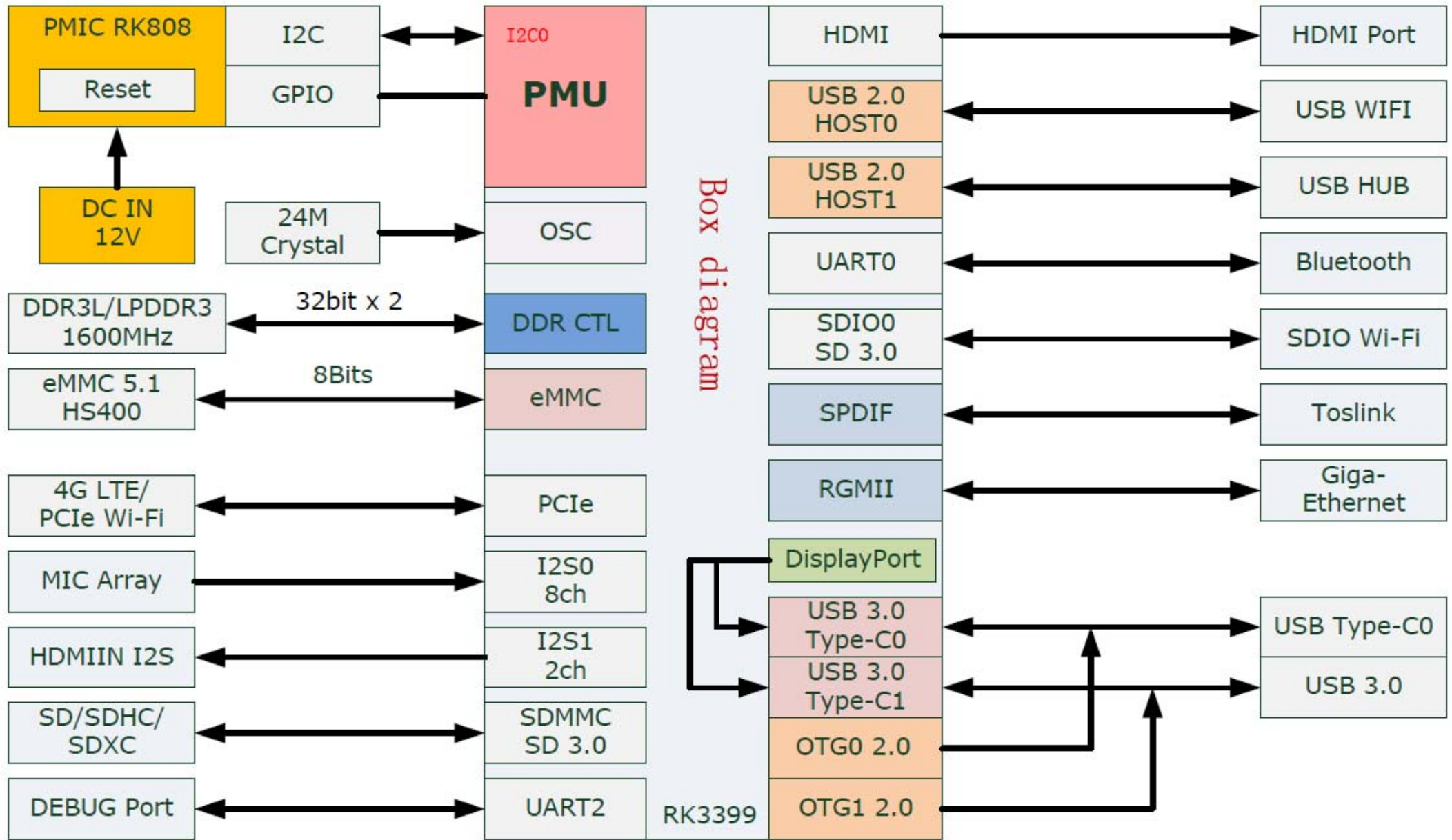




# Block Diagram



<b>PINE64</b>		
Title: RockPro64_RK3399		
Size: A4	Document Number: Block Diagram	Rev: V2.0
Date: Tuesday, MAR 6, 2018	Sheet: 2	of 33



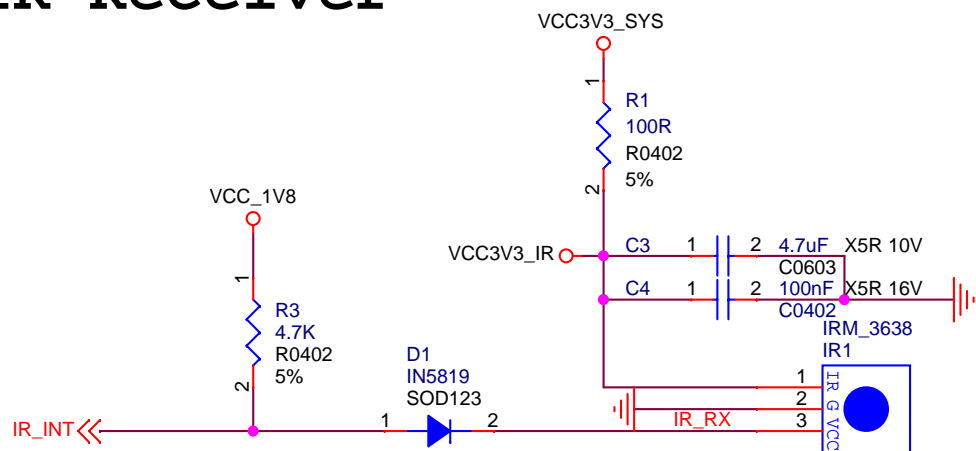
# RK3399 Power Domain Map

Part Port	Domain	Pin name in datasheet	I/O type	Power supply	Power source
Part C	PMUI01	pmui01_gpio0ab	1.8V only	VCC1V8_PMU	RK808 VLD03
Part E	PMUI02	pmu1830_gpio1abcd	1.8V(Default) 3.0V	VCC1V8_PMU	RK808 VLD03
Part I	API01	gmac_gpio3abc	3.3V only	VCC1V8_IO VCC3V3_IO	RK808 Buck4 RK808 VSW2
Part L	API02	bt656_gpio2ab	1.8V(Default) 3.0V	VCC1V8_DVP	RK808 VLD01
Part G	API03	wifi/bt_gpio2cd	1.8V only	VCC1V8_WIFI	RK808 Buck4
Part K	API04	gpio1830_gpio4cd	1.8V 3.0V(Default)	VCC_1V5 VCC3V0_IO	RK808 VLD06 RK808 VLD08
Part J	API05	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

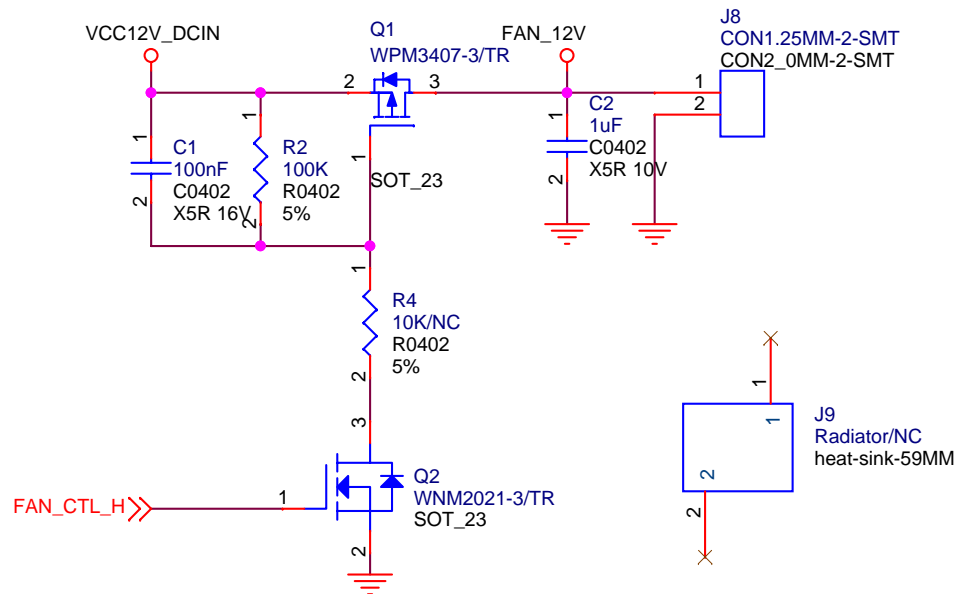
<b>PINE64</b>		
Title RockPro64_RK3399		
Size A4	Document Number Power Domain Map	Rev V2.0
Date: Tuesday, MAR 6, 2018	Sheet 4	of 33



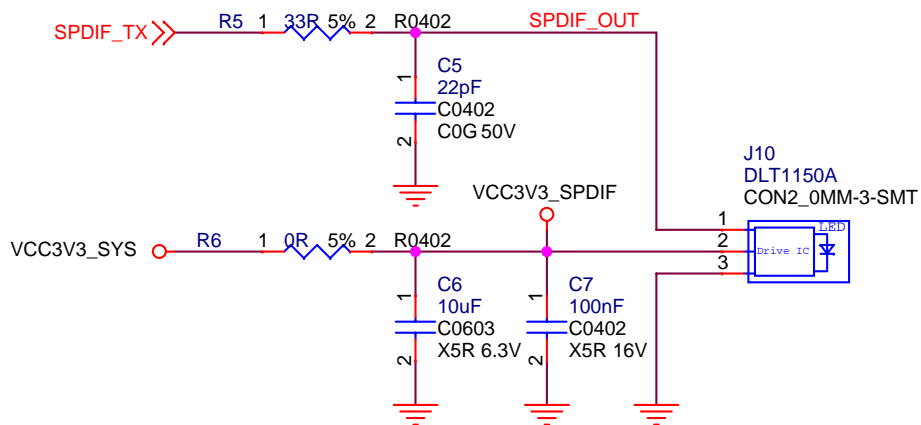
# IR Receiver



# HEATSINK/FAN (option)

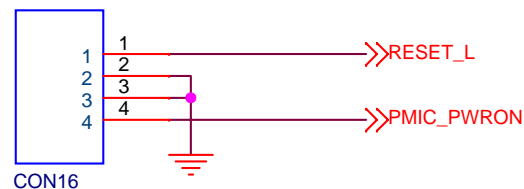


# SPDIF OUT



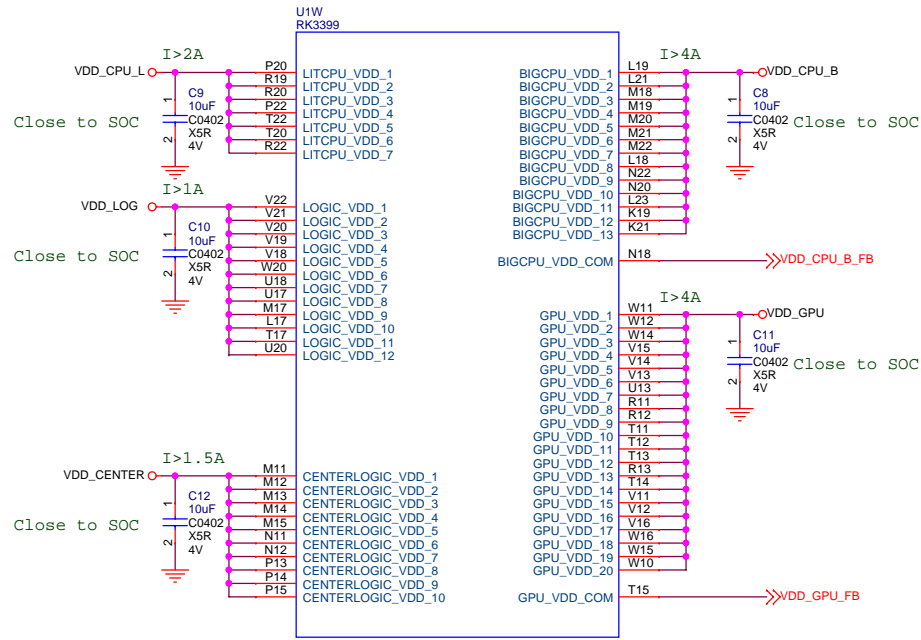
预留复位，开机键扩展连接座

XH\_2.5mm/NC

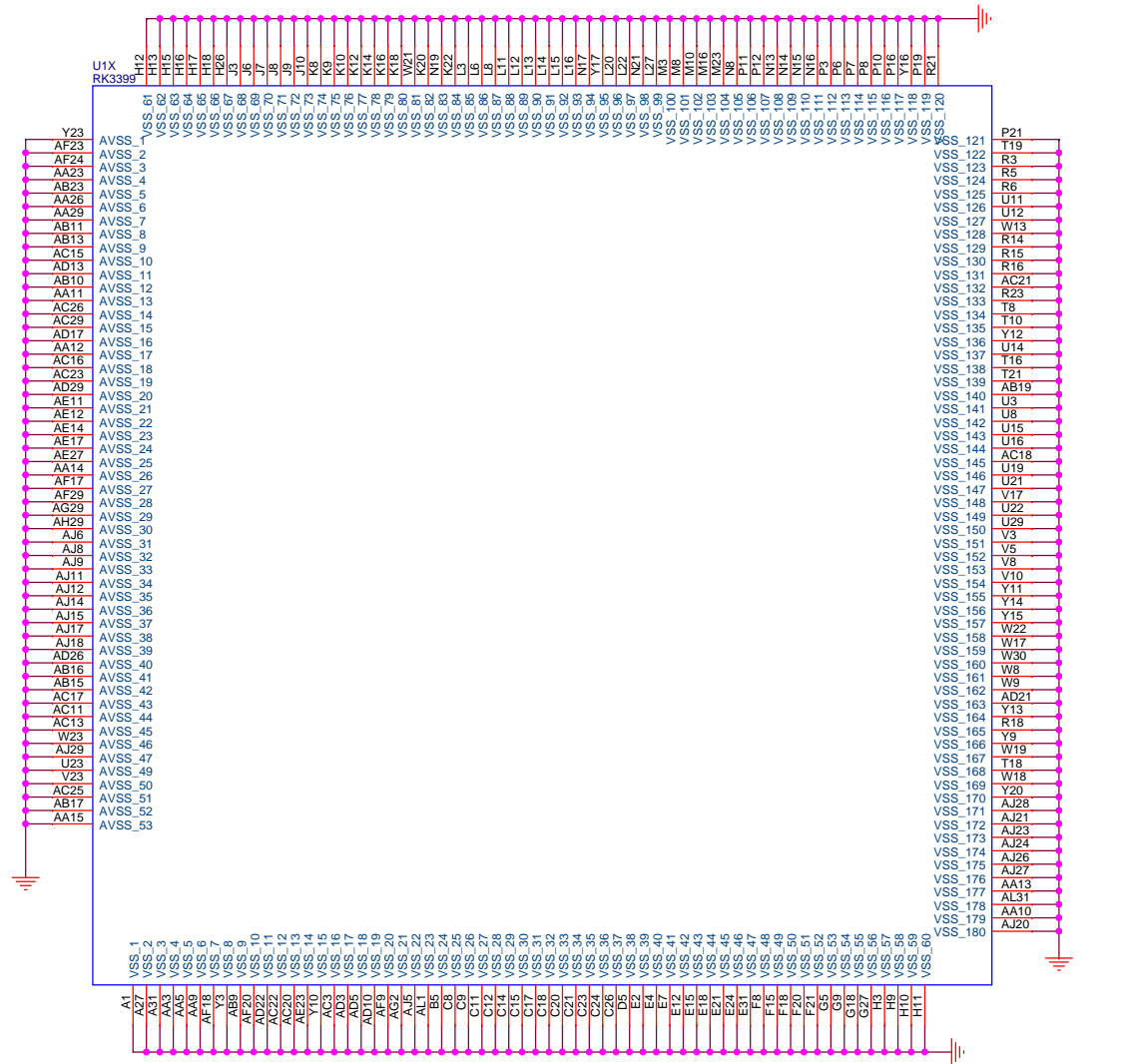
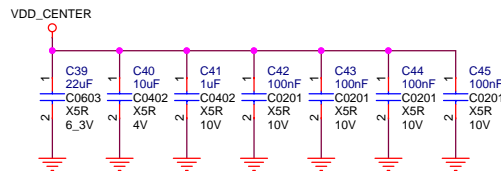
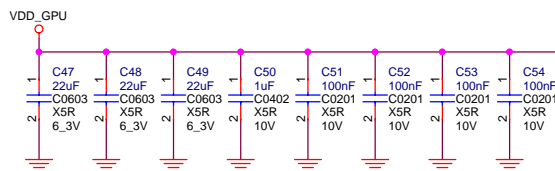
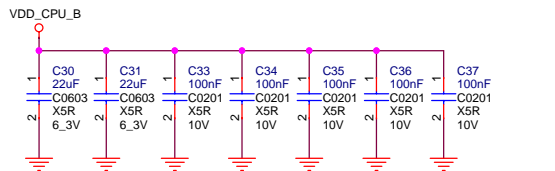
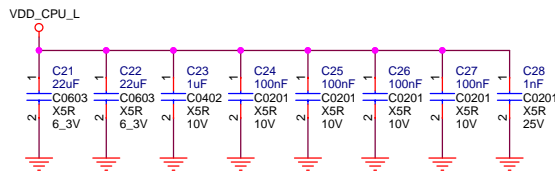
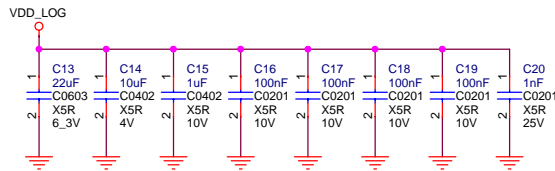


## PINE64

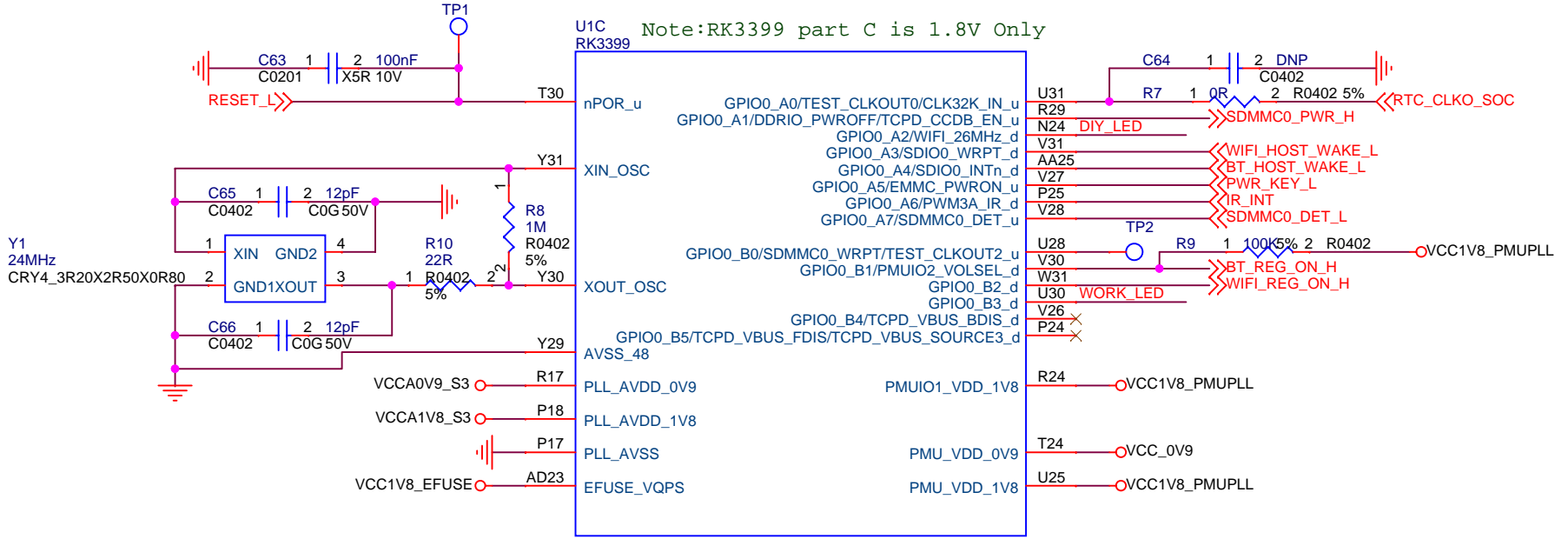
Title		
RockPro64_RK3399		
Size	Document Number	Rev
Custom	IR SPDIF	V2.0
Date:	Tuesday, MAR 6, 2018	Sheet 6 of 33



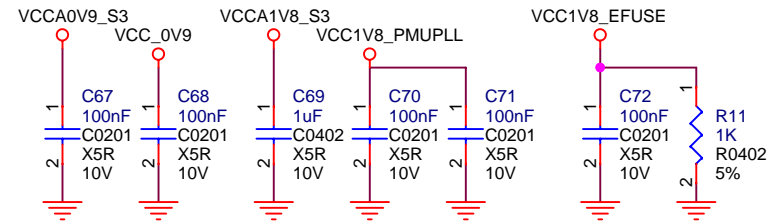
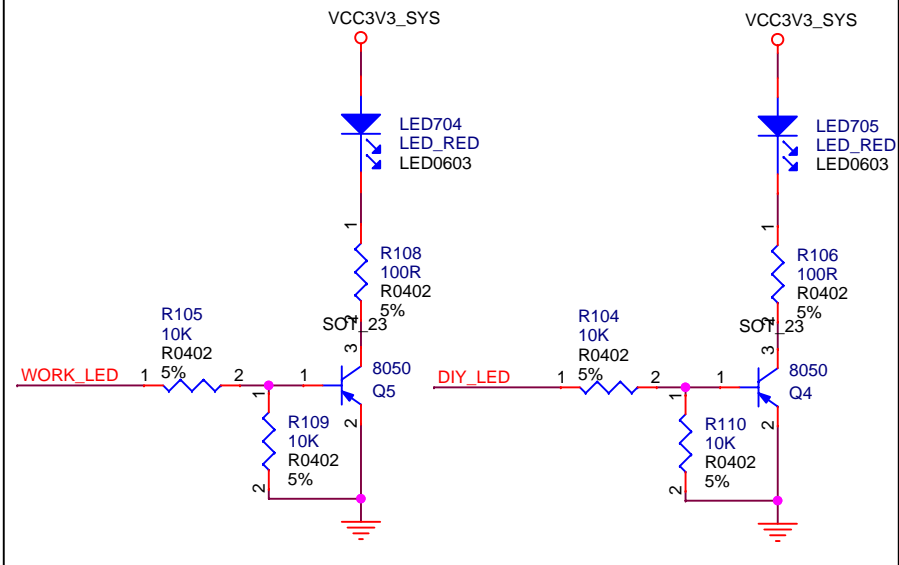
Note: Power filter CAP please place back of SOC or close to SOC



<b>PINE64</b>		
Title	RockPro64_RK3399	
Size	Document Number	Rev
A3	RK3399 Power	V2.0
Date:	Tuesday, MAR 6, 2018	Sheet 7 of 33

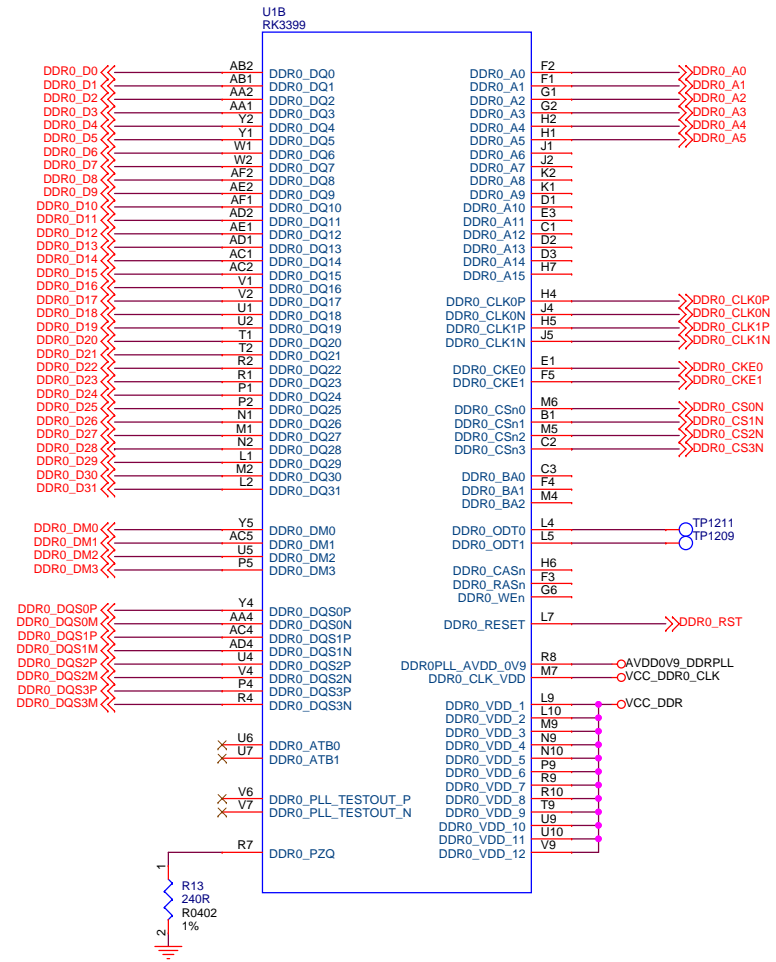
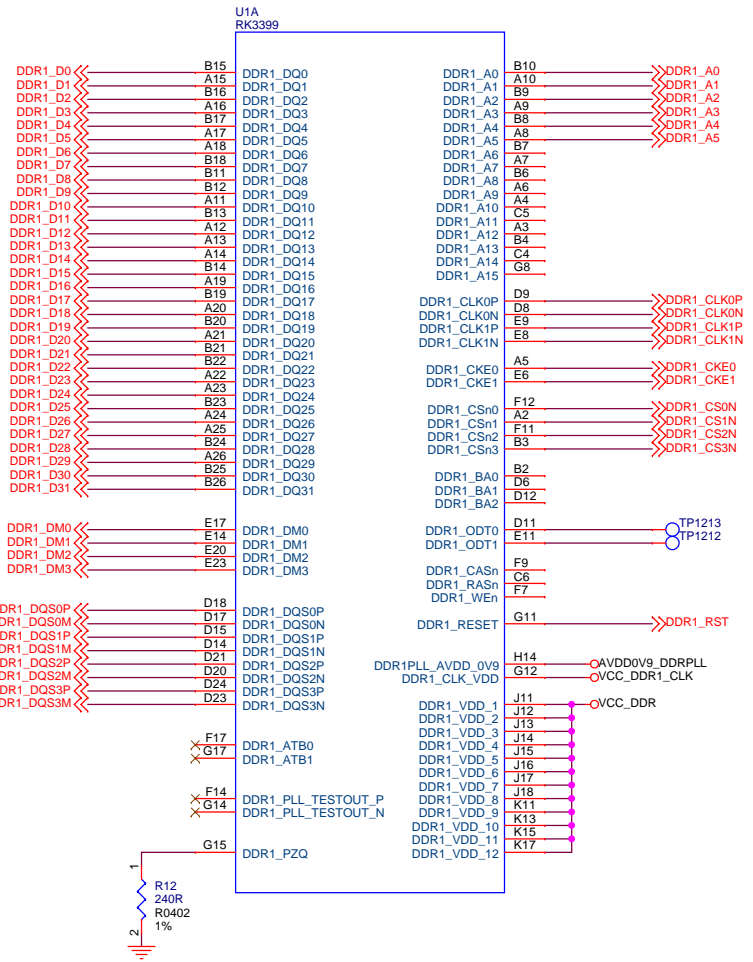


LED

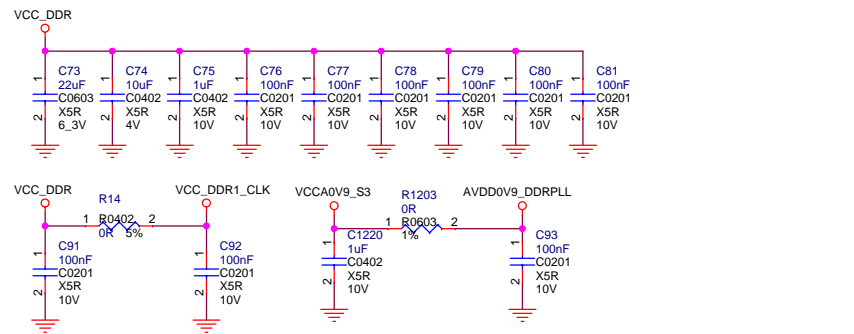


<b>PINE64</b>		
Title		
RockPro64_RK3399		
Size	Document Number	Rev
A4	RK3399 PMU Controller	V2.0
Date:	Tuesday, MAR 6, 2018	Sheet 8 of 33

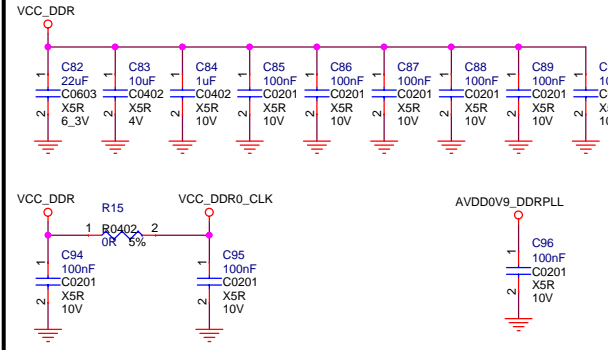




**DDR FILTER** Note:R1202 cannot be deleted

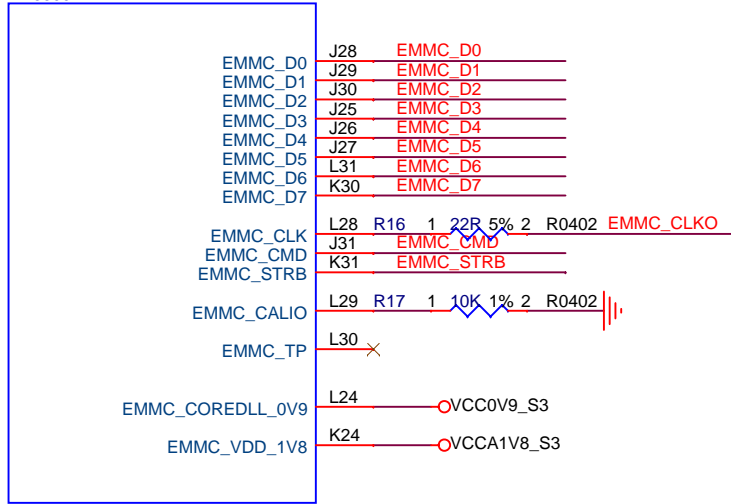


**DDR FILTER** Note:R1203 cannot be deleted

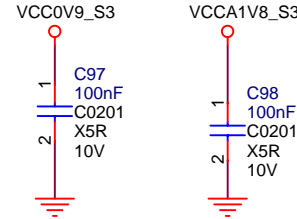
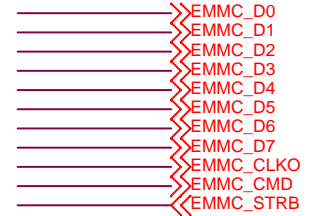


<b>PINE64</b>		
File	RockPro64_RK3399	
Size	Document Number	Rev
A3	RK3399 DDR Controller	V2.0
Date:	Tuesday, MAR 6, 2018	Sheet 9 of 33

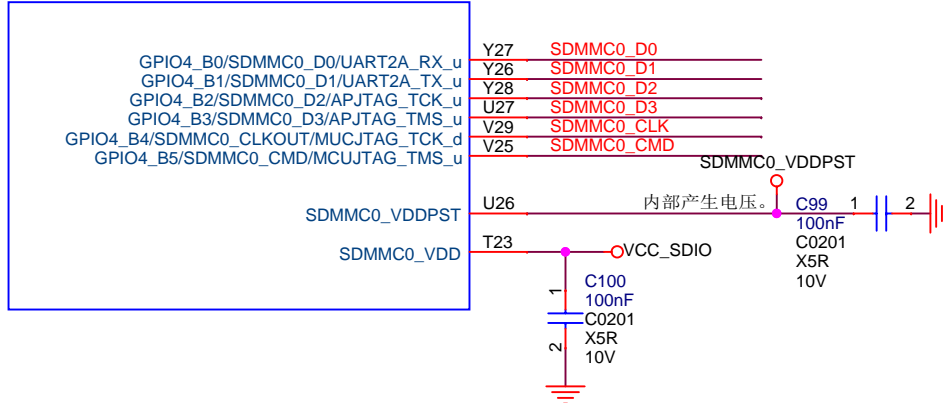
U1H  
RK3399



EMMC design rule:  
 1.Data[0:7]、cmd、strobe走线做为一组，并行走线并整组包地，组内等长要求为+/-100mil;  
 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SOC放置;



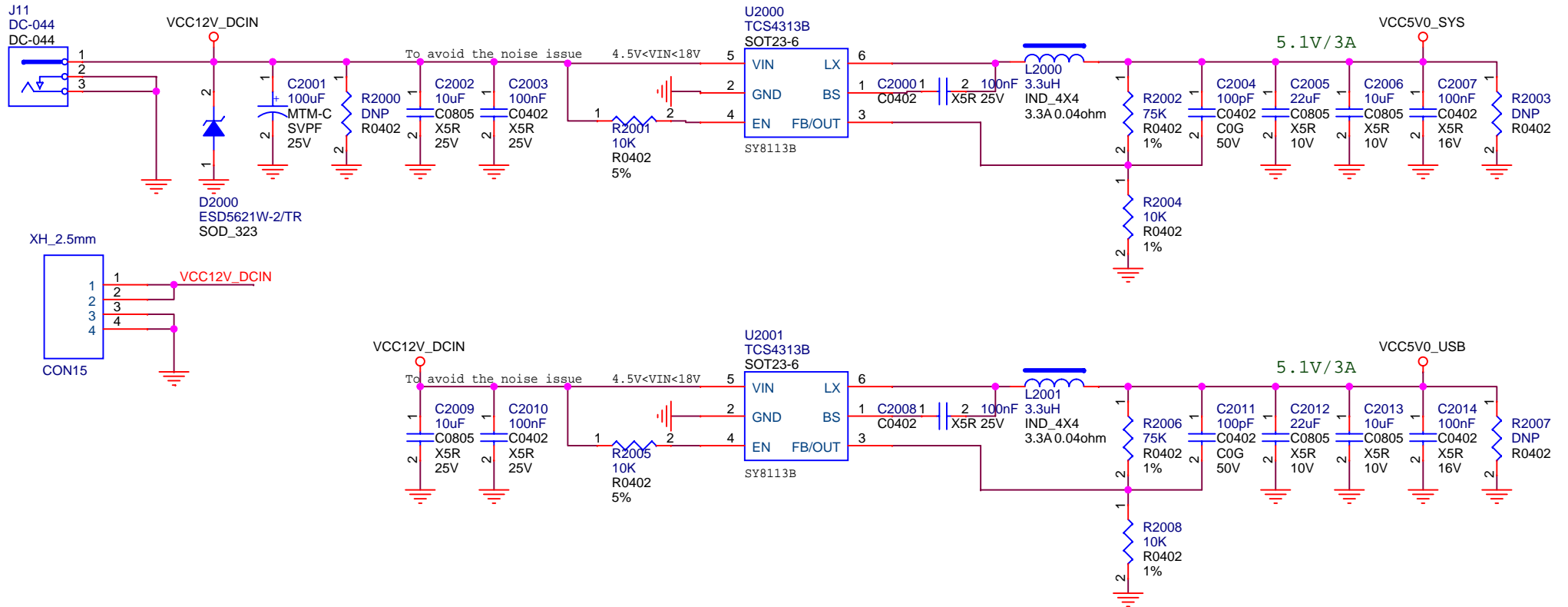
U1F  
RK3399



SDMMC design rule:  
 1.Data[0:3]、cmd走线做为一组，并行走线并整组包地，组内等长要求为+/-100mil;  
 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;

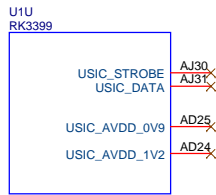
<b>PINE64</b>		
Title		
RockPro64_RK3399		
Size	Document Number	Rev
A4	RK3399 FLASH&SDMMC	V2.0
Date:	Tuesday, MAR 6, 2018	Sheet 10 of 33

# DC IN&SYSTEM Power

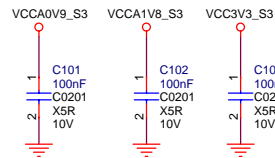
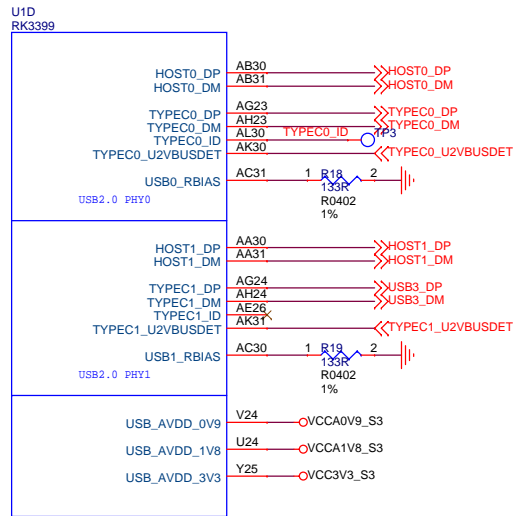


**PINE64**

Title		
RockPro64_RK3399		
Size	Document Number	Rev
A4	RK3399 USB/USIC Controller	V2.0
Date:	Tuesday, MAR 6, 2018	Sheet 11 of 33

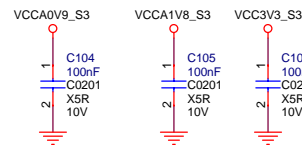
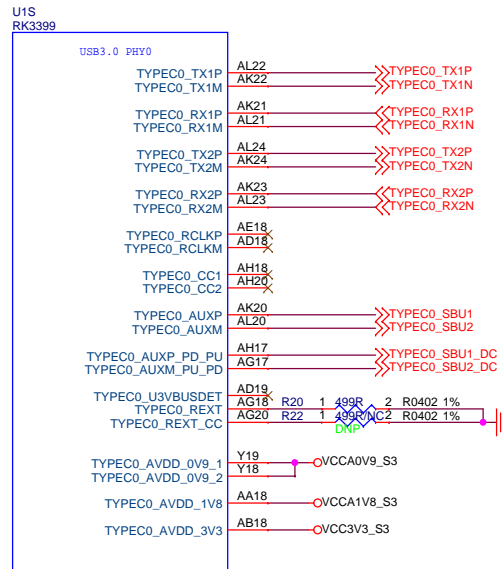


## USB2.0

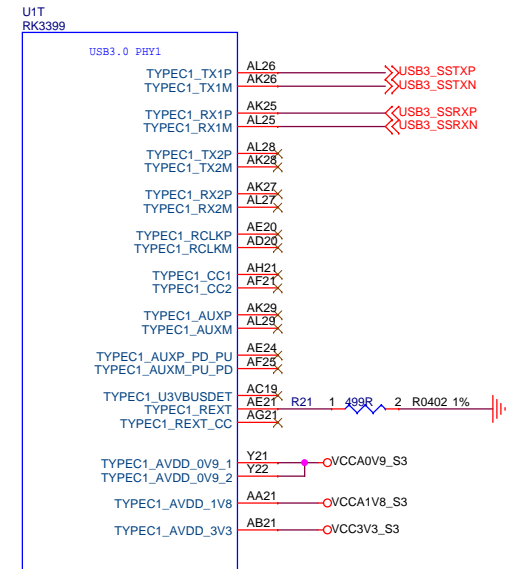


USB2.0 design rule:  
 1. Max intra-pair skew < 4 ps;  
 2. Max trace length < 6 inchs;  
 3. Max allowed via < 6;  
 4. Trace impedance 90ohm+/-10%;  
 5. 与其他信号间距遵循3w原则;

## USB3.0

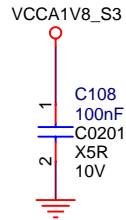
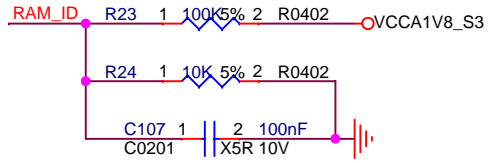
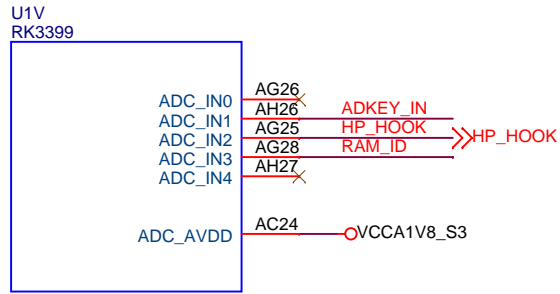


USB3.0 design rule:  
 1. Max intra-pair skew < 4 ps;  
 2. Max length skew between TX and RX < 1.6 ns;  
 3. Max trace length < 6 inchs;  
 4. Max allowed via < 4;  
 5. Trace impedance 90ohm+/-10%;  
 6. 与其他信号间距遵循3w原则;



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;

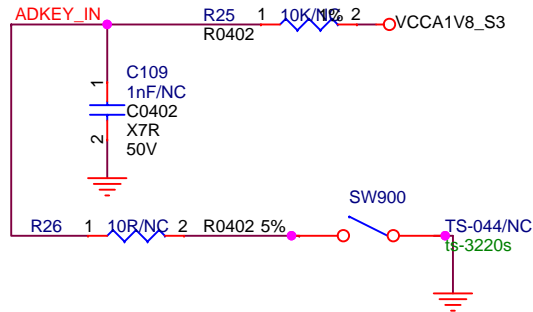
<b>PINE64</b>		
Title RockPro64_RK3399		
Size A3	Document Number RK3399 USB/USIC Controler	Rev V2.0
Date: Tuesday, MAR 6, 2018	Sheet 11	of 33



	RAM ID	R1501 PU	R1502 PD
DDR3/DDR3L	0.6V	200K	100K
LPDDR3	0.112V	150K	10K
LPDDR4	1.5V	100K	499K

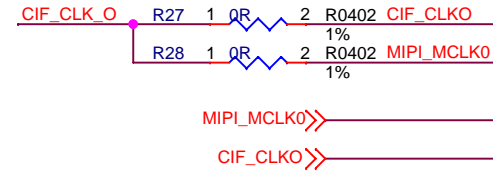
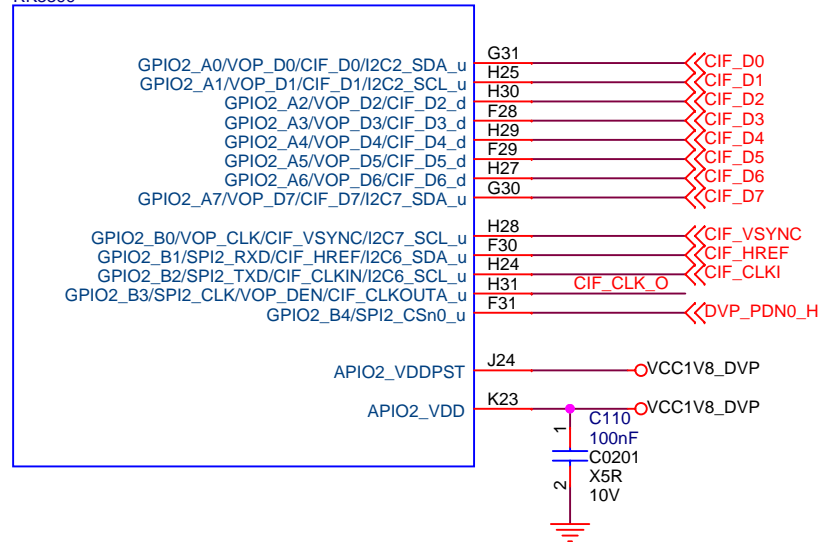
## 预留调试升级按键

Note:  
系统上电时, 如果ADKEY\_IN电平为0V,  
则RK3399进入Recovery模式;  
量产时R1503, SW1500, ED1500可以不用贴片。

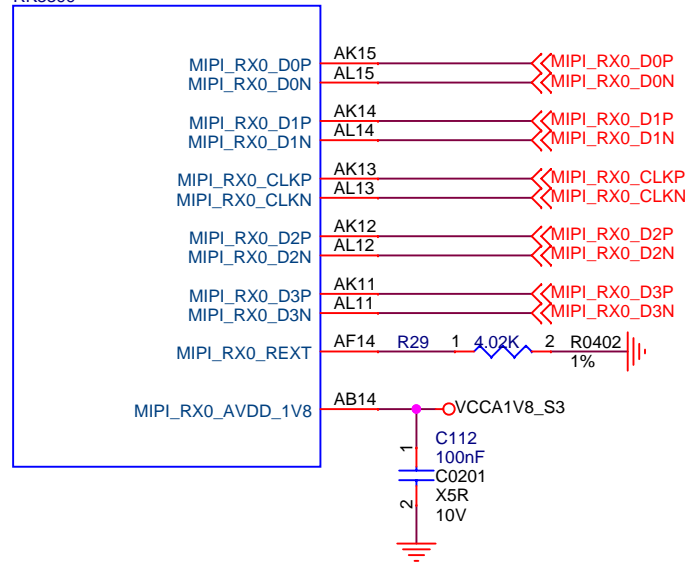


<b>PINE64</b>		
Title		
RockPro64_RK3399		
Size	Document Number	Rev
A4	RK3399 SARADC/KEY	V2.0
Date:	Tuesday, MAR 6, 2018	Sheet 12 of 33

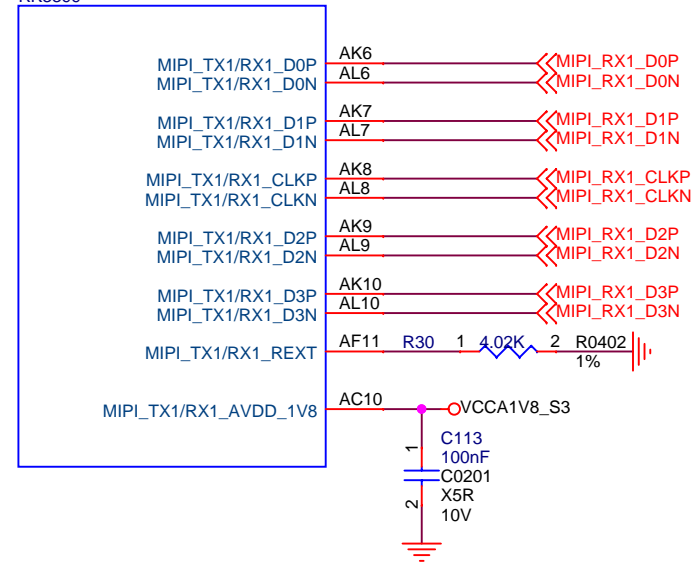
U1L  
RK3399



U1R  
RK3399



U1P  
RK3399



**PINE64**

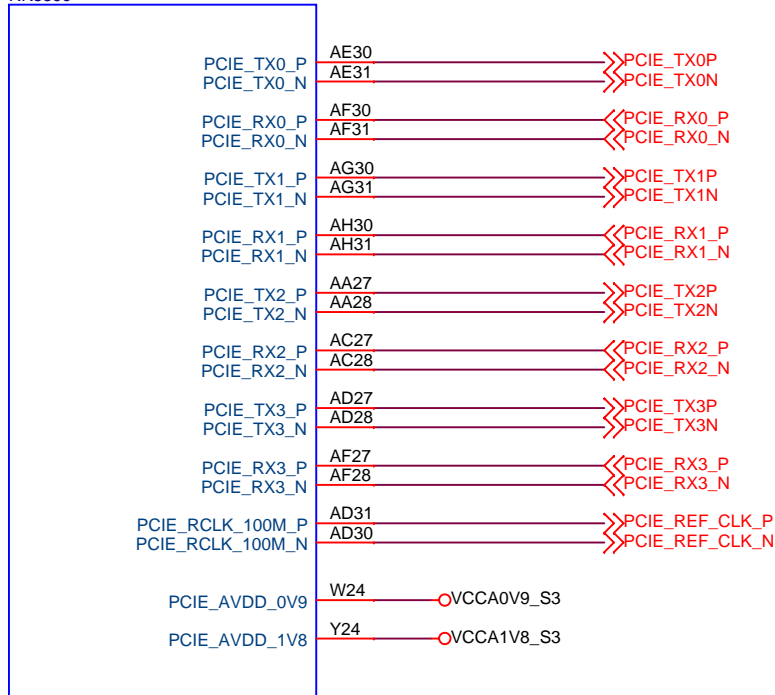
Title		
RockPro64_RK3399		
Size	Document Number	Rev
A4	RK3399 DVP Interface	V2.0
Date:	Tuesday, MAR 6, 2018	Sheet 13 of 33





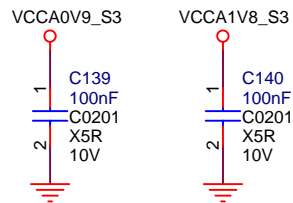


U10  
RK3399



PCIE design rule:

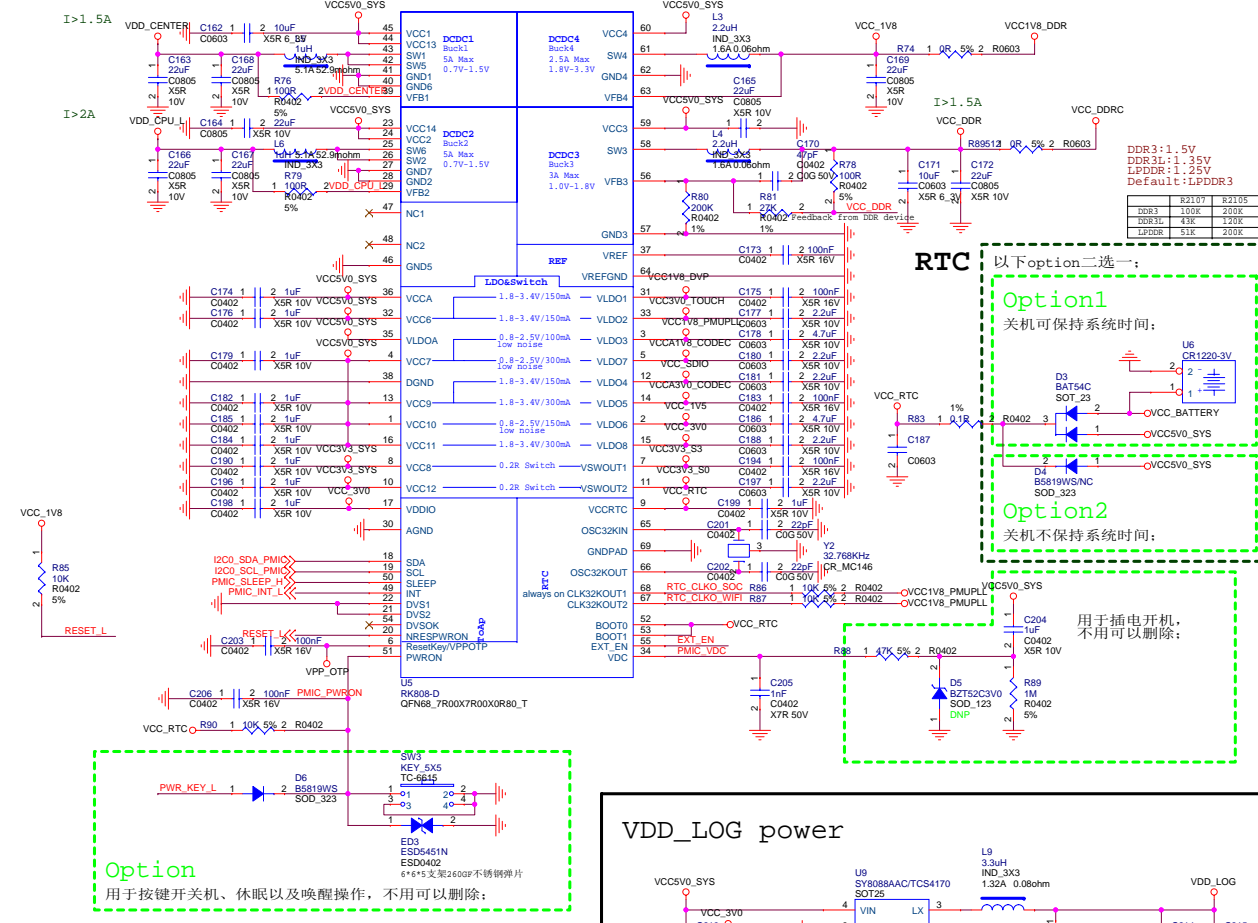
1. Max intra-pair skew < 4ps;
2. Max inter-pair skew < 1.6 ns;
3. Max trace length < 14 inches;
4. Max allowed via < 4;
5. Trace impedance 100ohm+/-10%;
6. 与其他信号间距遵循3W原则;



**PINE64**

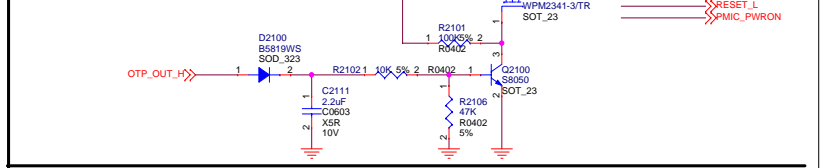
Title		
RockPro64_RK3399		
Size	Document Number	Rev
A4	RK3399 PCIE	V2.0
Date:	Tuesday, MAR 6, 2018	Sheet 16 of 33

# PMIC

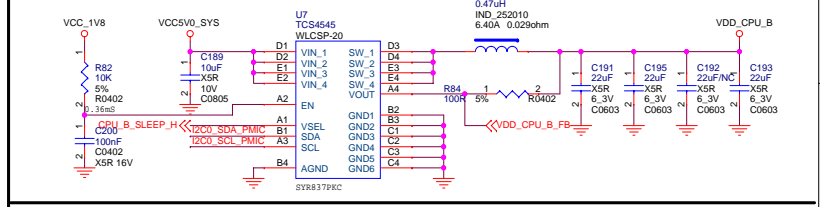


# Over-temperature Protection

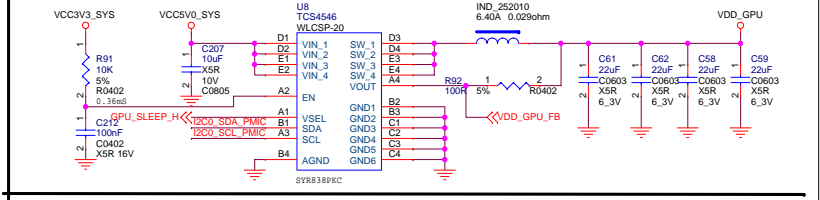
复位电路修改



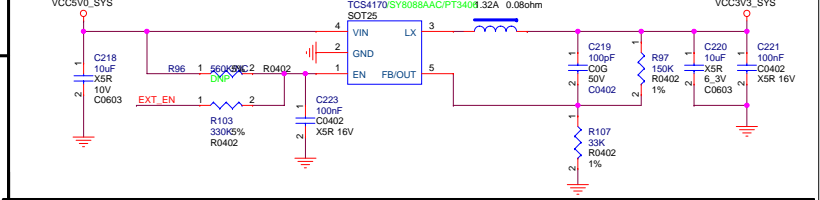
# VDD\_CPU\_B power



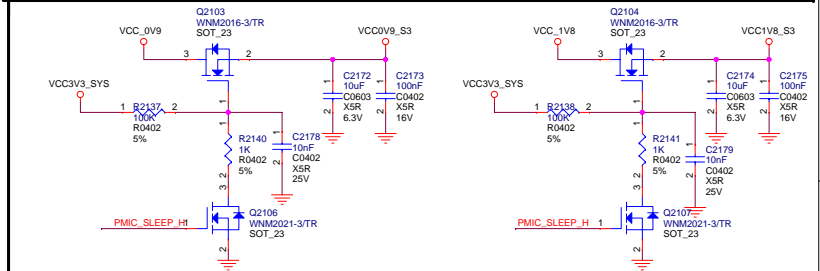
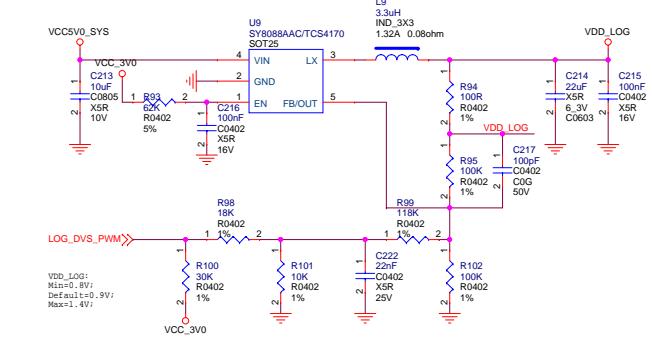
# VDD\_GPU power



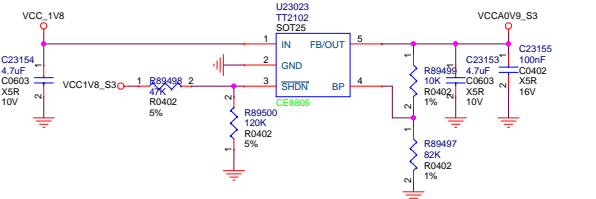
# VCC3V3\_SYS power



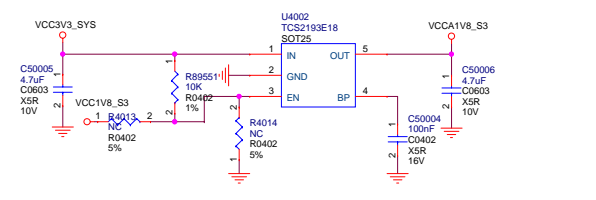
# VDD\_LOG power



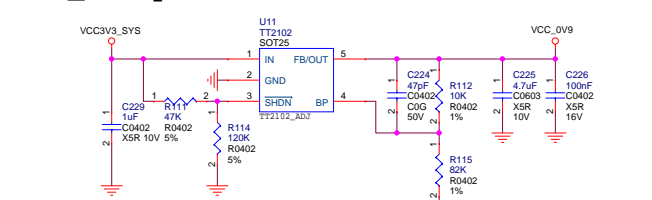
# VCC0V9\_S3



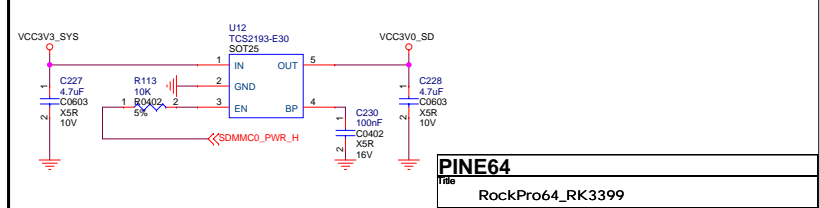
# VCCA1V8\_S3

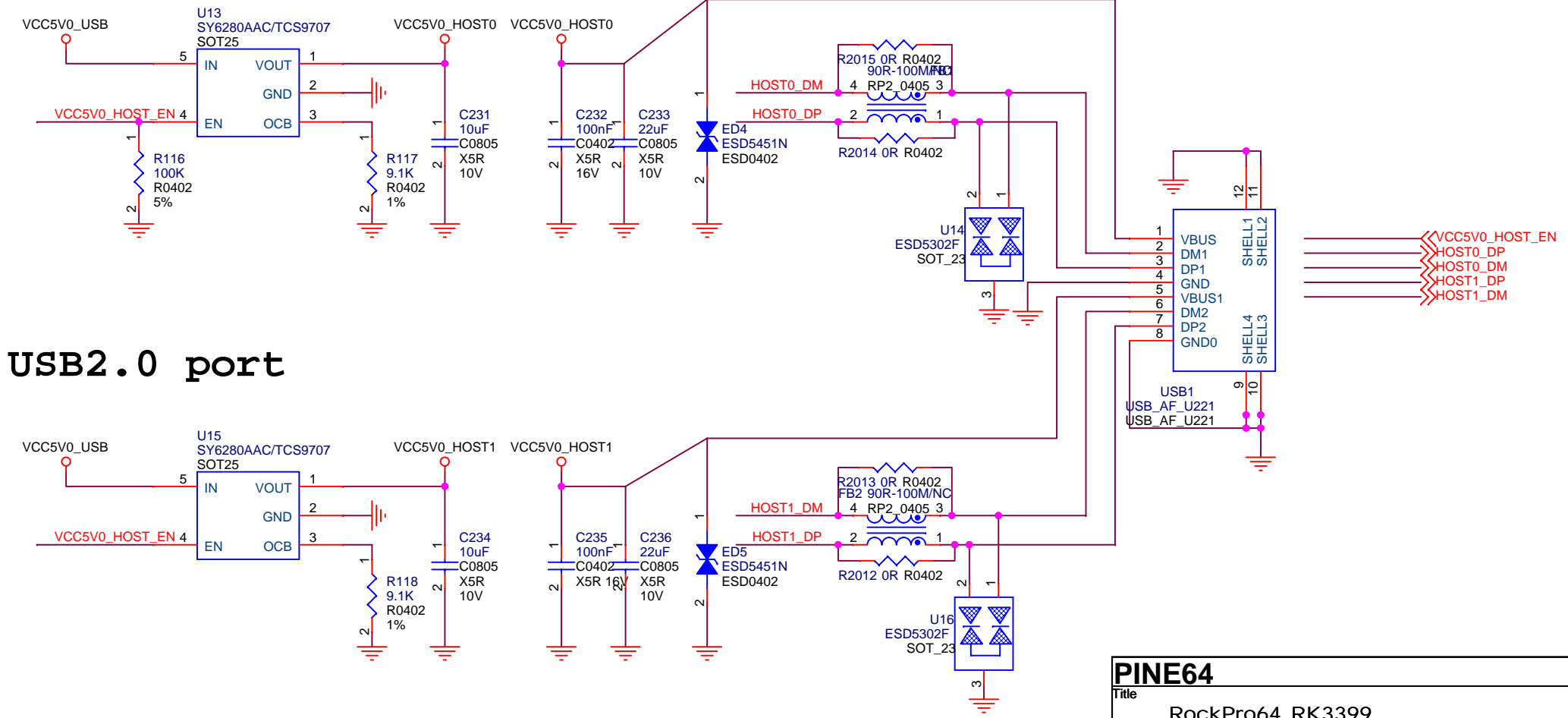


# VCC\_0V9 power



# VCC3V0\_SD power

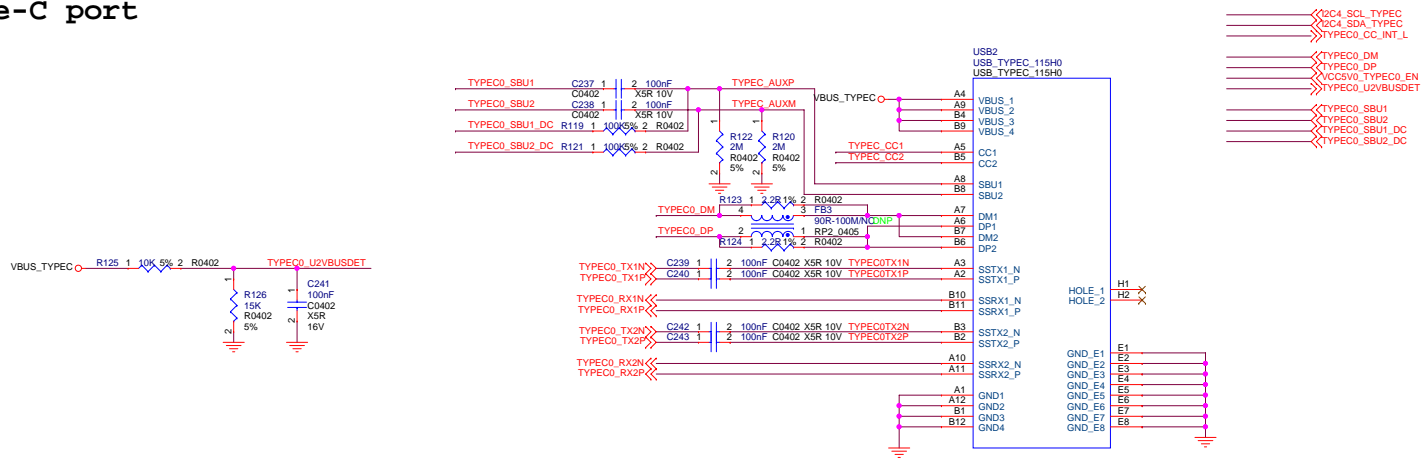




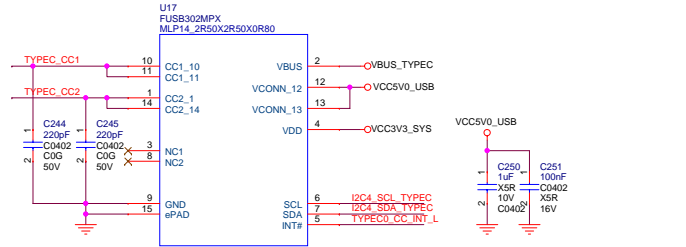
# USB2.0 port

<b>PINE64</b>		
Title		
RockPro64_RK3399		
Size	Document Number	Rev
Custom	USB HOST 2.0	V2.0
Date:	Tuesday, MAR 6, 2018	Sheet 19 of 33

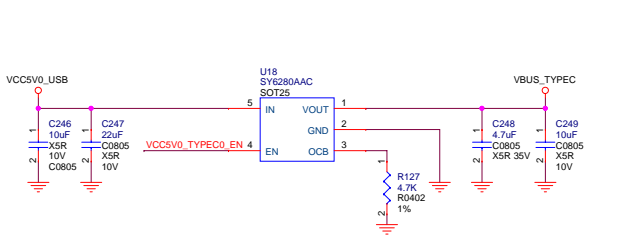
# USB Type-C port



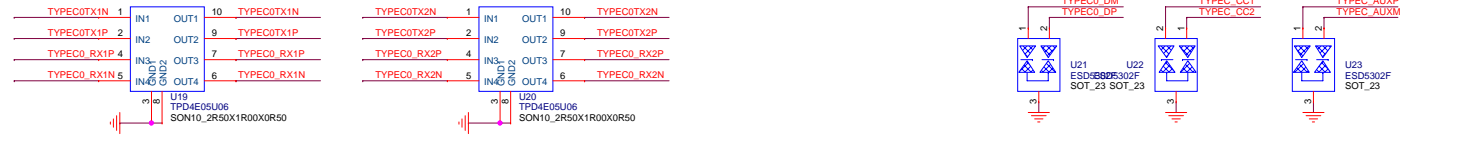
# CC CTRL



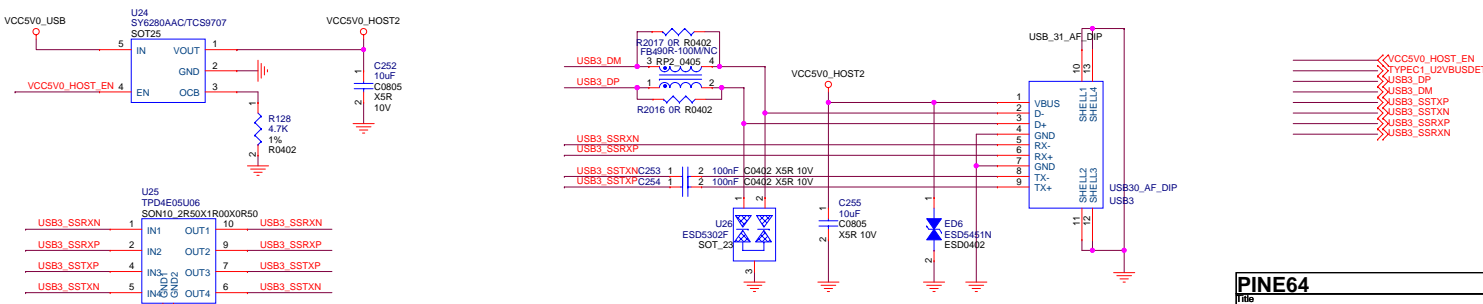
# Limit switch



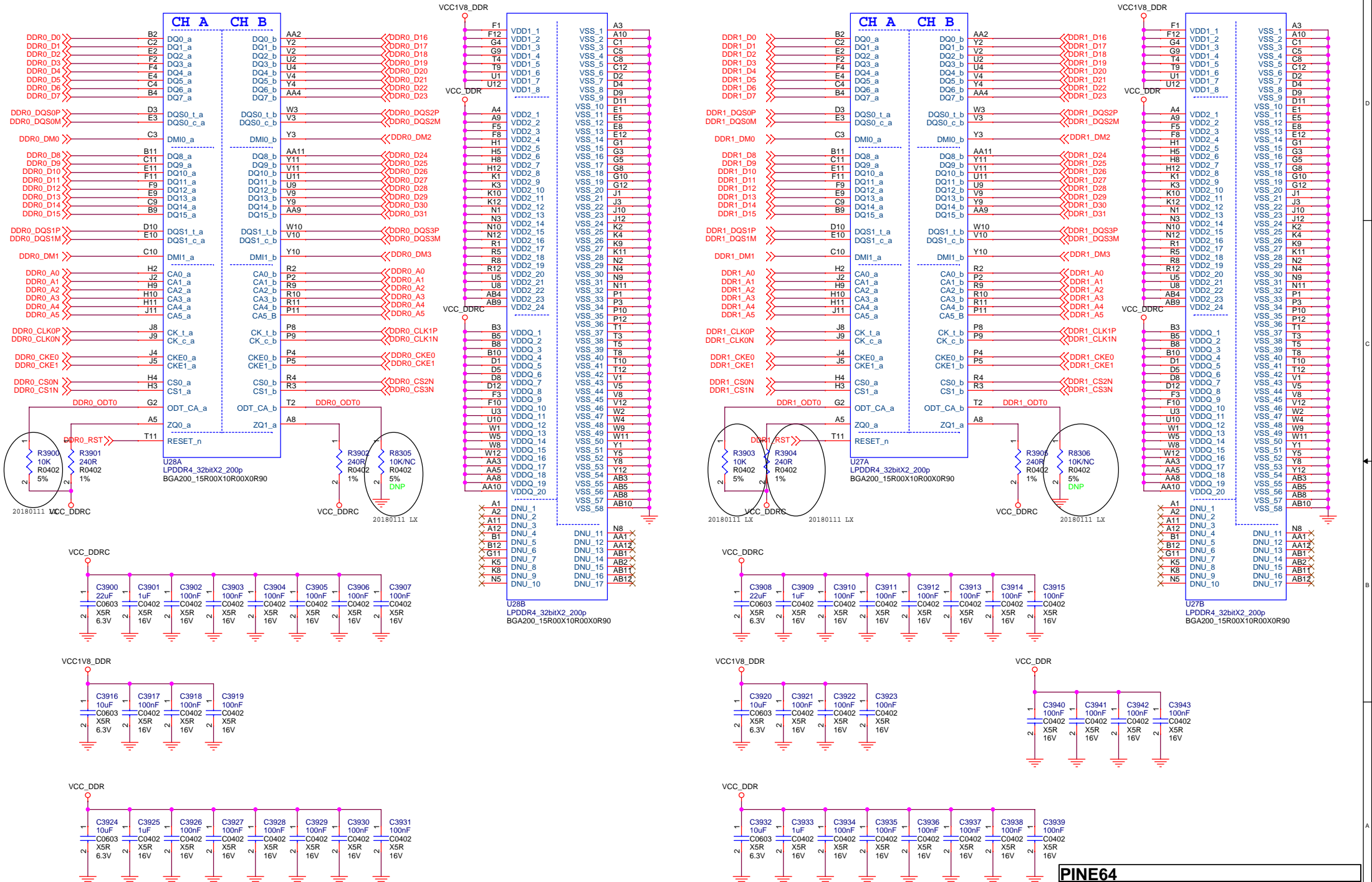
# ESD



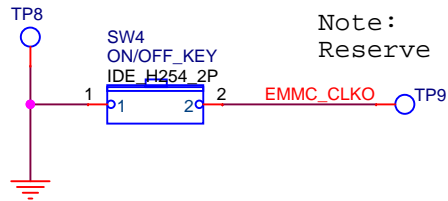
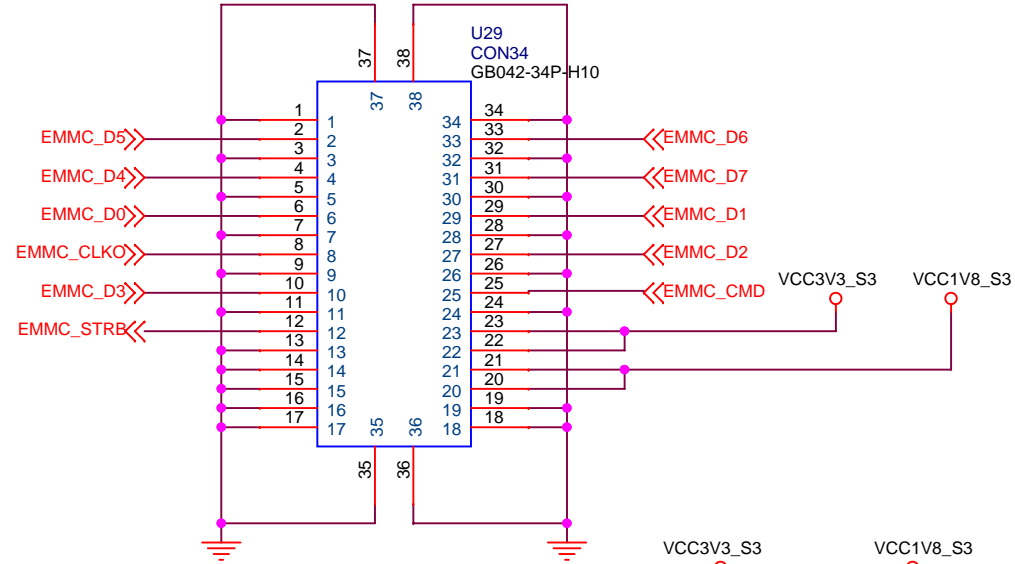
# USB3.0 port



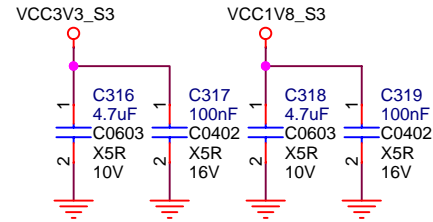
<b>PINE64</b>		
Title: RockPro64_RK3399		
Size: Custom	Document Number: USB 3.0	Rev: V2.0
Date: Tuesday, MAR 6, 2018	Sheet: 20	of 33



# eMMC Port

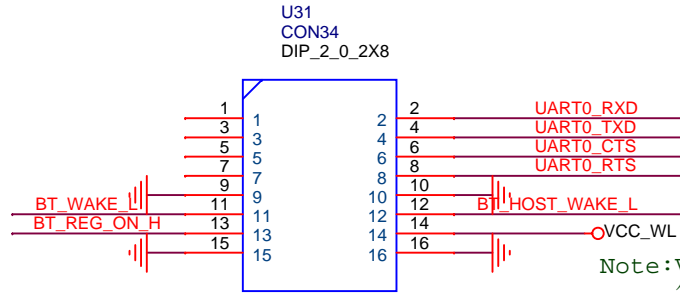
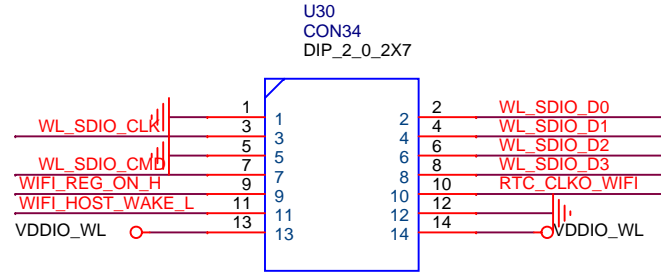


Note:  
Reserve PAD for Update.

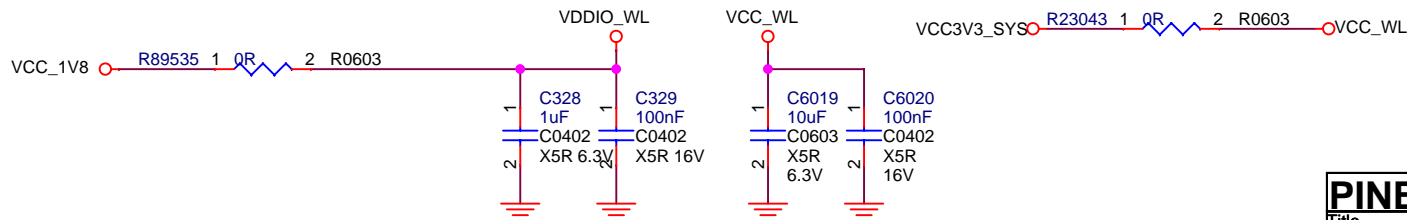
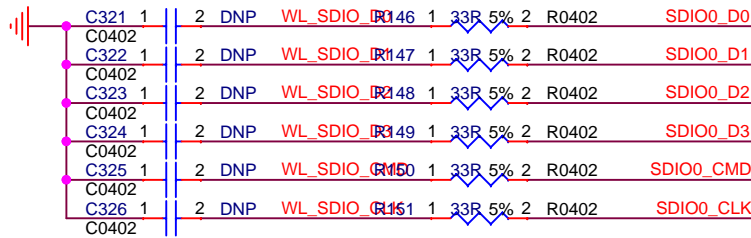
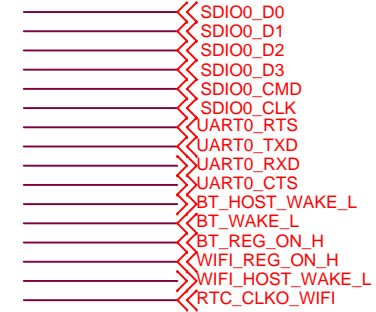


<b>PINE64</b>		
Title		
RockPro64_RK3399		
Size	Document Number	Rev
A4	eMMC COM	V2.0
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# SDIO WIFI/BT MODULE-MIMO

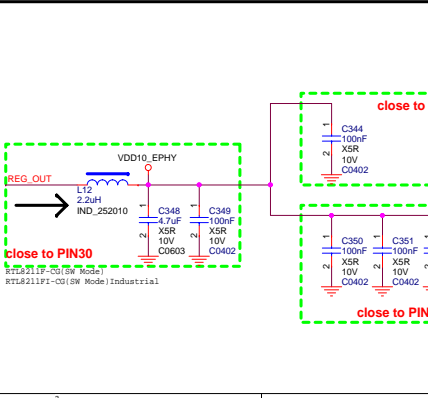
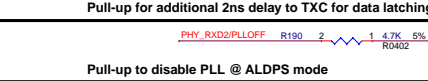
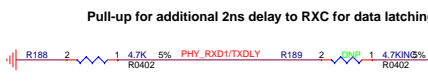
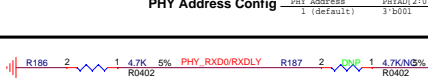
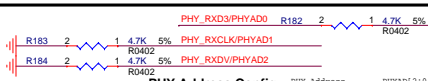
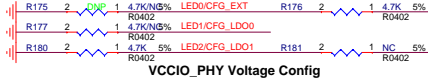
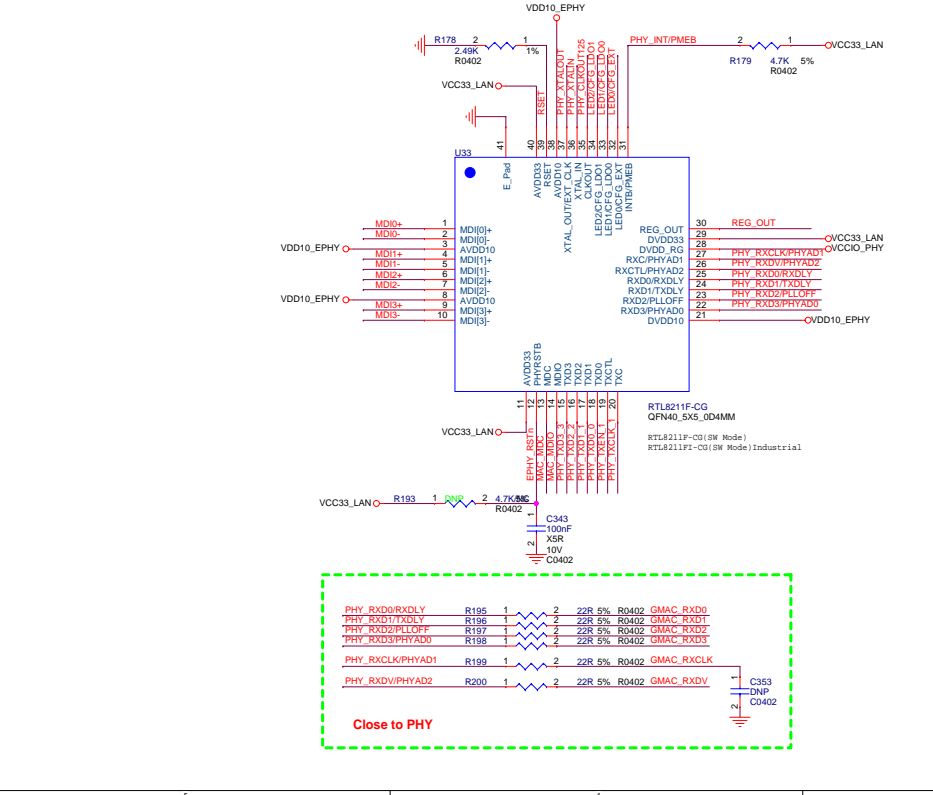
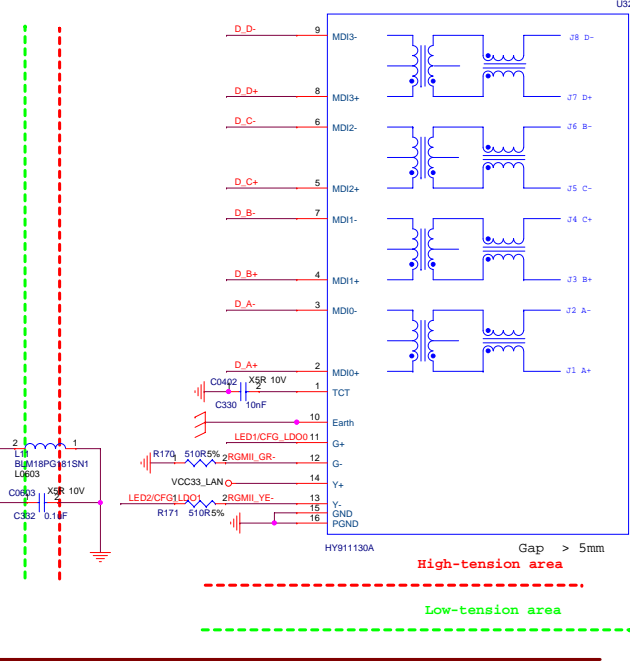
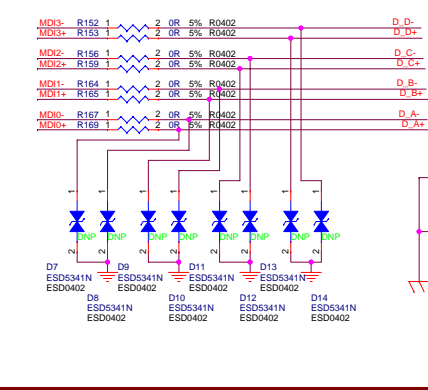
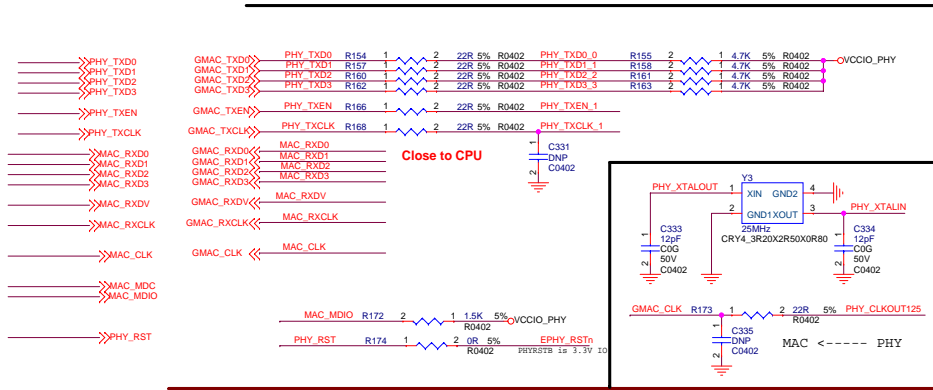


Note: VBAT电压范围3.0V~4.8V,  
供电电流至少400mA

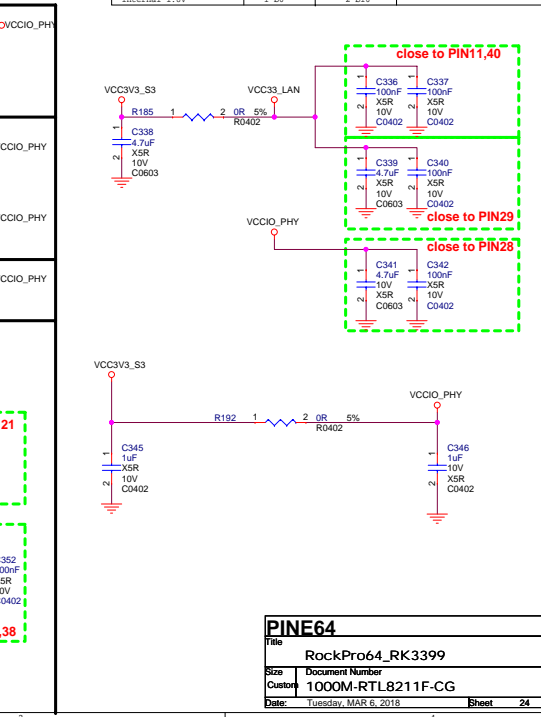


<b>PINE64</b>		
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# RJ45 & Transformer



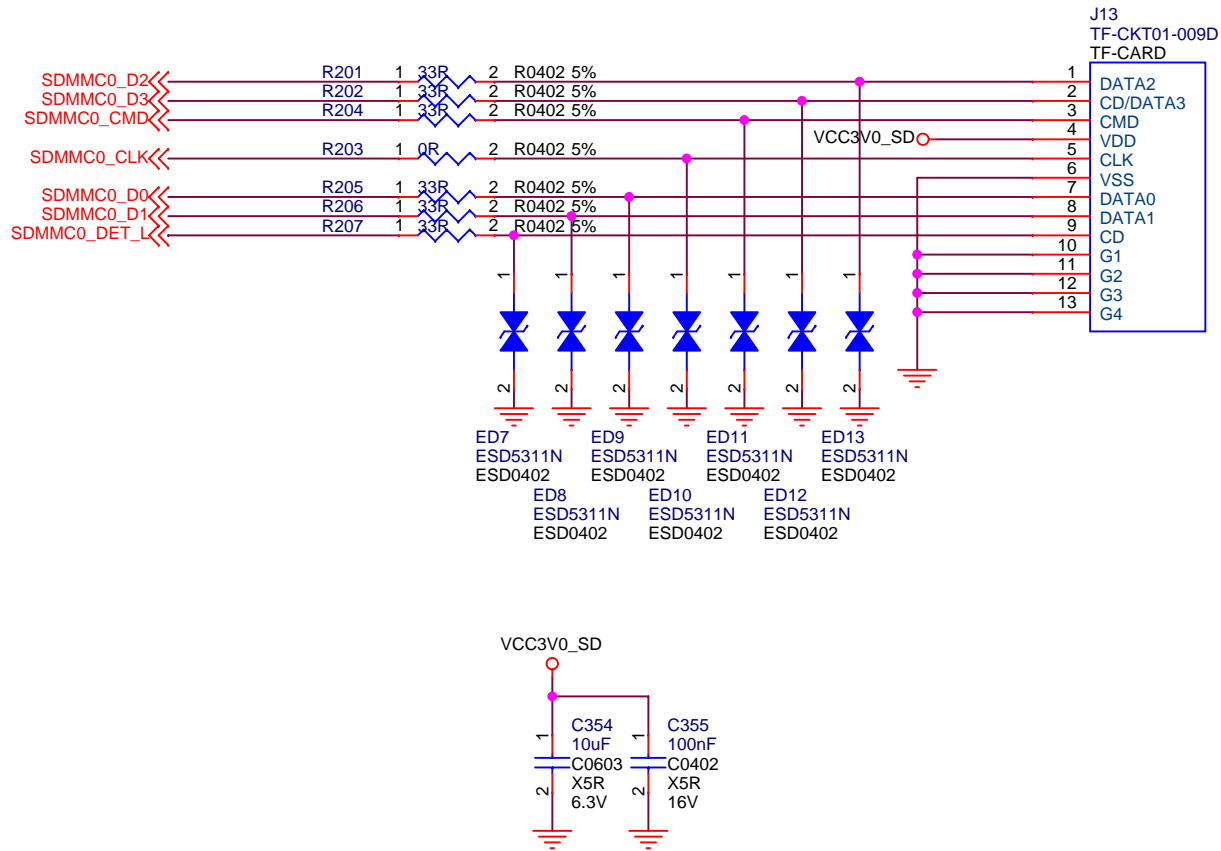
RMII Power Source	CFG_EXT	CFG_LDO[1:0]
External 3.3V	1'b1	2'b00
External 1.8V (default)	1'b1	2'b10
Internal 1.8V	1'b0	2'b10



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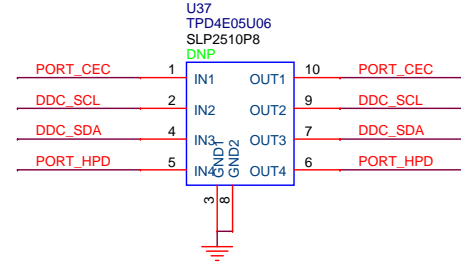
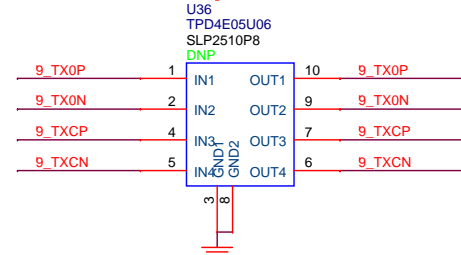
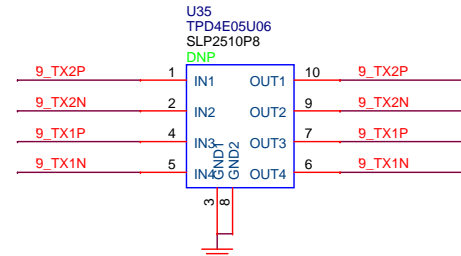
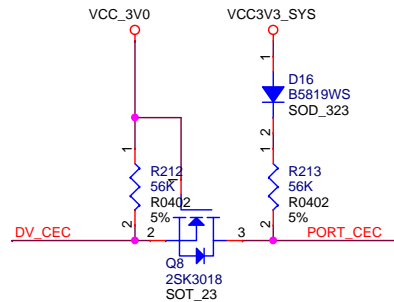
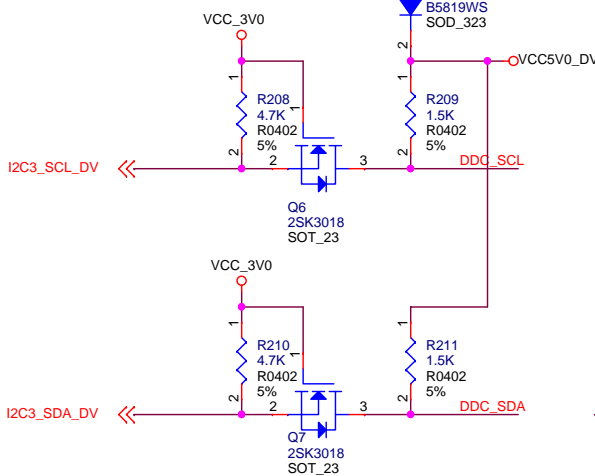
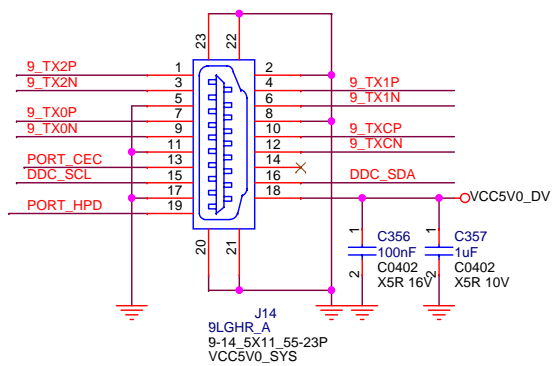


# TF CARD



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RockPro64_RK3399		
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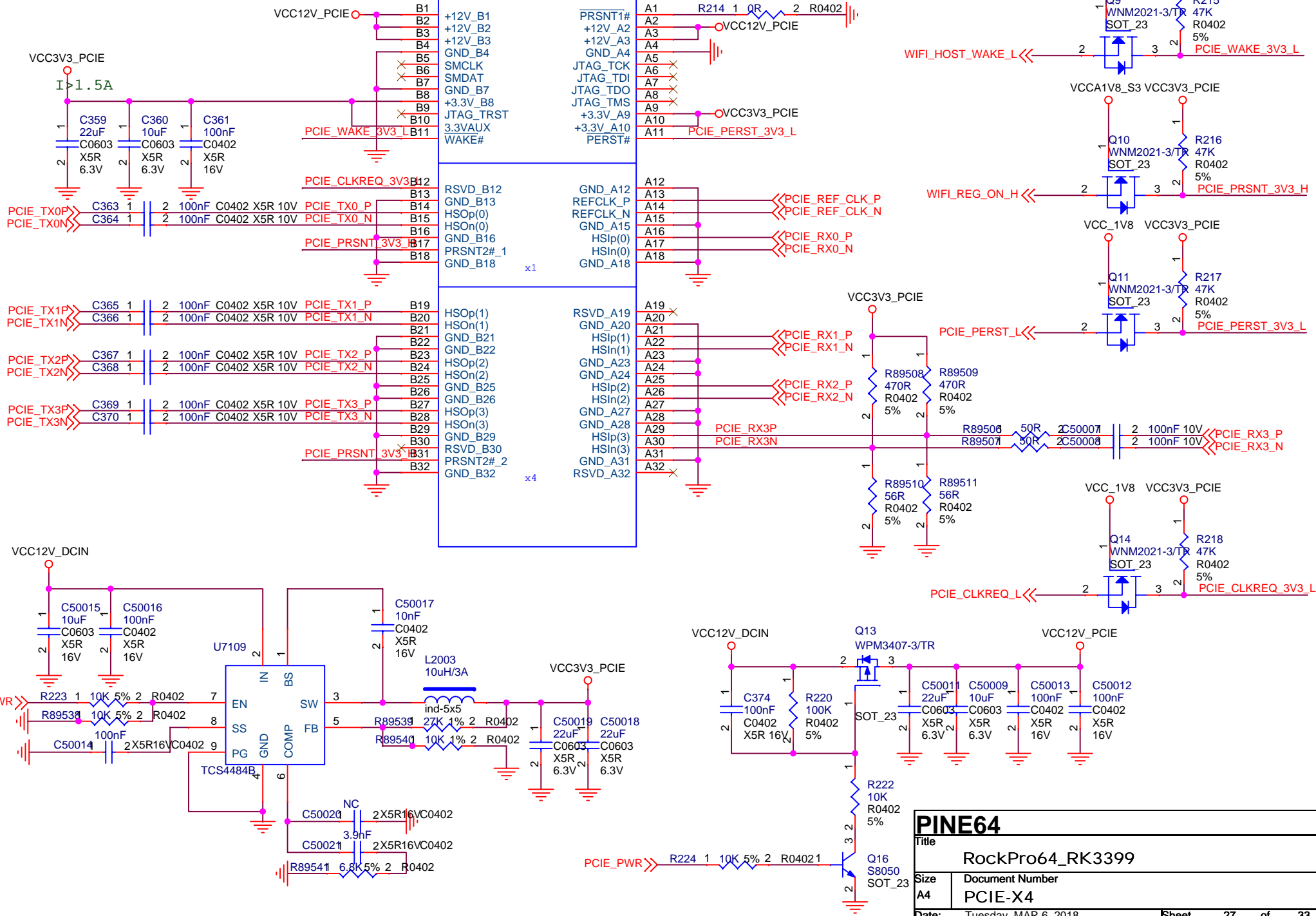
# LJLWDO9LGHR Output



<b>PINE64</b>		
Title		
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Custom	LJLWDO9LGHR3RUW	V2.0
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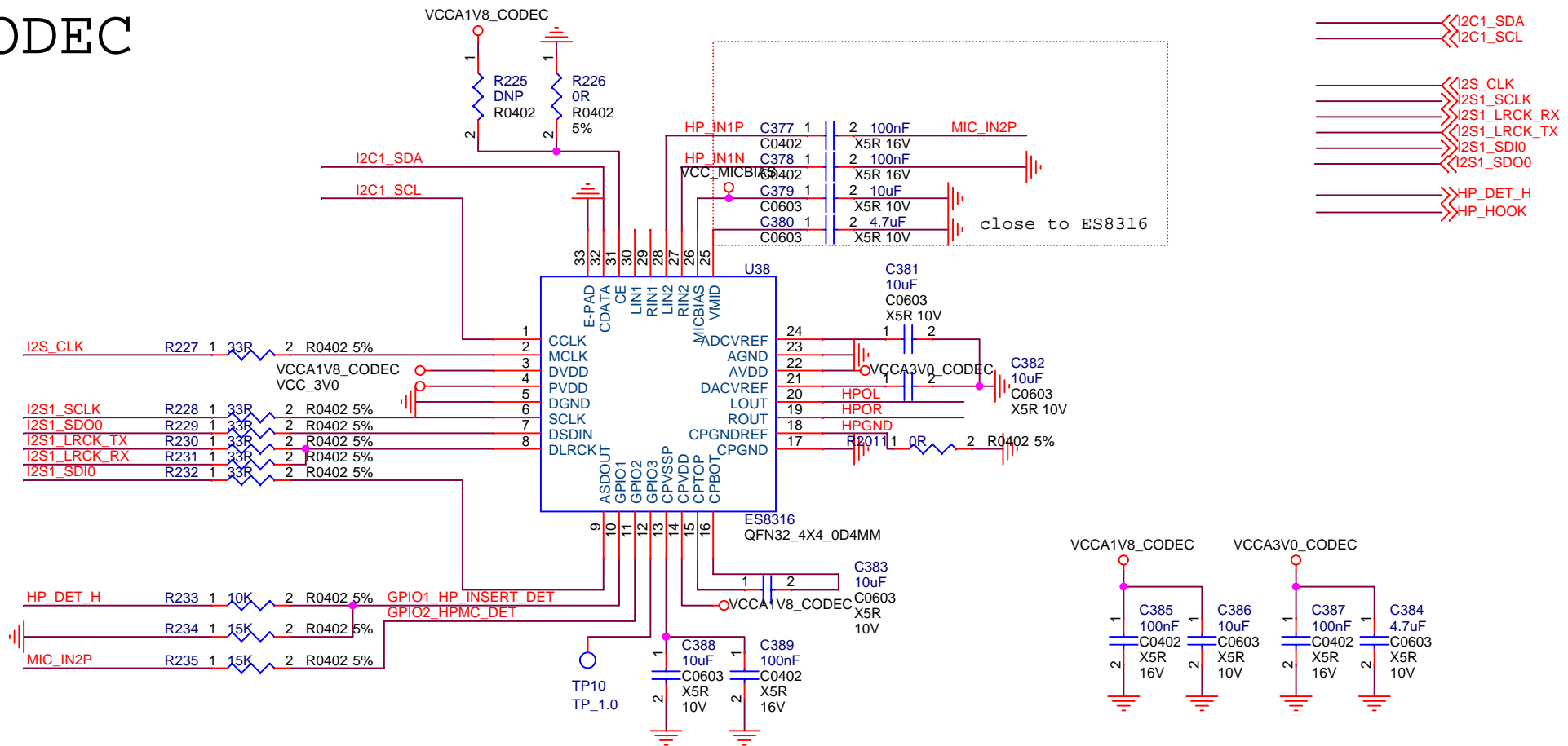
# PCIe x4

J15  
PCIe-64PINX4  
PCIe64\_DIP

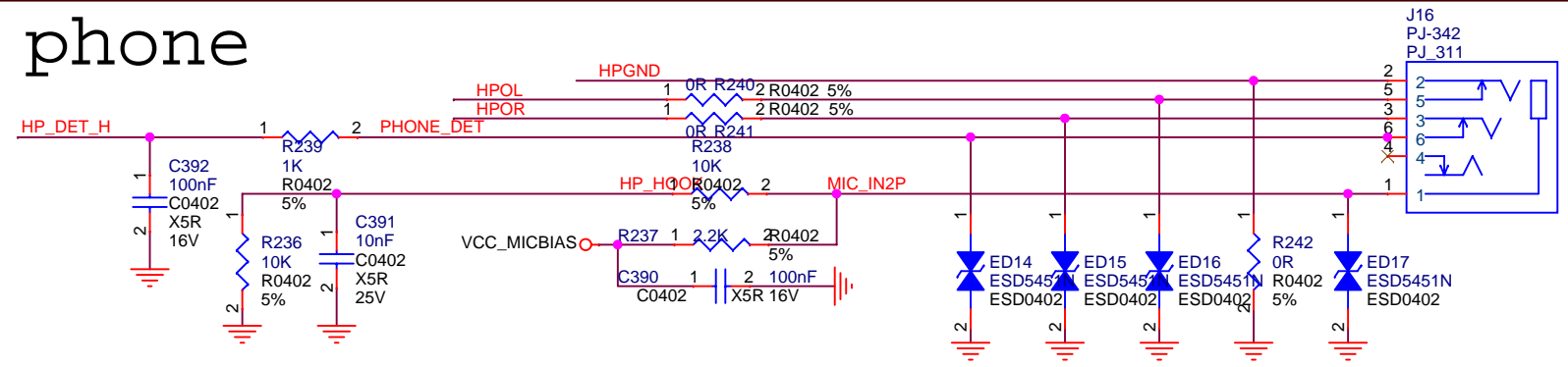


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Size: A4	Document Number: PCIE-X4	Rev: V2.0
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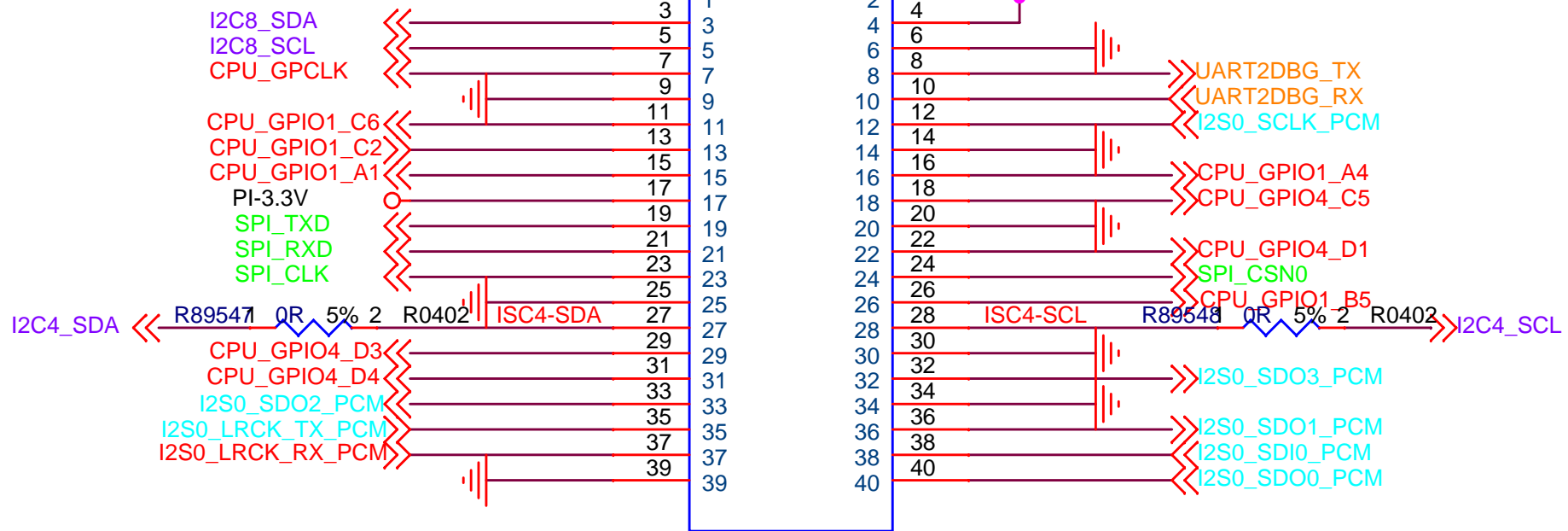
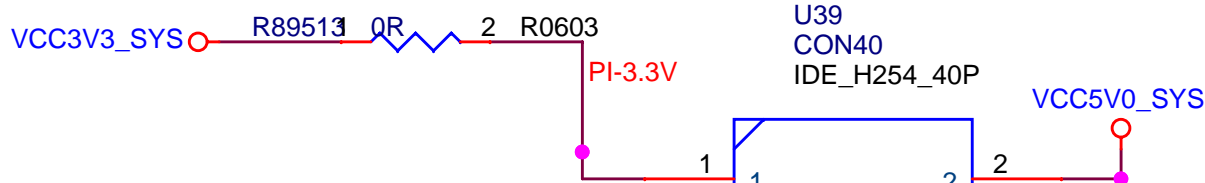
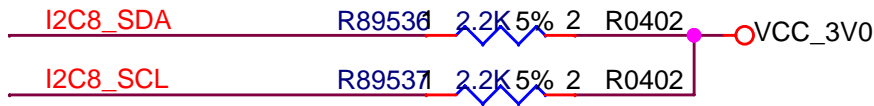
# CODEC



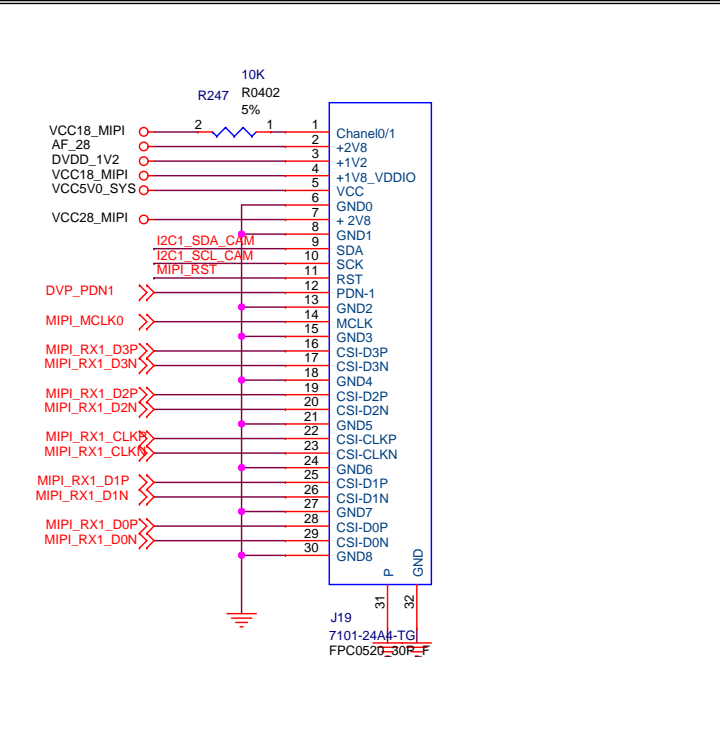
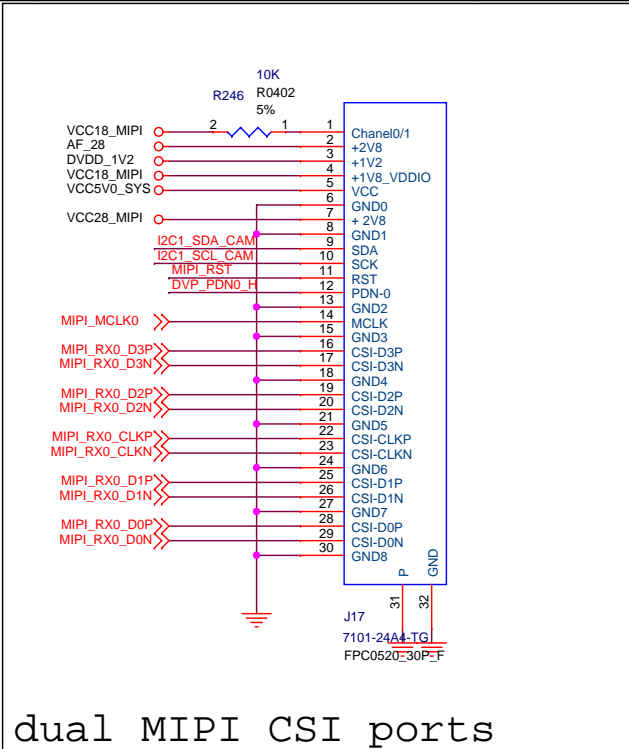
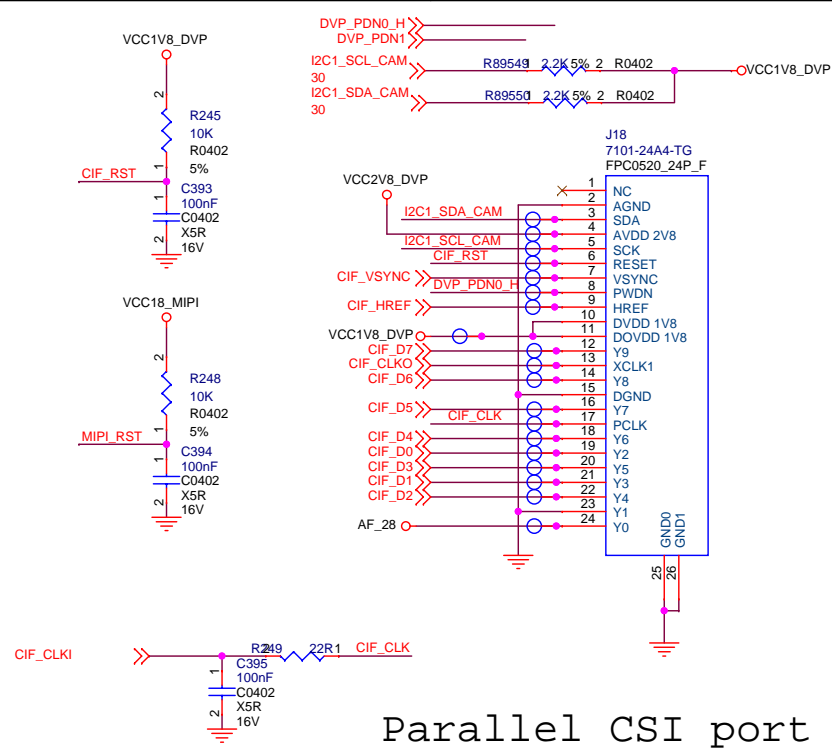
# Head phone



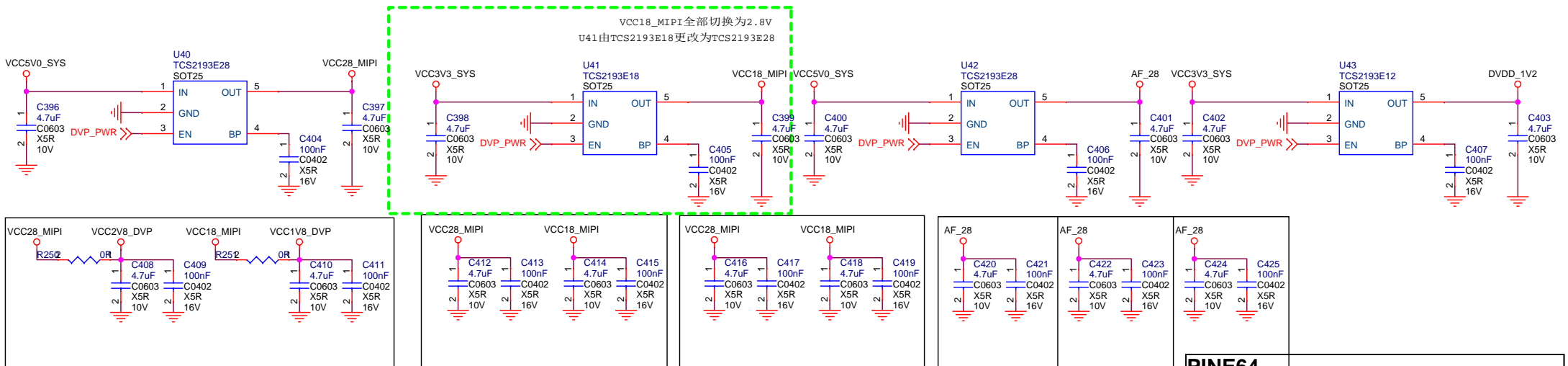
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RockPro64_RK3399		
Size	Document Number	Rev
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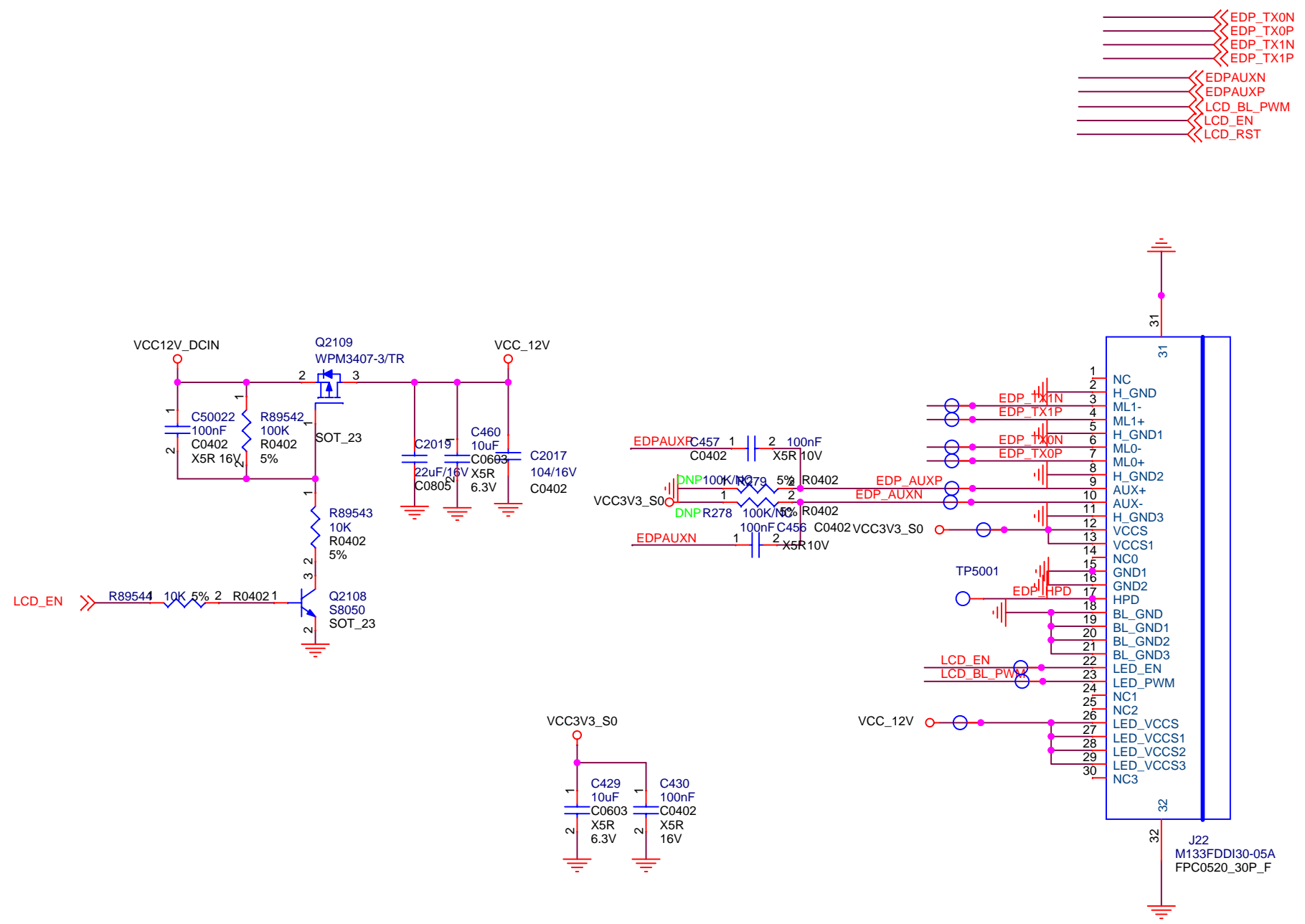


Parallel CSI port dual MIPI CSI ports



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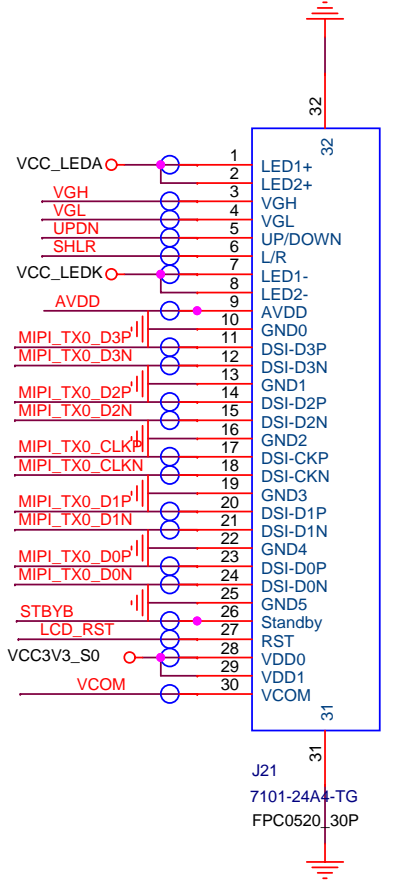
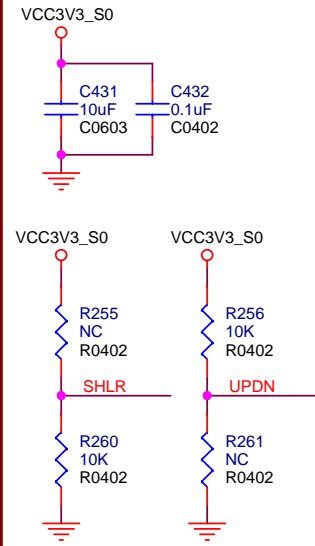
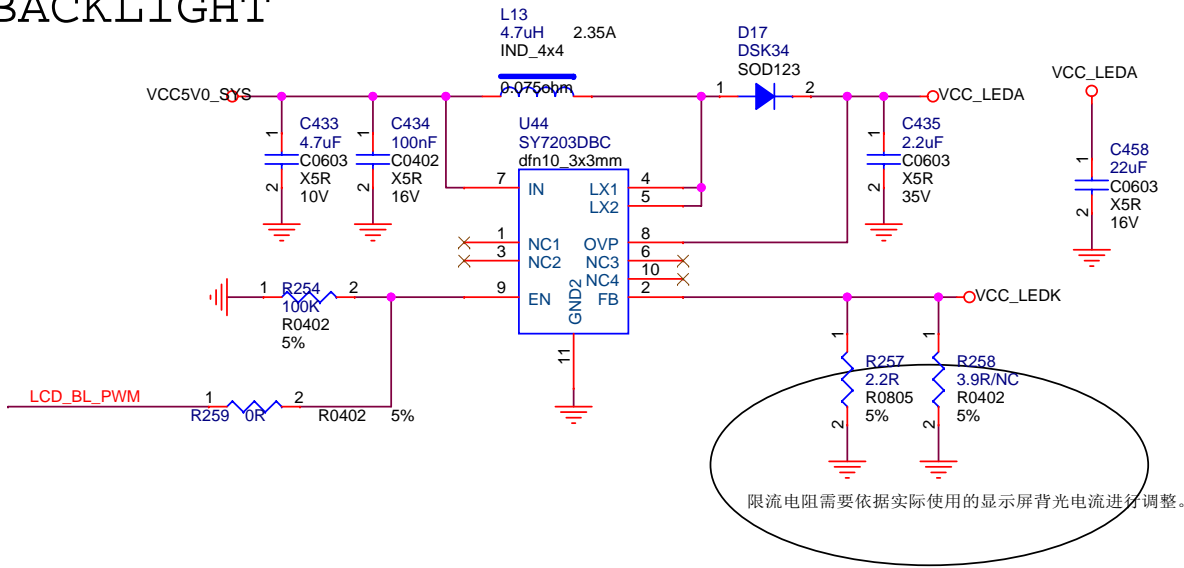
# eDP Panel



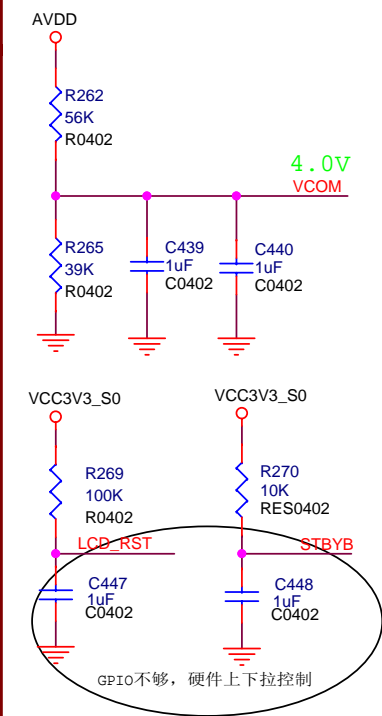
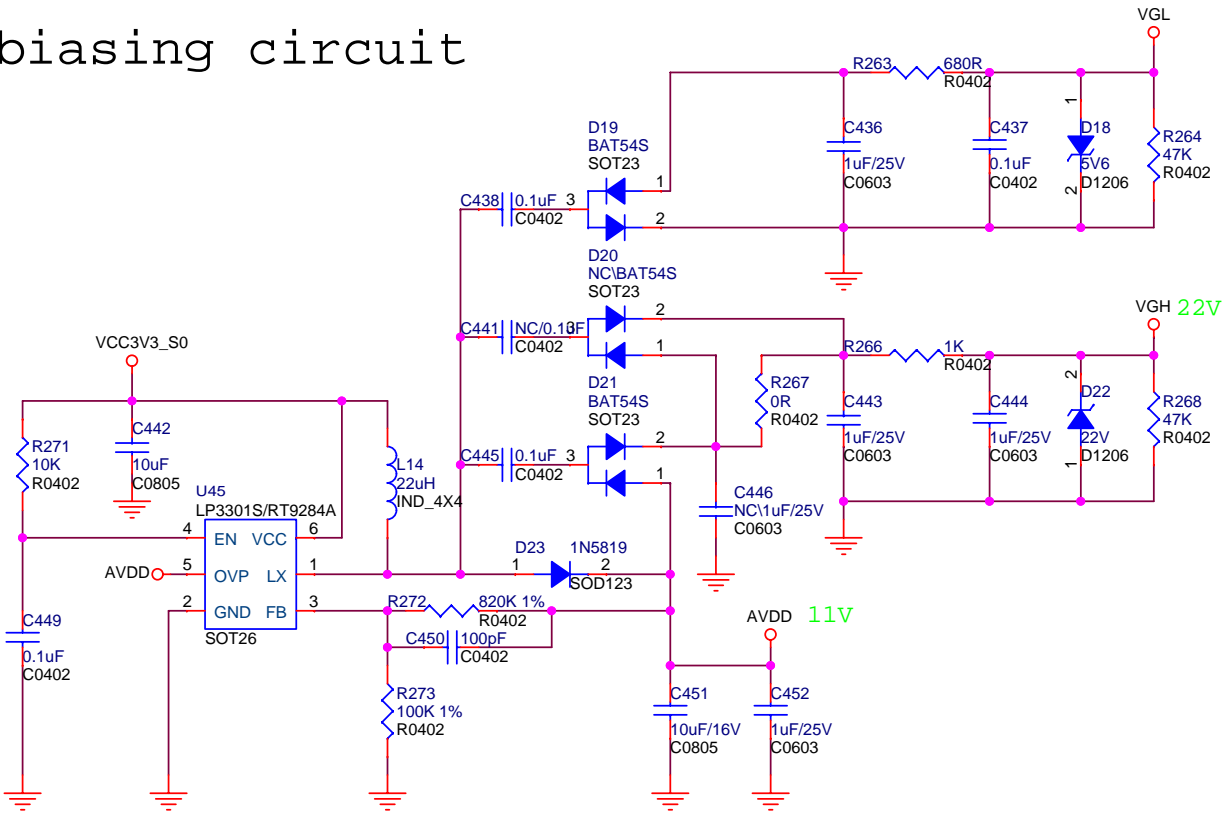
<b>PINE64</b>		
Title		
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# MIPI Panel

## BACKLIGHT



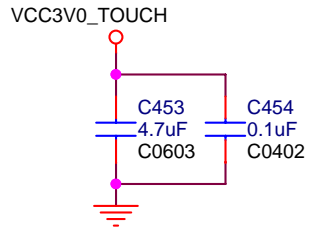
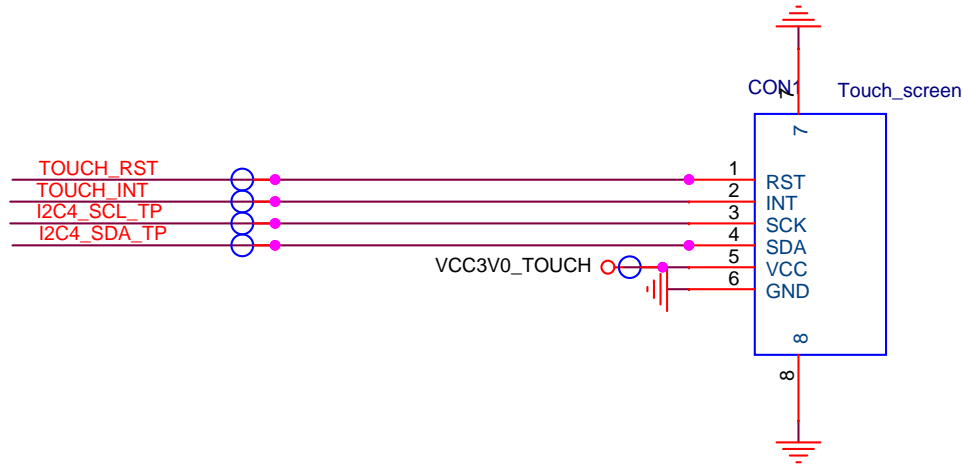
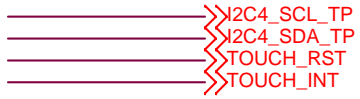
## biasing circuit



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Title			
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# Touch Panel connector



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