

# SoM Schematic For RK3399Pro

**RK3399Pro\_SoM\_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/TYPEC**

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项目:	SYSTEM ON MODULE BOARD		
文件:	RK3399Pro_SOM_SCH		
图纸:	00.Cover Page		
修改日期:	Sunday, April 28, 2019	版本:	V0.9
设计者:	zhang.chen	页码:	0 of 22

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## Note

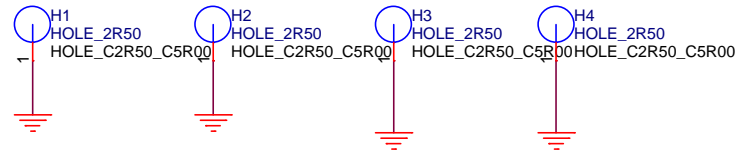
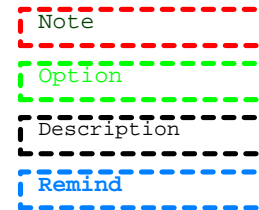
### NOTE 1:


#### 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:

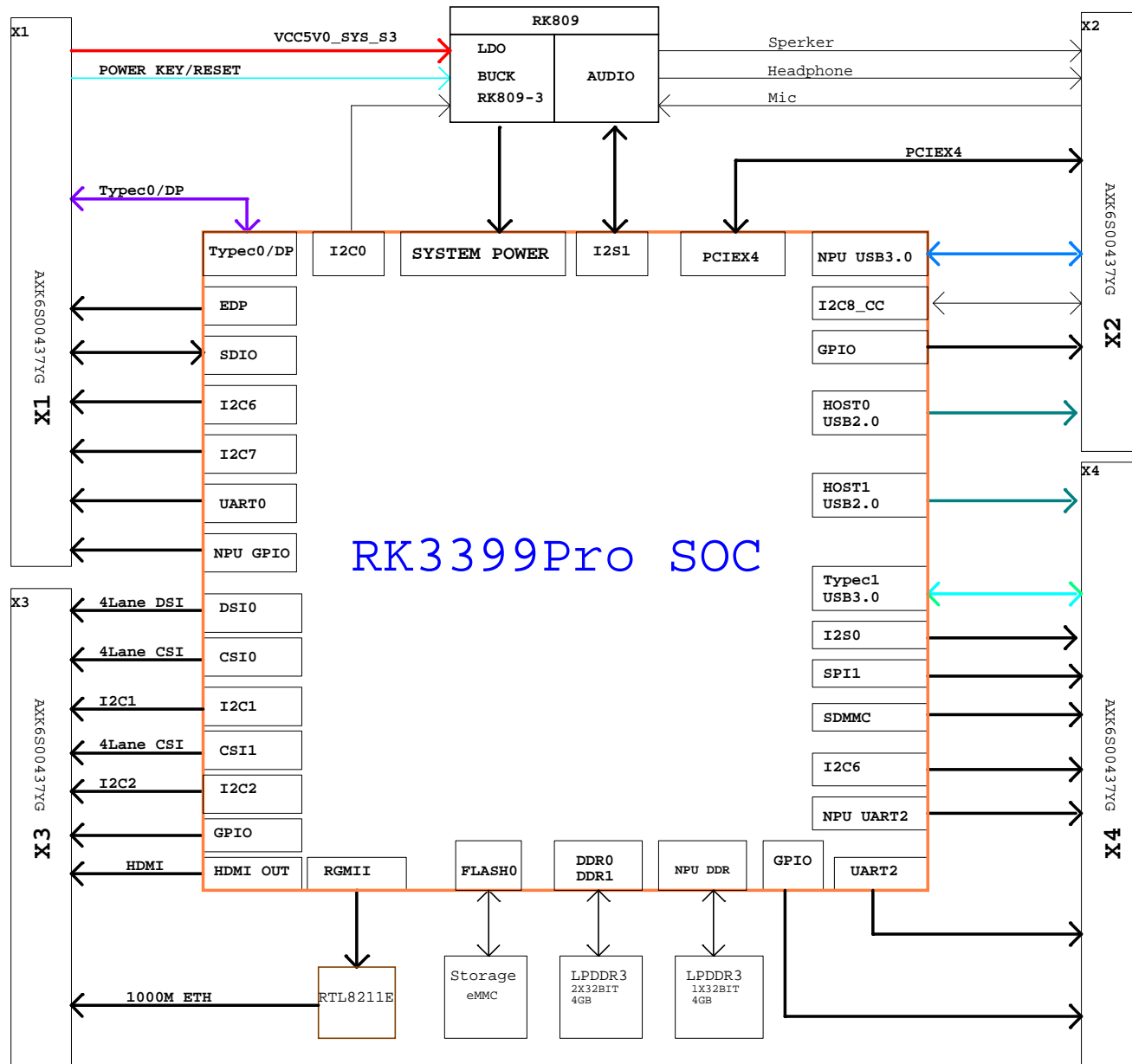
Please use our recommended components to avoid too many changes.For more informations about the second source,please refer to our AVL.

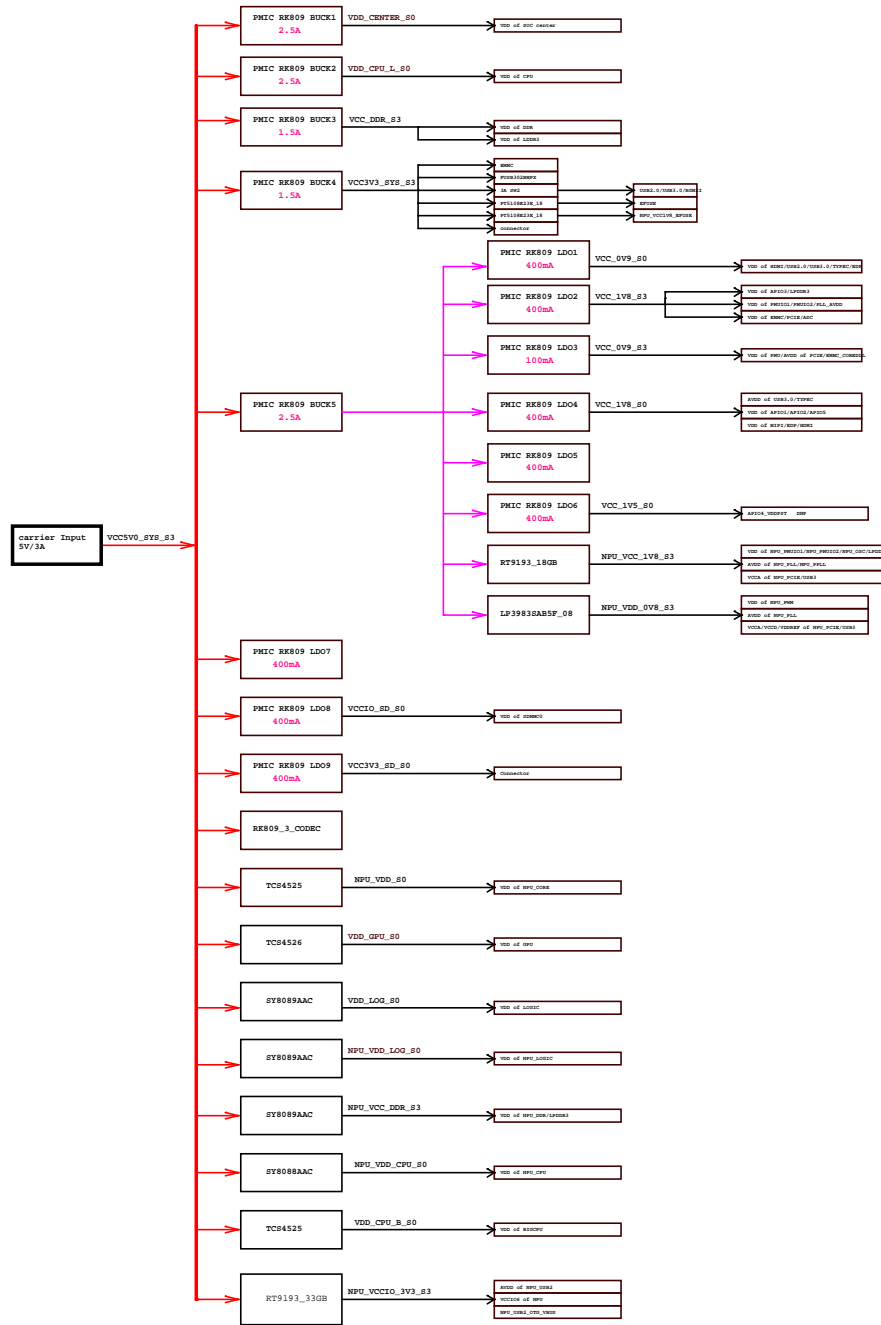


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项目:	SYSTEM ON MODULE BOARD		
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Version	Date	Author	Change List	Approved
V0.9	20181223		First edition for RK3399Pro	cza

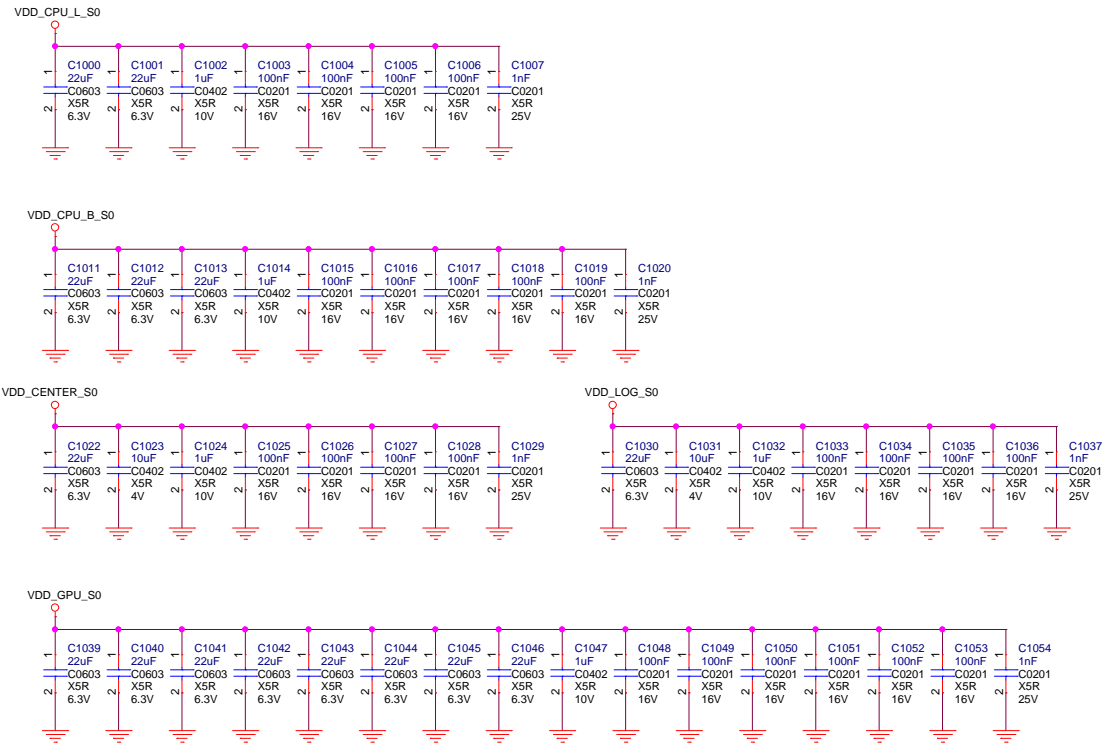
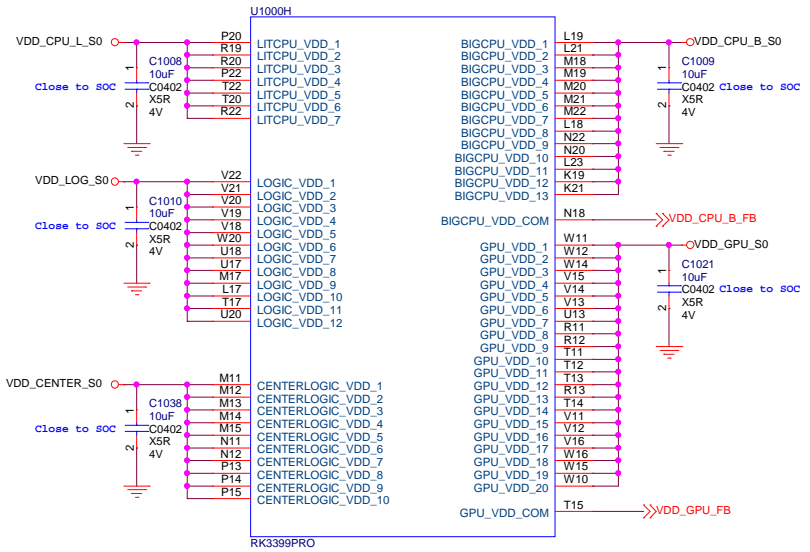
 <b>贝启科技</b> 厦门贝启科技有限公司 <small>beiqicloud.com</small>			
项目:	SYSTEM ON MODULE BOARD		
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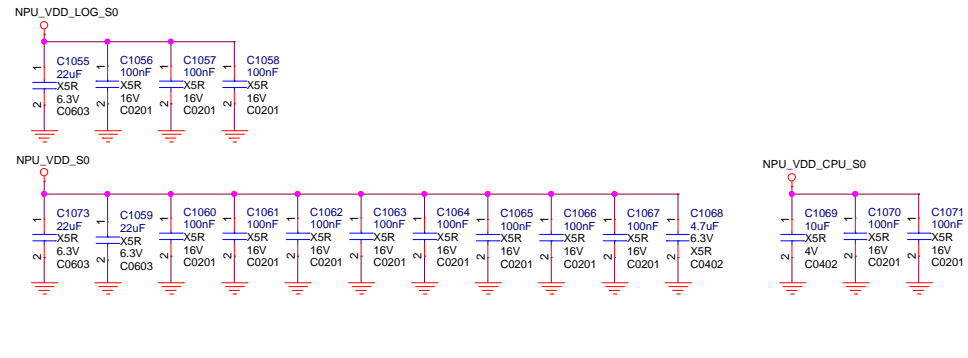
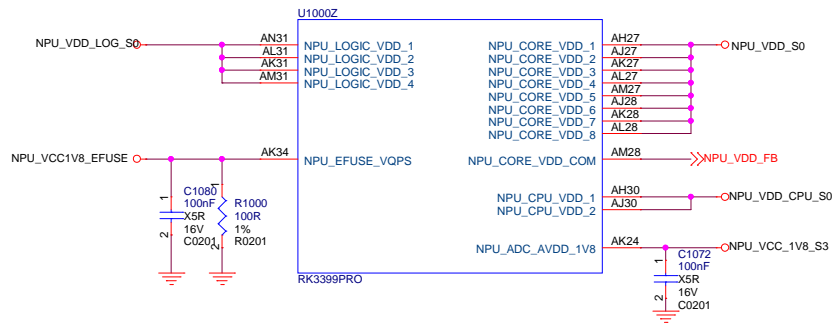





# Power

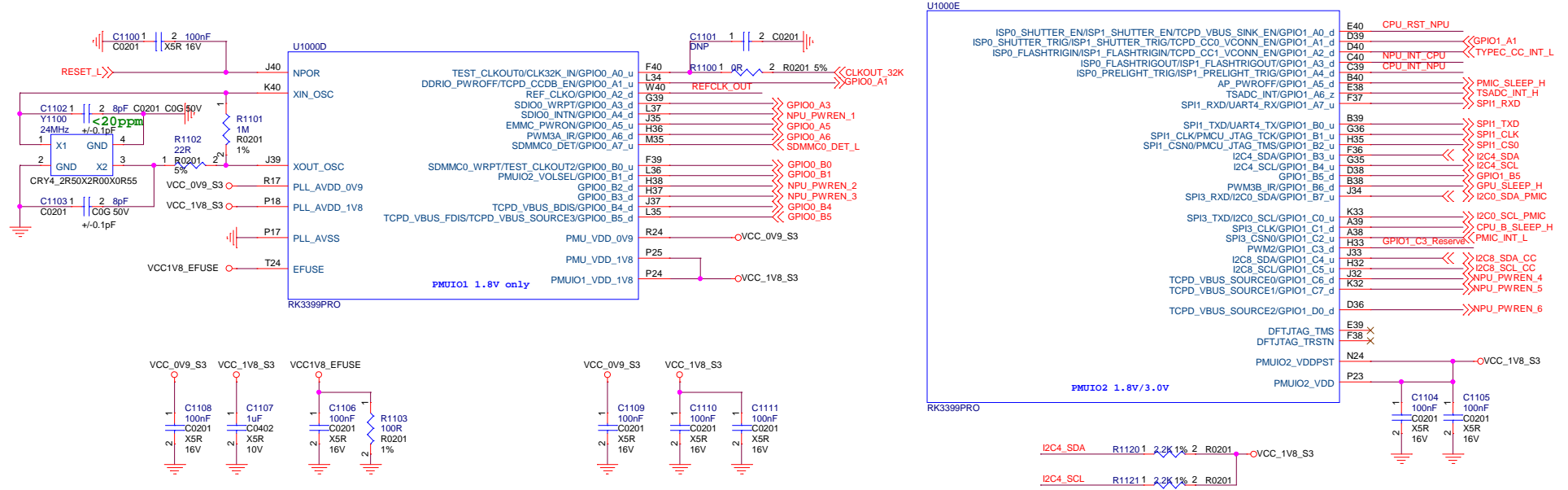


# NPU Power

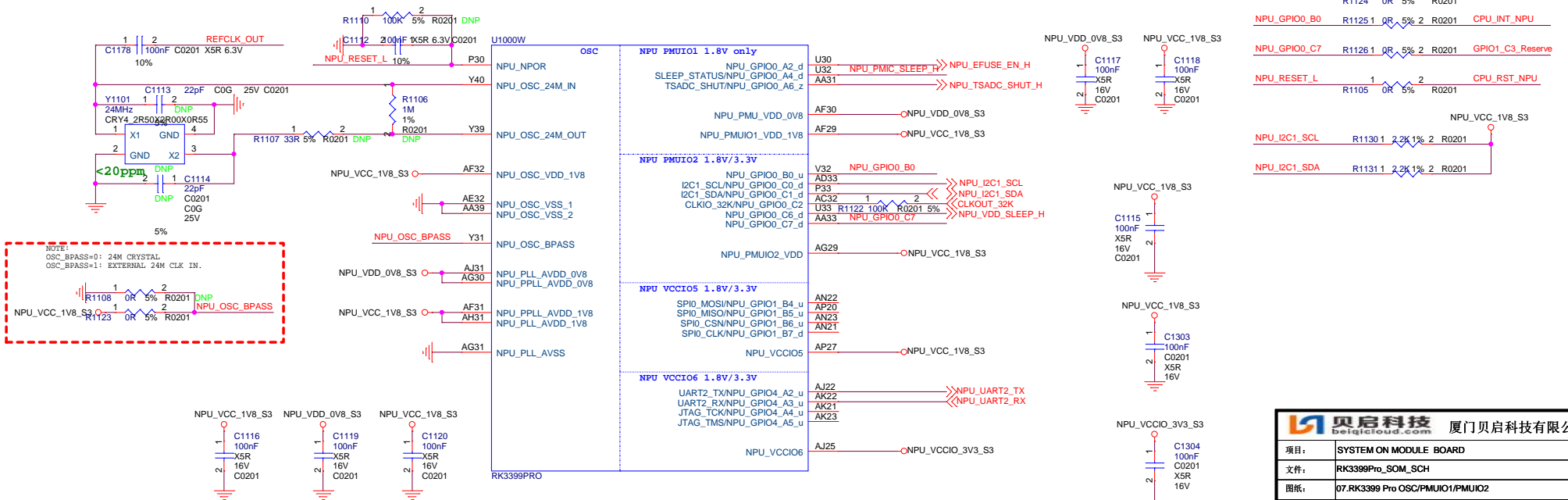


 <span style="float: right;">厦门贝启科技有限公司</span>			
项目:	SYSTEM ON MODULE BOARD		
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图纸:	06.RK3399 Pro Power		
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# PMUIO1/PMUIO2



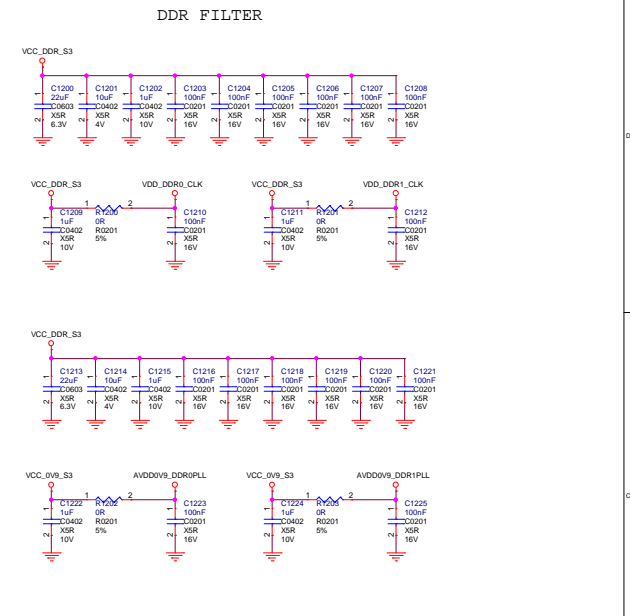
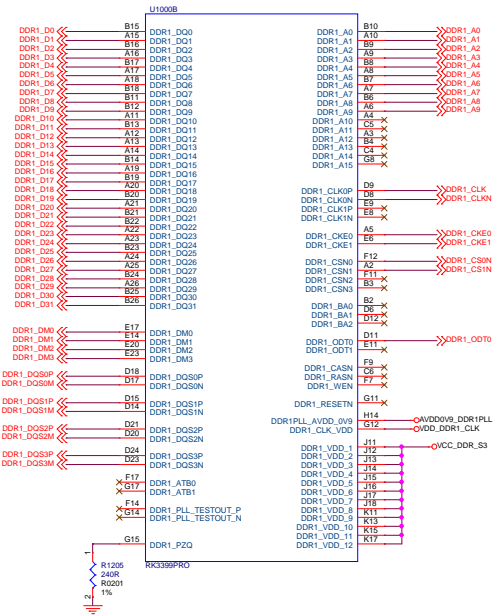
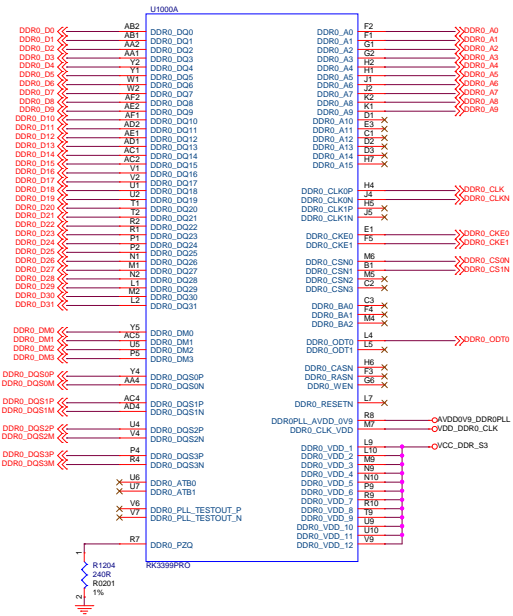
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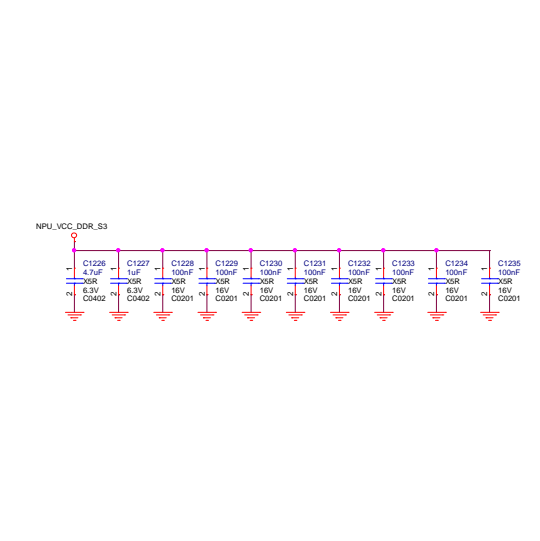
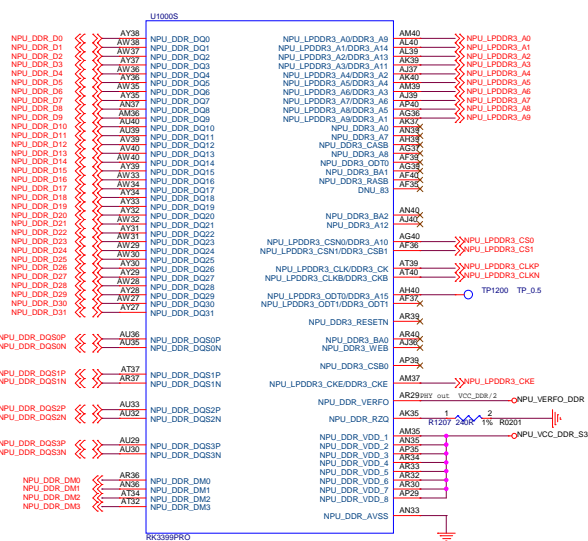
厦门贝启科技有限公司			
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文件:	RK3399Pro_SOM_SCH		
图框:	07.RK3399 Pro OSC/PMUIO1/PMUIO2		
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# DDR Controller

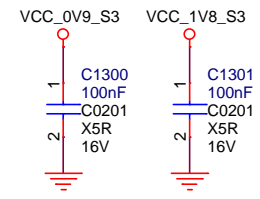
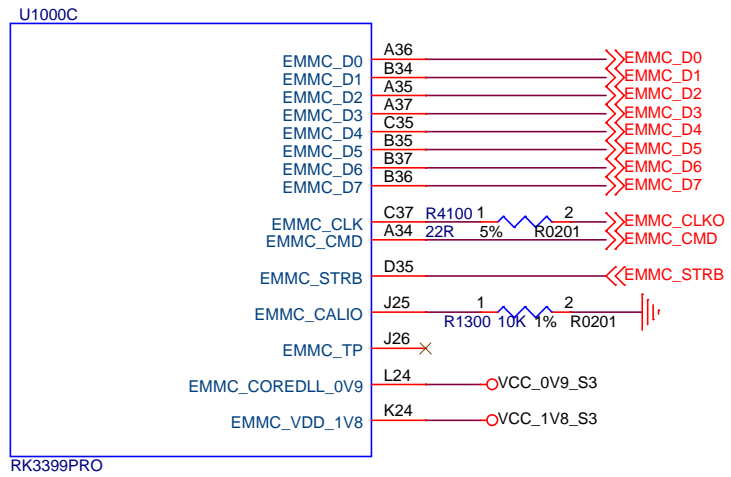


# NPU DDR Controller



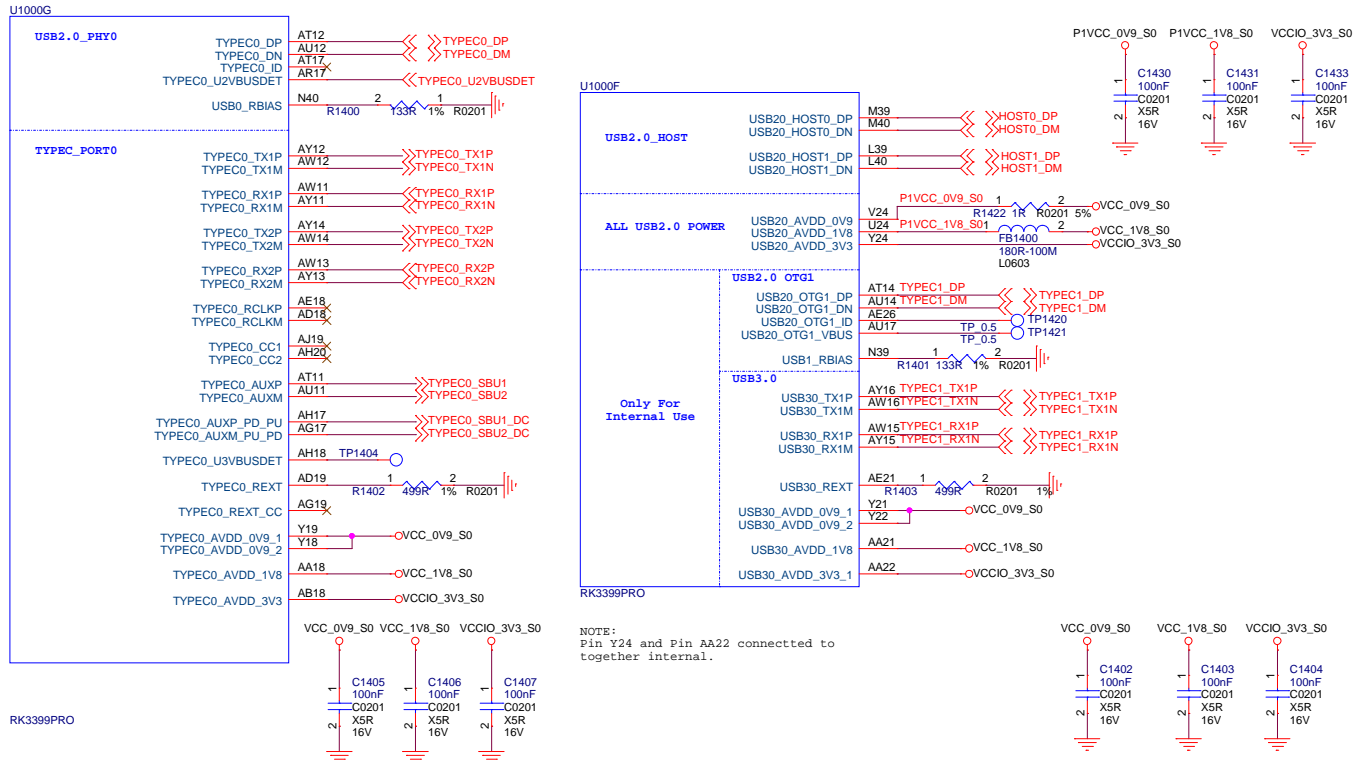
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C1201	10uF
C1202	1uF
C1203	100nF
C1204	100nF
C1205	100nF
C1206	100nF
C1207	100nF
C1208	100nF
C1210	22uF
C1211	10uF
C1212	1uF
C1213	100nF
C1214	100nF
C1215	100nF
C1216	100nF
C1217	100nF
C1218	100nF
C1219	100nF
C1220	100nF
C1221	100nF
C1222	22uF
C1223	10uF
C1224	1uF
C1225	100nF
C1226	100nF
C1227	100nF
C1228	4.7uF
C1229	1uF
C1230	100nF
C1231	100nF
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C1233	100nF
C1234	100nF
C1235	100nF

# EMMC

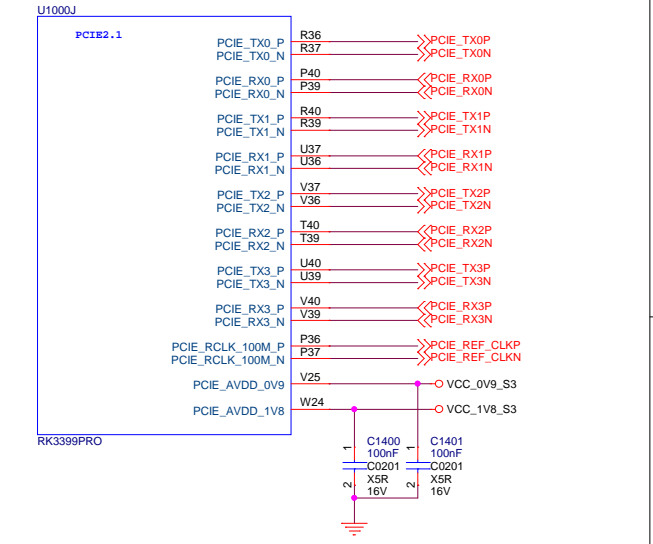


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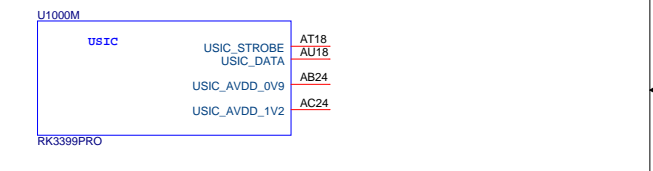
### USB/TYPEC



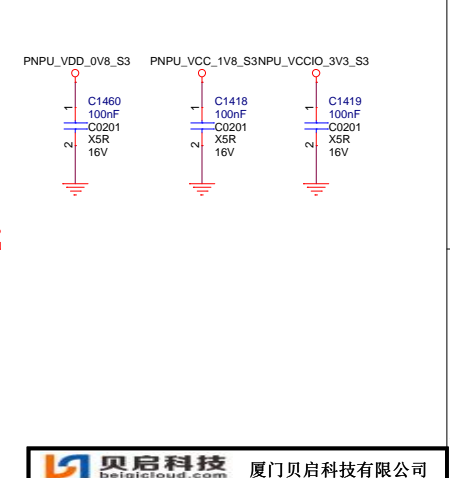
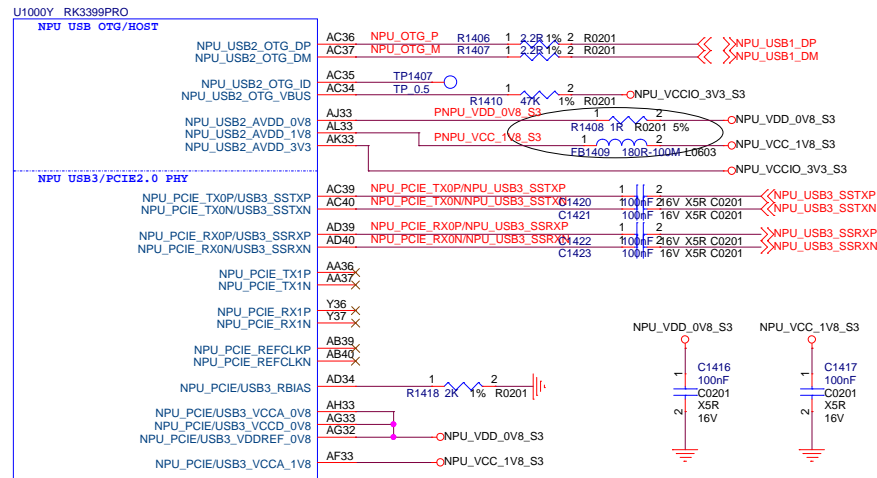
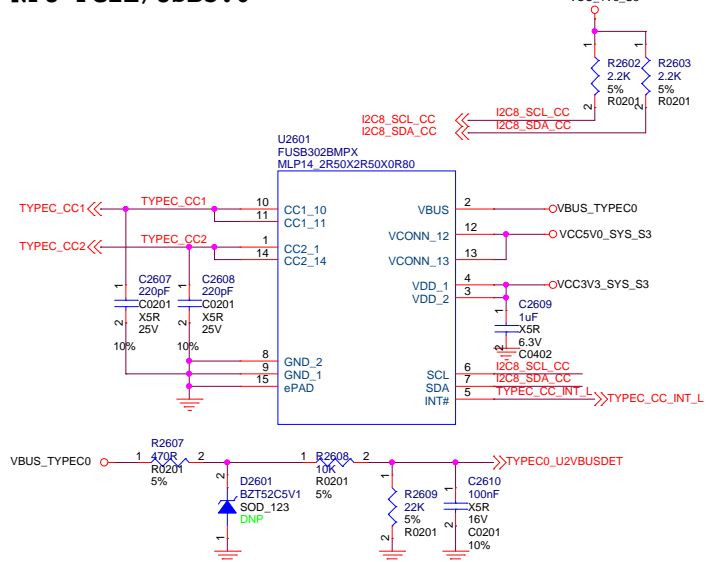
### PCIE



### USIC

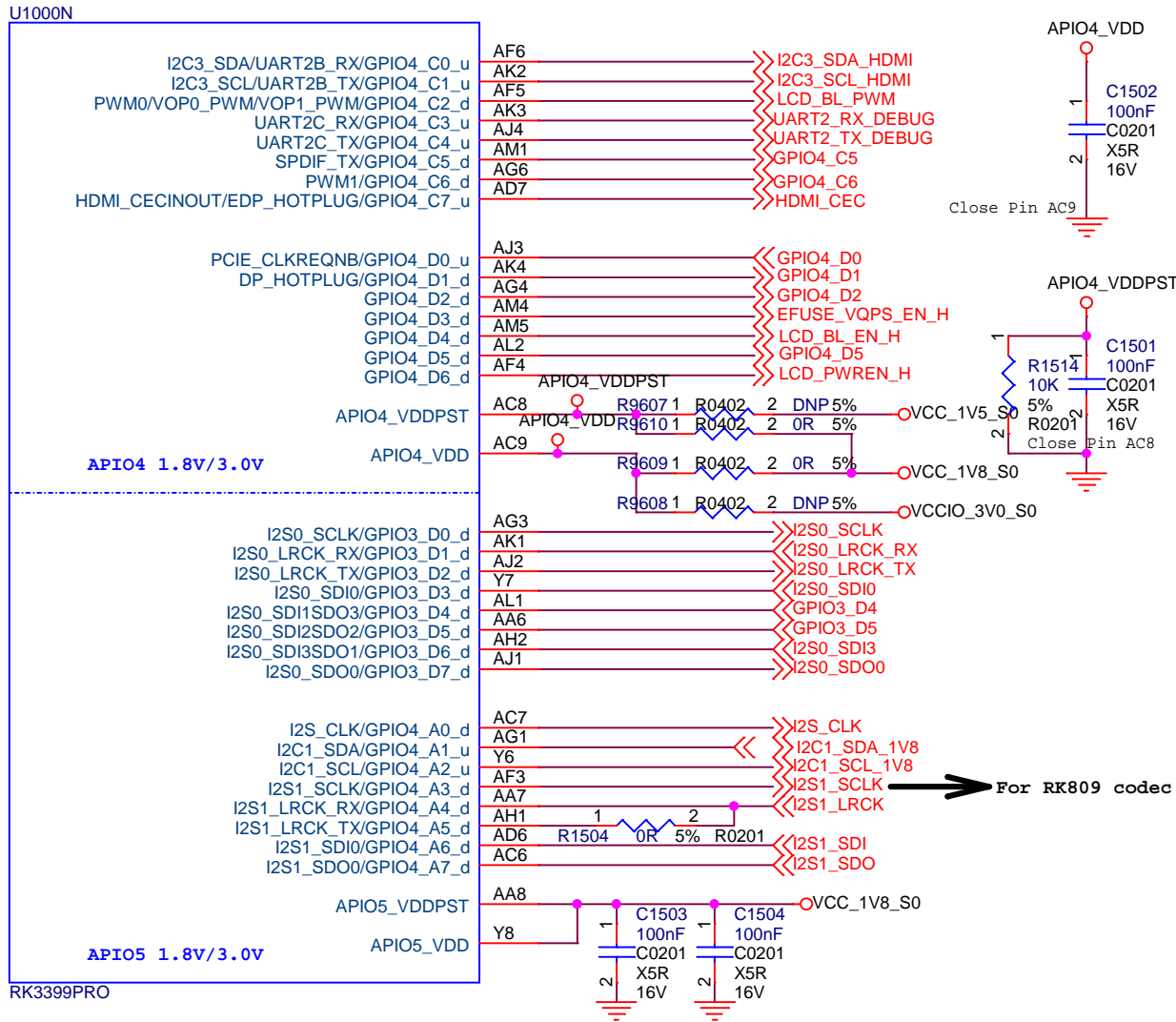


### NPU PCIE/USB3.0

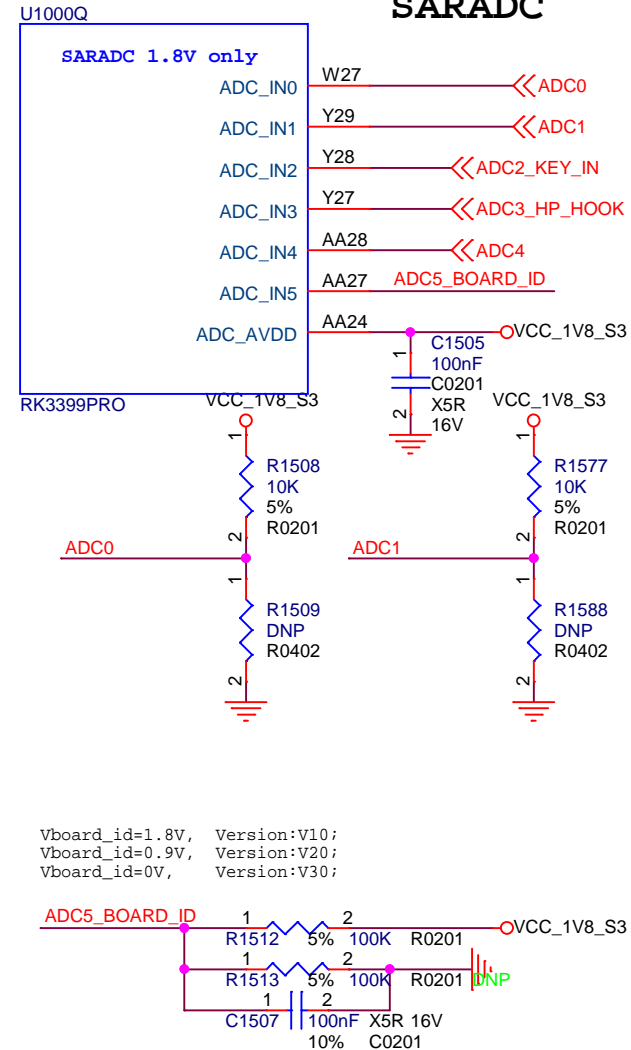


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项目:	SYSTEM ON MODULE BOARD		
文件:	RK3399Pro_SOM_SCH		
图框:	10.RK3399 Pro USB2.0/TYPEC/PCIE		
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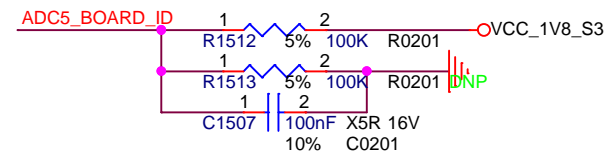
# GPIO



# SARADC

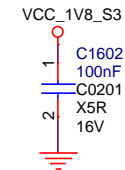
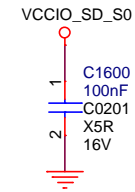
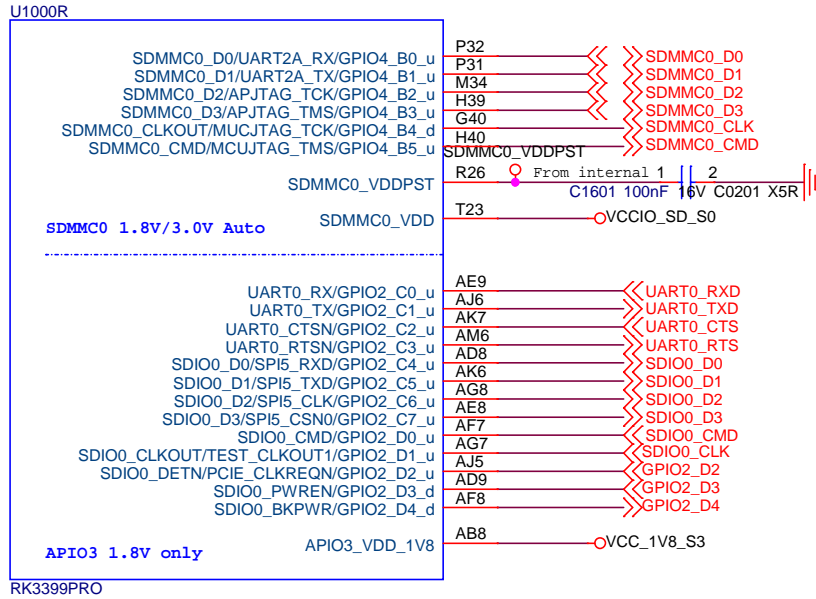



Vboard\_id=1.8V, Version:V10;  
 Vboard\_id=0.9V, Version:V20;  
 Vboard\_id=0V, Version:V30;



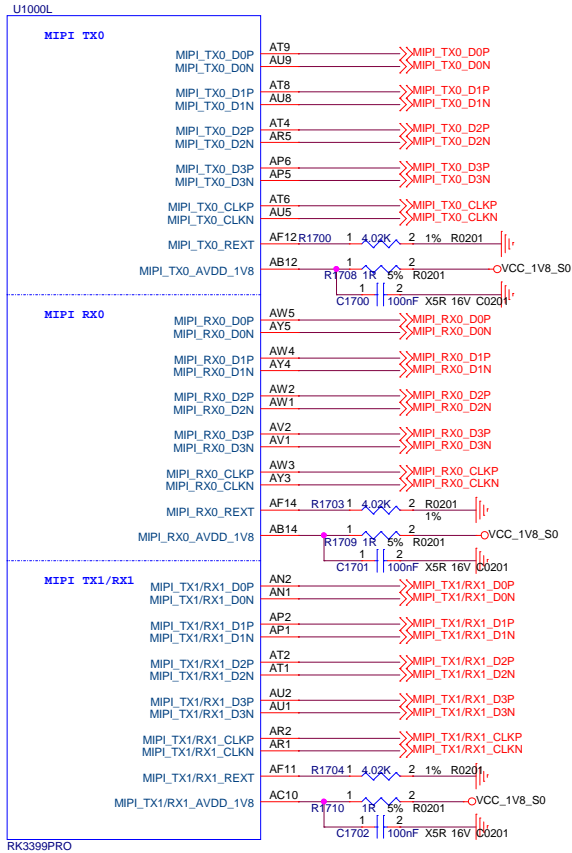
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图纸:	11.RK3399 Pro SARADC/GPIO		
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# SDMMC0/SDIO0 Controller



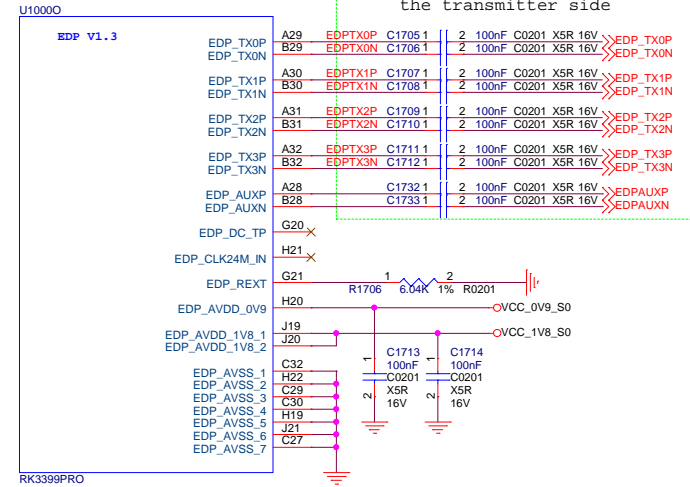
			
项目:	SYSTEM ON MODULE BOARD		
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图纸:	12.RK3399 Pro SDMMC0/SDMMC1		
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# MIPI CSI/DSI



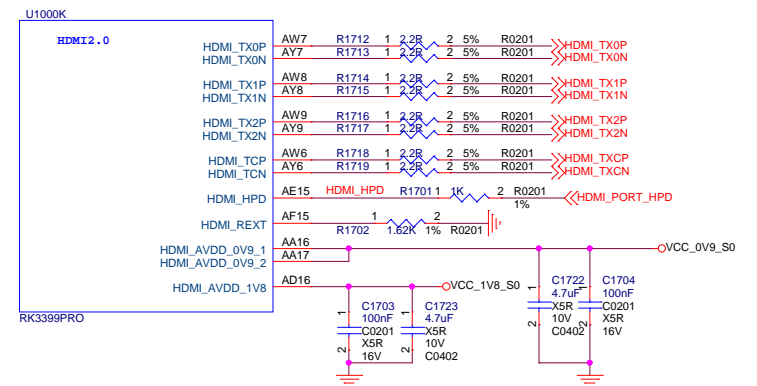
RK3399PRO

# EDP




RK3399PRO

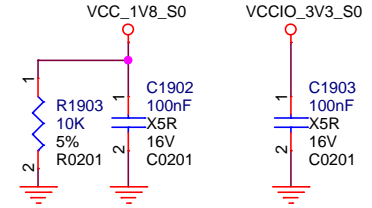
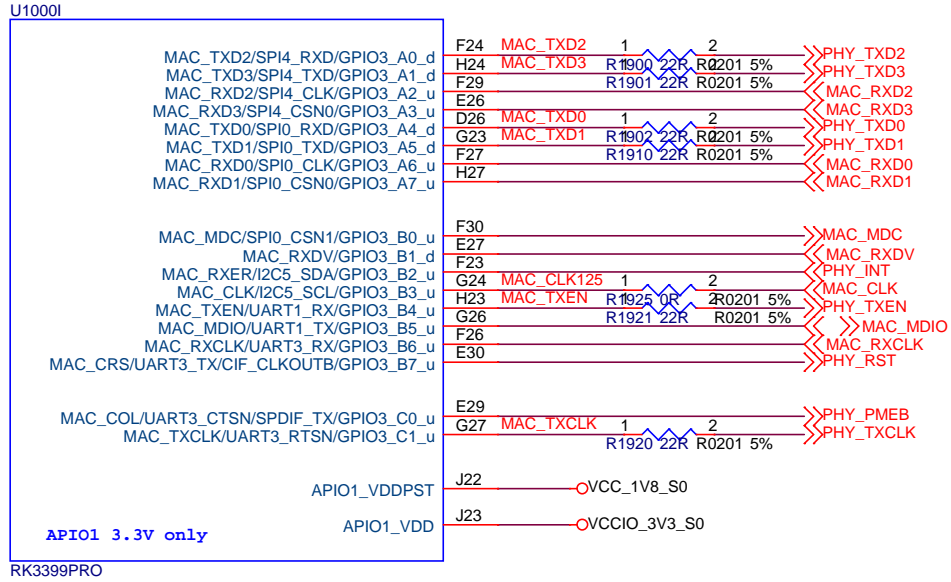
# HDMI



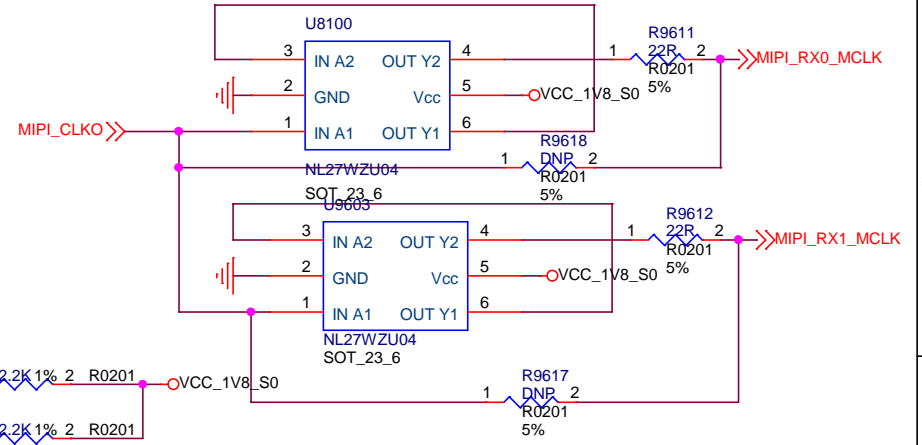
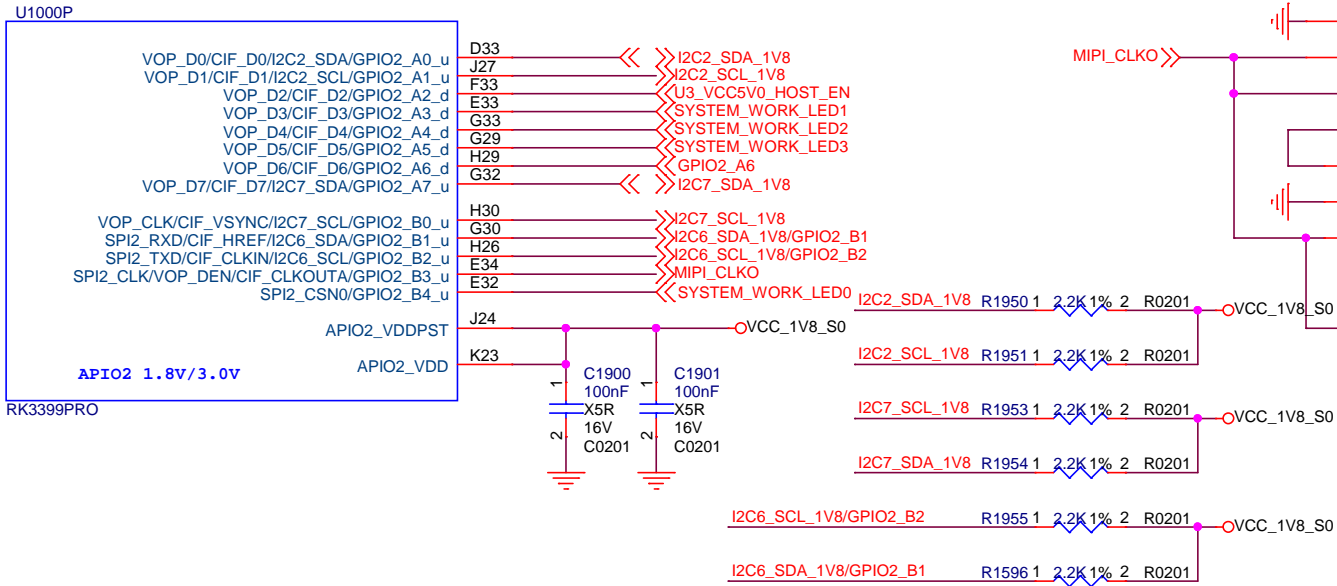
RK3399PRO


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项目:	SYSTEM ON MODULE BOARD		
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图纸:	13.RK3399 Pro Display		
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# MAC



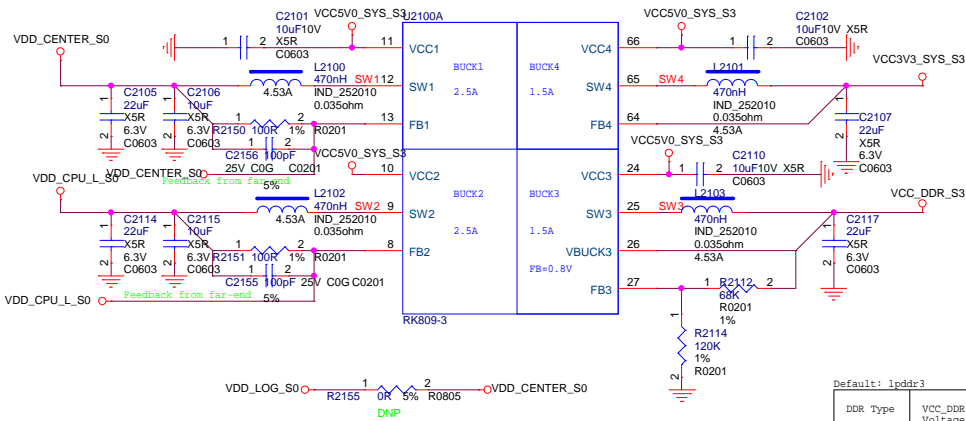
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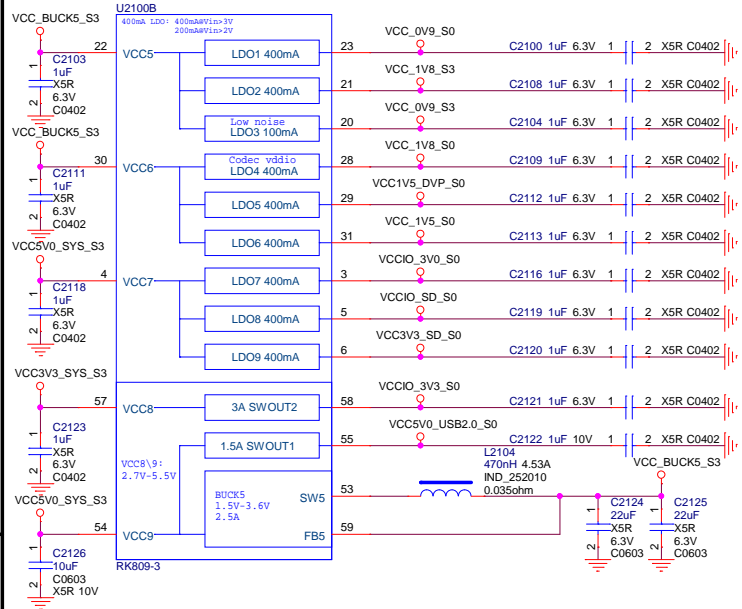
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项目:	SYSTEM ON MODULE BOARD		
文件:	RK3399Pro_SOM_SCH		
图纸:	14.RK3399 Pro RGMII/VOP/CIF		
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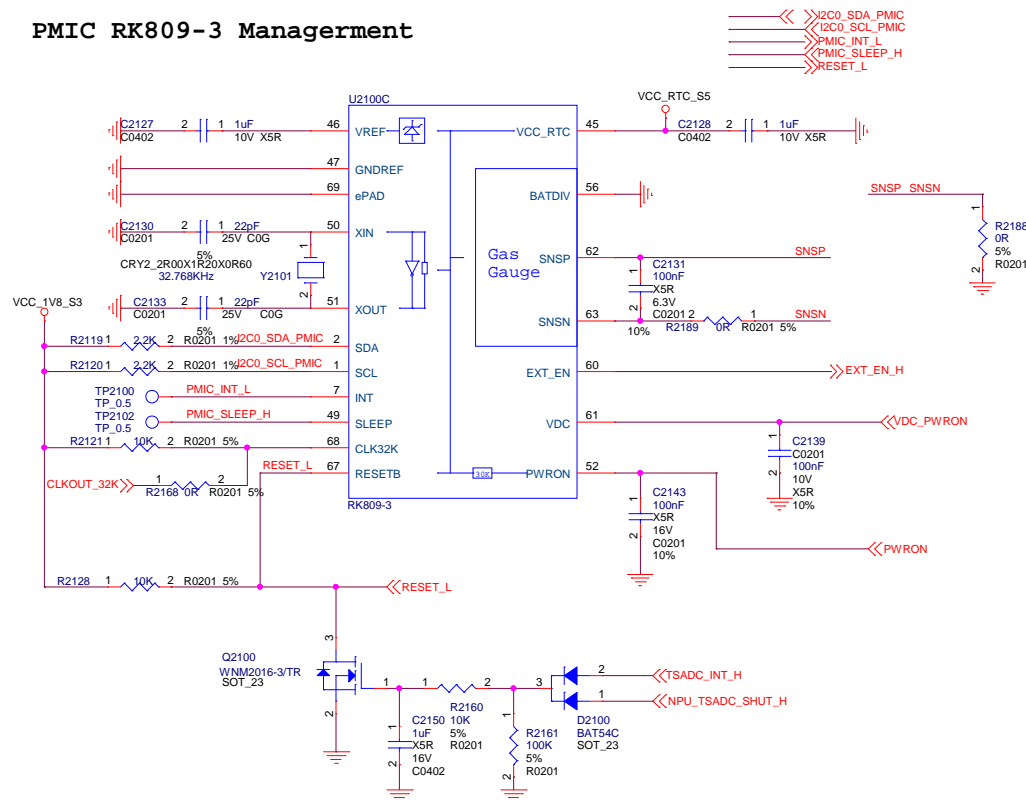
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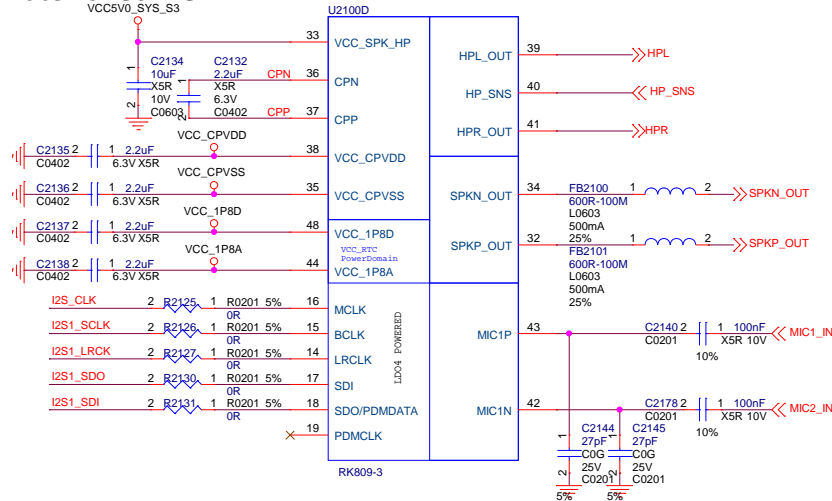
### PMIC RK809-3 LDO



### PMIC RK809-3 Management



### PMIC RK809-3 CODEC

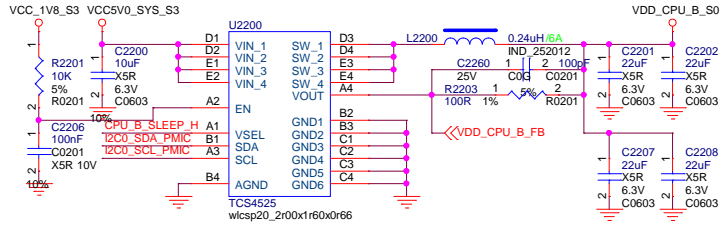


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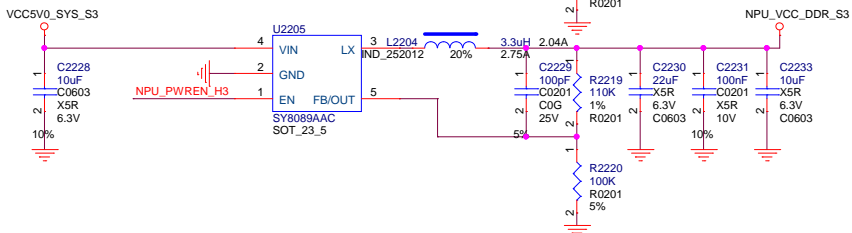
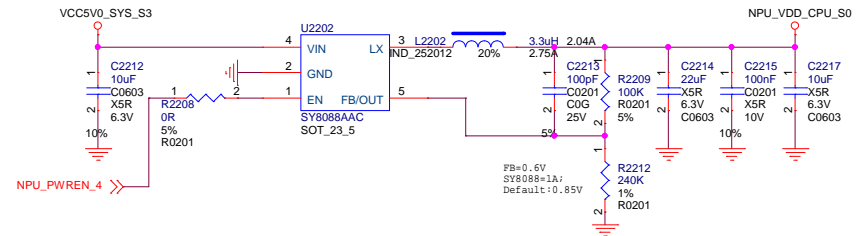
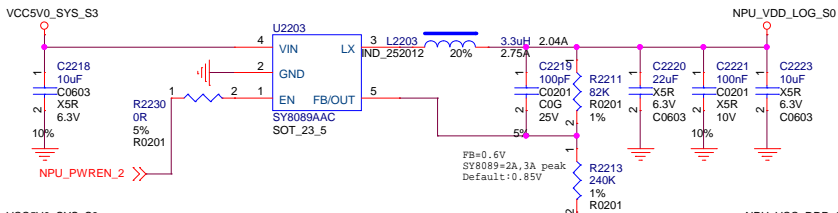
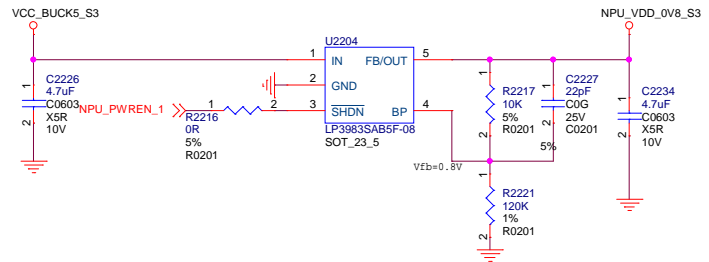
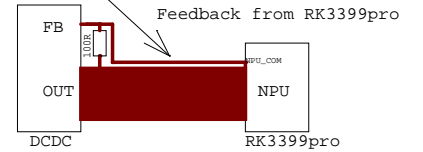
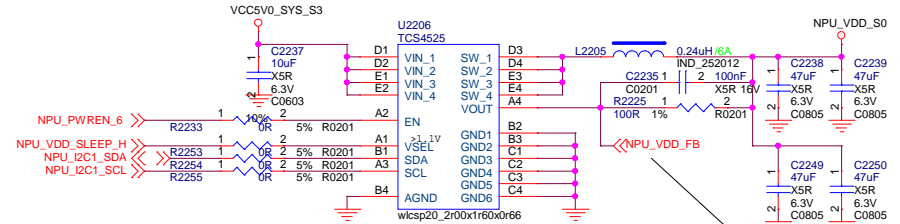
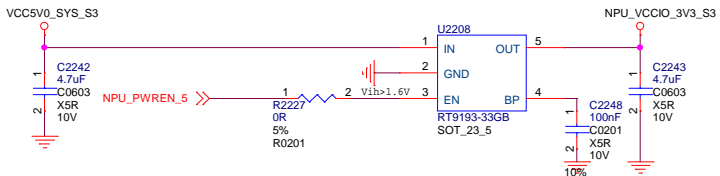
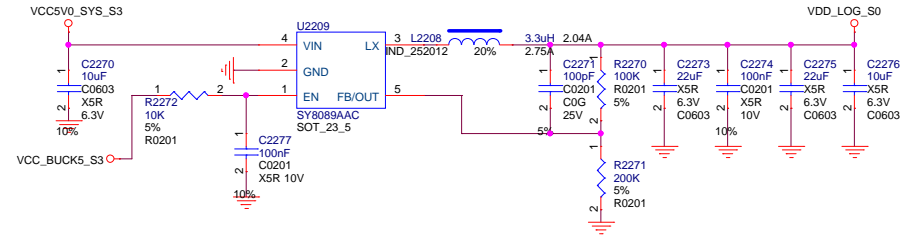
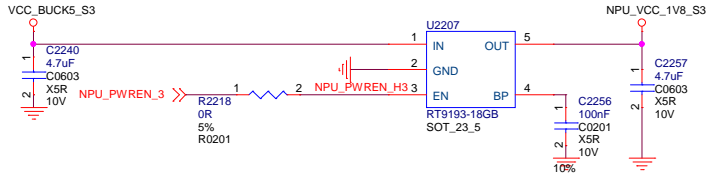
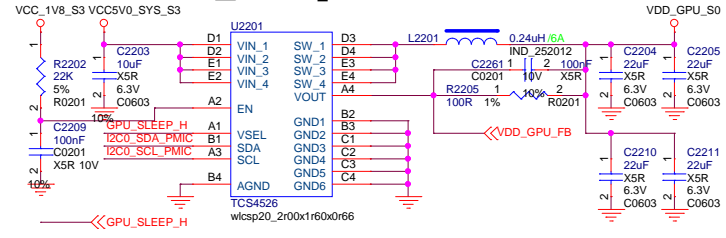
项目:	SYSTEM ON MODULE BOARD		
文件:	RK3399Pro_SOM_SCH		
图框:	15:Power-PMIC RK809-3		
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### VDD\_CPU\_B power



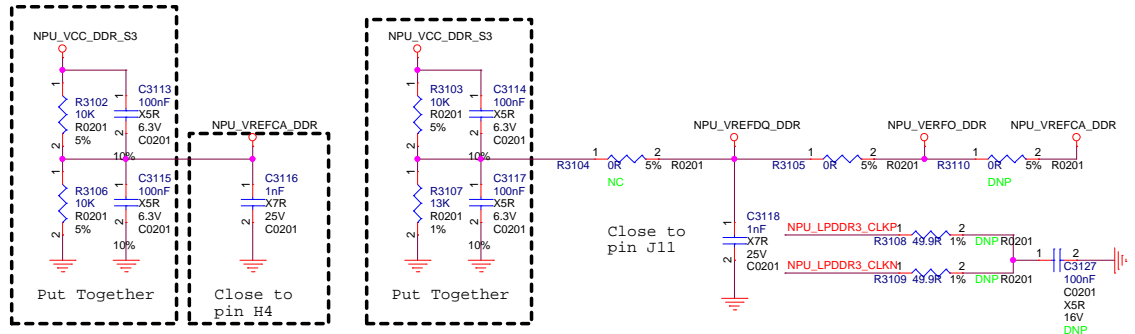
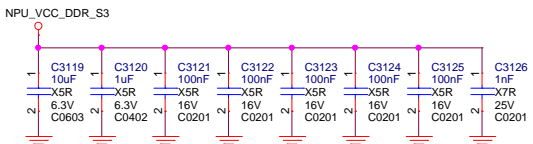
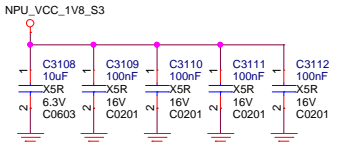
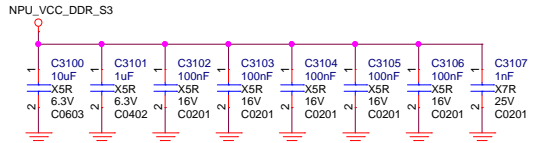
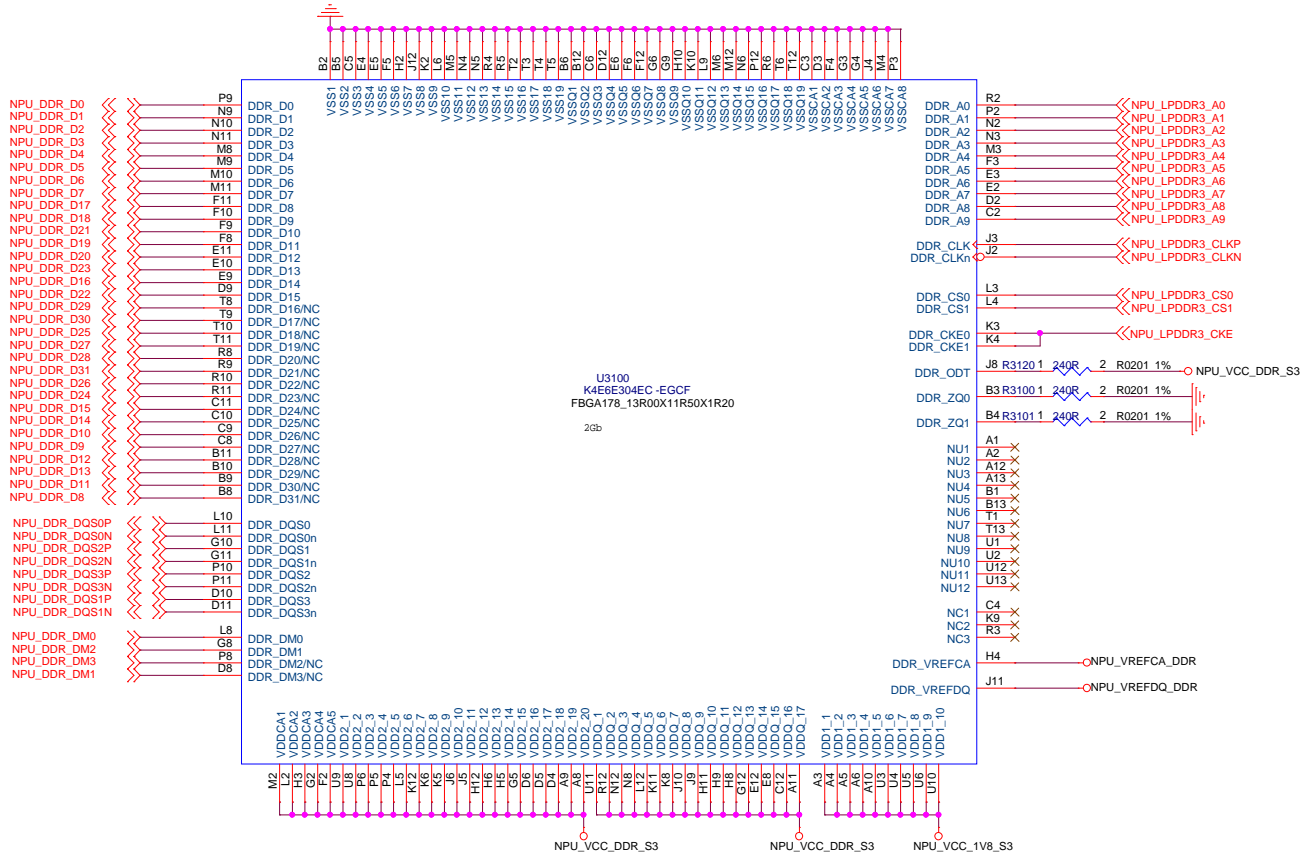
### VDD\_GPU power



项目:	SYSTEM ON MODULE BOARD		
文件:	RK3399Pro_SOM_SCH		
图纸:	16.POWER-CPU/GPU/NPU		
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设计者:	zhang.chen	页码:	16 of 22

### NPU Part power

# NPU LPDDR3 1x32bit

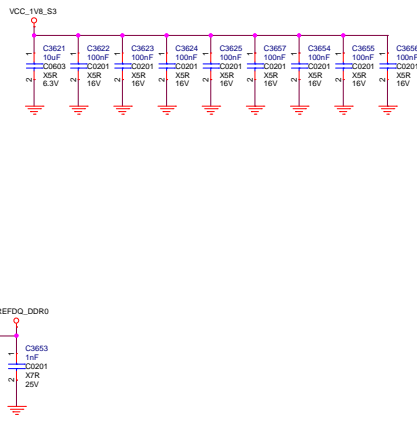
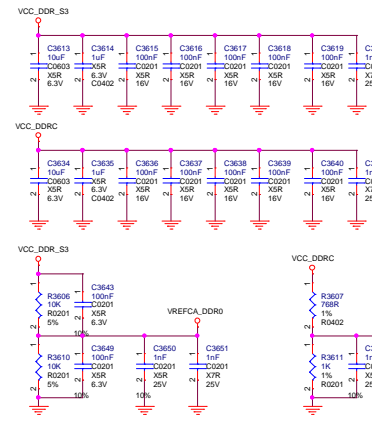
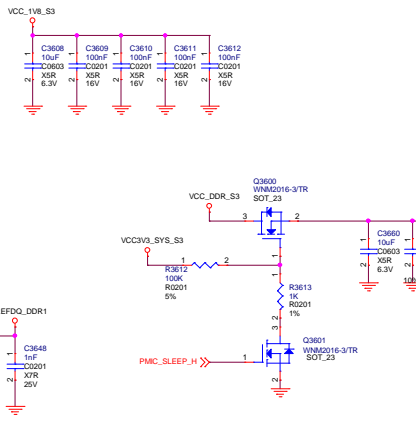
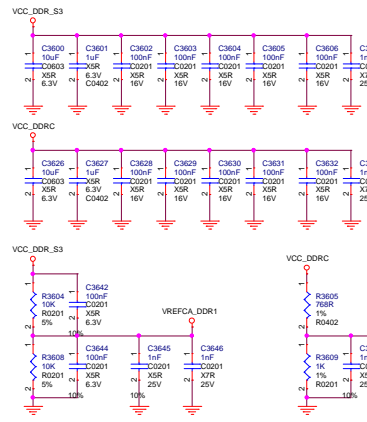
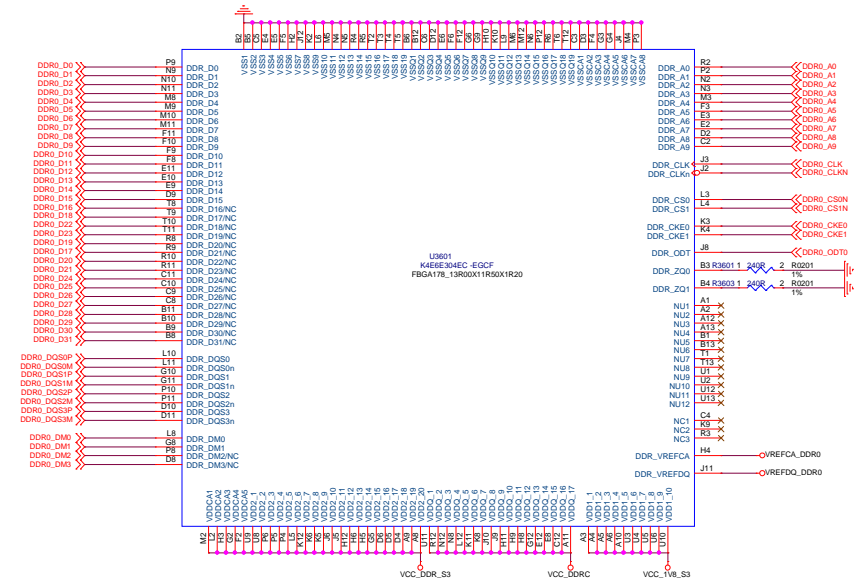
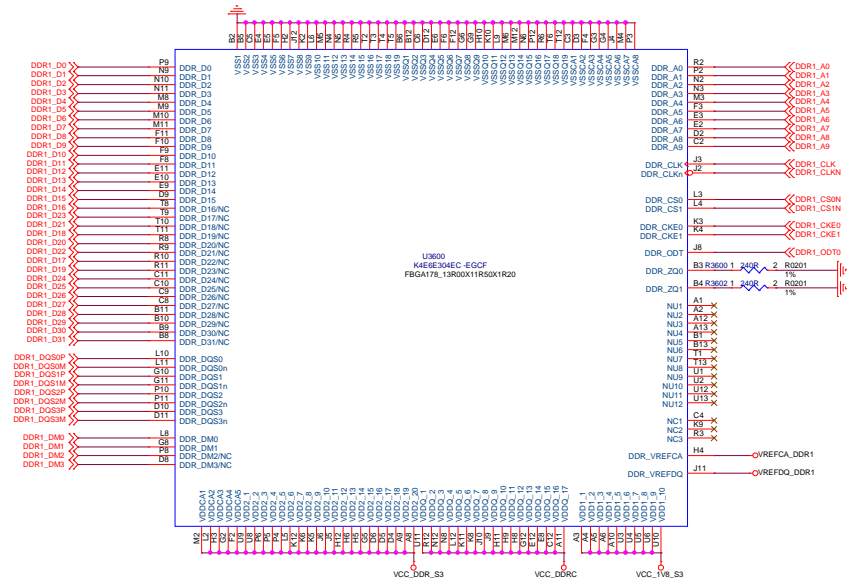


Note: All the power filter capacitors should be placed close to the power pins of LPDDR3

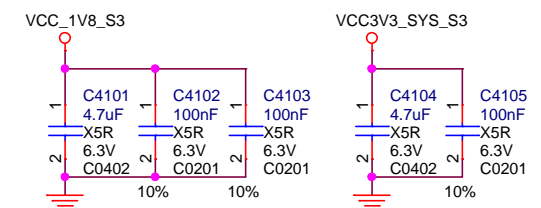
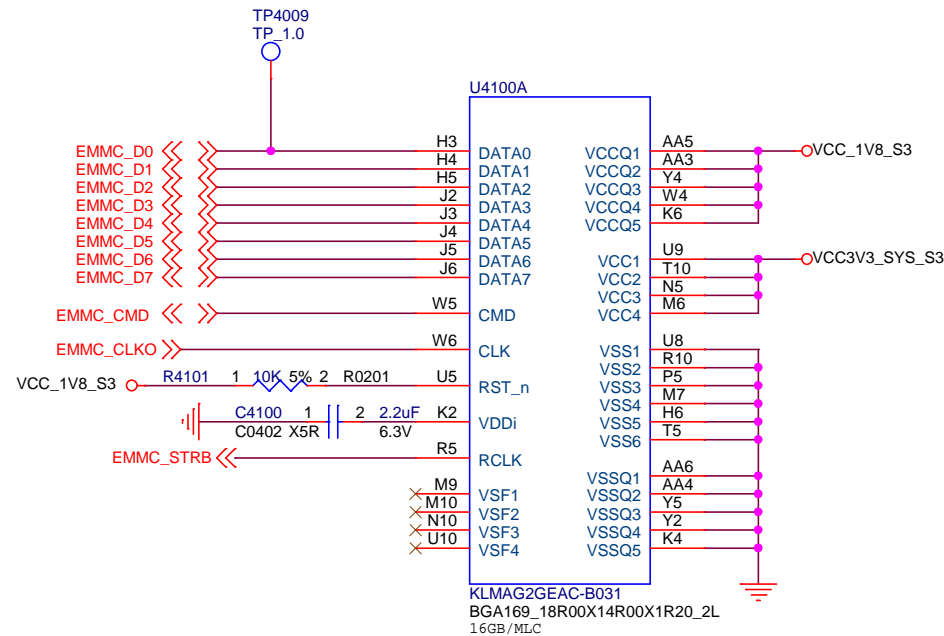
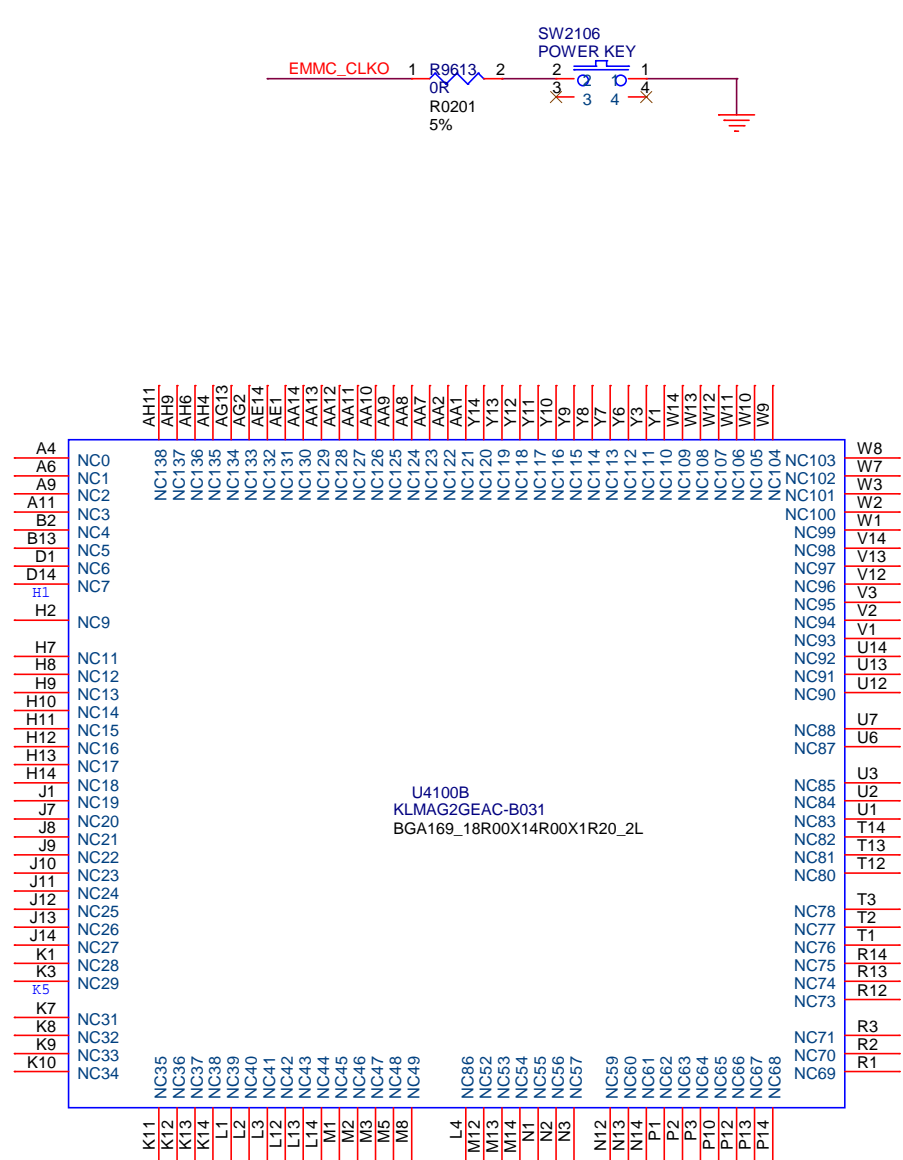
Note:  
 $V_{ih} = V_{CC}$   
 $V_{il} = V_{CC} * Ron / (Ron + Rodt)$   
 $V_{REFDQ\_DDR} = (V_{ih} + V_{il}) / 2$   
 eg:  $V_{CC} = 1.2V, Ron = 34ohm, Rodt = 240ohm$   
 so,  $V_{ih} = 1.2V, V_{il} = 0.149V, V_{REFDQ\_DDR} = 0.674V$


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项目:	SYSTEM ON MODULE BOARD
文件:	RK3399Pro_SOM_SCH
图纸:	17.NPU_RAM-LPDDR3 1x32bit
修改日期:	Sunday, April 28, 2019
设计者:	zhang.chen
版本:	V0.9
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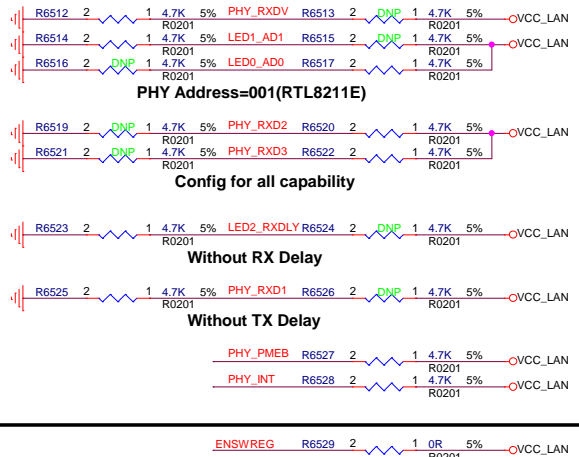
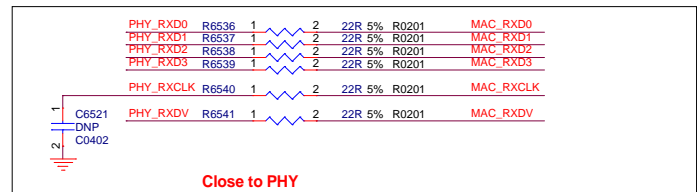
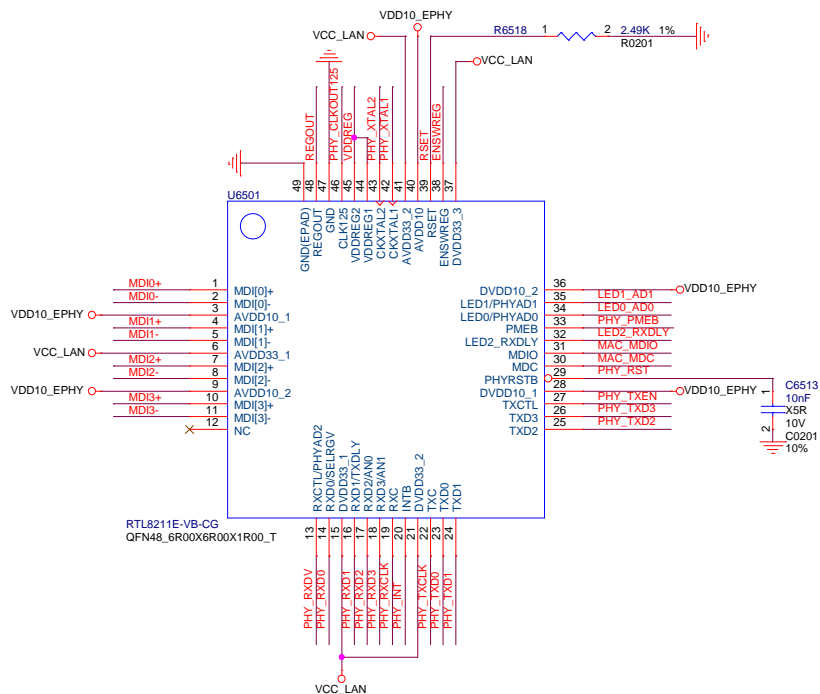
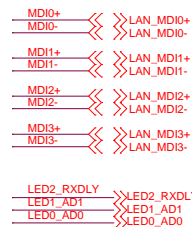
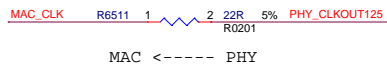
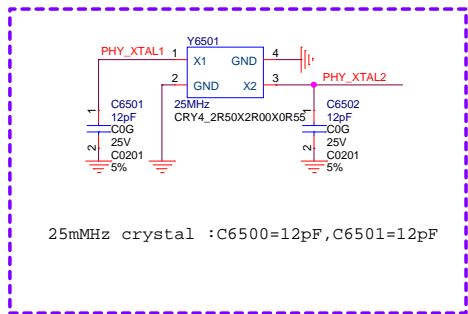
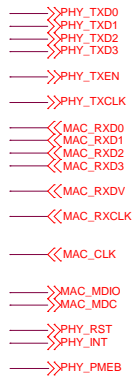
# LPDDR3



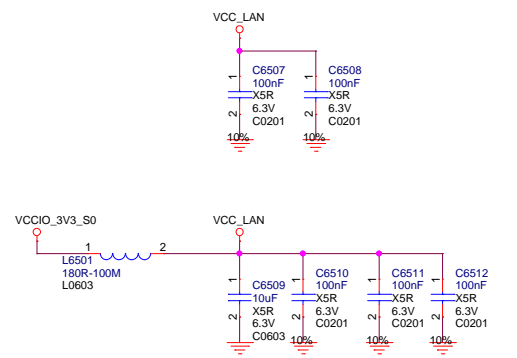
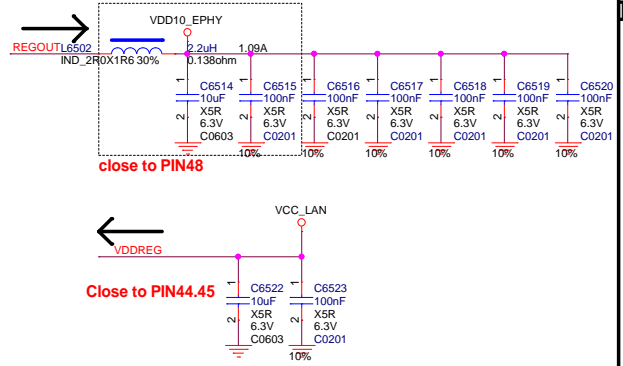
# eMMC



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项目:	SYSTEM ON MODULE BOARD		
文件:	RK3399Pro_SOM_SCH		
图纸:	19.EMMC		
修改日期:	Sunday, April 28, 2019	版本:	V0.9
设计者:	ziang.chen	页码:	19 of 22

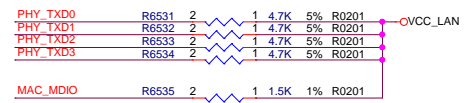


Connect ENSWREG to AVDD33 to enable Switching regulator or connect ENSWREG to GND to disable Switching regulator.

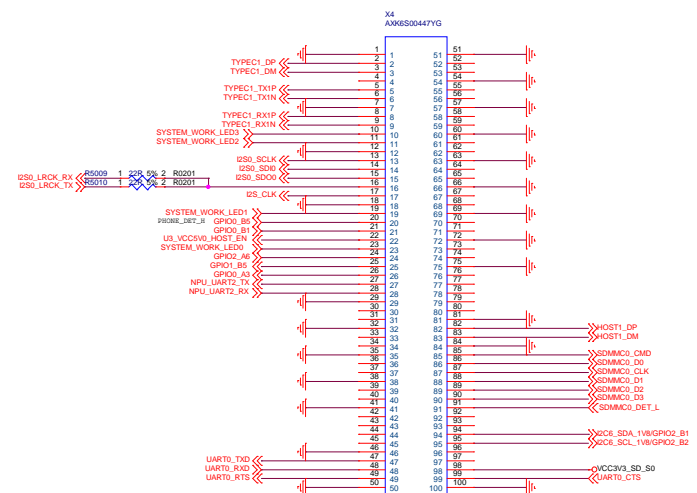
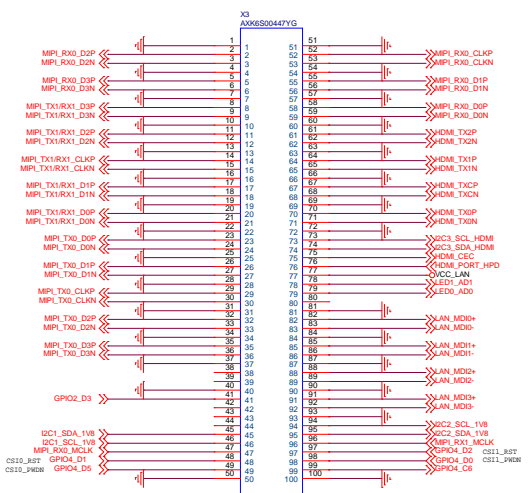
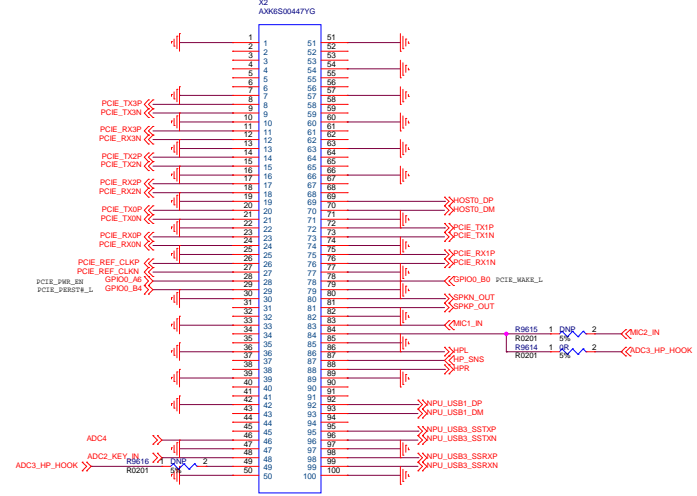
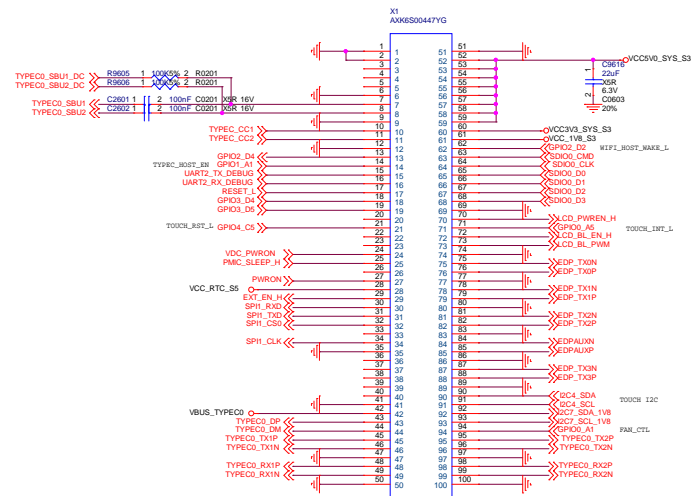


PHY\_RXD0 R6530 2 1 4.7K 5% OVCC\_LAN  
**Pull down for 2.5V RGMII(RTL8211D/8211E)**  
**Pull up for 3.3V RGMII (RTL8211D/8211E)**  
**Pull up1.5 /1.8V RGMII (RTL8211E-VL only)**

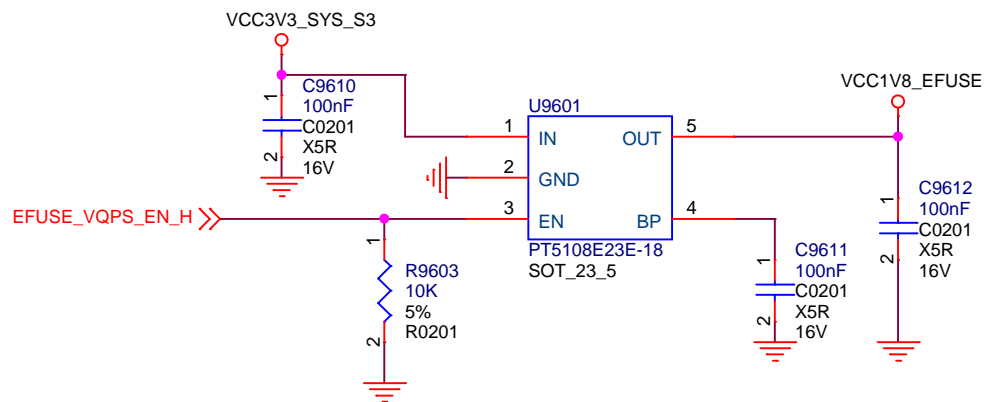
### RGMII 1000M



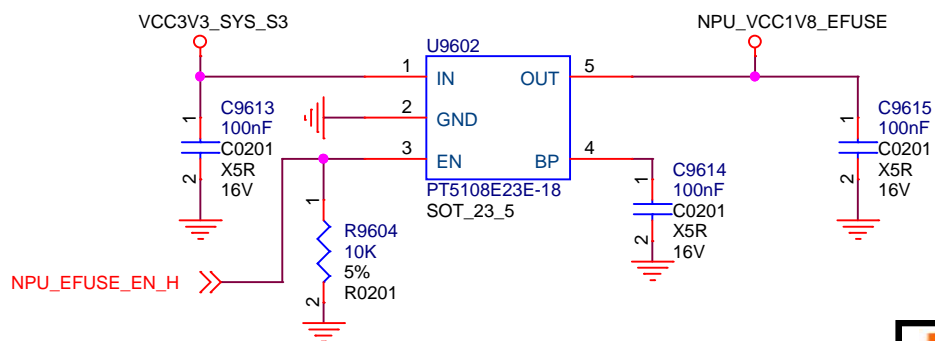
项目:	SYSTEM ON MODULE BOARD		
文件:	RK3399Pro_SOM_SCH		
图纸:	20.RGMII-10/100/1000M		
修改日期:	Sunday, April 28, 2019	版本:	V0.9
设计者:	zhang.chen	页码:	20 of 22




# EFUSE POWER



# NPU EFUSE POWER



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项目:	SYSTEM ON MODULE BOARD		
文件:	RK3399Pro_SOM_SCH		
图纸:	22.EFUSE		
修改日期:	Sunday, April 28, 2019	版本:	V0.9
设计者:	ziang.chen	页码:	22 of 22