

# EVB Schematic For RK3399Pro

**RK3399Pro\_EVB\_V1.0**

PMIC: RK809-3 (5BUCK + 9LDO + Codec)  
RAM: LPDDR3  
ROM: eMMC + TF card  
Interface: MIPI CSI/MIPI DSI/UART/I2S/RMII/LCDC/PCIE/USB2/TYPED

# Index

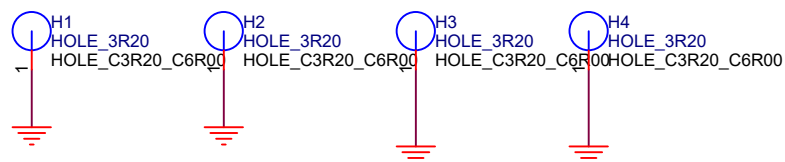
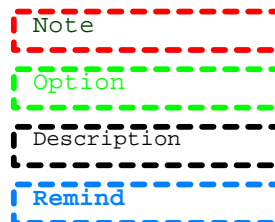
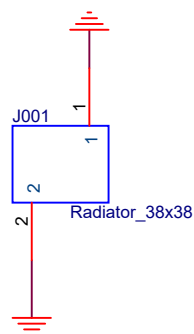
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## Note

### NOTE 1: Component parameter description

1. DNP stands for component not mounted temporarily
2. If Value or option is DNP, which means the area is reserved without being mounted
3. If Flash is compatible, please notice when eMMC is used, the option is that @eMMC is mounted, @Nand is not mounted when Nand is used, the option is that @Nand is mounted, @eMMC is not mounted

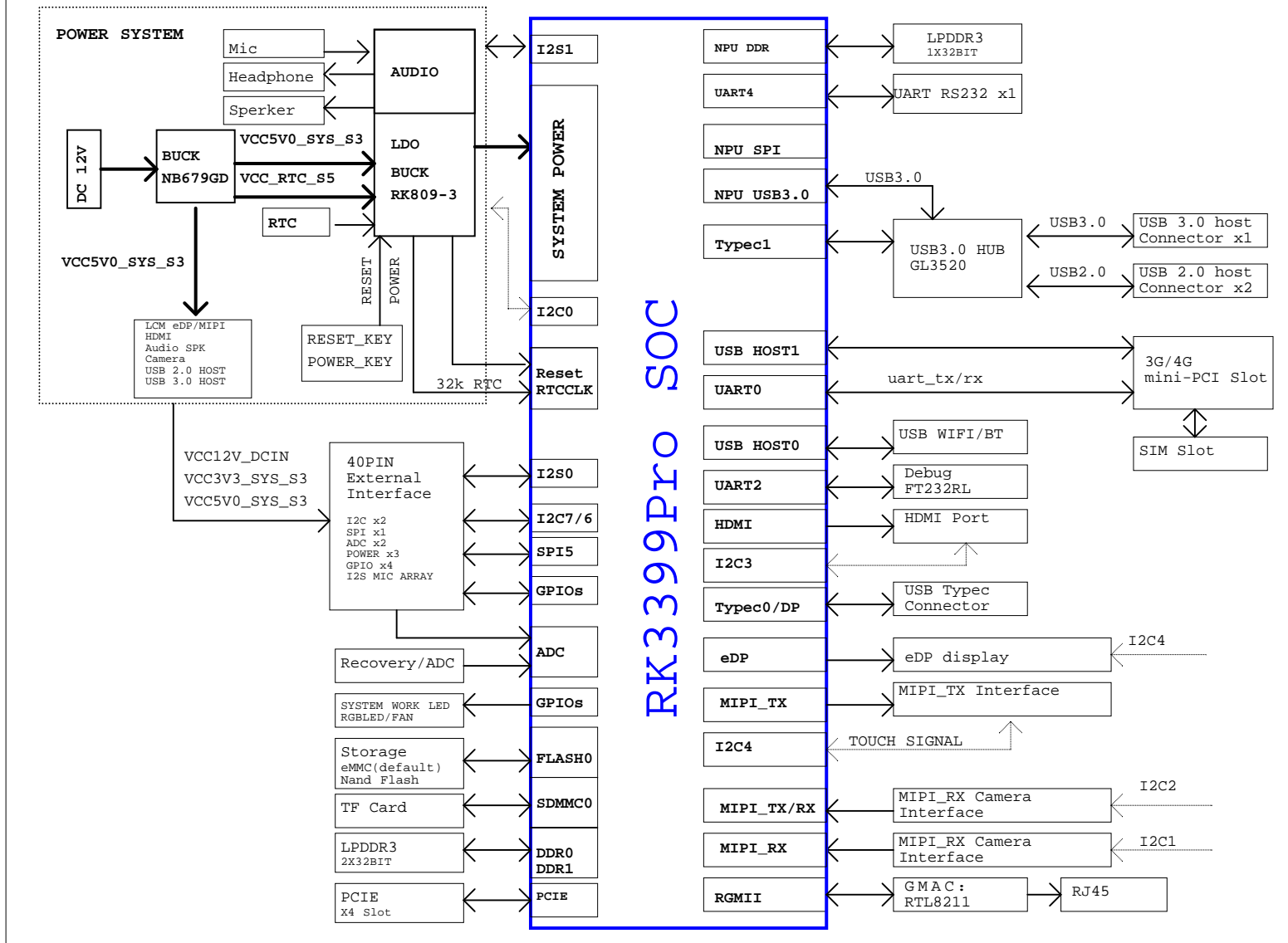
### NOTE 2: Please use our recommended components to avoid too many changes.For more informations about the second source,please refer to our AVL.

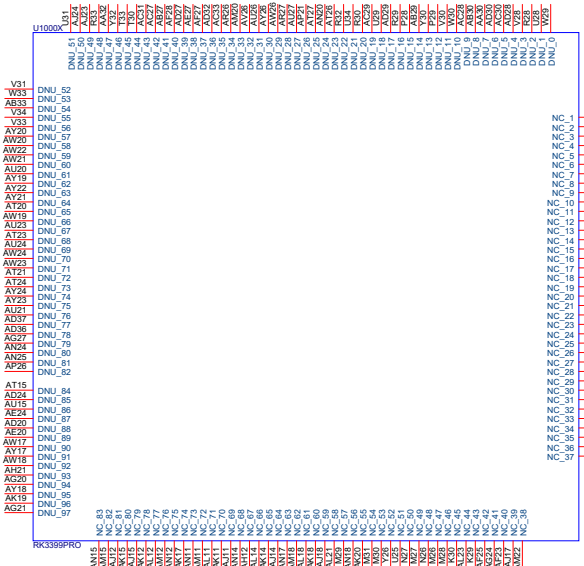
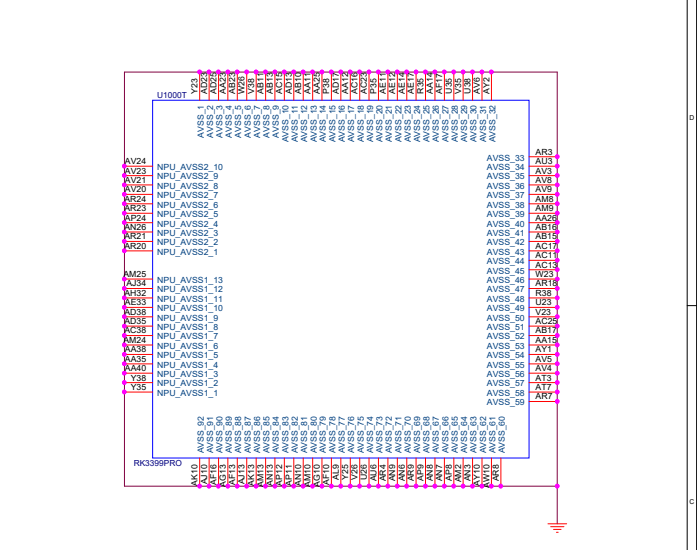
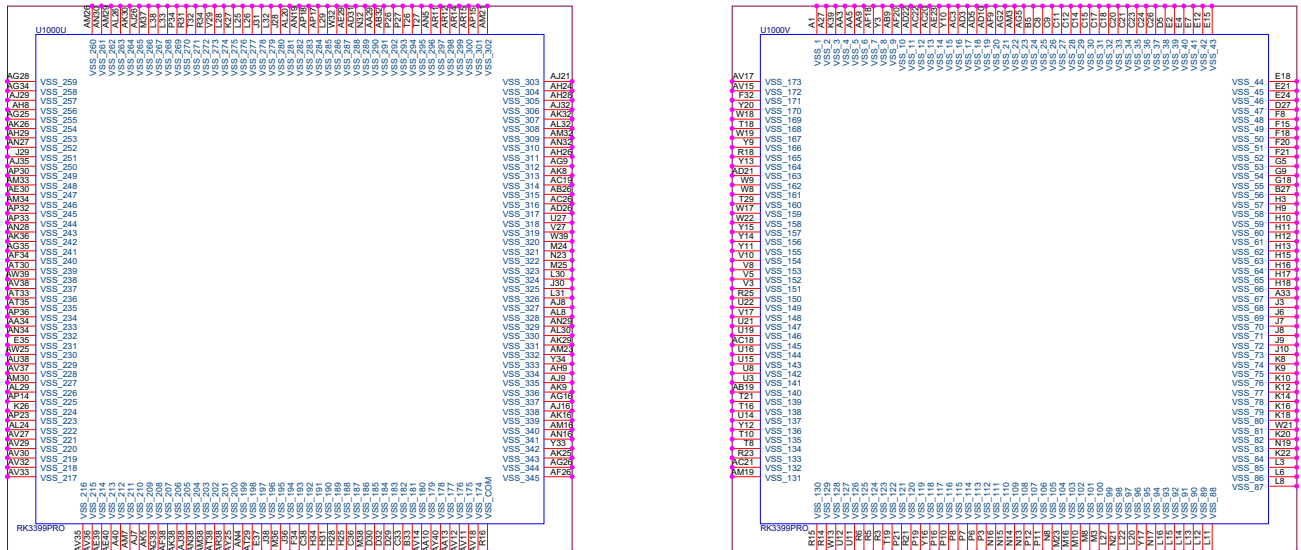


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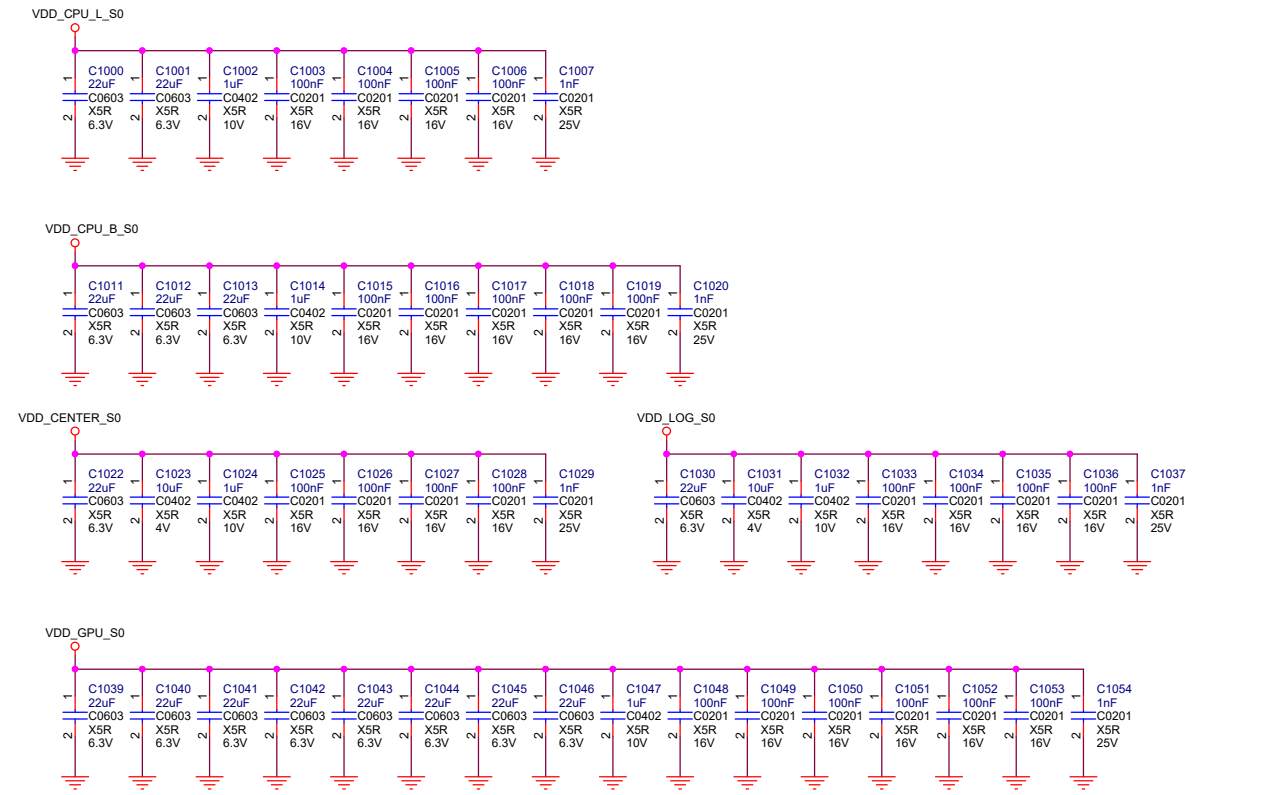
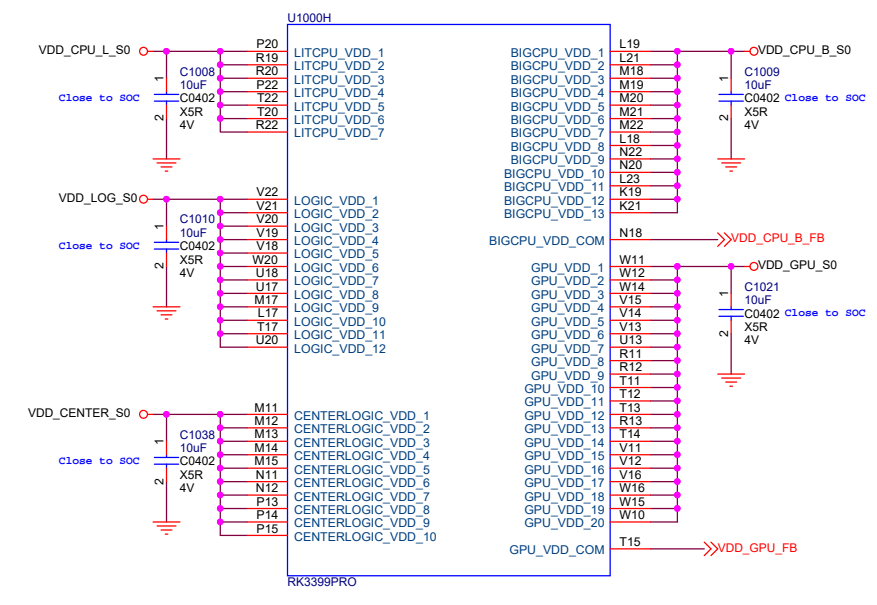
Version	Date	Author	Change List	Approved
V1.0	20181123		First edition for RK3399Pro	HXS

# System block diagram

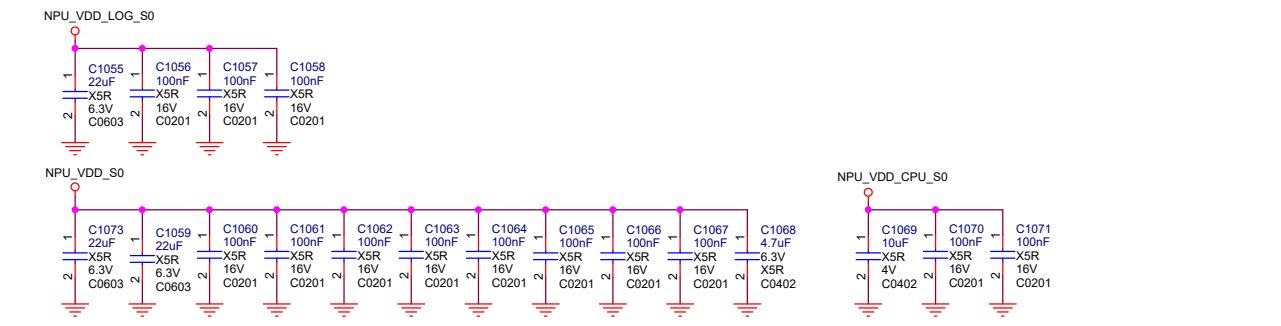
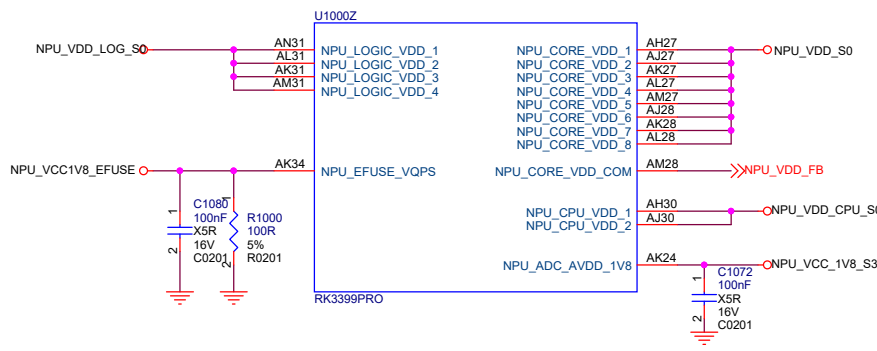




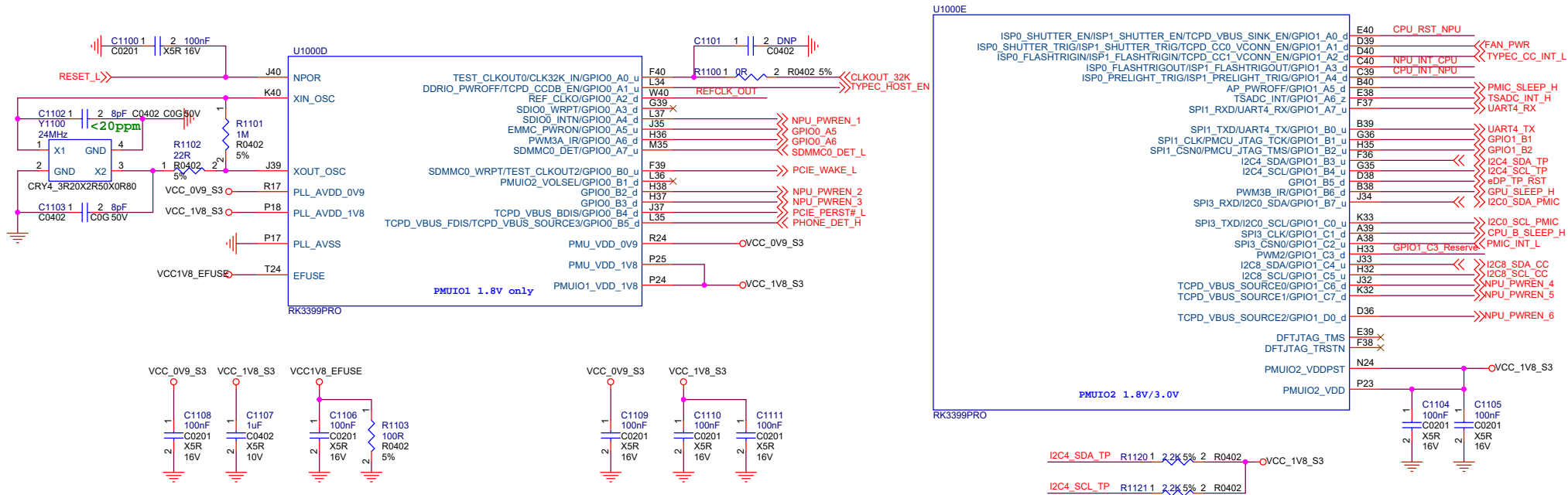
# Power



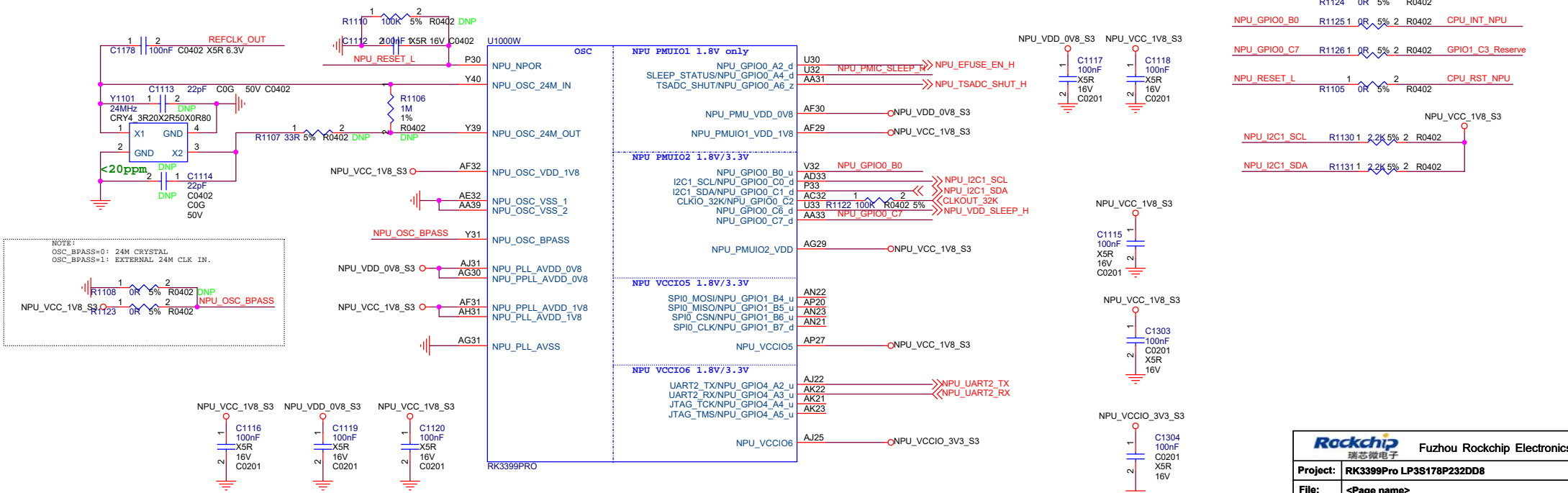
# NPU Power



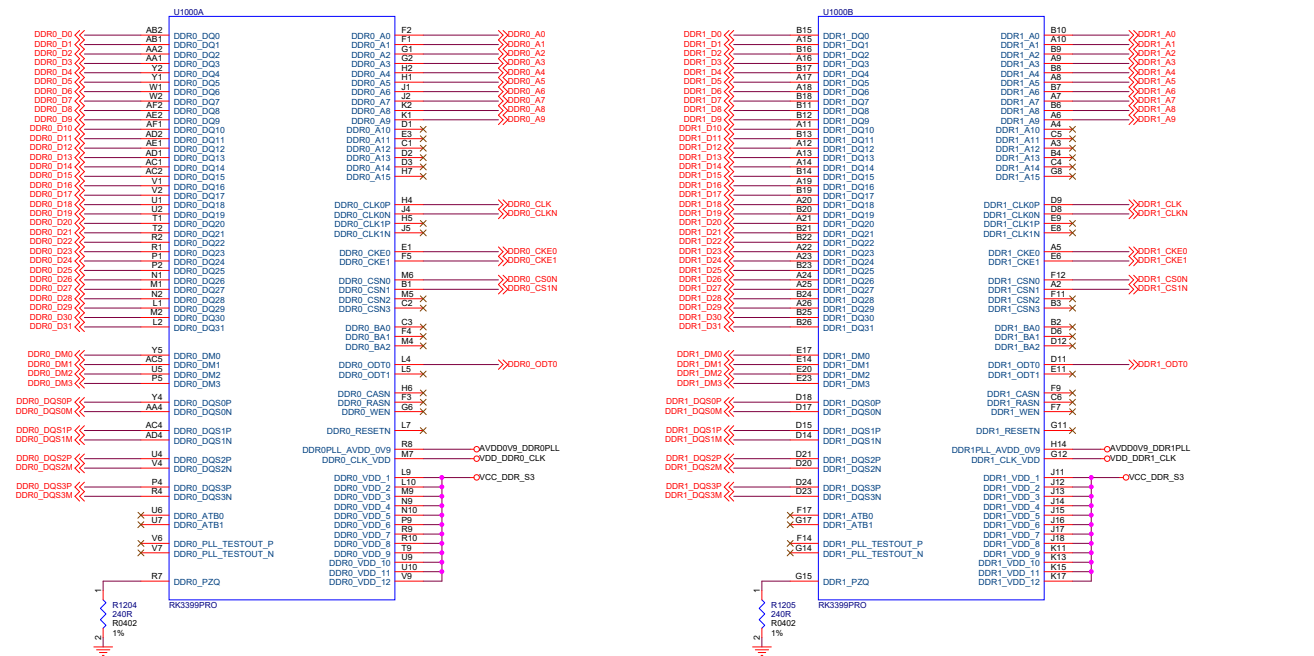
# PMUIO1/PMUIO2



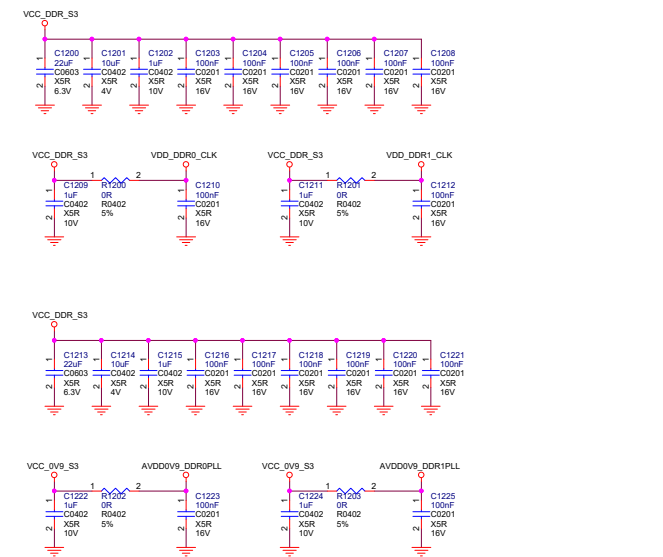
# NPU PMUIO1/PMUIO2/GPIO



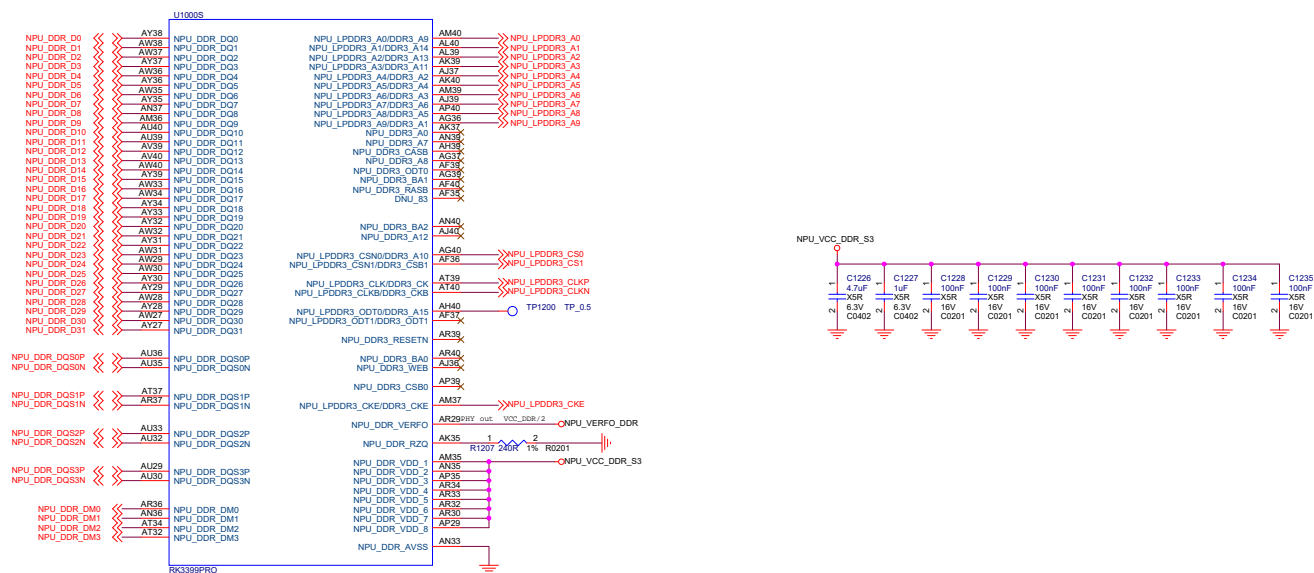
# DDR Controller



# DDR FILTER



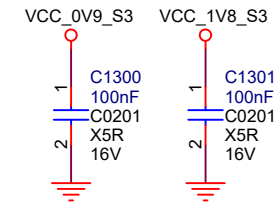
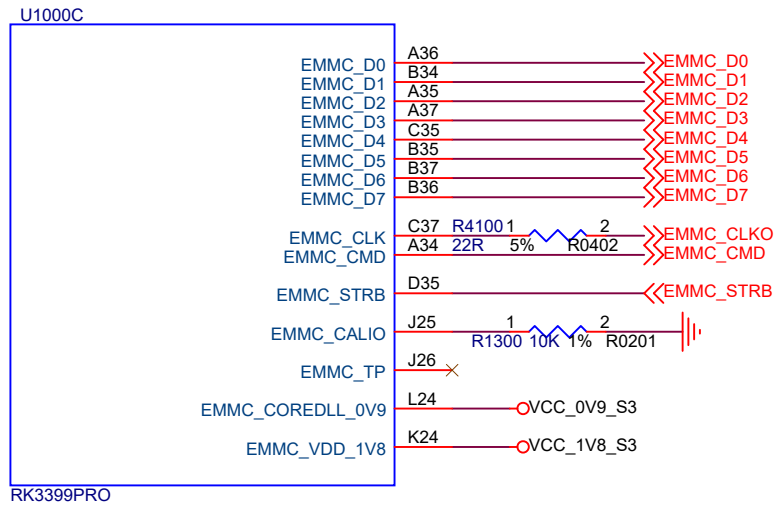
# NPU DDR Controller



LPDDR3/LPDDR2	DDR3
A0	A9
A1	A14
A2	A13
A3	A11
A4	A2
A5	A4
A6	A3
A7	A6
A8	A5
A9	A1
	A0
	A7
	CASB
	A8
	ODT0
	BA1
	RASB
	CSB0
	BA2
	A12
	BA0
	WEB
CK	CK
CKB	CKB
CKE	CKE
CSB0	A10
CSB1	CSB1
ODT0	A15
ODT1	ODT1
	RESETN

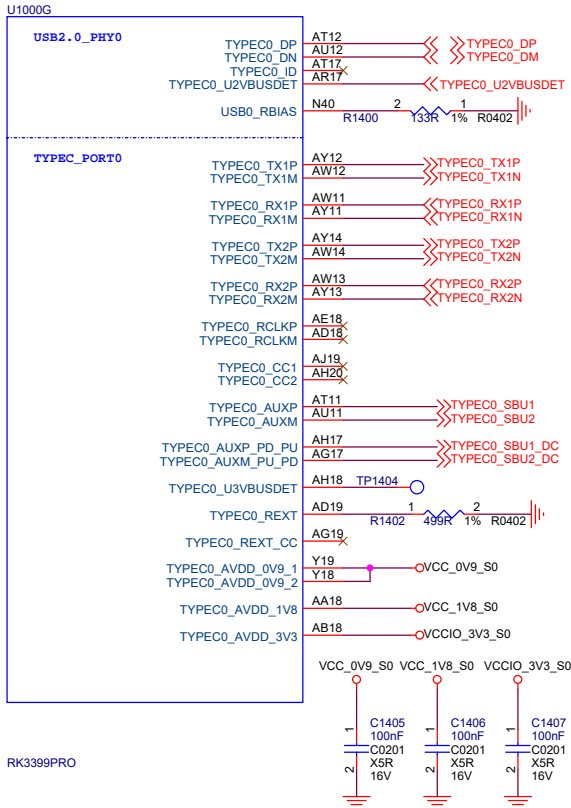


# EMMC

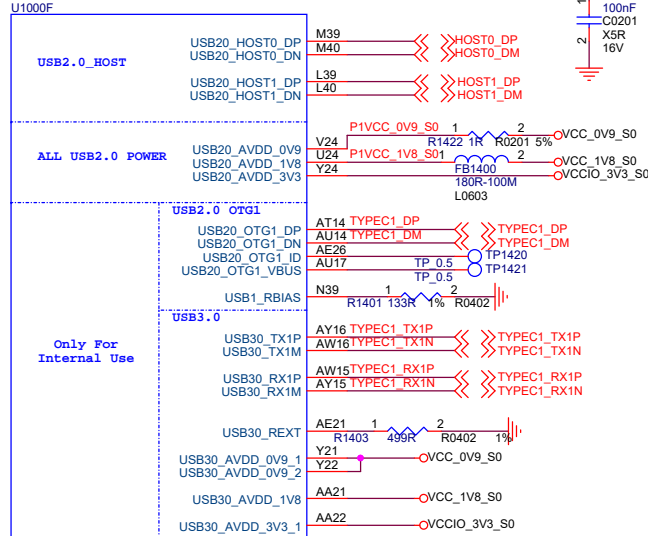


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# USB/TYPEC

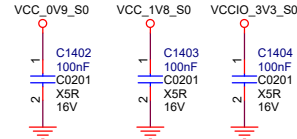


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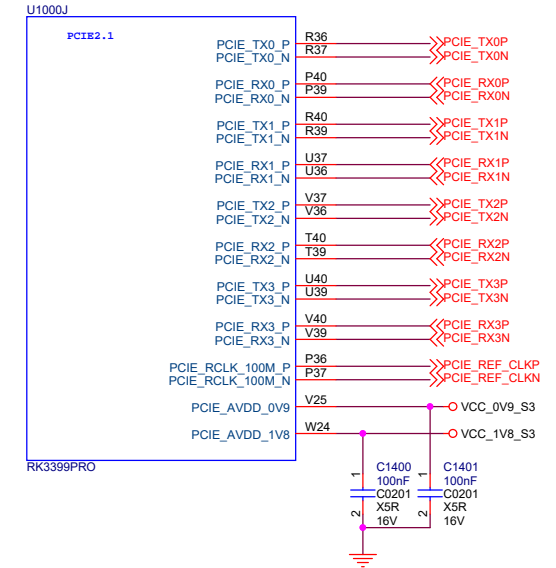
RK3399PRO

NOTE:  
Pin Y24 and Pin AA22 connected to together internal.

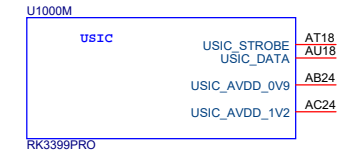


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# PCIE

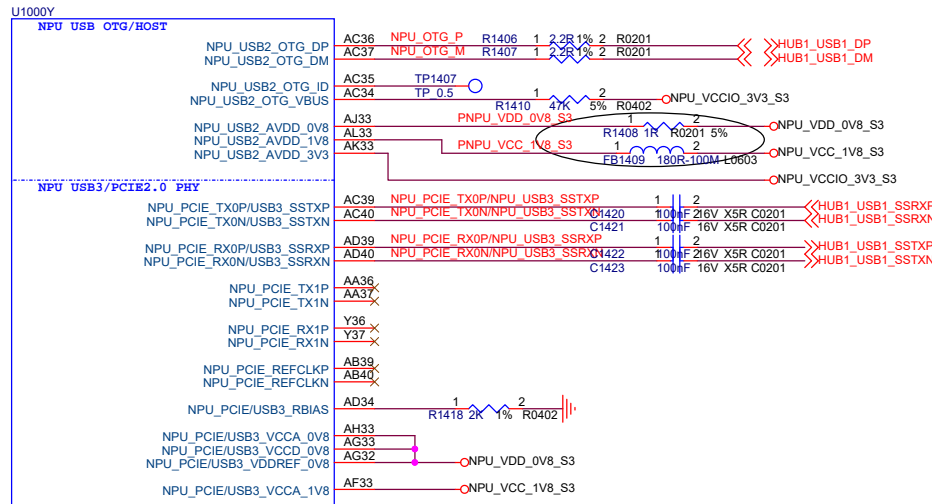


# USIC

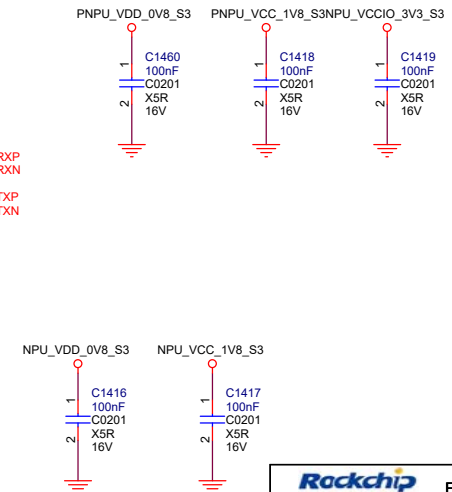


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# NPU PCIE/USB3.0

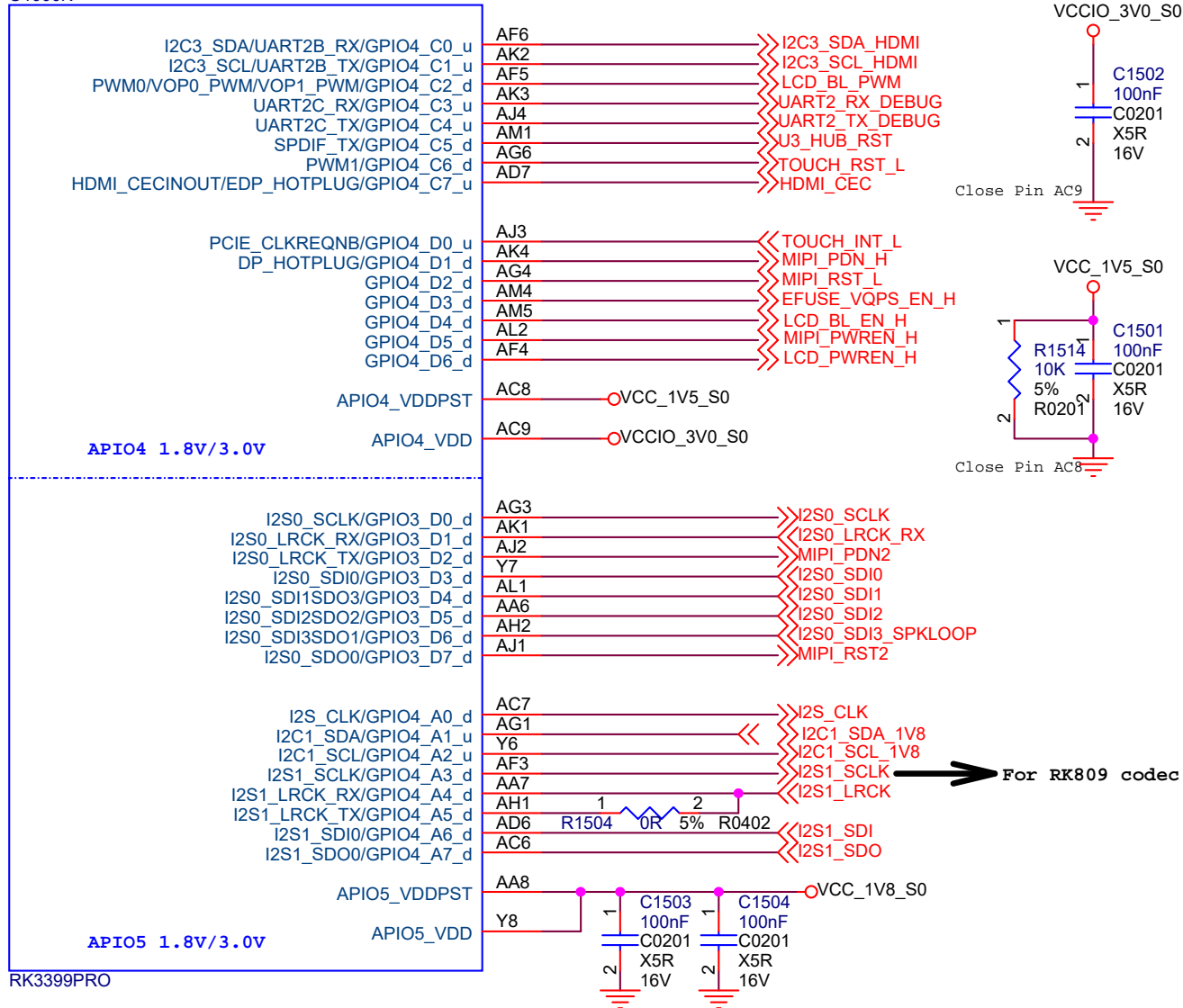


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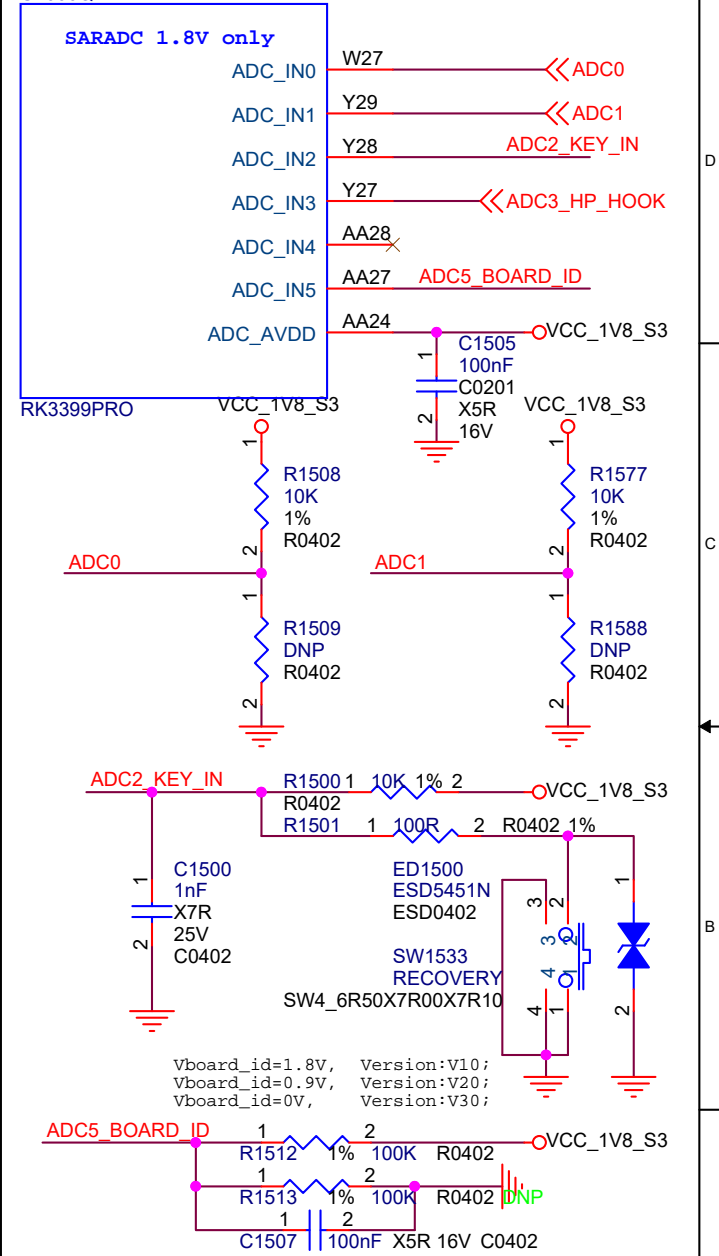
# GPIO

U1000N



U1000Q

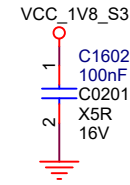
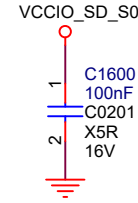
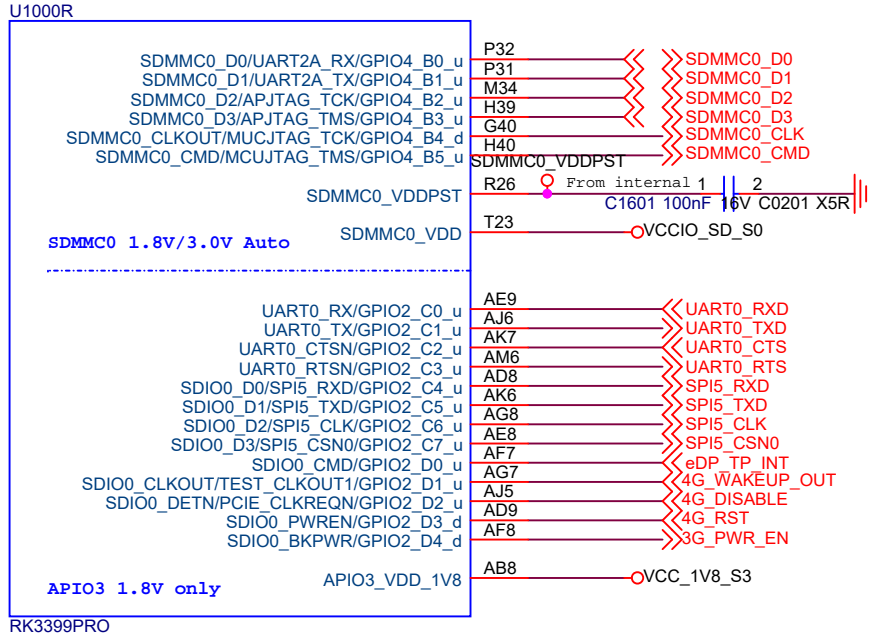
# SARADC



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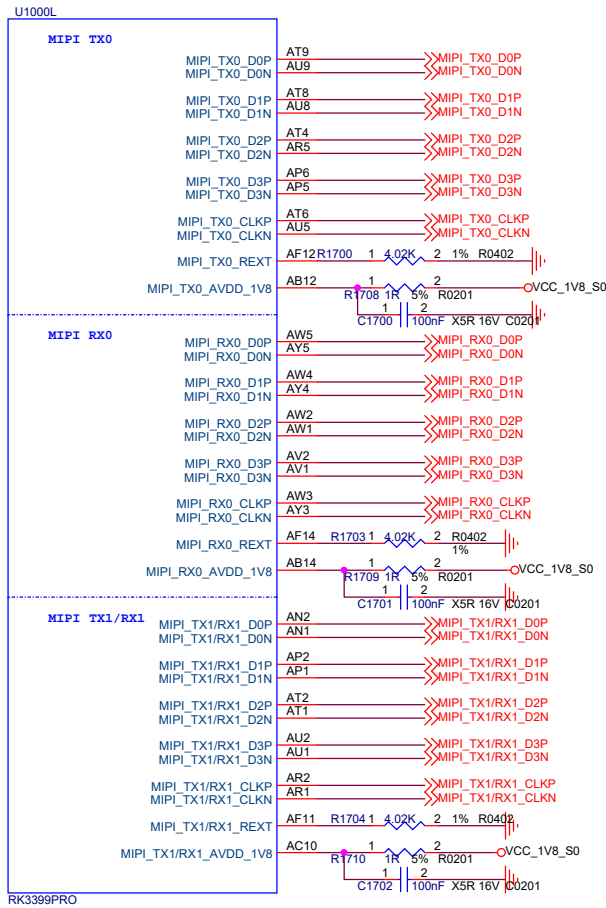
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# SDMMC0/SDIO0 Controller



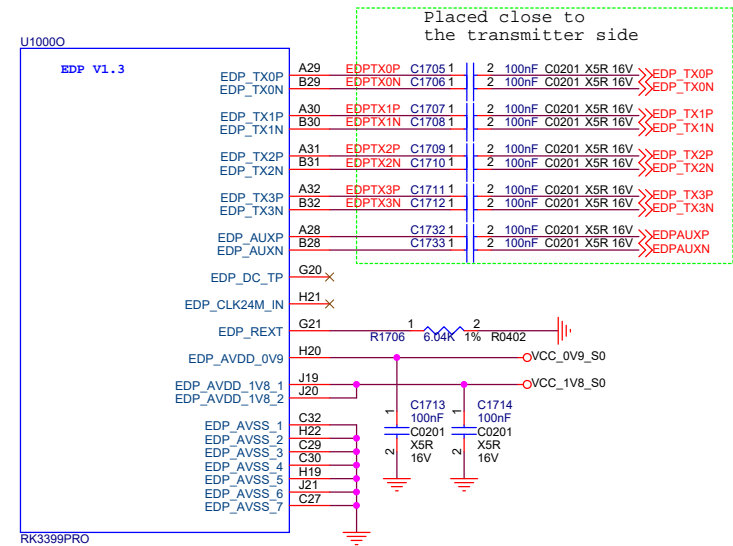
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# MIPI CSI/DSI



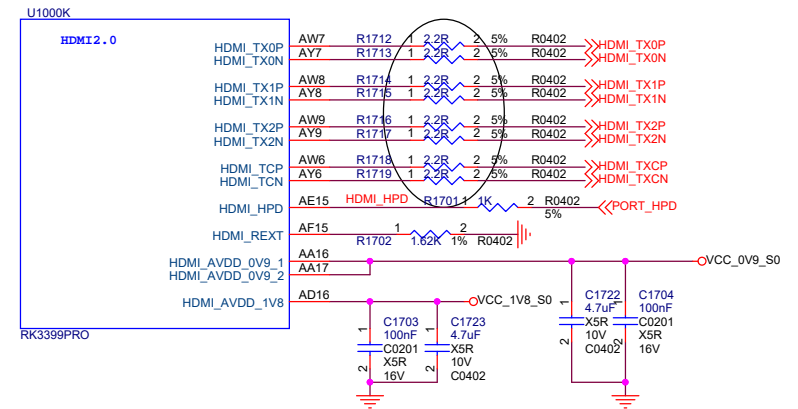
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# EDP



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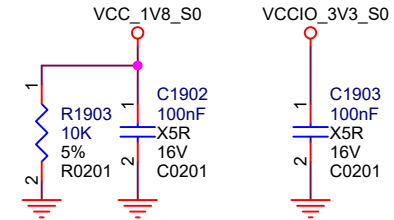
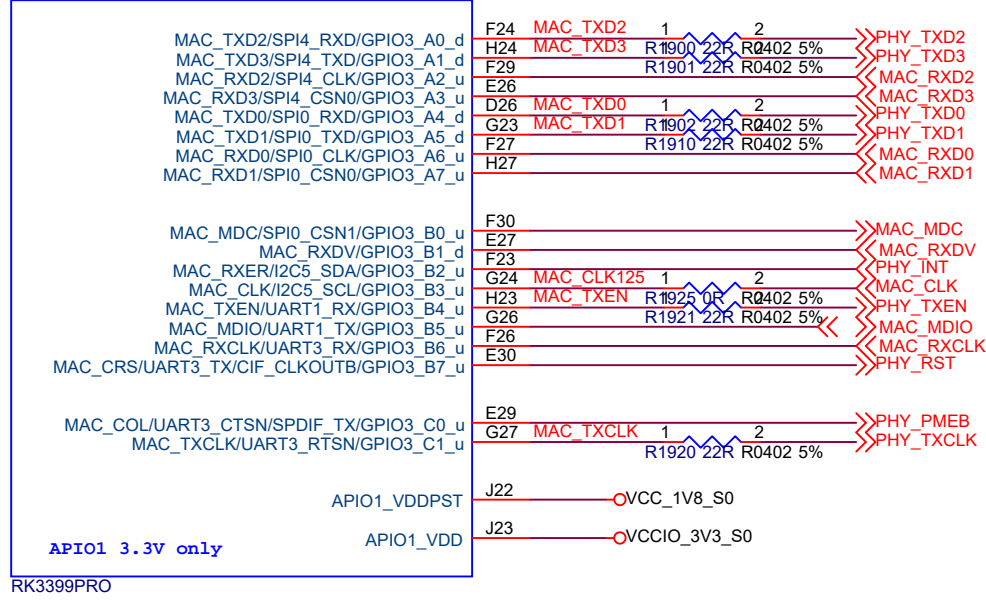
# HDMI



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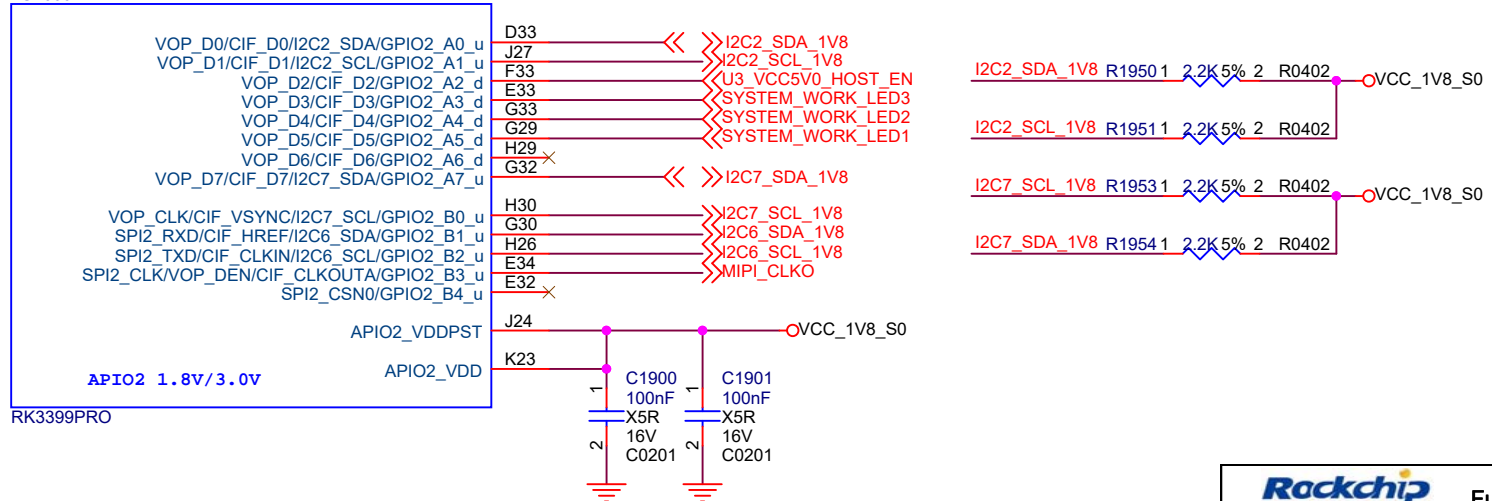
# MAC

U1000I



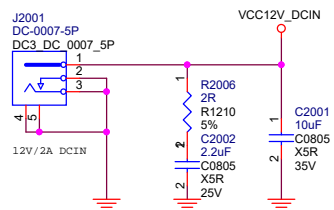
# VOP / CIF

U1000P

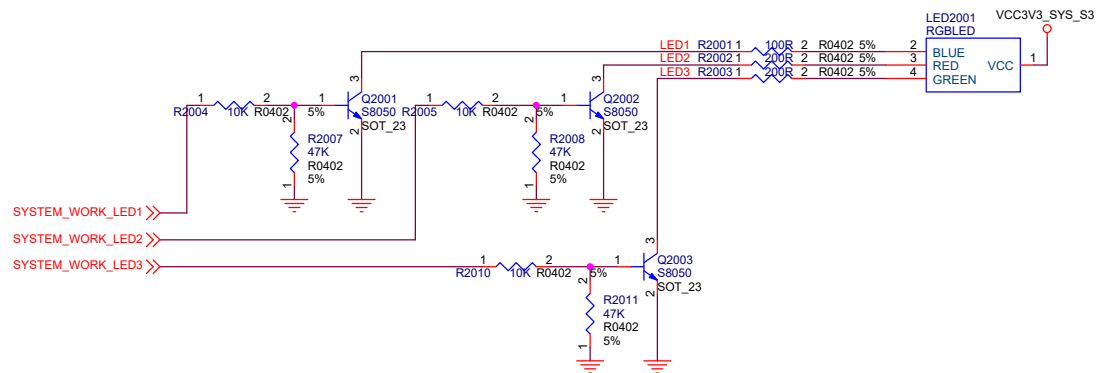


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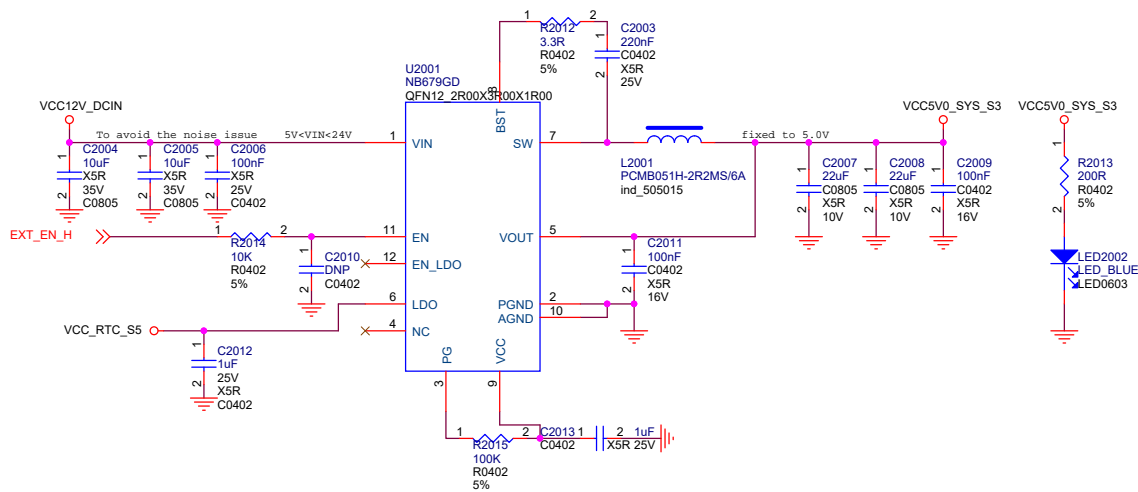
# DC IN 12V



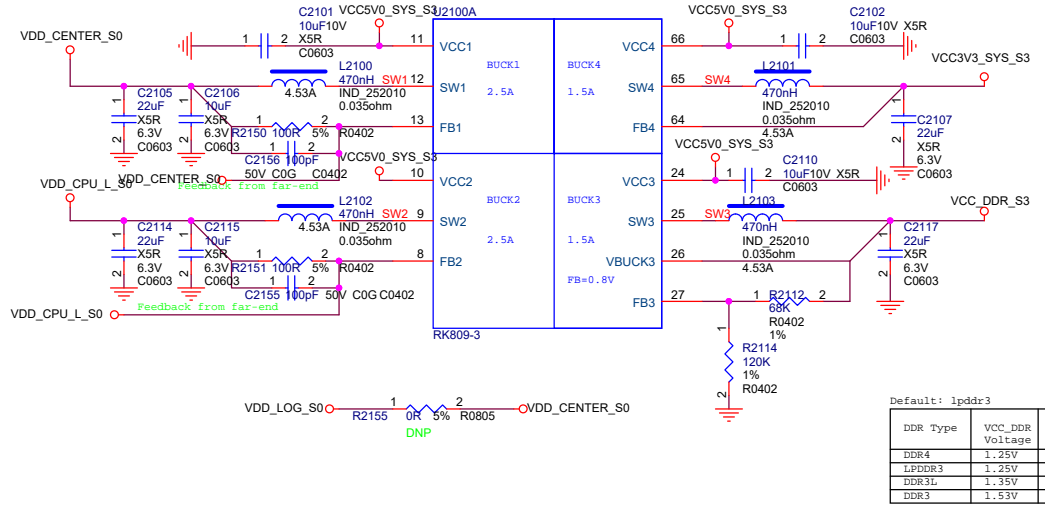
# SYSTEM WORK LED



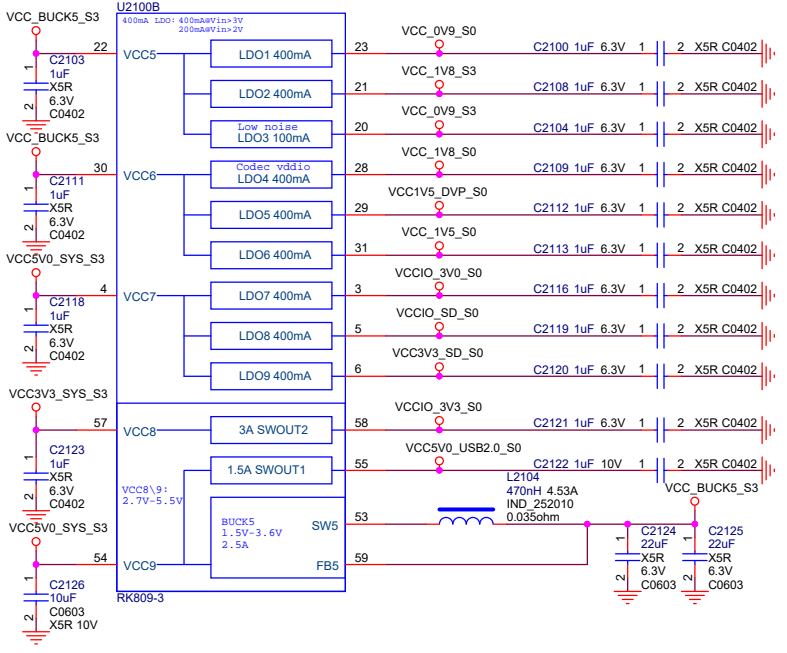
# BUCK 5V



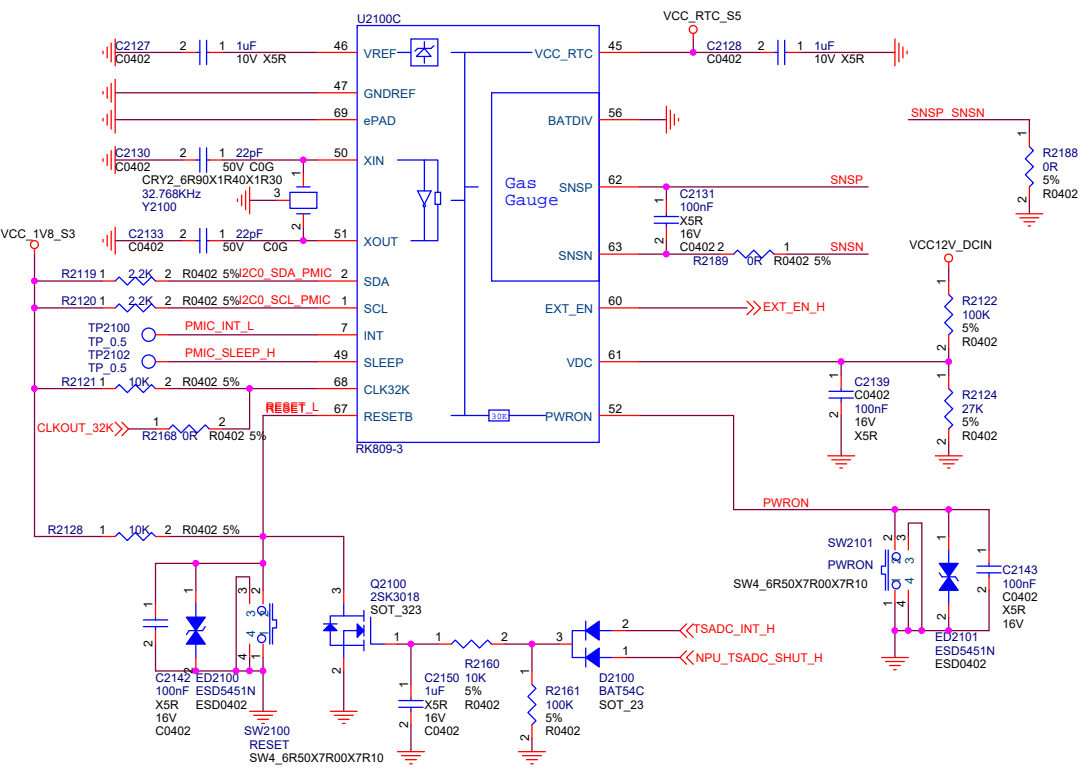
### PMIC RK809-3 DCDC



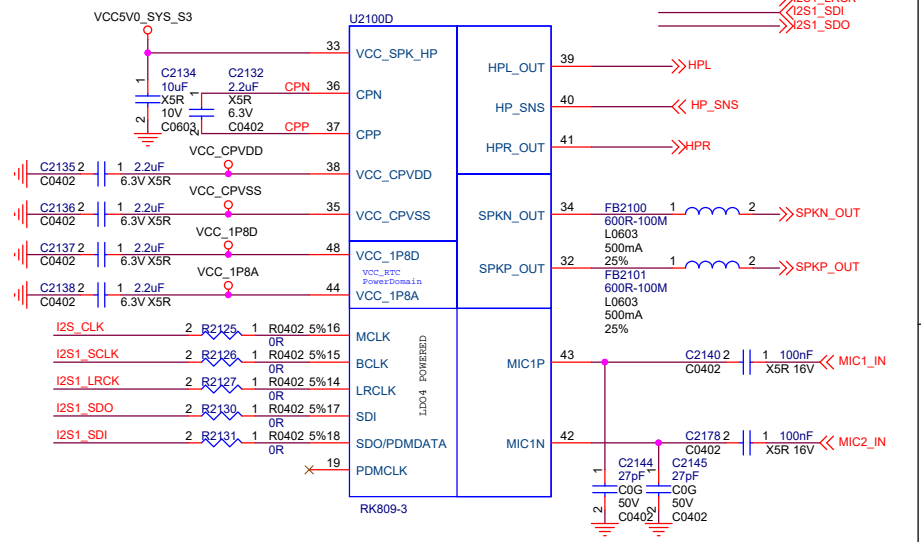
### PMIC RK809-3 LDO



### PMIC RK809-3 Management

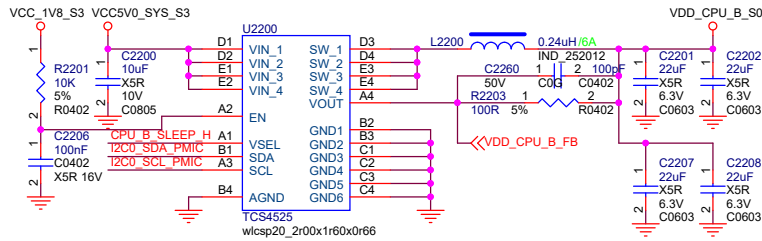


### PMIC RK809-3 CODEC

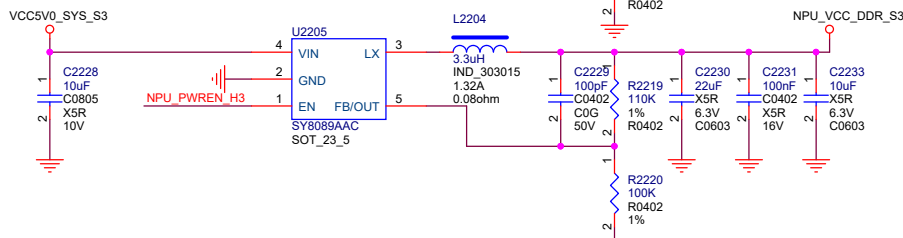
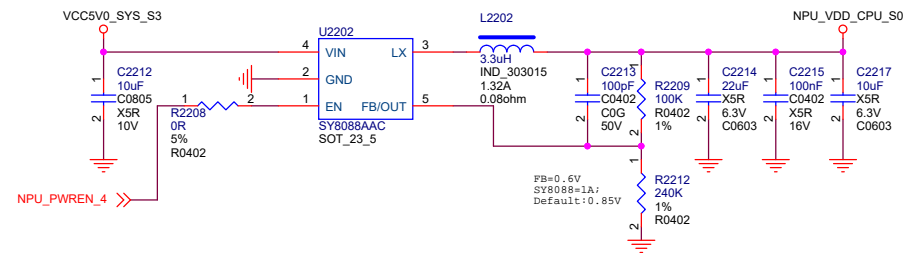
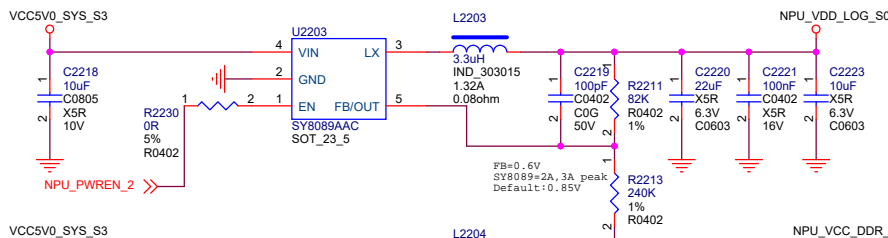
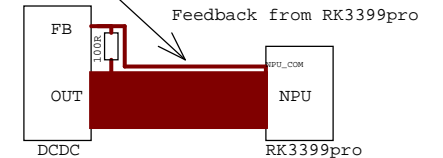
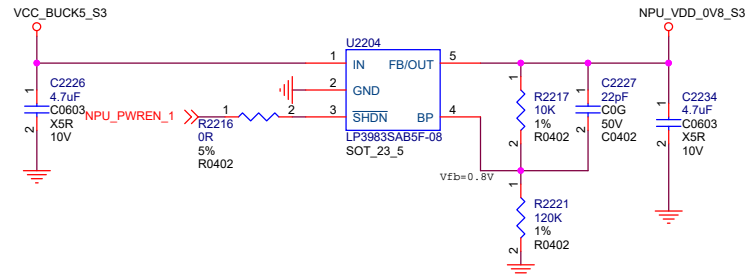
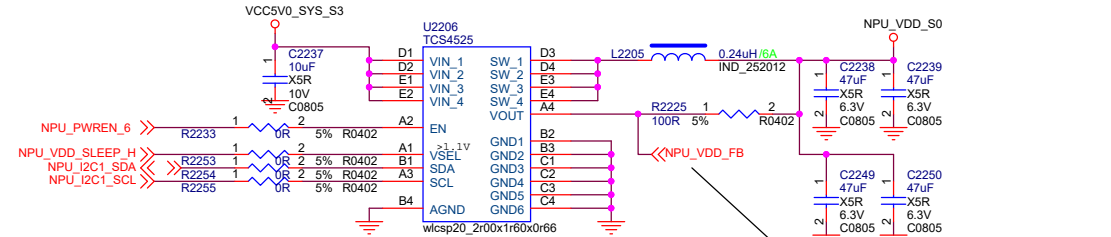
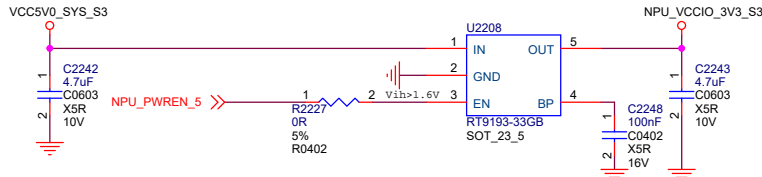
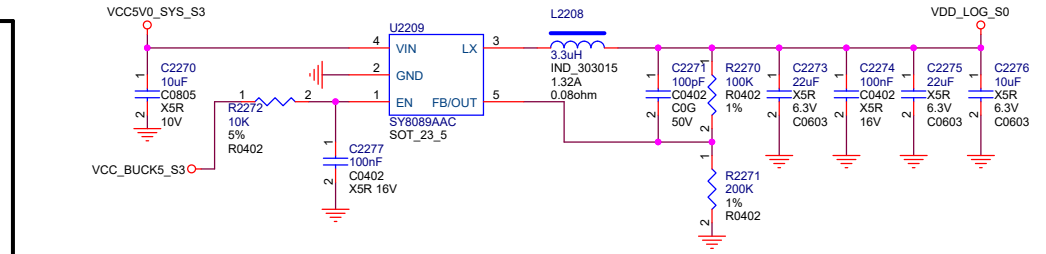
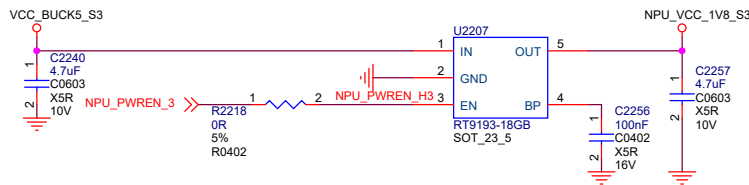
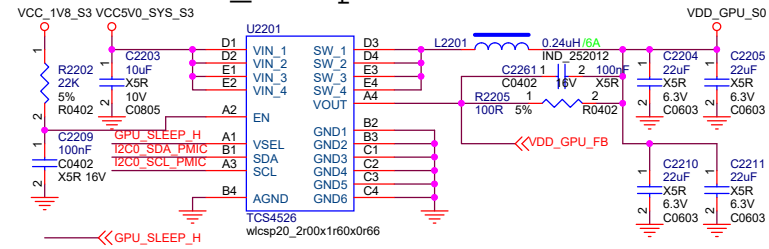




# VDD\_CPU\_B power



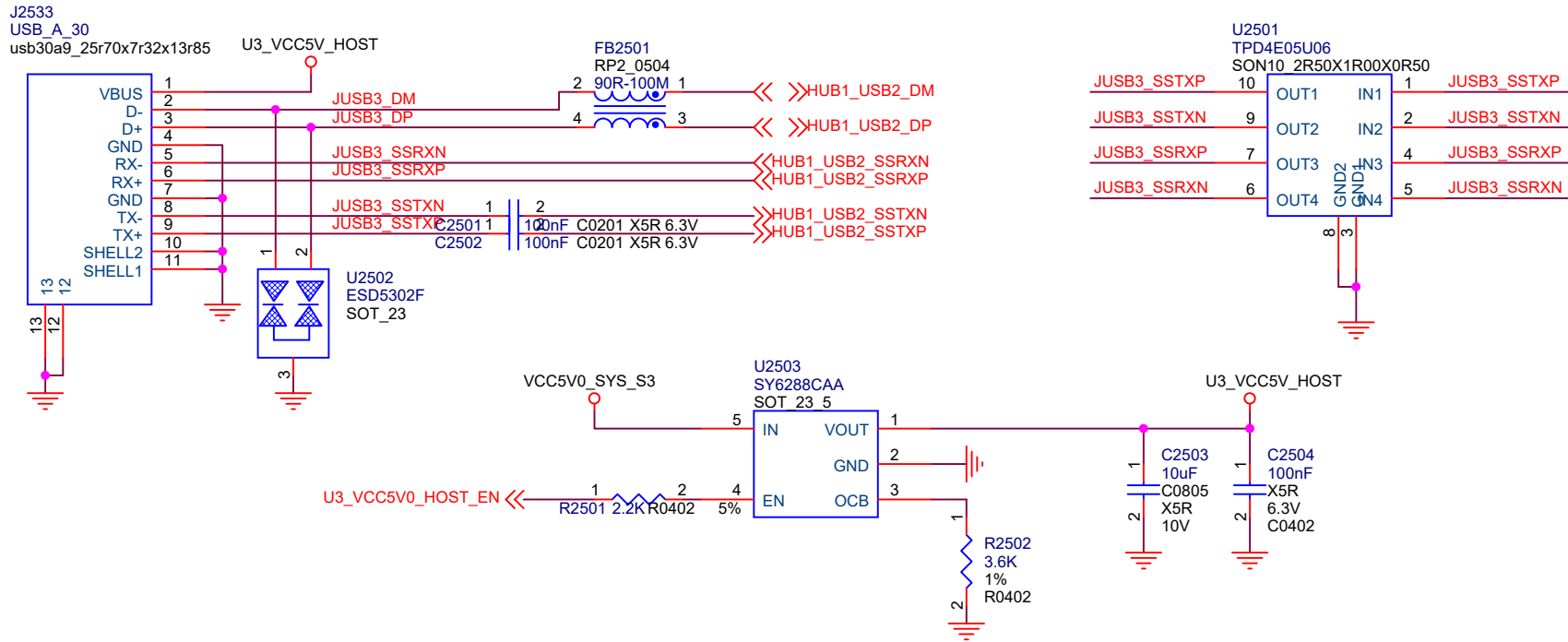
# VDD\_GPU power



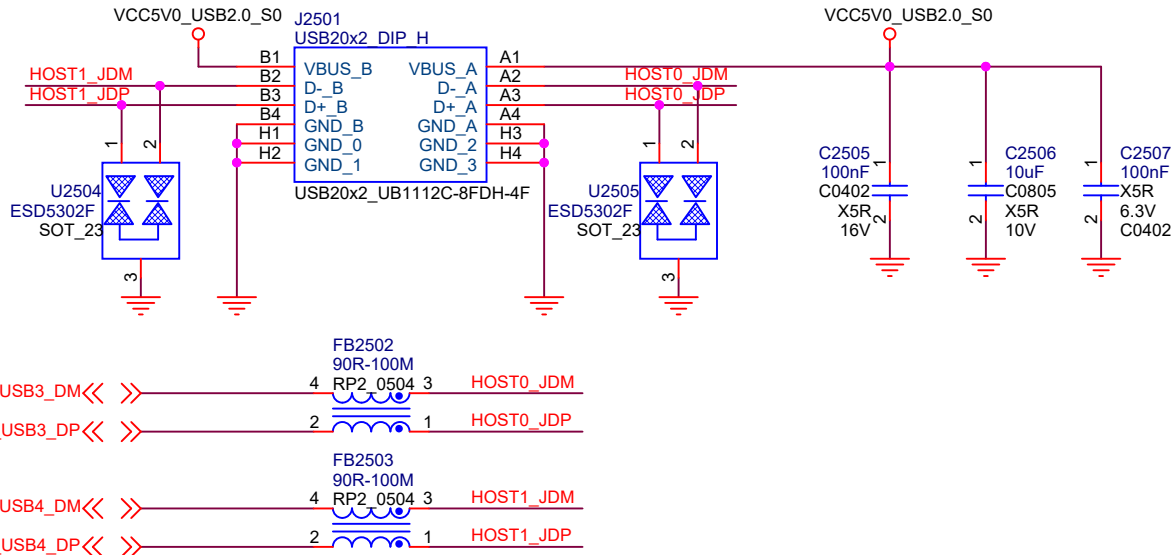
# NPU Part power

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# USB3.0 HOST



# USB2.0 HOST



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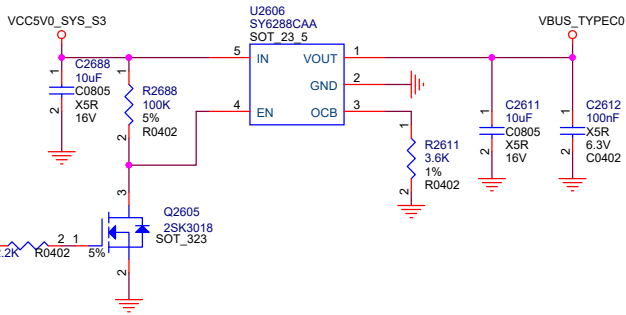
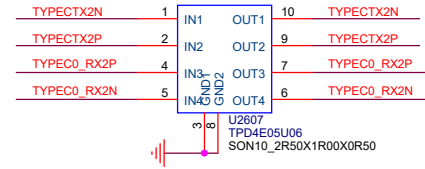
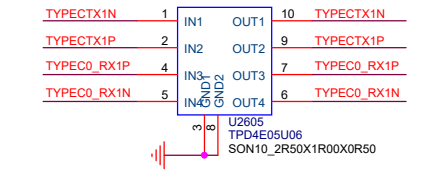
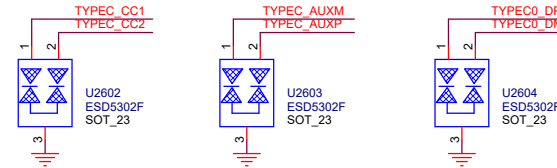
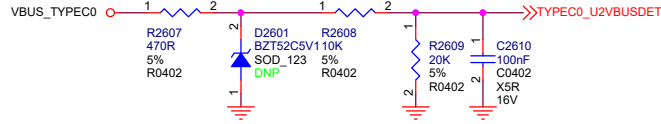
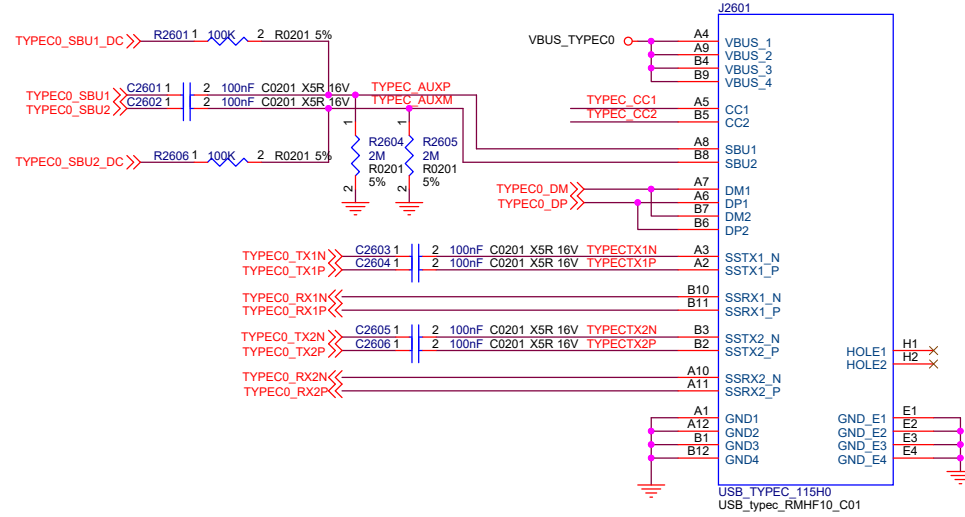
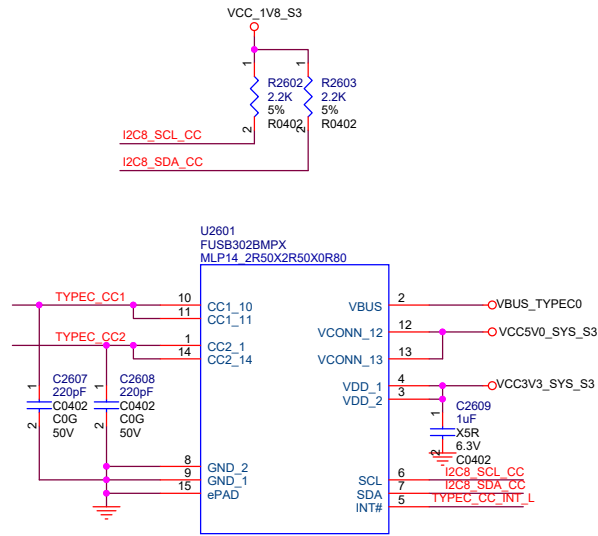
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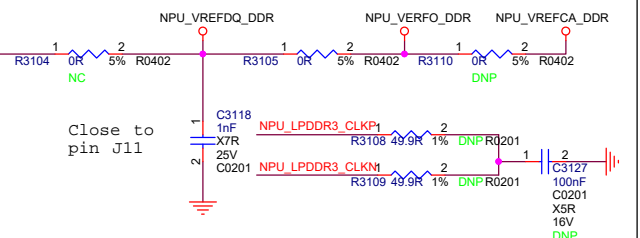
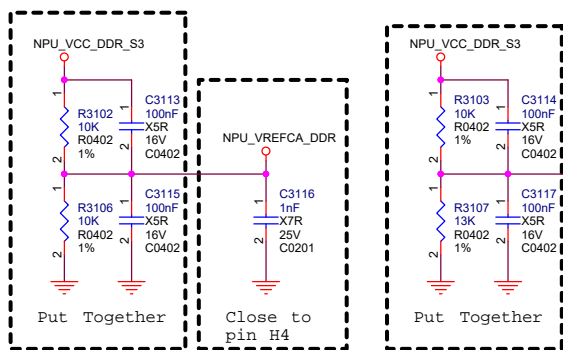
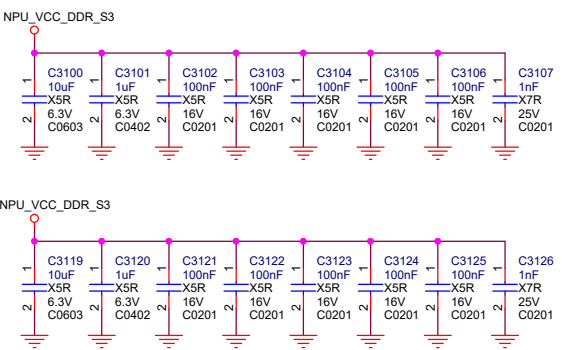
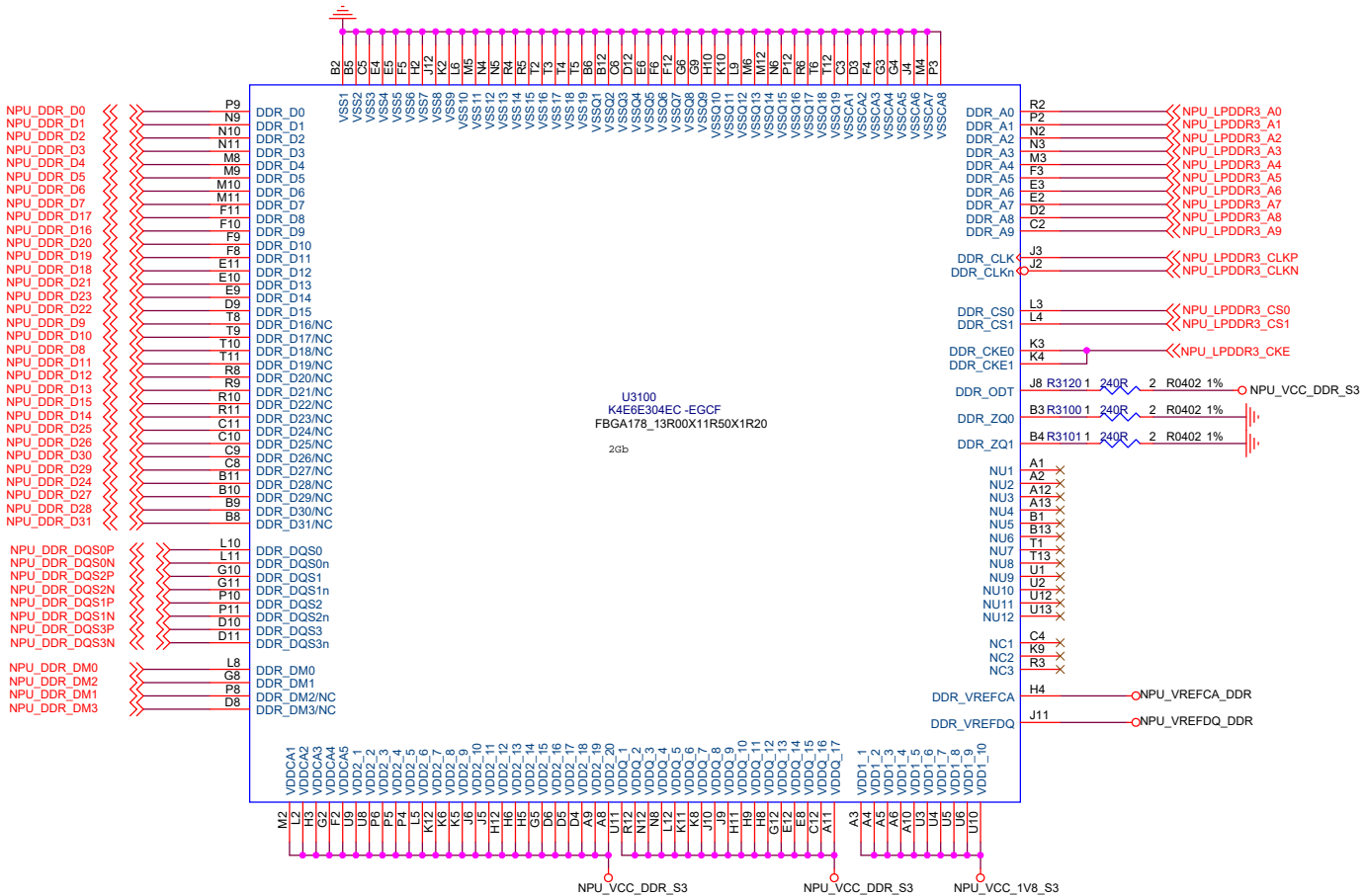
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# TYPEC PORT

<< I2C8\_SCL\_CC  
 << I2C8\_SDA\_CC  
 >> TYPEC\_CC\_INT\_L



# NPU LPDDR3 1x32bit



Note:All the power filter capacitors should be placed close to the power pins of LPDDR3

Note:  
 $V_{ih}=V_{CC}$   
 $V_{il}=V_{CC} * Ron / (Ron + Rodt)$   
 $V_{REFDQ\_DDR} = (V_{ih} + V_{il}) / 2$   
 eg:  $V_{CC}=1.2V, Ron=34ohm, Rodt=240ohm$   
 so,  $V_{ih}=1.2V, V_{il}=0.149V, V_{REFDQ\_DDR}=0.674V$

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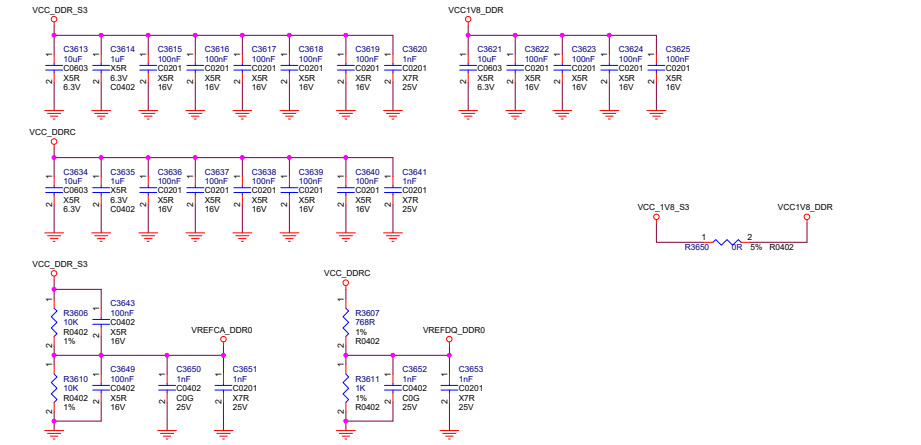
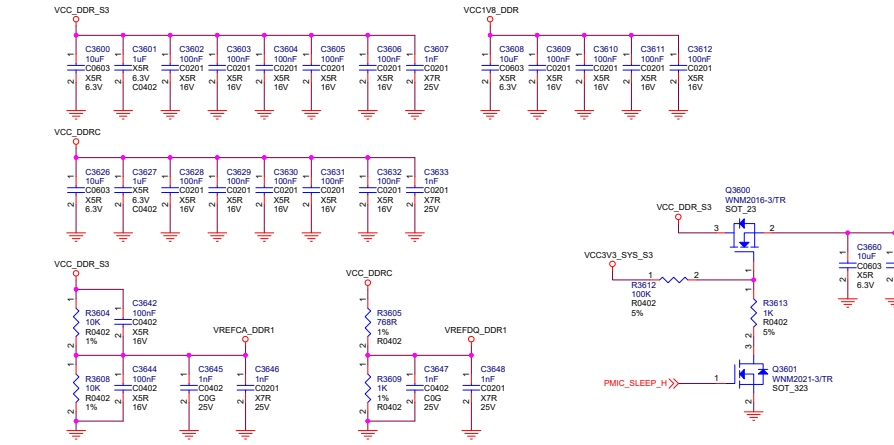
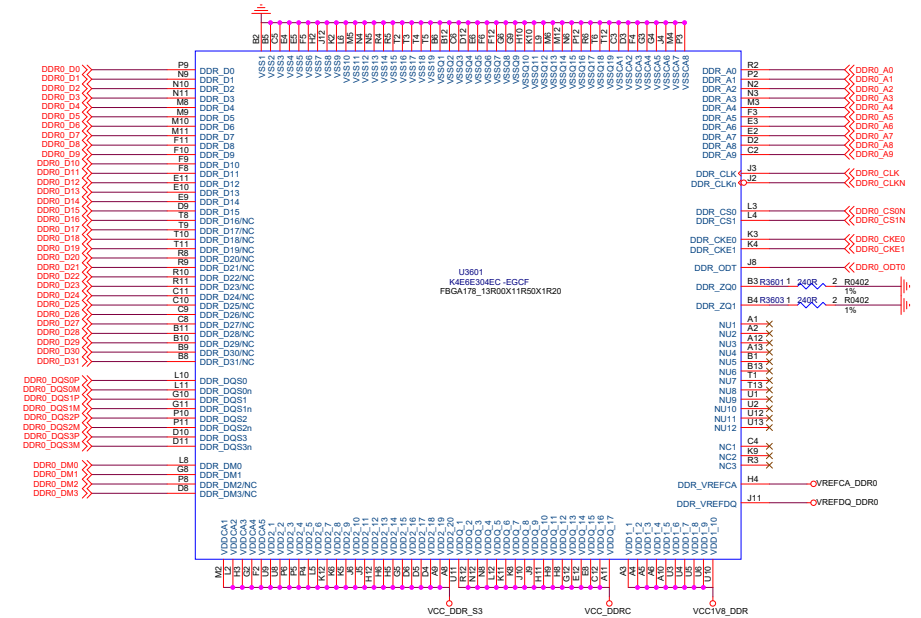
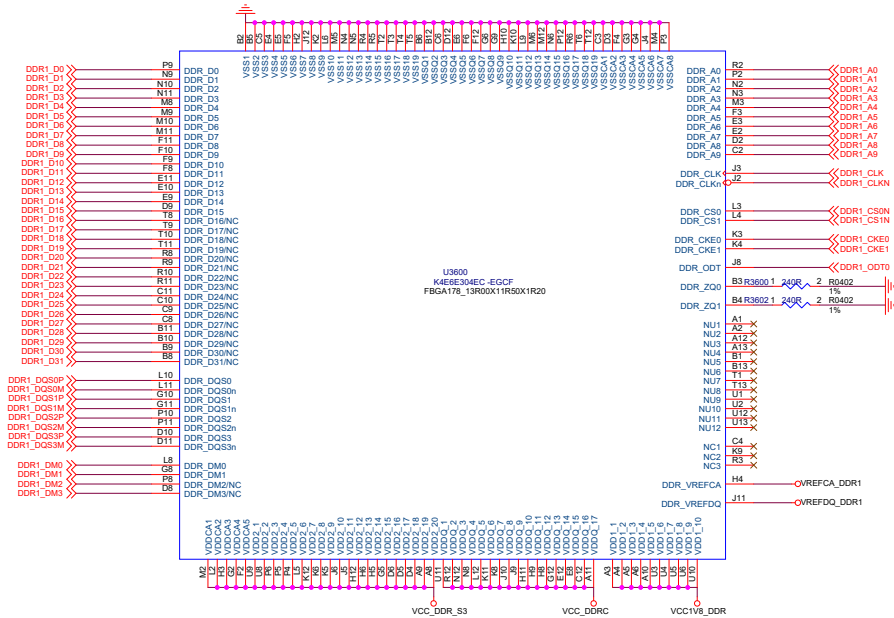
Project: RK3399Pro LP3S178P232DD8

File: <Page name>

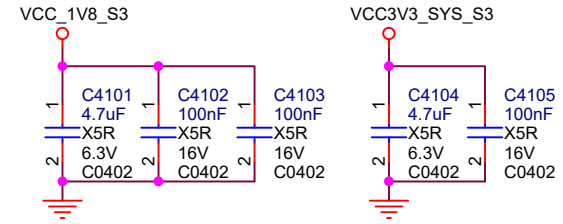
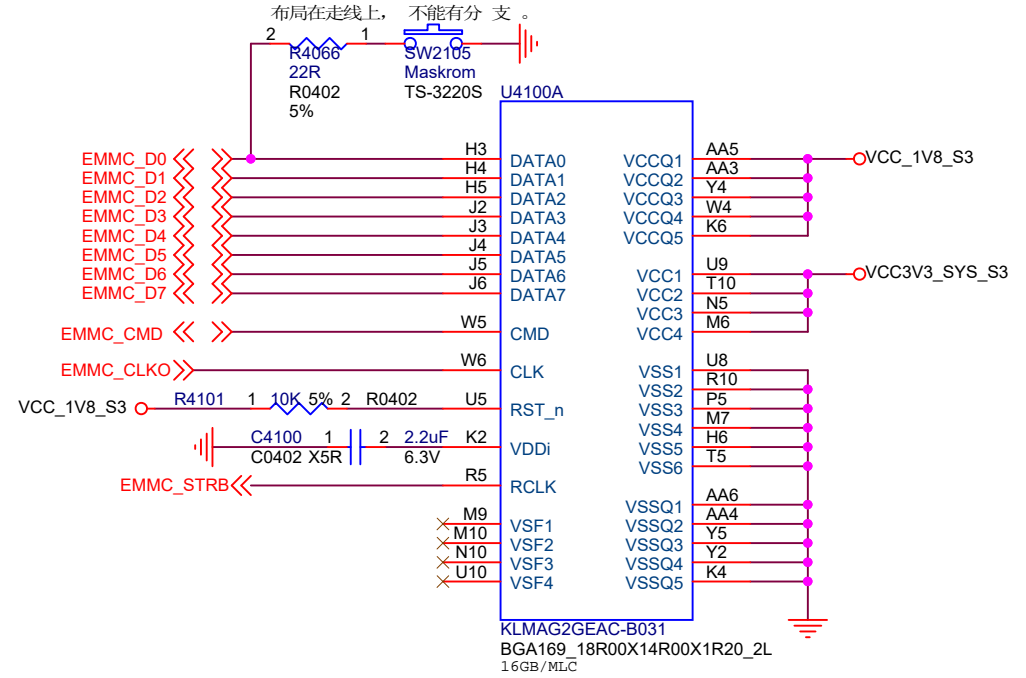
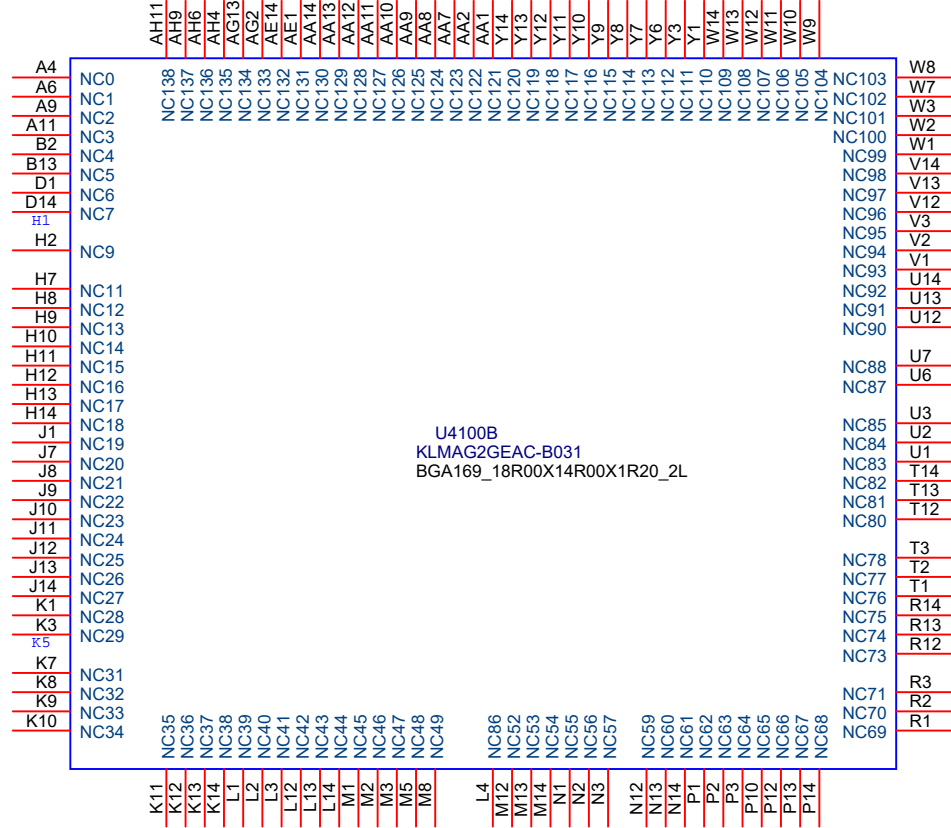
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LPDDR3

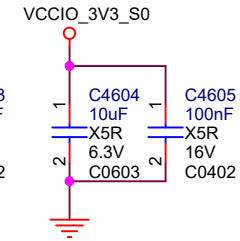
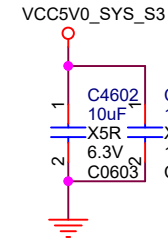
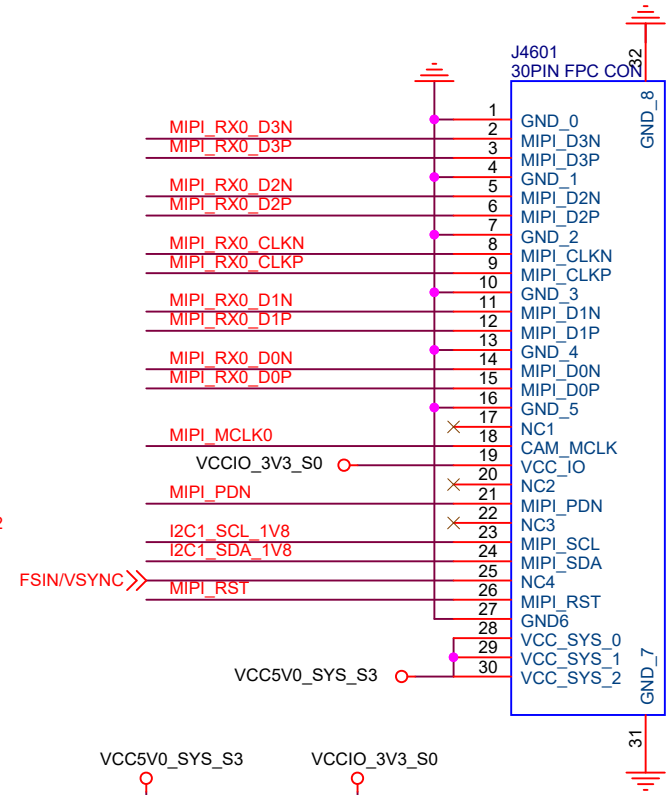
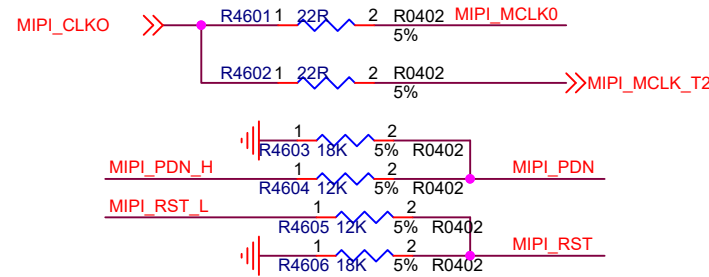
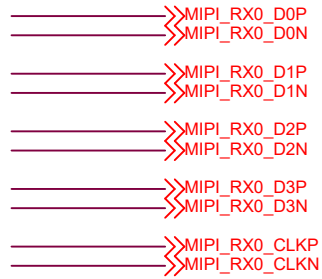


# eMMC



 瑞芯微电子		Fuzhou Rockchip Electronics	
<b>Project:</b>	RK3399Pro LP3S178P232DD8		
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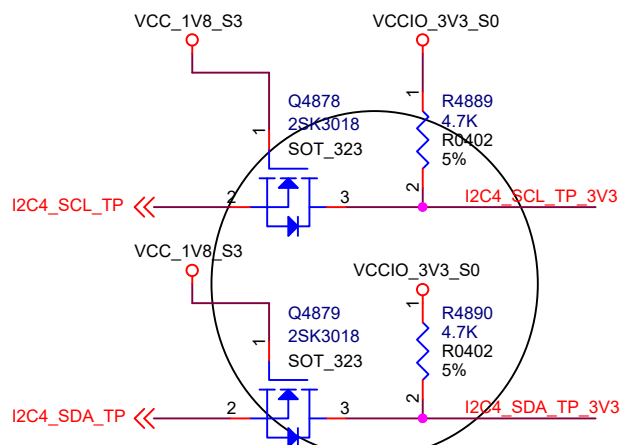
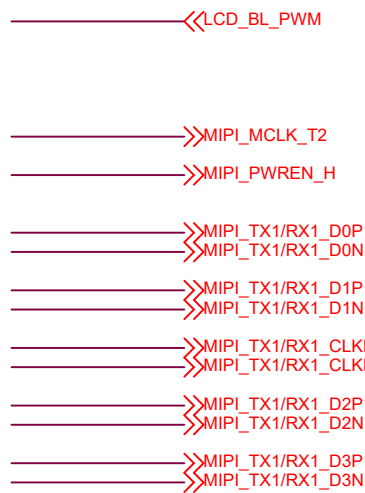
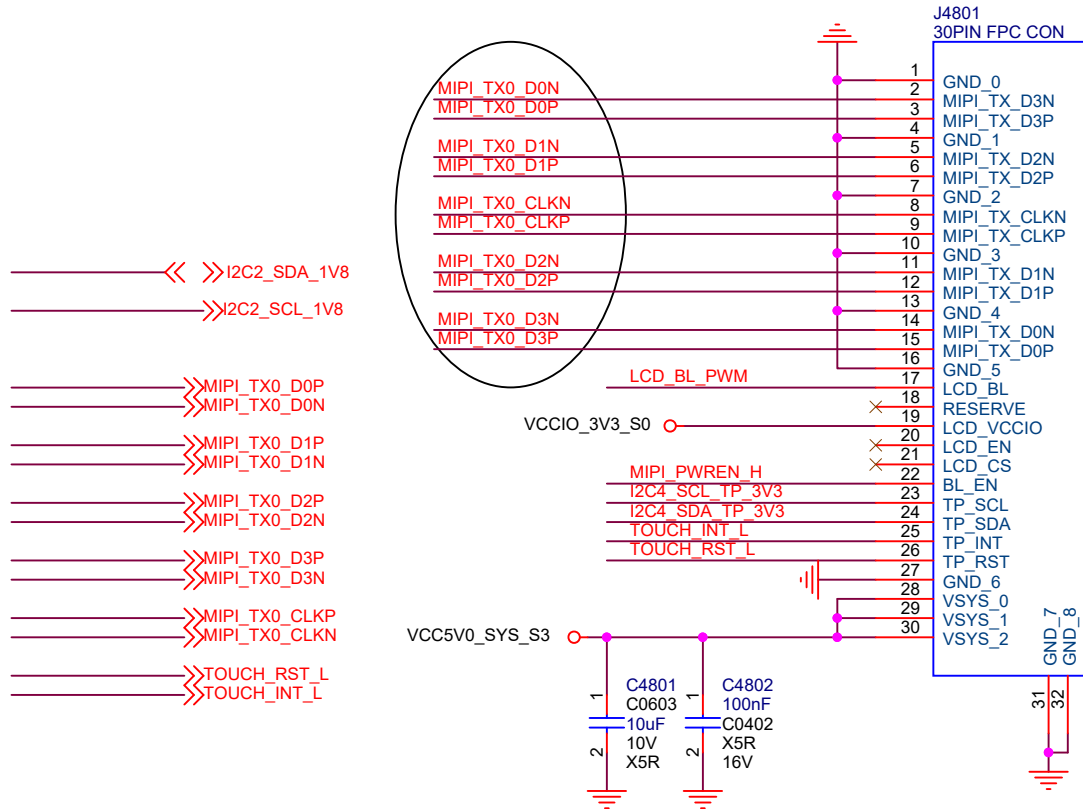
# MIPI\_RX0



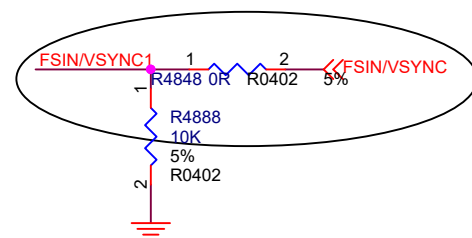
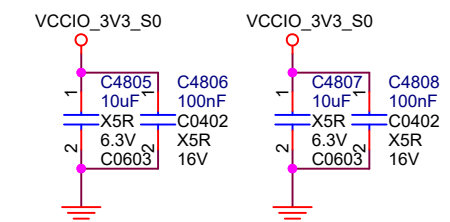
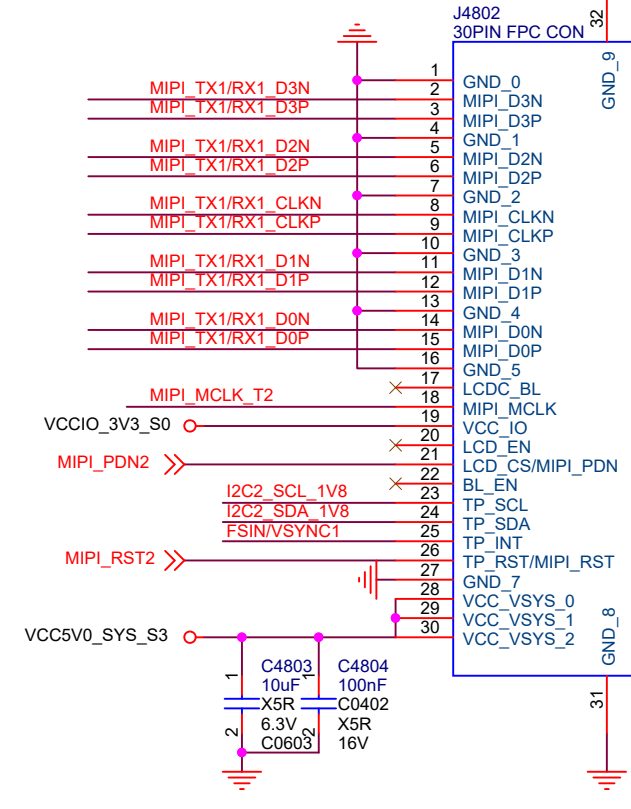
Fuzhou Rockchip Electronics

<b>Project:</b>	RK3399Pro LP3S178P232DD8		
<b>File:</b>	MIPI CSI		
<b>Date:</b>	Monday, December 17, 2018	<b>Rev:</b>	V1.0
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# MIPI\_TX0



# MIPI\_RX1

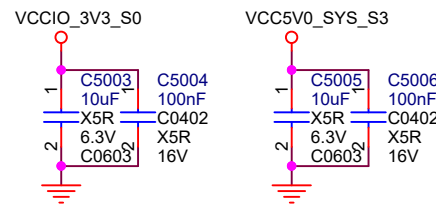
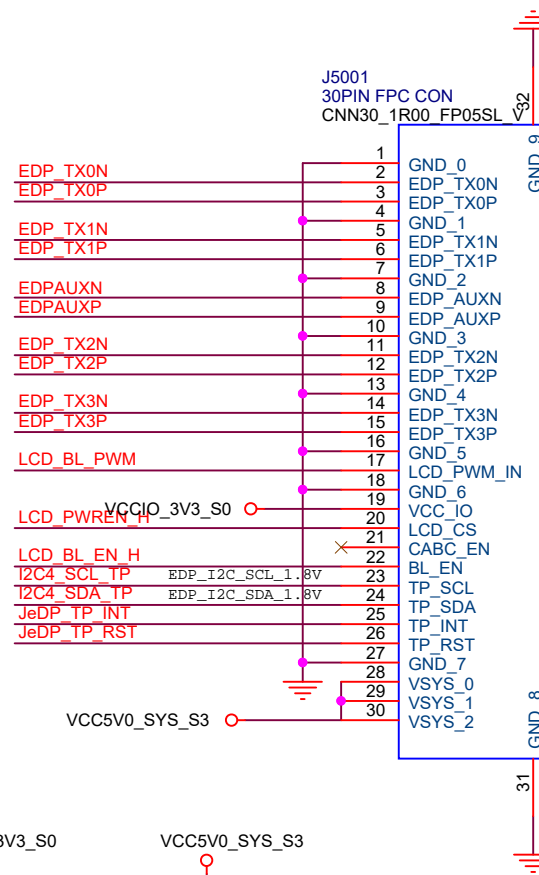
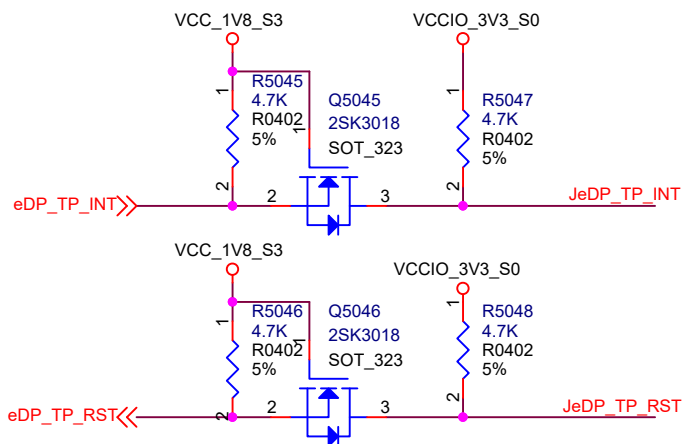
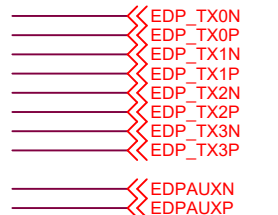


**Rackchip**  
 瑞芯微电子 Fuzhou Rockchip Electronics

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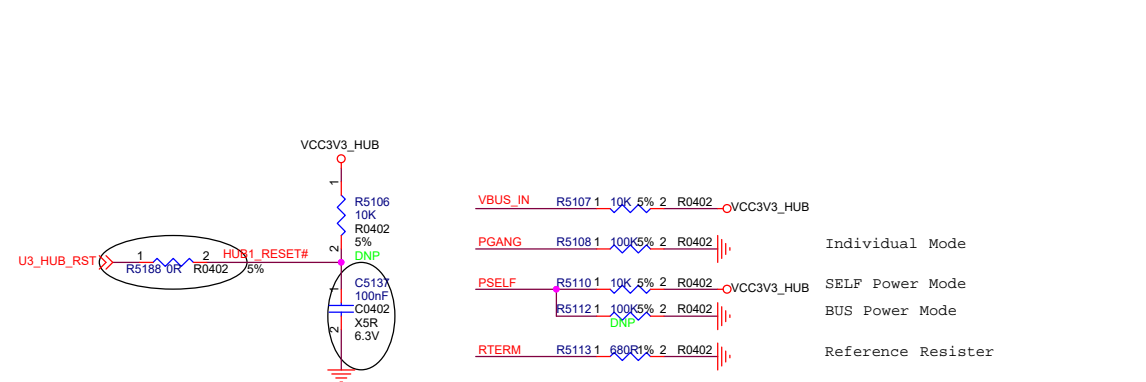
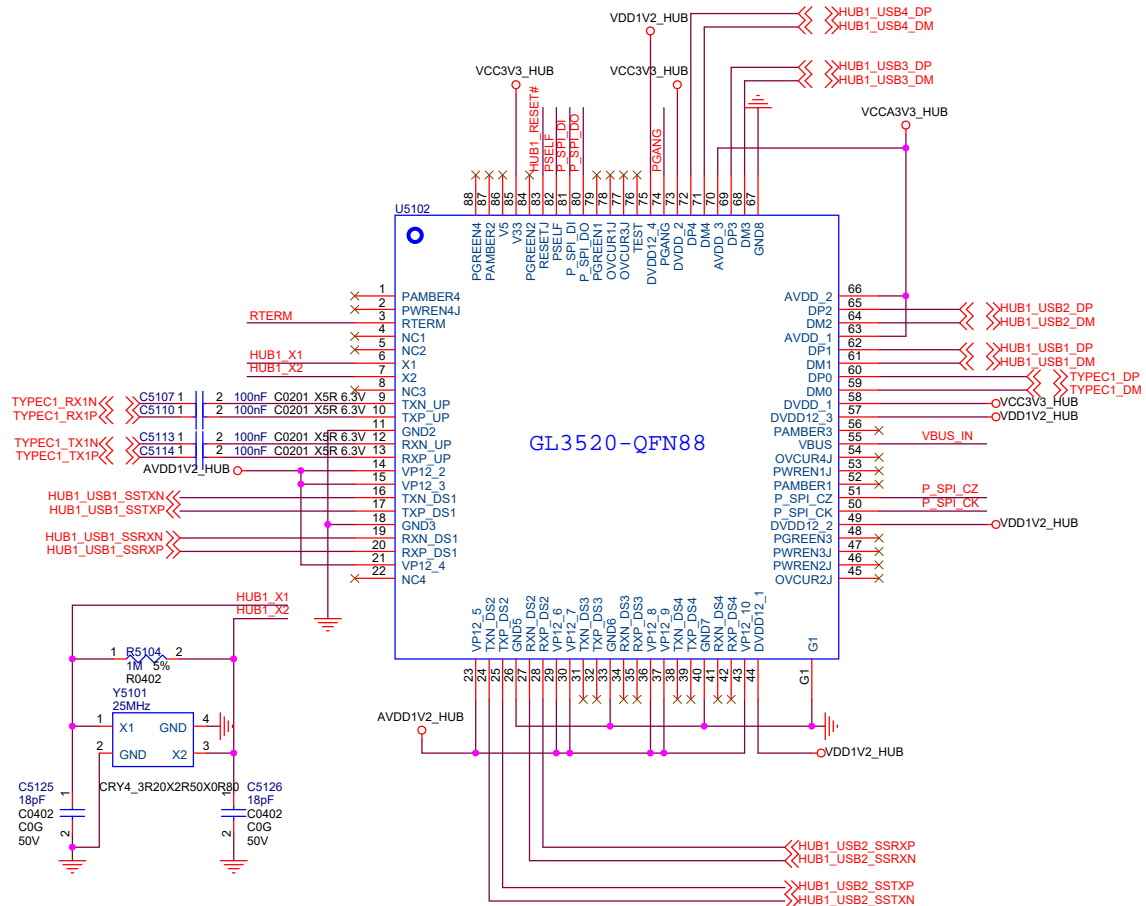


# eDP PORT

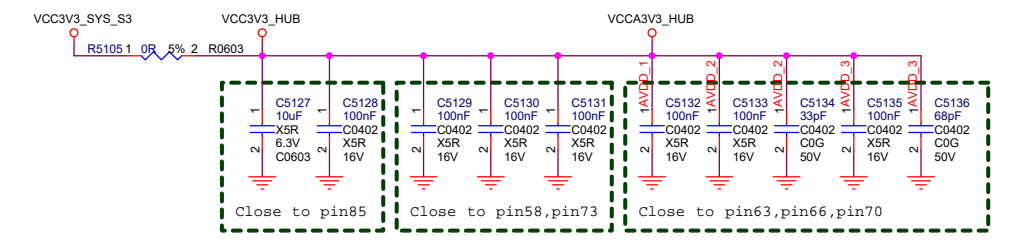
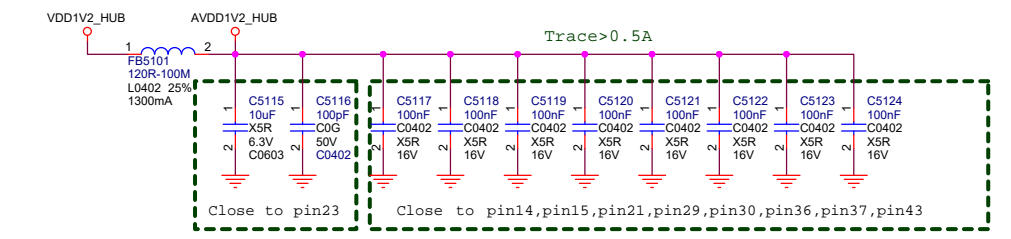
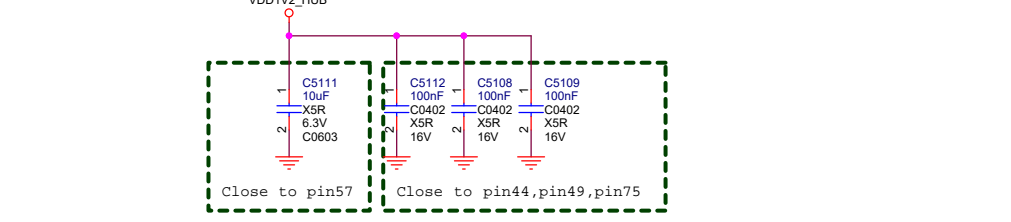
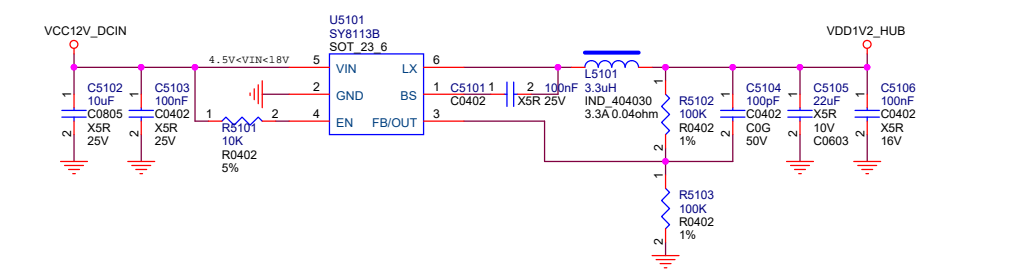


<b>Rockchip</b> 瑞芯微电子		<b>Fuzhou Rockchip Electronics</b>	
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<b>Date:</b>	Monday, December 17, 2018	<b>Rev:</b>	V1.0
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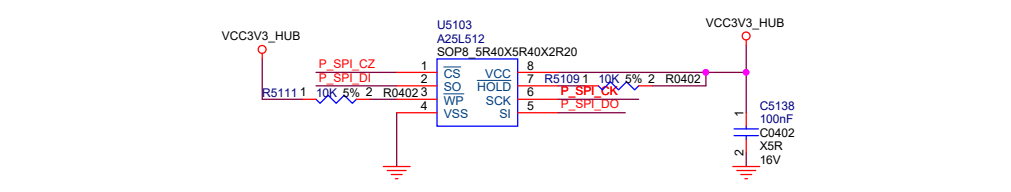
# USB3.0 HUB



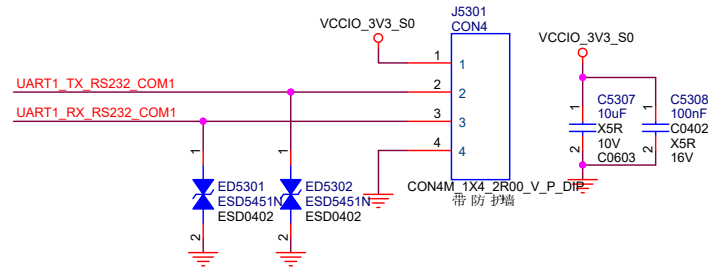
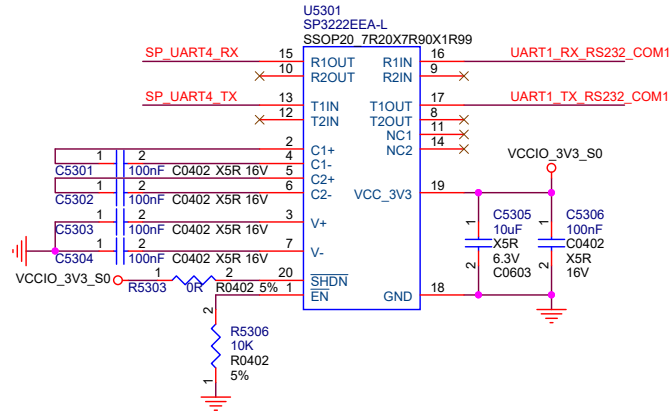
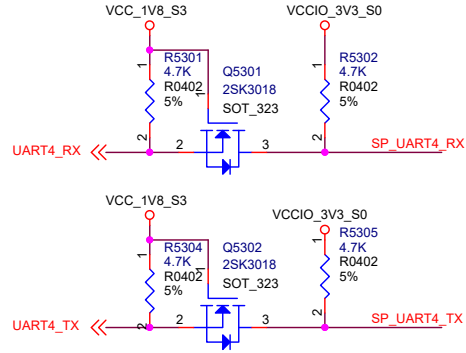
# HUB Power



# SPI Flash

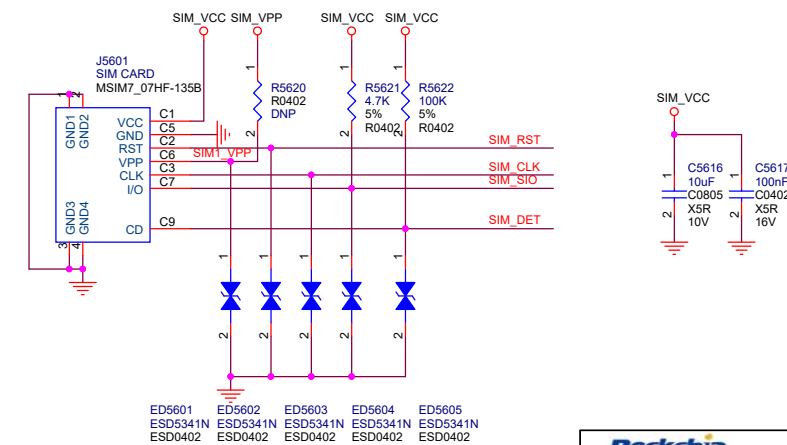
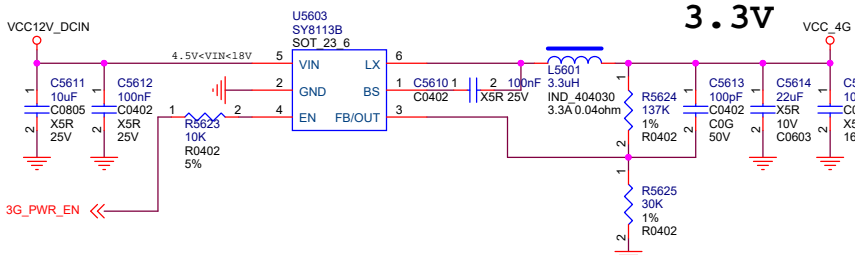
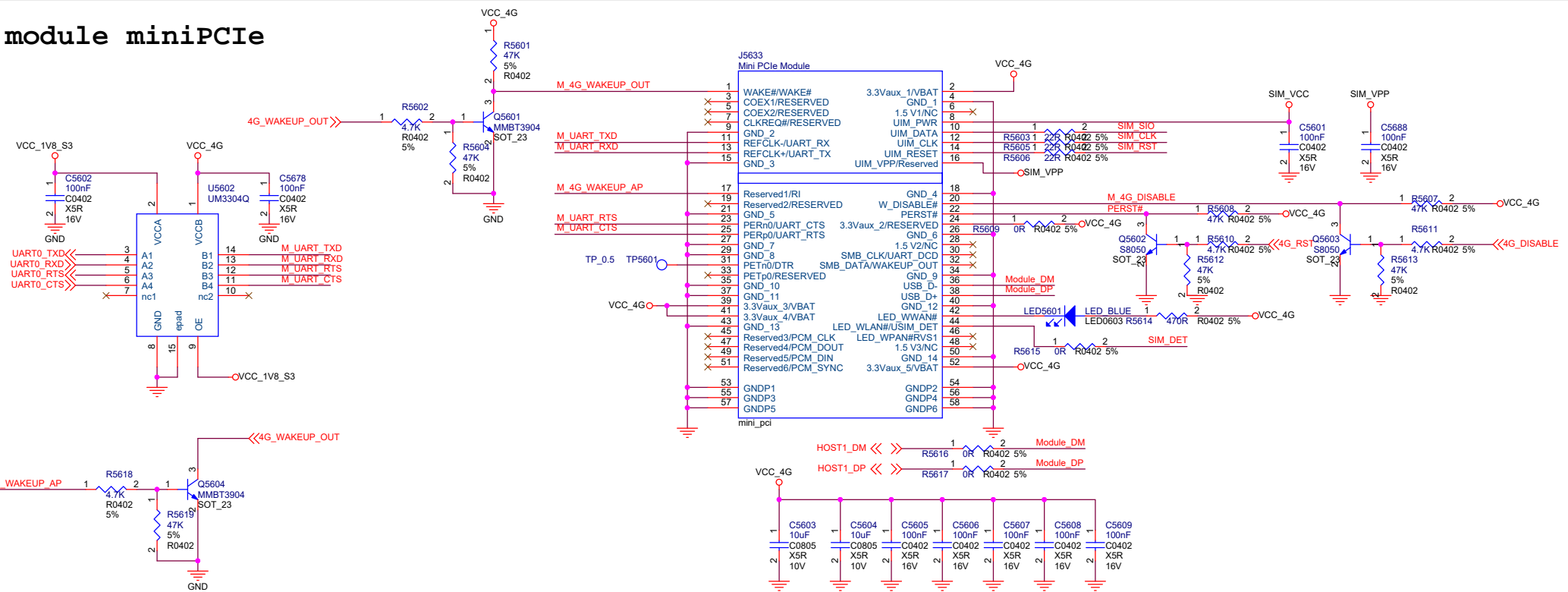


# UART RS232 Port1

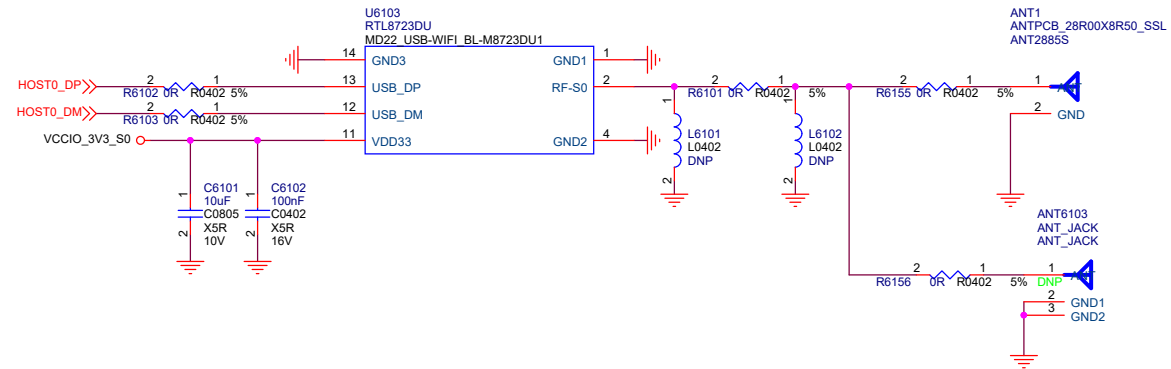


<b>Rockchip</b> 瑞芯微电子		Fuzhou Rockchip Electronics	
<b>Project:</b>	RK3399Pro LP3S178P232DD8		
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# 4G module miniPCIE

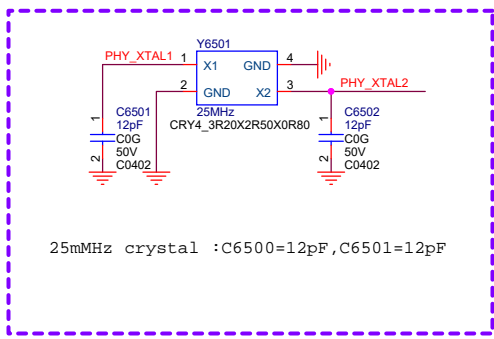


# USB WIFI

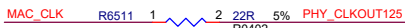


<b>Rockchip</b> 瑞芯微电子		Fuzhou Rockchip Electronics	
<b>Project:</b>	RK3399Pro LP3S178P232DD8		
<b>File:</b>	<Page name>		
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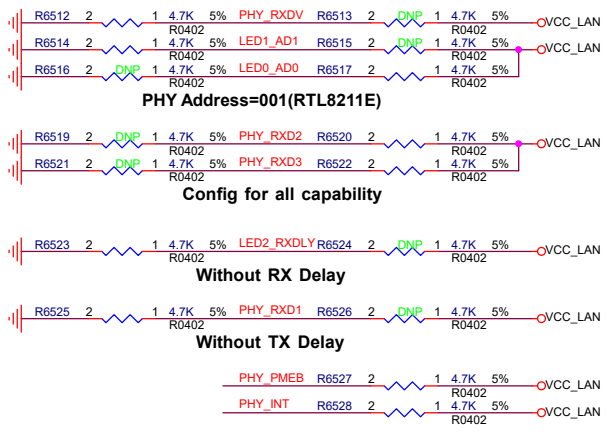
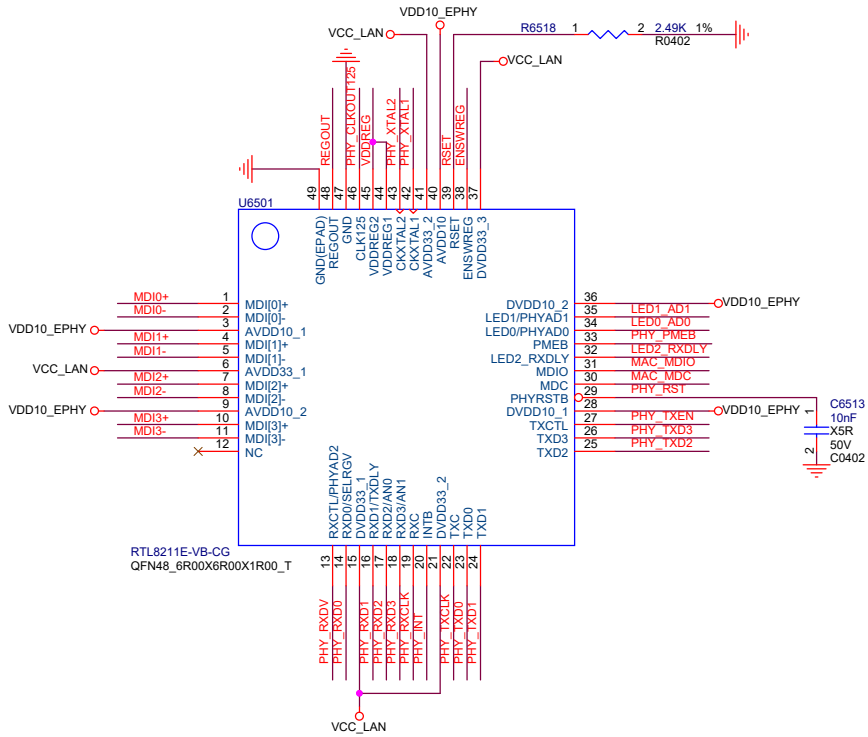
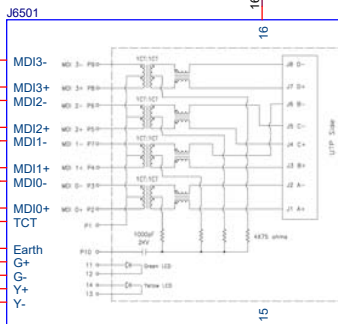
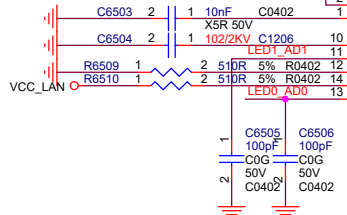
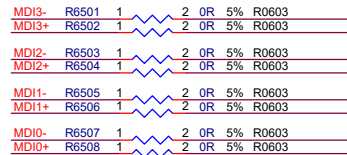
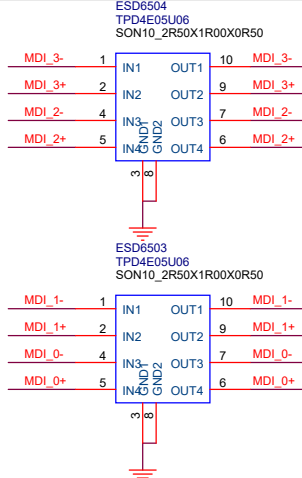
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- >>PHY\_TXD1
- >>PHY\_TXD2
- >>PHY\_TXD3
- >>PHY\_TXEN
- >>PHY\_TXCLK
- >>MAC\_RXD0
- >>MAC\_RXD1
- >>MAC\_RXD2
- >>MAC\_RXD3
- >>MAC\_RXDV
- >>MAC\_RXCLK
- >>MAC\_CLK
- >>MAC\_MDIO
- >>MAC\_MDC
- >>PHY\_RST
- >>PHY\_INT
- >>PHY\_PMEB



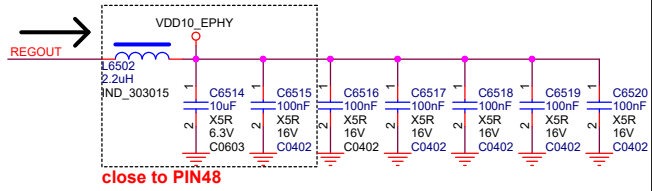
25mMHz crystal :C6500=12pF,C6501=12pF



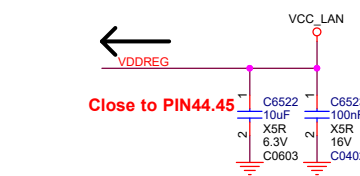
MAC <----- PHY



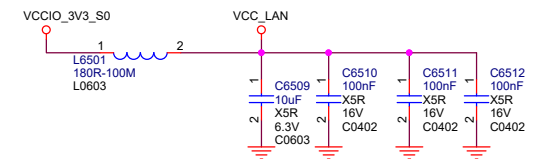
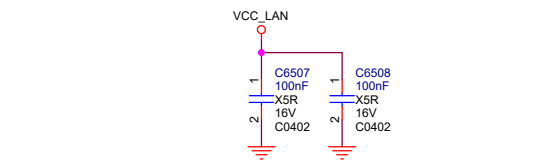
Connect ENSWREG to AVDD33 to enable Switching regulator or connect ENSWREG to GND to disable Switching regulator.



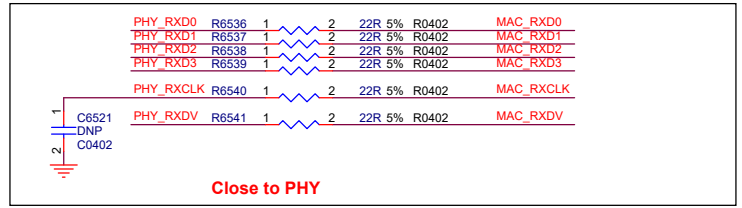
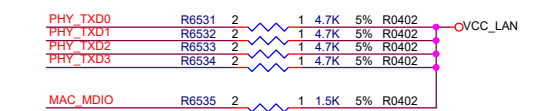
close to PIN48



Close to PIN44.45



Pull down for 2.5V RGMII(RTL8211D/8211E)  
Pull up for 3.3V RGMII (RTL8211D/8211E)  
Pull up 1.5 /1.8V RGMII (RTL8211E-VL only)



Close to PHY

# RGMII 1000M

**Rockchip** 瑞芯微电子 Fuzhou Rockchip Electronics

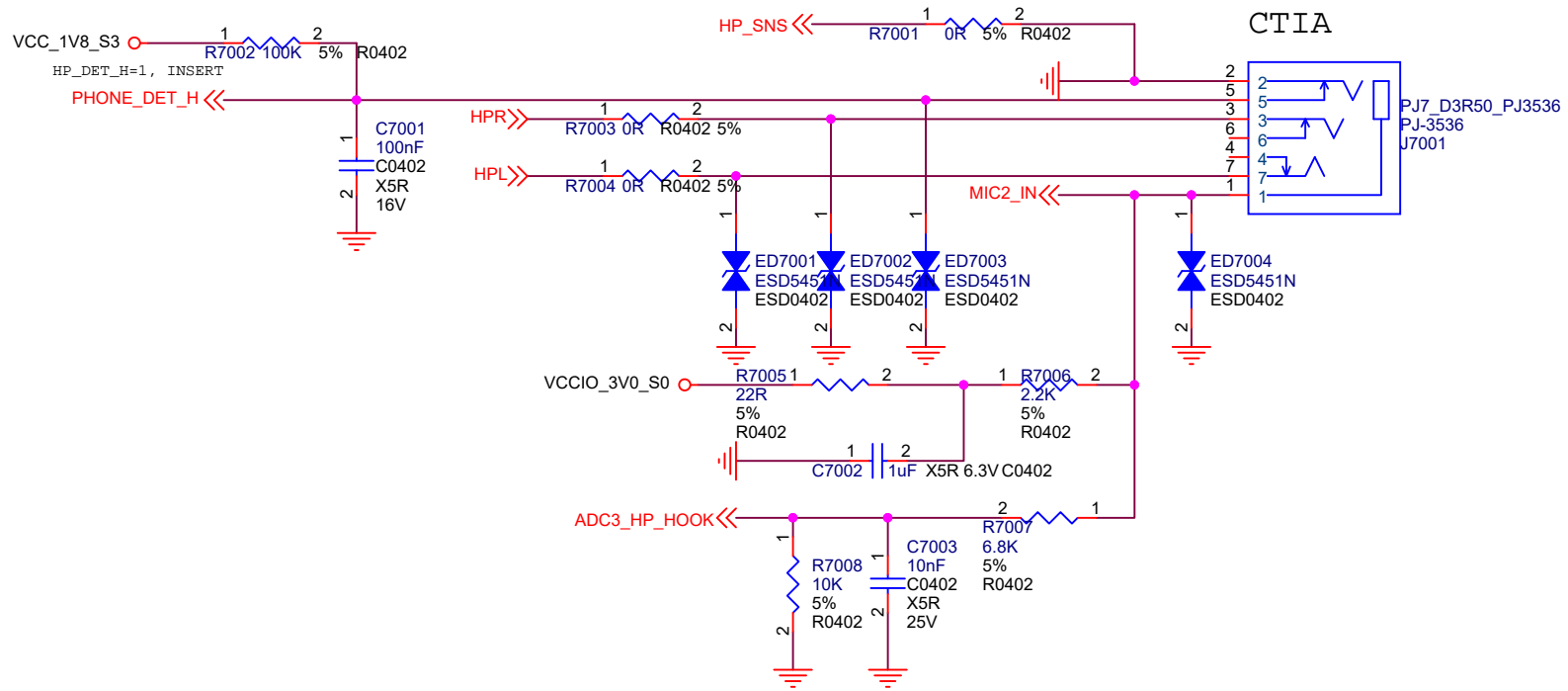
Project: RK3399Pro LP3S178P232DD8

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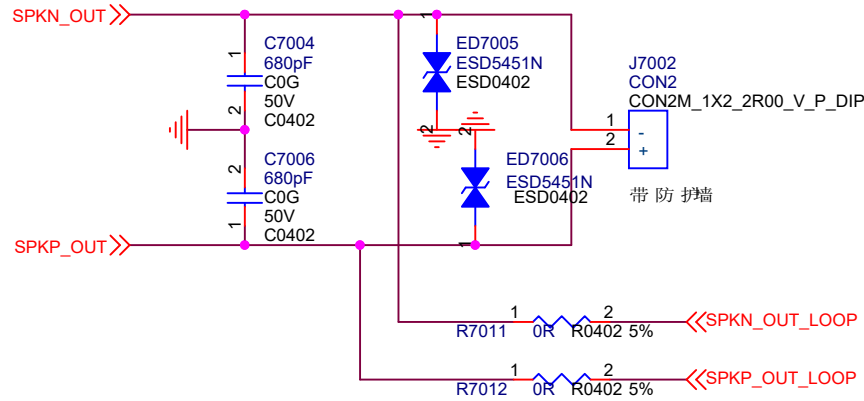
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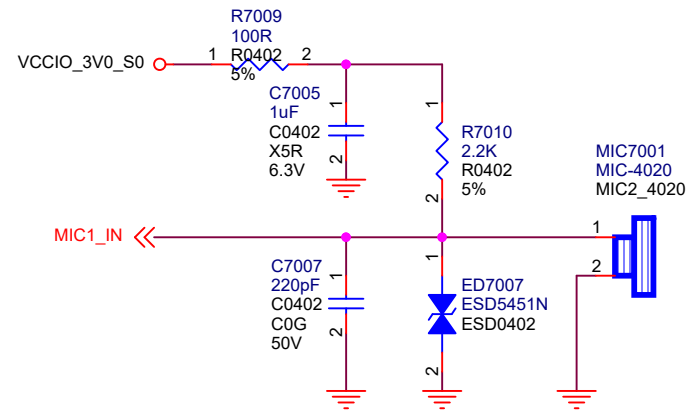
# HEADPHONE




# SPEAKER

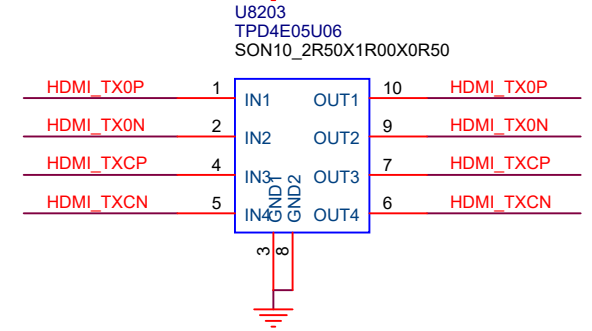
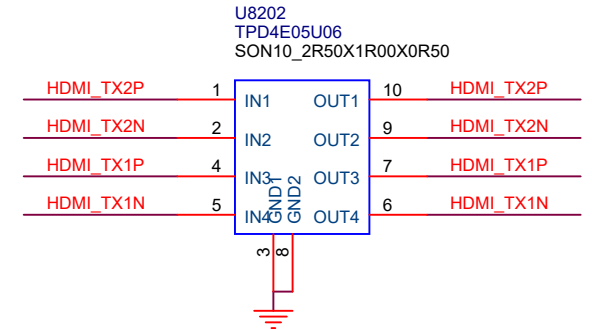
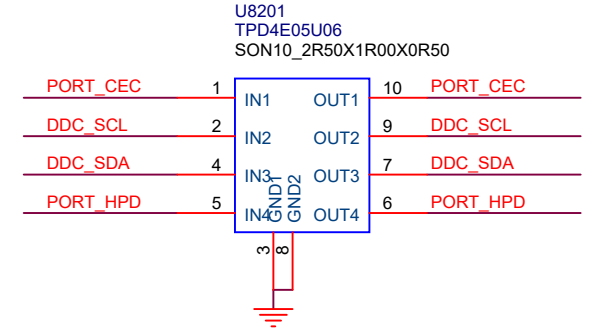
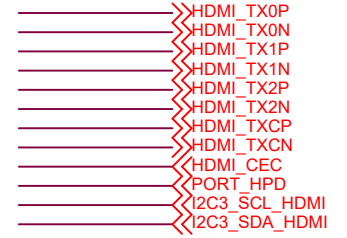
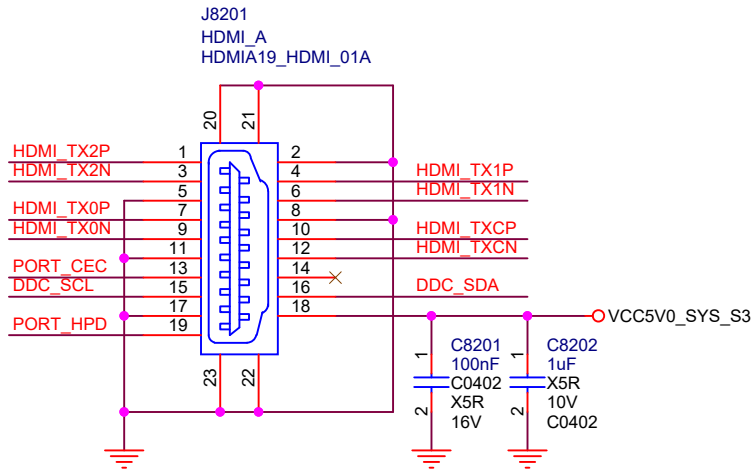
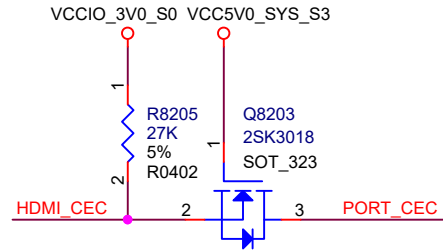
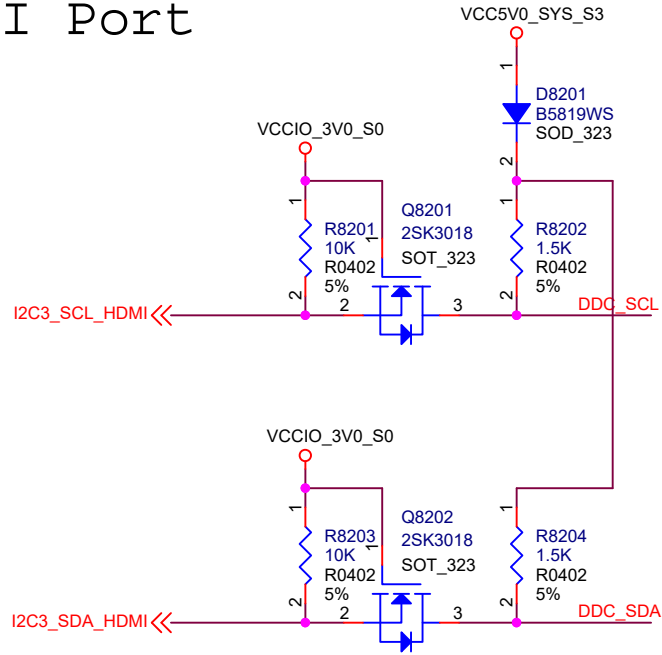


# MIC



 <b>Fuzhou Rockchip Electronics</b> 瑞芯微电子	
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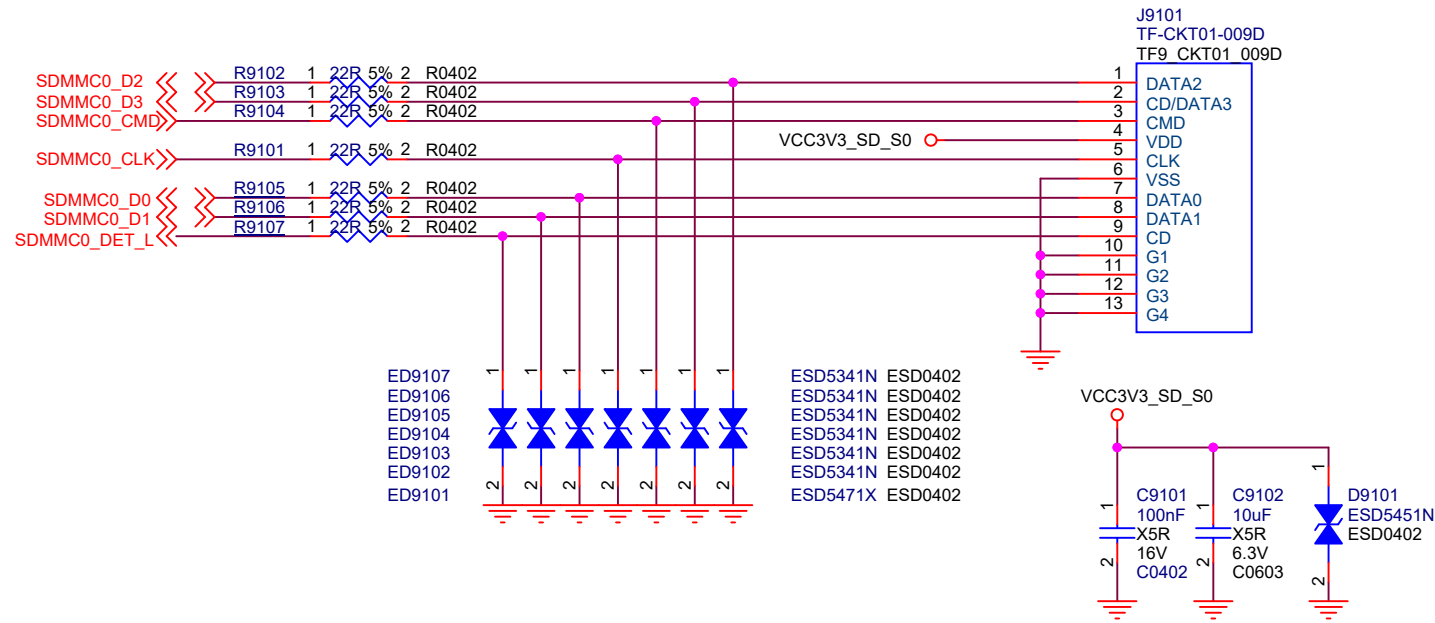
# HDMI Port




<b>Rockchip</b> 瑞芯微电子		<b>Fuzhou Rockchip Electronics</b>	
<b>Project:</b>	<b>RK3399Pro LP3S178P232DD8</b>		
<b>File:</b>	<b>&lt;Page name&gt;</b>		
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<b>Designed by:</b>	HXS	<b>Sheet:</b>	82 of 99

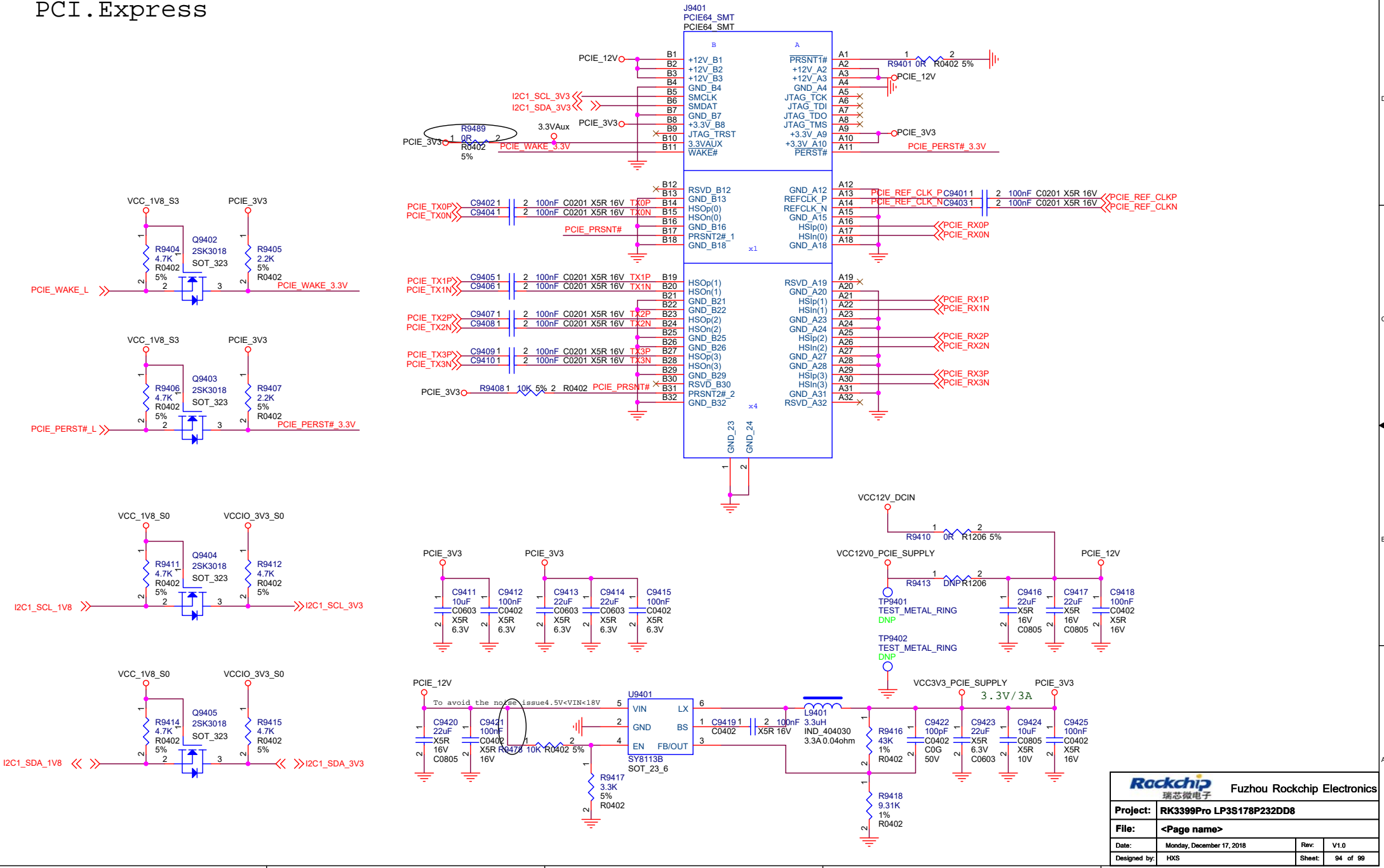


# TF Card



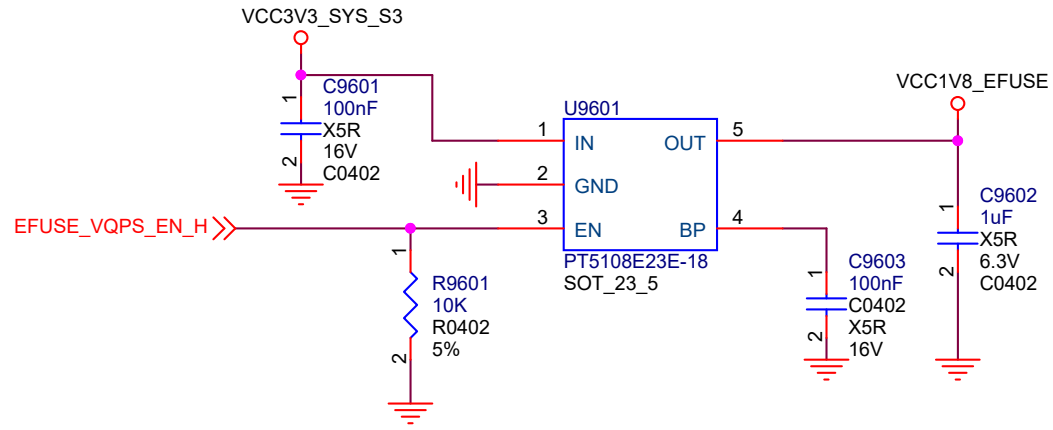
 <b>Fuzhou Rockchip Electronics</b> 瑞芯微电子	
<b>Project:</b>	<b>RK3399Pro LP3S178P232DD8</b>
<b>File:</b>	<b>&lt;Page name&gt;</b>
<b>Date:</b>	Monday, December 17, 2018
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# PCI .Express

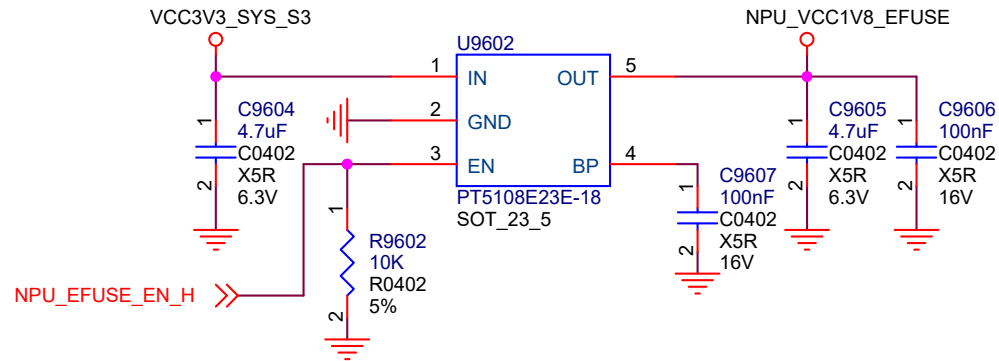


<b>Rockchip</b> 瑞芯微电子			
Fuzhou Rockchip Electronics			
<b>Project:</b>	RK3399Pro LP3S178P232DD8		
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# EFUSE POWER



# NPU EFUSE POWER



Fuzhou Rockchip Electronics

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File: <Page name>

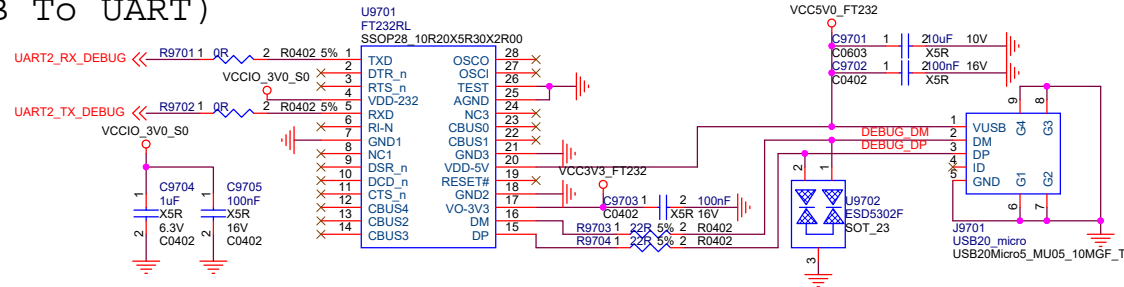
Date: Monday, December 17, 2018

Rev: V1.0

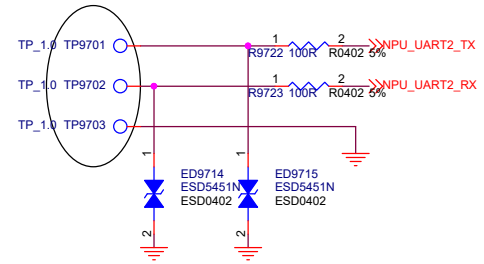
Designed by: HXS

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# Debug UART2 (USB To UART)



# NPU UART



# FAN

