

ROCK PI 4

CONTENT INDEXING

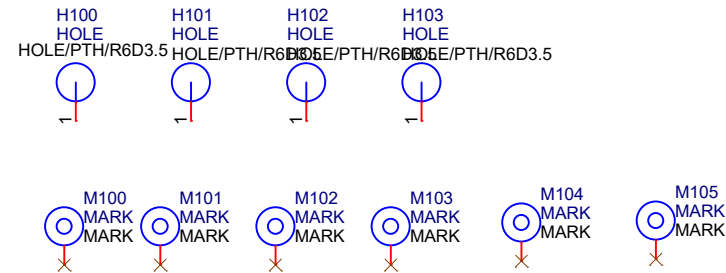
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Note:

器件参数说明

1: 如果 Value 为 DP, 说明暂时不贴。


2: 如果 Option 有 DP, 说明暂先不贴。

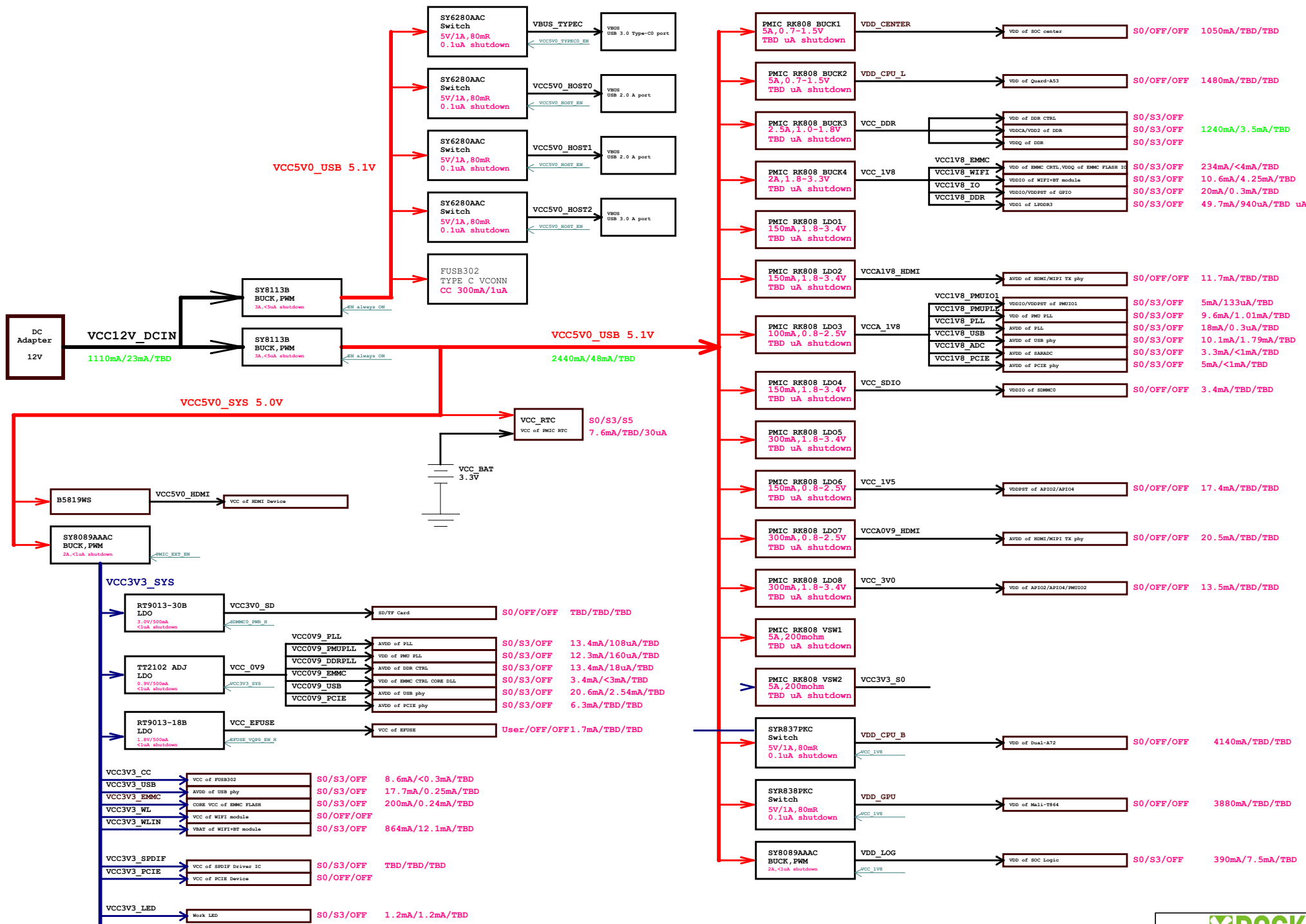


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Change List

Version	Date	Author	Change Note	Approved
V1.0	2018/06		First edition	
V1.1	2018/07			
V1.2	2018/08			
V1.3	2018/09			
V1.4	2018/11			

		
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I2C MAP

Port	Pin name	Domain	Bus name	Pull-up voltage	Slave Device	Slave Addr (MS 7Bits)	Note	Slave Bus Capability
I2C0	GPIO1_B7/SPI3_RXD/I2C0_SDA GPIO1_C0/SPI3_TXD/I2C0_SCL	PMUIO2	I2C_SDA_PMIC I2C_SCL_PMIC	VCC_1V8	Rockchip RK808	0x1b	PMIC	100kHz, 400KHz
					SYR837PKC	0x40	DC-DC BUCK	100kHz, 400KHz, 3.4MHz
					SYR838PKC	0x41	DC-DC BUCK	100kHz, 400KHz, 3.4MHz
I2C1	GPIO4_A1/I2C1_SDA GPIO4_A2/I2C1_SCL	APIO5		VCC_1V8			Low Speed CONNECTOR	
I2C2	GPIO2_A0/VOP_D0/CIF_D0/I2C2_SDA GPIO2_A1/VOP_D1/CIF_D1/I2C2_SCL	APIO2		VCC_1V8			High Speed CONNECTOR	
I2C3	GPIO4_C0/I2C3_SDA/UART2B_RX GPIO4_C1/I2C3_SCL/UART2B_TX	APIO4	I2C_SDA_HDMI I2C_SCL_HDMI	VCC_3V0				
I2C4	GPIO1_B3/I2C4_SDA GPIO1_B4/I2C4_SCL	PMUIO2	I2C_SDA_MEMS I2C_SCL_MEMS	VCC_1V8	Fairchild FUSB302B	0x44, 0x46	USB-TypeC Mux	100kHz, 400KHz, 1MHz
I2C5	GPIO3_B2/MAC_RXER/I2C5_SDA GPIO3_B3/MAC_CLK/I2C5_SCL	APIO1	Other pin function					
I2C6	GPIO2_B1/SPI2_RXD/CIF_HREF/I2C6_SDA GPIO2_B2/SPI2_TXD/CIF_CLKIN/I2C6_SCL	APIO2		VCC_1V8			Low Speed CONNECTOR	
I2C7	GPIO2_A7/VOP_D7/CIF_D7/I2C7_SDA GPIO2_B0/VOP_CLK/CIF_VSYNC/I2C7_SCL	APIO2		VCC_1V8			High Speed CONNECTOR	



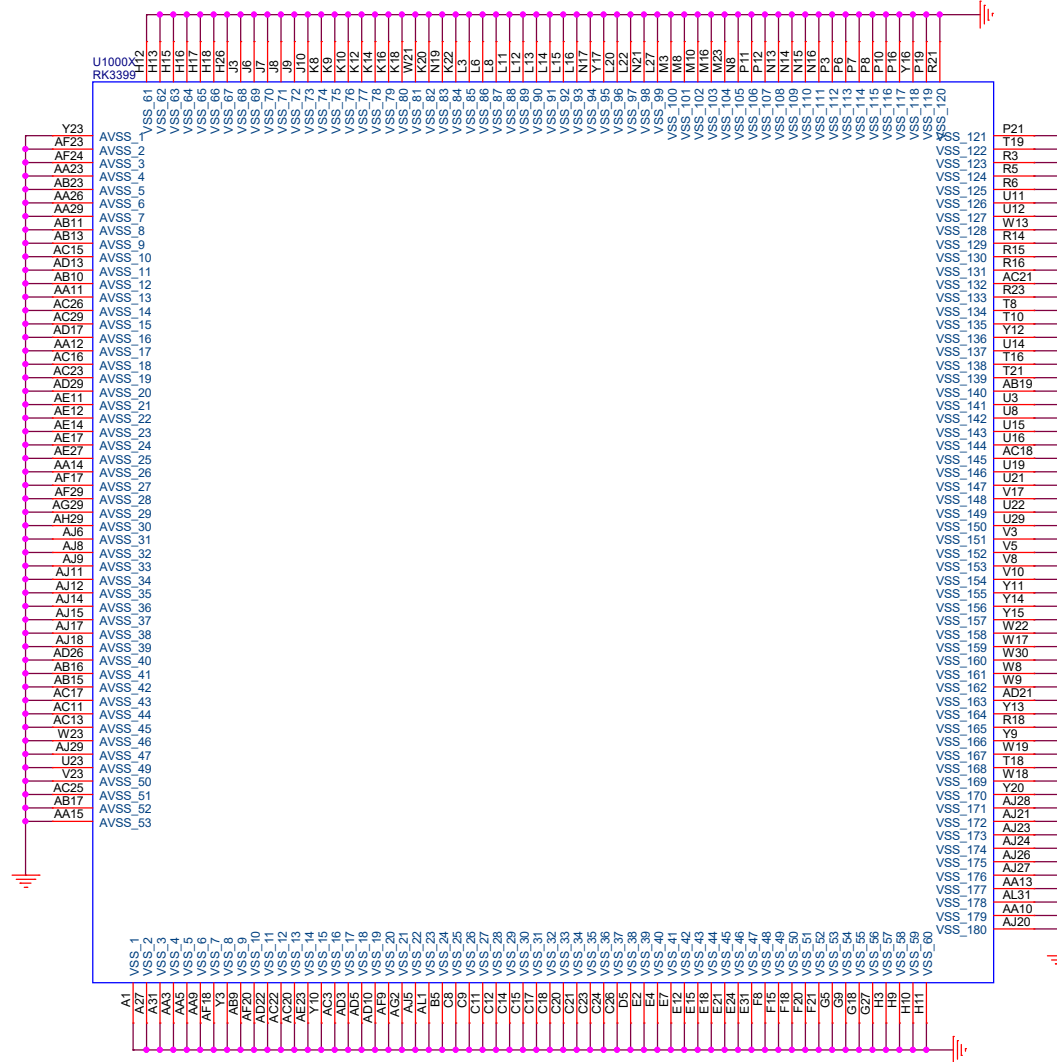
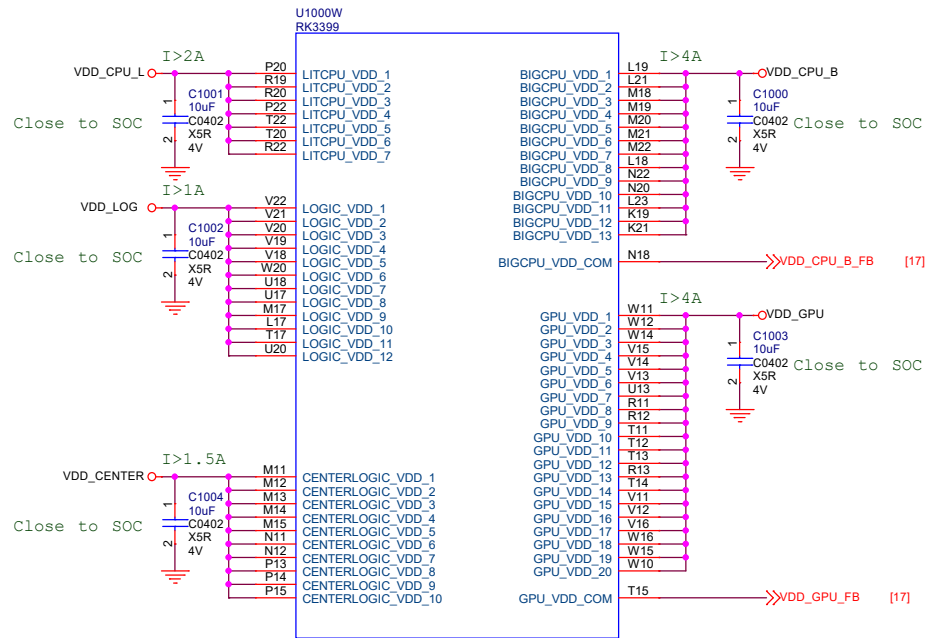
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Power Domain Map

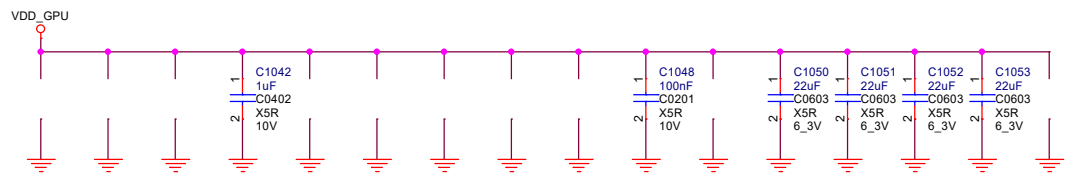
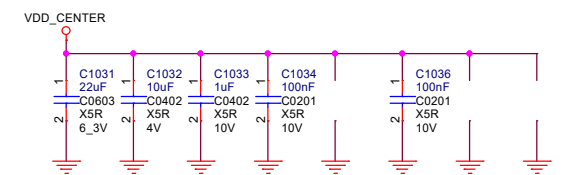
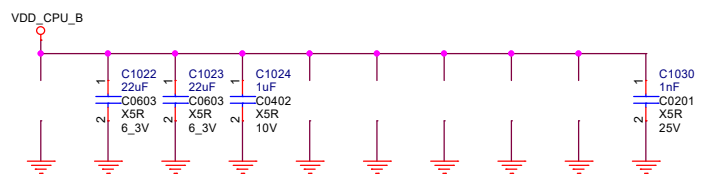
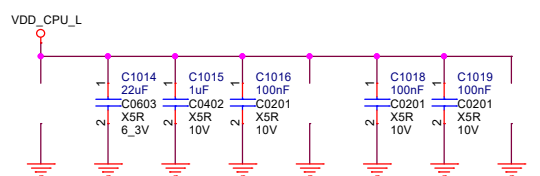
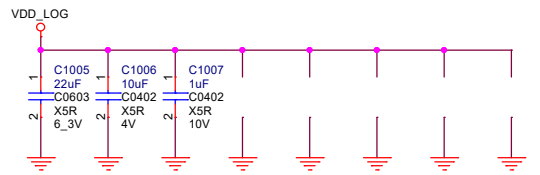
Part Port	Domain	Pin name in datasheet	I/O type	Power supply	Power source
Part C	PMUI01	pmui01_gpio0ab	1.8V only	VCCA_1V8	RK808-D VLDO3
Part E	PMUI02	pmu1830_gpio1abcd	1.8V (Default) 3.0V	VCC_1V8	RK808-D Buck4
Part I	APIO1	gmac_gpio3abc	3.3V only	VCC_1V8 VCC3V3_SYS	RK808-D Buck4
Part L	APIO2	bt656_gpio2ab	1.8V (Default) 3.0V	VCC_1V8	RK808-D VLDO3
Part G	APIO3	wifi/bt_gpio2cd	1.8V only	VCC_1V8	RK808-D Buck4
Part K	APIO4	gpio1830_gpio4cd	1.8V 3.0V (Default)	VCC_1V5 VCC_3V0	RK808-D VLDO6 RK808-D VLDO8
Part J	APIO5	audio_gpio3d_gpio4a	1.8V (Default) 3.0V	VCC_1V8	RK808-D Buck4
Part F	SDMMC0	sdmmc_gpio4b	1.8V 3.0V (Default)	VCC_SDIO	RK808-D VLDO4



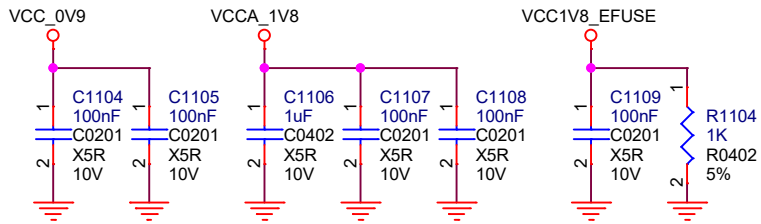
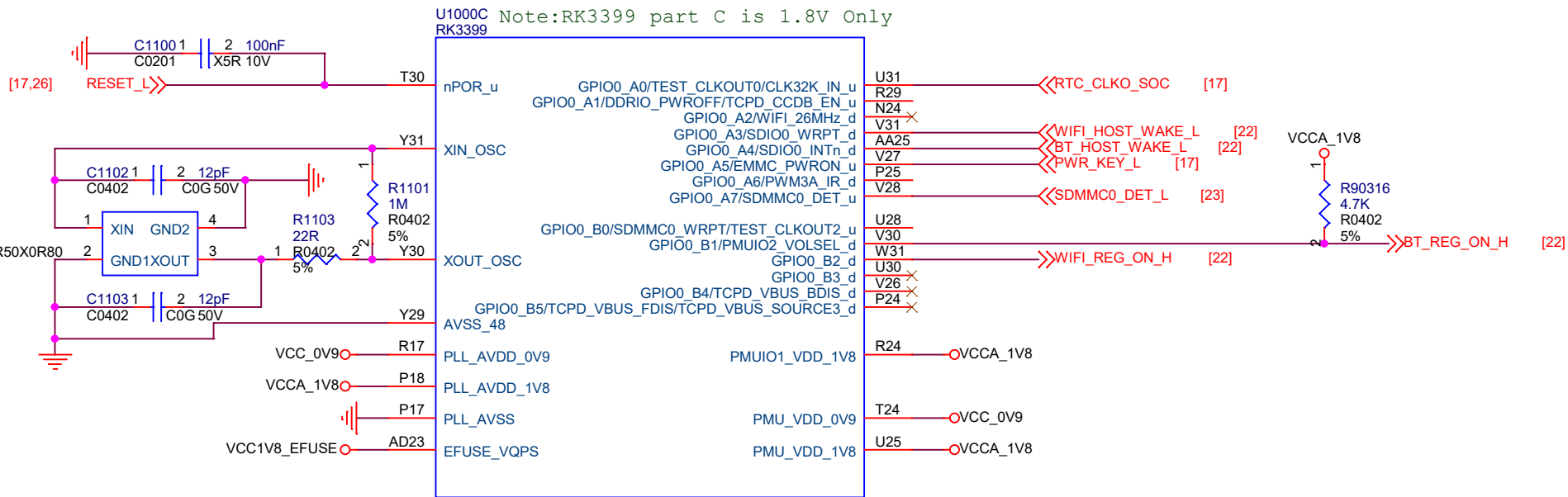
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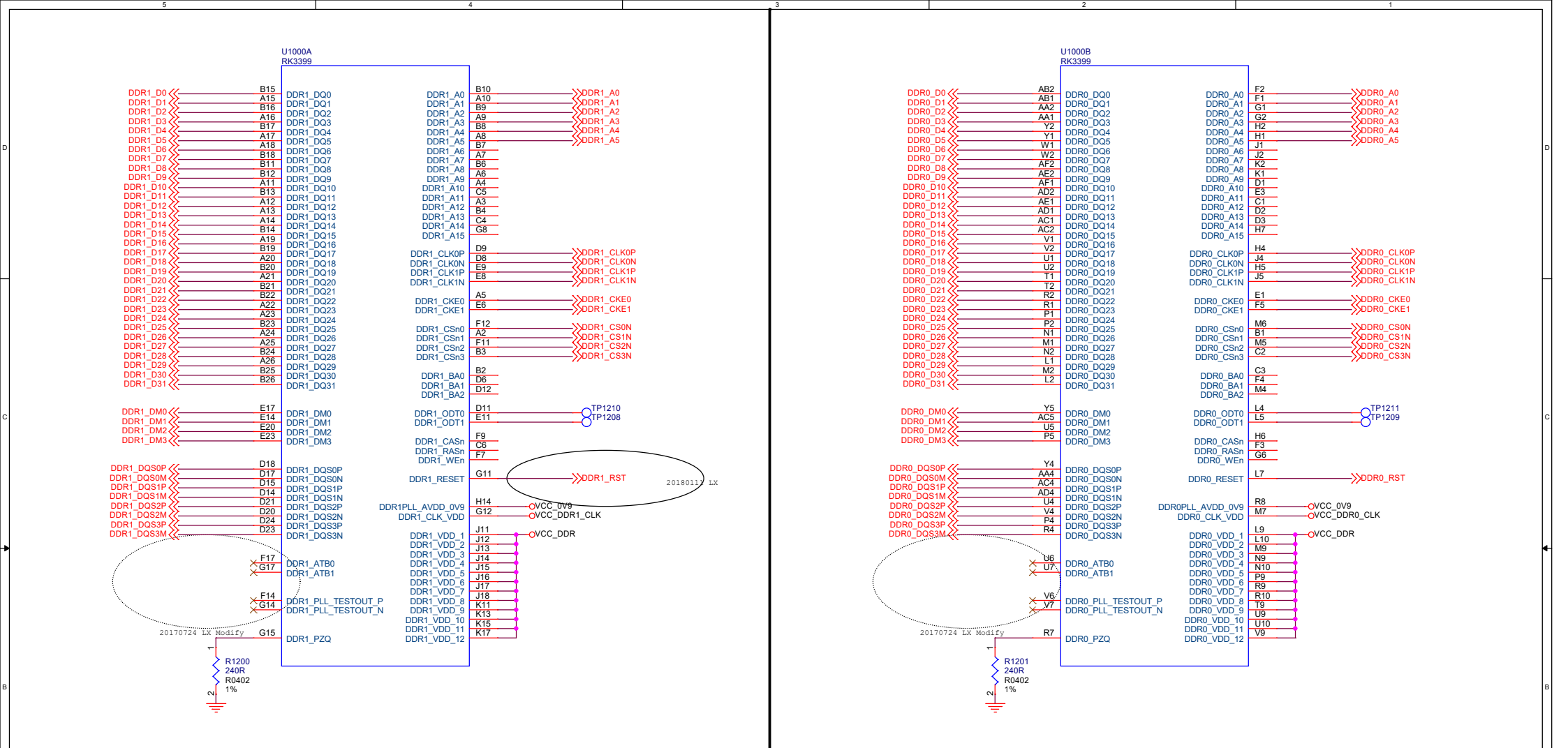
Note: Power filter CAP please place back of SOC or close to SOC



Size	Title	ROCK PI 4	REV
A3	Document Number	RK3399 Power	1.4
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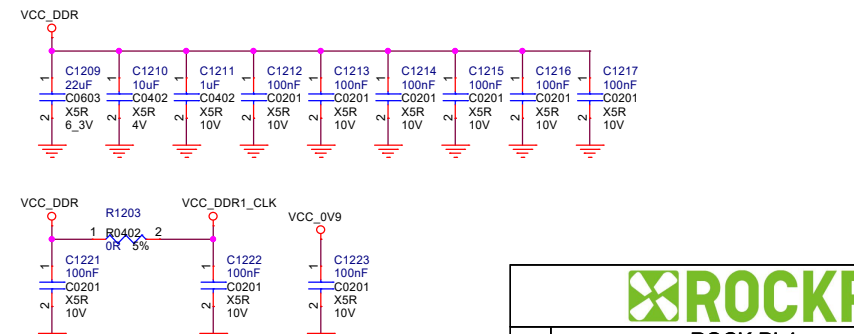
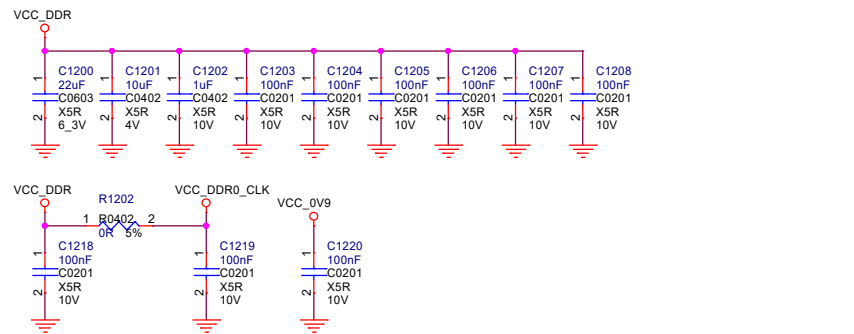


Size	Title	ROCK PI 4	REV
A4	Document Number	RK3399 PMU Controller	1.4
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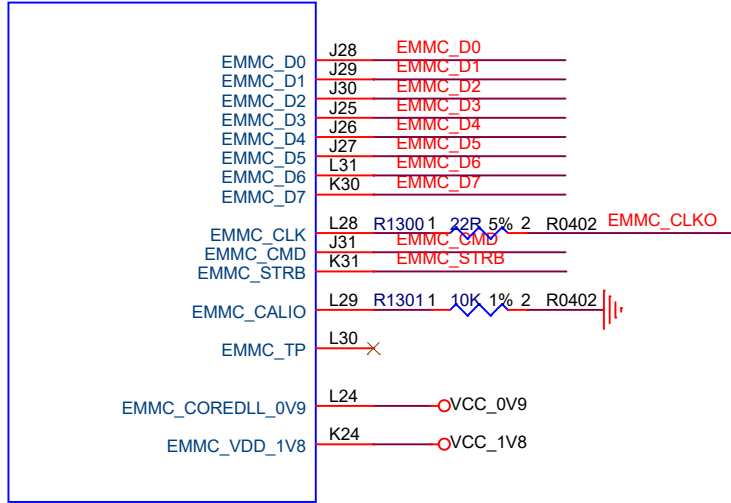
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DDR FILTER Note:R1203 cannot be deleted

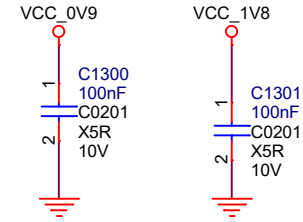
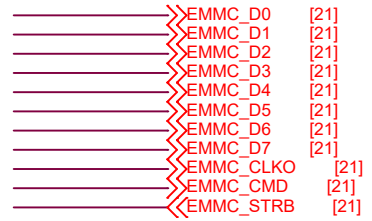


Size	Title	REV
A3	ROCK PI 4	1.4
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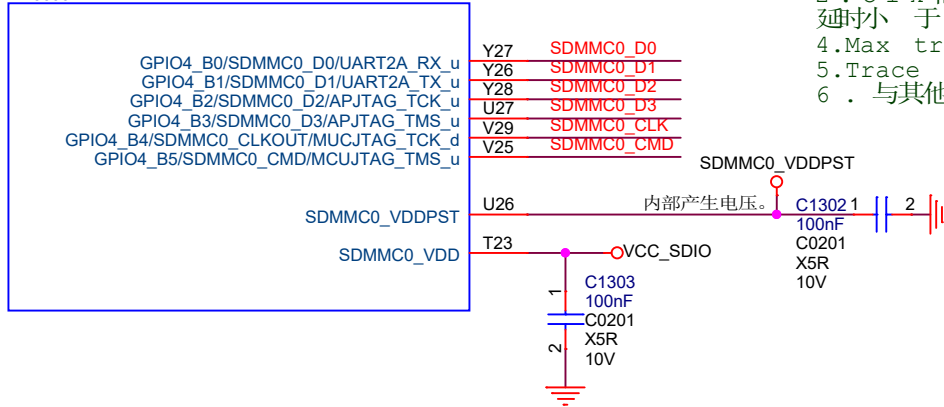
U1000H
RK3399



EMMC design rule:
 1. Data[0:7], cmd strobe 做为一组, 并行走线并包地, 组内等长要求为 +/-1 00mil;
 2. Clk 需要单独走线并包地处理, 与 data 间的延时小于 20ps;
 3. Max trace length < 3.93 inches;
 4. Trace impedance 50ohm +/- 10%;
 5. 与其他信号间距遵循 3W 原则
 6. R1300 靠近 S 放置



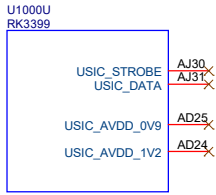
U1000F
RK3399



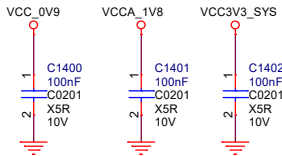
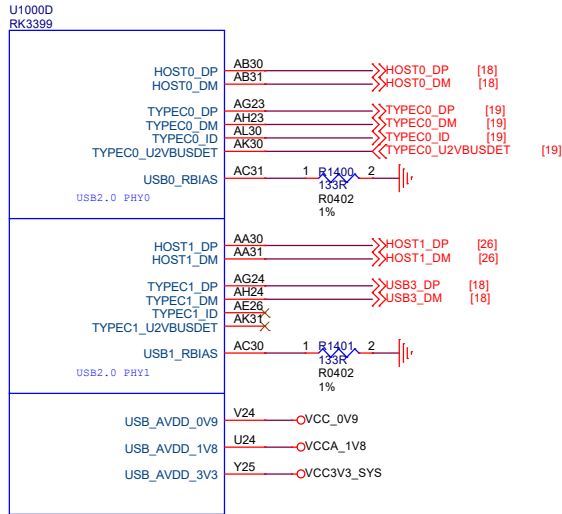
SDMMC design rule:
 1. Data[0:3], cmd strobe 做为一组, 并行走线并包地, 组内等长要求为 +/-1 00mil;
 2. Clk 需要单独走线并包地处理, 与 data 间的延时小于 20ps;
 4. Max trace length < 3.93 inches;
 5. Trace impedance 50ohm +/- 10%;
 6. 与其他信号间距遵循 3W 原则



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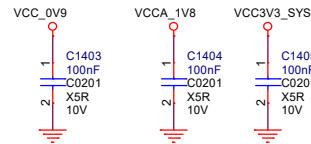
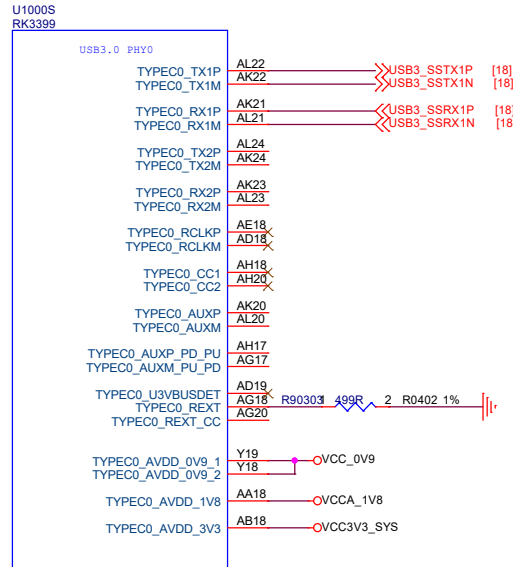
USB2.0



USB2.0 design rule:

- 1.Max intra-pair skew < 4 ps;
- 2.Max trace length < 6 inchs;
- 3.Max allowed via < 6;
- 4.Trace impedance 90ohm+/-10%;
5. 与其他信号间 距遵循3W 原则

USB3.0

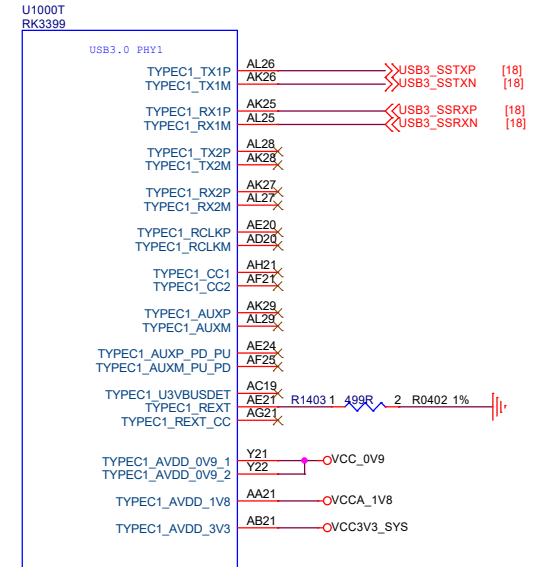


USB3.0 design rule:

- 1.Max intra-pair skew < 4 ps;
- 2.Max trace length between TX and RX < 1.6 n8;
- 3.Max trace length < 6 inchs;
- 4.Max allowed via < 4;
- 5.Trace impedance 90ohm+/-10%;
6. 与其他信号间 距遵循3W 原则

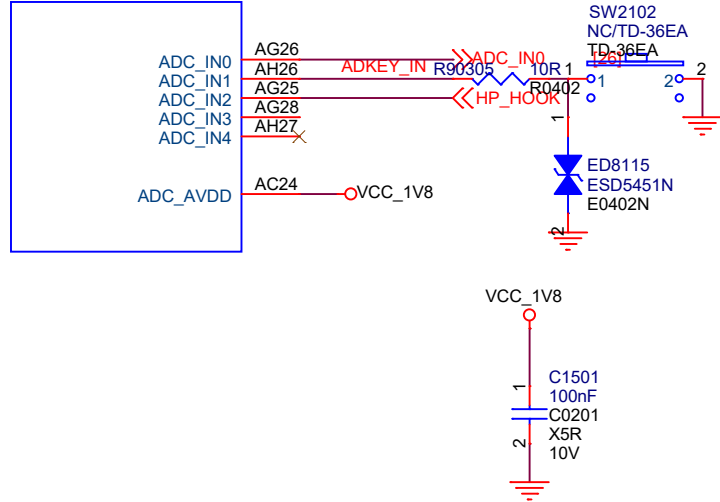
DP design rule:

- 1.Max intra-pair skew < 4 ps;
- 2.Max trace length < 6 inchs;
- 3.Max allowed via < 4;
- 4.Trace impedance 90ohm+/-10%;
5. 与其他信号间 距遵循3W 原则



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RK3399 USB/USIC Controller		
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U1000V
RK3399



KEY BAORD

Note:
系统上电时，如果 ADKEY_IN 电压为 0V，
则 RK3399 进入 Recovery 模式。
量时 R1503, SW1500, ED1500 不用贴片

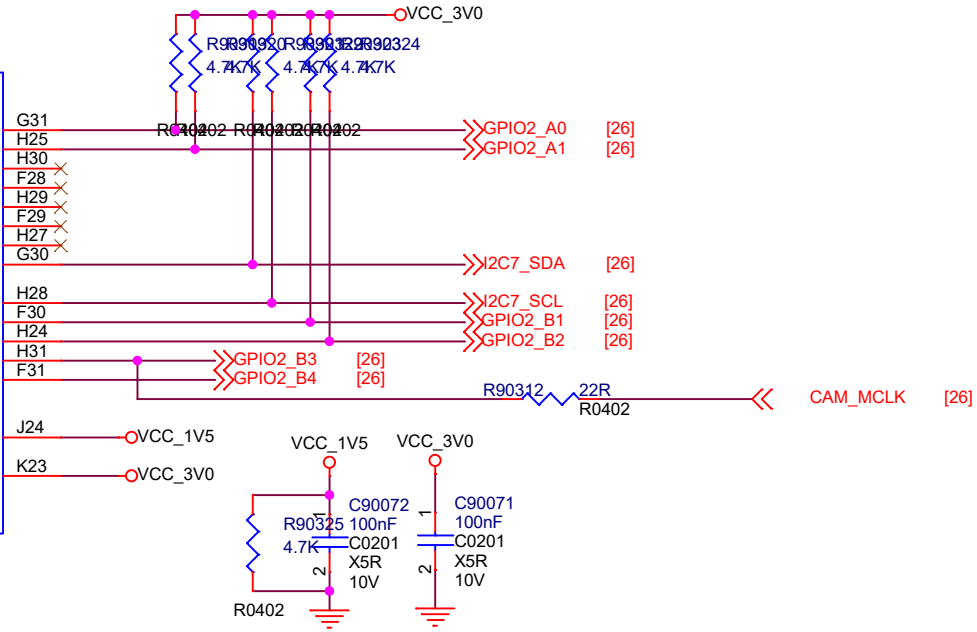


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U1000L
RK3399

GPIO2_A0/VOP_D0/CIF_D0/I2C2_SDA_u
GPIO2_A1/VOP_D1/CIF_D1/I2C2_SCL_u
GPIO2_A2/VOP_D2/CIF_D2_d
GPIO2_A3/VOP_D3/CIF_D3_d
GPIO2_A4/VOP_D4/CIF_D4_d
GPIO2_A5/VOP_D5/CIF_D5_d
GPIO2_A6/VOP_D6/CIF_D6_d
GPIO2_A7/VOP_D7/CIF_D7/I2C7_SDA_u
GPIO2_B0/VOP_CLK/CIF_VSYNC/I2C7_SCL_u
GPIO2_B1/SPI2_RXD/CIF_HREF/I2C6_SDA_u
GPIO2_B2/SPI2_TXD/CIF_CLKIN/I2C6_SCL_u
GPIO2_B3/SPI2_CLK/VOP_DEN/CIF_CLKOUTA_u
GPIO2_B4/SPI2_CSn0_u

APIO2_VDDPST
APIO2_VDD



U1000R
RK3399

MIPI_RX0_D0P AK15
MIPI_RX0_D0N AL15
MIPI_RX0_D1P AK14
MIPI_RX0_D1N AL14
MIPI_RX0_CLKP AK13
MIPI_RX0_CLKN AL13
MIPI_RX0_D2P AK12
MIPI_RX0_D2N AL12
MIPI_RX0_D3P AK11
MIPI_RX0_D3N AL11
MIPI_RX0_REXT AF14
MIPI_RX0_AVDD_1V8 AB14

U1000P
RK3399

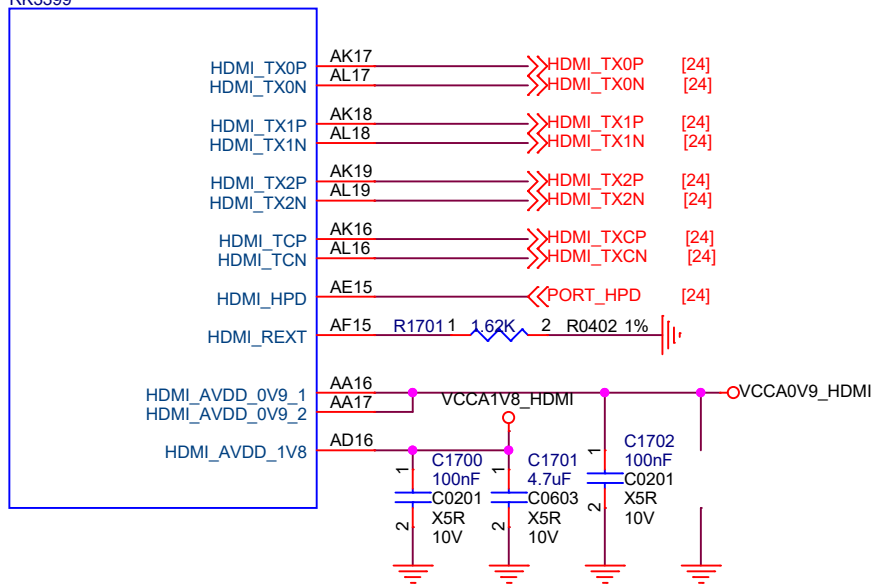
MIPI_TX1/RX1_D0P AK6
MIPI_TX1/RX1_D0N AL6
MIPI_TX1/RX1_D1P AK7
MIPI_TX1/RX1_D1N AL7
MIPI_TX1/RX1_CLKP AK8
MIPI_TX1/RX1_CLKN AL8
MIPI_TX1/RX1_D2P AK9
MIPI_TX1/RX1_D2N AL9
MIPI_TX1/RX1_D3P AK10
MIPI_TX1/RX1_D3N AL10
MIPI_TX1/RX1_REXT AF11
MIPI_TX1/RX1_AVDD_1V8 AC10

Dual
MIPI
Right



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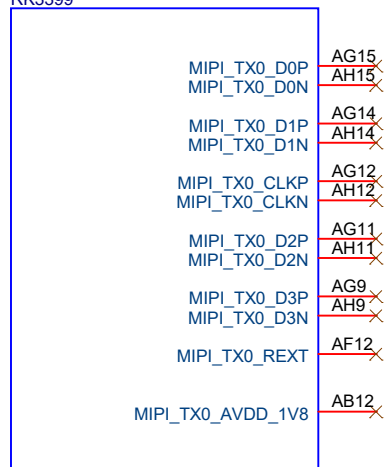
U1000N
RK3399



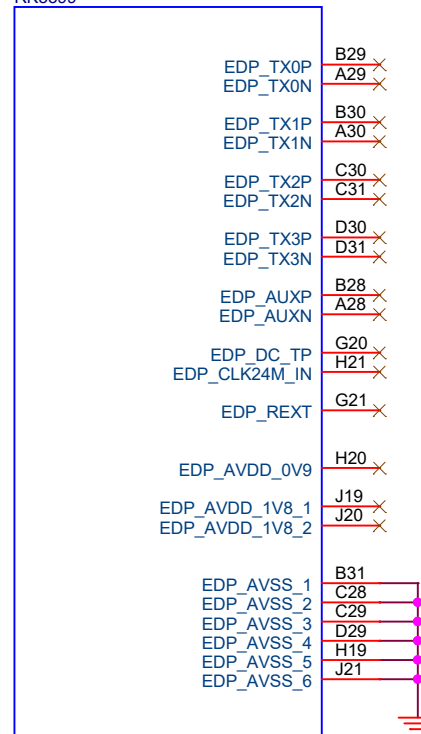
HDMI design rule:

1. Max intra-pair skew < 4 ps;
2. Max length skew between clk and data < 80 ps;
3. Max trace length < 9.8 inches;
4. Max allowed via < 4;
5. Trace impedance 100ohm+/-10%;
6. 与其他信号间距遵循3W原则

U1000Q
RK3399



U1000M
RK3399



eDP design rule:

1. Max intra-pair skew < 4 ps;
2. Max trace length < 6 inches;
3. Max allowed via < 4;
4. Trace impedance 90ohm+/-10%;
5. 与其他信号间距遵循3W原则

MIPI design rule:

1. Max intra-pair skew < 4 ps;
2. Max length skew between clk and data < 7ps;
3. Max trace length < 7.2 inches;
4. Max allowed via < 4;
5. Trace impedance 100ohm+/-10%;
6. 与其他信号间距遵循3W原则

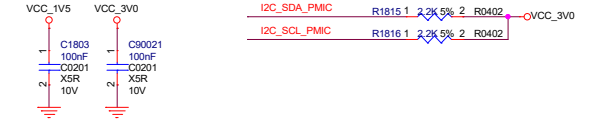
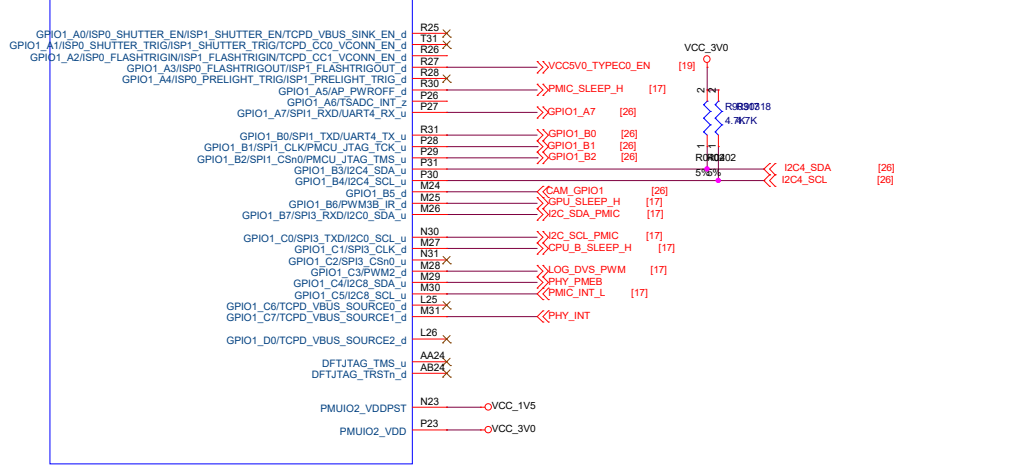


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U1000E Note:RK3399 part I is 3.3V only



U1000E Note:RK3399 part E is 1.8V/3.0V mode



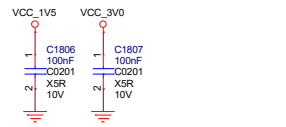
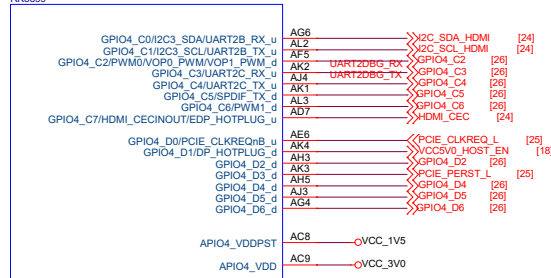
1.8V Only	VDDPST=VDDIO=1.8V
3.3V Only	VDDPST=1.8V, VDDIO=3.3V
other	3.0V mode: VDDPST=1.5V, VDDIO=3.0V 1.8V mode: VDDPST=1.8V, VDDIO=1.8V

U1000G Note:RK3399 part G is 1.8V only

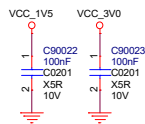
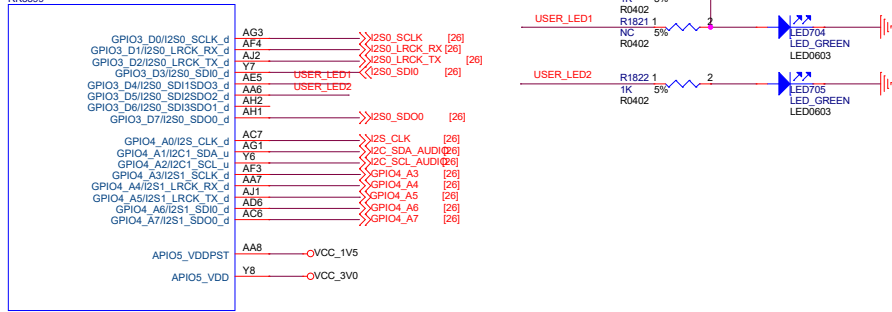


SDIO design rule:
 1. Data [0:3], cmd 数据组, 并行传输其他, 组内等长要求为 +/-10mil;
 2. clk 需要单独布线包地处理, 与 data 间隔
 小于 20ps;
 4. Max trace length < 3.93 inches;
 5. Trace impedance 50ohm +/-10%;
 6. 与其他信号 间距遵循 3W 原则

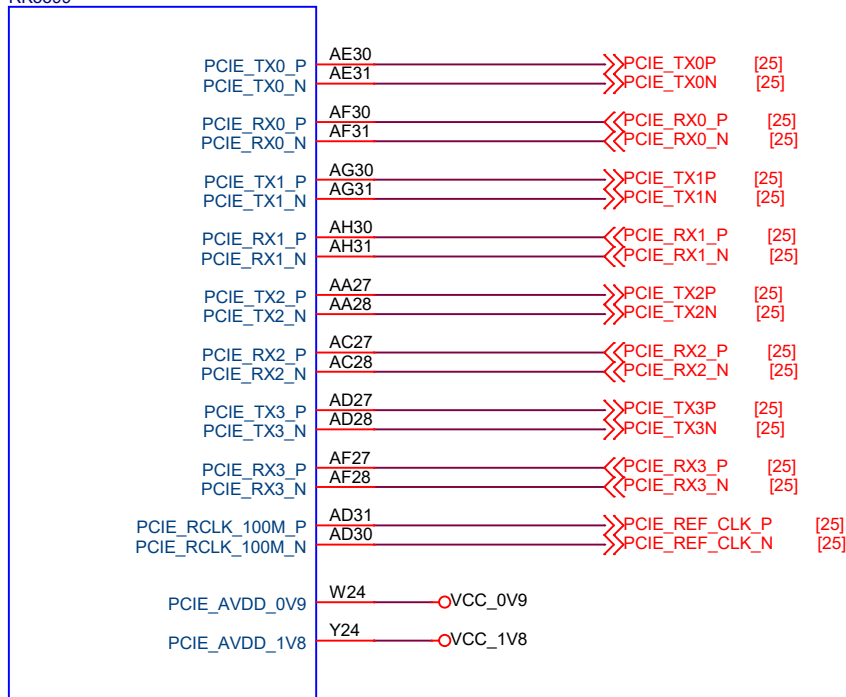
U1000K Note:RK3399 part J is 1.8V/3.0V mode



U1000J Note:RK3399 part J is 1.8V/3.0V mode

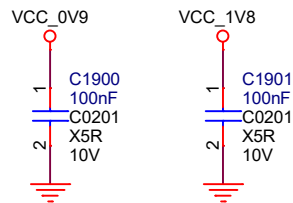


U10000
RK3399



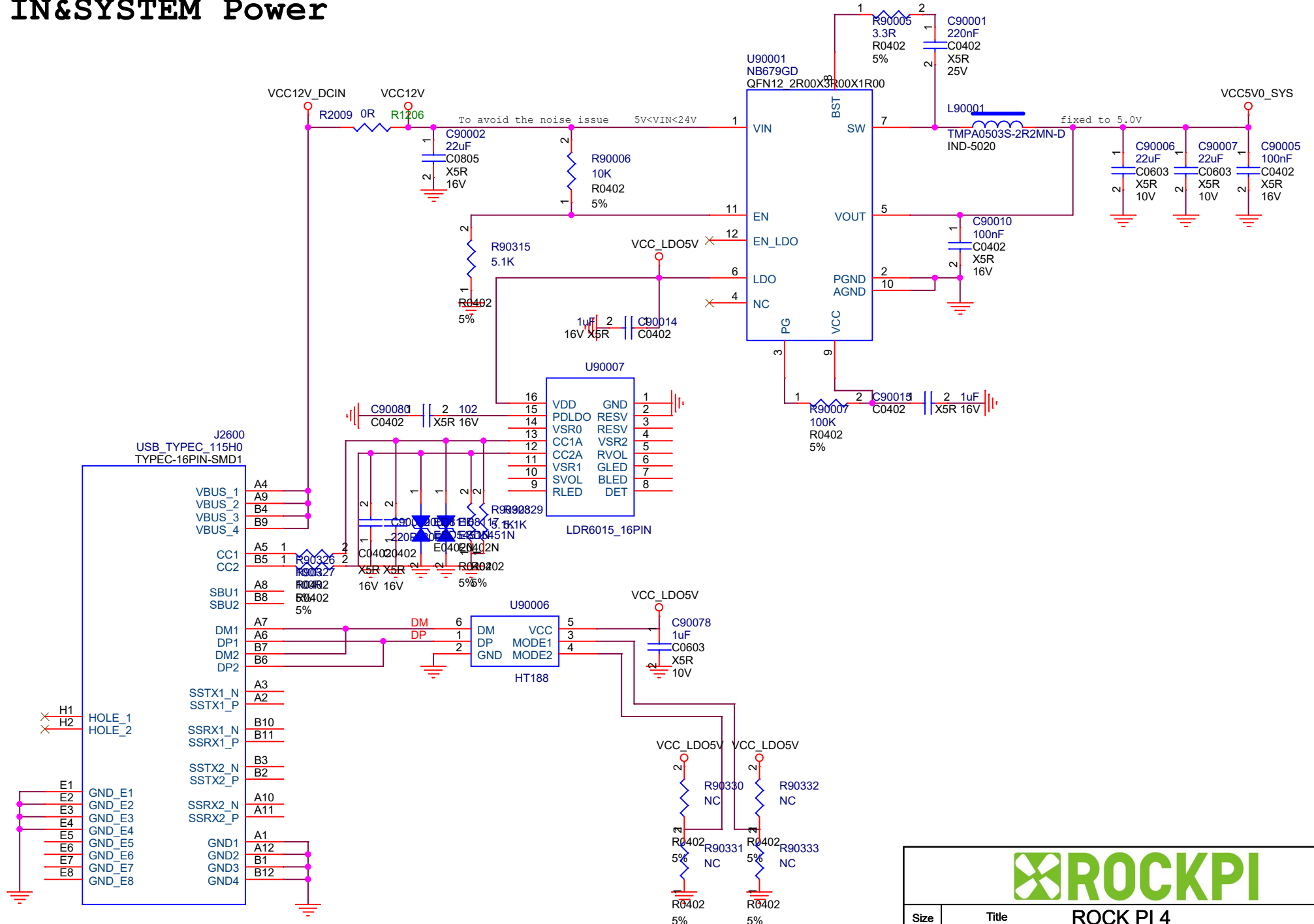
PCIE design rule:

1. Max intra-pair skew < 4ps;
2. Max inter-pair skew < 1.6 ns;
3. Max trace length < 14 inches;
4. Max allowed via < 4;
5. Trace impedance 100ohm+/-10%;
6. 与其他信号间距遵循3W原则



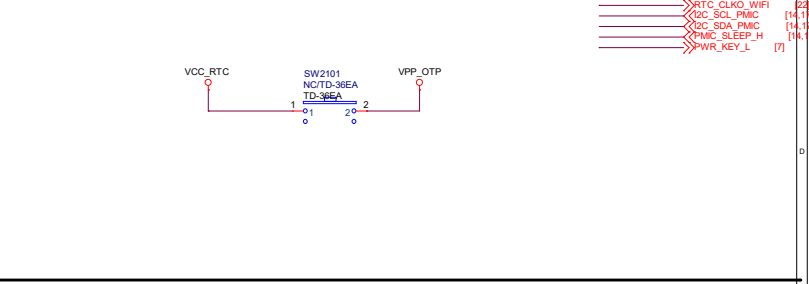
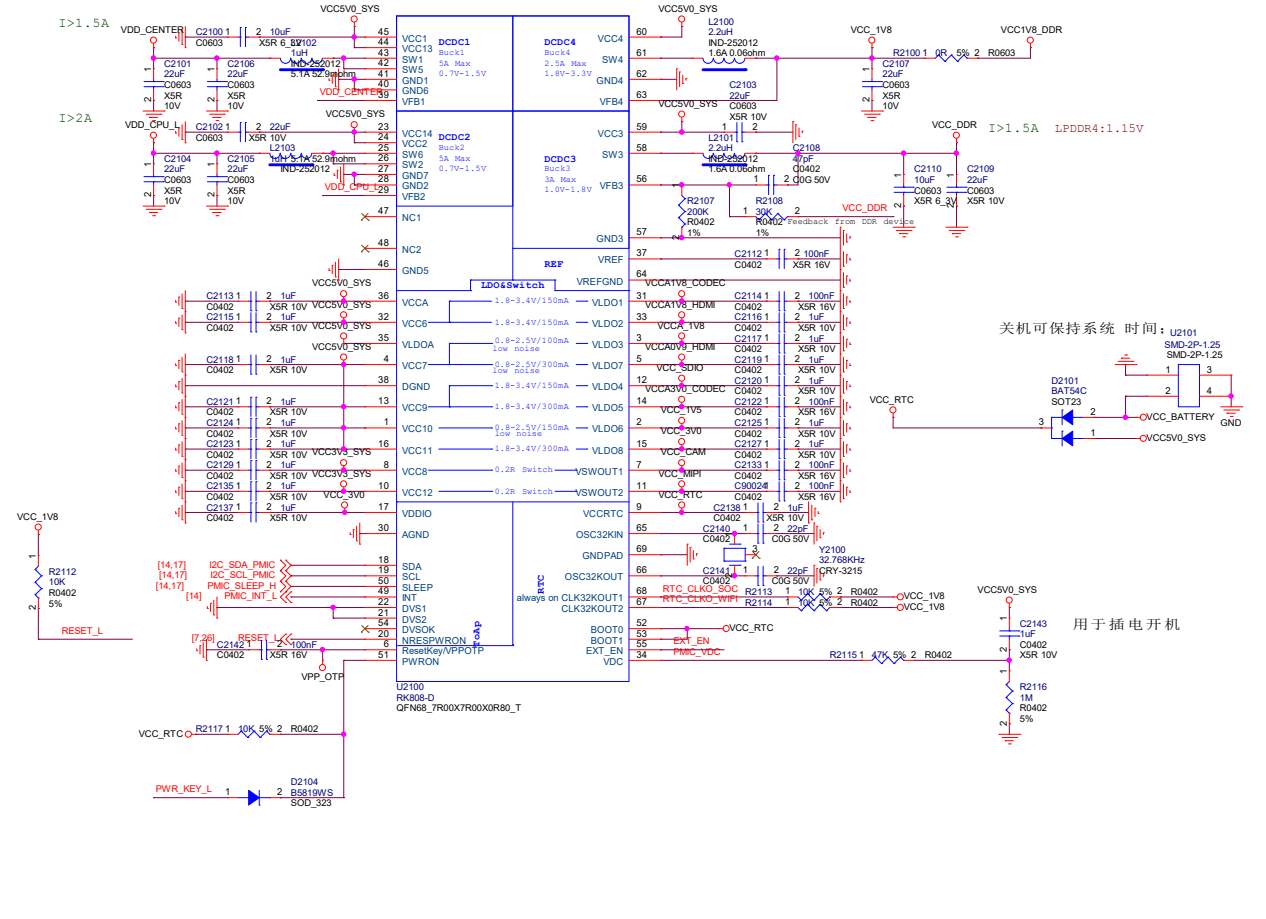
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A4	ROCK PI 4 Document Number RK3399 PCIE	1.4
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DC IN&SYSTEM Power

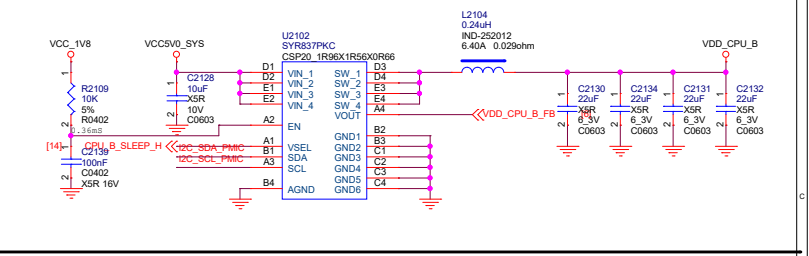


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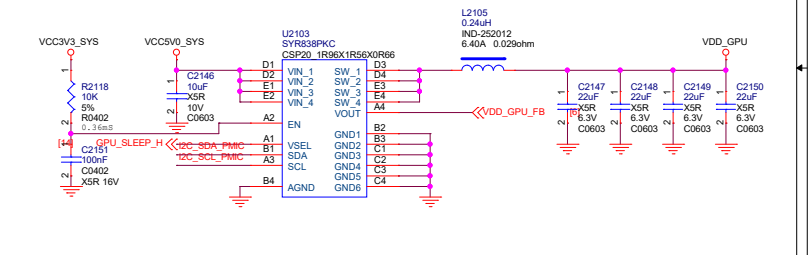
PMIC



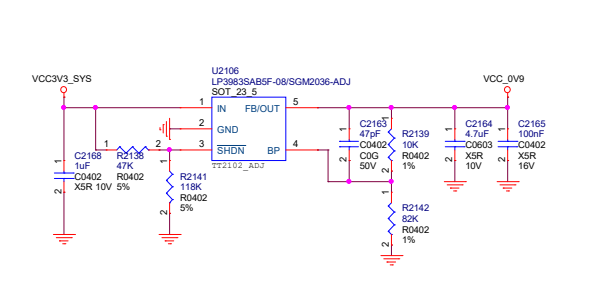
VDD_CPU_B power



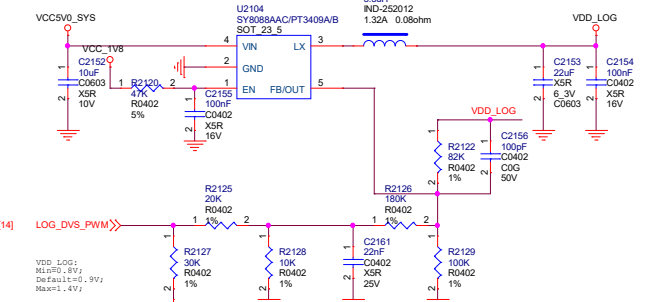
VDD_GPU power



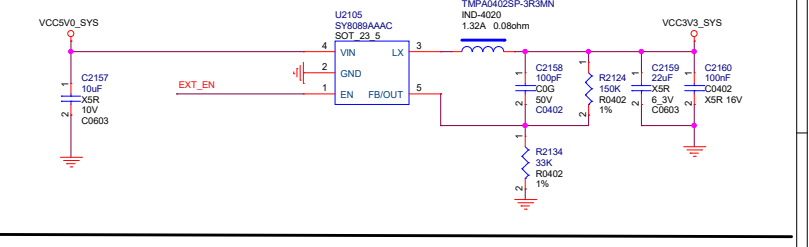
VCC_0V9 power




VDD_LOG power



VCC3V3_SYS power

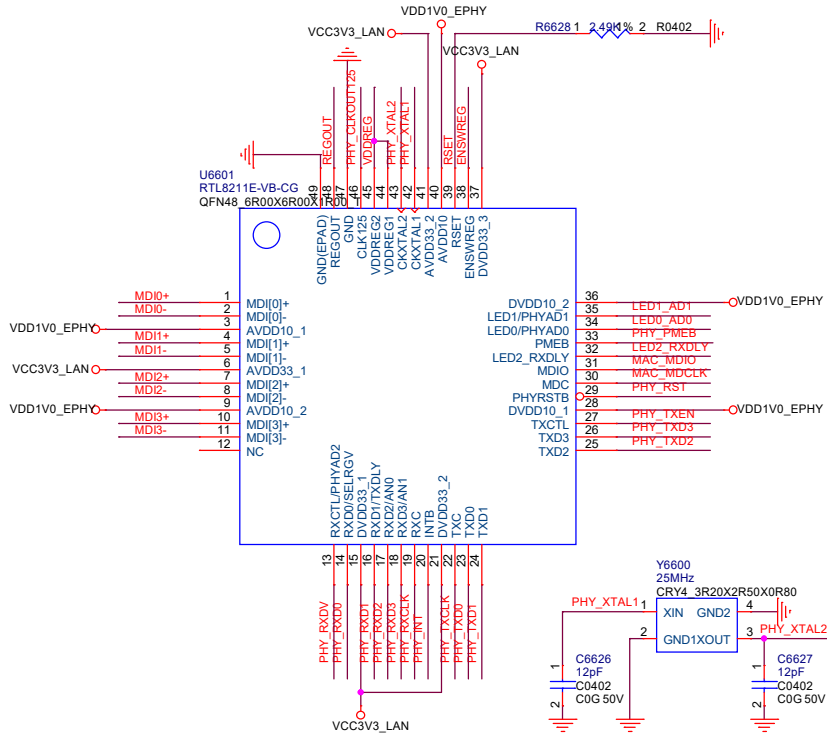
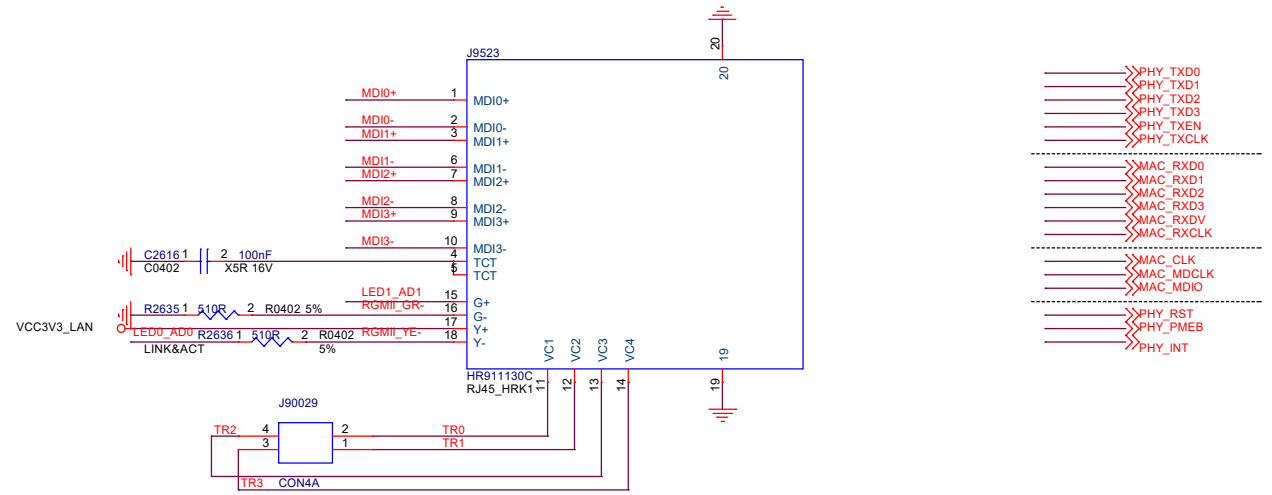




ROCK PI 4

Size	Title	REV
	ROCK PI 4	
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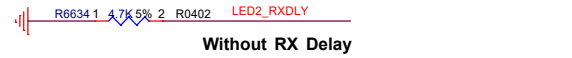
GMAC 10/100/1000 RGMII Ethernet PHY



PHY Address=001(RTL8211E)

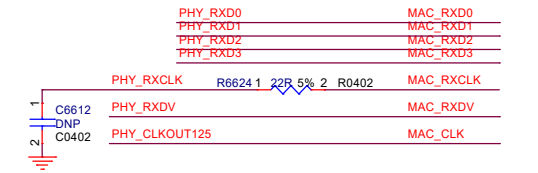
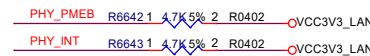


Config for all capability

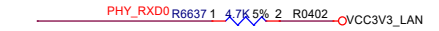


Without RX Delay

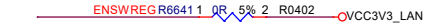
Without TX Delay



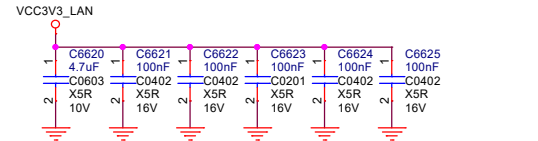
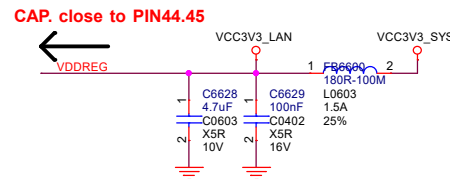
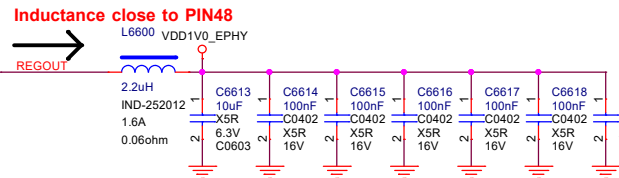
Close to PHY



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)

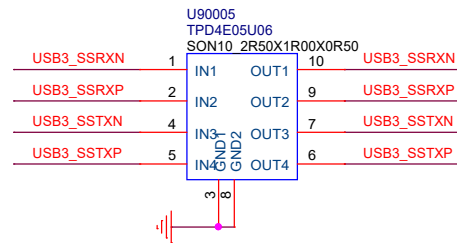
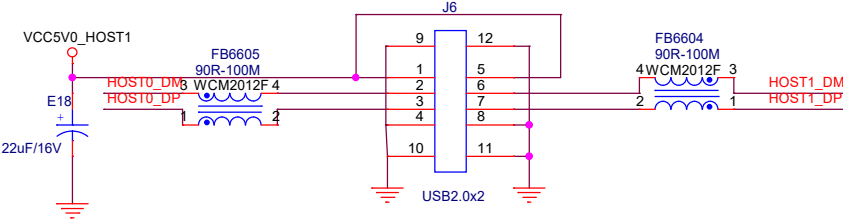
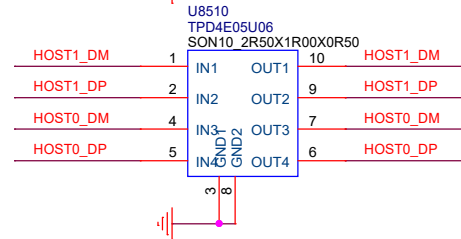
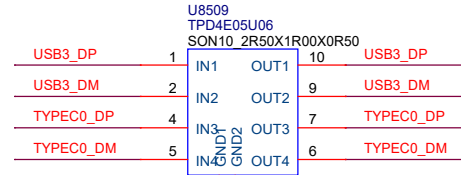
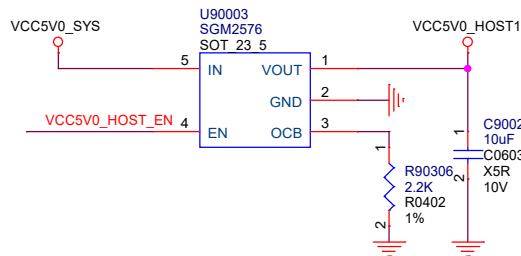
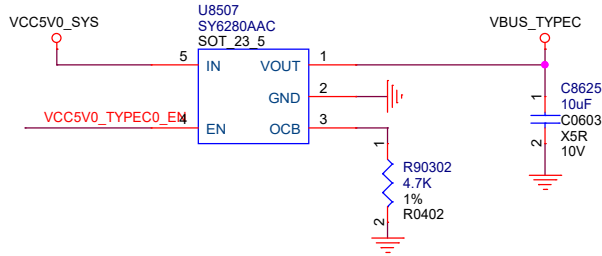
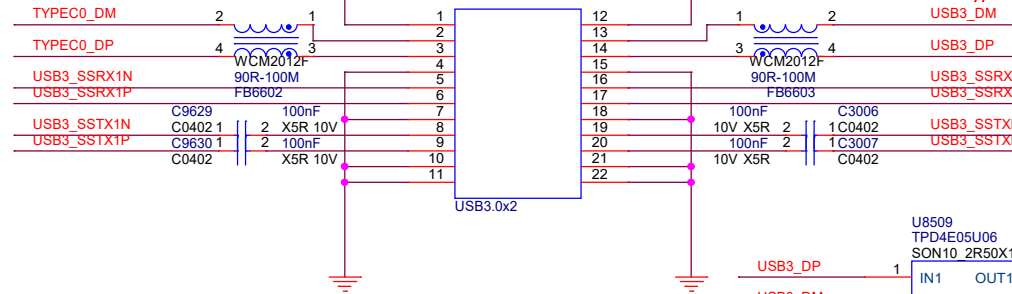
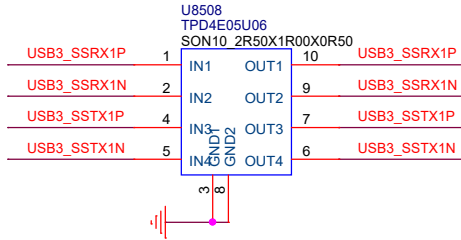
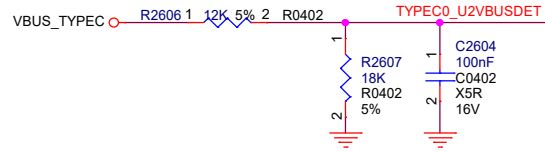


Connect ENSWREG to AVDD33 to enable
 Switching regulator or connect ENSWREG
 to GND to disable Switching regulator.



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A3	Document Number	RTL8211E	1.4
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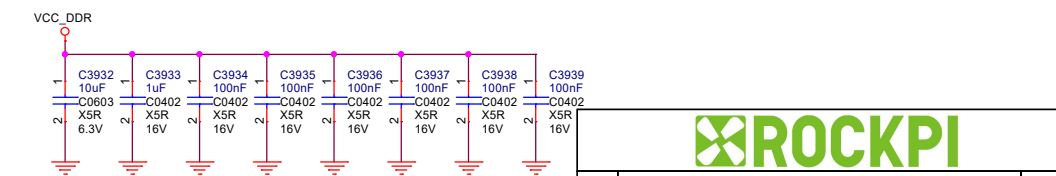
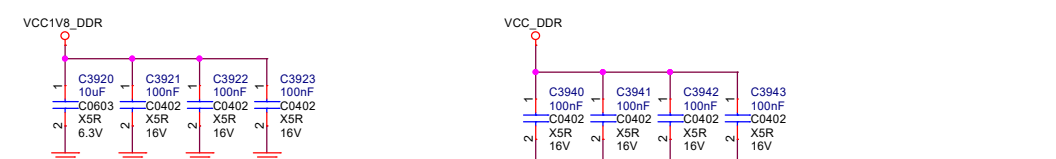
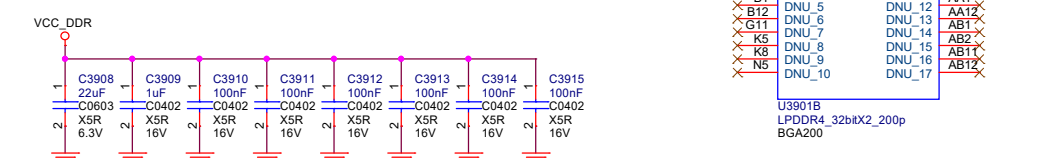
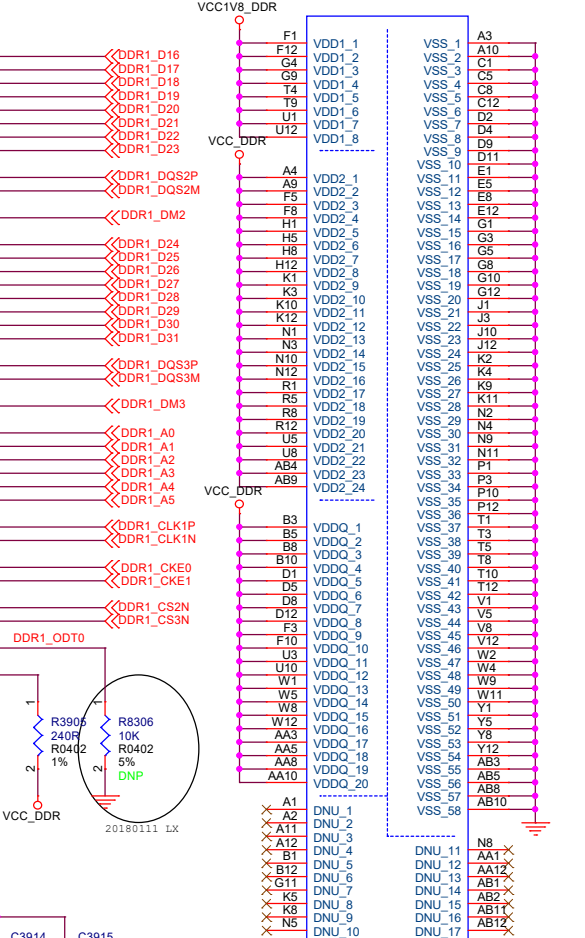
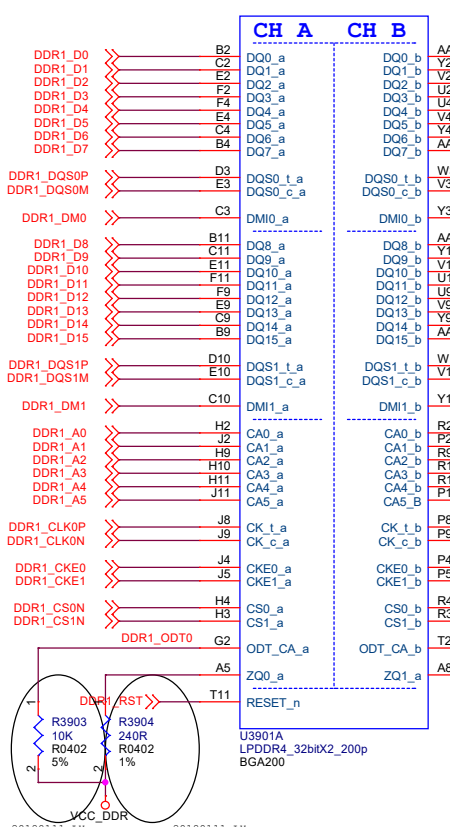
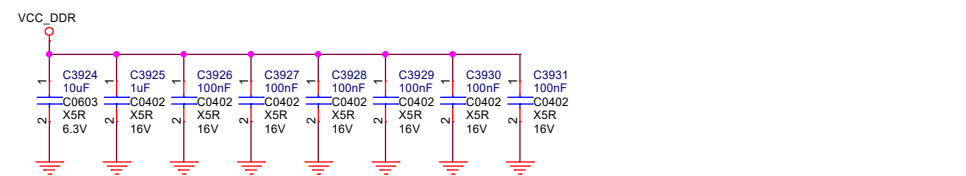
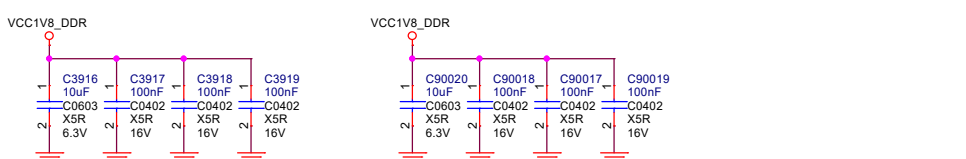
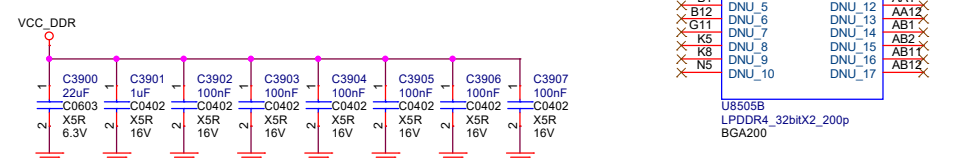
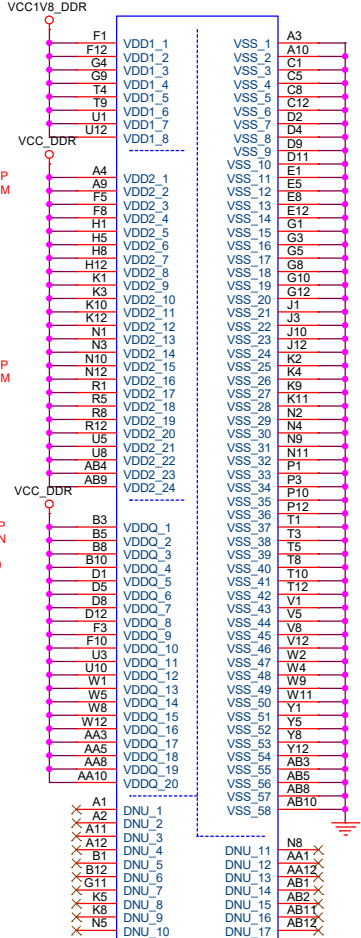
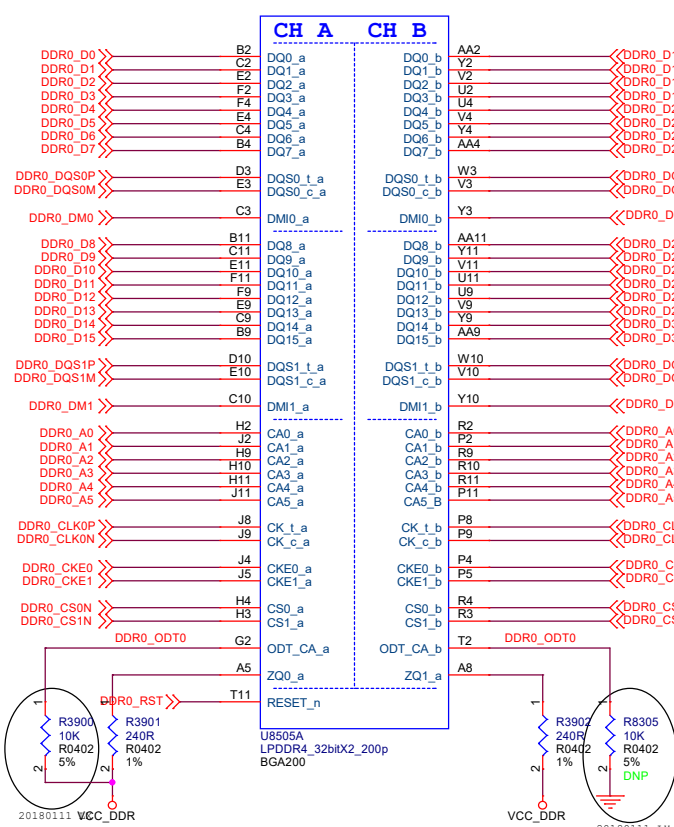
USB3.0 OTG port



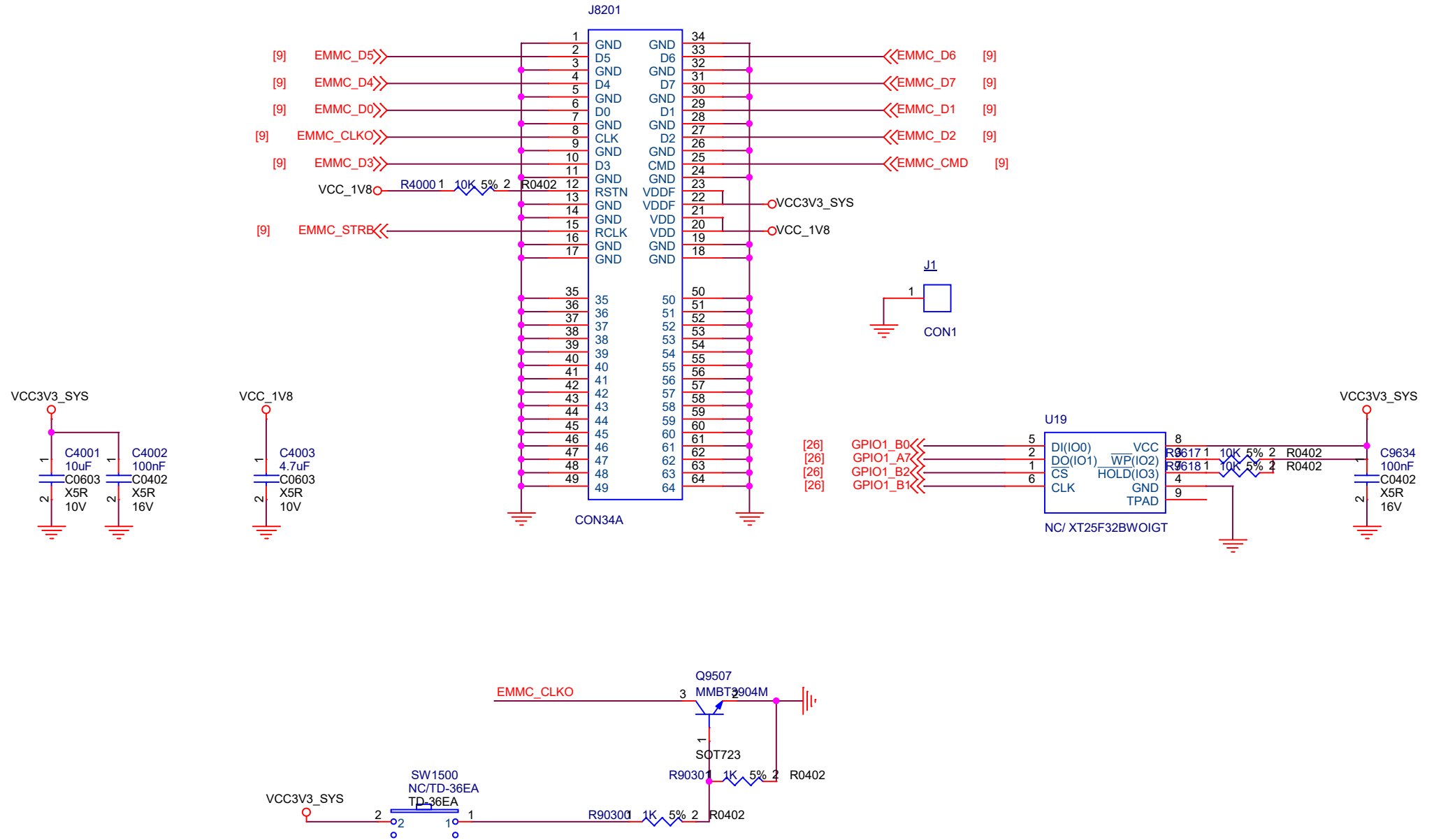
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- >>>TYPEC0_DP [10]
- >>>TYPEC0_DM [10]
- >>>VCC5V0_TYPEC0_EN [14]
- >>>TYPEC0_U2VBUSDET [10]
- >>>USB3_SSTX1P [18]
- >>>USB3_SSTX1N [18]
- >>>USB3_SSRX1P [18]
- >>>USB3_SSRX1N [18]
- >>>HOST0_DP [10]
- >>>HOST0_DM [10]
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- >>>HOST1_DM [26]



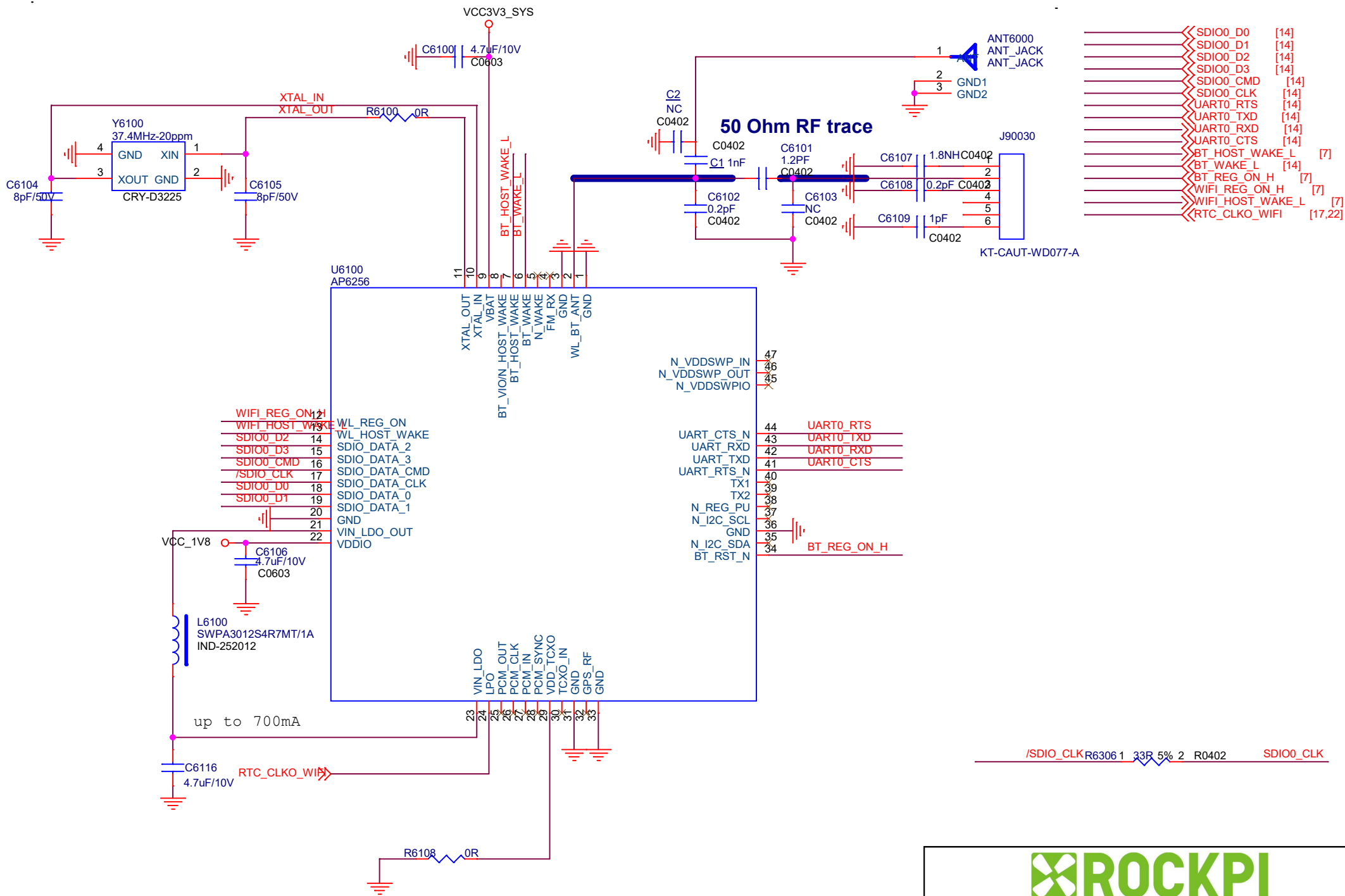
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eMMC FLASH

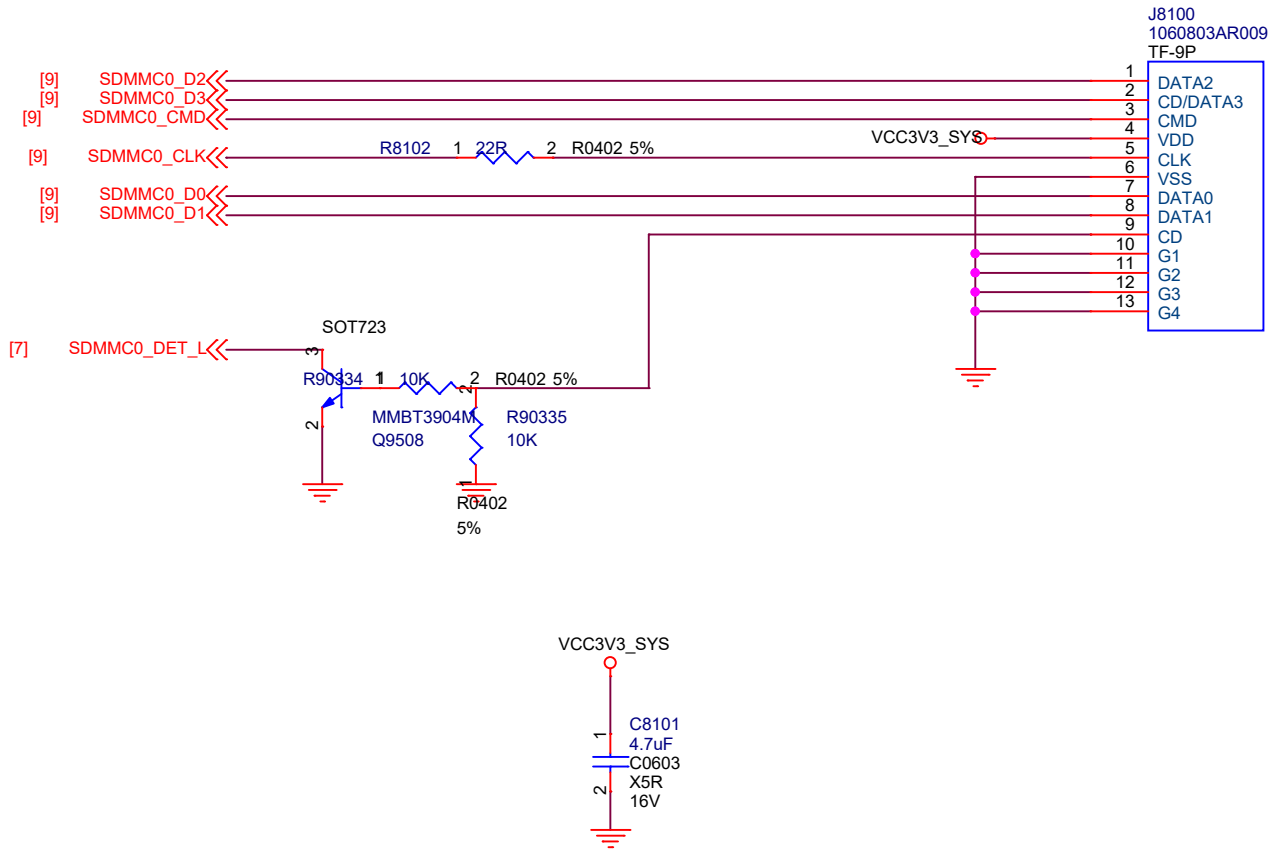


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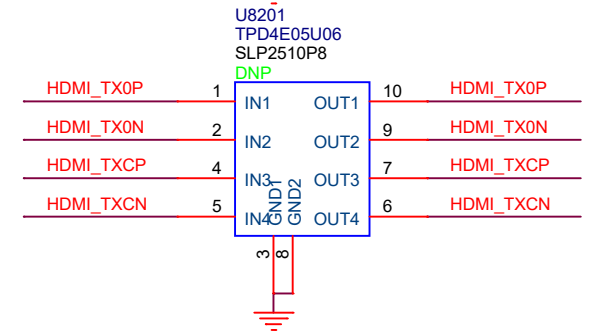
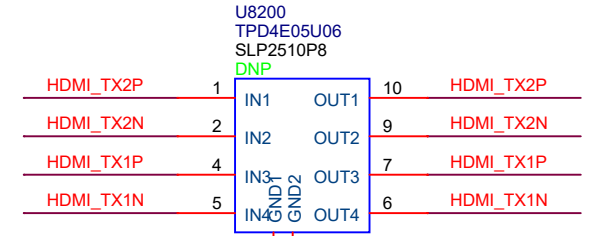
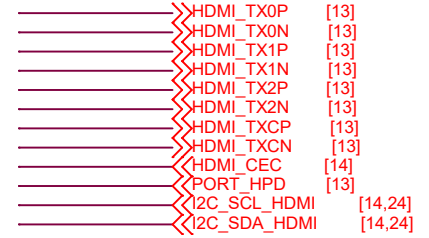
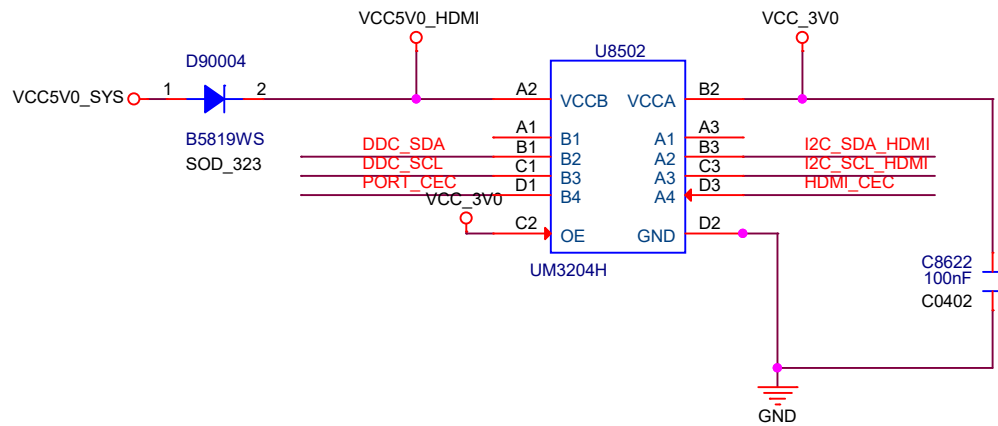
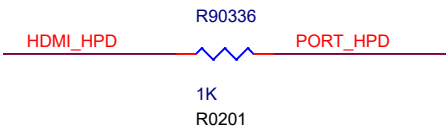
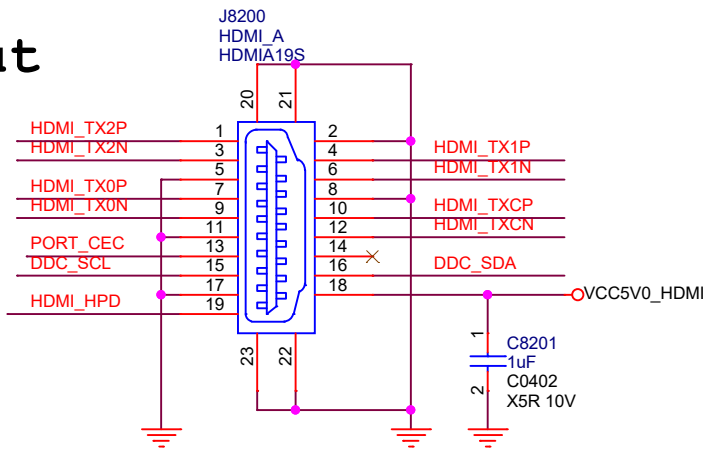
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A4	ROCK PI 4		1.4
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TF CARD

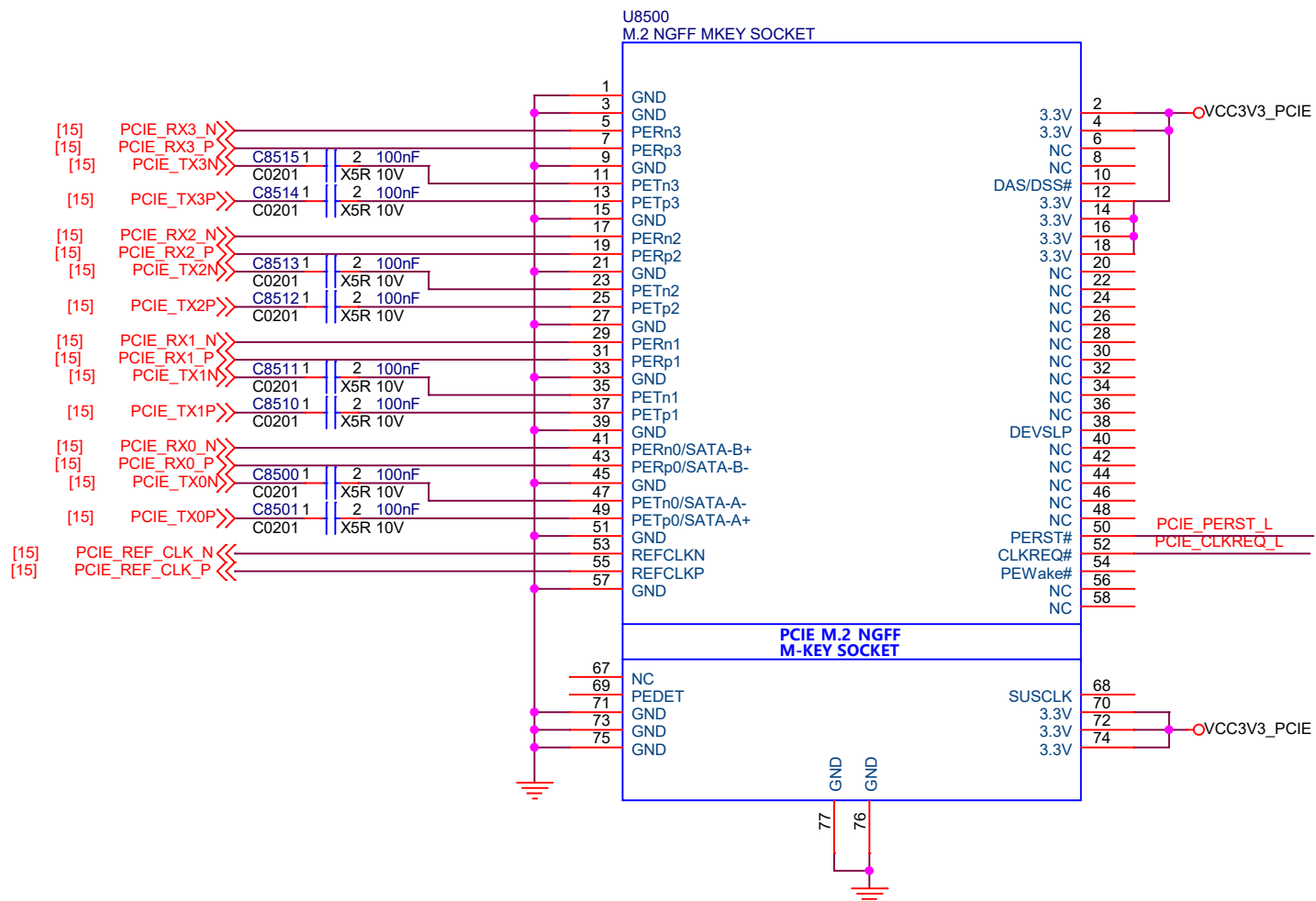


Size	Title	ROCK PI 4	REV
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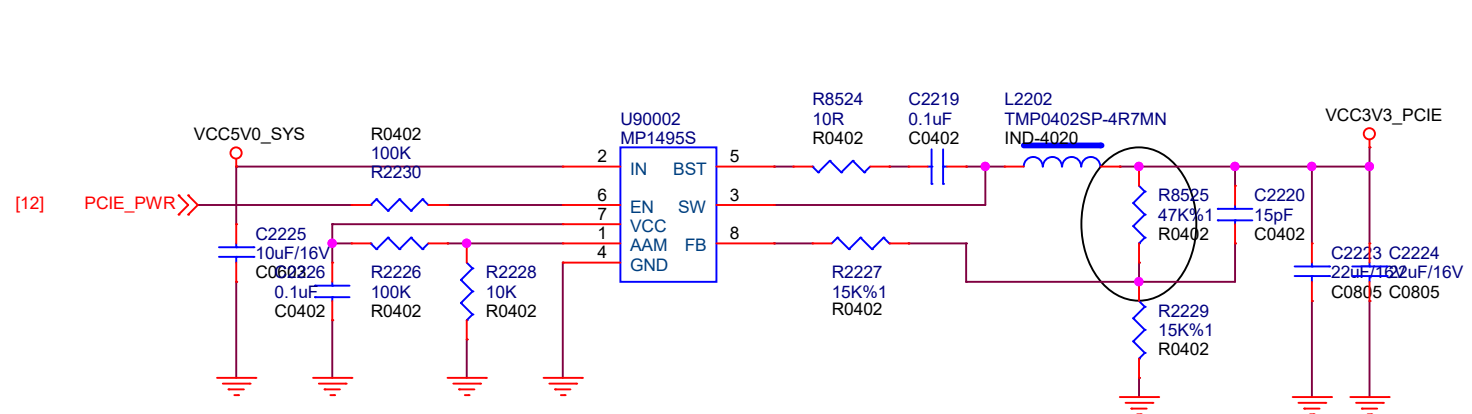
HDMI Output



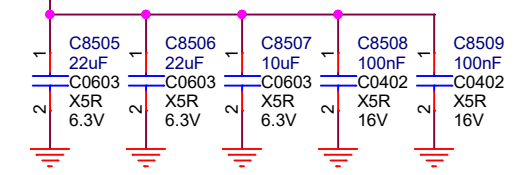
PCIe NGFF/M.2




[12] PCIE_PERST_L
[14] PCIE_CLKREQ_L

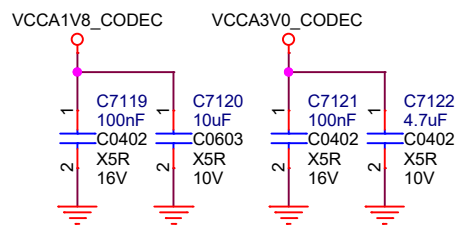
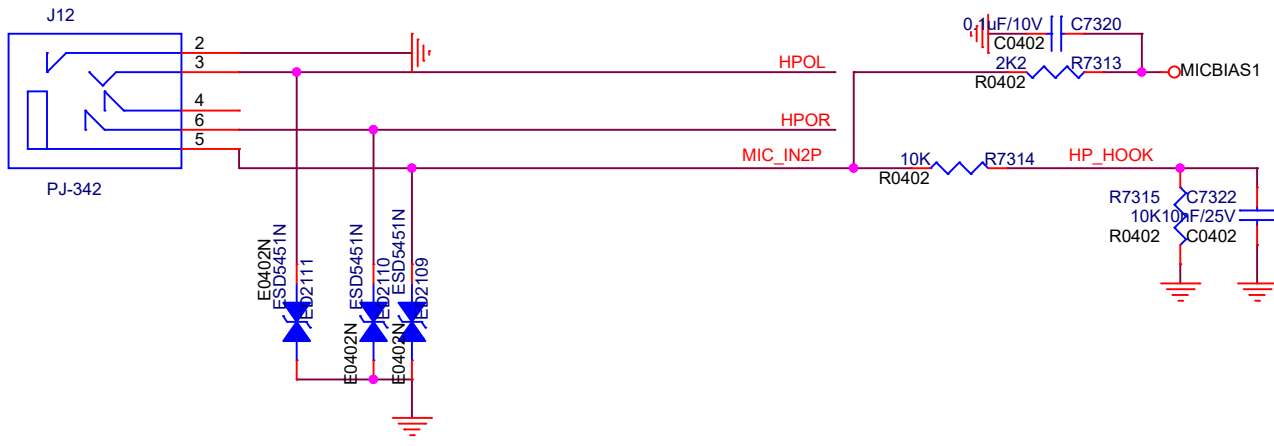
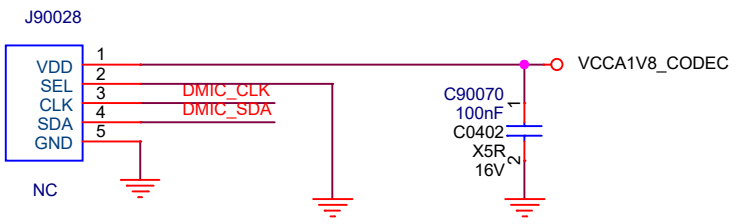
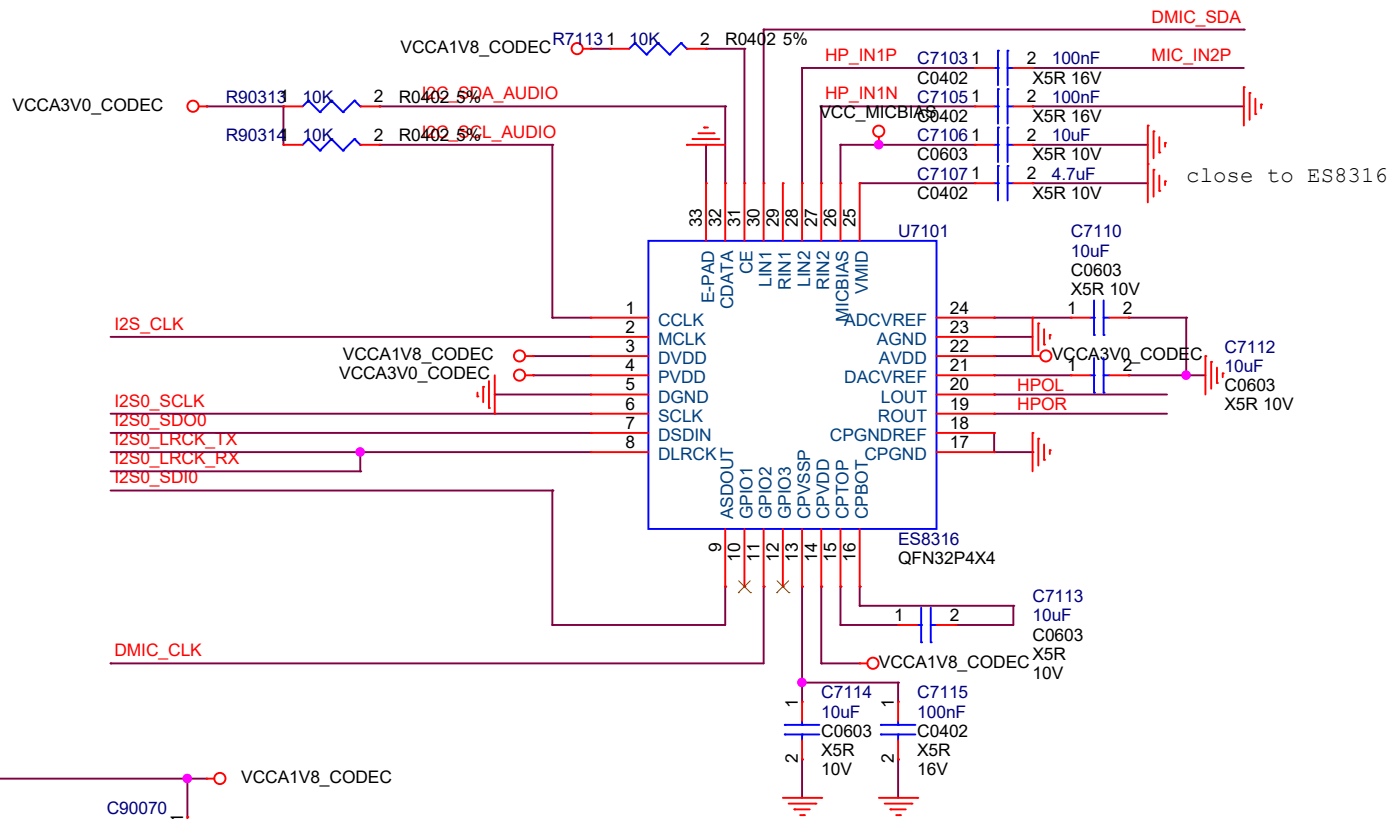
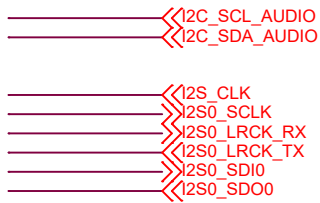


VCC3V3_PCIE Note: 3.3V 供电至少 5A

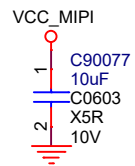
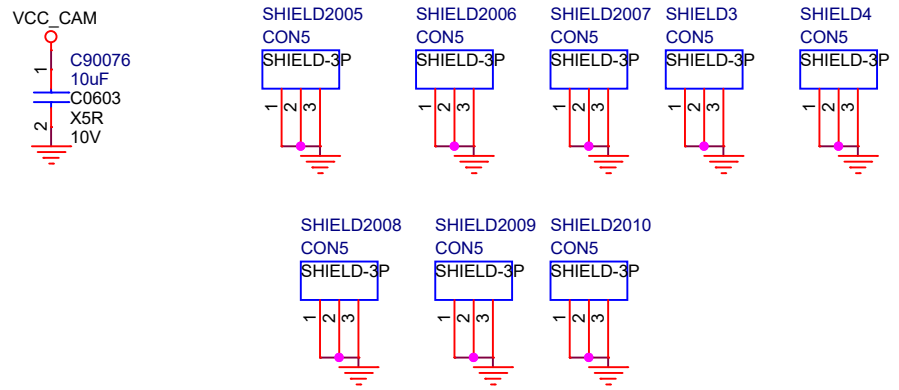
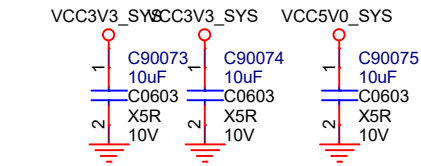
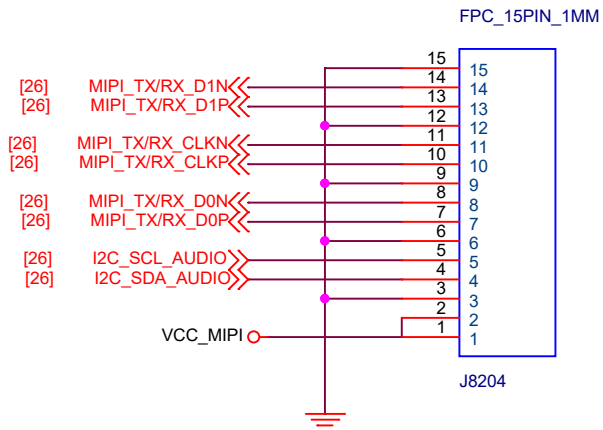
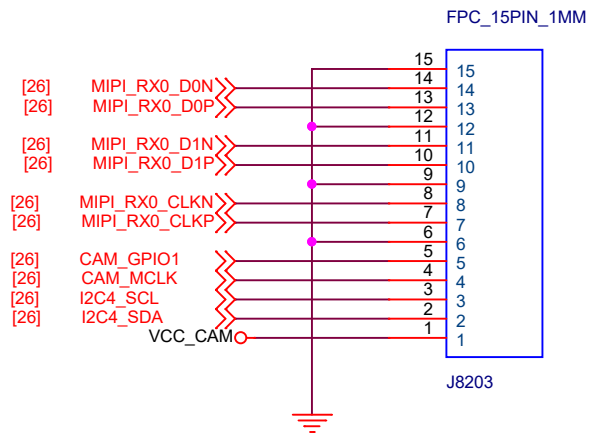
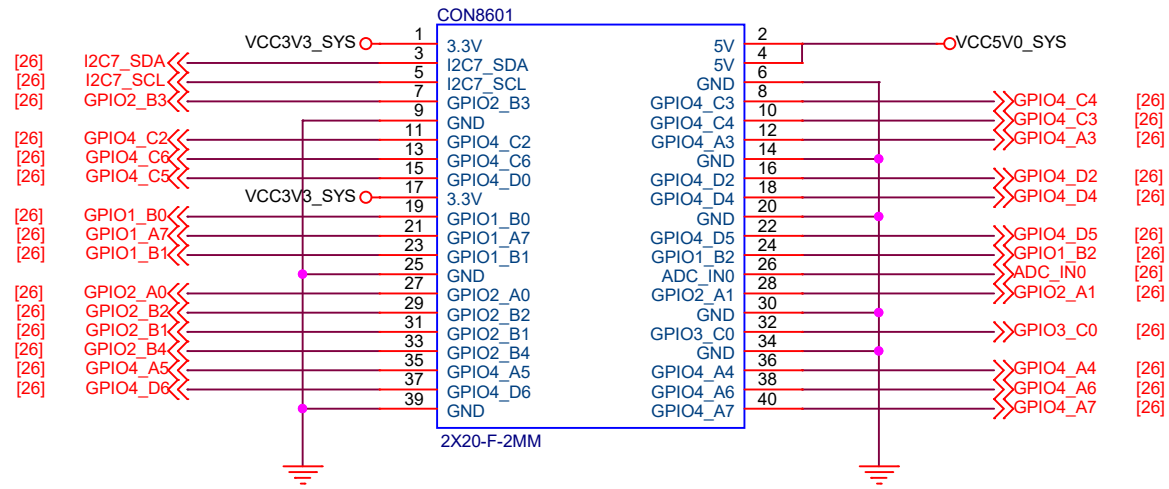




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ROCK PI 4		
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CONNECTOR		
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