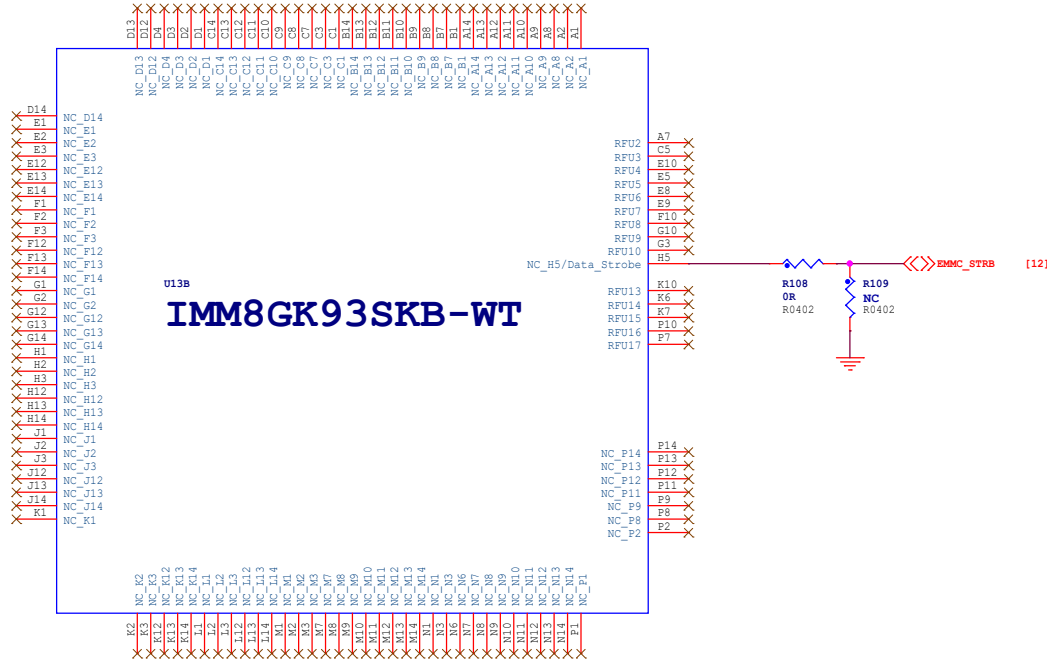
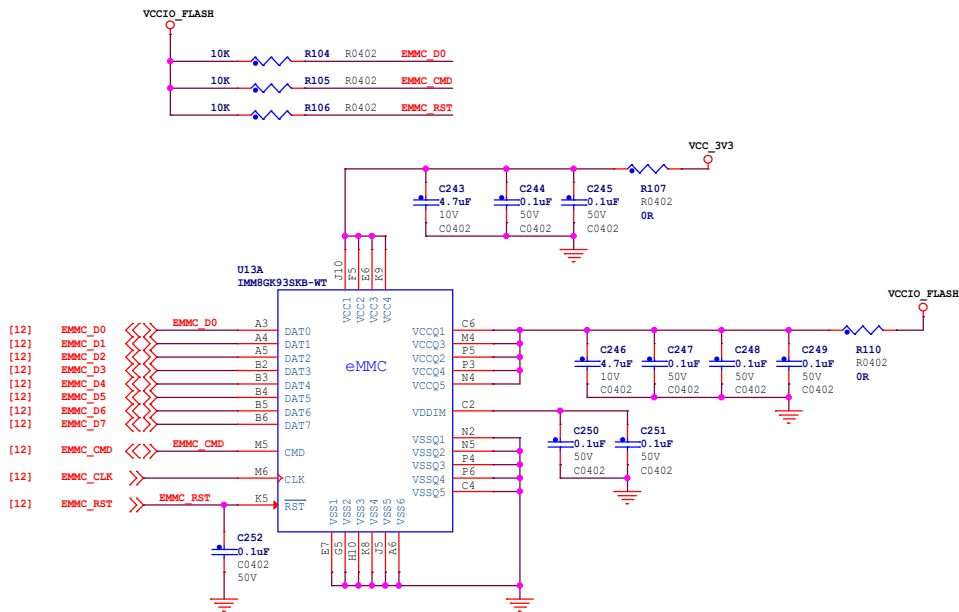
|                                               |                 |      |
|-----------------------------------------------|-----------------|------|
| Title                                         |                 |      |
| 野火_RK3568 LubanCat 2 N_原理图_V1.0               |                 |      |
| Size                                          | Document Number | Rev  |
| A3                                            | VO Interface_1  | V1.0 |
| Date: Monday, October 10, 2022 Sheet 16 of 29 |                 |      |

RK3568 VCCIO5 Domain

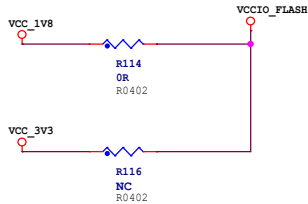




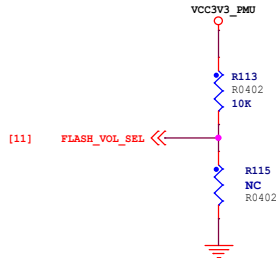
EMMC FLASH



EMMC\_IO\_Toggle



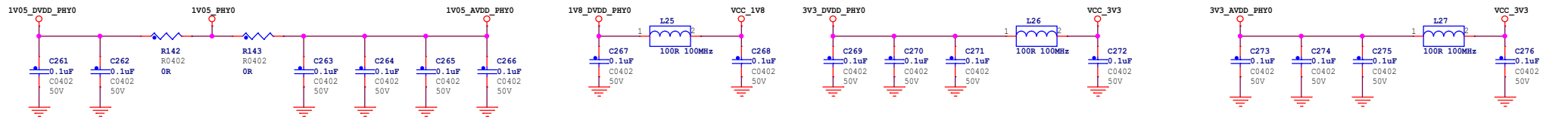
FLASH\_VOL\_SEL



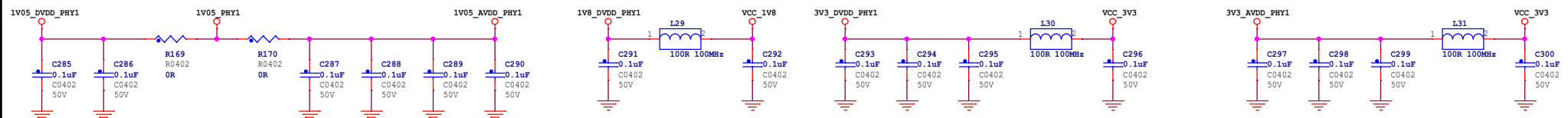
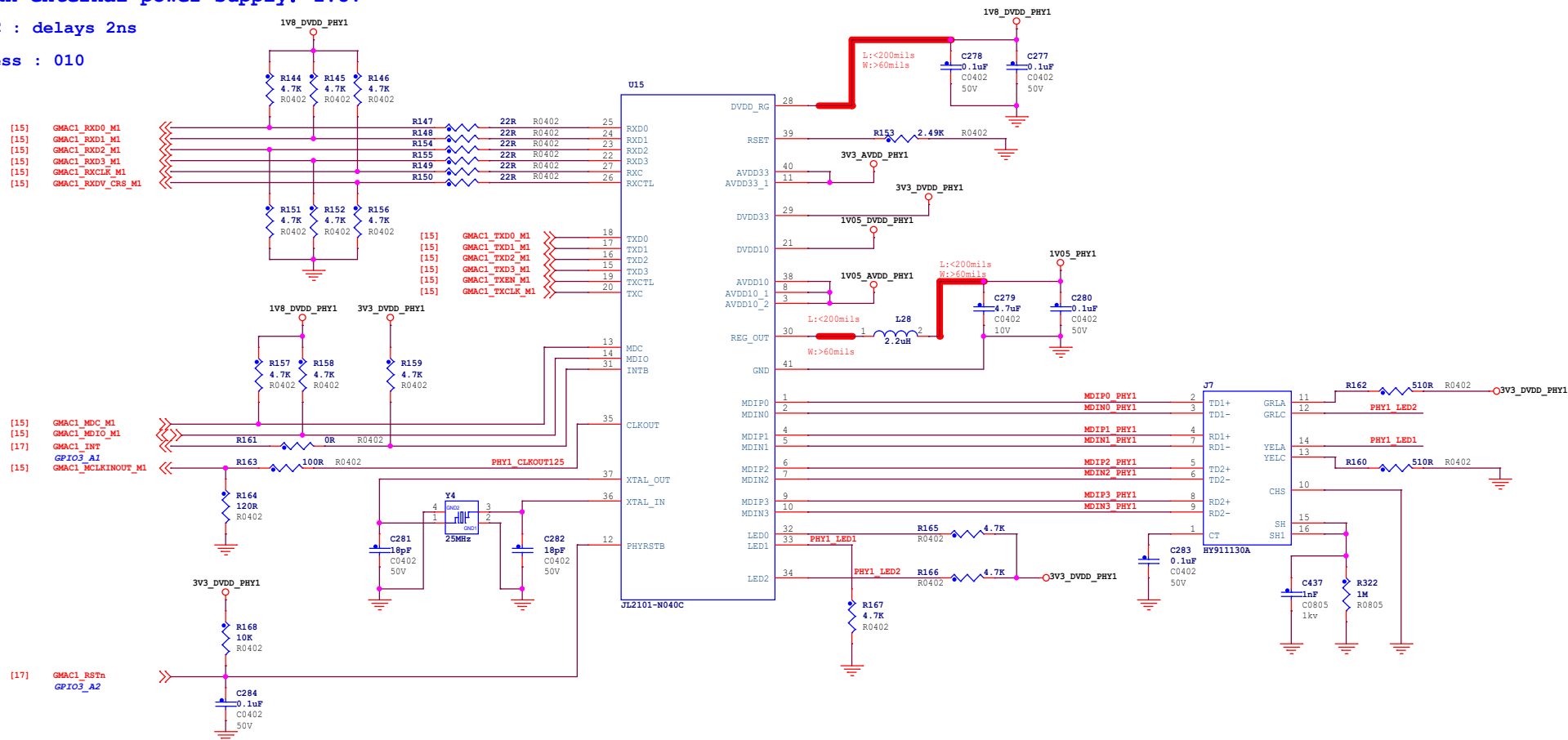
Note:  
FLASH\_VOL\_SEL state decided  
to VCCIO2 domain IO driven by default  
Logic=L: 3.3V IO driven  
Logic=H: 1.8V IO driven

|                                 |                            |                |
|---------------------------------|----------------------------|----------------|
| 野火_RK3568 IubanCat 2 N_原理图_V1.0 |                            |                |
| Size                            | Document Number            | Rev            |
| A3                              | EMMC_FLASH                 | V1.0           |
| Date:                           | Tuesday, November 29, 2022 | Sheet 19 of 29 |

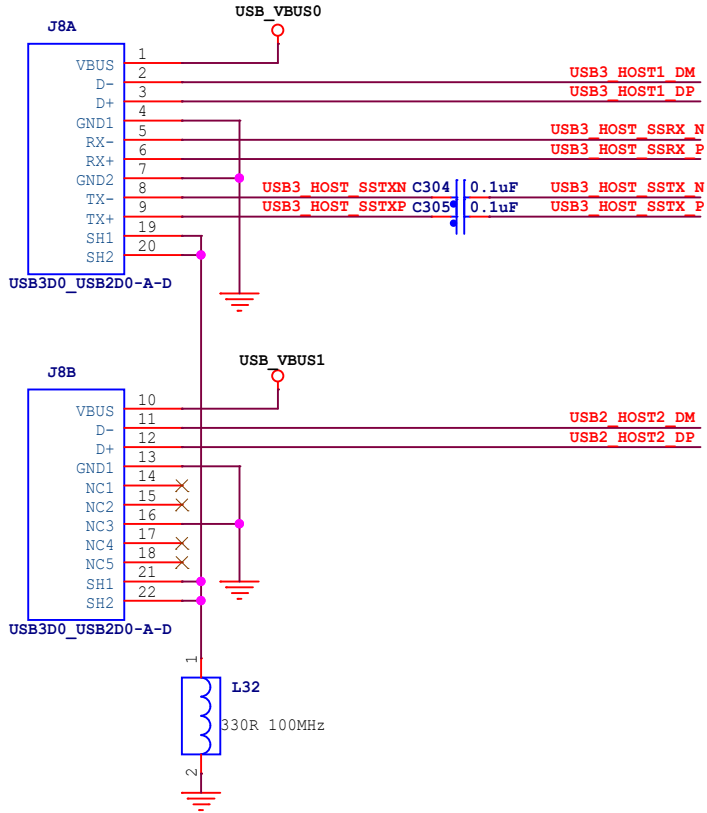
PHY Address : 001



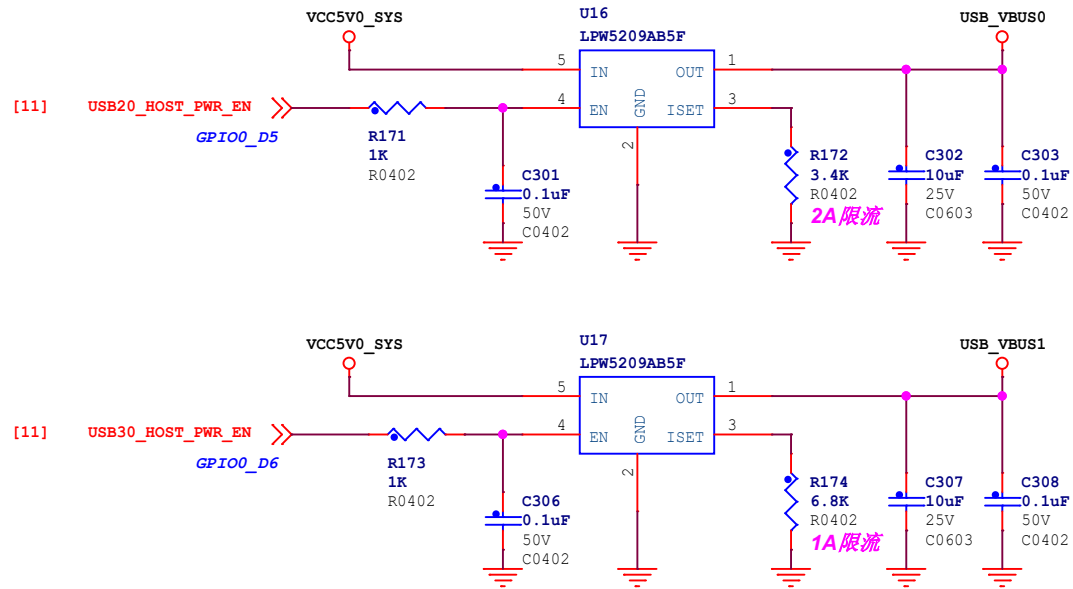
PHY Address : 010



USB 3.0 HOST x1  
USB 2.0 HOST x1



USB POWER



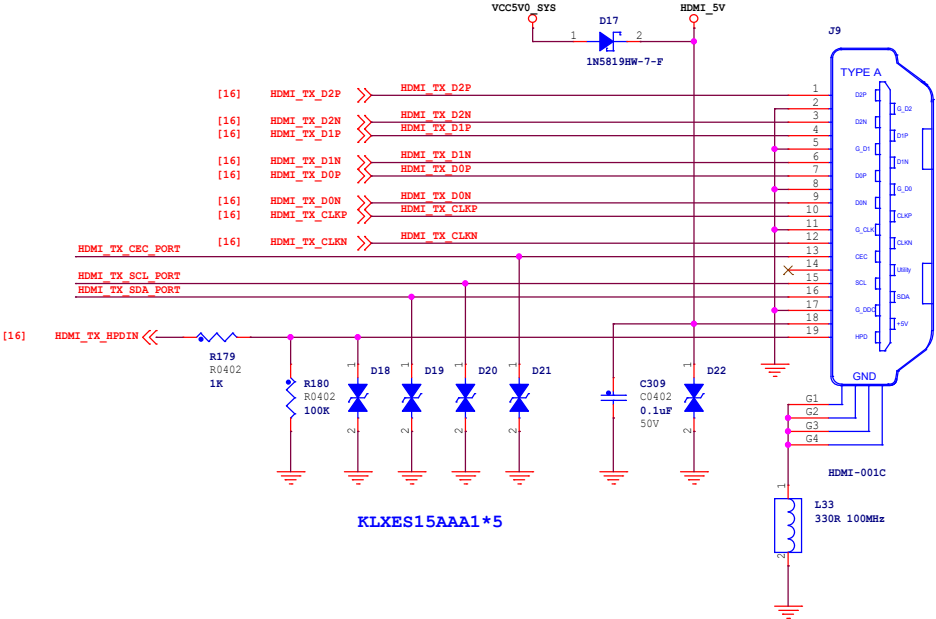
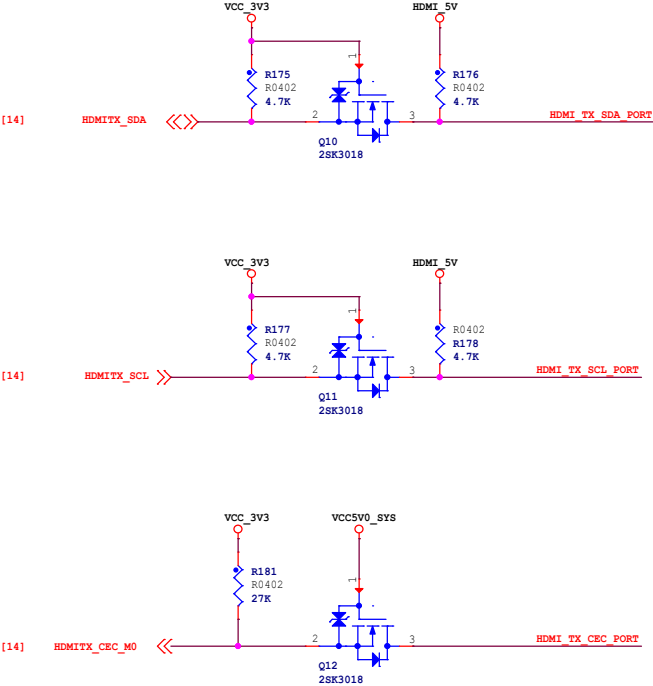
|                  |    |                  |      |
|------------------|----|------------------|------|
| USB3_HOST1_DM    | >> | USB3_HOST1_DM    | [13] |
| USB3_HOST1_DP    | >> | USB3_HOST1_DP    | [13] |
| USB2_HOST2_DM    | >> | USB2_HOST2_DM    | [13] |
| USB2_HOST2_DP    | >> | USB2_HOST2_DP    | [13] |
| USB3_HOST_SSRX_N | >> | USB3_HOST_SSRX_N | [13] |
| USB3_HOST_SSRX_P | >> | USB3_HOST_SSRX_P | [13] |
| USB3_HOST_SSTX_N | >> | USB3_HOST_SSTX_N | [13] |
| USB3_HOST_SSTX_P | >> | USB3_HOST_SSTX_P | [13] |

ESD

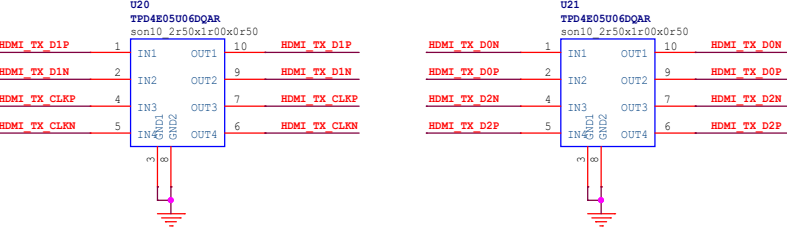


|                                                |                             |             |
|------------------------------------------------|-----------------------------|-------------|
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| Title<br>野火_RK3568 LubanCat 2 N_原理图_v1.0       |                             |             |
| Size<br>A4                                     | Document Number<br>USB_PORT | Rev<br>V1.0 |
| Date: Thursday, October 27, 2022Sheet 22 of 29 |                             |             |

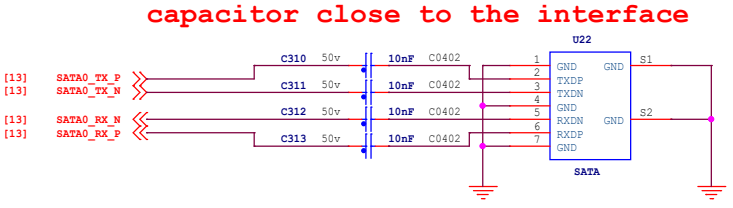
HDMI\_PORT



HDMI\_ESD

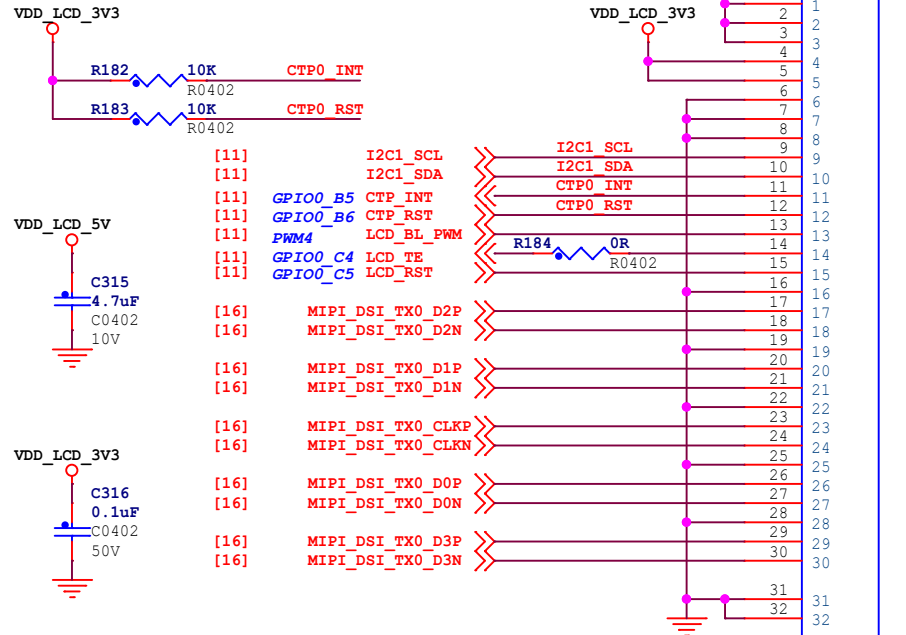


SATA\_PORT

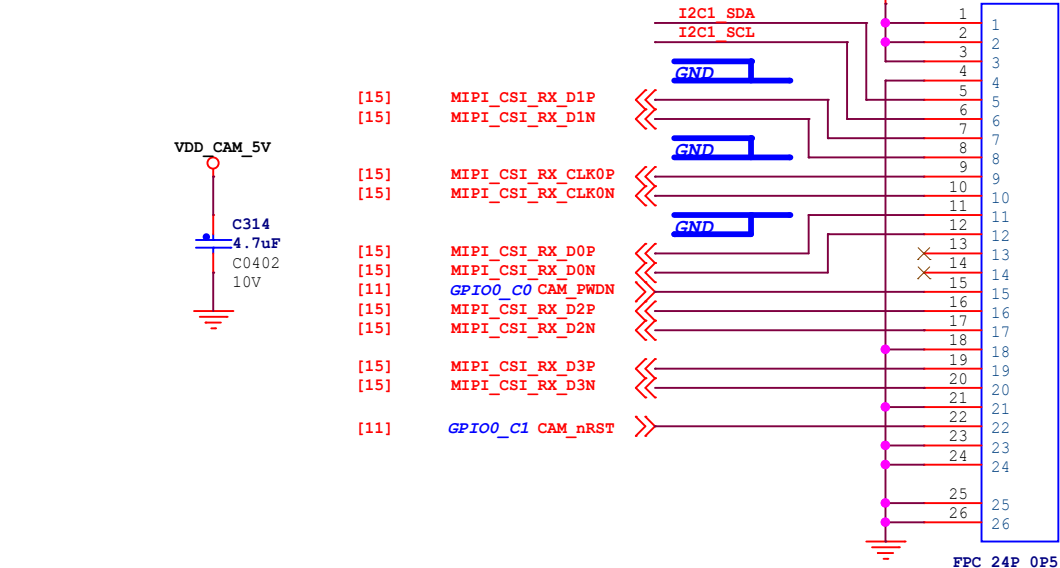


|                                 |                                 |                |
|---------------------------------|---------------------------------|----------------|
| 野火_RK3568 LubanCat 2 N_原理图_V1.0 |                                 |                |
| Title                           | 野火_RK3568 LubanCat 2 N_原理图_V1.0 |                |
| Size                            | Document Number                 | Rev            |
| A3                              | HDMI_PORT/SATA_PORT             | V1.0           |
| Date:                           | Thursday, October 27, 2022      | Sheet 23 of 29 |

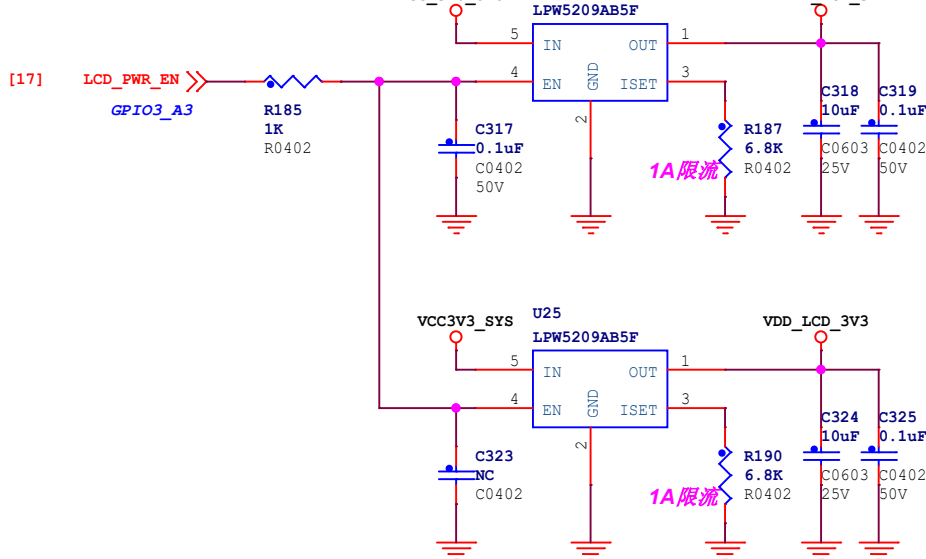
## MIPI DSI LCD PORT



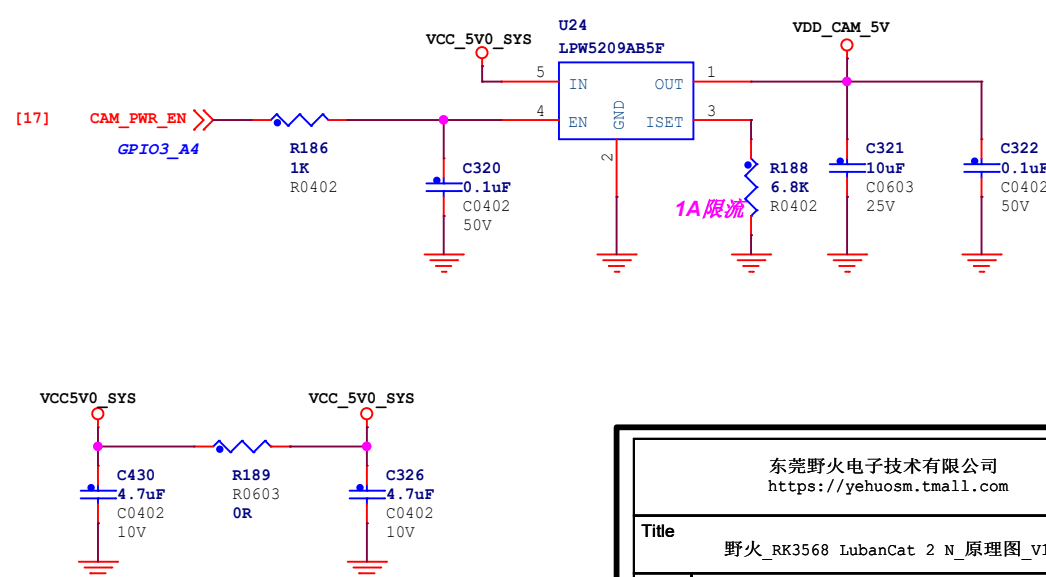
## MIPI CSI PORT



## LCD Power



## MIPI CSI Power



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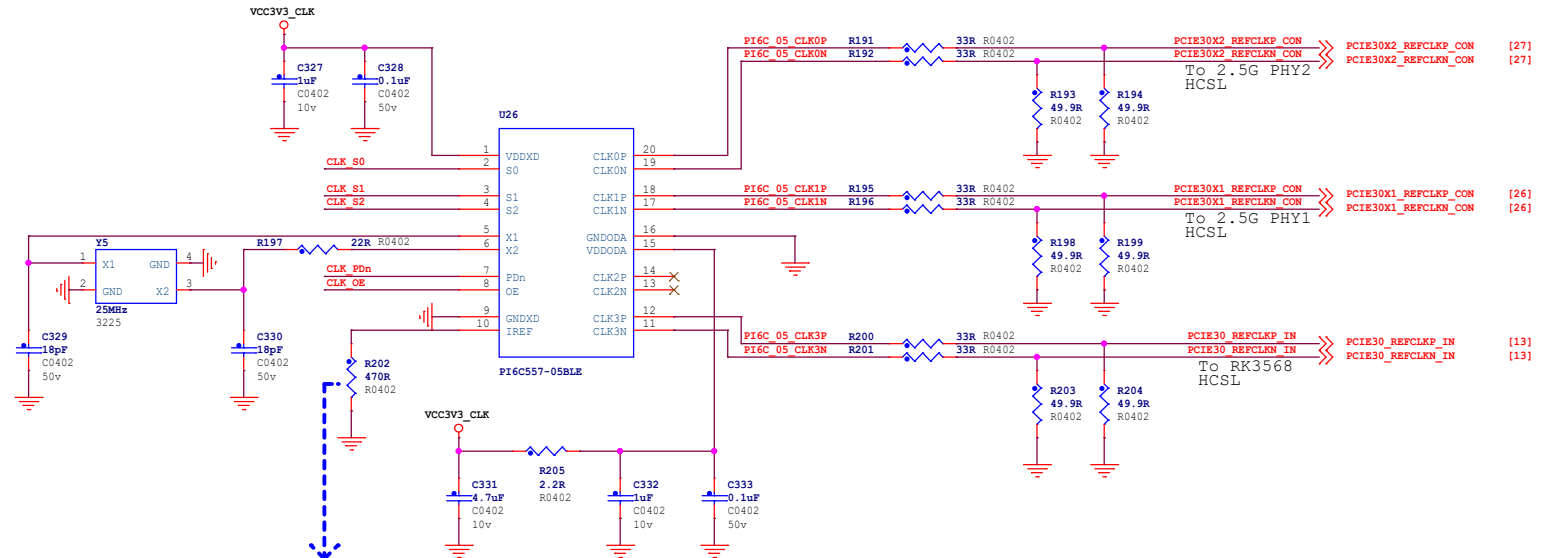
Title 野火\_RK3568 LubanCat 2 N\_原理图\_V1.0

Size A4 Document Number MIPI DSI/MIPI CSI\_PORT Rev V1.0

Date: Monday, October 10, 2022 Sheet 24 of 29

# PCIE3.0\_ REFCLK

CLK\*3 @100MHz



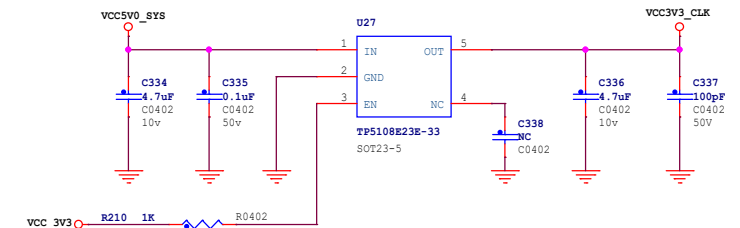
If board target trace impedance is 50ohm  
then  $R = 475\text{ohm}$  providing an IREF of 2.32 mA . The output current ( IOH ) is  $6 * \text{IREF}$  .  
 $6 \times 2.32 \times 50 = 696\text{mV}$

## SPEED\_MODE\_SET

Default: No Spread

| CLK_S0 | CLK_S1 | CLK_S2 | Spread %  | Out Freq |
|--------|--------|--------|-----------|----------|
| 0      | 0      | 0      | -0.5      | 100MHz   |
| 1      | 0      | 0      | -1.0      | 100MHz   |
| 0      | 1      | 0      | -1.5      | 100MHz   |
| 1      | 1      | 0      | No Spread | 100MHz   |

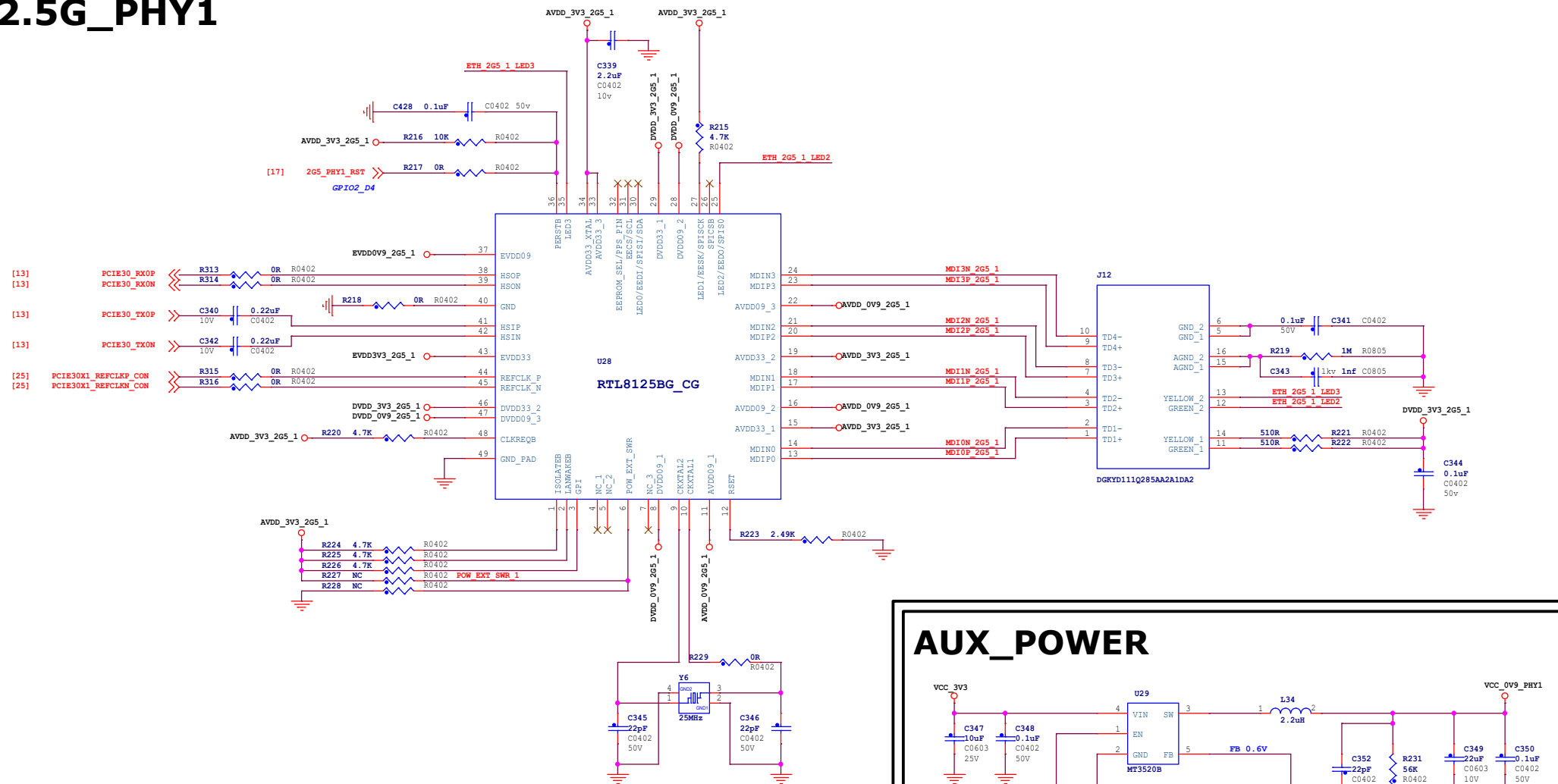
## SPLIT\_CLK\_POWER



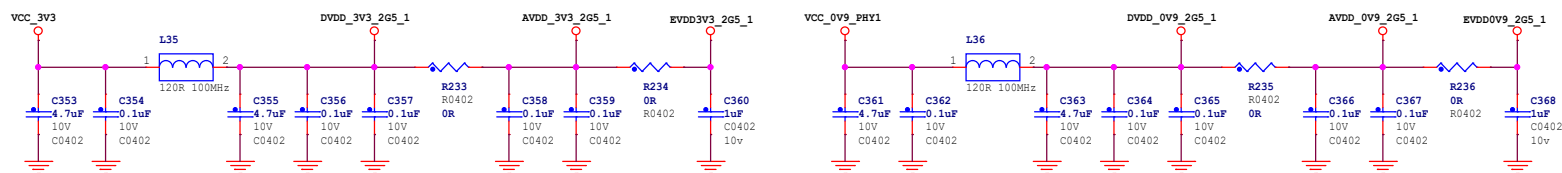
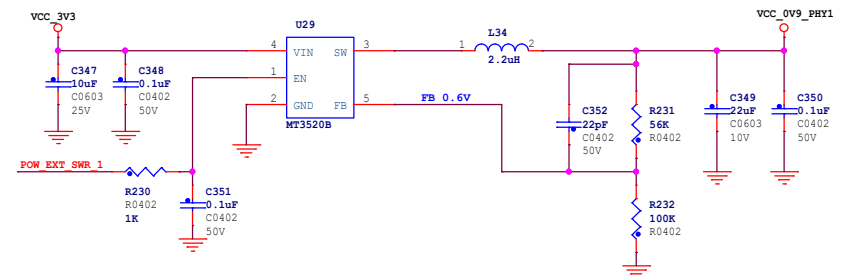
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|                                       |                                 |          |
|---------------------------------------|---------------------------------|----------|
| Title 野火_RK3568 LubanCat 2 N_原理图_V1.0 |                                 |          |
| Size A3                               | Document Number PCIE3.0_ REFCLK | Rev V1.0 |
| Date: Monday, October 10, 2022        | Sheet 25                        | of 29    |

## 2.5G\_PHY1



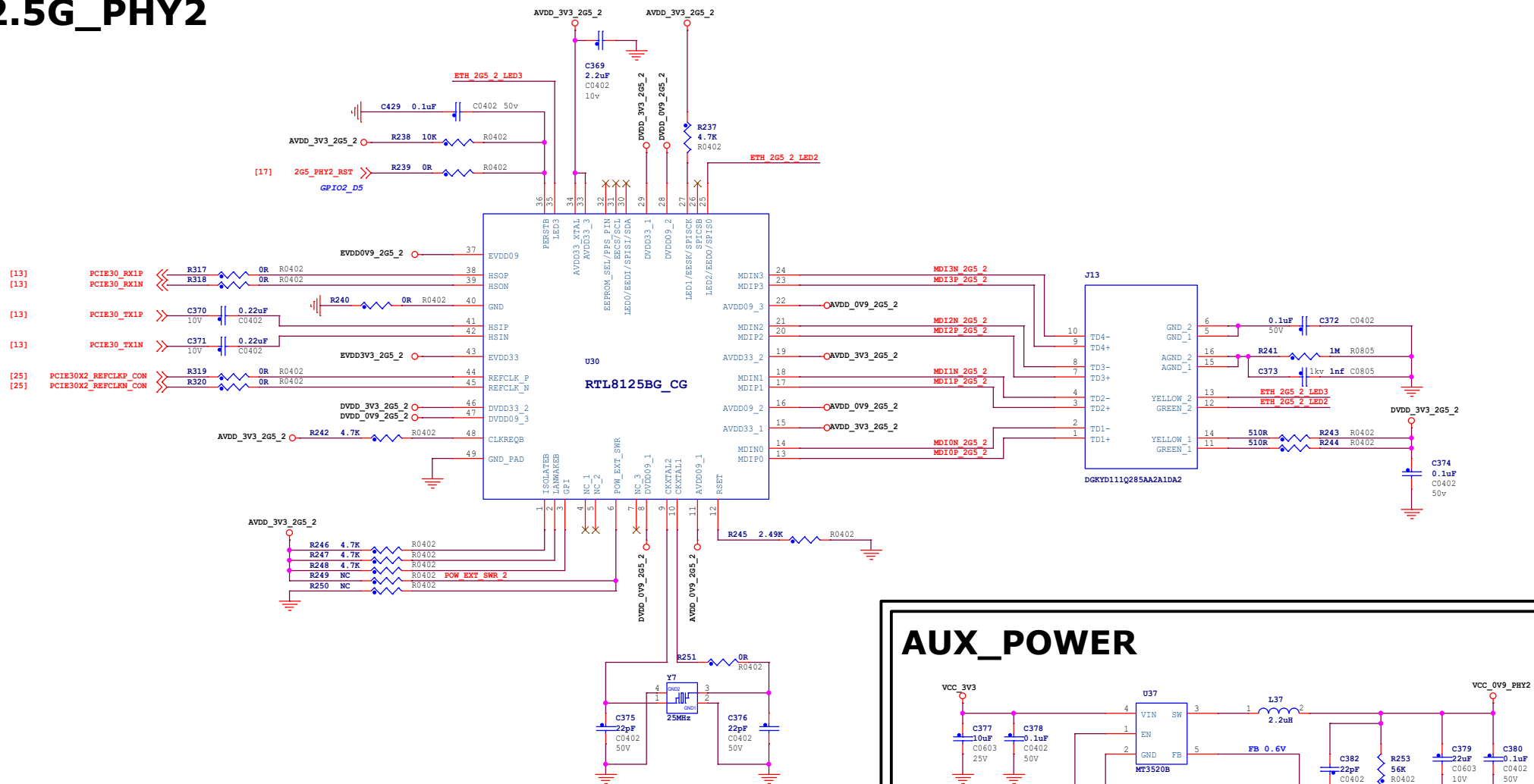
## AUX\_POWER



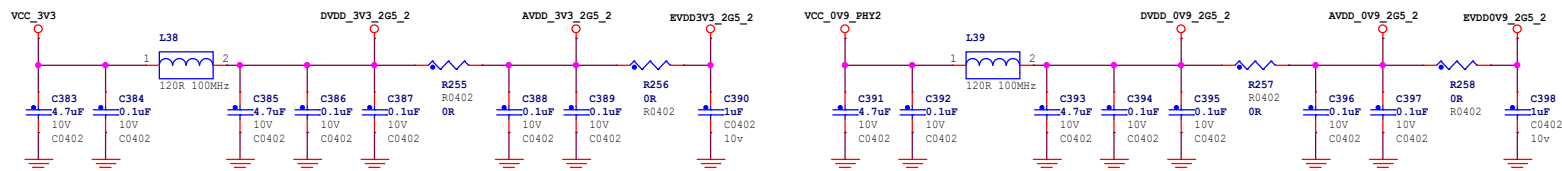
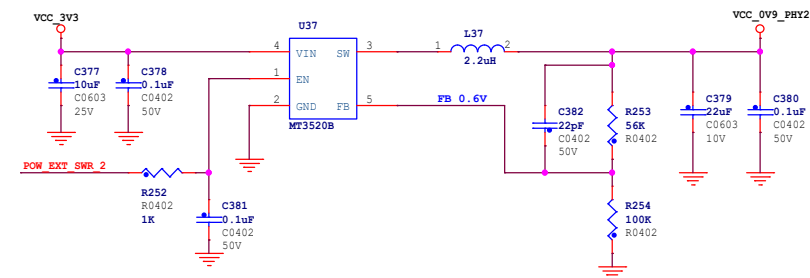
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|                                  |                              |             |
|----------------------------------|------------------------------|-------------|
| Title                            |                              |             |
| 野火_RK3568 LubanCat 2 N_原理图_V1.0  |                              |             |
| Size<br>A3                       | Document Number<br>2.5G_PHY1 | Rev<br>V1.0 |
| Date: Thursday, October 27, 2022 | Sheet 26 of 29               |             |

## 2.5G\_PHY2



## AUX\_POWER

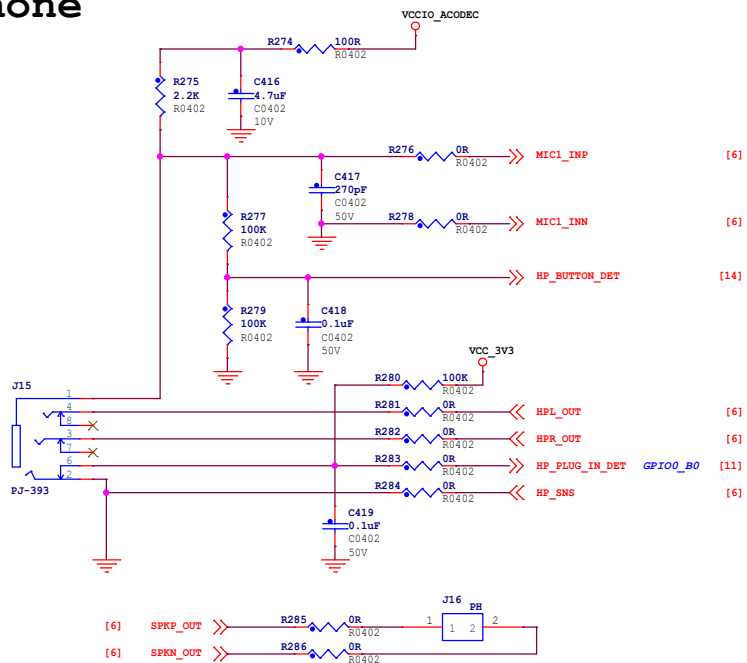


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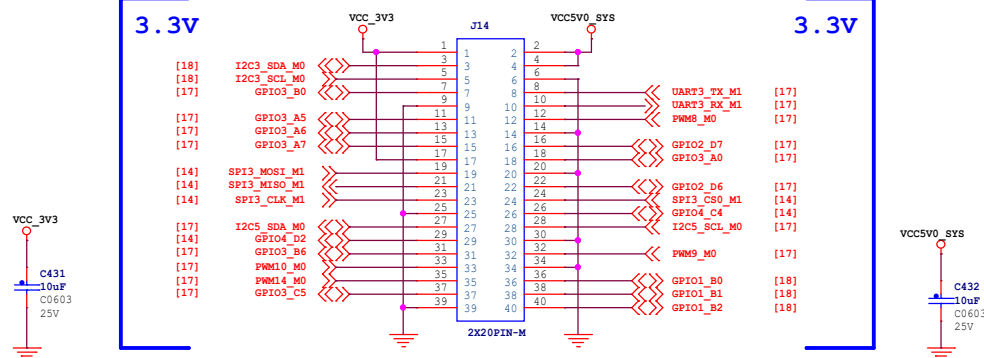
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|---------------------------------|------------------------------|----------------|
| Title                           |                              |                |
| 野火_RK3568 LubanCat 2 N_原理图_V1.0 |                              |                |
| Size<br>A3                      | Document Number<br>2.5G_PHY2 | Rev<br>V1.0    |
| Date:                           | Thursday, October 27, 2022   | Sheet 27 of 29 |



## Earphone



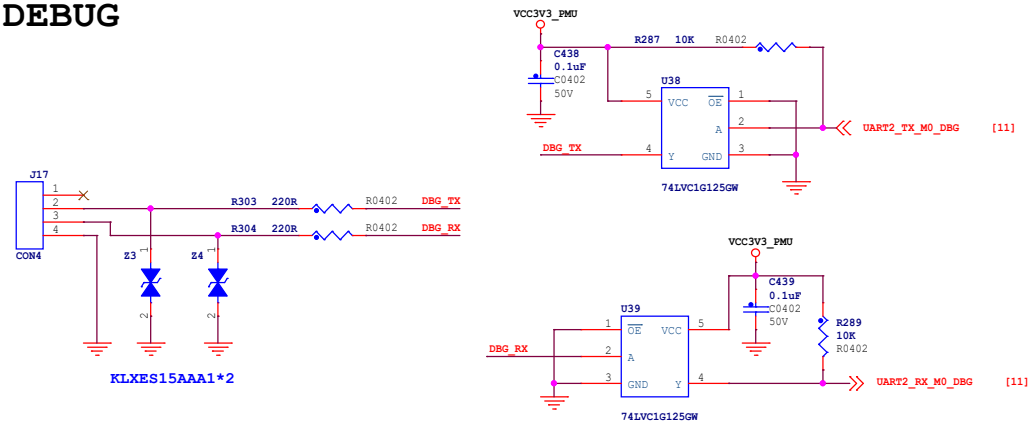
## IO PORT



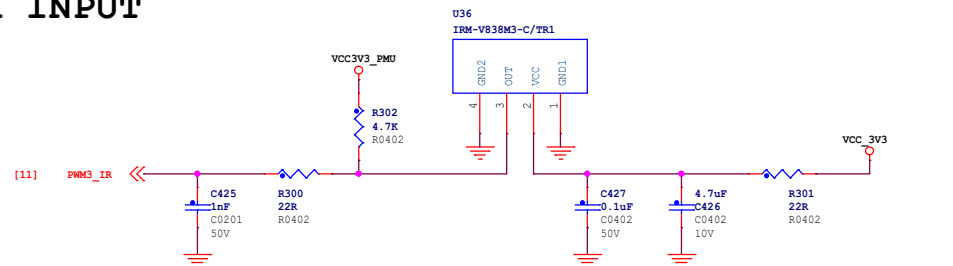
## LED



## DEBUG



## IR INPUT



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|                                 |                            |       |          |
|---------------------------------|----------------------------|-------|----------|
| Title                           |                            |       |          |
| 野火_RK3568 LubanCat 2 N_原理图_V1.0 |                            |       |          |
| Size                            | Document Number            | Rev   |          |
| A3                              | Earphone/DEBUG/IO_PORT/LED | V1.0  |          |
| Date:                           | Monday, October 10, 2022   | Sheet | 29 of 29 |