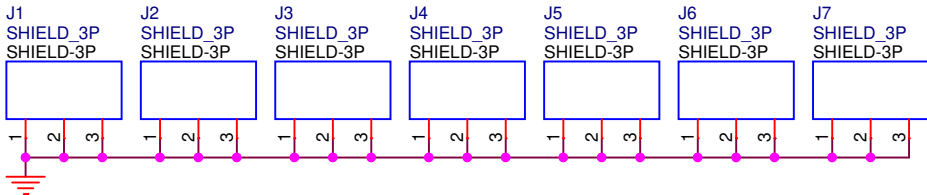
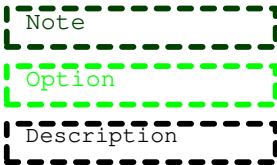


ROCKPro64_V2.1

CONTENT INDEXING

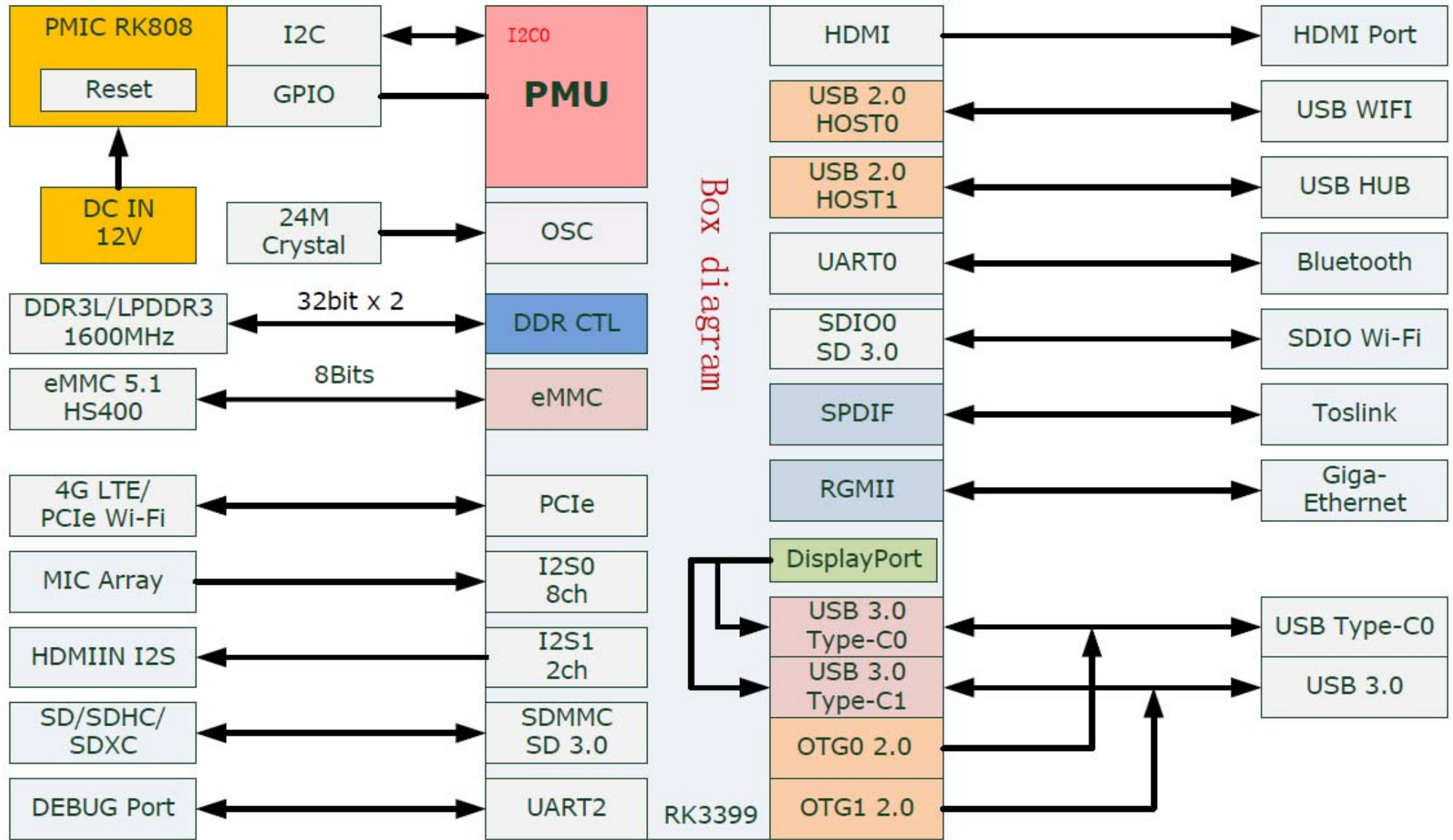
- 01.Index
- 02.Change List
- 03.Block Diagram
- 04.Power Tree
- 05.I2C Map
- 06.Power Domain Map
- 09.IR Receiver
- 10.RK3399 Power
- 11.RK3399 PMU Controler
- 12.RK3399 DDR Controler
- 13.RK3399 Flash&SDMMC Controler
- 14.RK3399 USB/USIC Controler
- 15.RK3399 SARADC/Key
- 16.RK3399 DVP Interface
- 17.RK3399 Display Interface
- 18.RK3399 GPIO
- 19.RK3399 PCIE
- 20.Power-DC IN
- 21.Power-PMIC RK808-D
- 25.USB OTG/HOST Port
- 26.USB Type-C Port
- 27.USB HUB
- 32.RAM-DDR3 4x16bit(option)
- 36.RAM-LPDDR3(178P)
- 40.Memory-eMMC
- 60.WIFI-USB(option)
- 61.WIFI/BT-AP6xxx(option)
- 63.WIFI/BTMIMO-AP6354
- 65.RJ45-1000M-RTL8211E
- 66.RJ45-100M-DP83848N(option)
- 67.RJ45-1000M-ZX2AA500(option)
- 74.MIC Array
- 81.TF Card
- 82.Digital Video Output
- 83.Digital Video Input
- 84.SPDIF Output
- 85.PCie NGFF/M.2
- 86.PCie x4 (option)
- 90.FAN(option)
- 91.eFUSE(option)

Note:
1: If the Value or option of the component properties is DNP, indicating do not mounted

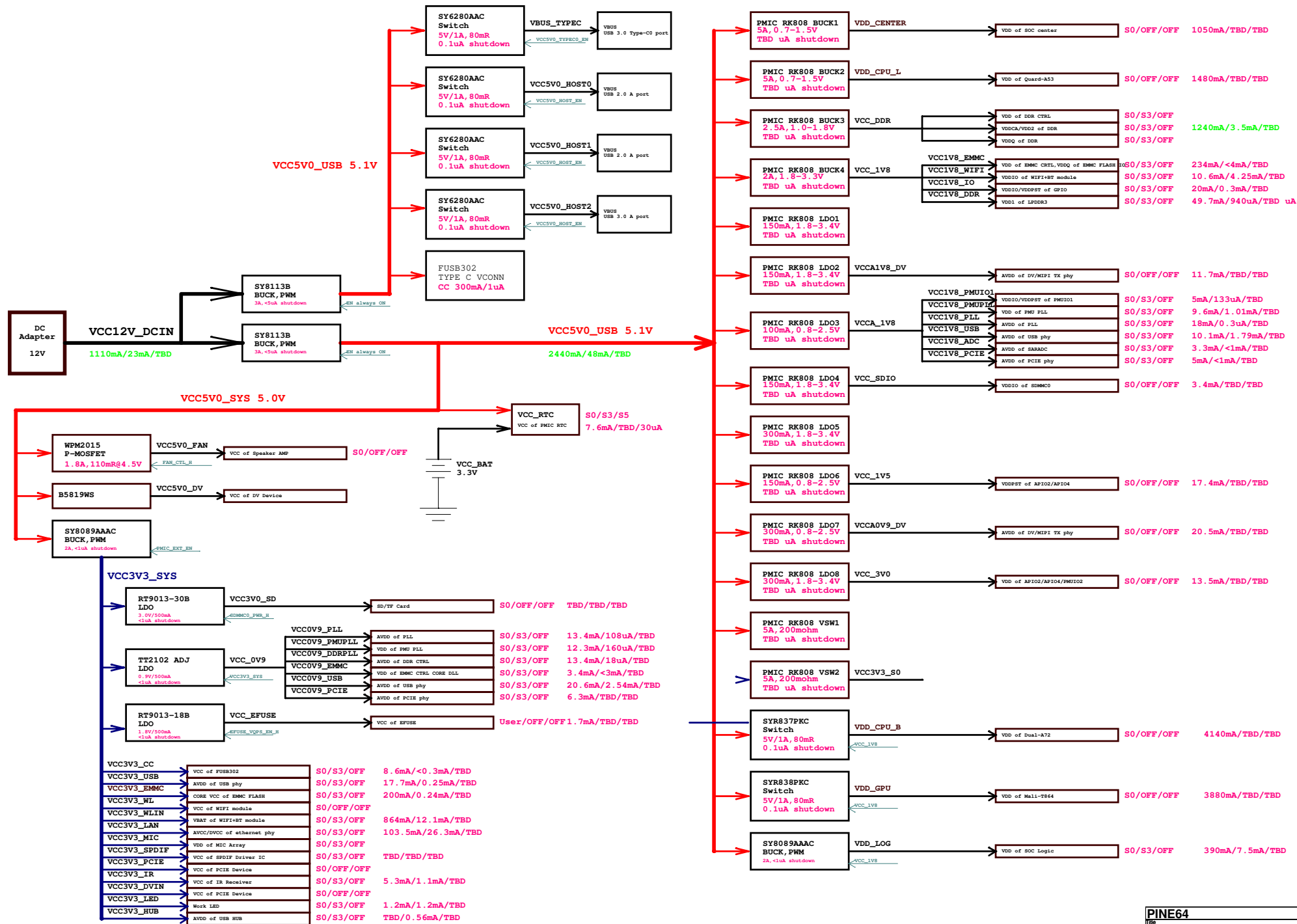


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Block Diagram



RK3399 POWER DIAGRAM



RK3399 Power Domain Map

Part Port	Domain	Pin name in datasheet	I/O type	Power supply	Power source
Part C	PMUIO1	pmuiol_gpio0ab	1.8V only	VCC1V8_PMU	RK808 VLD03
Part E	PMUIO2	pmul830_gpiolabcd	1.8V(Default) 3.0V	VCC1V8_PMU	RK808 VLD03
Part I	APIO1	gmac_gpio3abc	3.3V only	VCC1V8_IO VCC3V3_IO	RK808 Buck4 RK808 VSW2
Part L	APIO2	bt656_gpio2ab	1.8V(Default) 3.0V	VCC1V8_DVP	RK808 VLD01
Part G	APIO3	wifi/bt_gpio2cd	1.8V only	VCC1V8_WIFI	RK808 Buck4
Part K	APIO4	gpio1830_gpio4cd	1.8V 3.0V(Default)	VCC_1V5 VCC3V0_IO	RK808 VLD06 RK808 VLD08
Part J	APIO5	audio_gpio3d_gpio4a	1.8V(Default) 3.0V	VCCA1V8_CODEC	RK808 VLD07
Part F	SDMMC0	sdmmc_gpio4b	1.8V 3.0V(Default)	VCC_SDIO	RK808 VLD04

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Power Domain Map

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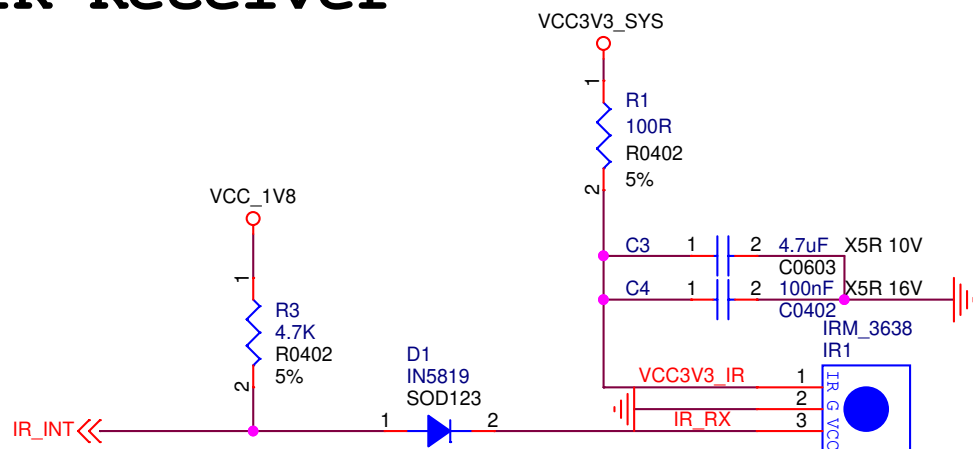
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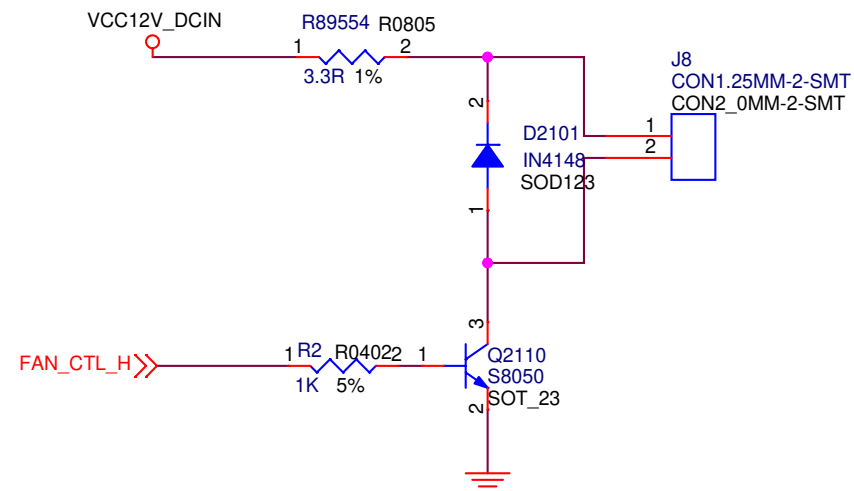
I2C MAP

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	I2C_SDA_VIDEO I2C_SCL_VIDEO	VCC_1V8	TC358749XBG		DV Transmit	
I2C2	GPIO2_A0/VOP_D0/CIF_D0/I2C2_SDA GPIO2_A1/VOP_D1/CIF_D1/I2C2_SCL	APIO2	RESERVE					
I2C3	GPIO4_C0/I2C3_SDA/UART2B_RX GPIO4_C1/I2C3_SCL/UART2B_TX	APIO4	I2C_SDA_DV I2C_SCL_DV	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	RESERVE					
I2C7	GPIO2_A7/VOP_D7/CIF_D7/I2C7_SDA GPIO2_B0/VOP_CLK/CIF_VSYNC/I2C7_SCL	APIO2	RESERVE					

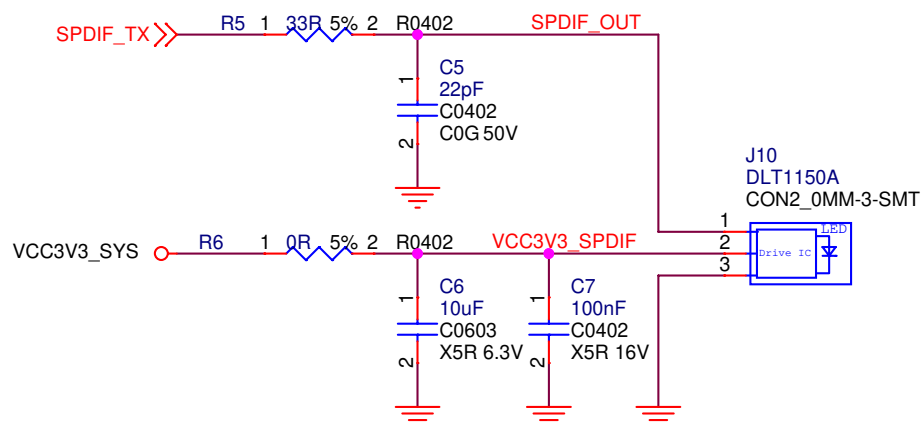
IR Receiver



HEATSINK/FAN (option)

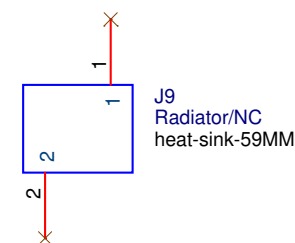
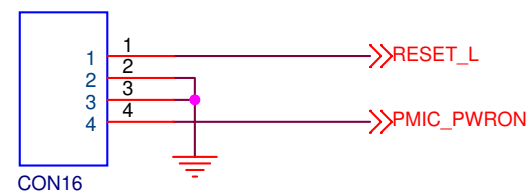


→ **SPDIF OUT**



预留复位，开机键扩展连接座

XH 2.5mm/NC

**PINE64**

Title

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Size

Document Number

Custom

IR SPDIF

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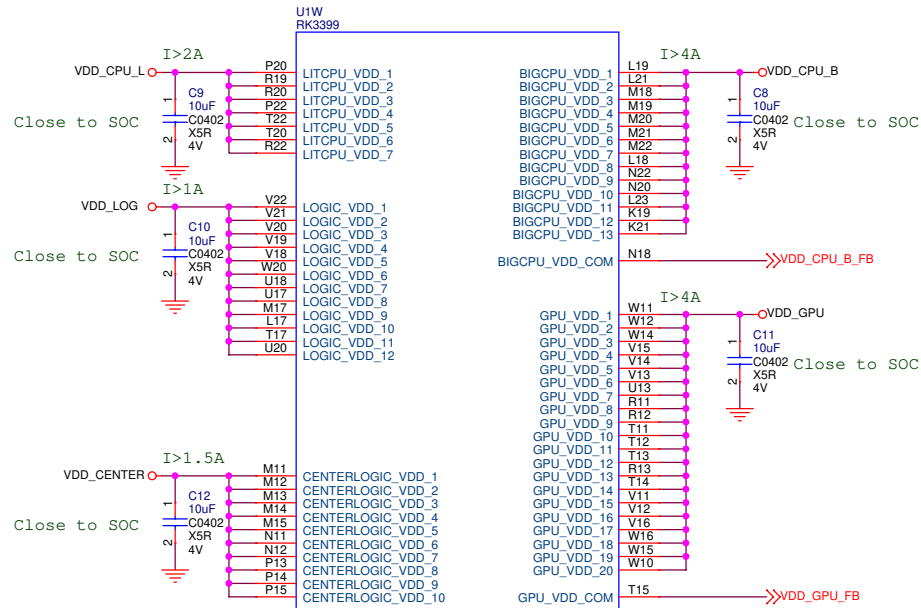
Sheet

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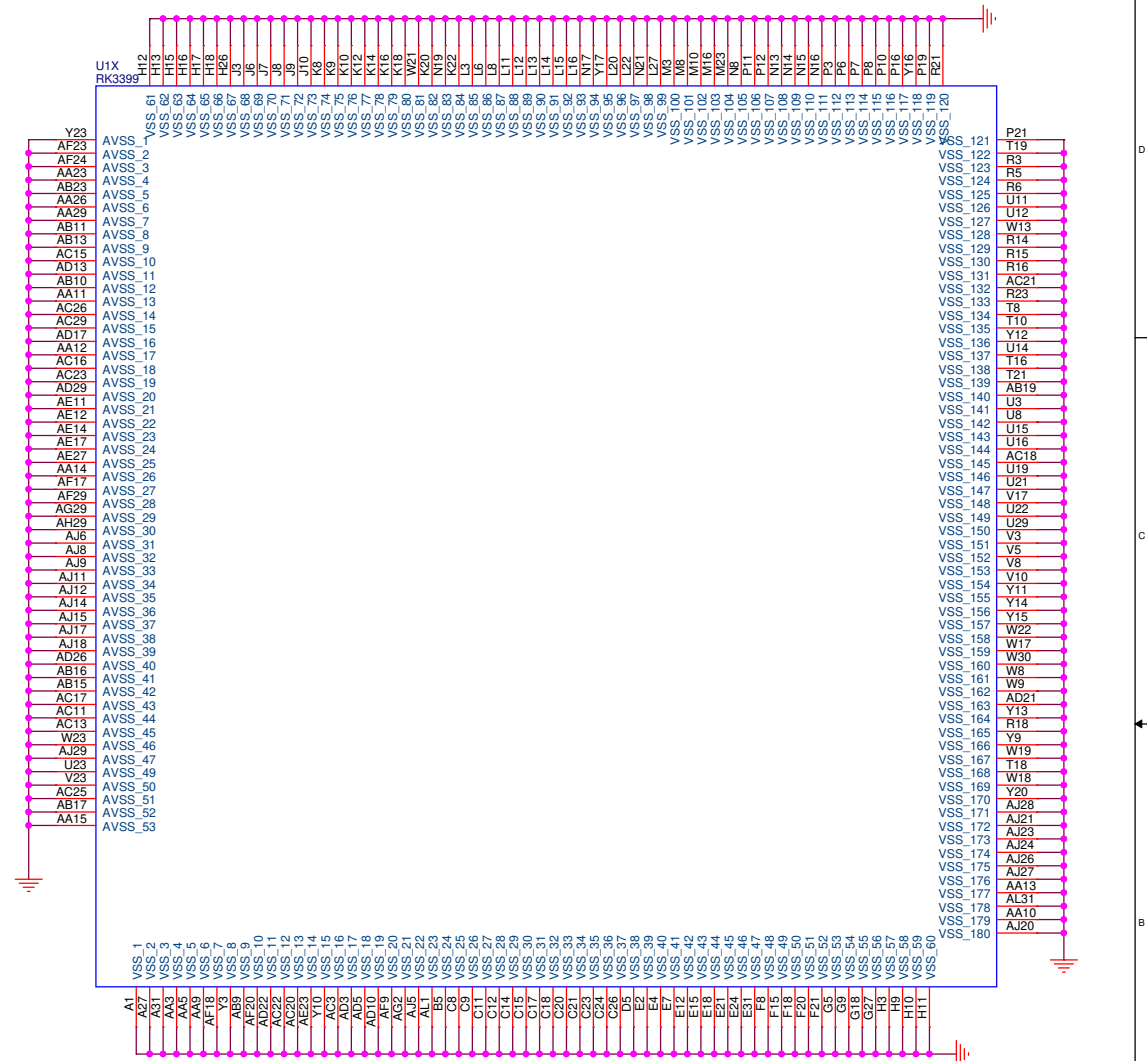
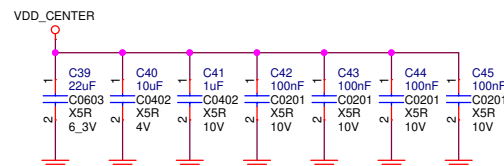
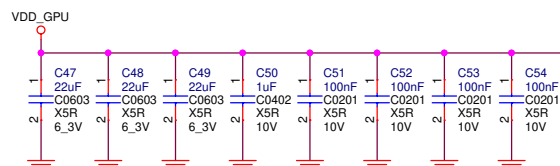
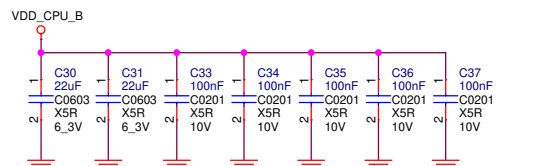
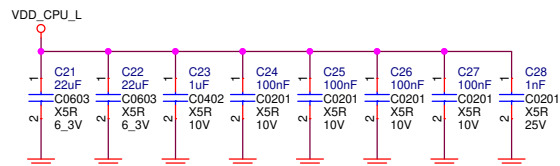
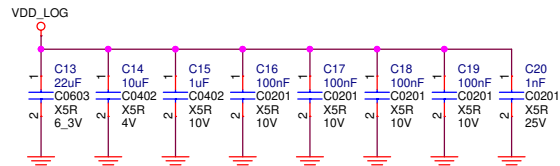
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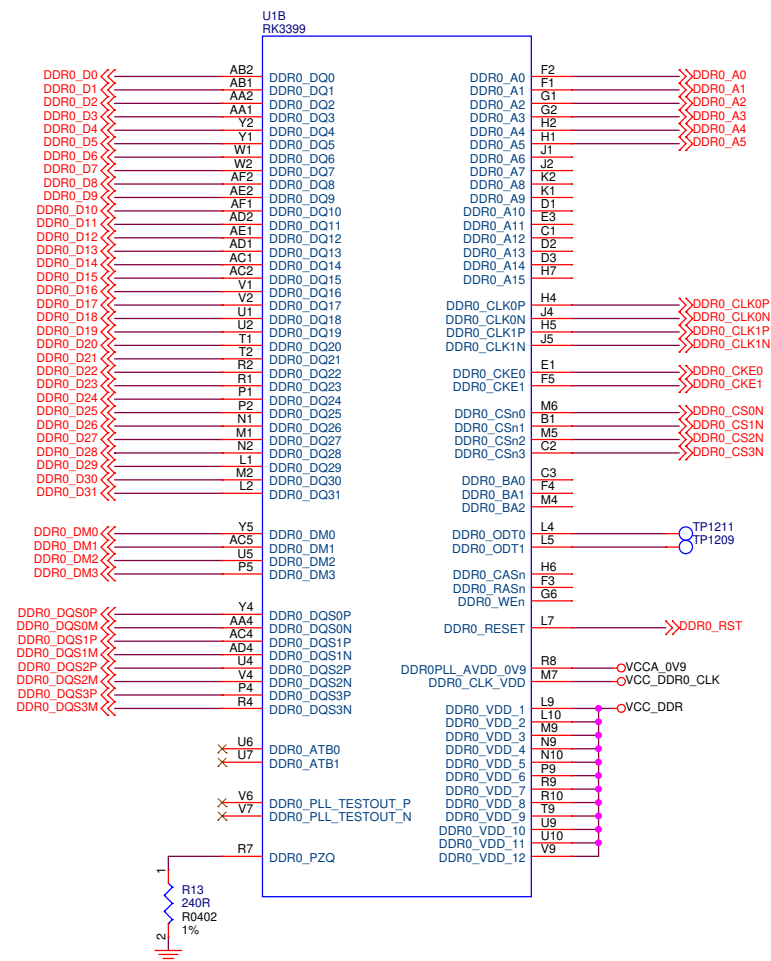
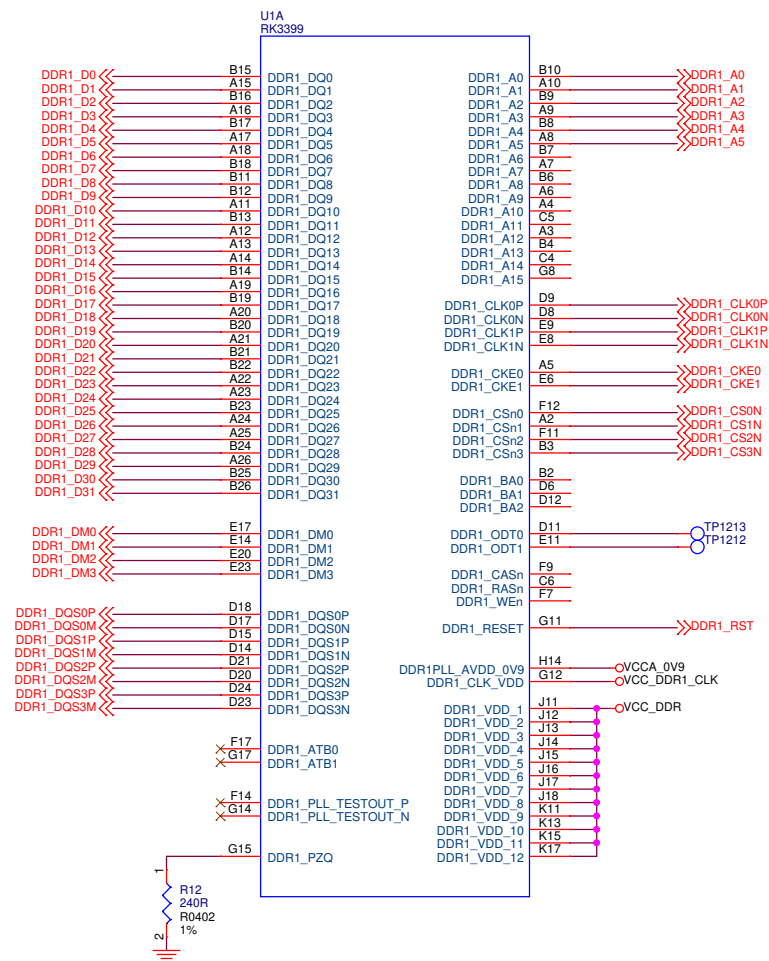
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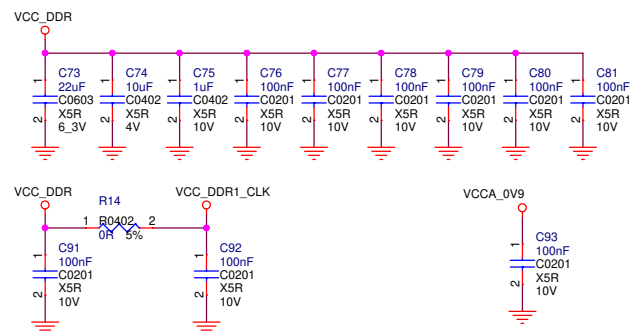


Note: Power filter CAP please place back of SOC or close to SOC

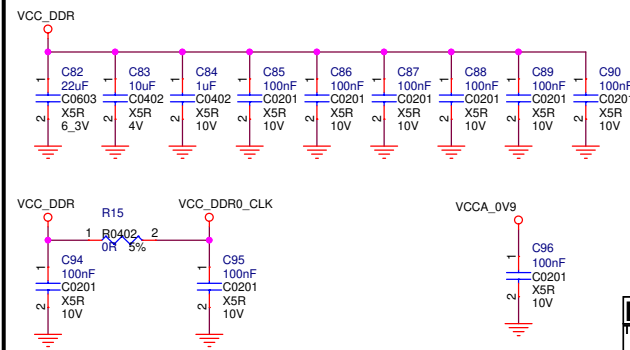




DDR FILTER Note:R1202 cannot be deleted



DDR FILTER Note:R1203 cannot be deleted

**PINE64**

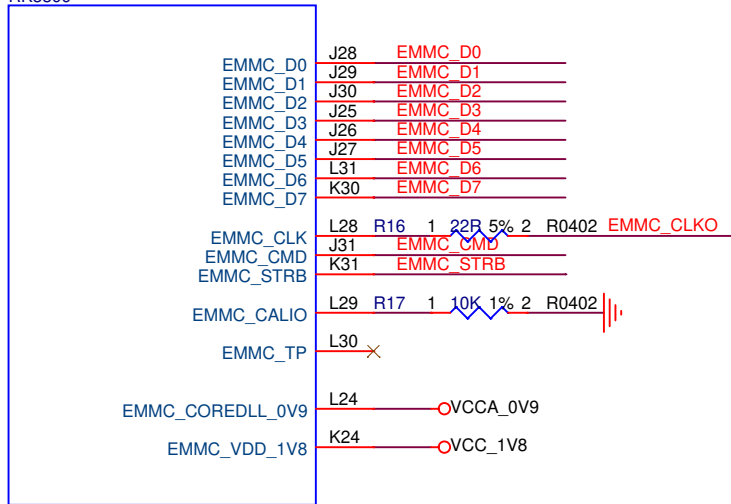
RockPro64_RK3399

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A3	RK3399 DDR Controller

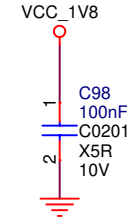
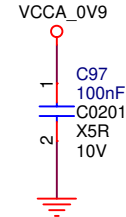
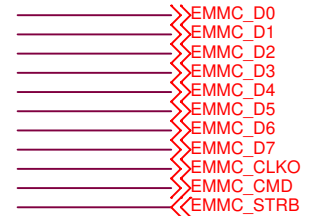
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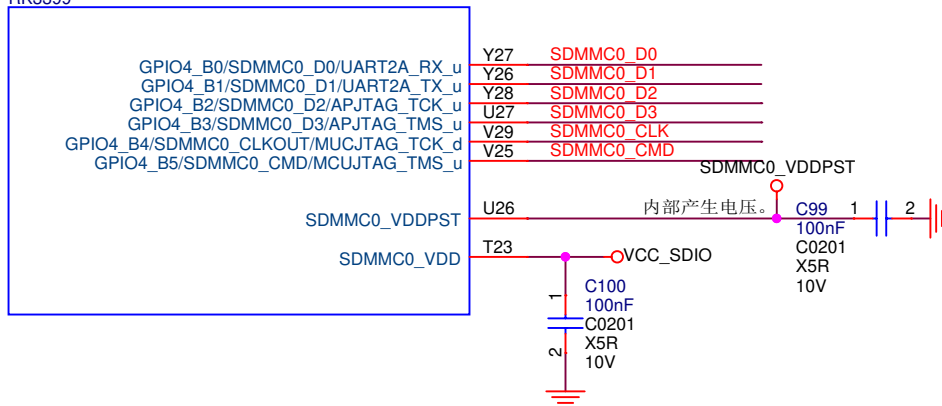
U1H
RK3399



EMMC design rule:
1.Data[0:7]、cmd、strobe走线做为的一组，
并行走线并整组包地，组内等长要求为 $\pm 100\text{mil}$;
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 $\pm 10\%$;
5.与其他信号间距遵循3w原则;
6.R1300靠近SOC放置;



U1F
RK3399



SDMMC design rule:
1.Data[0:3]、cmd走线做为的一组，
并行走线并整组包地，组内等长要求为 $\pm 100\text{mil}$;
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 $\pm 10\%$;
6.与其他信号间距遵循3w原则;

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Title

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Size

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RK3399 FLASH&SDMMC

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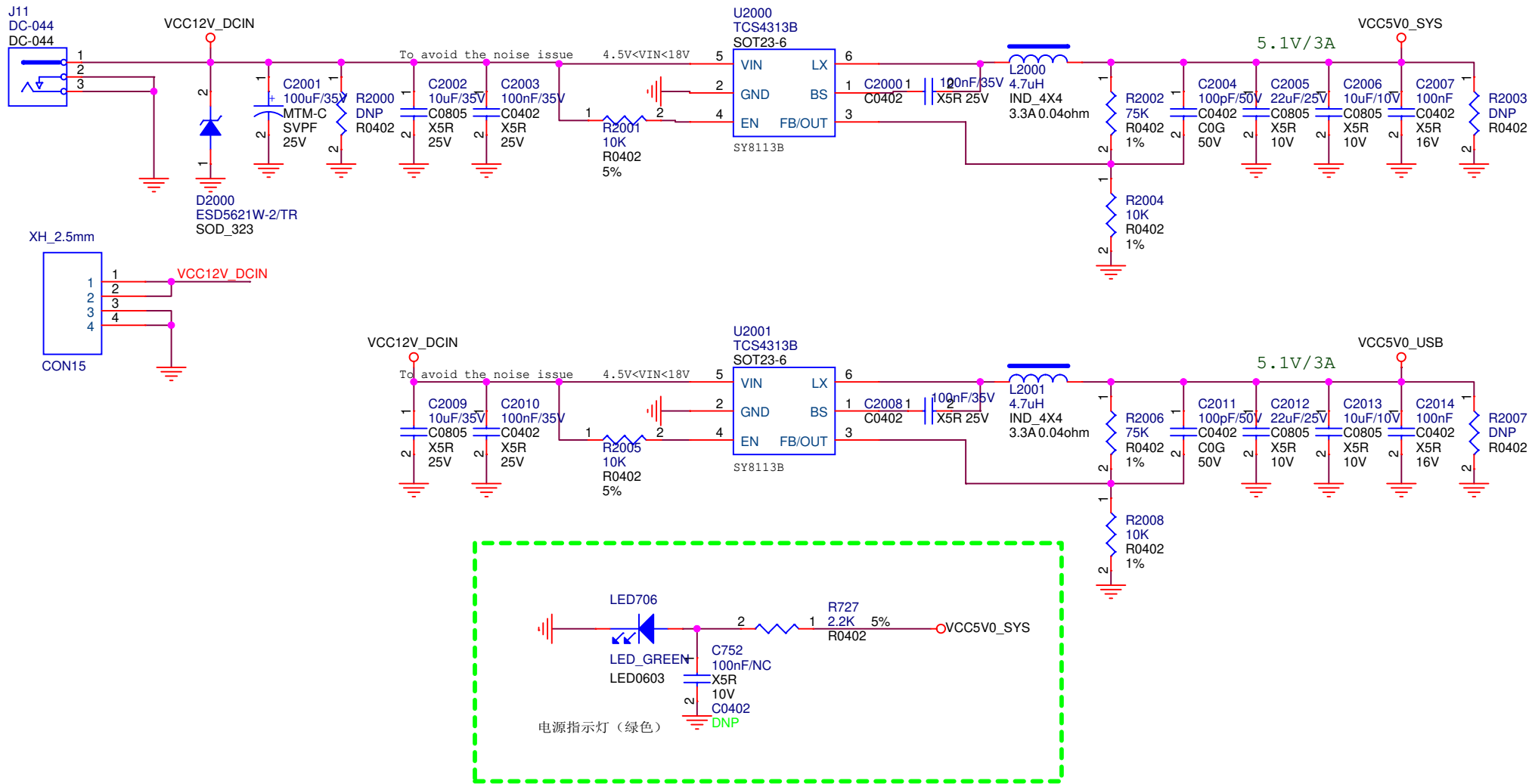
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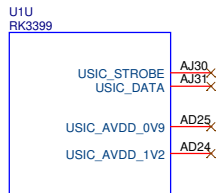
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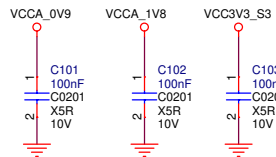
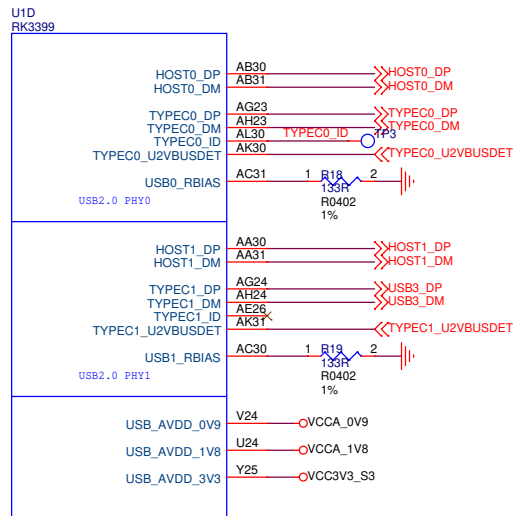
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DC IN&SYSTEM Power



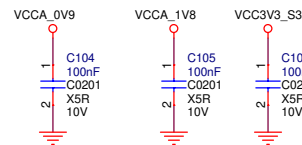
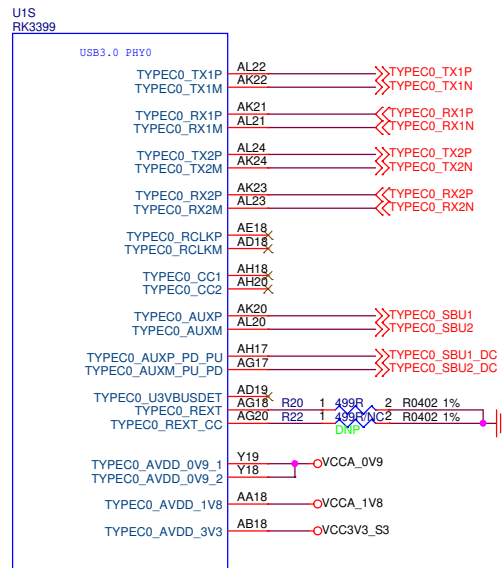


USB2.0

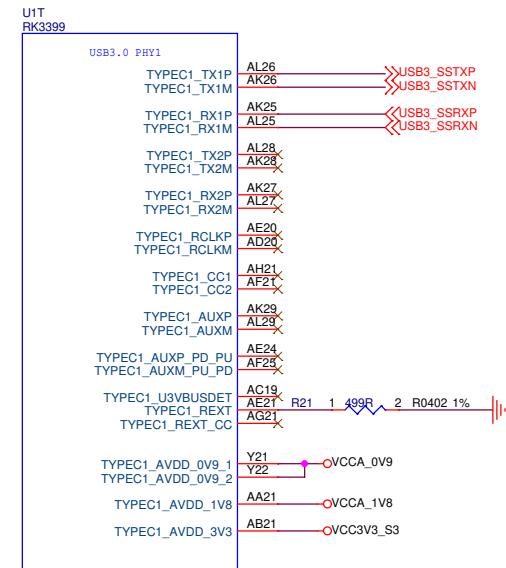


USB2.0 design rule:
 1.Max intra-pair skew < 4 ps;
 2.Max trace length < 6 inches;
 3.Max allowed via < 6;
 4.Trace impedance 90ohm+/-10%;
 5.与其他信号间距遵循3w原则;

USB3.0

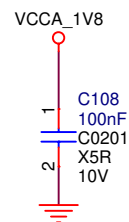
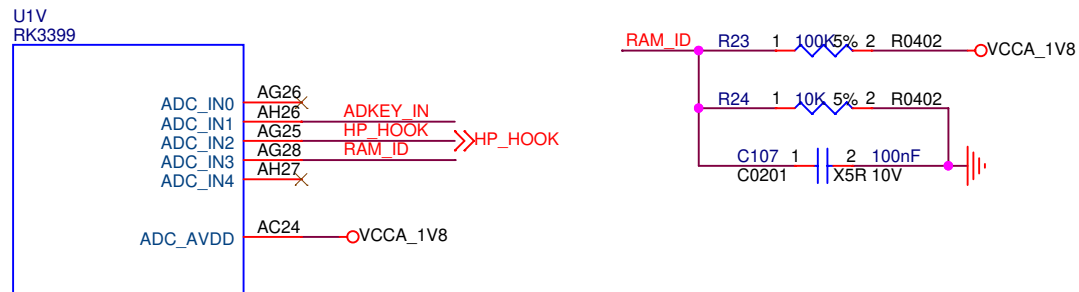


USB3.0 design rule:
 1.Max intra-pair skew < 4 ps;
 2.Max length skew between TX and RX < 1.6 ns;
 3.Max trace length < 6 inches;
 4.Max allowed via < 4;
 5.Trace impedance 90ohm+/-10%;
 6.与其他信号间距遵循3w原则;



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

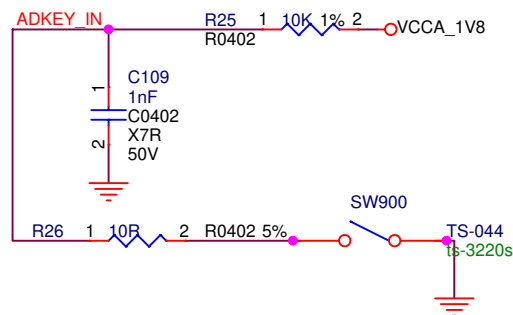
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A3	RK3399 USB/USIC Controller	V2.0
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	RAM ID	R1501 PU	R1502 PD
DDR3/DDR3L	0.6V	200K	100K
LPDDR3	0.112V	150K	10K
LPDDR4	1.5V	100K	499K

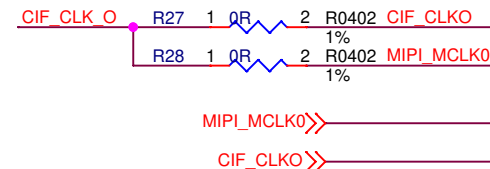
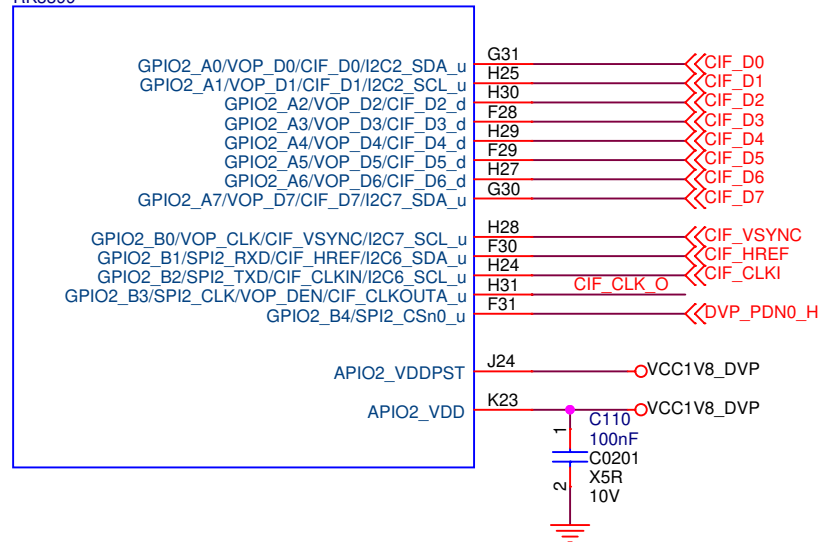
调试升级按键

Note:
系统上电时，如果ADKEY_IN电平为0V，
则RK3399进入Recovery模式；

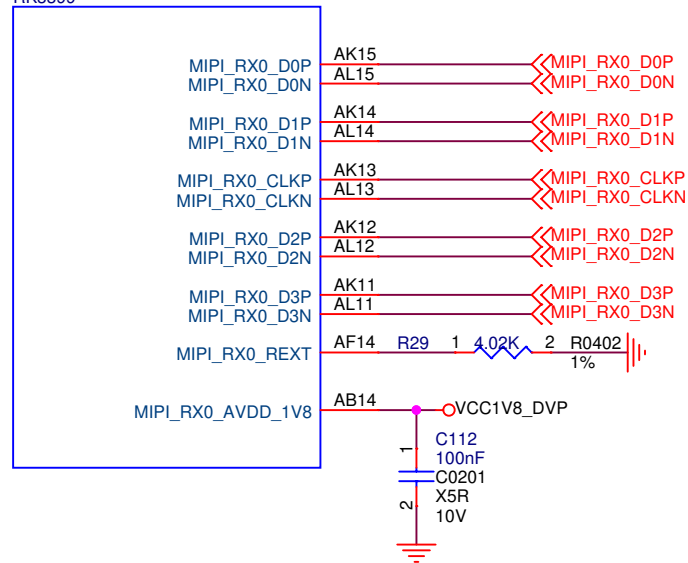


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RockPro64_RK3399			
Size	Document Number		Rev
A4	RK3399 SARADC/KEY		V2.0
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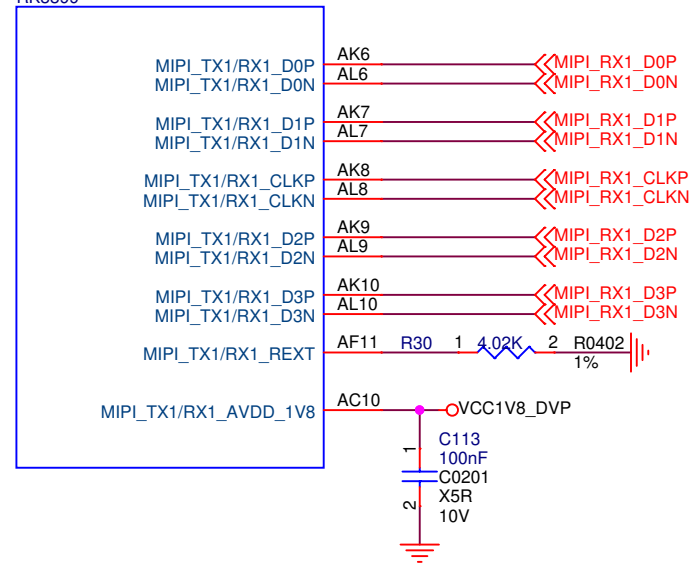
U1L
RK3399



U1R
RK3399



U1P
RK3399



PINE64

Title

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RK3399 DVP Interface

V2.0

Date:

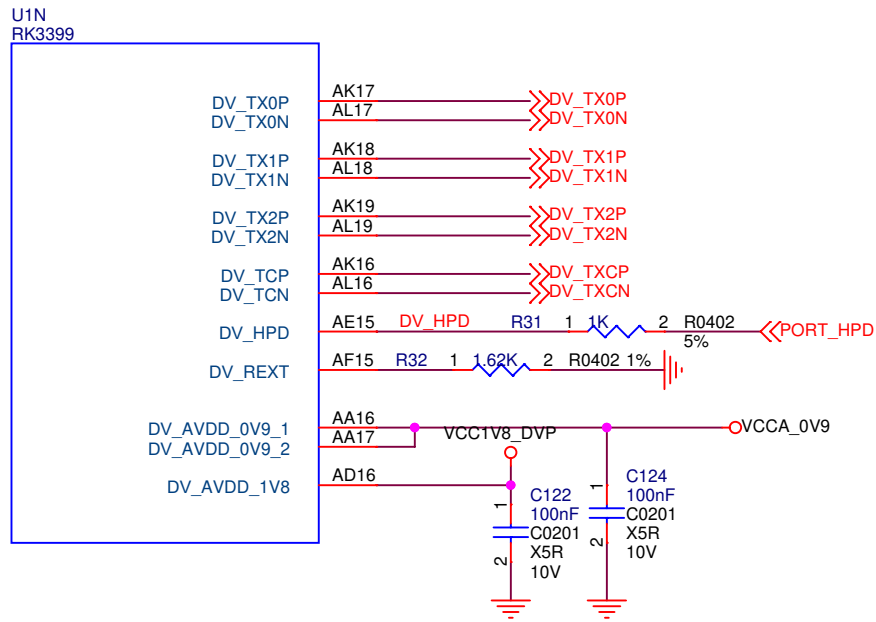
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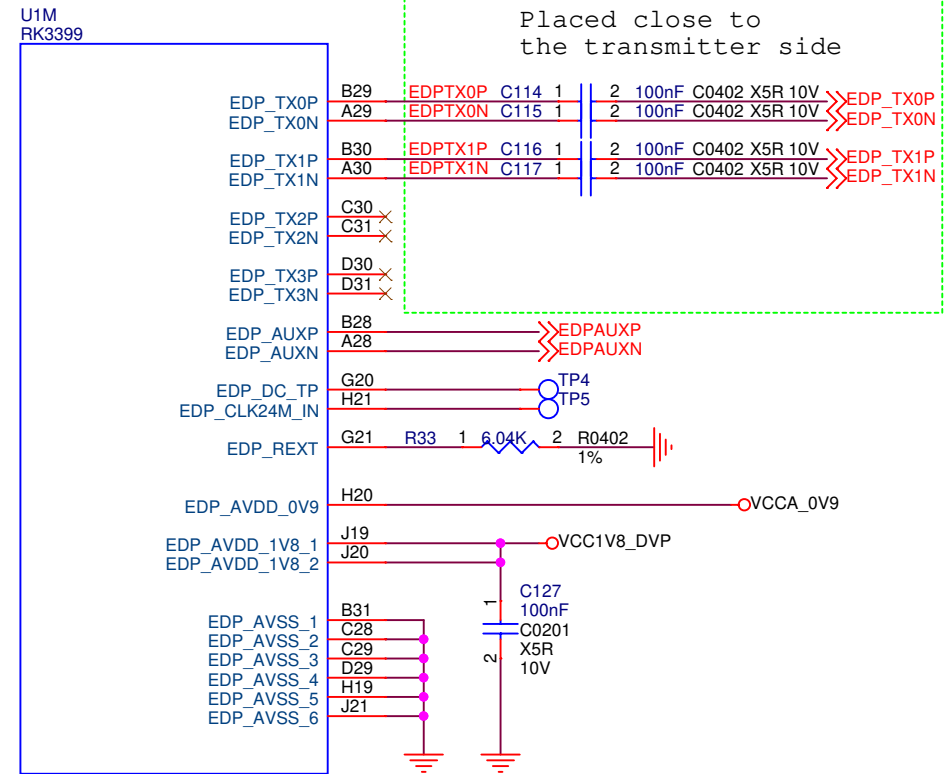
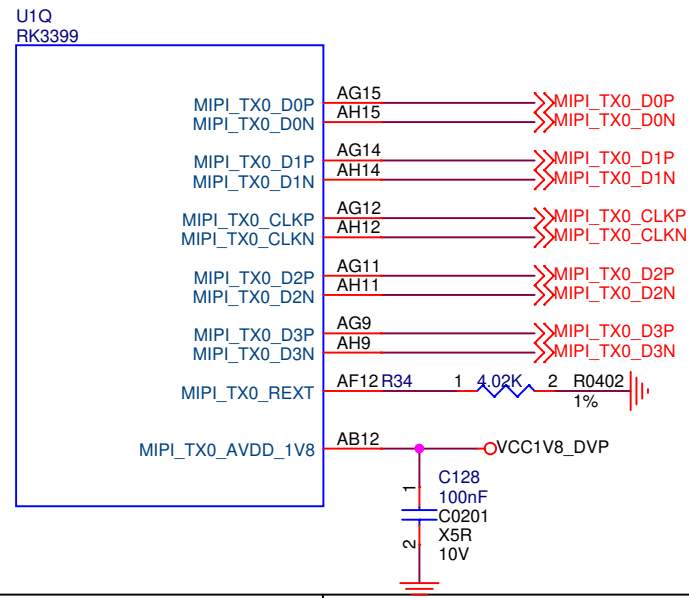
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Digital Video design rule:

- 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;



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;

PINE64

Title

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RK3399 Display Interface

V2.0

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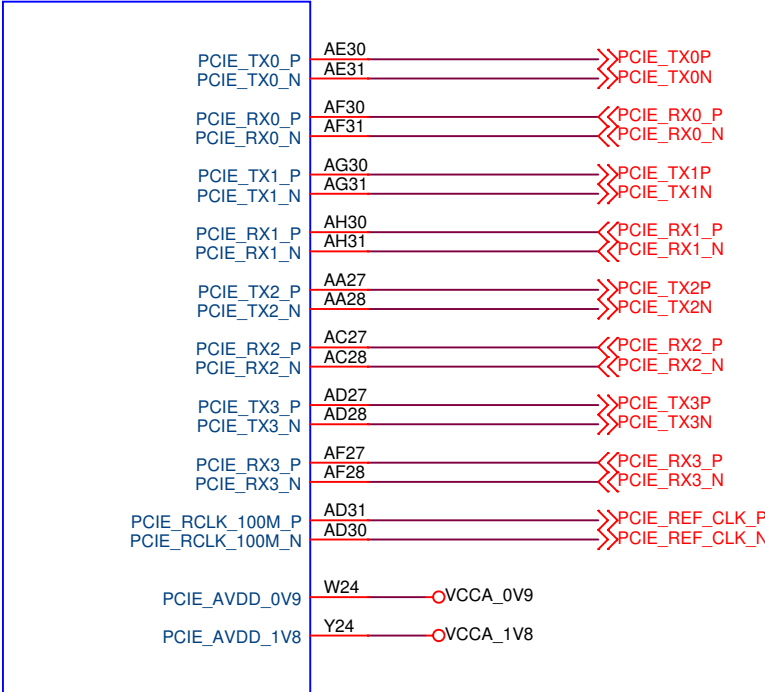
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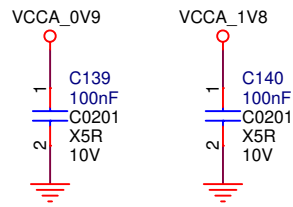
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U10
RK3399

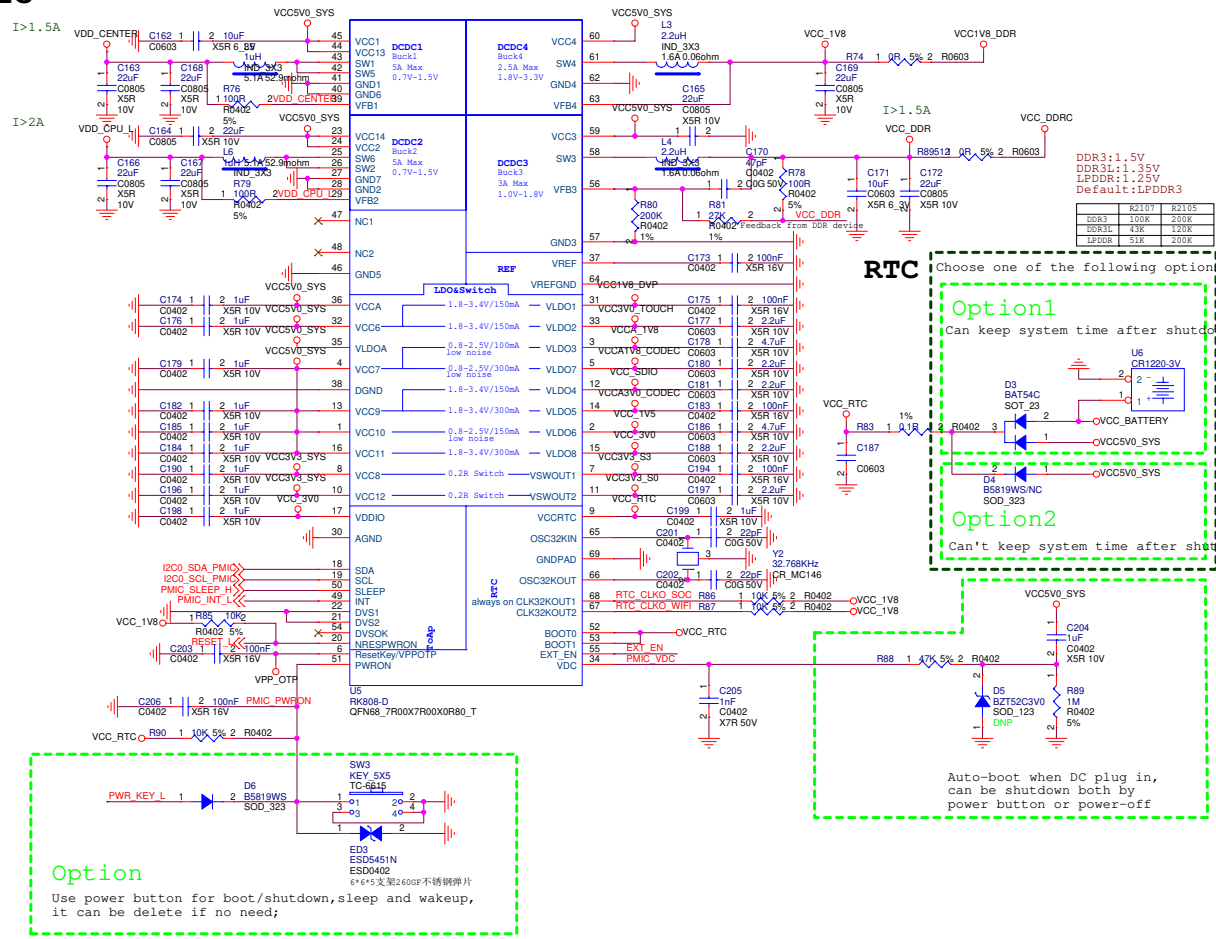


PCIE design rule:
1.Max intra-pair skew < 4ps;
2.Max inter-pair skew < 1.6 ns;
3.Max trace length < 14 inches;
4.Max allowed via < 4;
5.Trace impedance 100ohm+/-10%;
6.与其他信号间距遵循3W原则;



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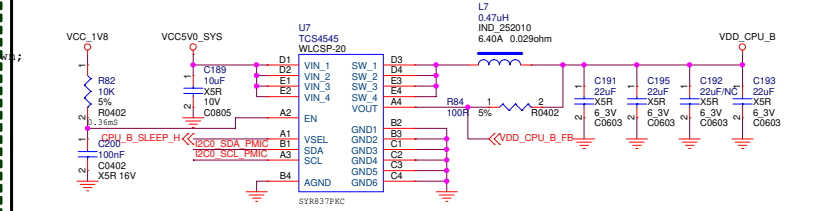
PMIC



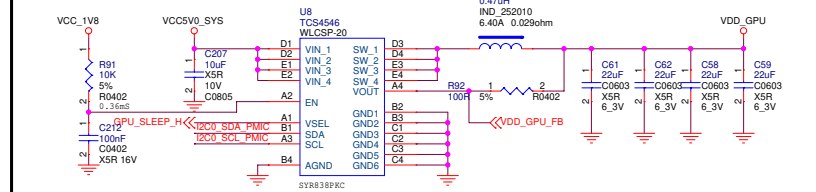
Over-temperature Protection

复位电路修改

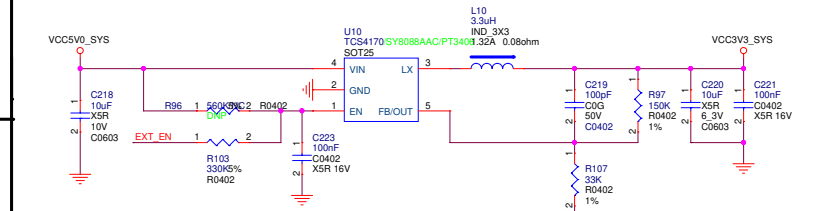
VDD_CPU_B power



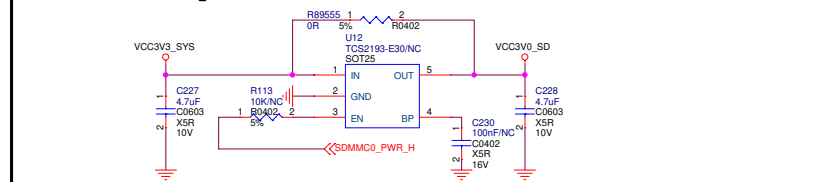
VDD_GPU power



VCC3V3_SYS power

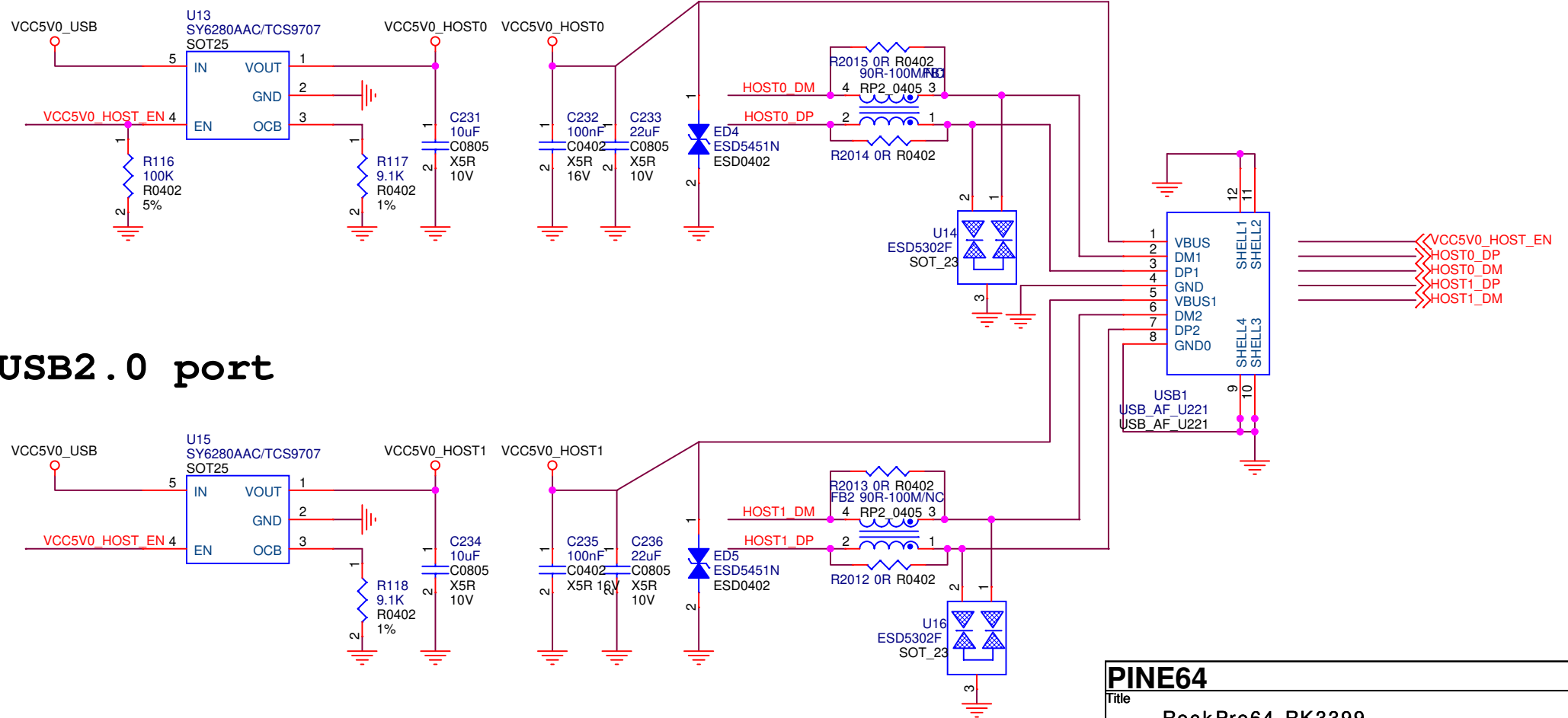


VCC3V0_SD power

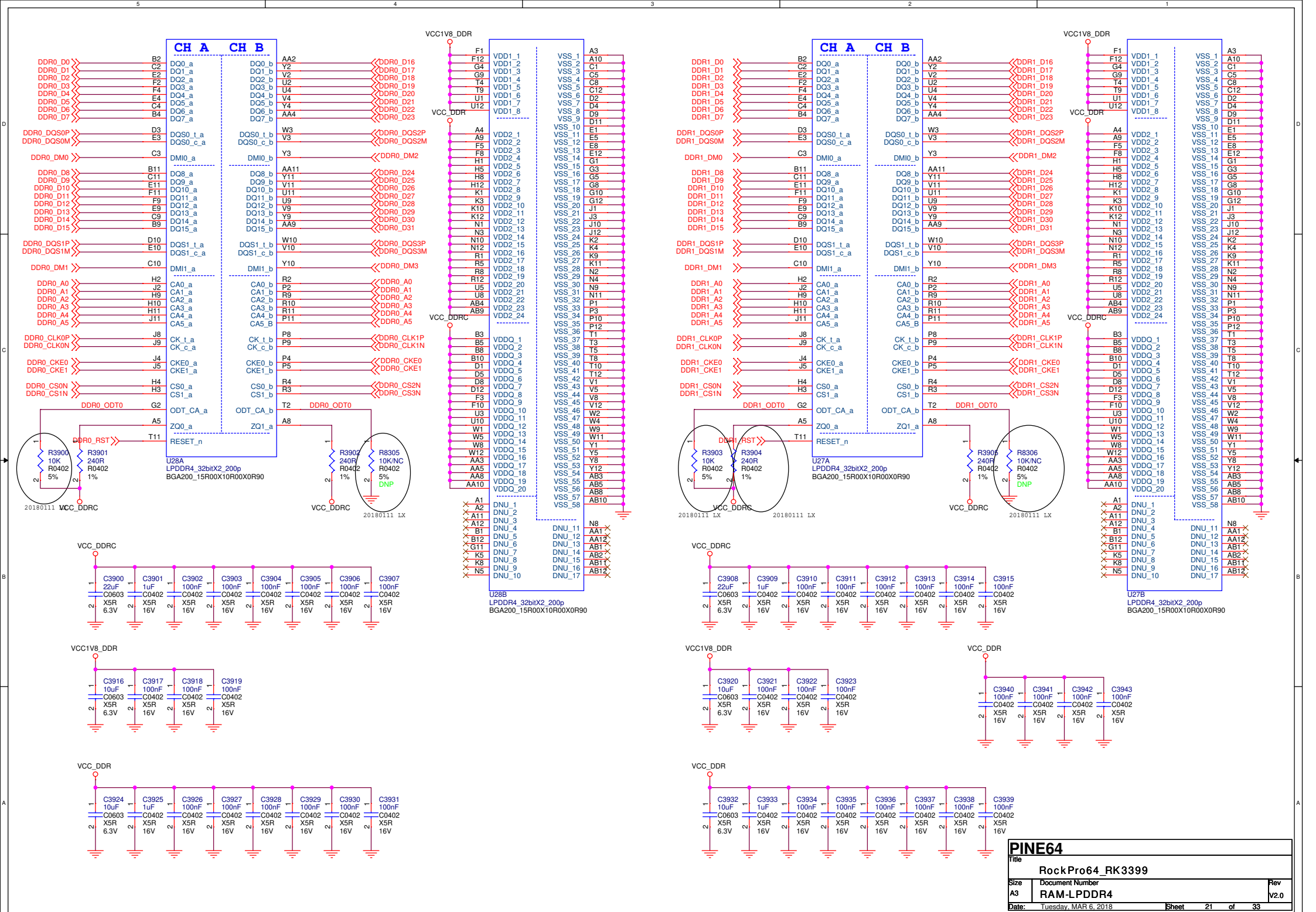


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RockPro64_RK3399			
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Custom	PMIC RK808-D	V2.0	
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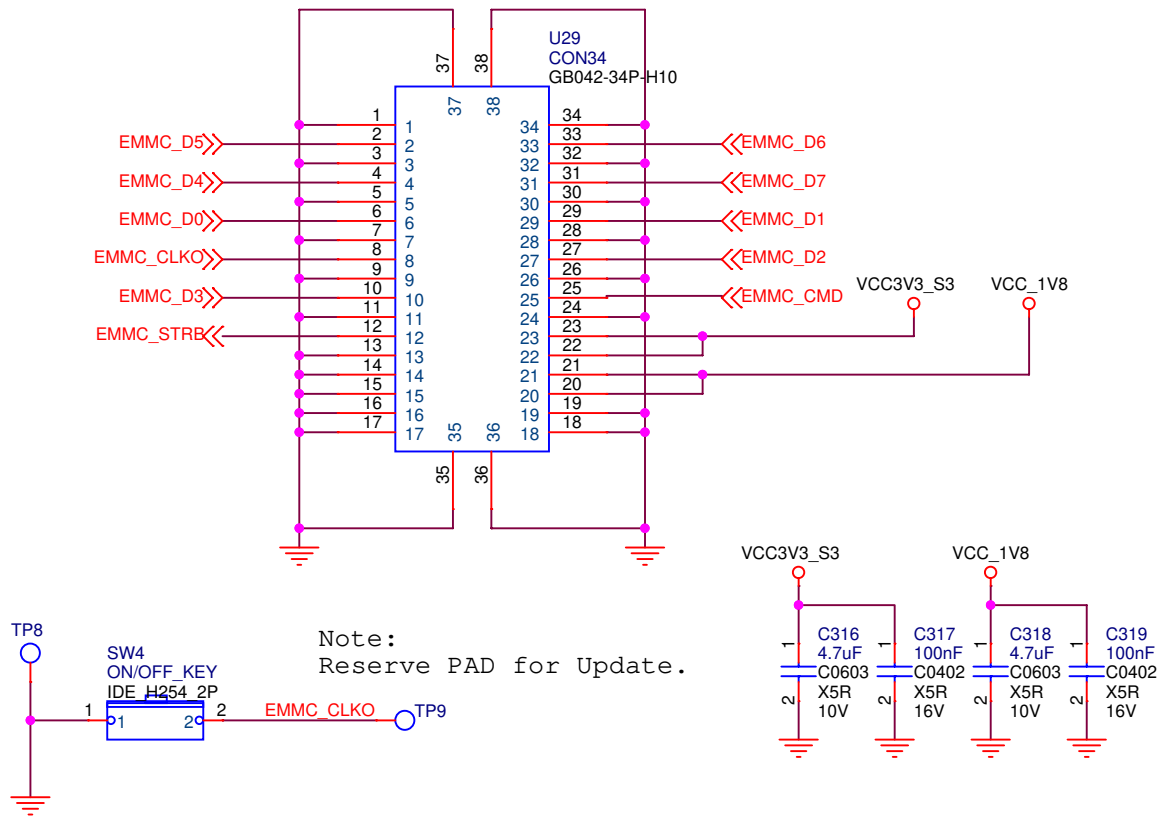
USB2.0 port



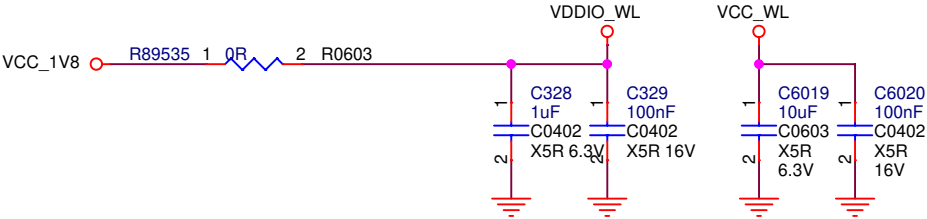
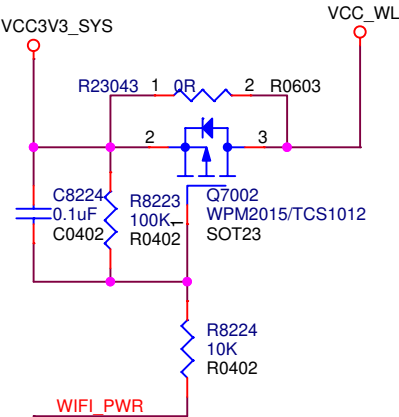
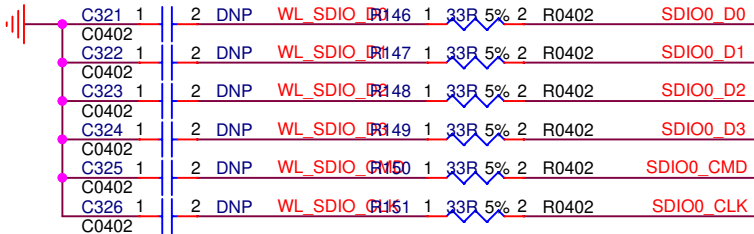
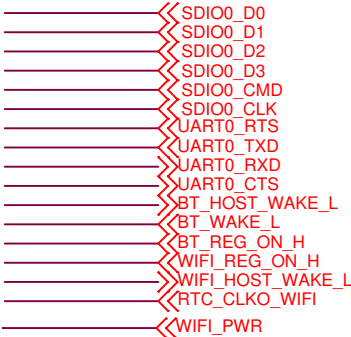
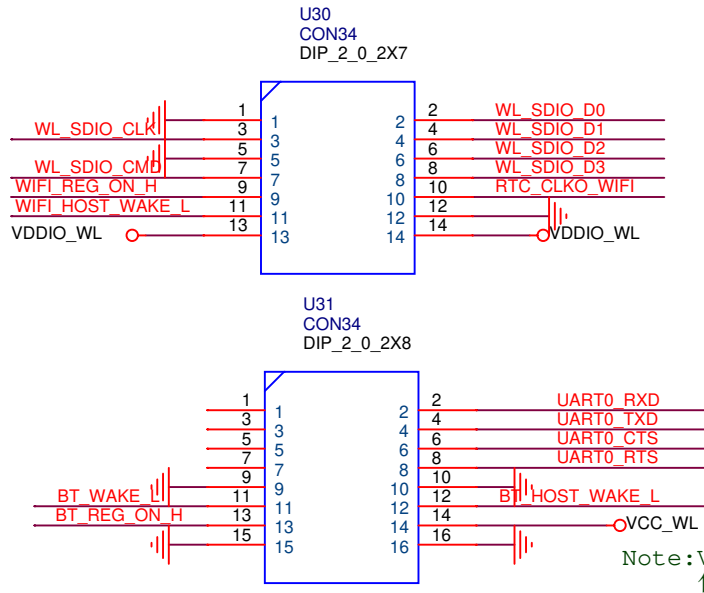
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eMMC Port

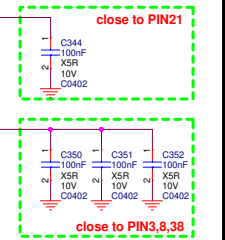
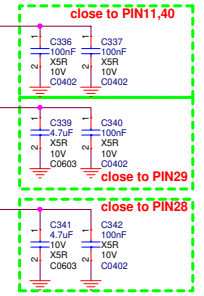
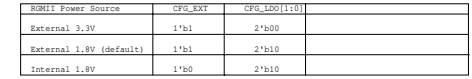
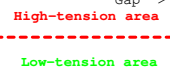
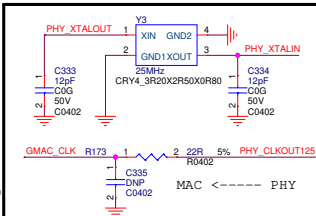


SDIO WIFI/BT MODULE-MIMO



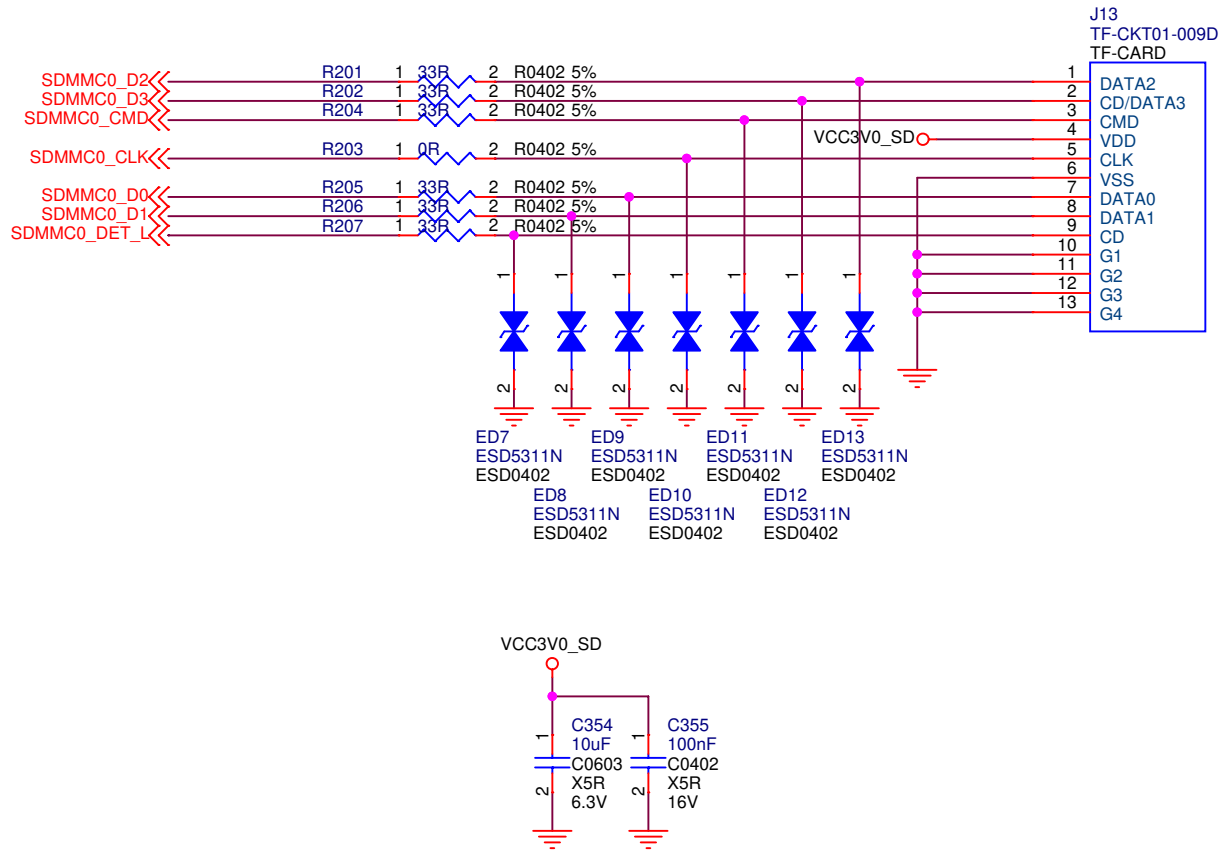
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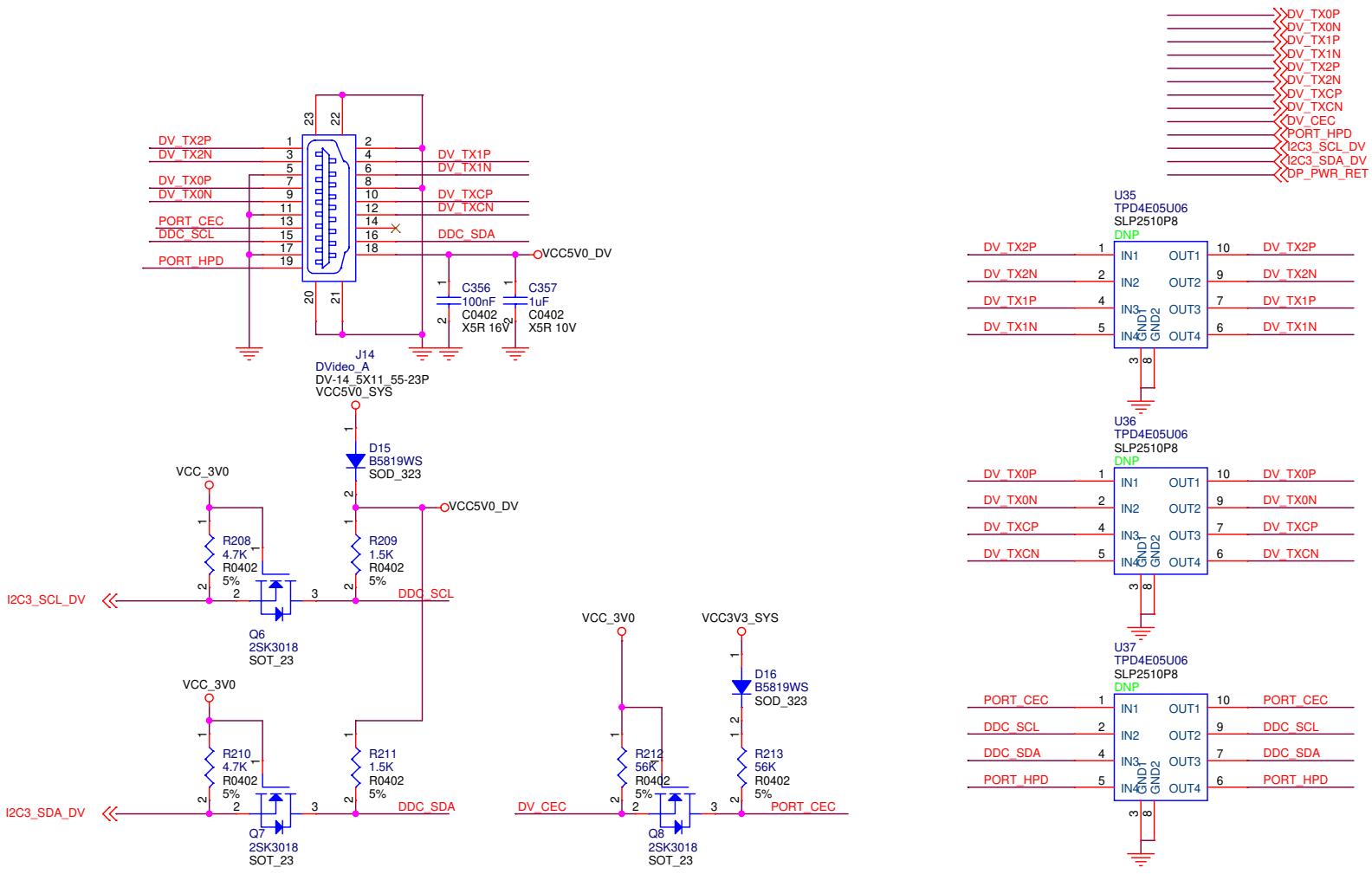


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TF CARD

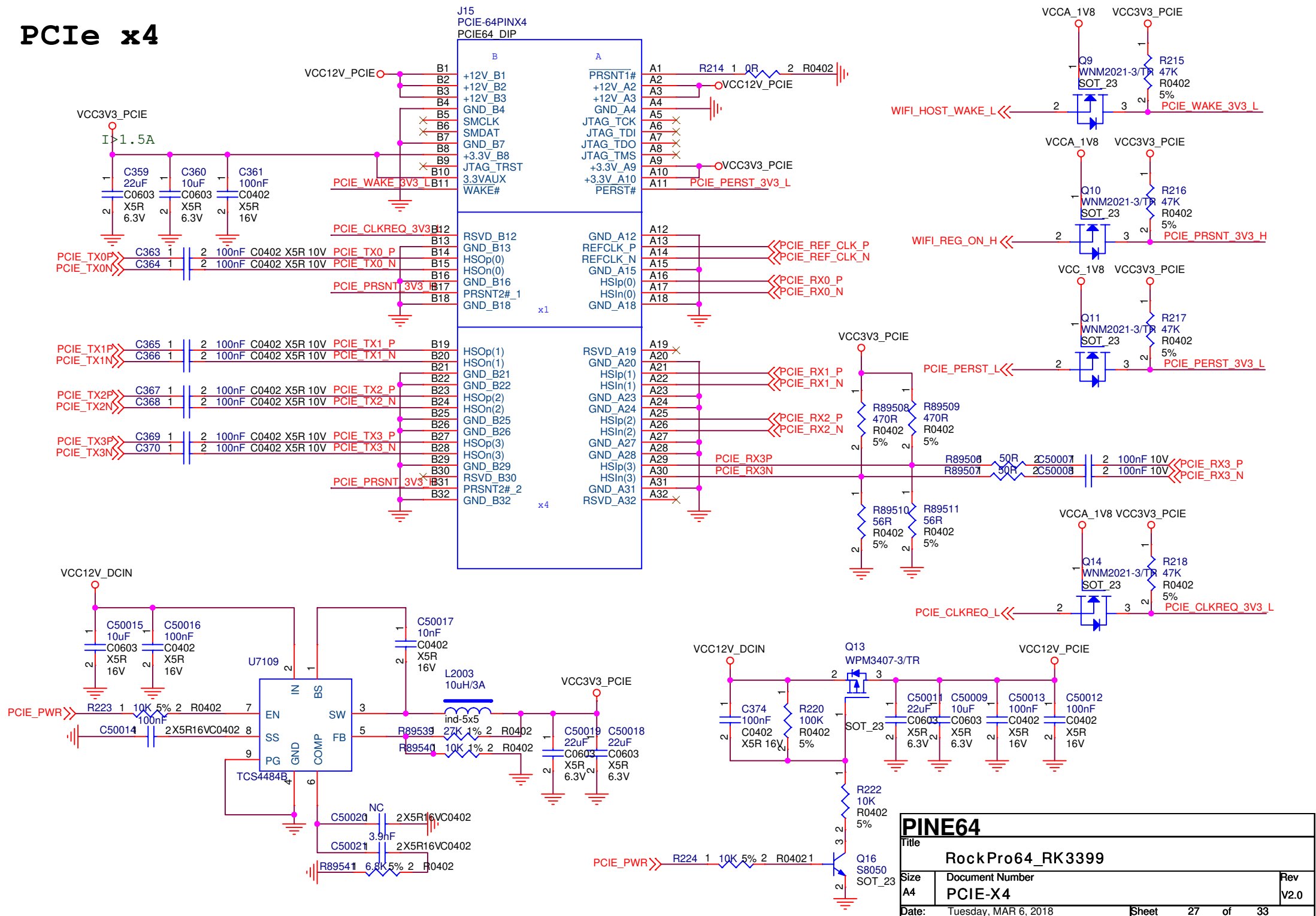


Digital Video Output

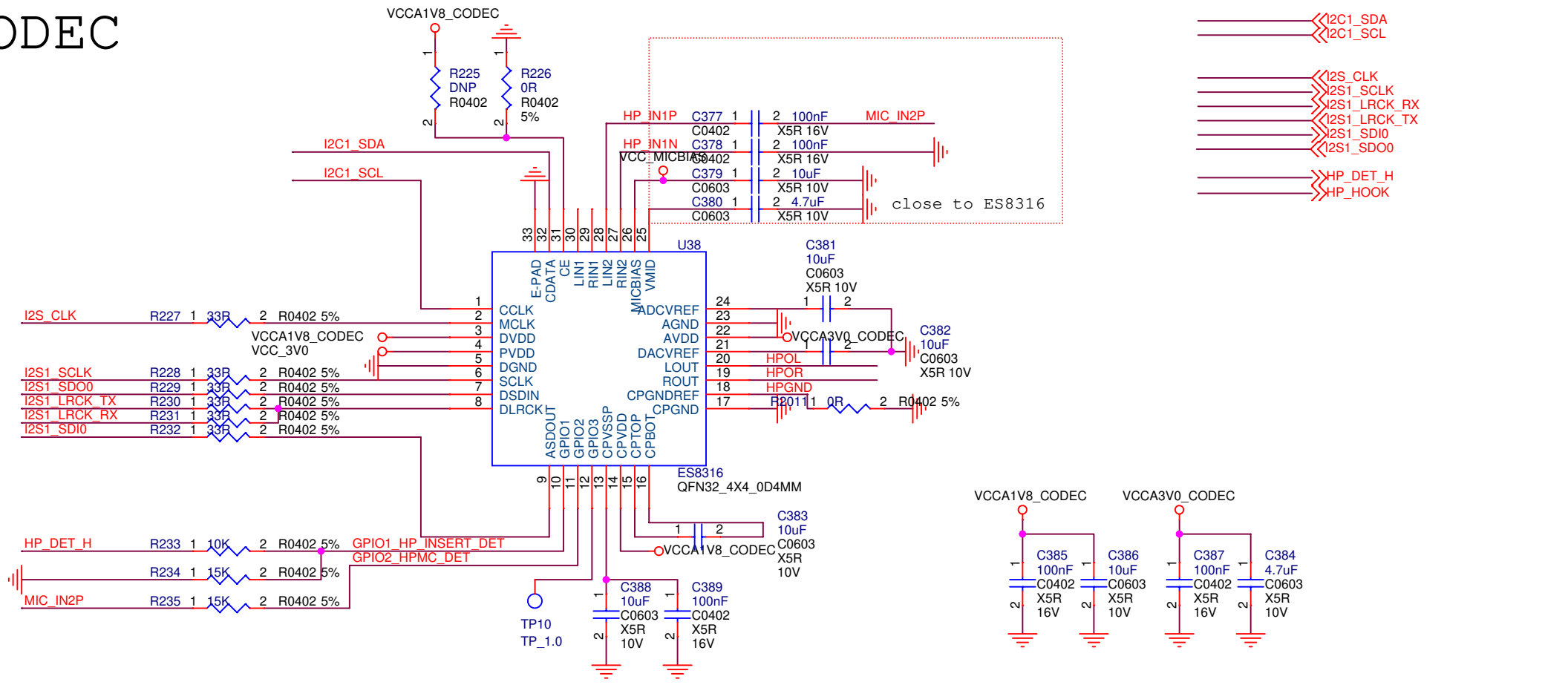


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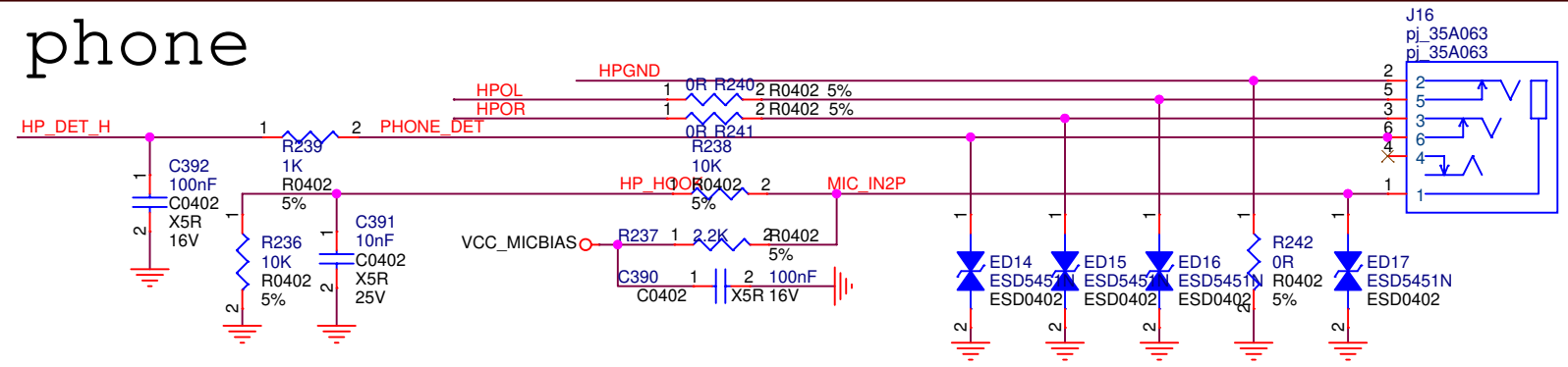
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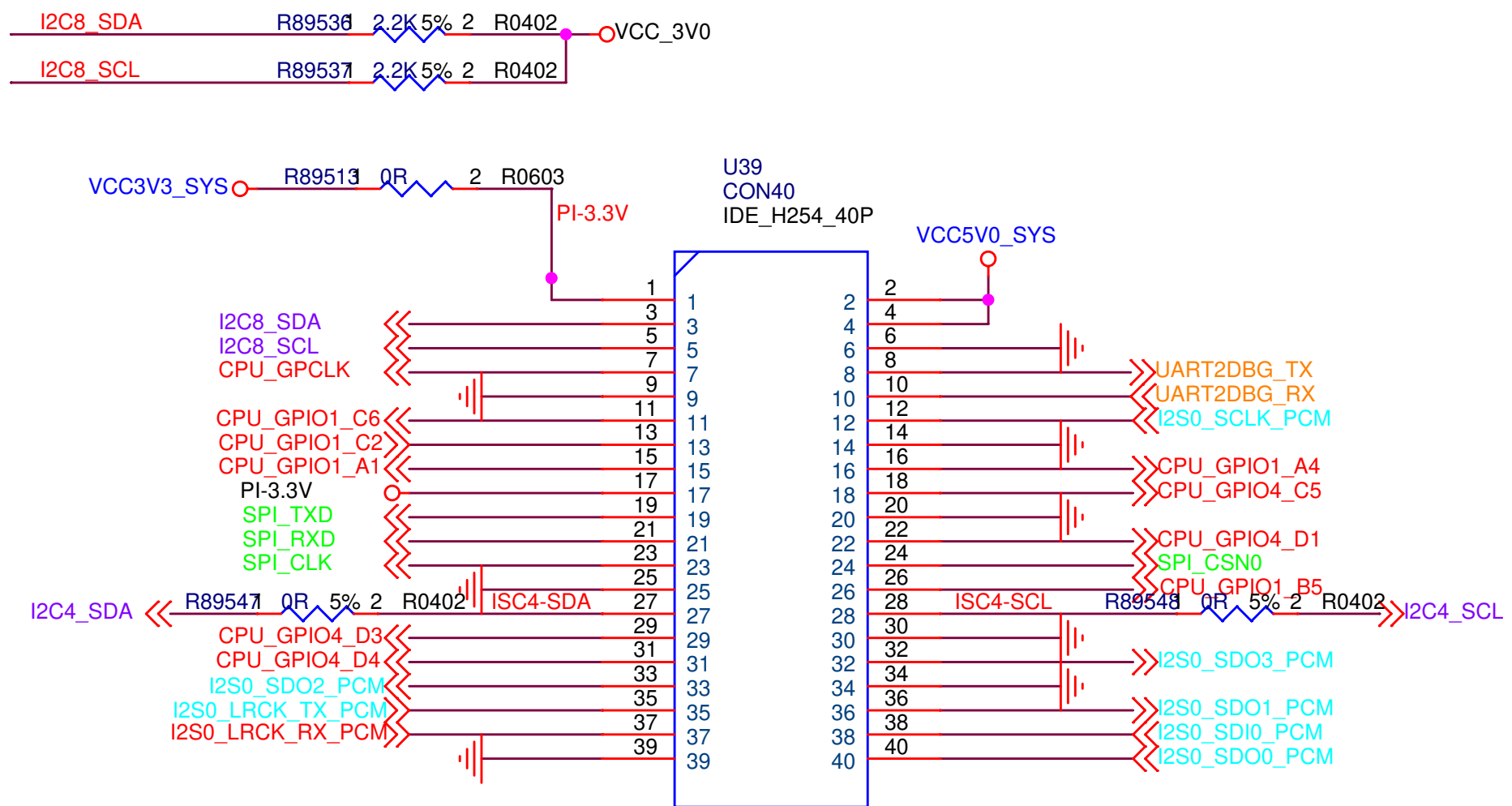
CODEC



Head phone

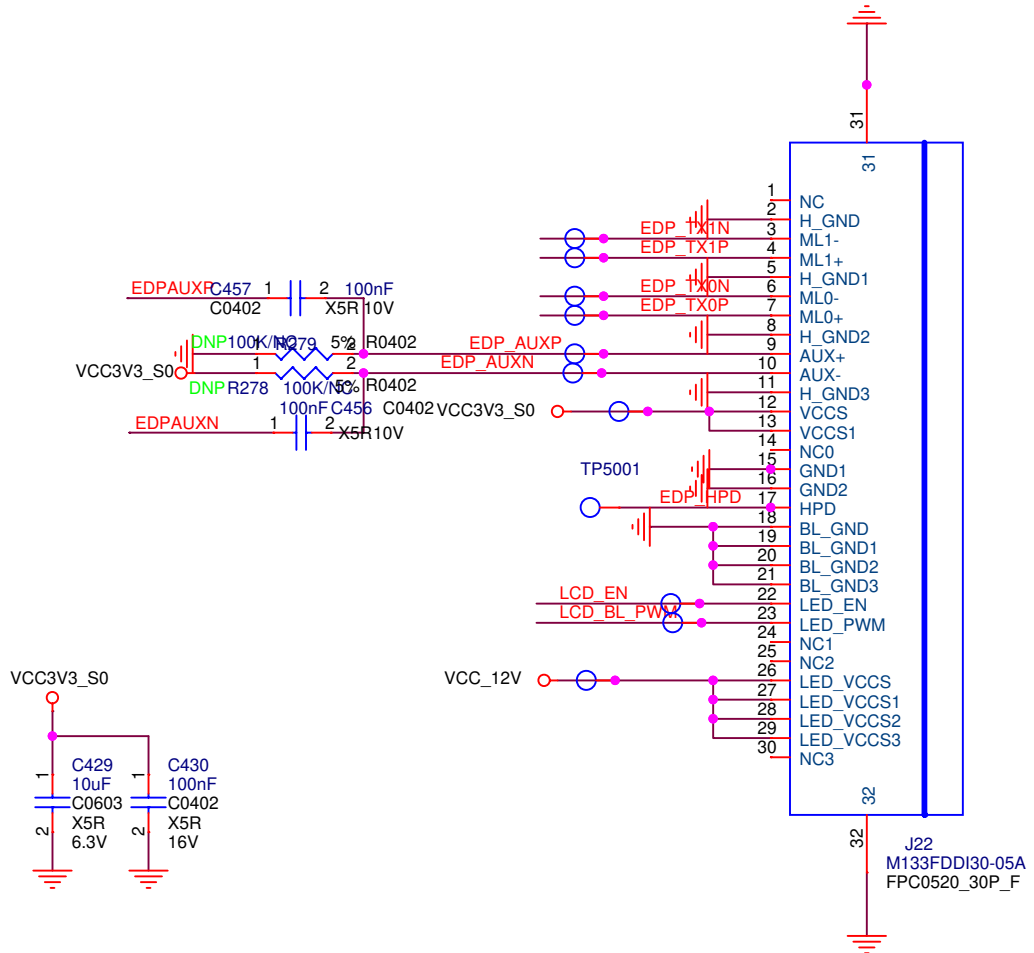
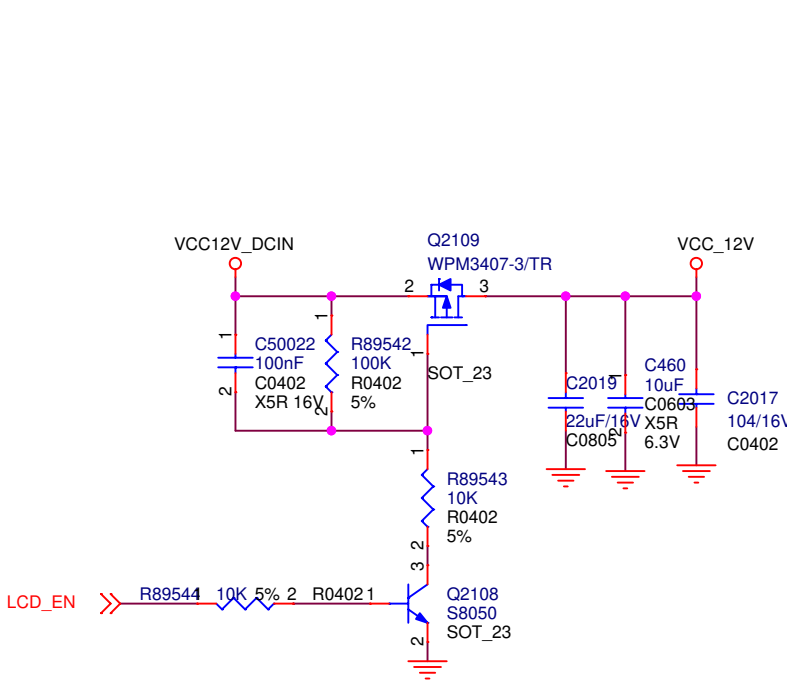


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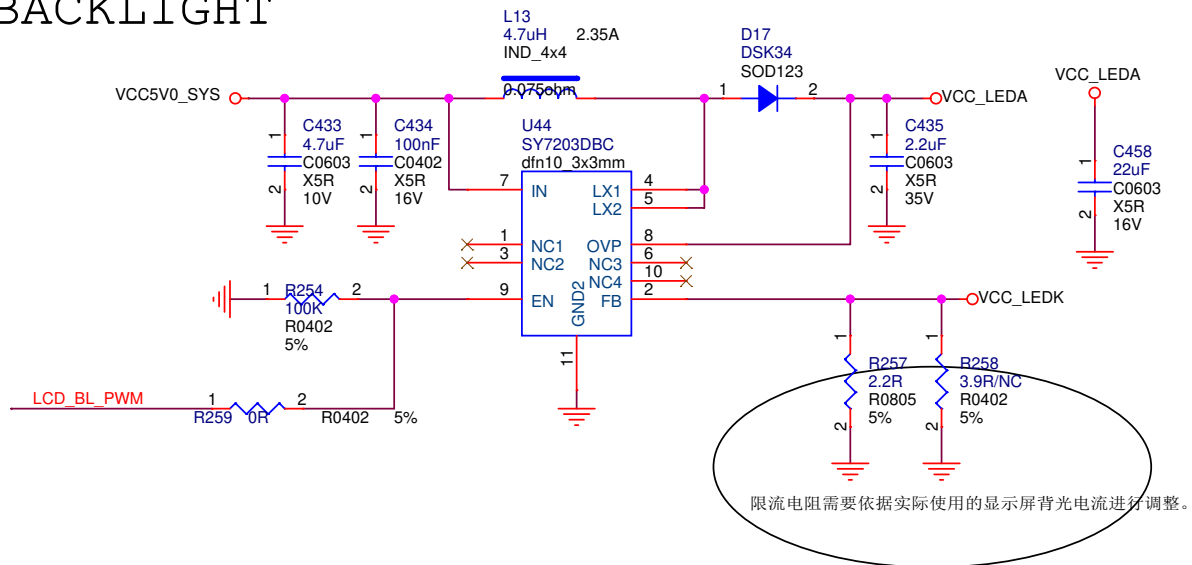
eDP Panel



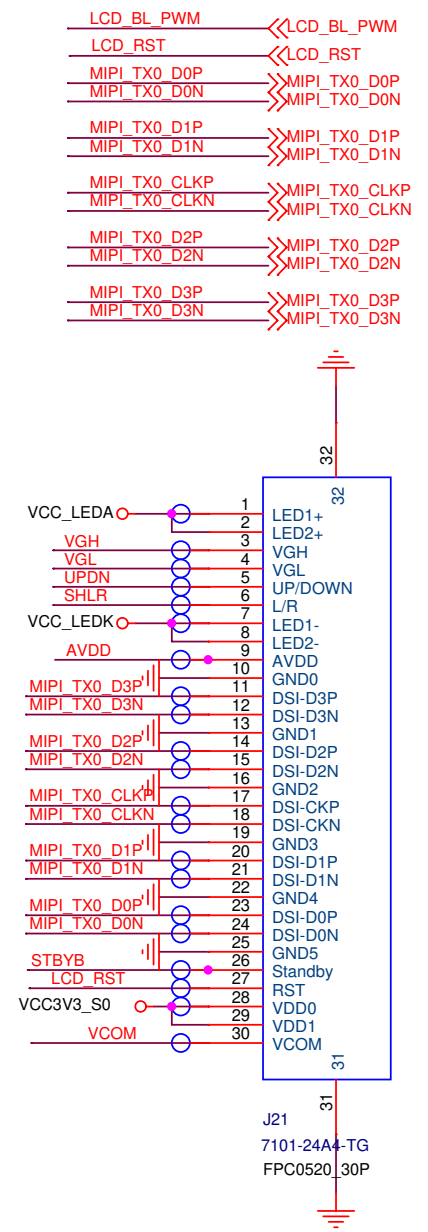
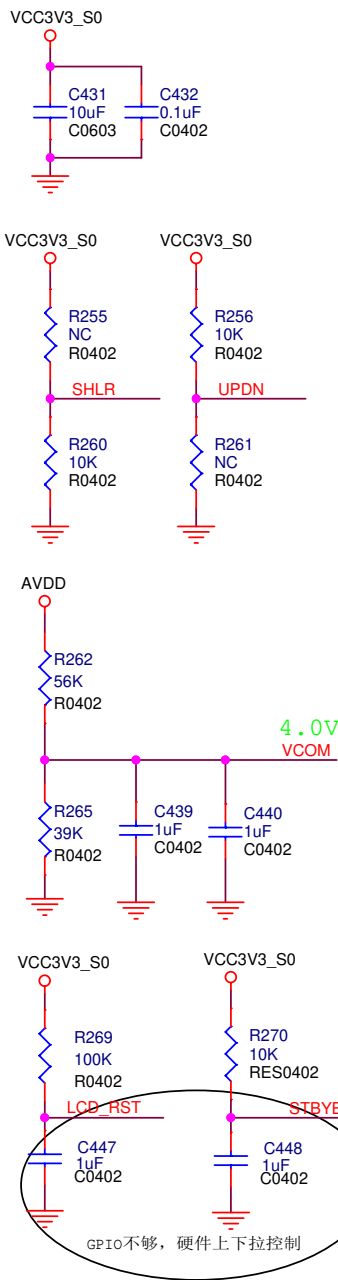
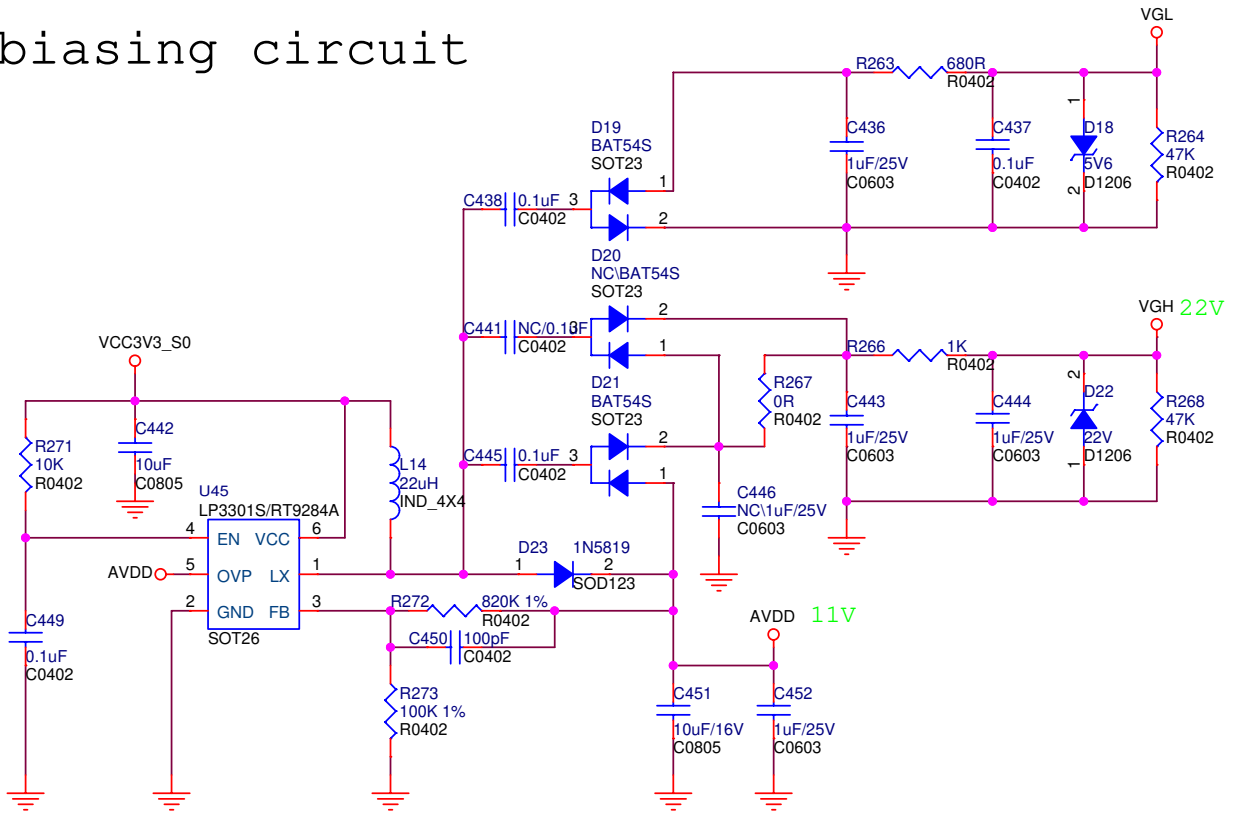
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MIPI Panel

BACKLIGHT

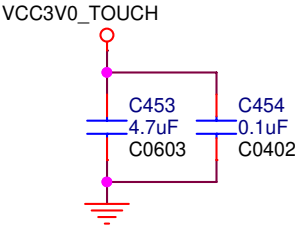
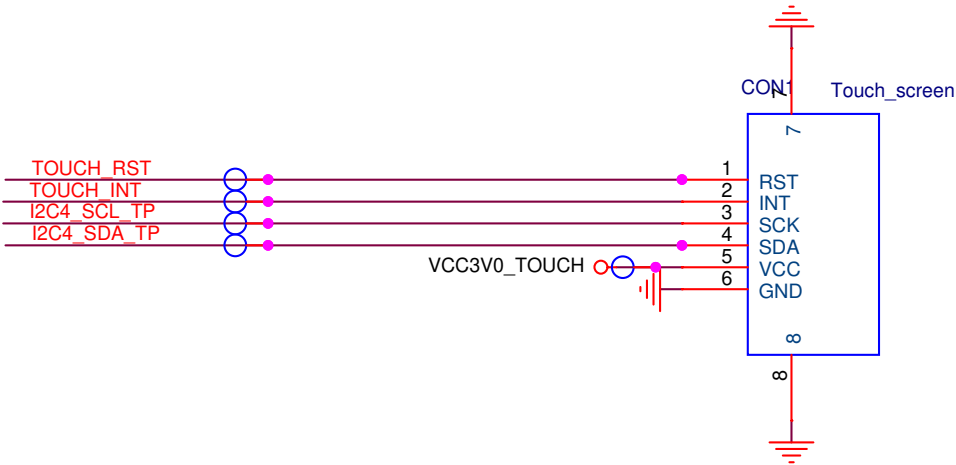


biasing circuit



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Touch Panel connector



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