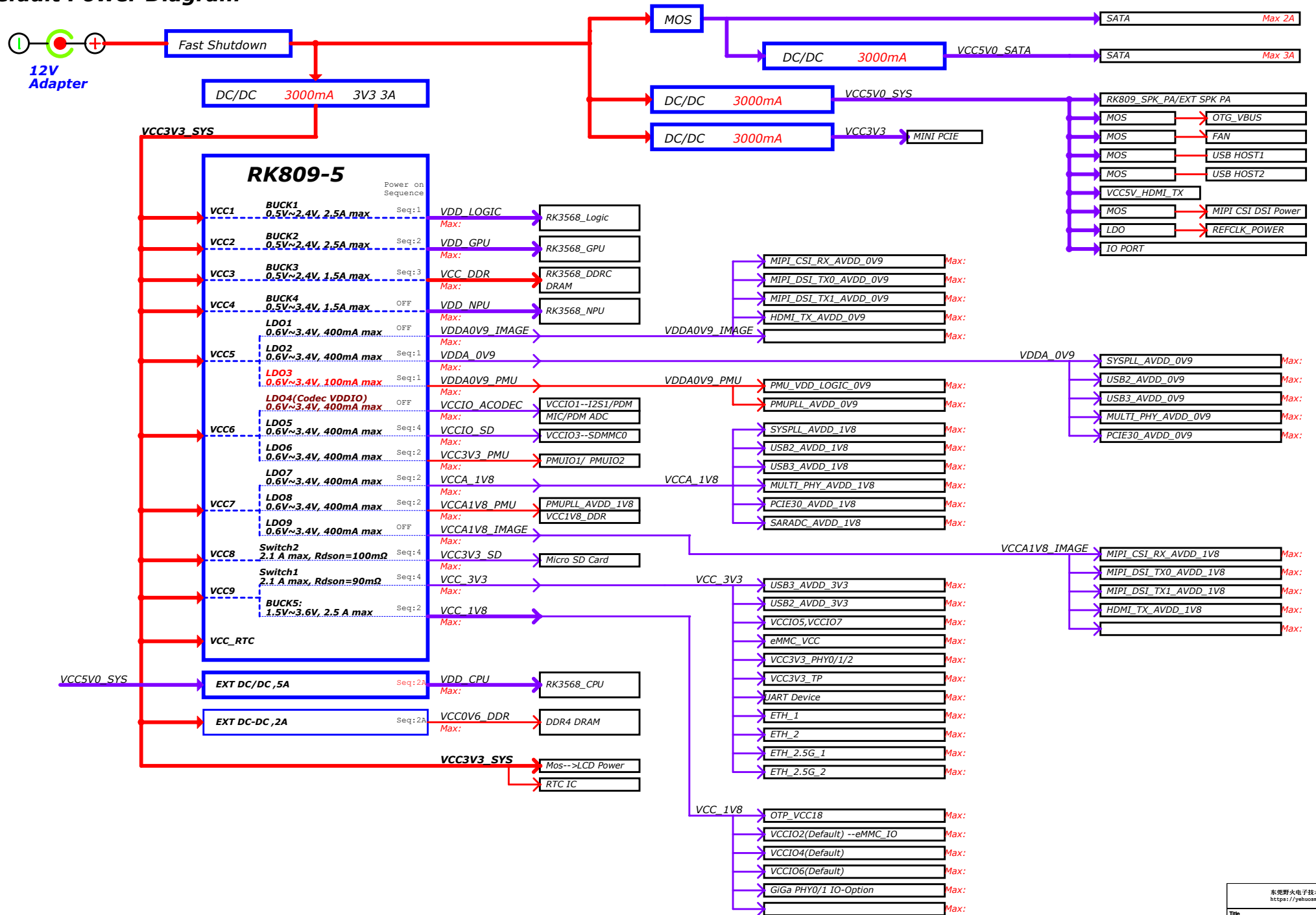


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Title 野火_RK3568 LubanCat 2 N_原理图			
Size A3	Document Number Content		Rev V3R0
Date:	Wednesday, February 26, 2025	Sheet 1 of	29

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
V1.1	2022-09-09	ghs	修正BOARD ID的ID识别电阻的电源域，修正PHY芯片的复位引脚电压不匹配问题
V1.2	2022-12-13	ghs	增加网卡上拉电阻，更新mini pcie的固定螺丝柱
V1.3	2023-07-13	ghs	新增一个MIPI CSI，一个MIPI DSI
V3R0	2024-03-22	ghs	将U3，U4，U10，32电源芯片更换为ASP9135ZC-R。将U26的PCIE时钟发生器更新为RS2CG5705BLE 将U14，U15网卡芯片更新为RTL8211F 由于PMIC内置RTC电路功耗大，由此停用内置的RTC电路，增加外挂RTC模块电路 添加RTC_INT唤醒电路，调整SATA_PWR的I/O引脚 更新BOARD ID为0x0502，用于区分新旧版本
<div><div>东莞野火电子技术有限公司</div><div>https://yehuosm.tmall.com</div><div>Title野火_RK3568 LubanCat 2 N_原理图</div><div><div>SizeA3</div><div>Document NumberHistoric Version</div><div>RevV3R0</div></div><div>Date: Wednesday, February 26, 2025Sheet 2 of 29</div></div>			

Default Power Diagram



[illegible]

VDD_12V

C17 100uF C0603 25V

C18 10uF C0603 25V

C19 0.1uF C0402 50V

U4 ASP91352C-R

VIN BOOT

GND SW

EN FB

C12 0.1uF C0402

L4 3.3uH

1 2

5.2V 3A

C14 10uF C0603 25V

C15 10uF C0603 25V

C16 0.1uF C0402 50V

VCC5V0_sys

VDD_12V

R15 140K R0402

R309 NC R0402

EN:1.3V (TYP)

UVLO:10.5V

R312 20K R0402

C434 NC C0402

R12 115K R0402

R14 20K R0402

C13 NC C0402

[6] EXT_EN

U5
LFW5209AB5F

IN 5
OUT 1
EN 4
GND 2
ISET 3

VCCSV0_SYS
OTG_VBUS
OTG_VBUS_PWR_EN
GPIO_A5

R19 1K R0402
C21 0.1uF 50V C0402
R21 3.4K R0402
C22 10uF 25V C0603
C23 0.1uF 50V C0402

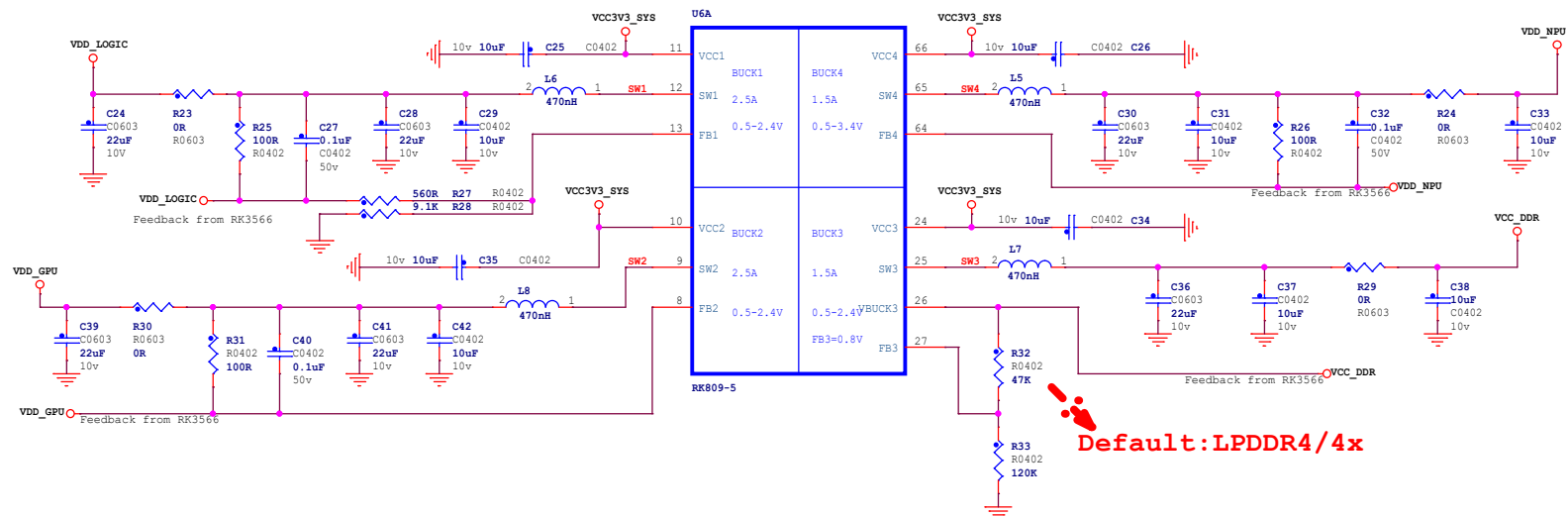
2A 熔断

[illegible][illegible]

Diagram illustrating four separate SS1, SS2, SS3, and SS4 nodes, each with an NPTH_M3 connection.

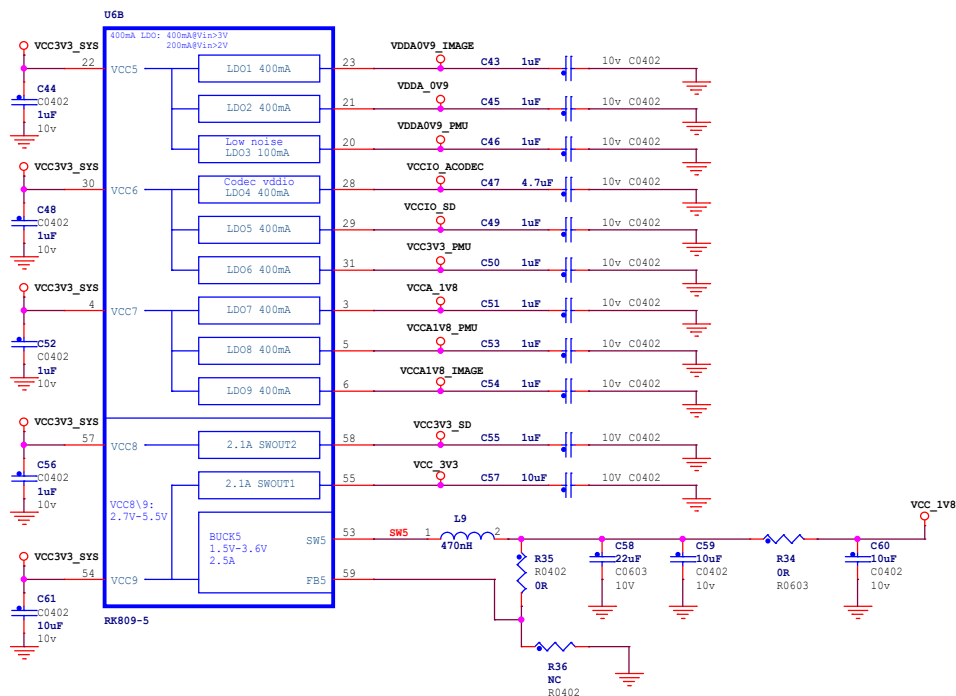
Title		
野火_RK3568 LubanCat 2 N_原理图		
Size	Document Number	Revision
A3	DC_IN/OTG_Download	V3P0
Date: Wednesday, February 26, 2025 Sheet 4 of 29		

PMIC RK809 DCDC



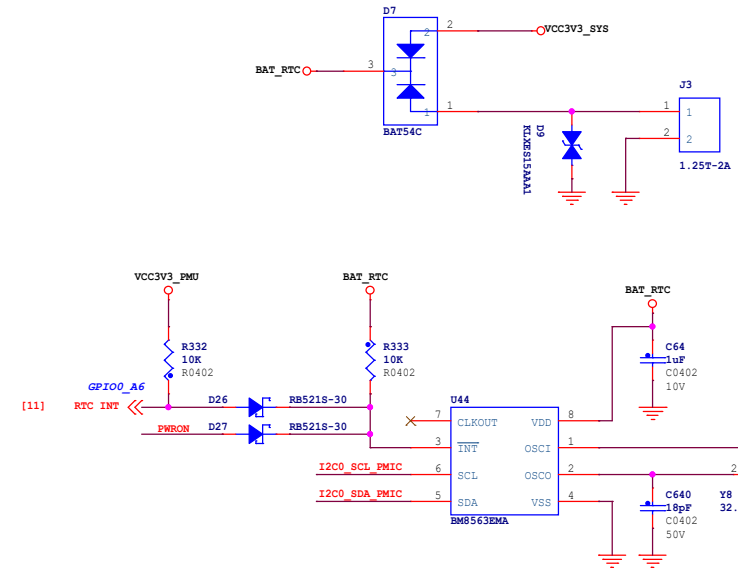
RK3566 BUCK FB

PMIC RK809 LDO



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Title	野火_RK3568 LubanCat 2 N_原理图	
Size A3	Document Number PMIC_DCDC/LDO	Rev V3R0
Date: Wednesday, February 26, 2025	Sheet 5	of 29

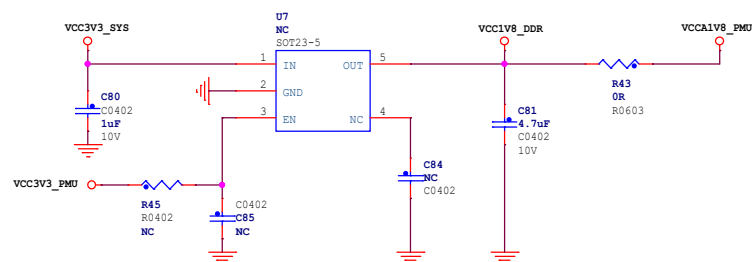
PWR_LED



PCB layout diagram of the RX809-5 module. The diagram shows the internal components of the module, including the U6D chip, various capacitors (C70, C71, C72, C73, C74, C75, C76, C77, C78, C79), and the connection points for the VCC5V0_SYS, VCC_SPK_HP, VCC_CPVDD, VCC_CPVSS, VCC_IP8D, VCC_IP8A, MCLK, BCLK, LRCLK, SDI, SDO/PDMDATA, PDMCLK, HPL_OUT, HP_SNS, HPR_OUT, SPK_OUTn, SPK_OUTp, MIC1n_INF, MIC1n_INN, MIC1n_MIC_L, and MIC1n_MIC_R. The module is labeled RX809-5.

Date: Wednesday, February 26, 2025 Sheet 6 of 29

LPDDR4_VCC1V8_DDR

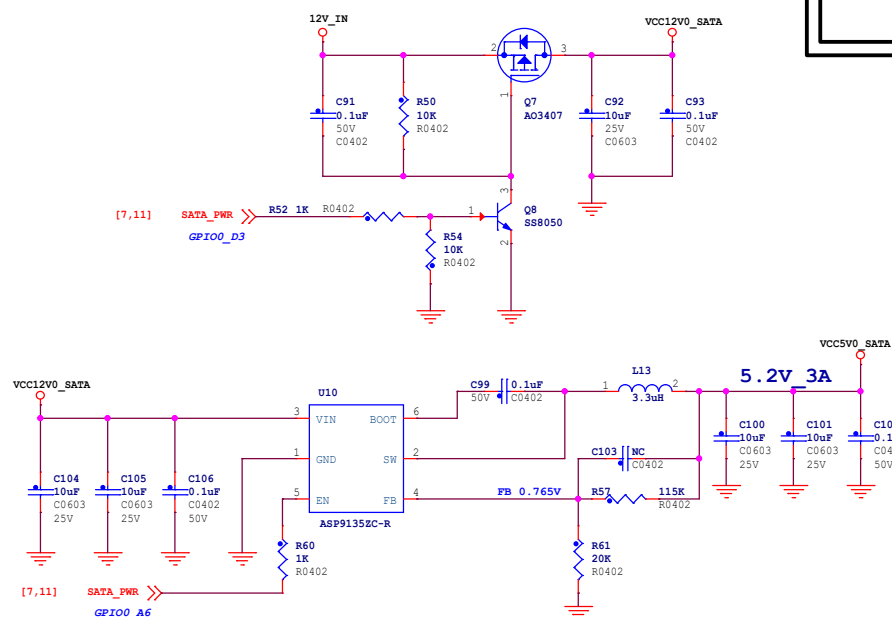


VCC5V0_SATA

VCC12V0_SATA

J4
XH-4A

1 1
2 2
3 3
4 4



VCC3V3_PMI

R44 R0402 51K

C90 C0402 0.1uF 50V

VCC5V0_SYS

C82 C0603 10uF 25V

C83 C0603 10uF 25V

U8

D1 VIN_1 SW_1

D2 VIN_2 SW_2

E1 VIN_3 SW_3

E2 VIN_4 SW_4

A2

EN

GND1

GND2

GND3

GND4

GND5

GND6

AGND

L11 470nH

R46 R0402 100R

C86 C0402 0.1uF 50V

C87 C0603 22uF 10V

C88 C0603 22uF 10V

C89 C0603 22uF 10V

VDD_CPU

VDD_CPU_COM

[6,11] PMIC_SLEEP_H

[6,11] I2C0_SDA_PMIC

[6,11] I2C0_SCL_PMIC

R47 22R

R48 22R

R49 22R

R0402

R0402

R0402

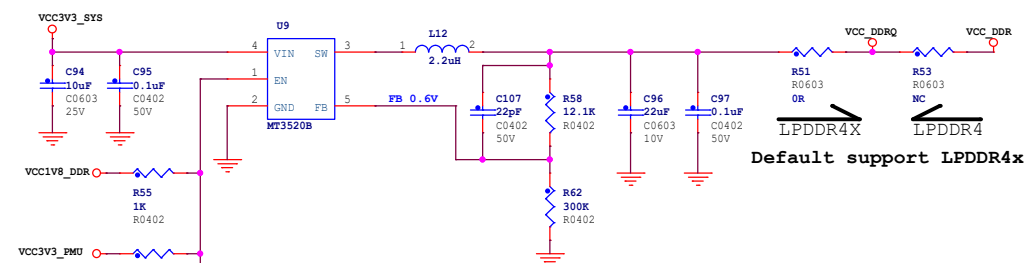
TCS4525

csn20 1r96x1r56x0r66

Feedback from RK3568

[8]

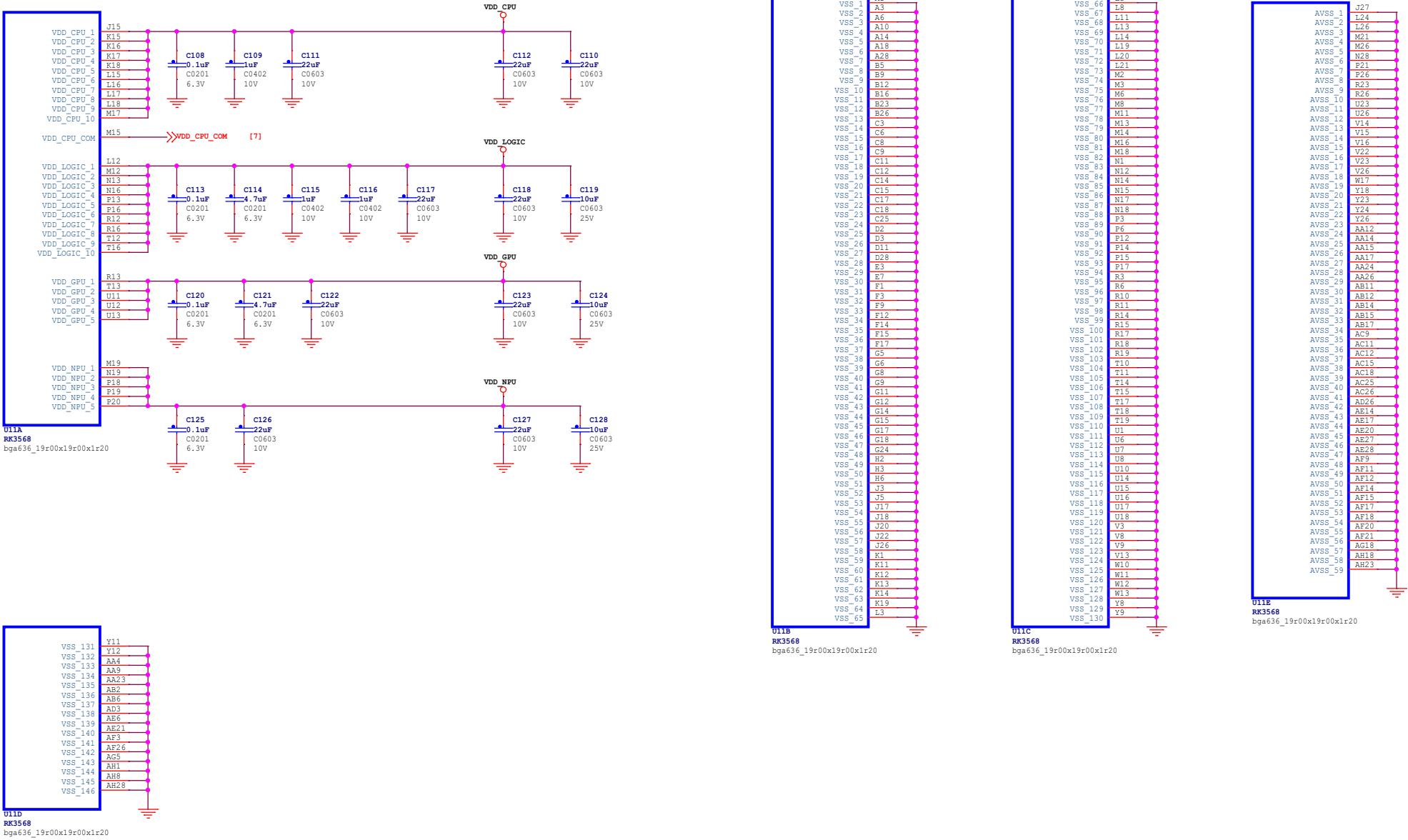
output: 0.6V



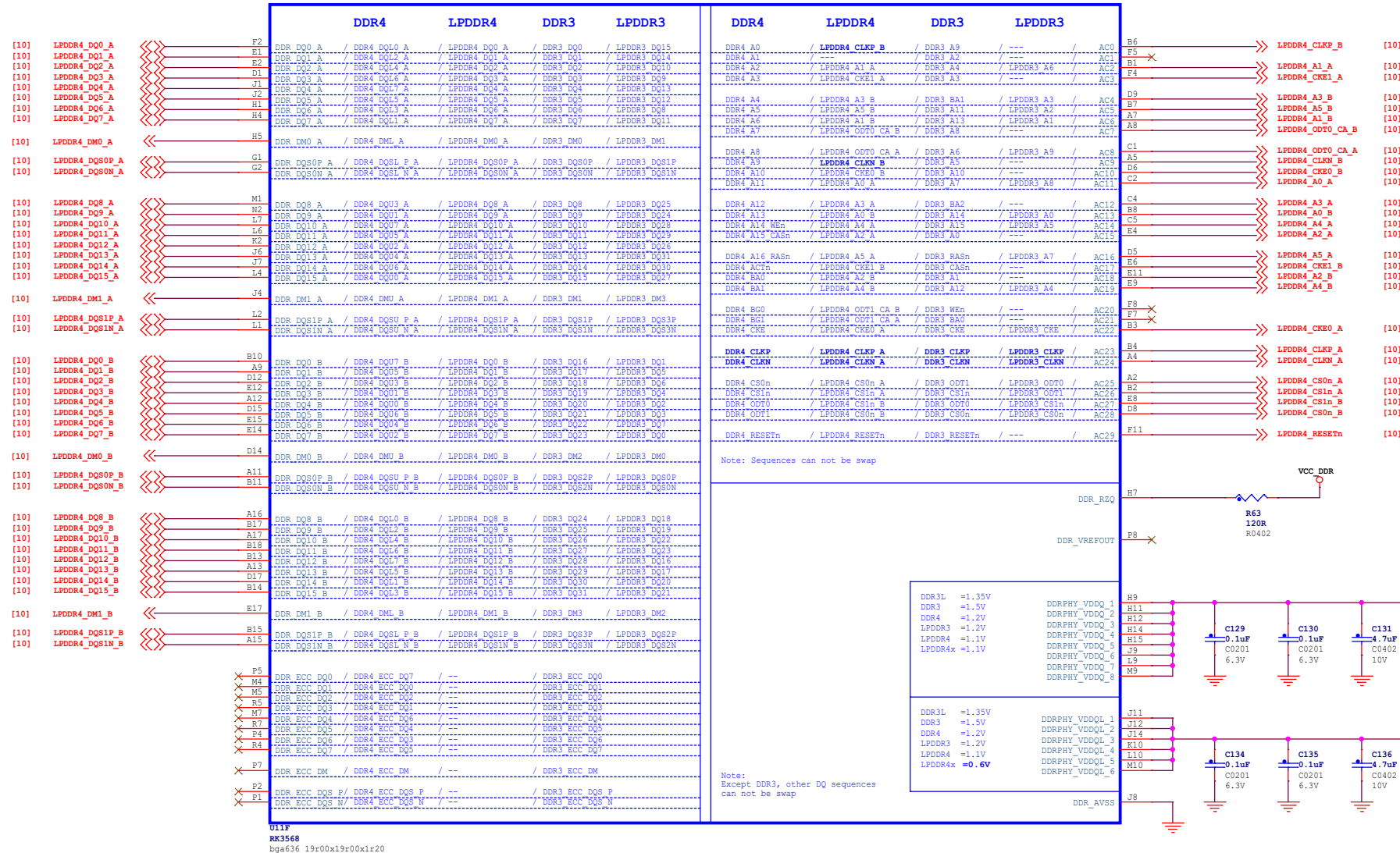
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Title		
野火_RK3568 LubanCat 2 N_原理图		
Size A3	Document Number Power_other	Rev V3R0
Date: Wednesday, February 26, 2025 Sheet 7 of 29		

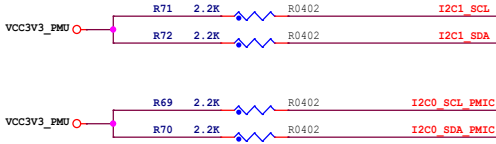
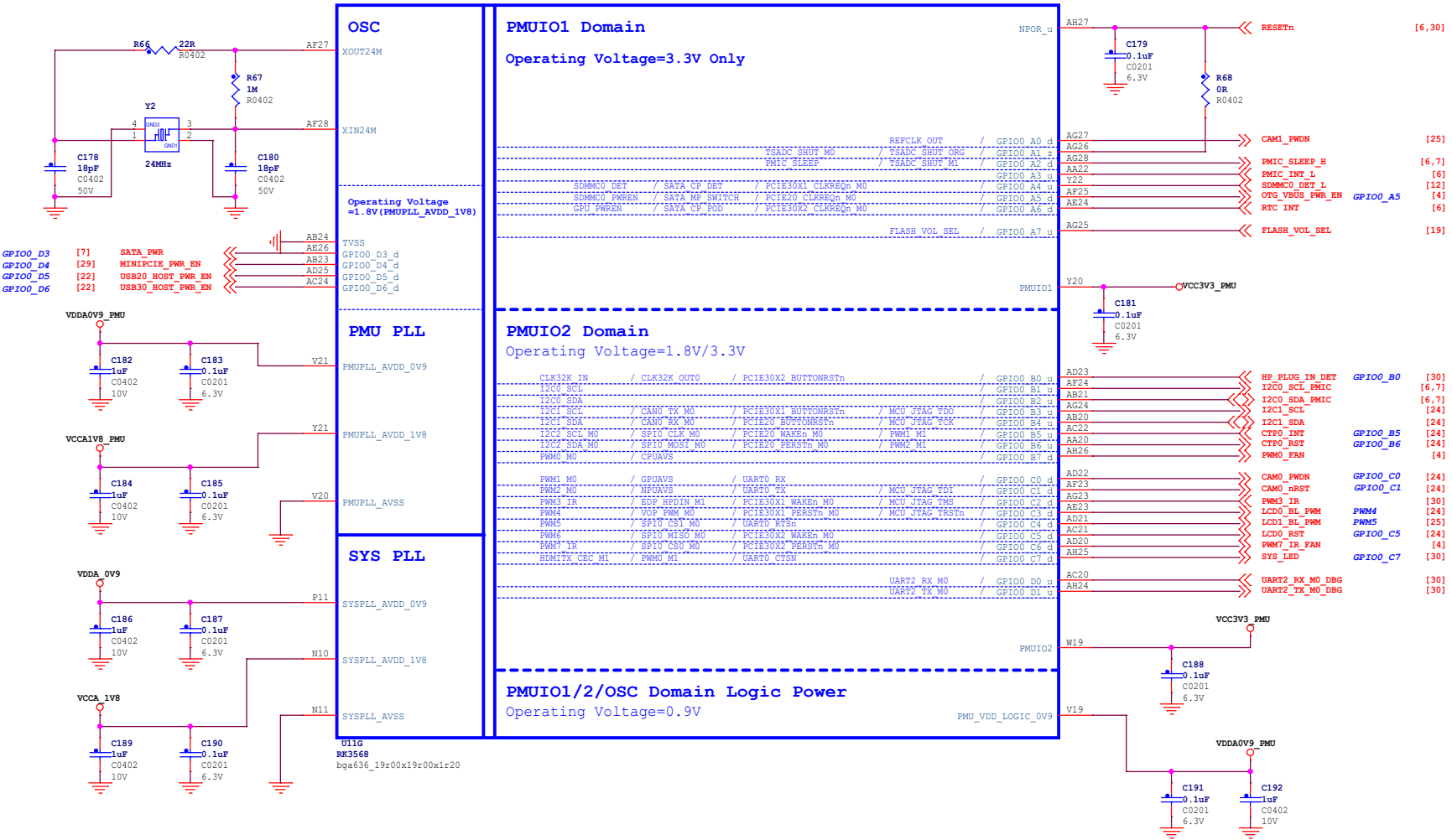
RK3568 Power/GND



RK3568 DDR PHY



RK3568 OSC/PLL/PMUIO



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Title 野火_RK3568 LubanCat 2 N_原理图		
Size A3	Document Number OSC/PLL/PMUIO	Rev V3R0
Date: Wednesday, February 26, 2023 Sheet 11 of 29		

RK3568 VCCIO2 Domain

VCCIO2 Domain

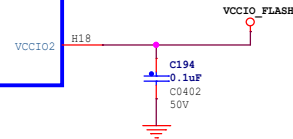
Operating Voltage=1.8V/3.3V

EMMC D0	/ FLASH D0	/ GPIO1 B4 u	A24	EMMC D0	[19]
EMMC D1	/ FLASH D1	/ GPIO1 B5 u	C21	EMMC D1	[19]
EMMC D2	/ FLASH D2	/ GPIO1 B6 u	B24	EMMC D2	[19]
EMMC D3	/ FLASH D3	/ GPIO1 B7 u	D21	EMMC D3	[19]
EMMC D4	/ FLASH D4	/ GPIO1 C0 u	A25	EMMC D4	[19]
EMMC D5	/ FLASH D5	/ GPIO1 C1 u	E21	EMMC D5	[19]
EMMC D6	/ FLASH D6	/ GPIO1 C2 u	E22	EMMC D6	[19]
EMMC D7	/ FLASH D7	/ GPIO1 C3 u	B25	EMMC D7	[19]
EMMC CMD	/ FLASH WRn	/ GPIO1 C4 u	B22	EMMC_CMD	[19]
EMMC CLKOUT	/ FLASH DQS	/ GPIO1 C5 d	A23	EMMC_CLK	[19]
EMMC DATA STROBE	/ FSPI CSIn	/ FLASH CLE	A26	EMMC_STRB	[19]
EMMC RSTn	/ FSPI D2	/ FLASH WPh	F20	EMMC_RST	[19]
FSPI CLK	/ FLASH ALE	/ GPIO1 D0 d	A22		
FSPI D0	/ FLASH RDY	/ GPIO1 D1 u	C24		
FSPI D1	/ FLASH RDn	/ GPIO1 D2 u	D23		
FSPI CSOut	/ FLASH CSOut	/ GPIO1 D3 u	C23		
FSPI D3	/ FLASH CSIn	/ GPIO1 D4 u	A27		

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

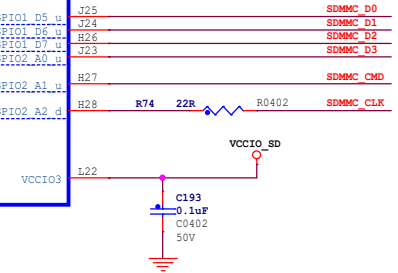
VCCIO3 Domain

Operating Voltage=1.8V/3.3V

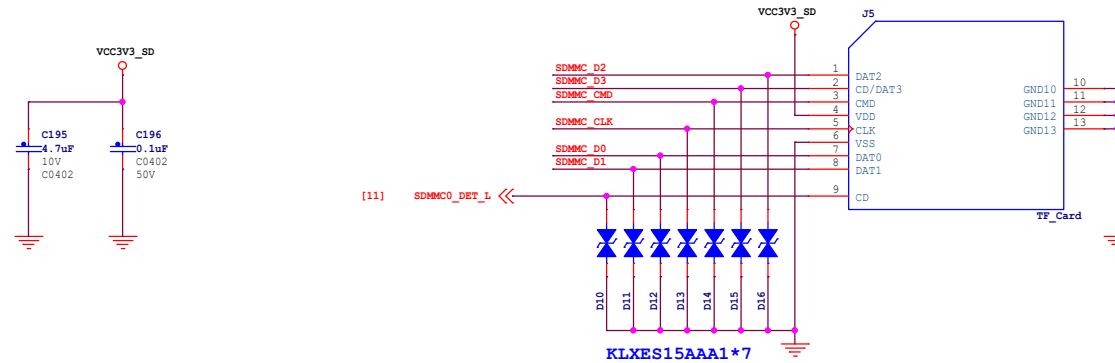
SDMMC0 D0	/ UART2 TX M1	/ UART6 TX M1	/ PWM8 M1	/ GPIO1 D5 u	J25	SDMMC D0
SDMMC0 D1	/ UART2 RX M1	/ UART6 RX M1	/ PWM8 M1	/ GPIO1 D6 u	J24	SDMMC D1
SDMMC0 D2	/ ARMUTAG_TCK	/ UART5 CSBn M0	/ GPIO1 D7 u	/ GPIO1 D7 u	H26	SDMMC D2
SDMMC0 D3	/ ARMUTAG_TMS	/ UART5 RSTn M0	/ GPIO2 A0 u	/ GPIO2 A0 u	J23	SDMMC D3
SDMMC0 CMD	/ PWM10 M1	/ UART5 RX M0	/ CAN0 TX M1	/ GPIO2 A1 u	H27	SDMMC_CMD
SDMMC0 CLK	/ TEST CLKOUT	/ UART5 TX M0	/ CAN0 RX M1	/ GPIO2 A2 d	H28	SDMMC_CLK

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		
Size A3	Document Number Flash/SD Controller	Rev V3R0
Date: Wednesday, February 26, 2022 Sheet 12 of 29		

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

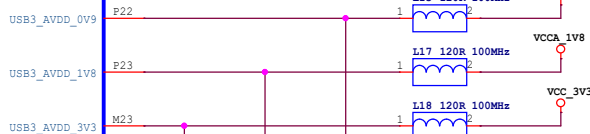
USB3.0 OTG0_HS/FS/LS (USB Download)



USB3.0 HOST1_HS/FS/LS

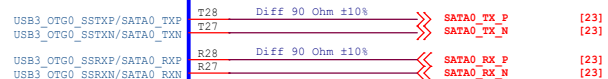


USB3.0 OTG0/HOST1_ HS/FS/LS Power

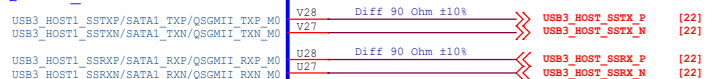


MULTI_PHY0/1/2

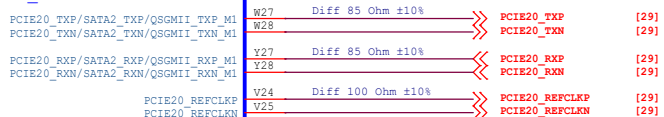
USB3.0 OTG0_SS and SATA0 Mux



USB3.0 HOST1_SS and SATA1 and QSGMII_M0 Mux



PCIe2.0 and SATA2 and QSGMII_M1 Mux



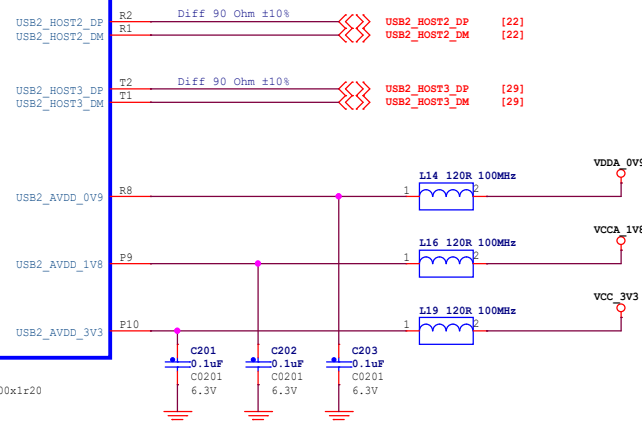
MULTI_PHY REFCLK



U110
RK3568
bga636_19r00x19r00x1r20

RK3568 USB2.0 HOST

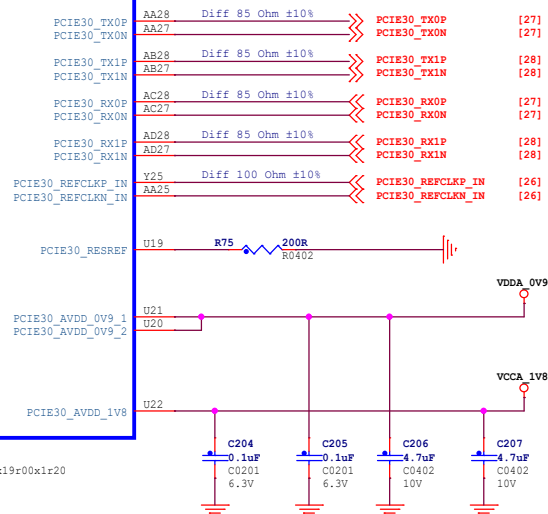
USB2.0 HOST



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

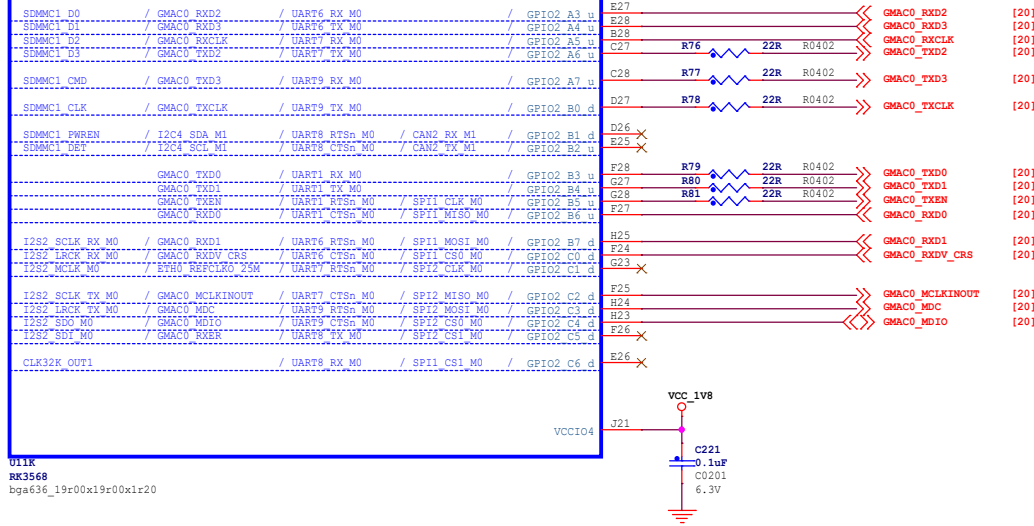
Size A3 Document Number USB/PCIe/STAT PHY Rev V3R0

Date: Wednesday, February 26, 2024 Sheet 13 of 29

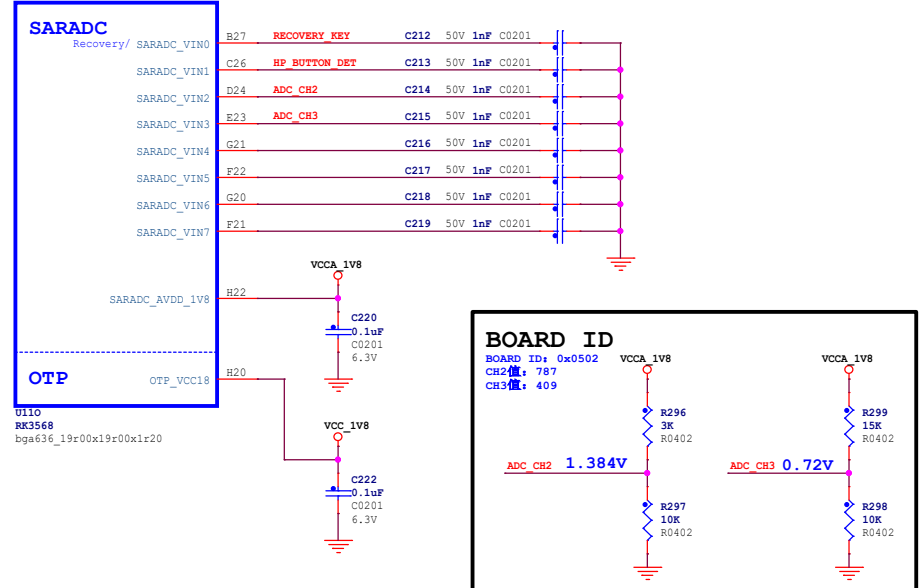
RK3568 VCCIO4 Domain

VCCIO4 Domain

Operating Voltage=1.8V/3.3V



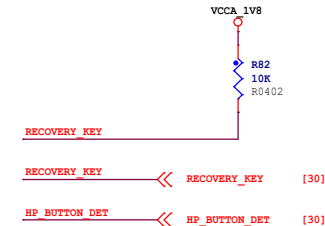
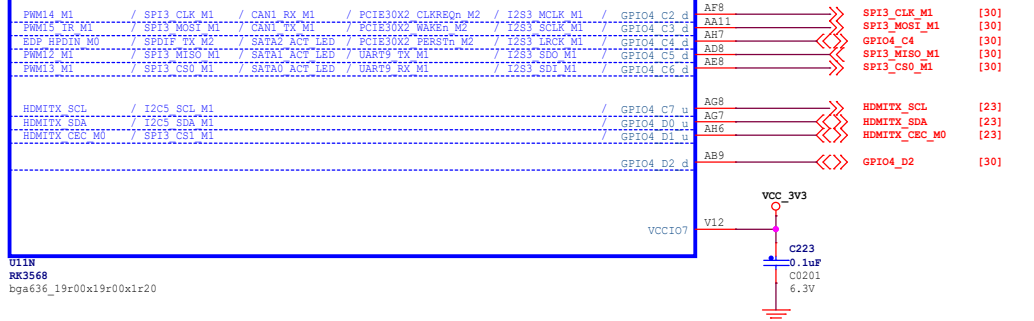
RK3568 SARADC/OTP



RK3568 VCCIO7 Domain

VCCIO7 Domain

Operating Voltage=1.8V/3.3V

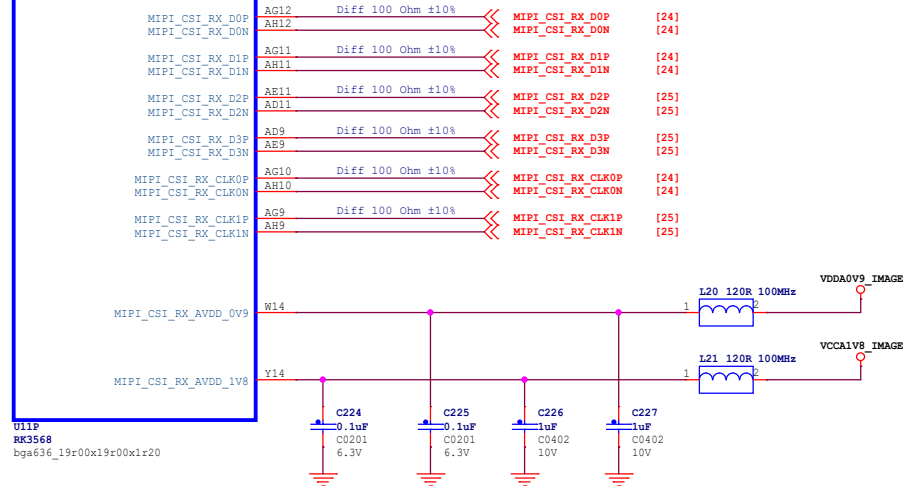


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Title		
野火_RK3568 LubanCat 2 N_原理图		
Size	Document Number	Rev
A3	SARADC/GPIO	V3R0
Date: Wednesday, February 26, 2024 Sheet 14 of 29		

RK3568 MIPI_CSI_RX

MIPI CSI RX

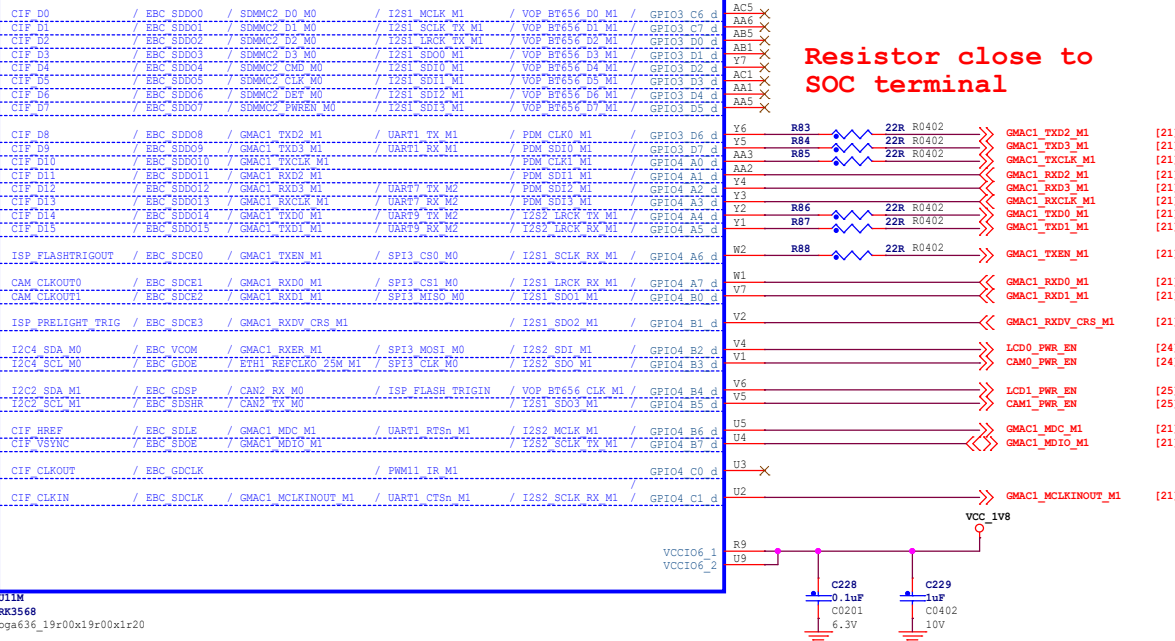


Option1	Sensor1 x4Lane	MIPI_CSI_RX_D0-3 MIPI_CSI_RX_CLK0
Option2	Sensor1 x2Lane	MIPI_CSI_RX_D0-1 MIPI_CSI_RX_CLK0
	+ Sensor2 x2Lane	MIPI_CSI_RX_D2-3 MIPI_CSI_RX_CLK1

RK3568 VCCIO6 Domain

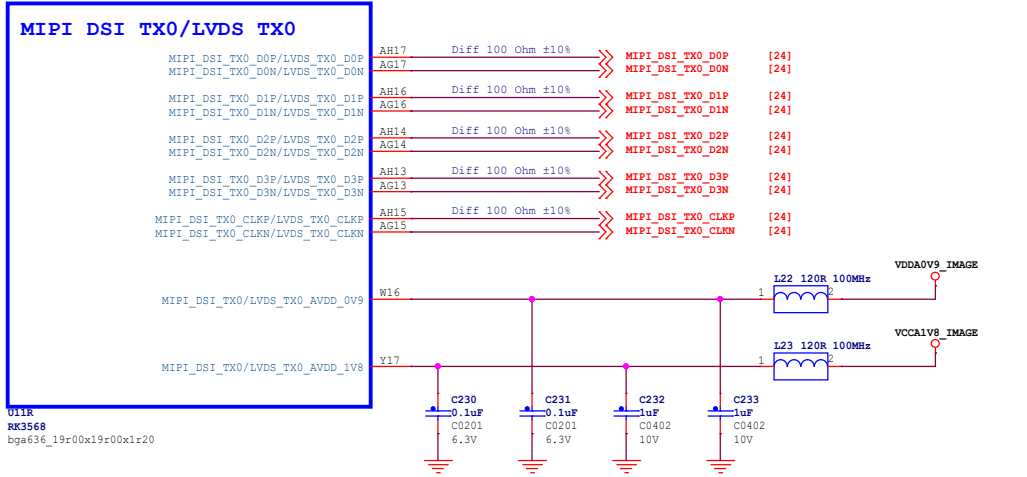
VCCIO6 Domain

Operating Voltage=1.8V/3.3V

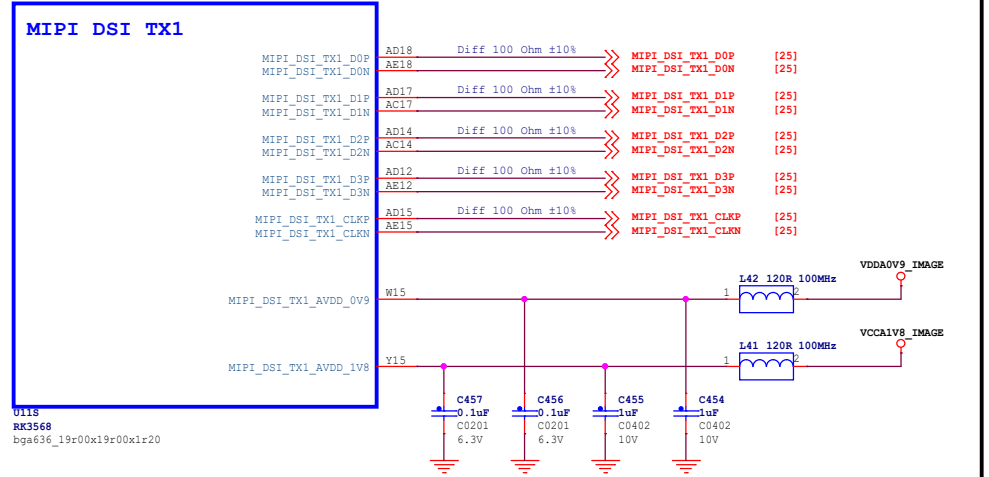


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Title 野火_RK3568 Iubancat 2 N_原理图		
Size A3	Document Number VI Interface	Rev V3R0
Date: Wednesday, February 26, 2023 Sheet 15 of 29		

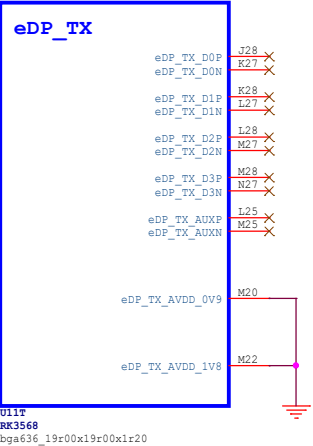
RK3568 MIPI_DSI_TX0/LVDS_TX0



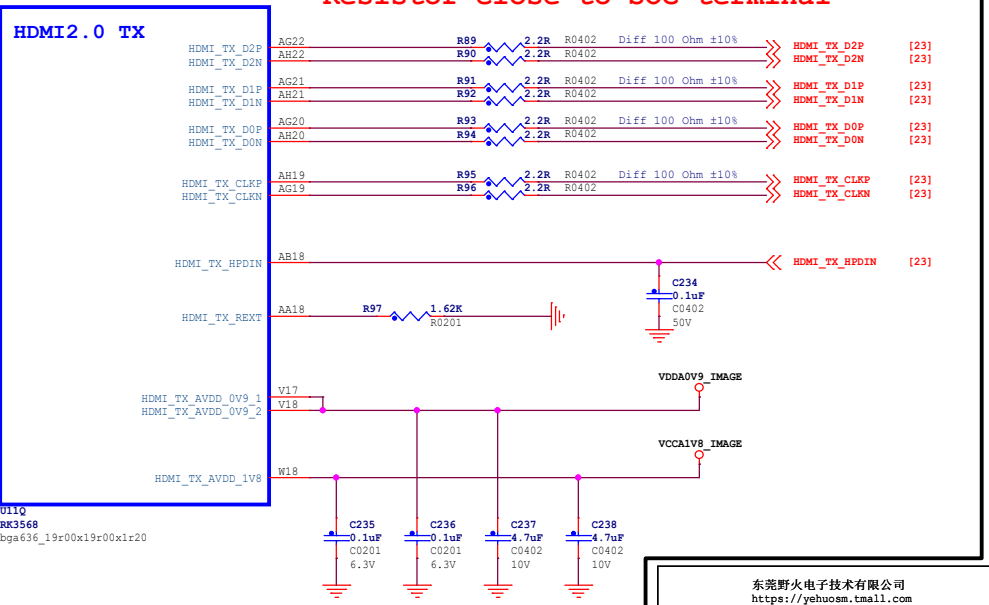
RK3568 MIPI_DSI_TX1



RK3568 eDP TX

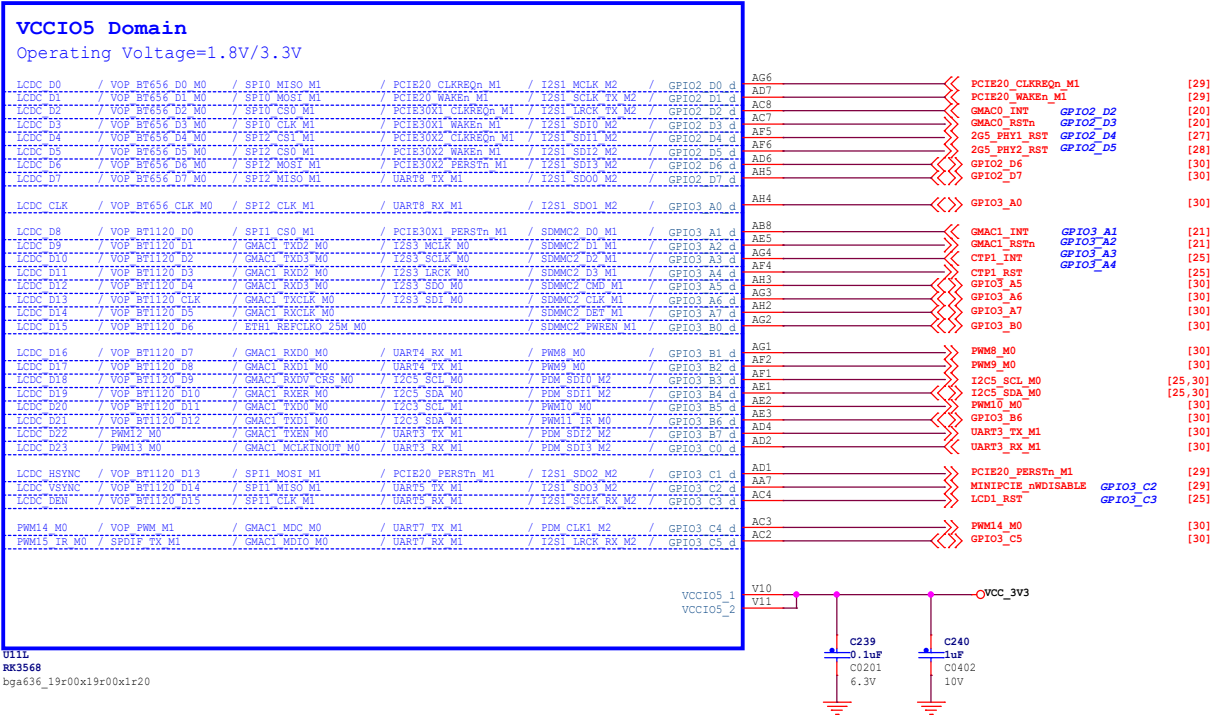


RK3568 HDMI2.0 TX

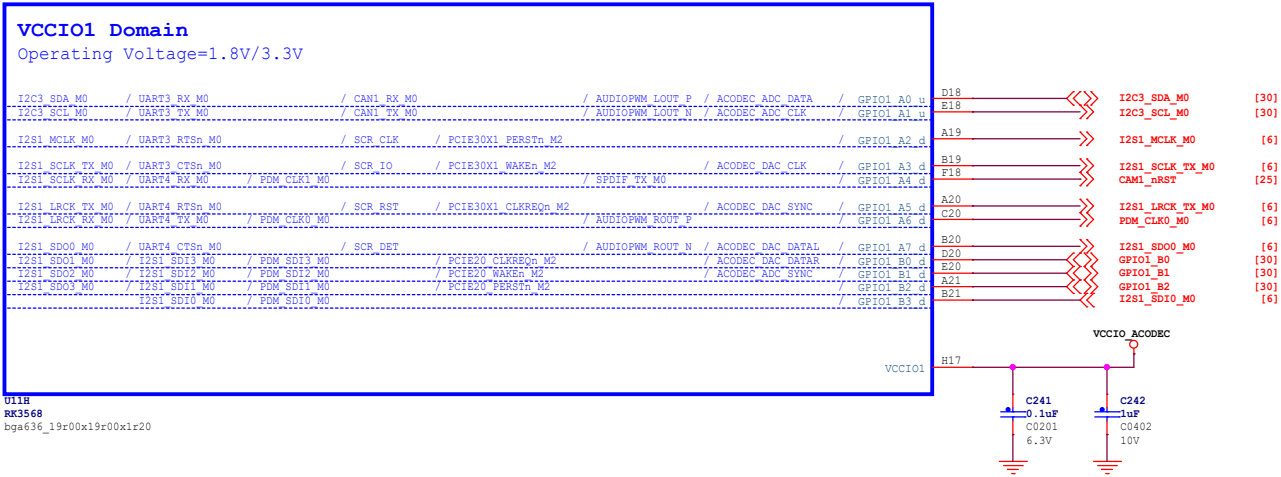


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Title 野火_RK3568 LubanCat 2 N_原理图		
Size A3	Document Number VO Interface_1	Rev V3R0
Date: Wednesday, February 26, 2023 Sheet 16 of 29		

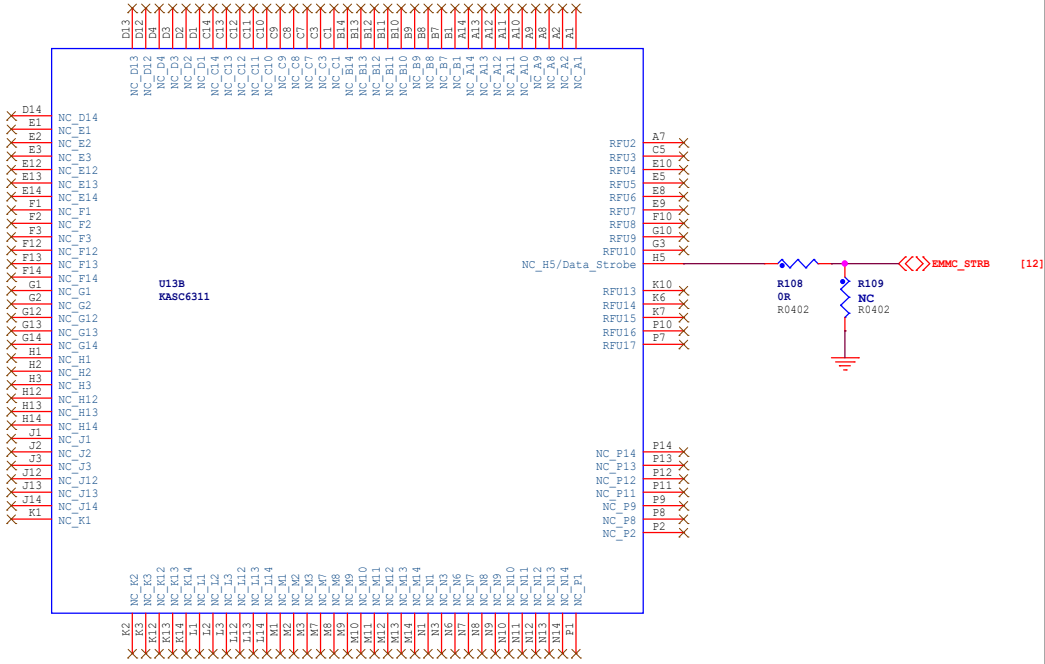
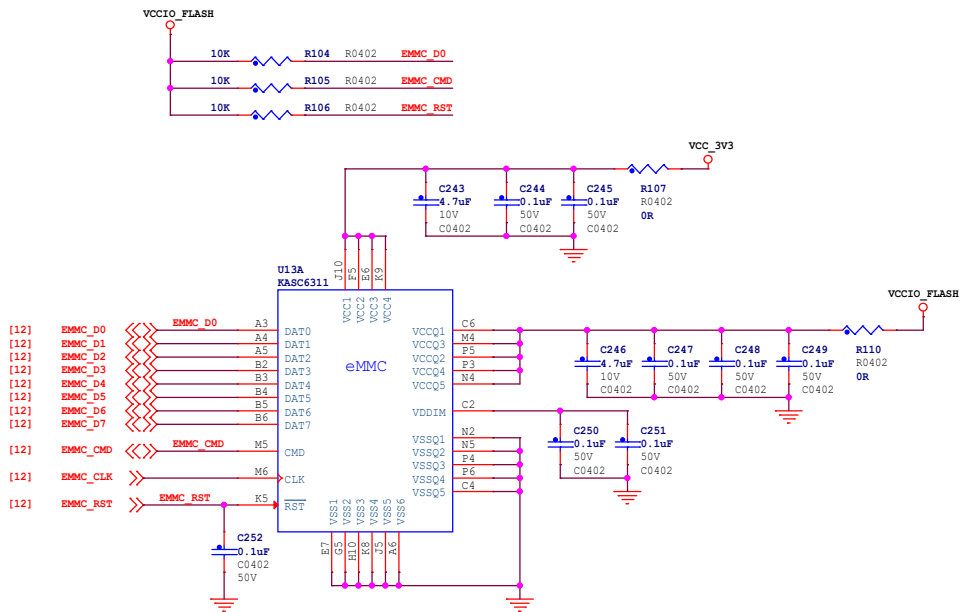
RK3568 VCCIO5 Domain



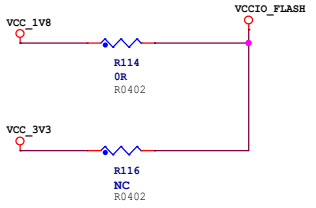
RK3568 VCCIO1 Domain



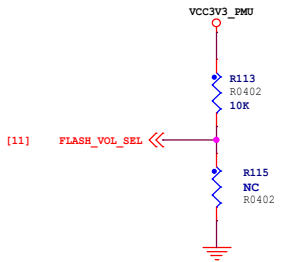
EMMC FLASH



EMMC_IO_Toggle



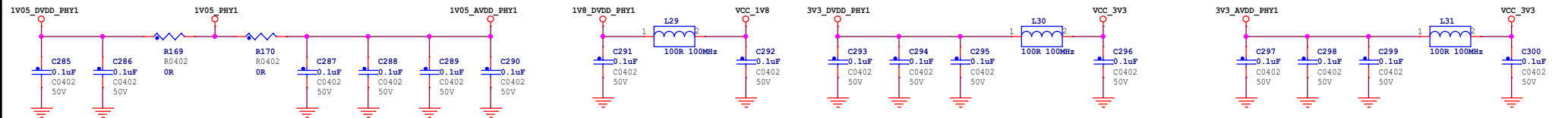
FLASH_VOL_SEL



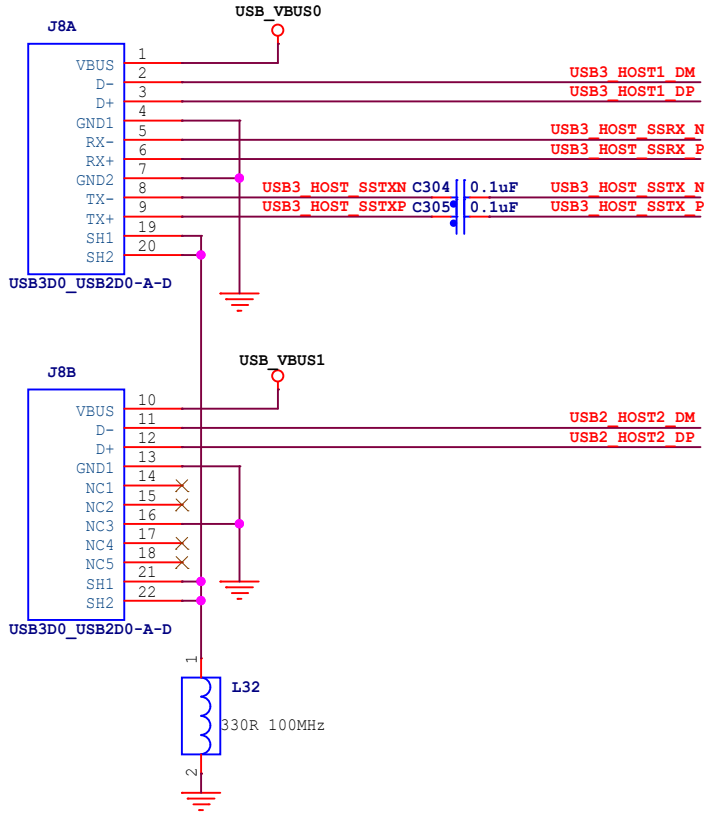
Note:
FLASH_VOL_SEL state decided
to VCCIO2 domain IO driven by default
Logic=L: 3.3V IO driven
Logic=H: 1.8V IO driven

Title		
野火_RK3568 IubanCat 2 N_原理图		
Size	Document Number	Rev
A3	EMMC_FLASH	V3R0
Date: Wednesday, February 26, 2023		
Sheet 19		of 29

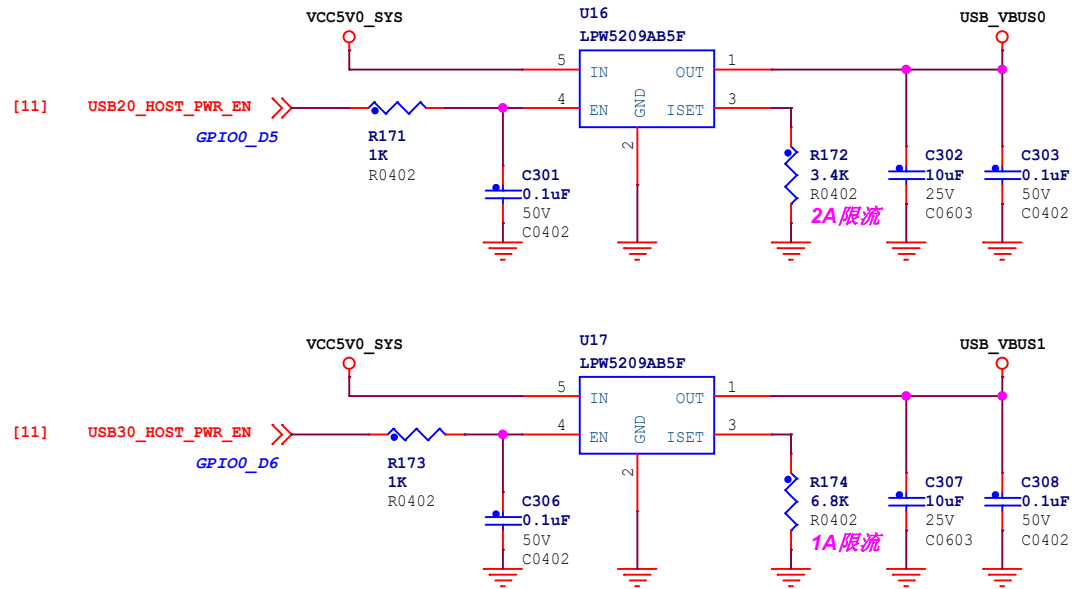
PHY Address : 010



USB 3.0 HOST x1
USB 2.0 HOST x1

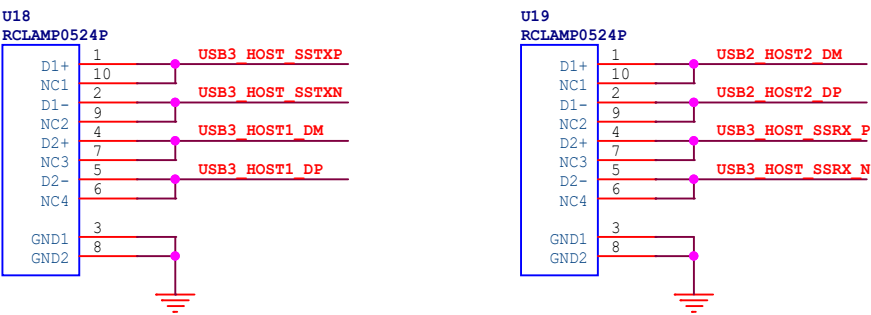


USB POWER



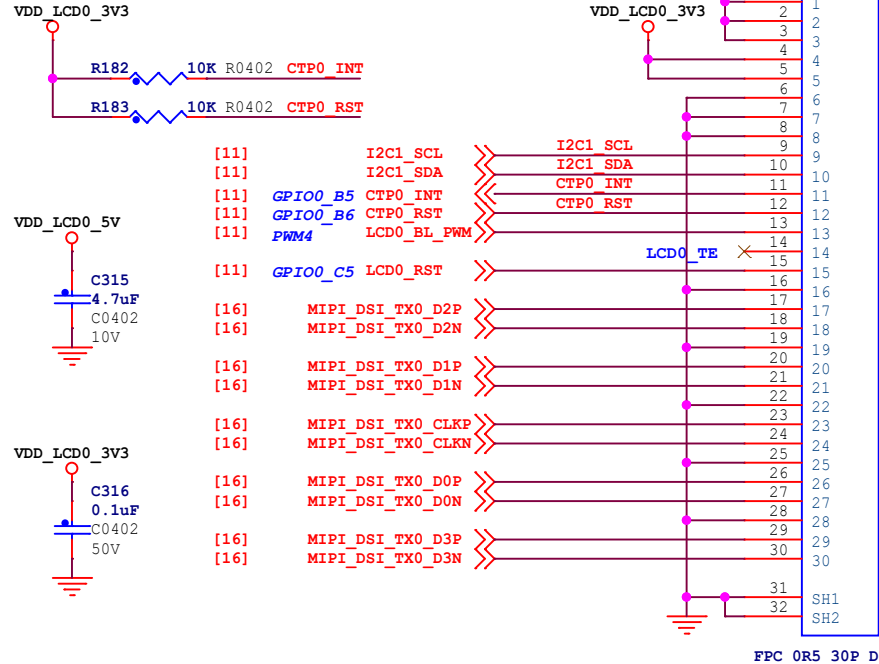
USB3_HOST1_DM	>>	USB3_HOST1_DM	[13]
USB3_HOST1_DP	>>	USB3_HOST1_DP	[13]
USB2_HOST2_DM	>>	USB2_HOST2_DM	[13]
USB2_HOST2_DP	>>	USB2_HOST2_DP	[13]
USB3_HOST_SSRX_N	>>	USB3_HOST_SSRX_N	[13]
USB3_HOST_SSRX_P	>>	USB3_HOST_SSRX_P	[13]
USB3_HOST_SSTX_N	>>	USB3_HOST_SSTX_N	[13]
USB3_HOST_SSTX_P	>>	USB3_HOST_SSTX_P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

ESD

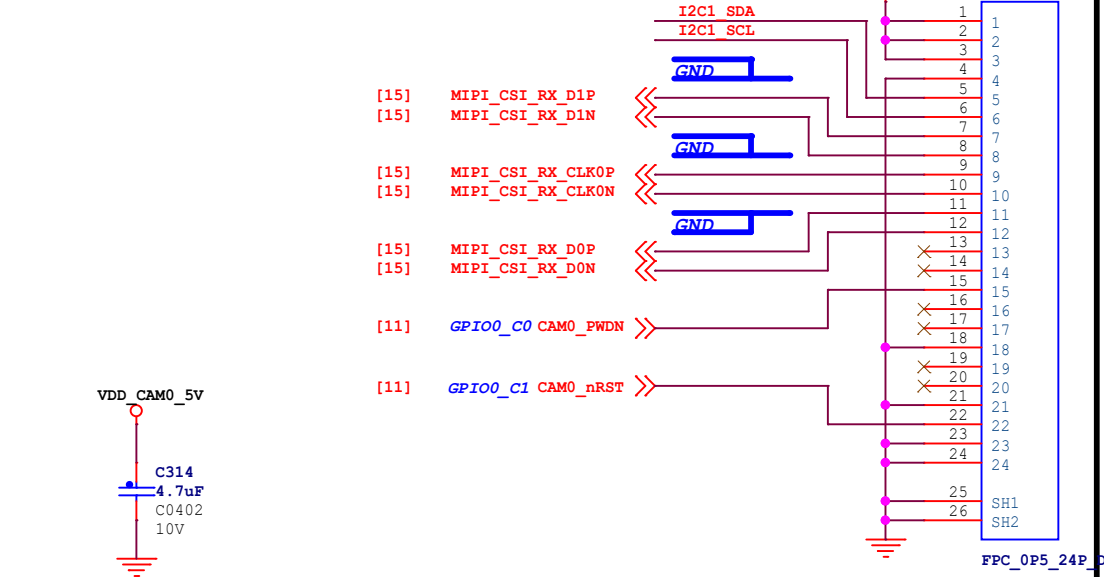


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Title 野火_RK3568 LubanCat 2 N_原理图		
Size A4	Document Number USB_PORT	Rev V3R0
Date: Wednesday, February 26, 2025 Sheet 22 of 29		

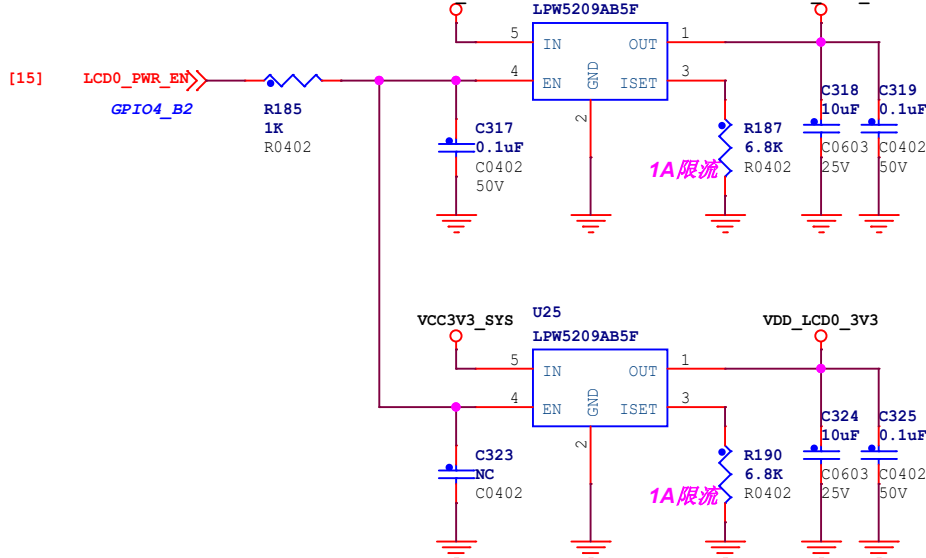
MIPI DSI LCD PORT 0



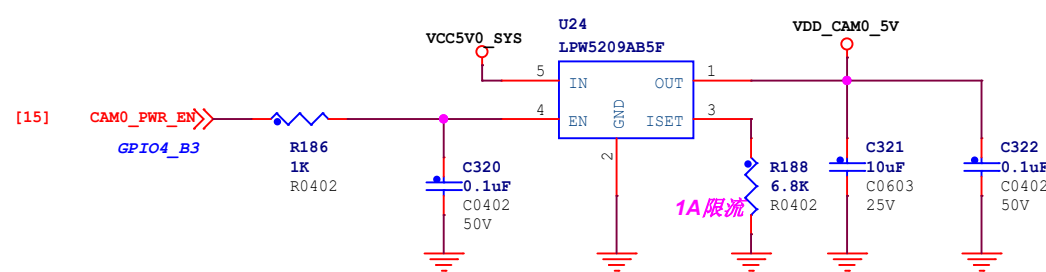
MIPI CSI PORT 0



LCD Power



MIPI CSI Power



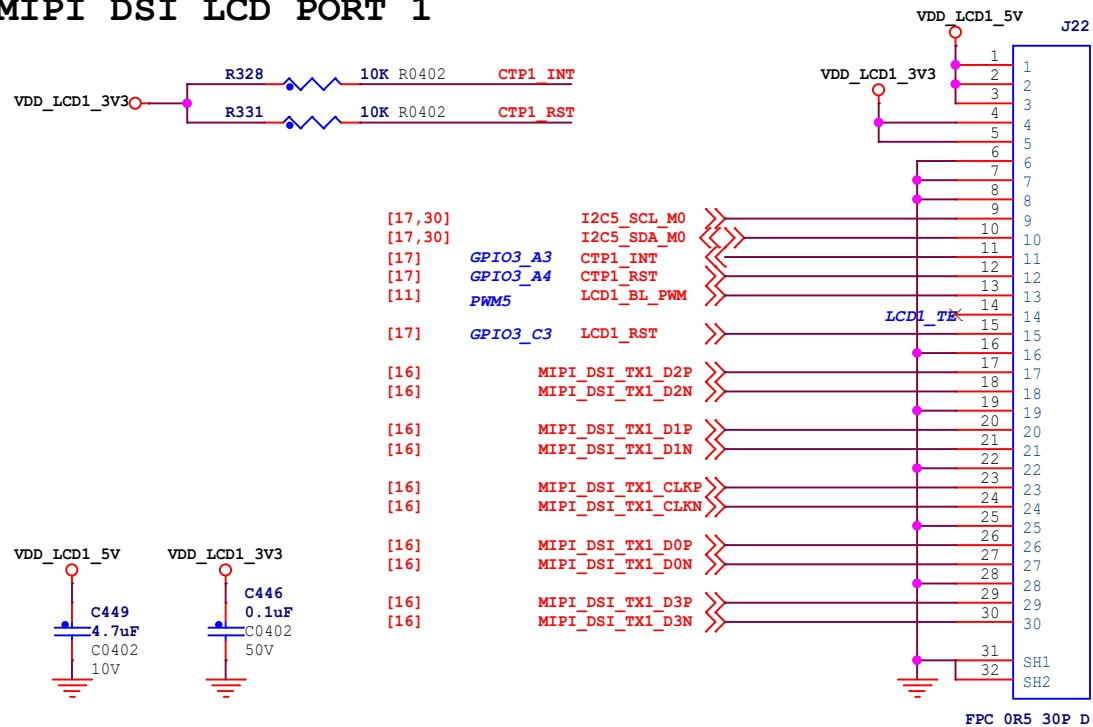
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Title: 野火_RK3568 LubanCat 2 N_原理图

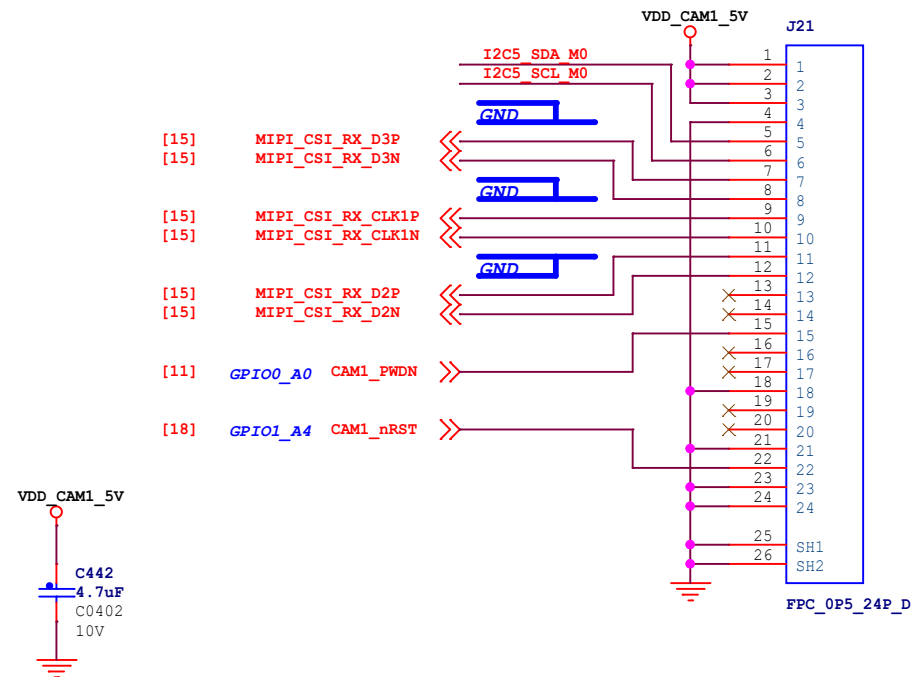
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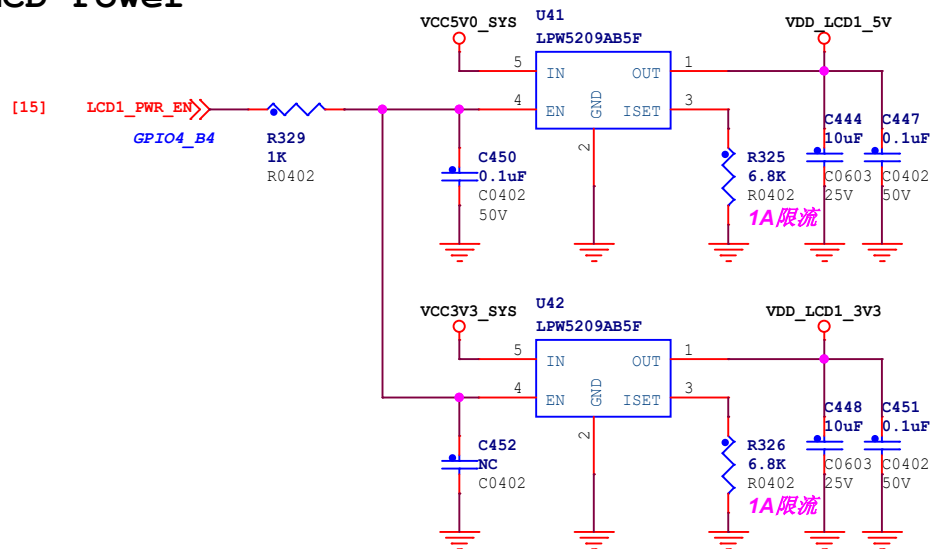
MIPI DSI LCD PORT 1



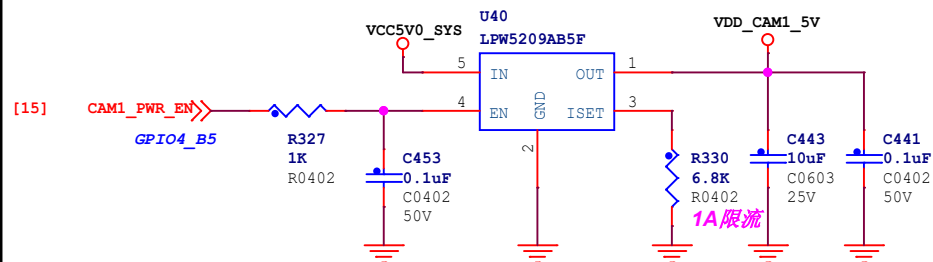
MIPI CSI PORT 1



LCD Power



MIPI CSI Power



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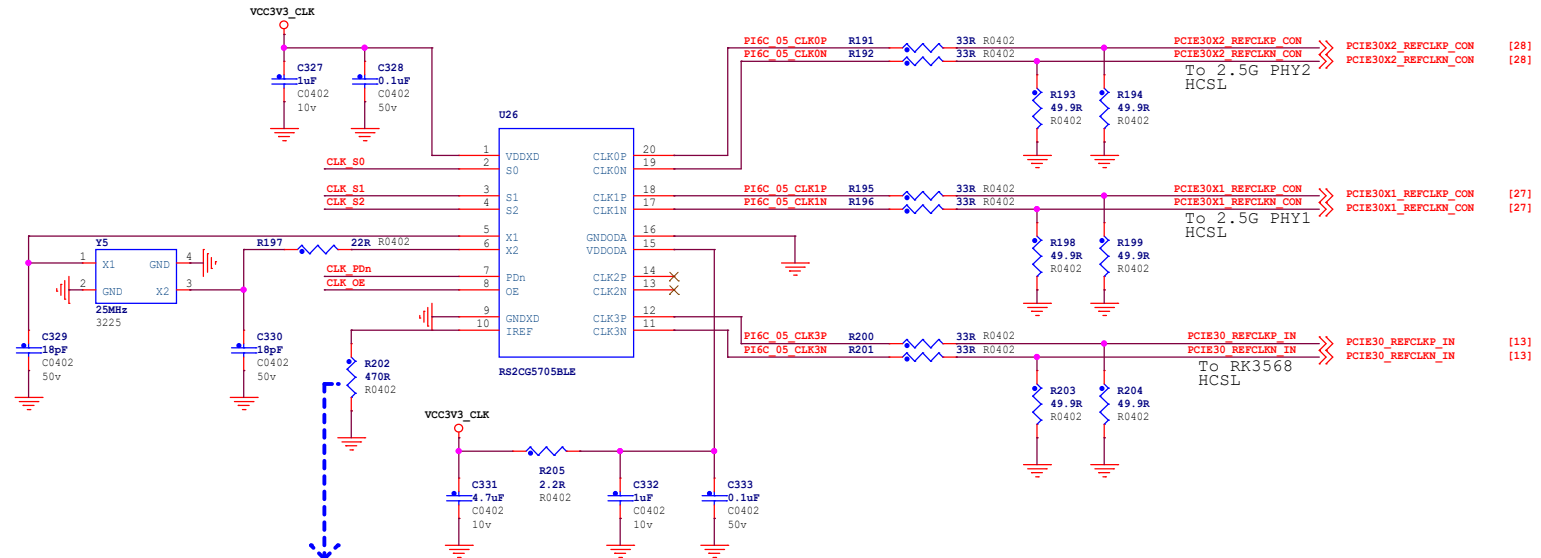
Title 野火_RK3568 LubanCat 2 N_原理图

Size A4 Document Number MIPI DSI/MIPI CSI_PORT Rev V3R0

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PCIE3.0_ REFCLK

CLK*3 @100MHz



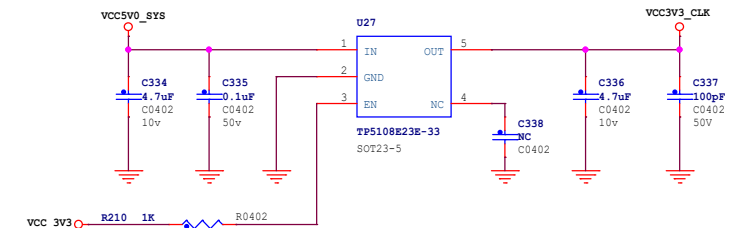
If board target trace impedance is 50ohm
then $R = 475\text{ohm}$ providing an IREF of 2.32 mA . The output current (IOH) is $6 * \text{IREF}$.
 $6 \times 2.32 \times 50 = 696\text{mV}$

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

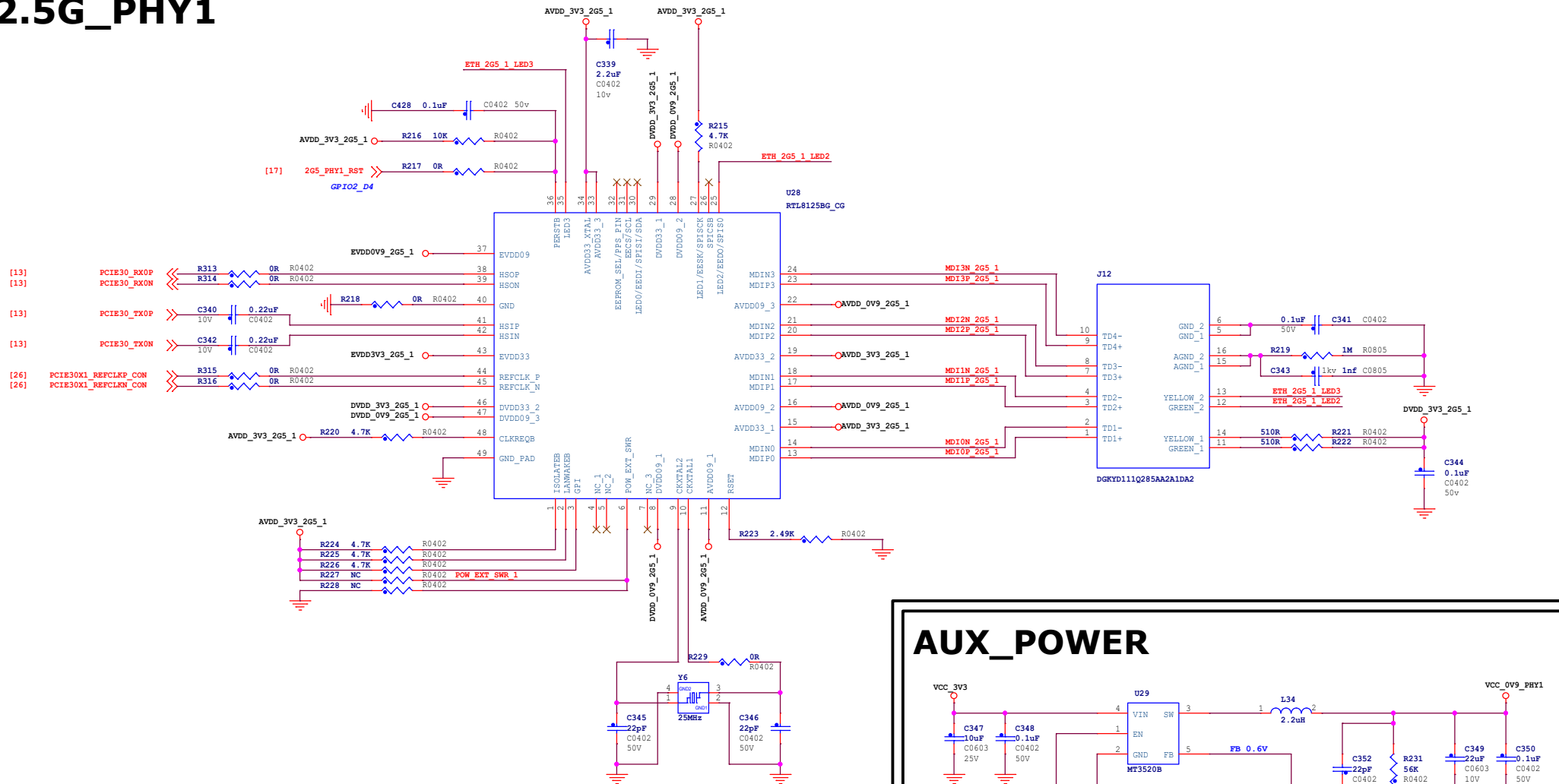
SPLIT_CLK_POWER



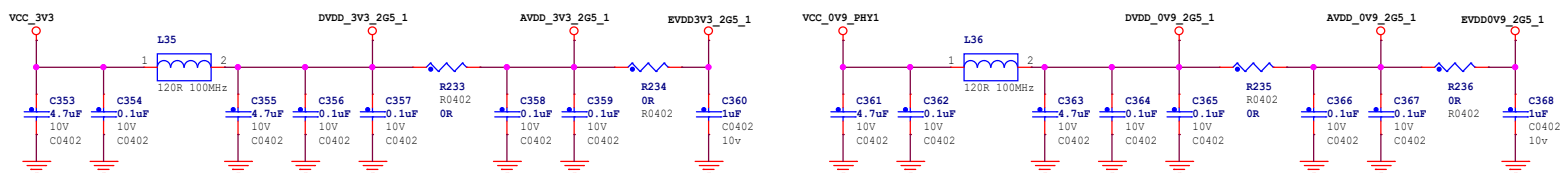
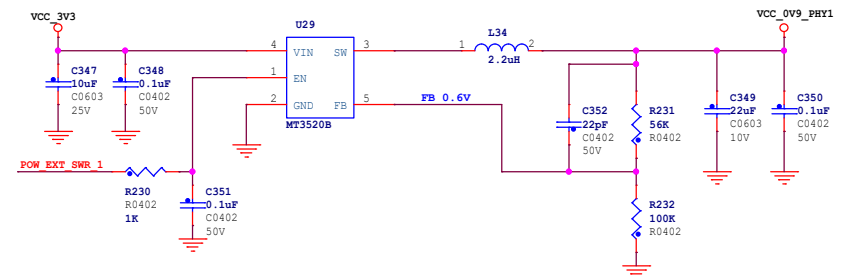
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Size A3	Document Number PCIE3.0_ REFCLK	Rev V3R0
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2.5G_PHY1



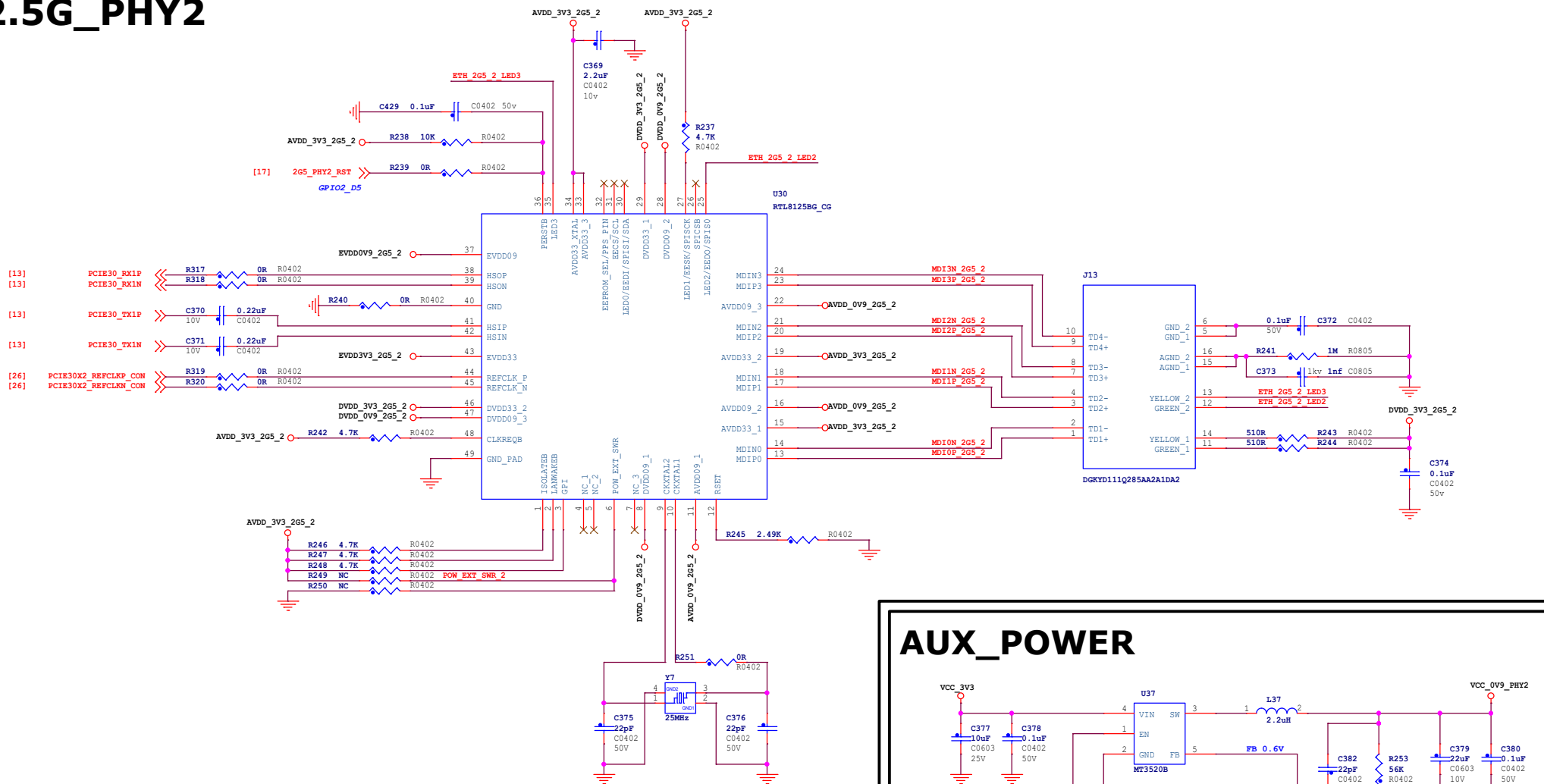
AUX_POWER



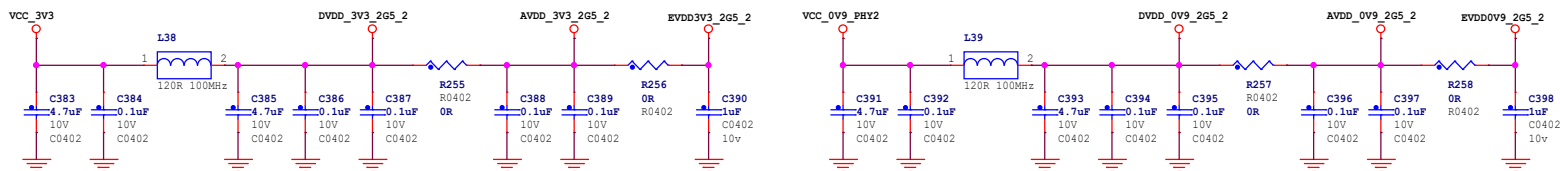
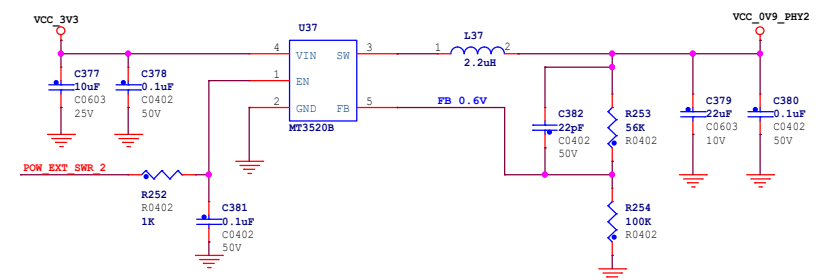
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Title		
野火_RK3568 LubanCat 2 N_原理图		
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2.5G_PHY2



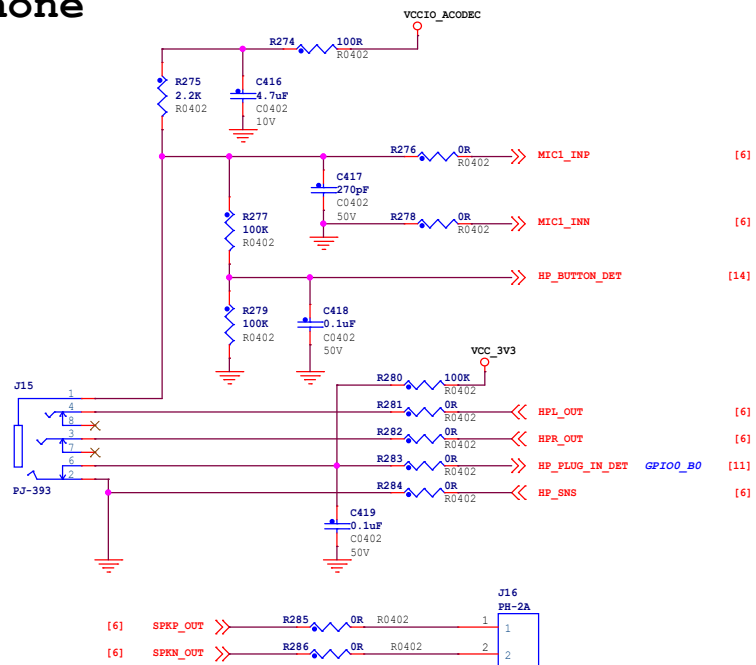
AUX_POWER



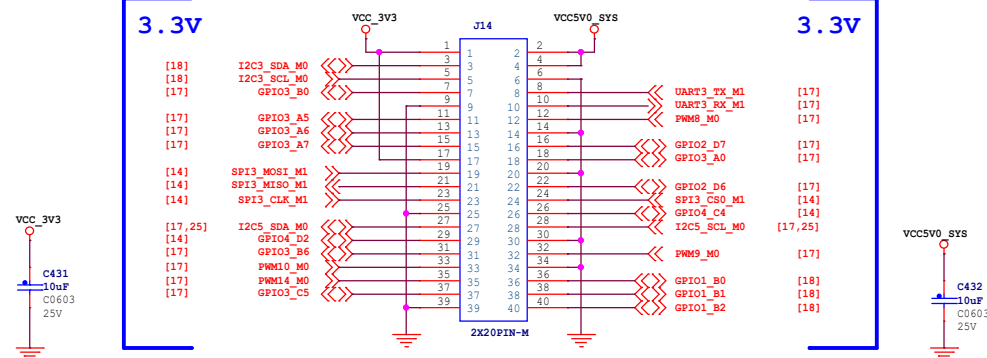
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Title		
野火_RK3568 LubanCat 2 N_原理图		
Size A3	Document Number 2.5G_PHY2	Rev V3R0
Date: Wednesday, February 26, 2023 Sheet 28 of 30		

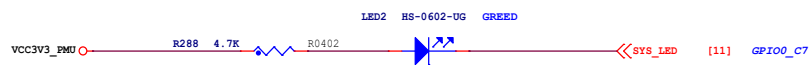
Earphone



IO PORT

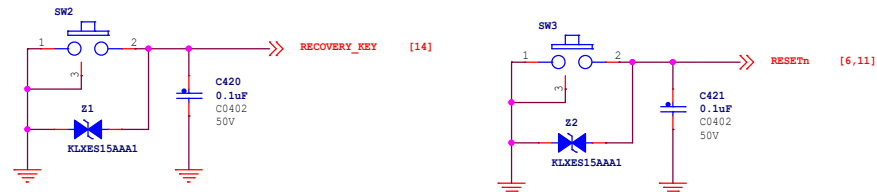


LED

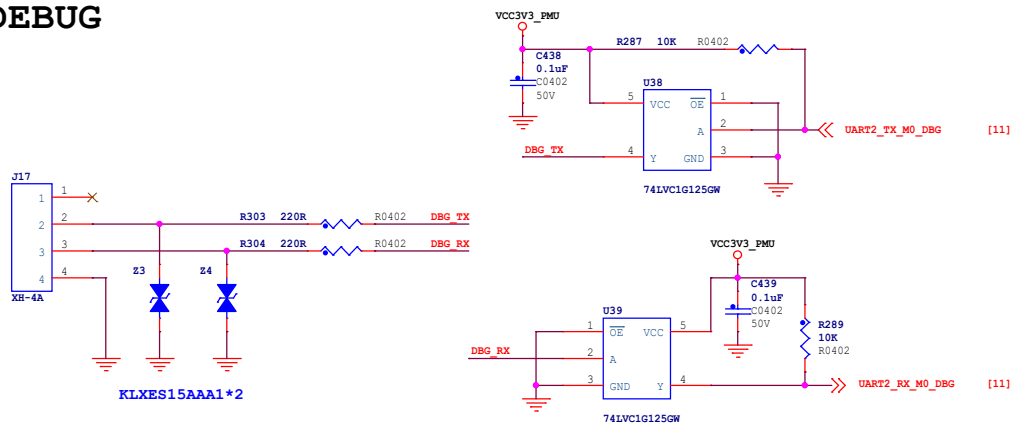


RECOVERY KEY

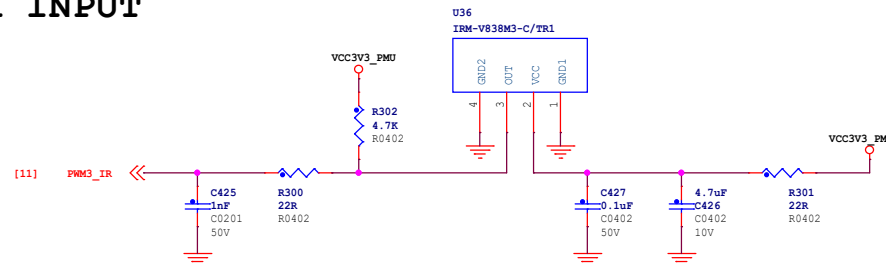
RESET KEY



DEBUG



IR INPUT



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Title		
野火_RK3568 LubanCat 2 N_原理图		
Size	Document Number	Rev
A3	Earphone/DEBUG/IO_PORT/LED	V3R0
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