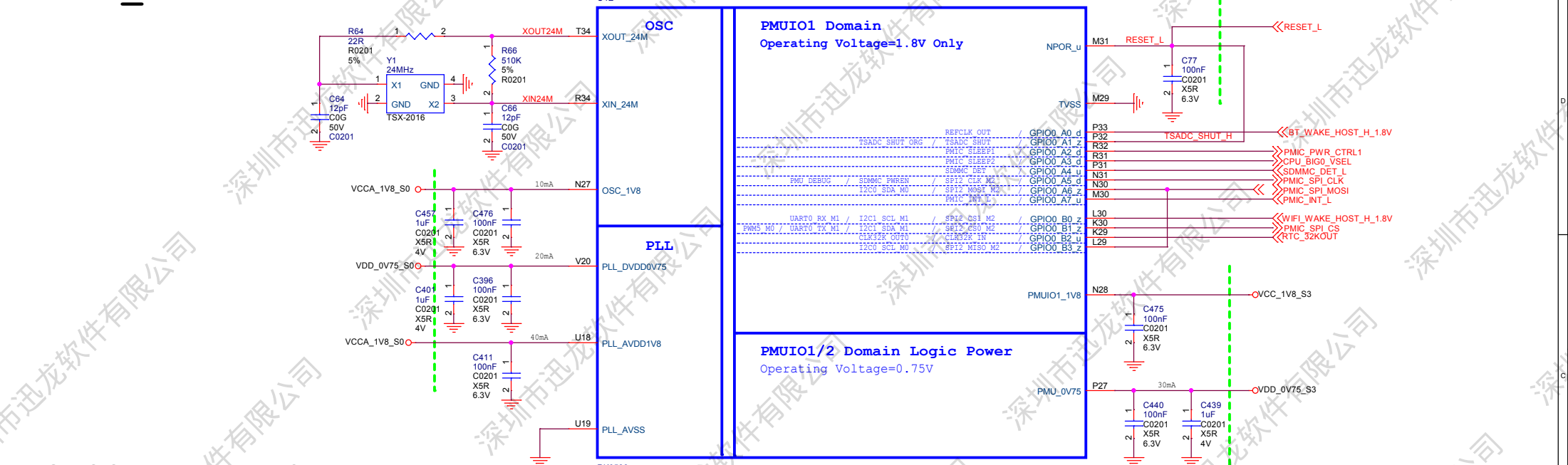
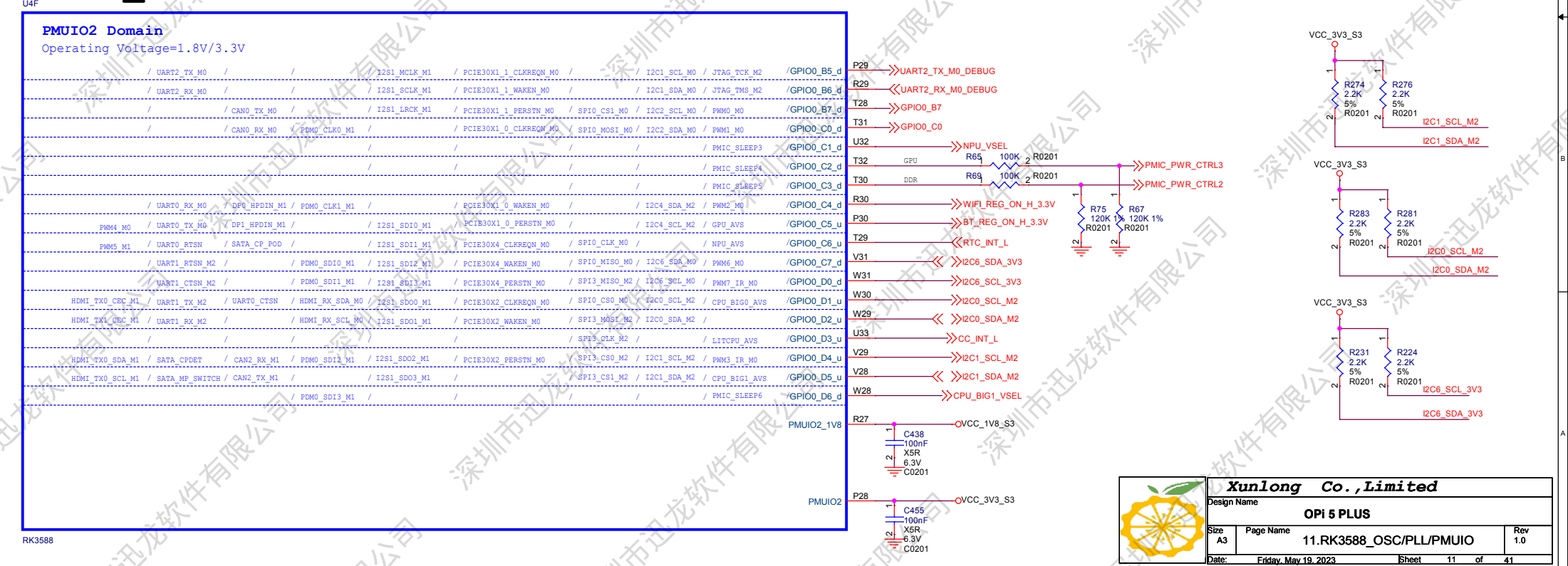


RK3588_E (OSC/PLL/PMUIO1/2)



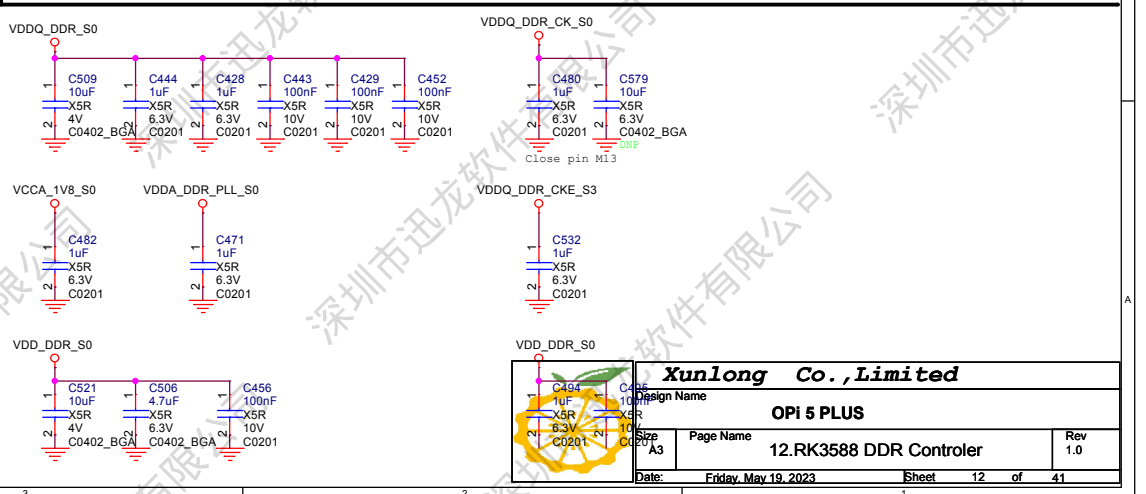
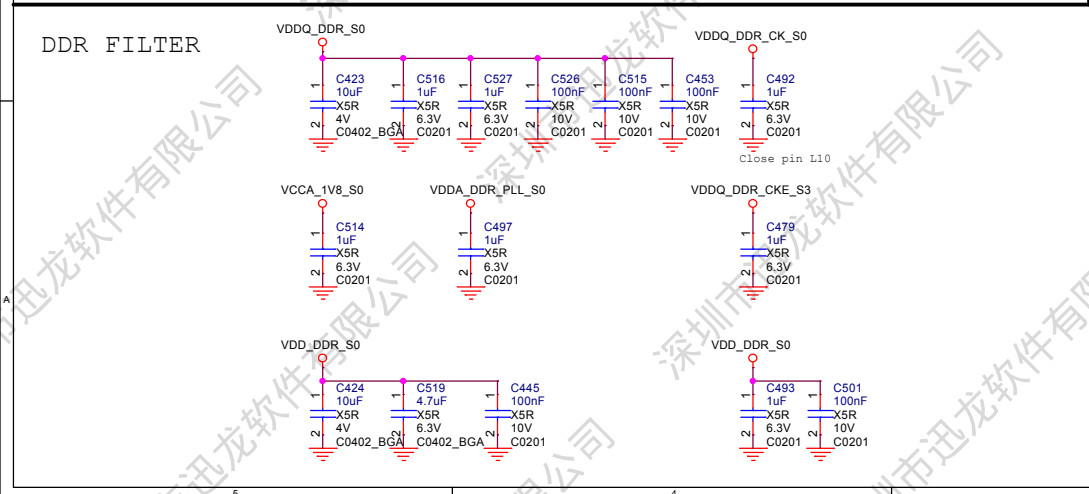
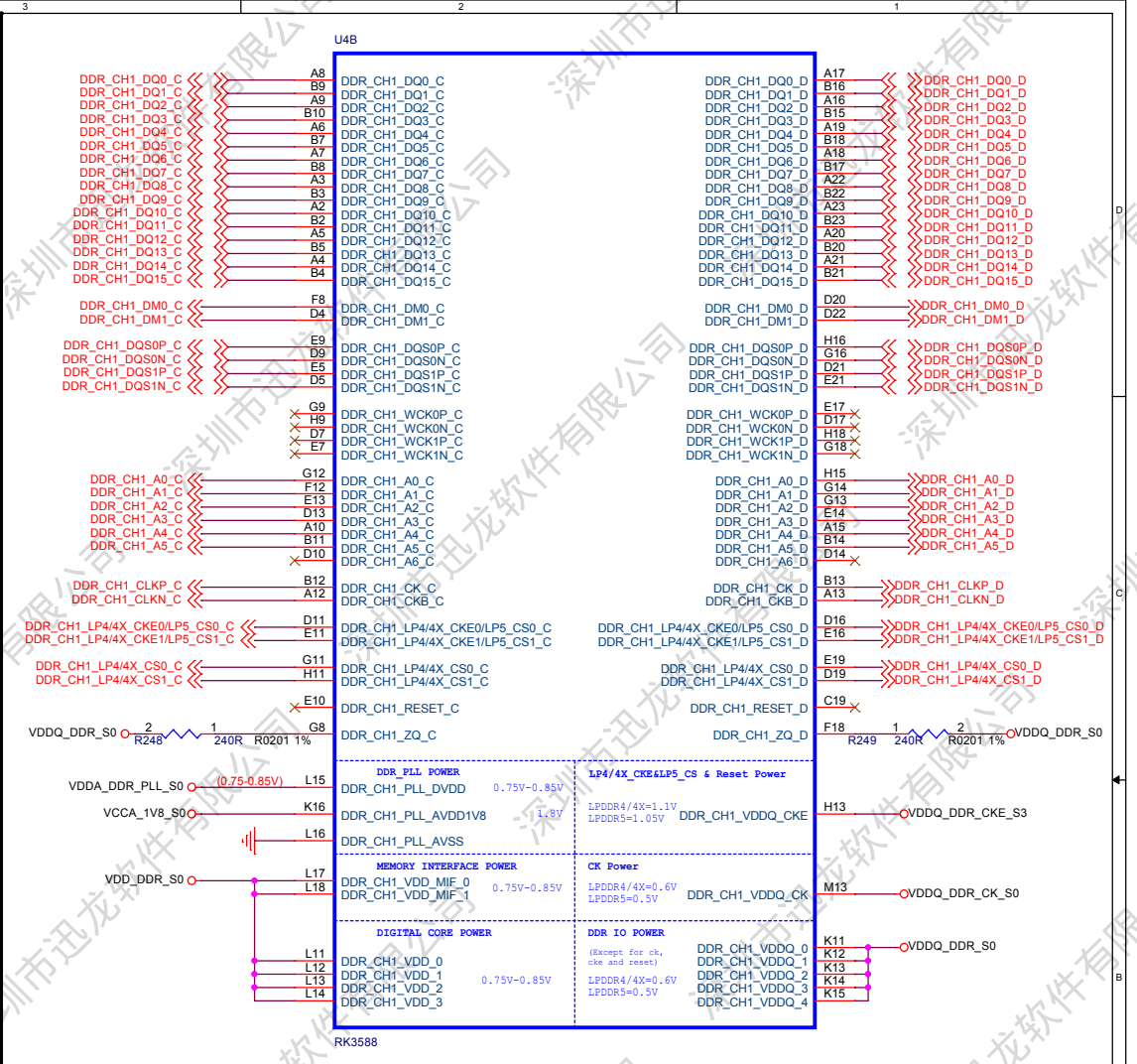
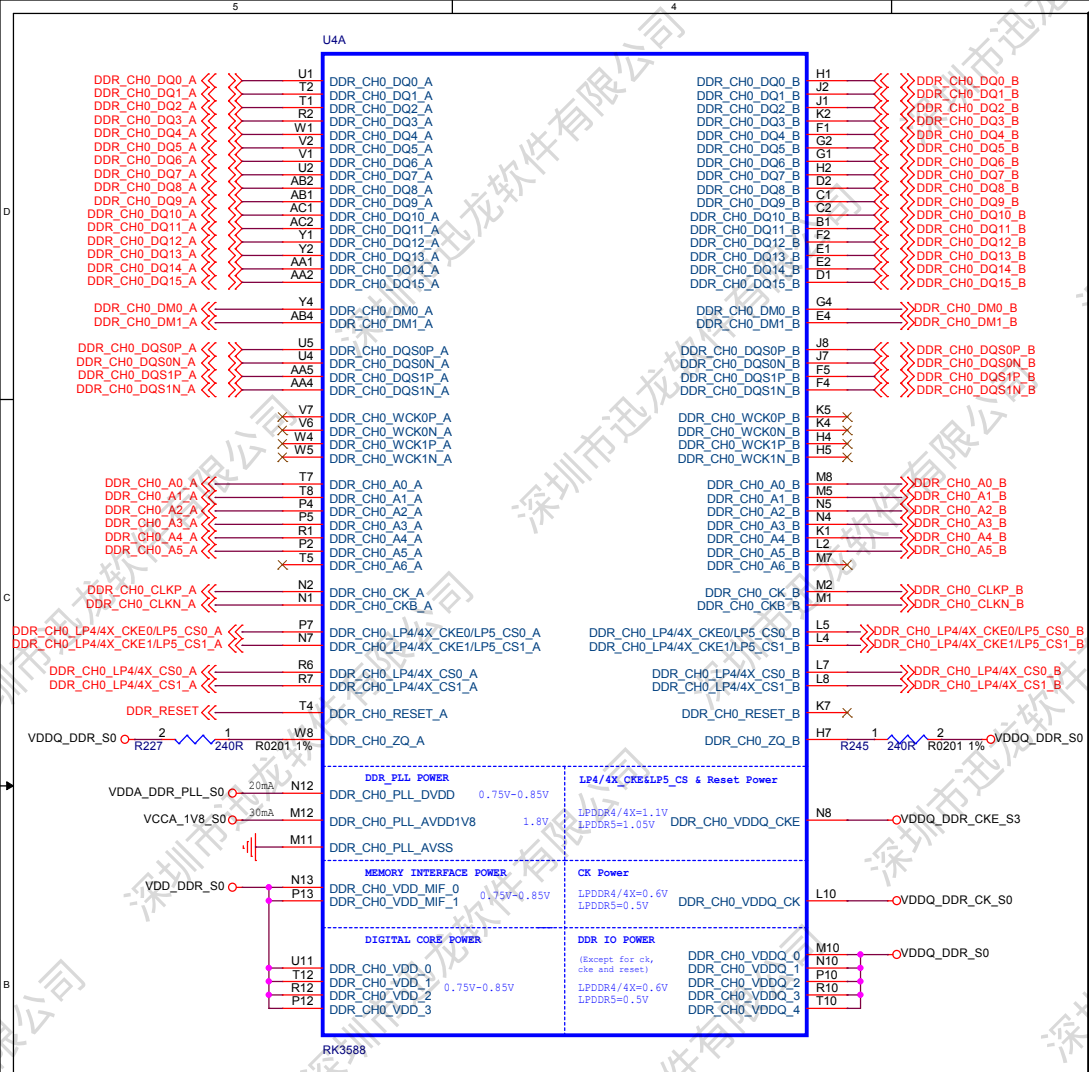
RK3588_F (PMUIO2)



Xunlong Co., Limited

Design Name: **OPI 5 PLUS**

Size: A3	Page Name: 11.RK3588_OSC/PLL/PMUIO	Rev: 1.0
Date: Friday, May 19, 2023	Sheet: 11	of: 41



Xunlong Co., Limited

Design Name: OPI 5 PLUS

Page Name: 12.RK3588 DDR Controller

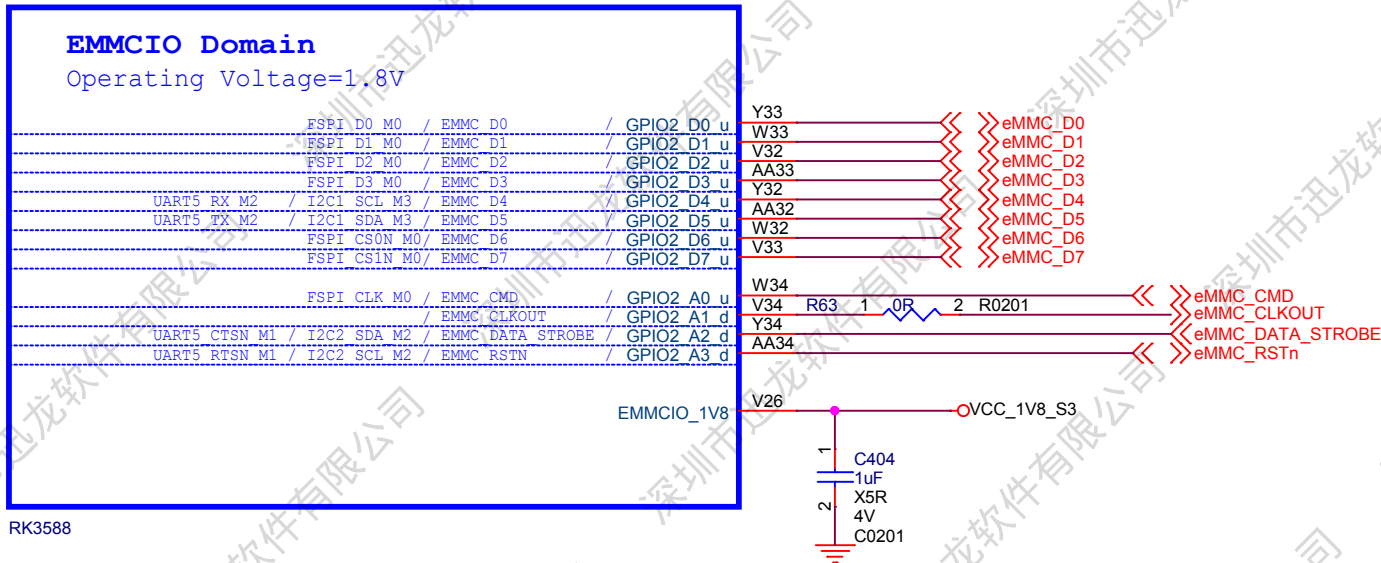
Rev 1.0

Date: Friday, May 19, 2023

Sheet 12 of 41

RK3588_C (EMMCIO Domain)

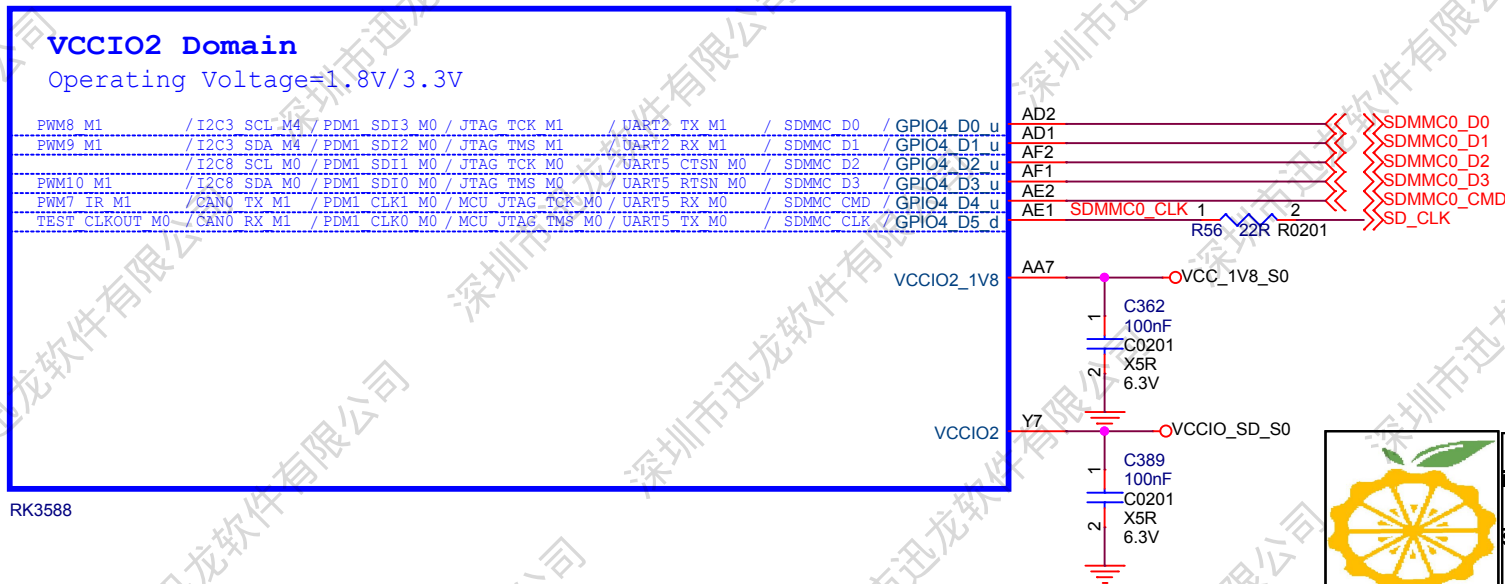
U4C



RK3588

RK3588_D (VCCIO2 Domain)

U4D



RK3588



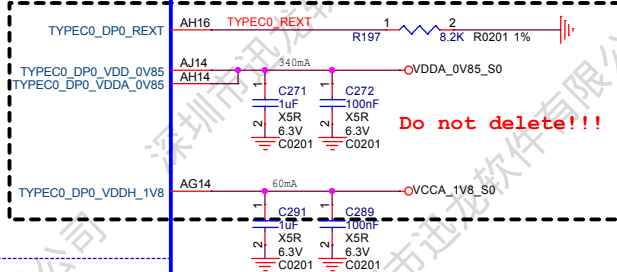
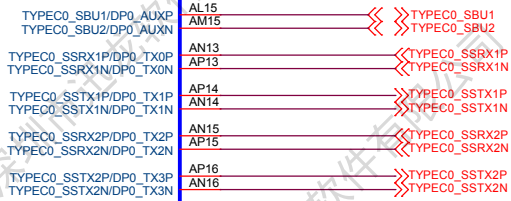
Xunlong Co., Limited			
Design Name			
OPI 5 PLUS			
Size A4	Page Name		Rev 1.0
	13.RK3588_Flash/SD Controller		
Date:	Friday, May 19, 2023	Sheet 13 of 41	

RK3588_M (TYPE-C/DP)

U4M

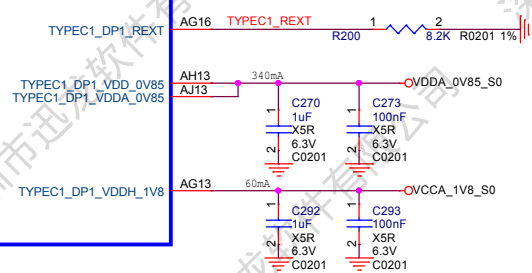
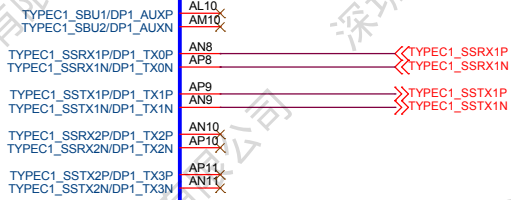
USB3.0 OTG/DP1.4 Alt of TYPEC0

USB:U3/Gen1----Controller0
DP:RBR/HBR/HBR2/HBR3



USB3.0 OTG/DP1.4 Alt of TYPEC1

USB:U3/Gen1----Controller1
DP:RBR/HBR/HBR2/HBR3



RK3588

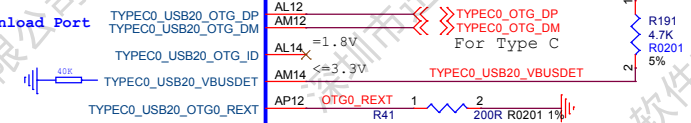
RK3588_L (USB2.0 HOST/OTG)

U4L

USB2.0 of TYPEC0 (OTG/HOST/DEVICE)

HS/FS/LS

Download Port



USB2.0 of TYPEC1 (OTG/HOST/DEVICE)

HS/FS/LS



USB2.0 HOST0

HS/FS/LS

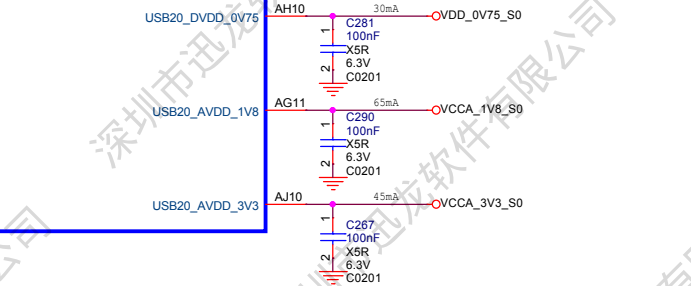


USB2.0 HOST1


HS/FS/LS



USB2.0 POWER

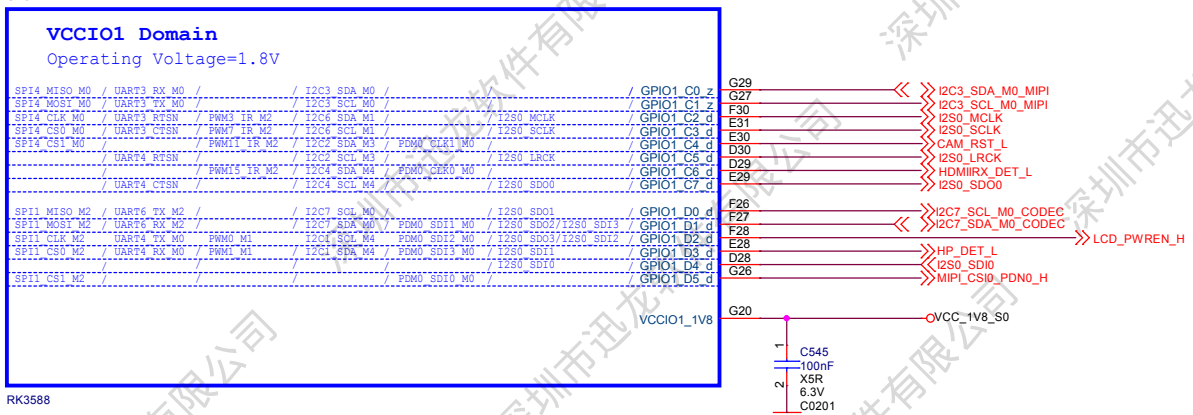


RK3588

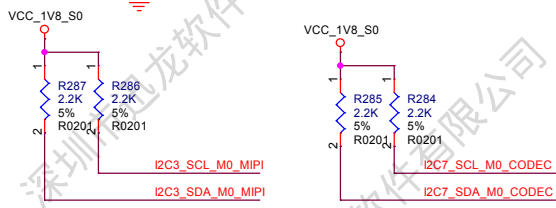
		
Xunlong Co., Limited		
Design Name		
OPI 5 PLUS		
Size	Page Name	Rev
A3	14.RK3588_USB30/USB20_Ctrl	1.0
Date:	Friday, May 19, 2023	Sheet 14 of 41

RK3588_G (VCCIO1 Domain)

U4G

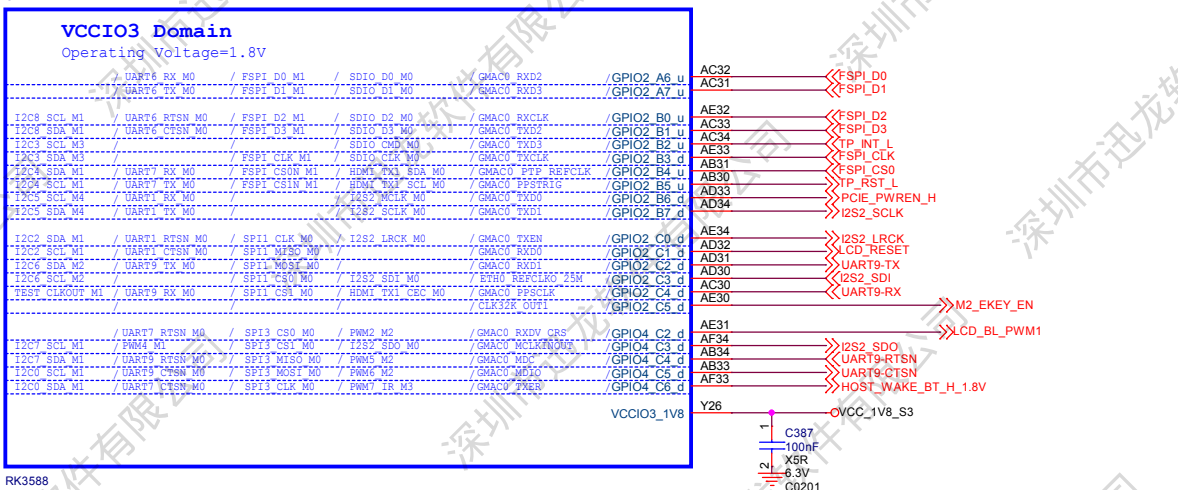


RK3588



RK3588_H (VCCIO3 Domain)

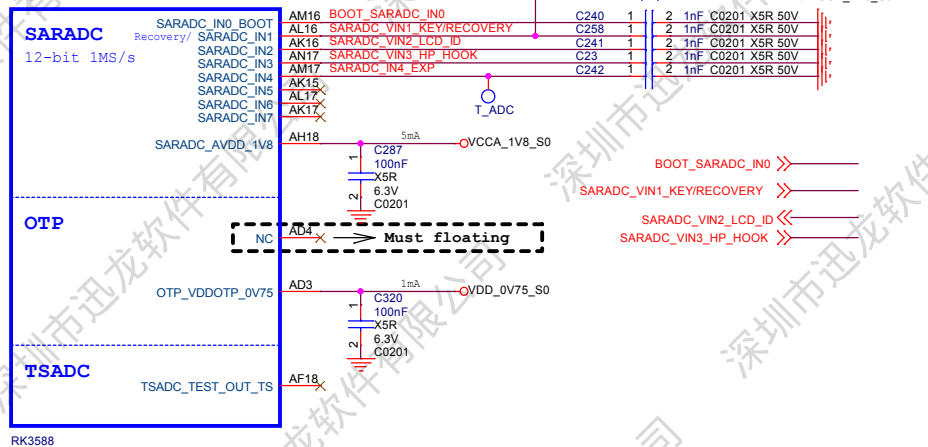
U4H



RK3588

RK3588_U (SARADC/OTP)

U4U

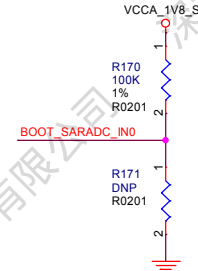


RK3588

BOOT MODE CONFIG

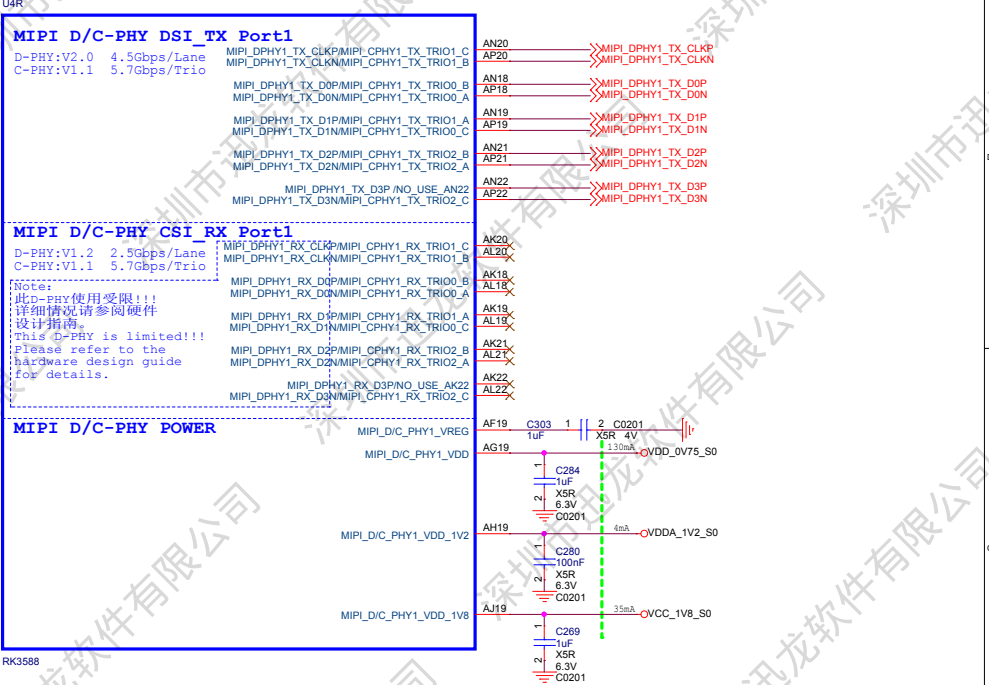
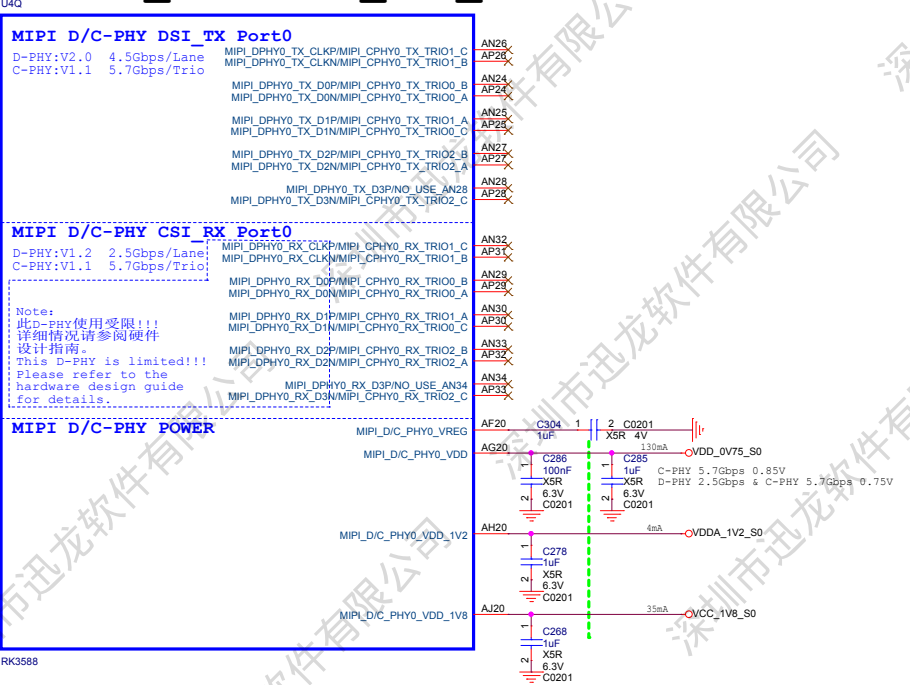
TABLE 1

Item	Rup	Rdown	ADC	VOL	BOOT MODE
LEVEL1	DNP	100K	0	0V	USB (Maskrom mode)
LEVEL2	100K	20K	682	0.3V	SD Card-USB
LEVEL3	100K	51K	1365	0.6V	EMMC-USB
LEVEL4	100K	100K	2047	0.9V	FSPI M0-USB
LEVEL5	100K	200K	2730	1.2V	FSPI M1-USB
LEVEL6	100K	499K	3412	1.5V	FSPI M2-USB
LEVEL7	100K	DNP	4095	1.8V	FSPI M2-FSPI M1-FSPI M0-EMMC-SD Card-USB

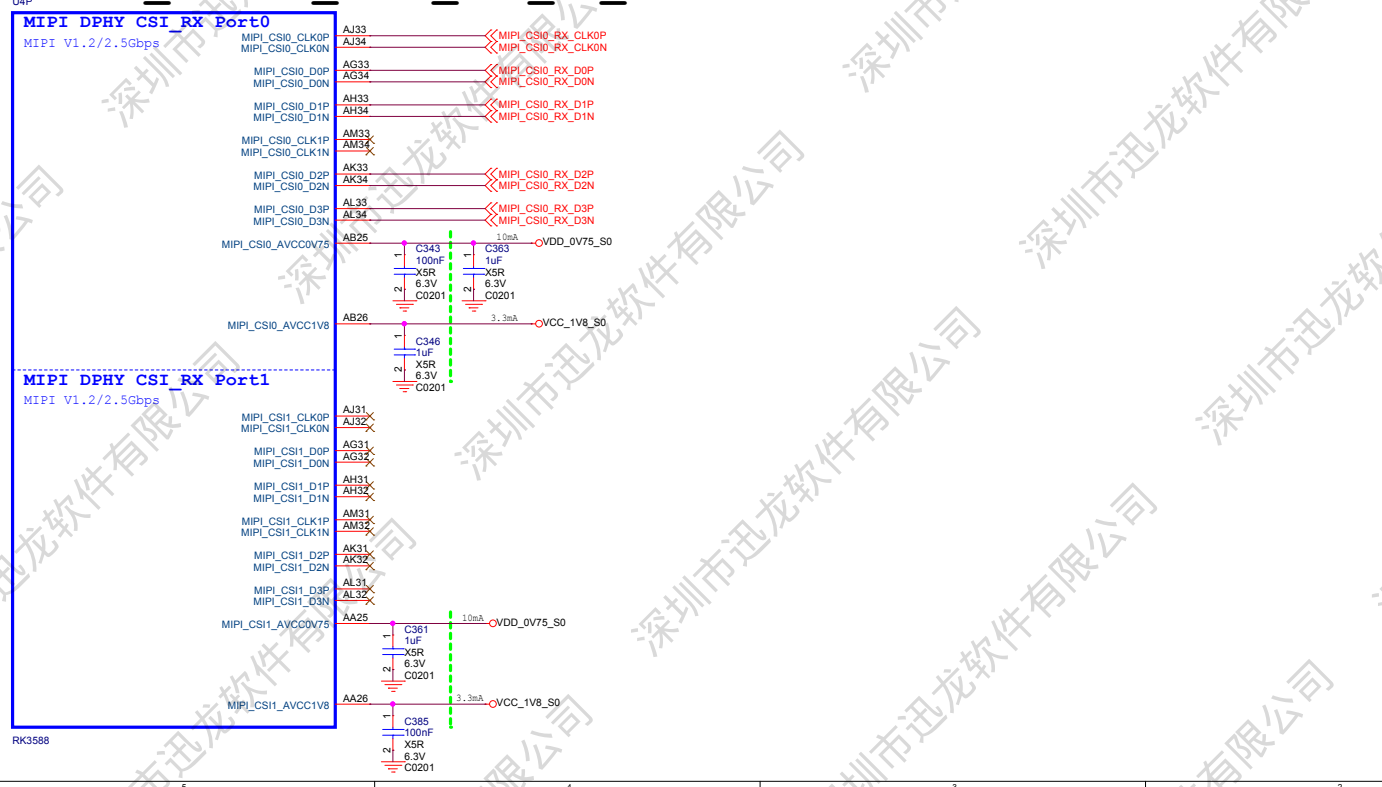



Xunlong Co., Limited
 Design Name: OPI 5 PLUS
 Size: A3, Page Name: 15.RK3588_SARADC/1.8V Only GPIO, Rev: [blank]
 Date: Friday, May 19, 2023, Sheet: 15 of 41

RK3588_Q/R (MIPI_D/C_PHY0/1)



RK3588_P (MIPI_DPHY_CSI_RX_PHY)

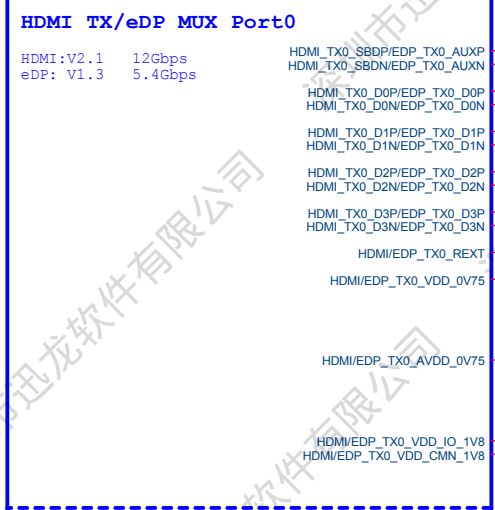


			
Xunlong Co., Limited			
Design Name			
OPI 5 PLUS			
Size	Page Name	Rev	
Custom	16.RK3588_MIPI Interface	1.0	
Date:	Friday, May 19, 2023	Sheet	16 of 41

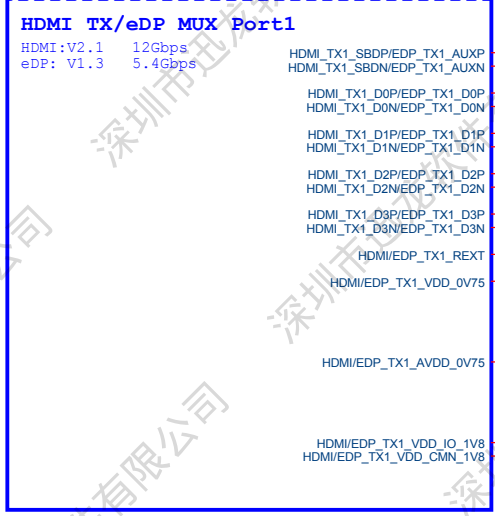
RK3588_S (HDMI2.1 TX)

Note:
 The HDMI2.1 trace length is less than 100mm.
 The HDMI2.1 differential trace impedance is 100 OHM.

U4S



HDMI2.1_TX
 100 Ohm +-10%



RK3588

Note:
 The Caps to the left of green line should be placed under the U1000 package, Other caps should be placed close to the U1000 package.

Note:
 If not used:
 Signal: leave floating
 Power: Floating or tie to VSS

RK3588_T (HDMI20 RX)

U4T



HDMI20_RX
 100 Ohm +-10%

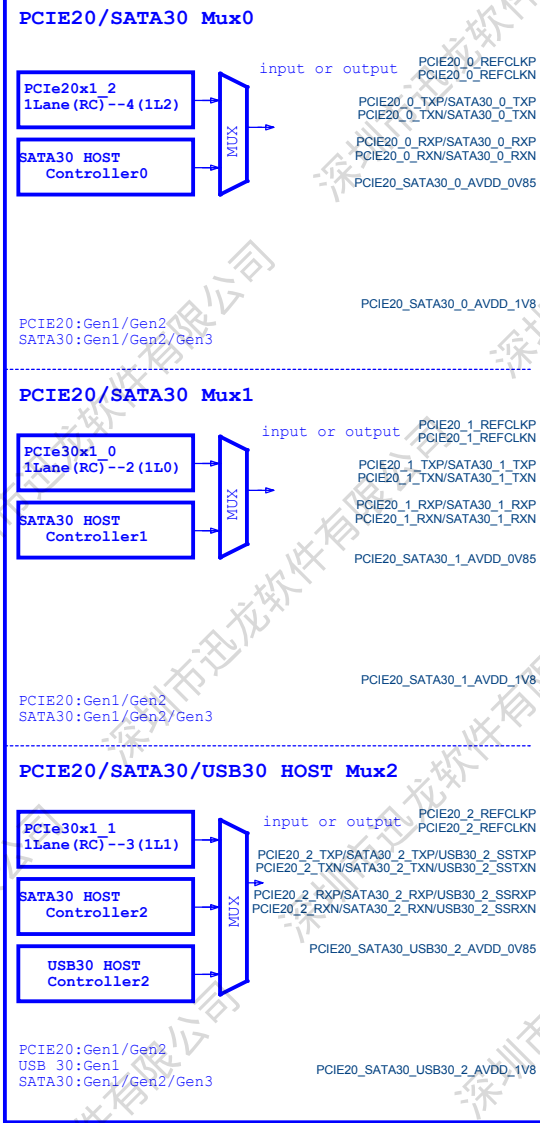
Note:
 If not used:
 Signal: leave floating
 Power: Floating

RK3588

Xunlong Co., Limited		
Design Name		
OPI 5 PLUS		
Size	Page Name	Rev
A3	17.RK3588_HDMI/eDP Interface	1.0
Date:	Friday, May 19, 2023	Sheet 17 of 41

RK3588_N (PCIE20)

U4N



Note:
If not used:
Signal:leave floating
Power: Floating

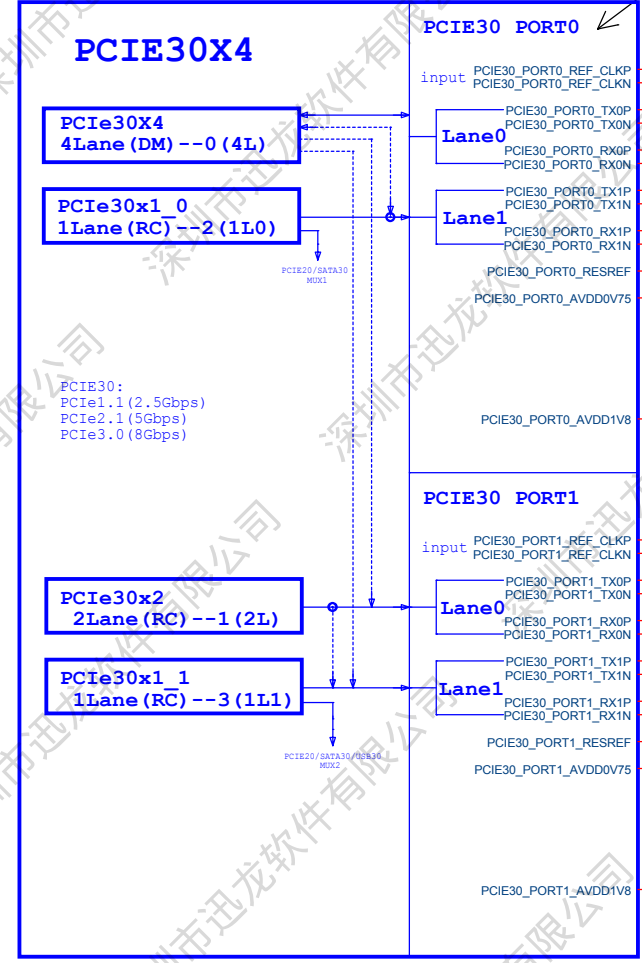
CLK Differential Pair:
100 Ohm±10%
DATA Differential Pair:
PCIE20: 85 Ohm±10%
SATA30: 100 Ohm±10%
USB30: 90ohm±10%

Note:
每个SATA PORT最多只能扩展5个SATA, 不支持二级扩展。
Each sata port can only expand 5 sata port at most, No support level-2 expand.

Note:
The SATA differential trace impedance is 100 OHM
The SATA trace length is less than 5 inch

RK3588_O (PCIE30)

U4O



Note:
Only PCIE3.0 Controller 0 support RC and EP, Other controller only support RC Mode.

CLK Differential Pair:
100 Ohm±10%
DATA Differential Pair:
PCIE30: 85 Ohm±10%

Note:
If Port0 and Port1 are not used,
Port0 and Port1 REF_CLKP/N: Leave floating or tie to VSS
Port0 and Port1 Other Signal: Leave floating
Port0 and Port1 Power: Leave floating or tie to VSS

If Port0 is used, Port1 is not used,
Port1 REF_CLKP/N: Leave floating or tie to VSS
Port1 Other Signal: Leave floating
Port1 Power: Must supply power

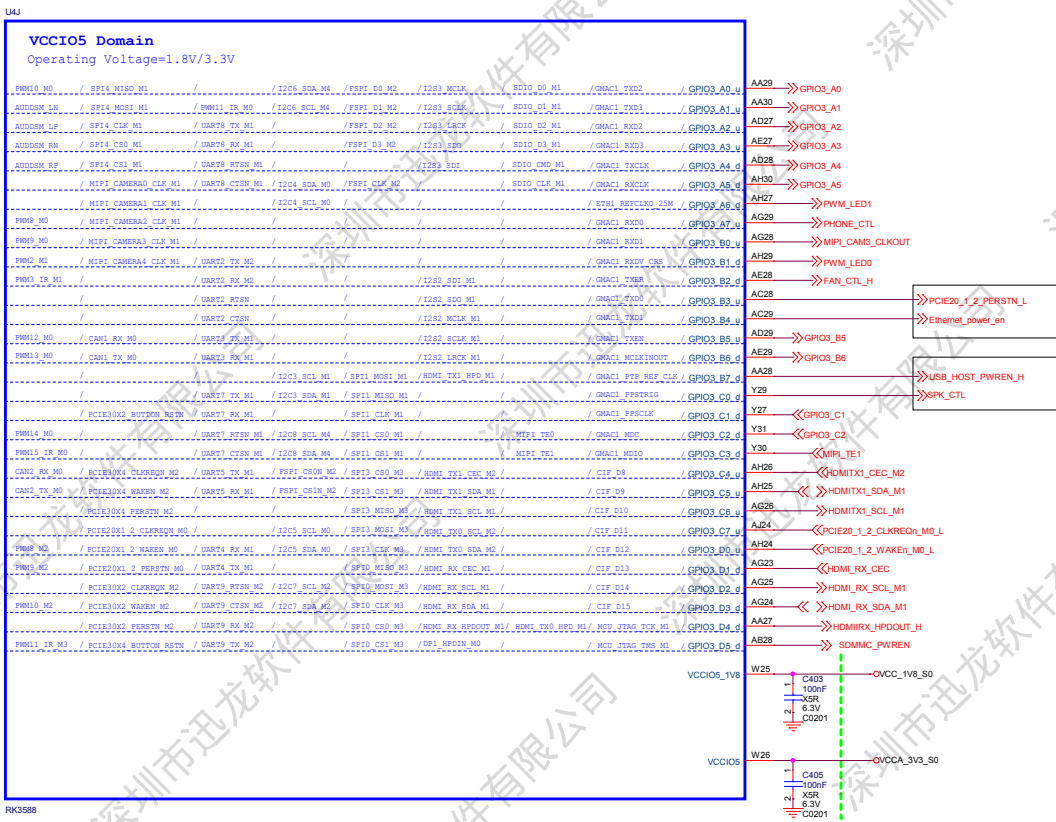
If Port1 is used, Port0 is not used,
Port0 REF_CLKP/N: Leave floating or tie to VSS
Port0 Other Signal: Leave floating
Port0 Power: Must supply power

PCIE30x4 Controller:
Wake/cikreq/perstn Optional:
Option0: Pin V31/T29/W31
Option1: Pin AJ26/AL26/AJ27
Option2: Pin AH25/AH26/AG26
Option3: Pin D25/C27/D26



Xunlong Co., Limited		
Design Name		
OPI 5 PLUS		
Size	Page Name	Rev
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Date:	Friday, May 19, 2023	Sheet 18 of 41

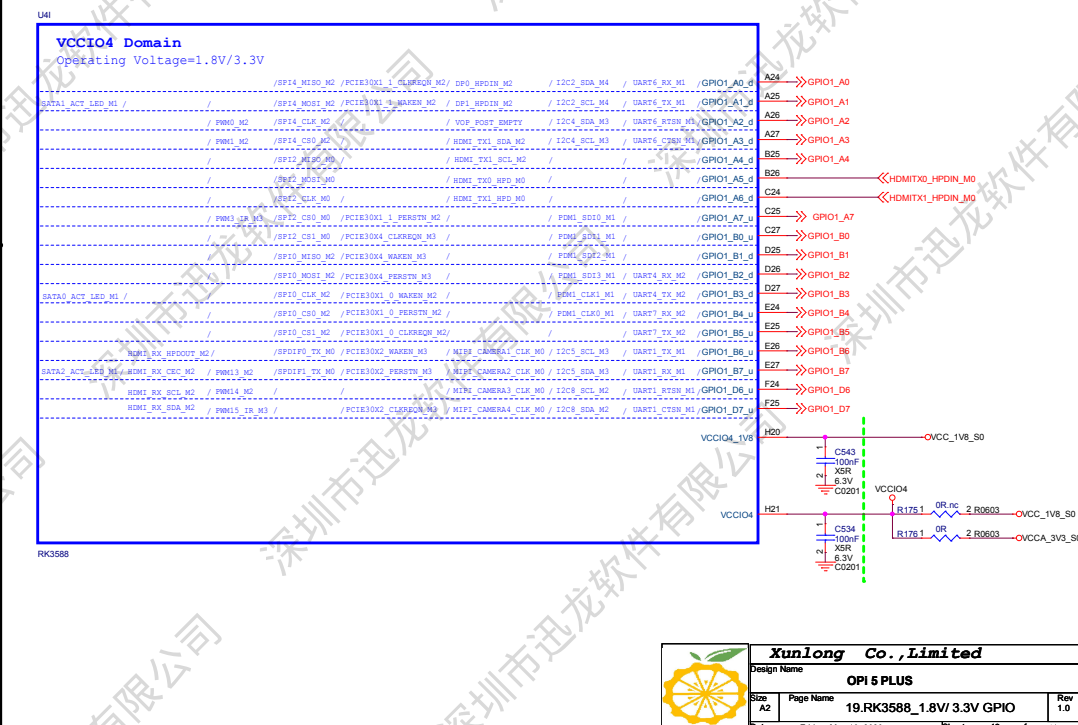
RK3588_J (VCCIO5 Domain)

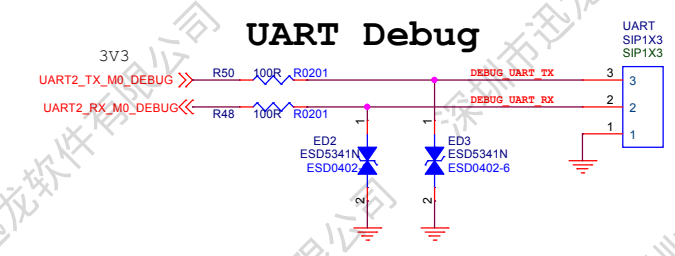
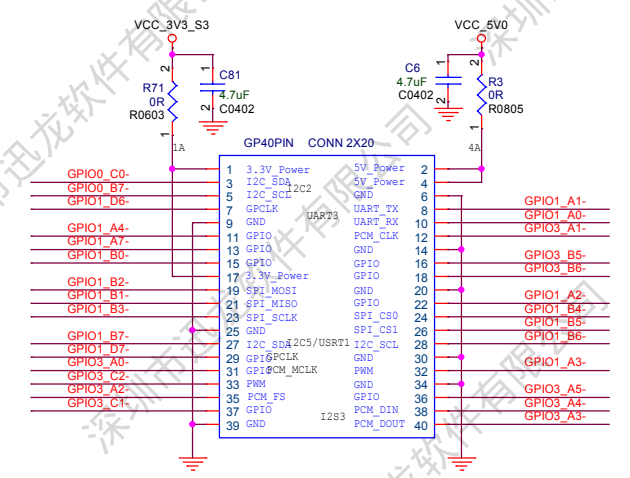
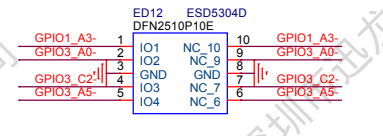
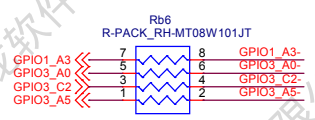
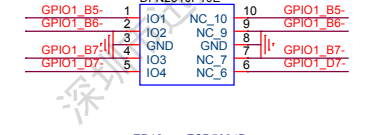
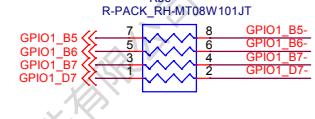
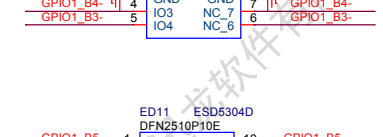
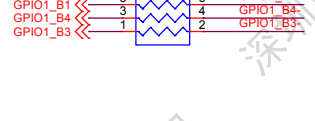
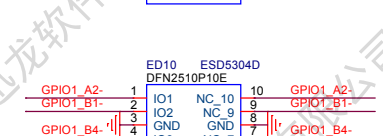
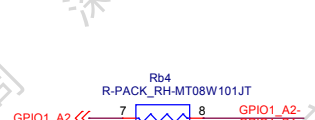
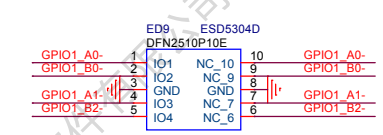
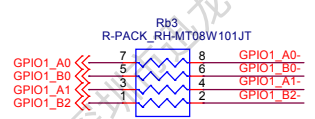
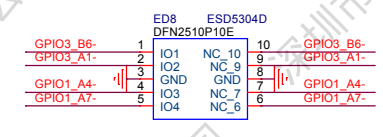
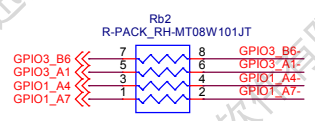
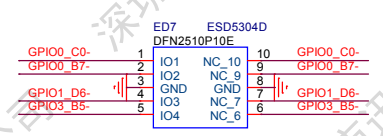
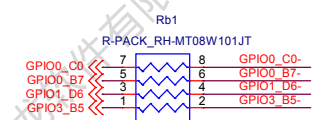


RK3588_K (VCCIO6 Domain)



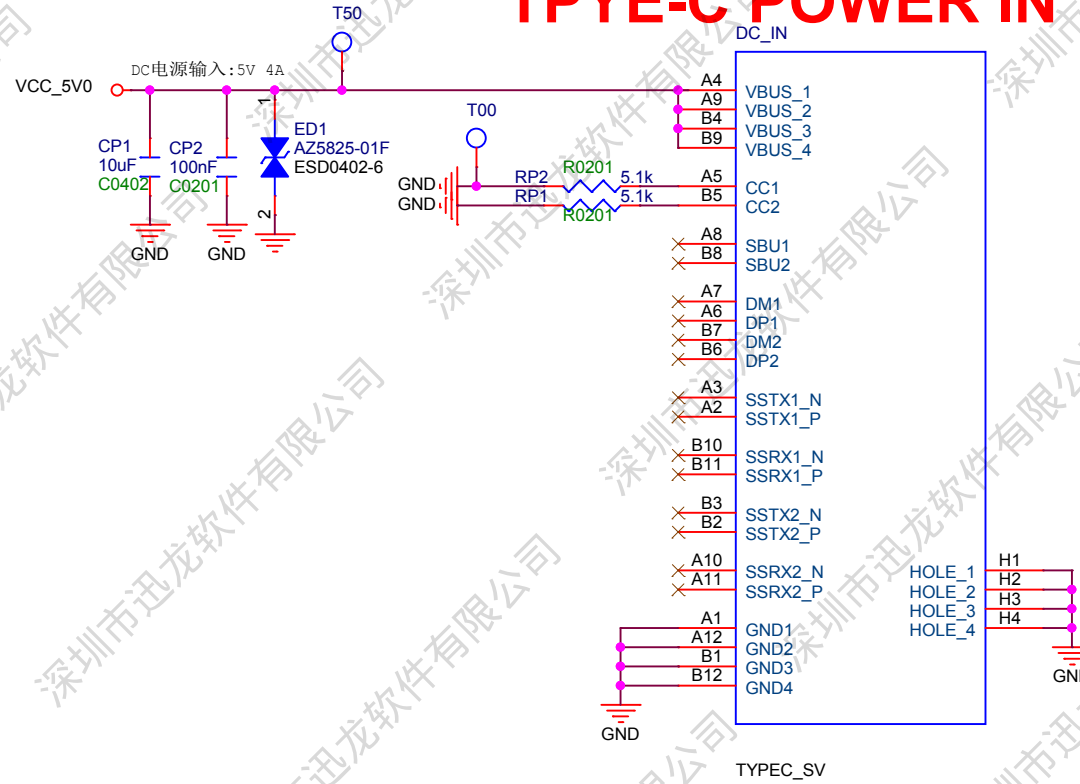
RK3588_I (VCCIO4 Domain)





DCIN-5V/4A

TPYE-C POWER IN



Xunlong Co., Limited

Design Name

OPI 5 PLUS

Size
A4

Page Name

21.Power_IN TYPE_C DC5_4A

Rev
1.0

Date:

Friday, May 19, 2023

Sheet

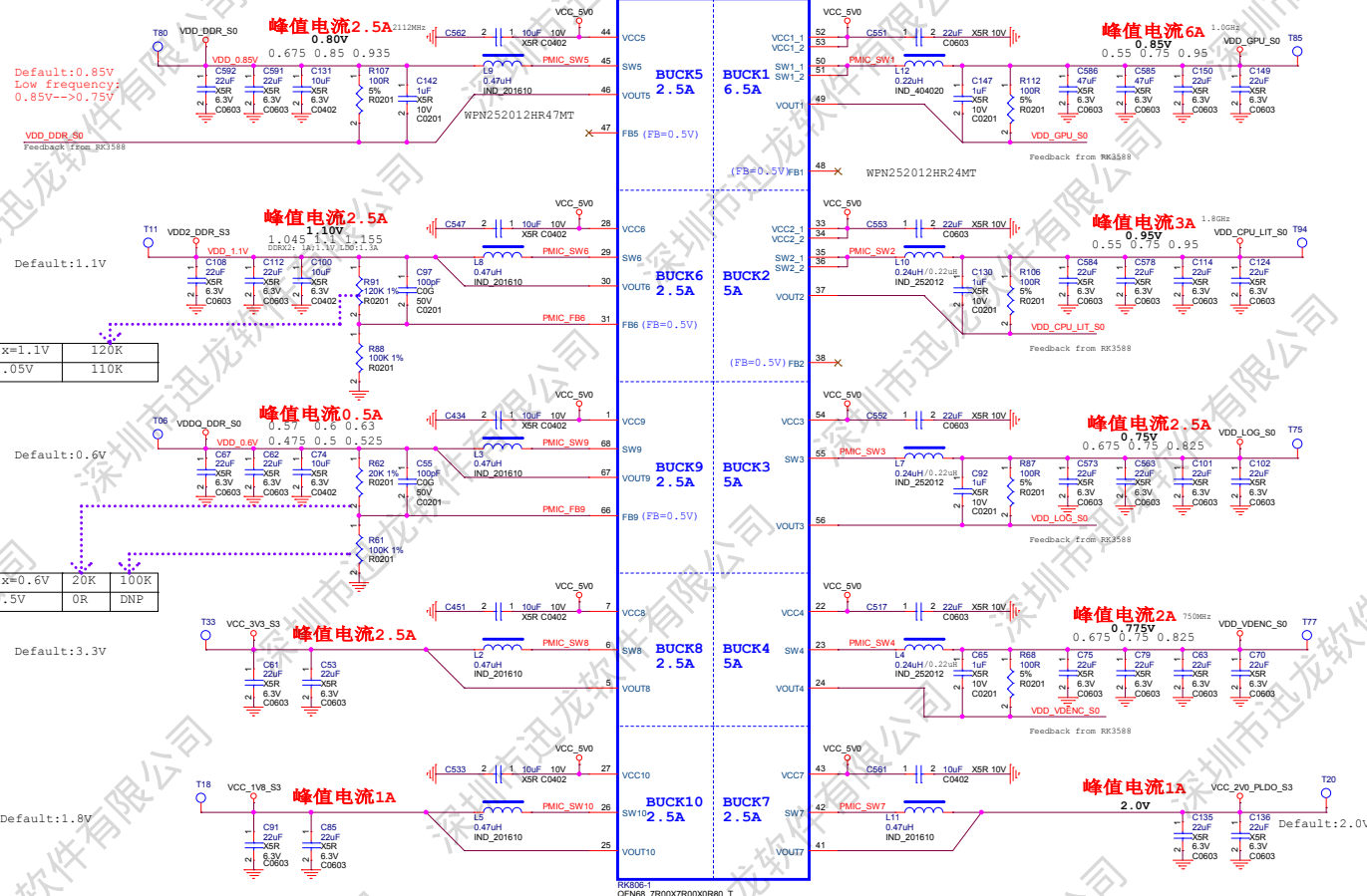
21

of

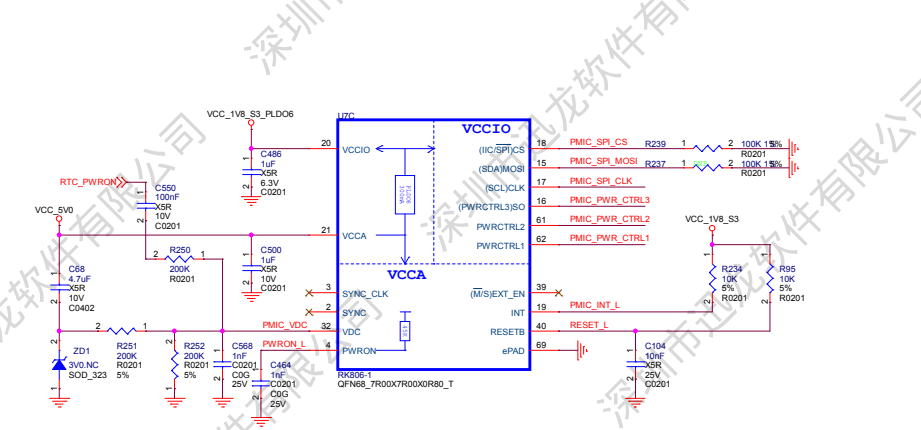
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PMIC RK806-1 BUCK

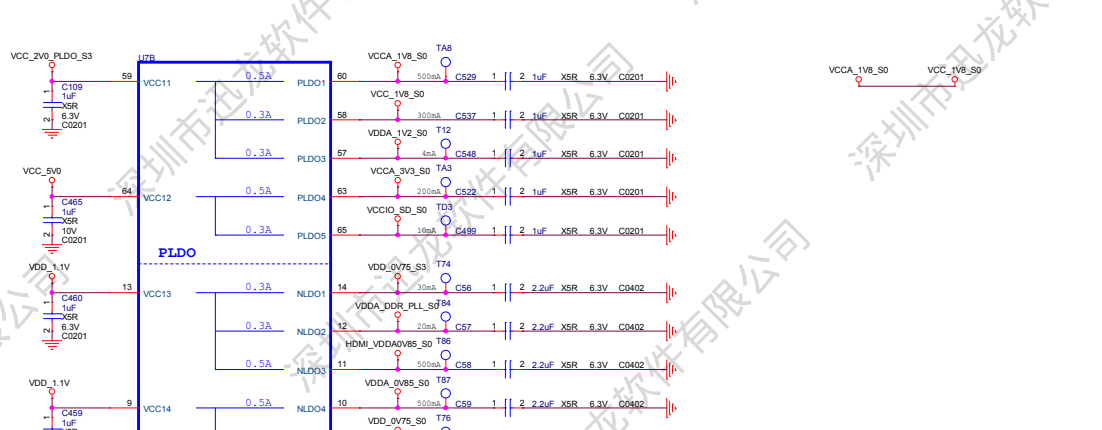
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- PMIC_SPL_MOSI
- PMIC_SPL_CLK
- PMIC_PWR_CTRL1
- PMIC_PWR_CTRL2
- PMIC_PWR_CTRL3
- PMIC_INT_L
- RESET_L
- PWRON_L



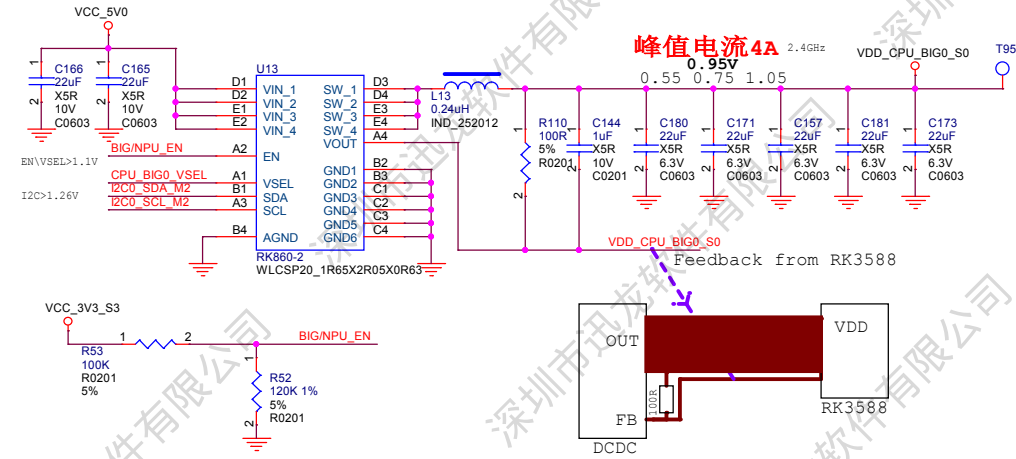
PMIC RK806-1 Management



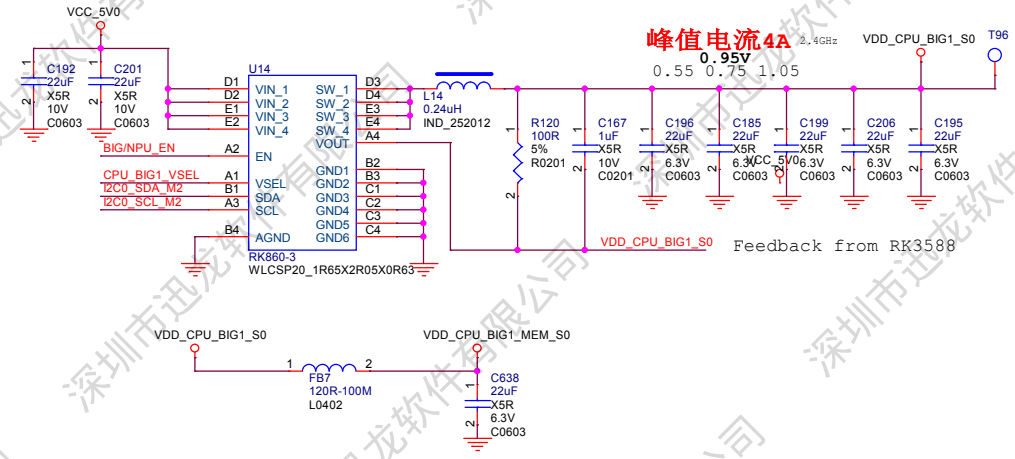
PMIC RK806-1 LDO



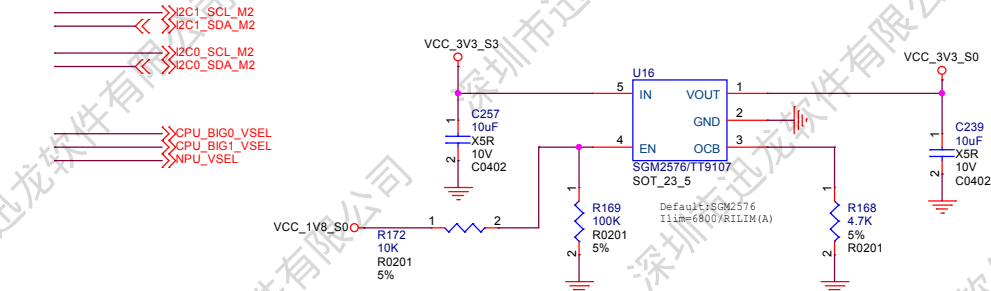
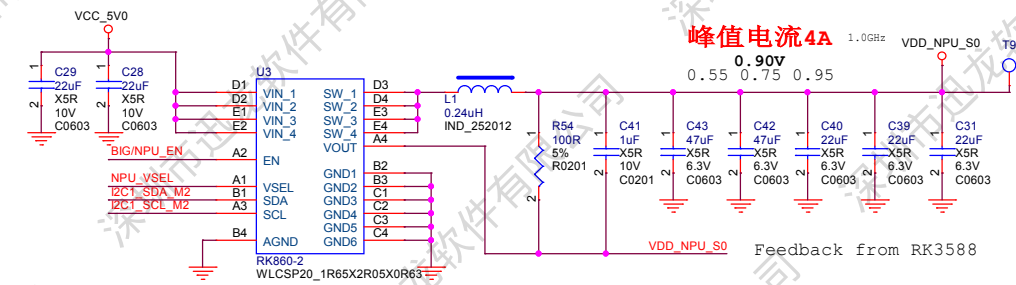
VDD_CPU_BIG0



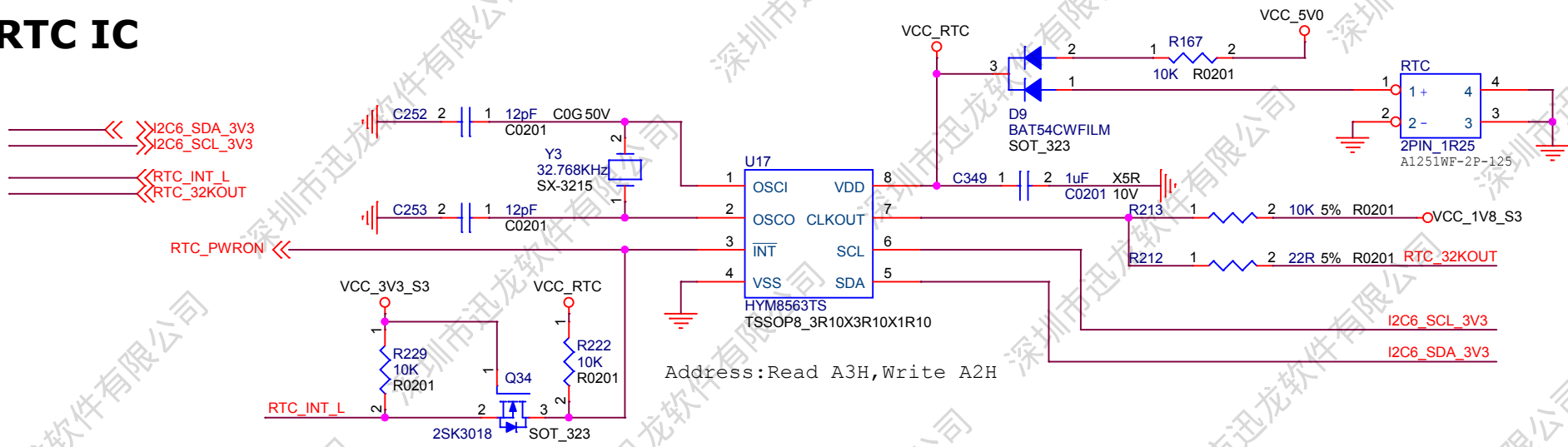
VDD_CPU_BIG1



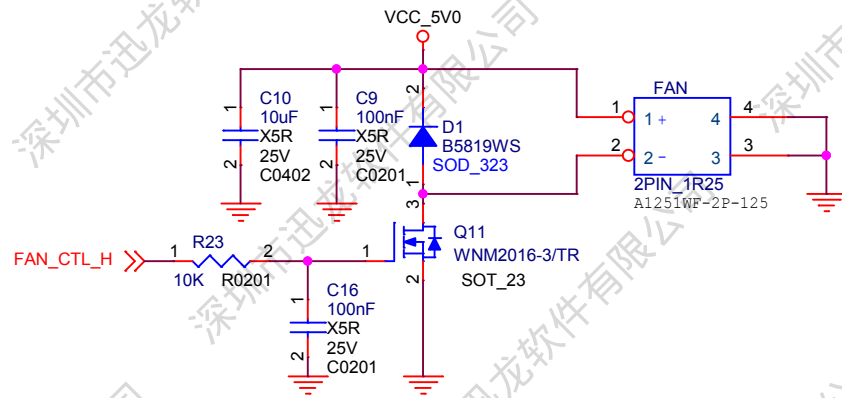
VDD_NPU



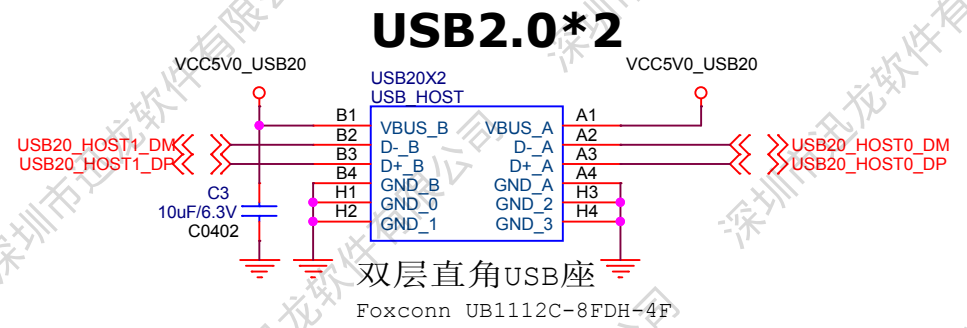
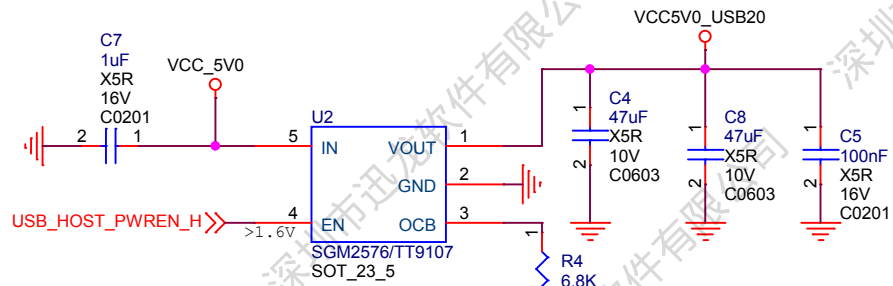
RTC IC



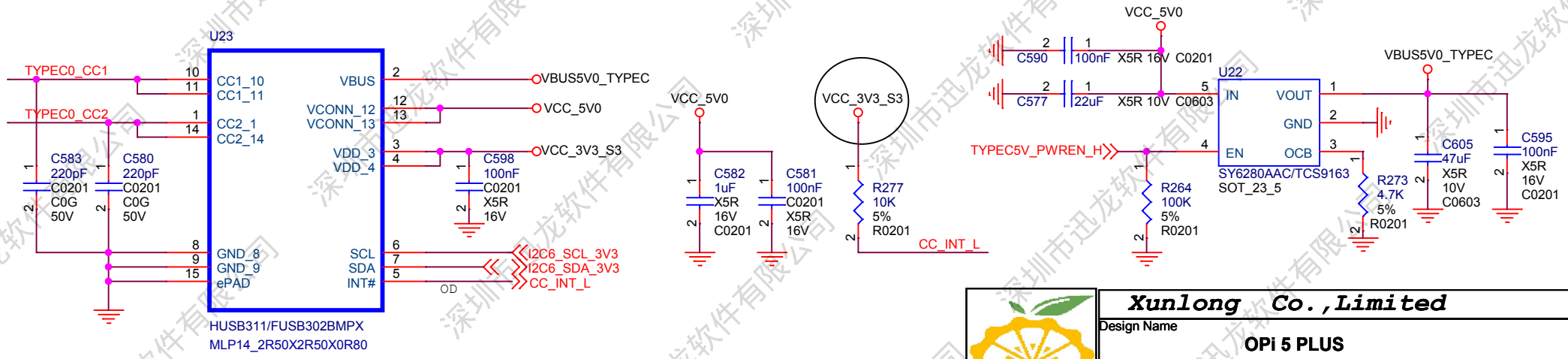
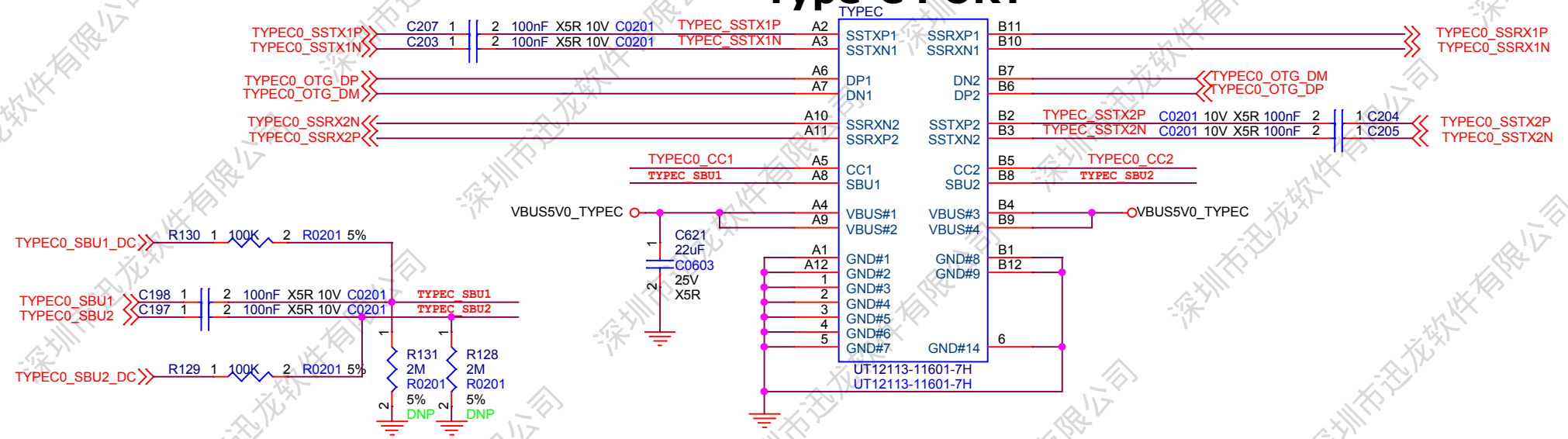
FAN_POWER



Xunlong Co., Limited			
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OPI 5 PLUS			
Size	Page Name		Rev
A4	24.RTC/FAN		1.0
Date:	Friday, May 19, 2023	Sheet	24 of 41



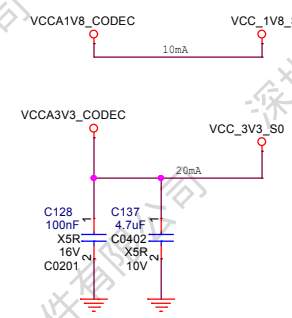
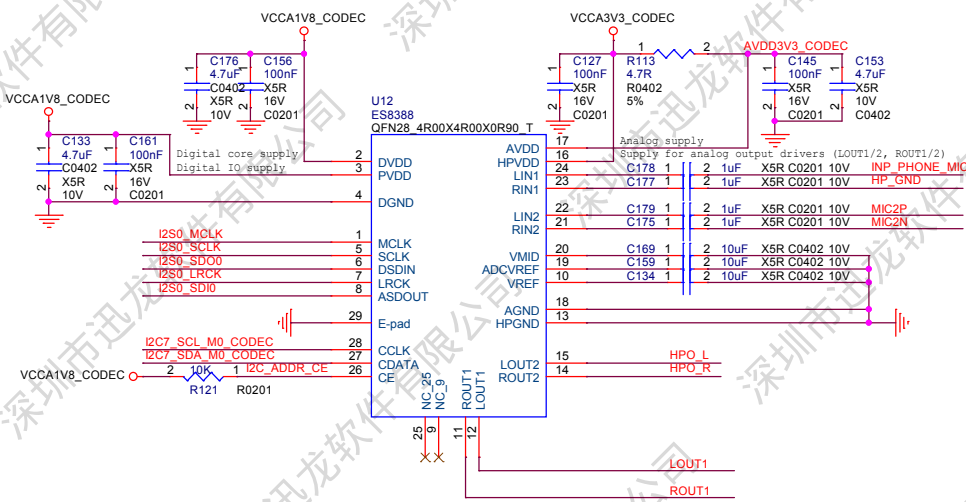
Type-C PORT



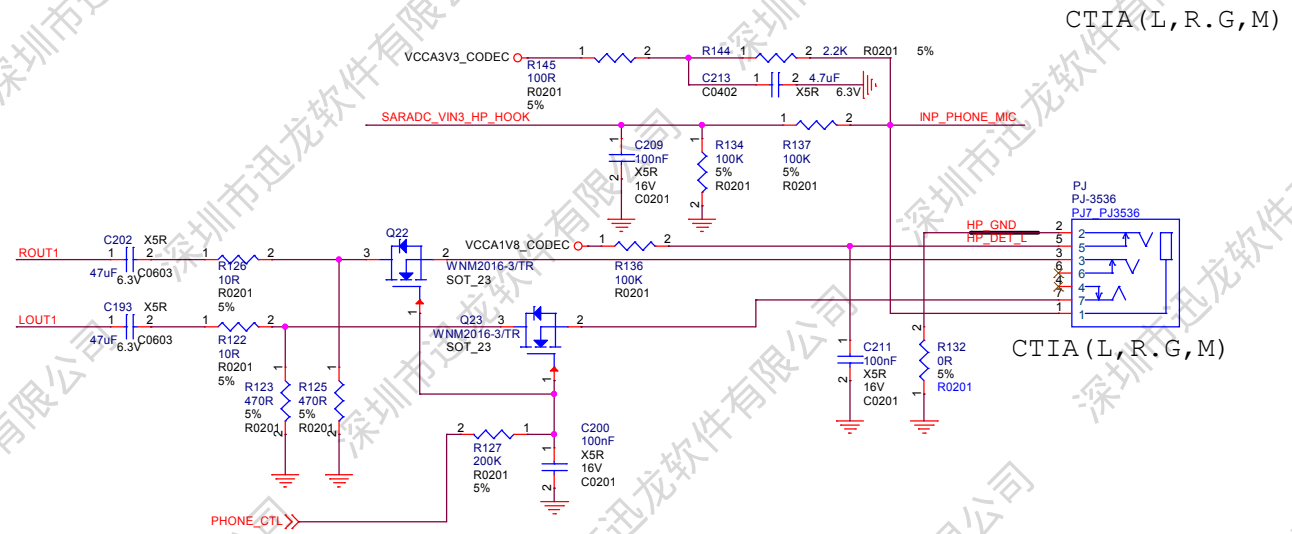
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Size	Page Name	Rev
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Date:	Friday, May 19, 2023	Sheet 26 of 41

CODEC ES8388

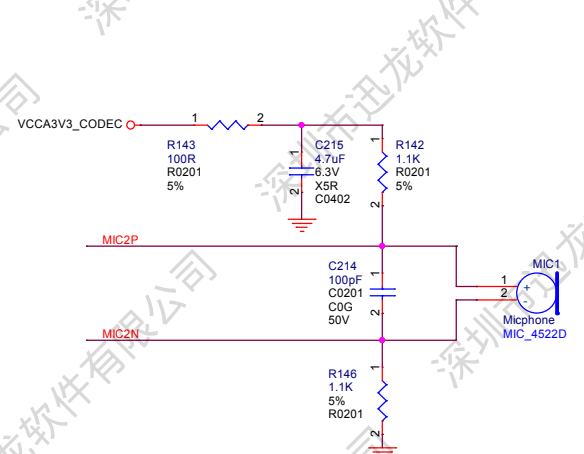
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- ≡≡ I2C7_SCL_M0_CODEC
- ≡≡ I2S0_MCLK
- ≡≡ I2S0_SCLK
- ≡≡ I2S0_LRCK
- ≡≡ I2S0_SDIO
- ≡≡ HPO_R
- ≡≡ HPO_L
- ≡≡ SARADC_VIN3_HP_HOOK
- ≡≡ HP_DET_L
- ≡≡ PHONE_CTL




EARPHONE

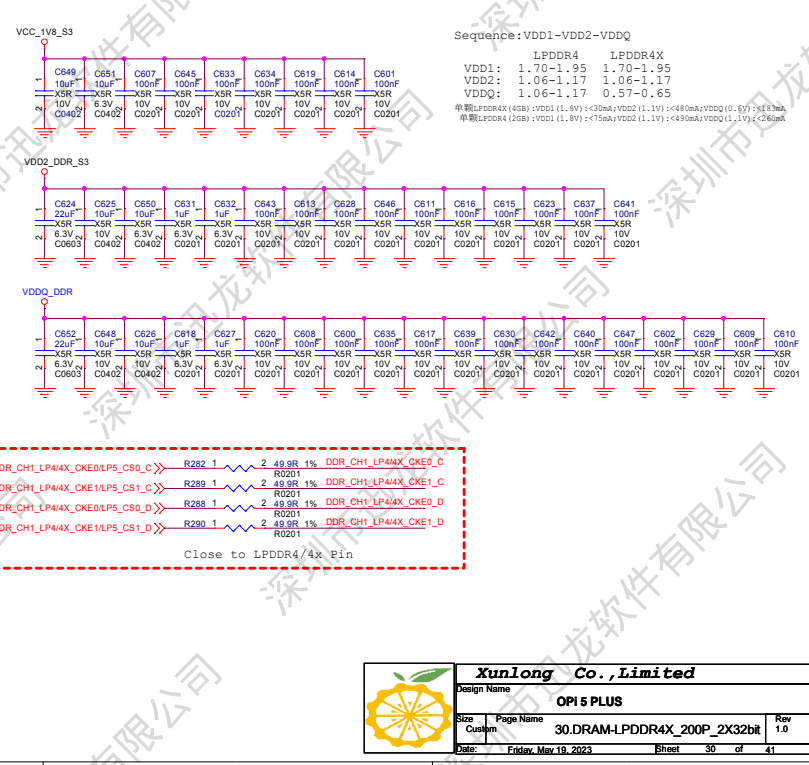
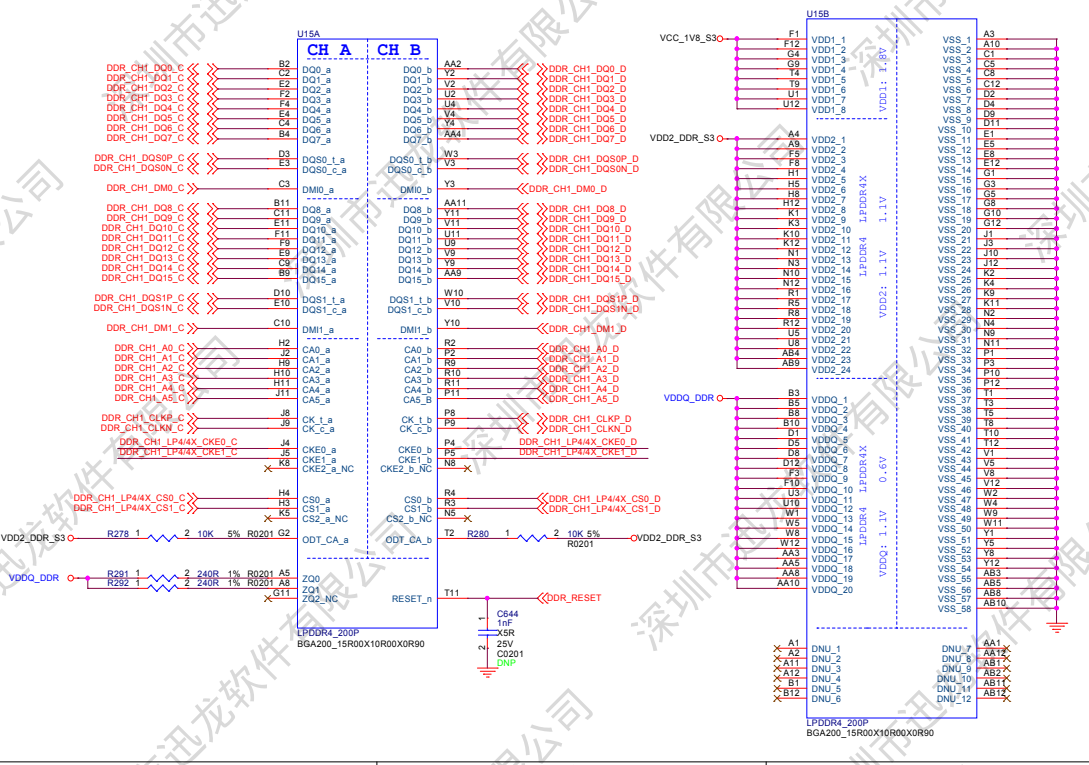
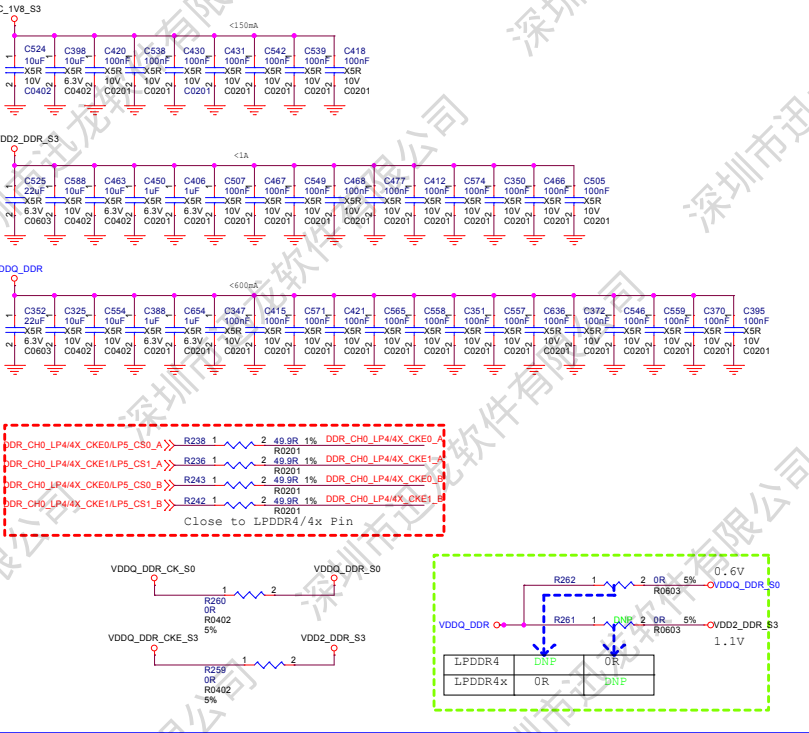
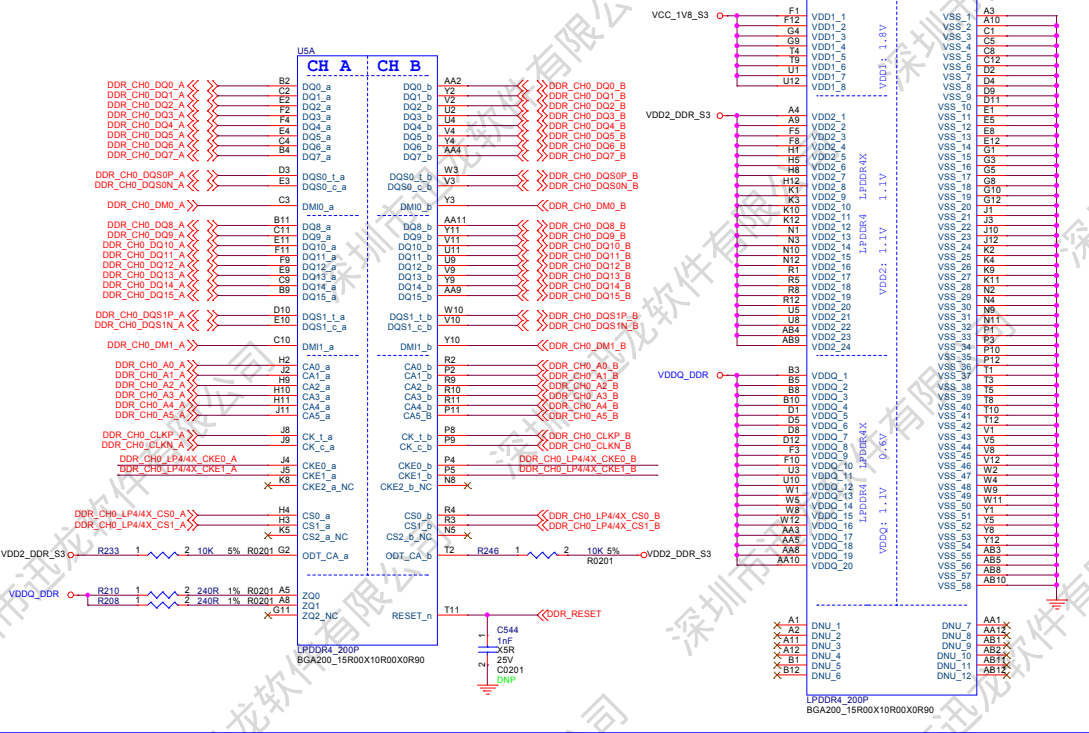


Analog MIC



		Xunlong Co., Limited	
		Design Name OPI 5 PLUS	
Size A3	Page Name 28.Audio Codec-ALC5651	Rev 1.0	
Date: Friday, May 19, 2023	Sheet 29	of 41	

LPDDR4/4X



Xunlong Co., Limited

Design Name: OPI 5 PLUS

Size: Custom

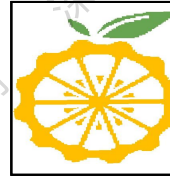
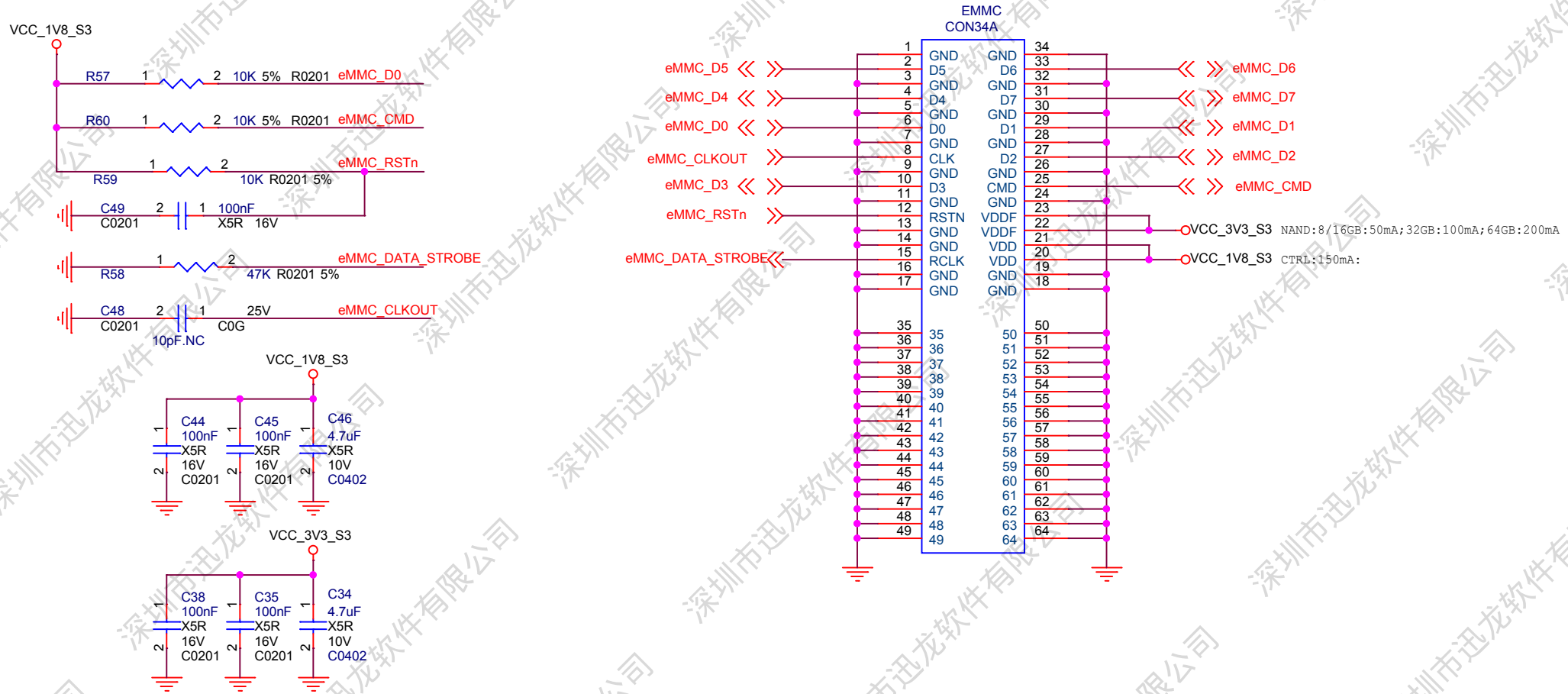
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Date: Friday, May 19, 2023

Sheet: 30 of 41

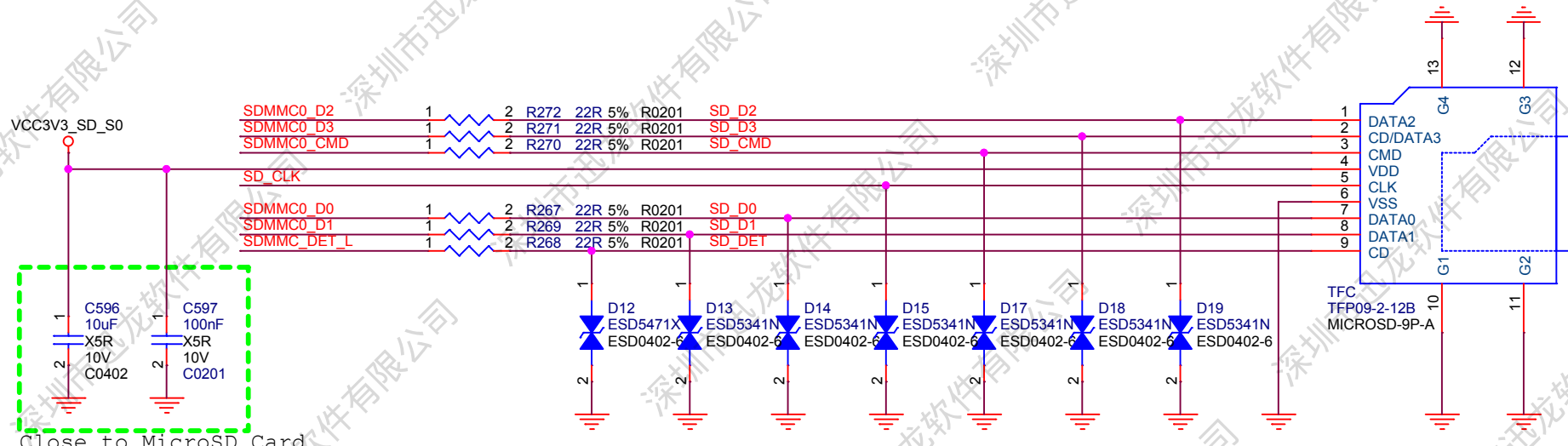
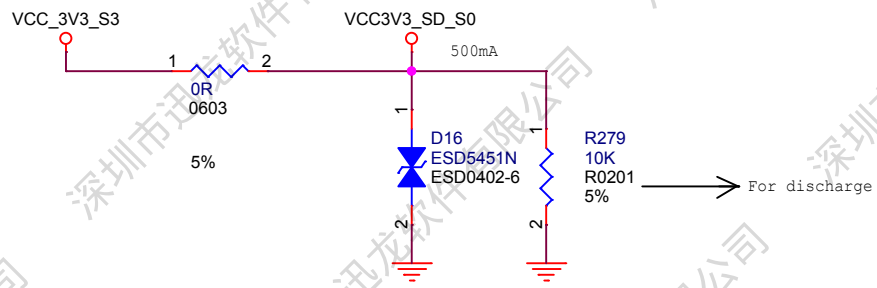
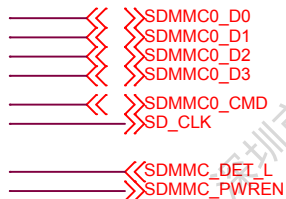
Rev: 1.0

eMMC FLASH



Xunlong Co., Limited		
Design Name		
OPI 5 PLUS		
Size	Page Name	Rev
A4	31.Flash-eMMC Flash	1.0
Date:	Friday, May 19, 2023	Sheet 31 of 41

TF CARD

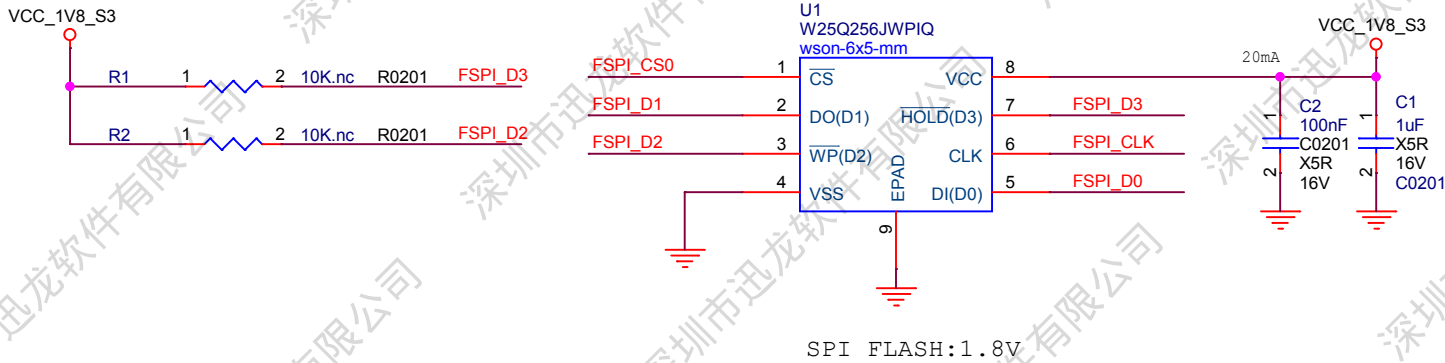


Rockchip Confidential



Xunlong Co., Limited			
Design Name			
OPI 5 PLUS			
Size A4	Page Name 32.Flash-TF Card	Rev 1.0	
Date: Friday, May 19, 2023	Sheet 32	of 41	

SPI NOR OR NAND Flash

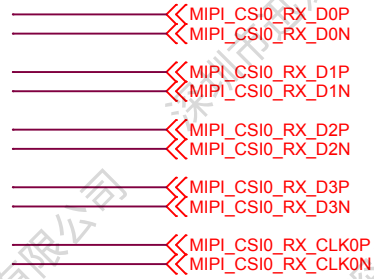


SPI FLASH:1.8V



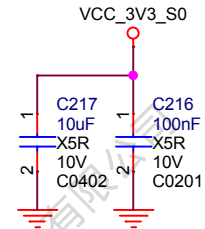
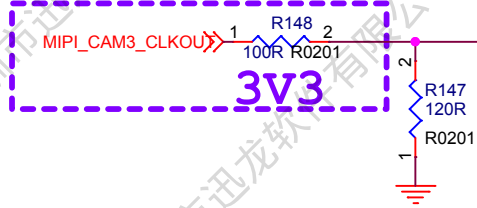
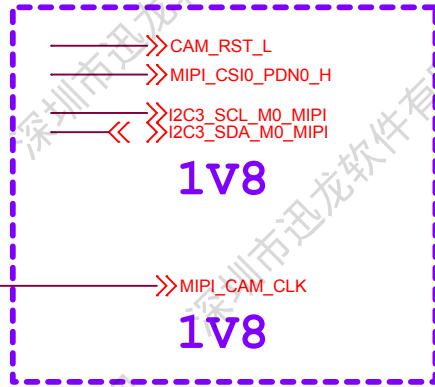
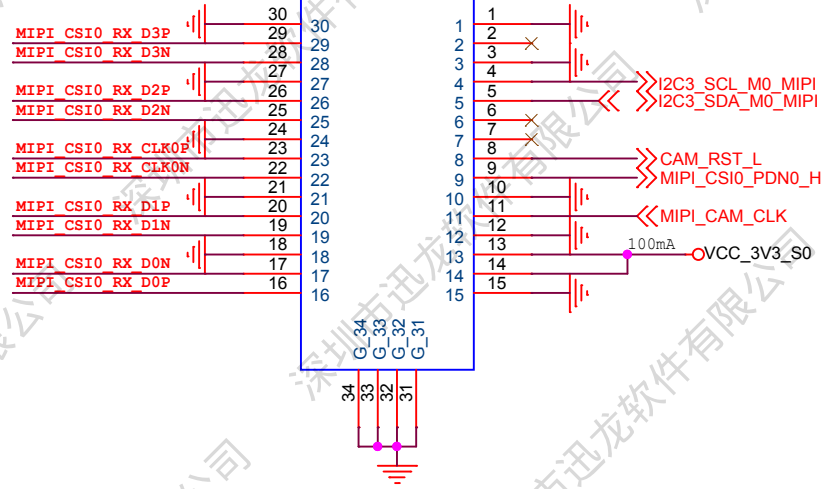
Xunlong Co., Limited		
Design Name		
OPI 5 PLUS		
Size	Page Name	Rev
A4	33.Flash-SPI FLASH	1.0
Date:	Friday, May 19, 2023	Sheet 33 of 41

MIPI-CSIO_RX



CAM

OK-10F030-04
CON_SMD_OK-10F030-04



Xunlong Co., Limited

Design Name

OPI 5 PLUS

Size
A4

Page Name

34.VI-Camera_MIPI_CSI-RX

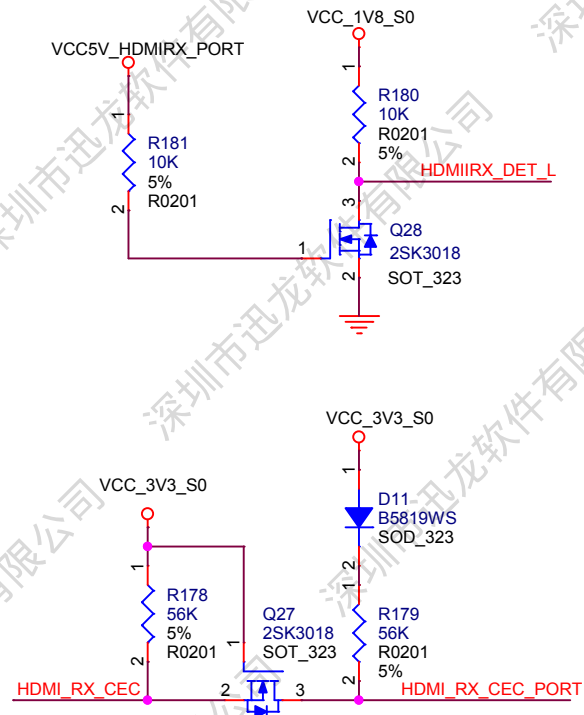
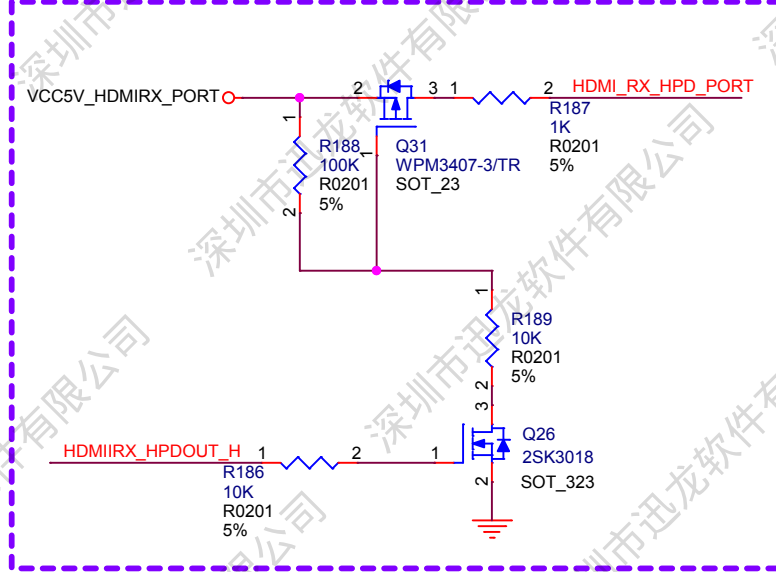
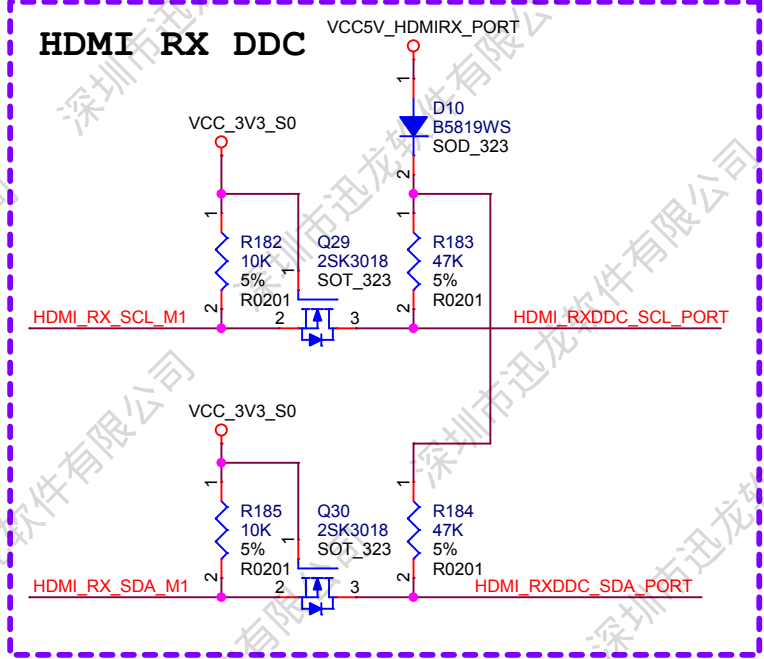
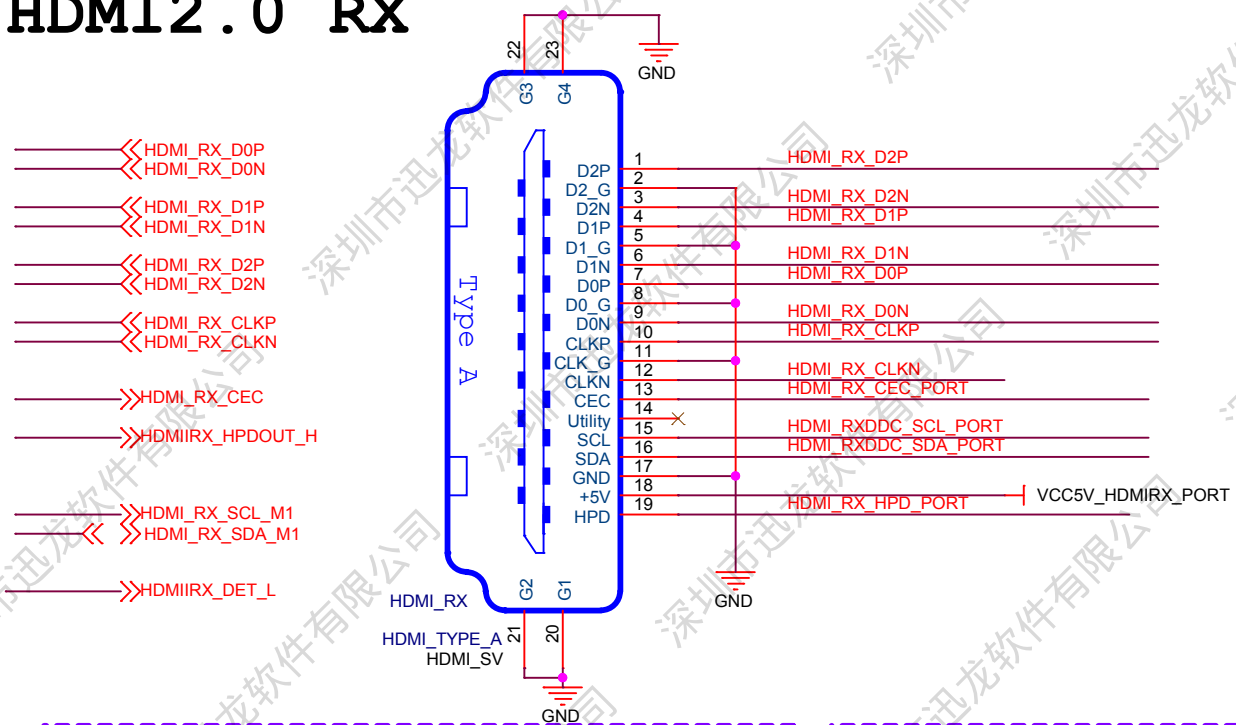
Rev
1.0

Date: Friday, May 19, 2023

Sheet 34 of 41

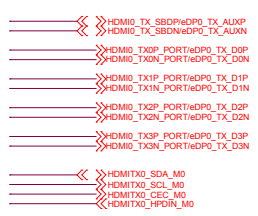
HDMI2.0 RX

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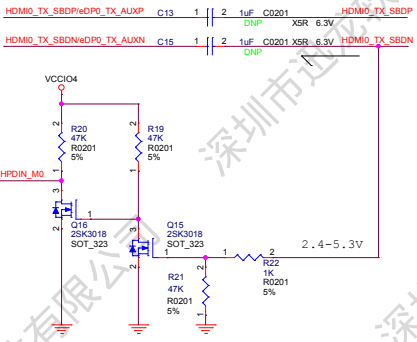


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Design Name			
OPI 5 PLUS			
Size	Page Name	Rev	
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Date:	Friday, May 19, 2023	Sheet	35 of 41

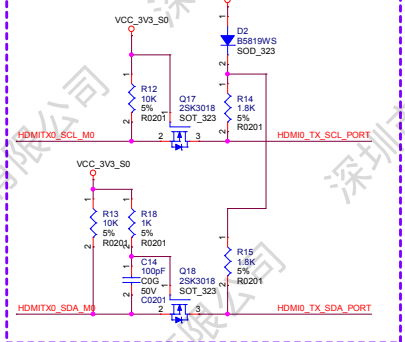
HDMI TX0



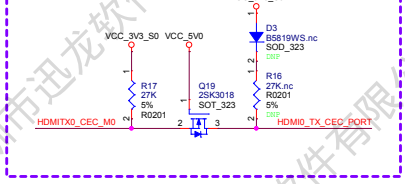
HDMI TX eARC



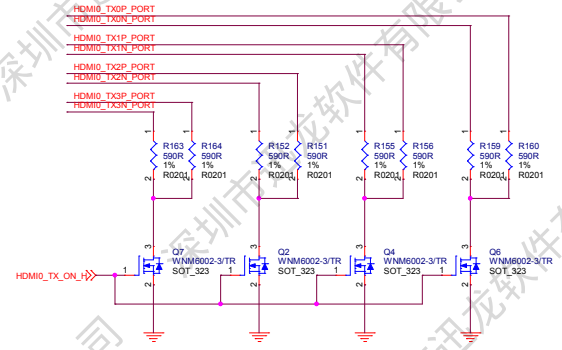
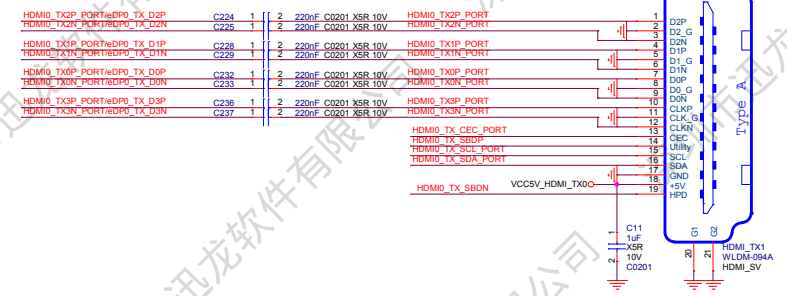
HDMI TX DDC



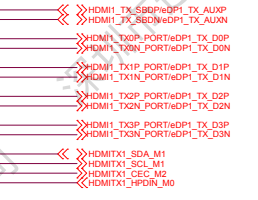
HDMI TX CEC



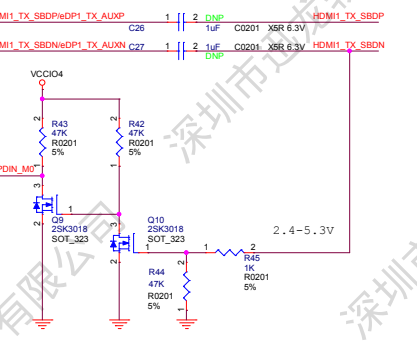
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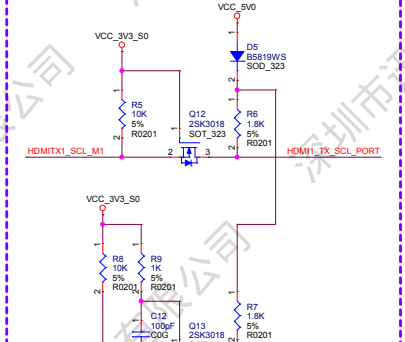
HDMI TX1



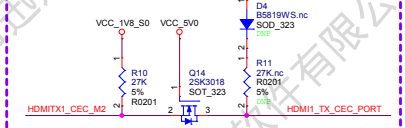
HDMI TX eARC



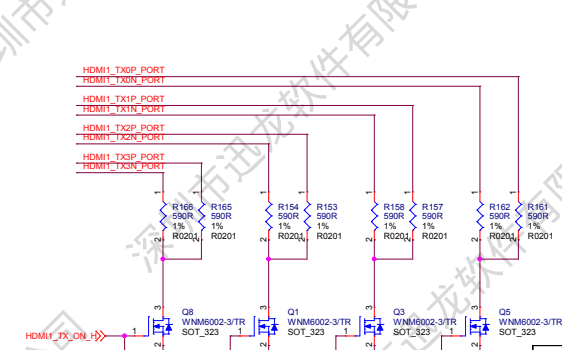
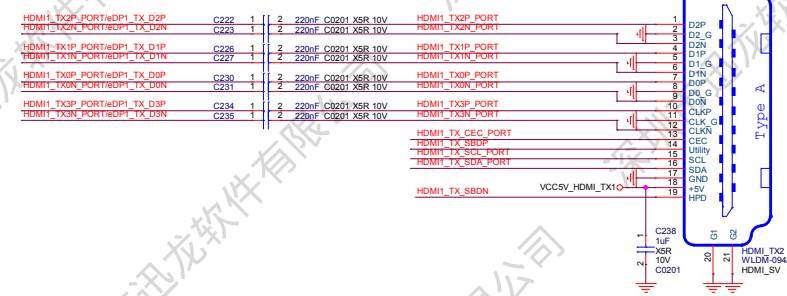
HDMI TX DDC



HDMI TX CEC

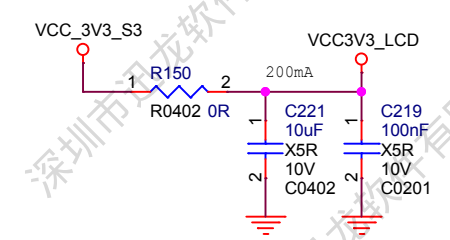
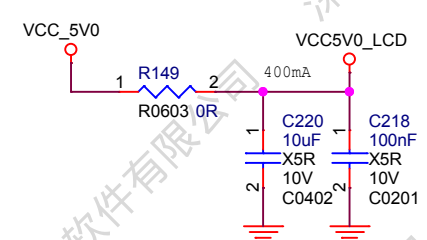
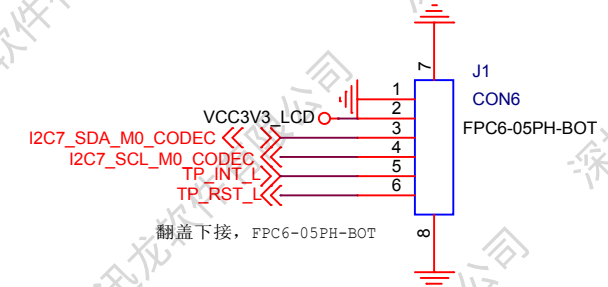
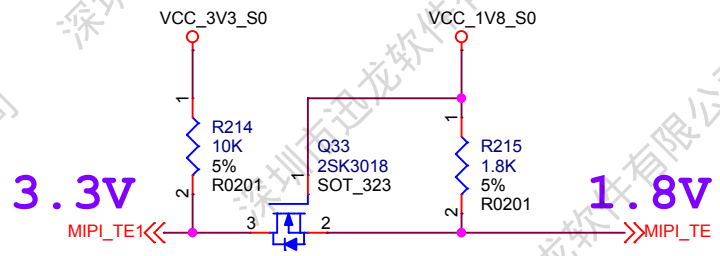
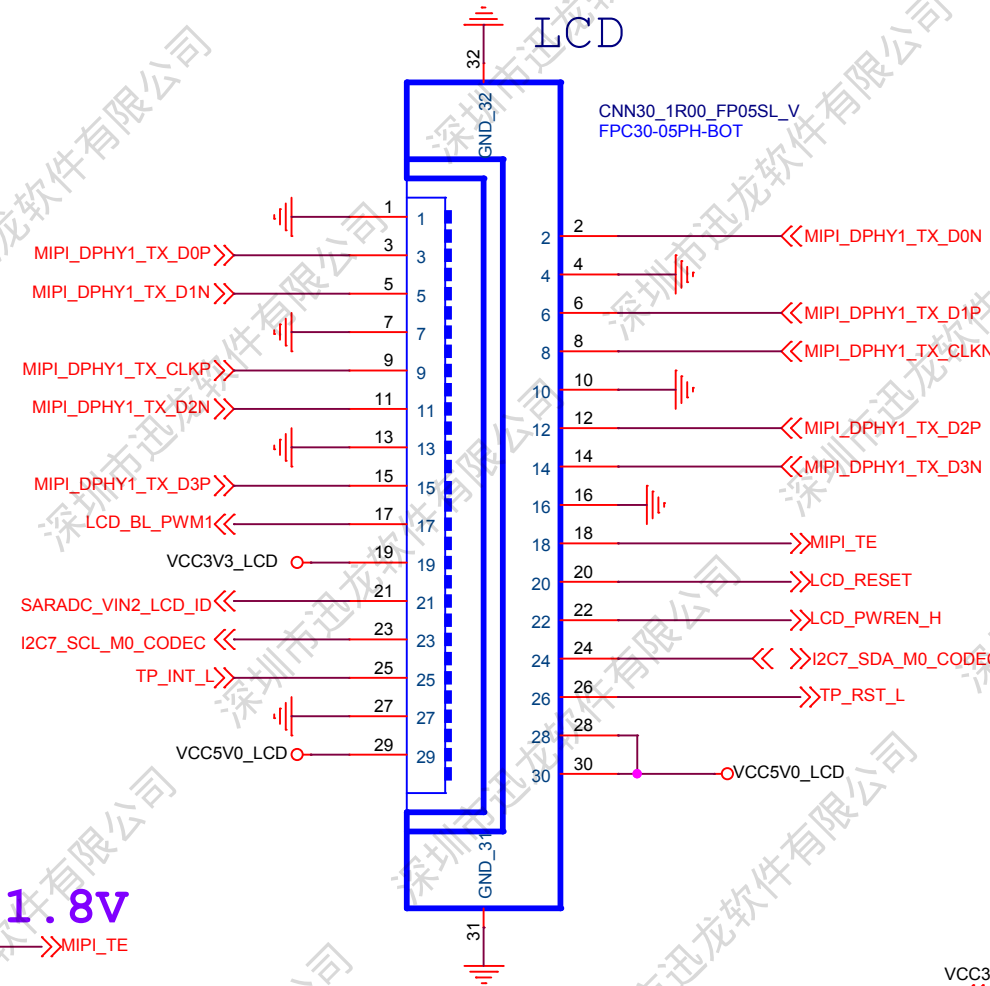
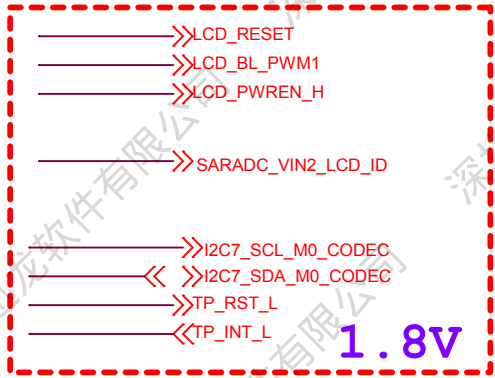


Cj <= 0.2pF



MIPI DPHY1 TX

MIPI DPHY1 TX



Xunlong Co., Limited

Design Name: **Opi 5 PLUS**

Size: A4	Page Name: 37.VO-LCM_MIPI	Rev: 1.0
Date: Friday, May 19, 2023	Sheet: 37 of 41	

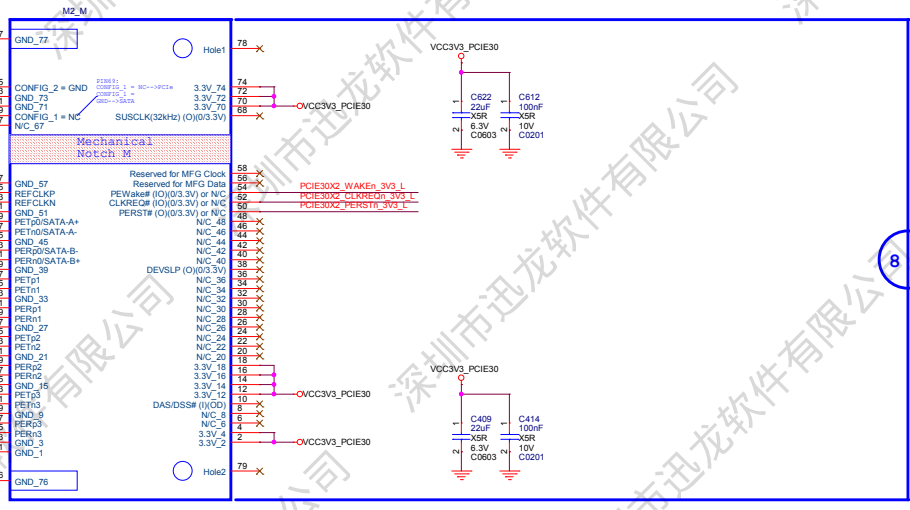
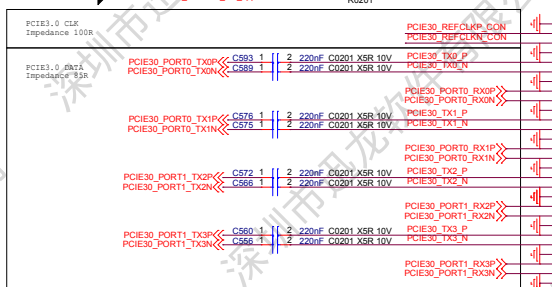
M.2_PCIe3.0 x 2Lanes

- PCIe3.0 PORT0_REFCLKP_IN
- PCIe3.0 PORT0_REFCLKN_IN
- PCIe3.0 PORT0_TX0P
- PCIe3.0 PORT0_TX0N
- PCIe3.0 PORT0_TX1P
- PCIe3.0 PORT0_TX1N
- PCIe3.0 PORT0_RX0P
- PCIe3.0 PORT0_RX0N
- PCIe3.0 PORT0_RX1P
- PCIe3.0 PORT0_RX1N

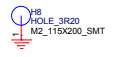


- PCIe3.0 PORT1_REFCLKP_IN
- PCIe3.0 PORT1_REFCLKN_IN
- PCIe3.0 PORT1_TX2P
- PCIe3.0 PORT1_TX2N
- PCIe3.0 PORT1_RX2P
- PCIe3.0 PORT1_RX2N
- PCIe3.0 PORT1_TX3P
- PCIe3.0 PORT1_TX3N
- PCIe3.0 PORT1_RX3P
- PCIe3.0 PORT1_RX3N

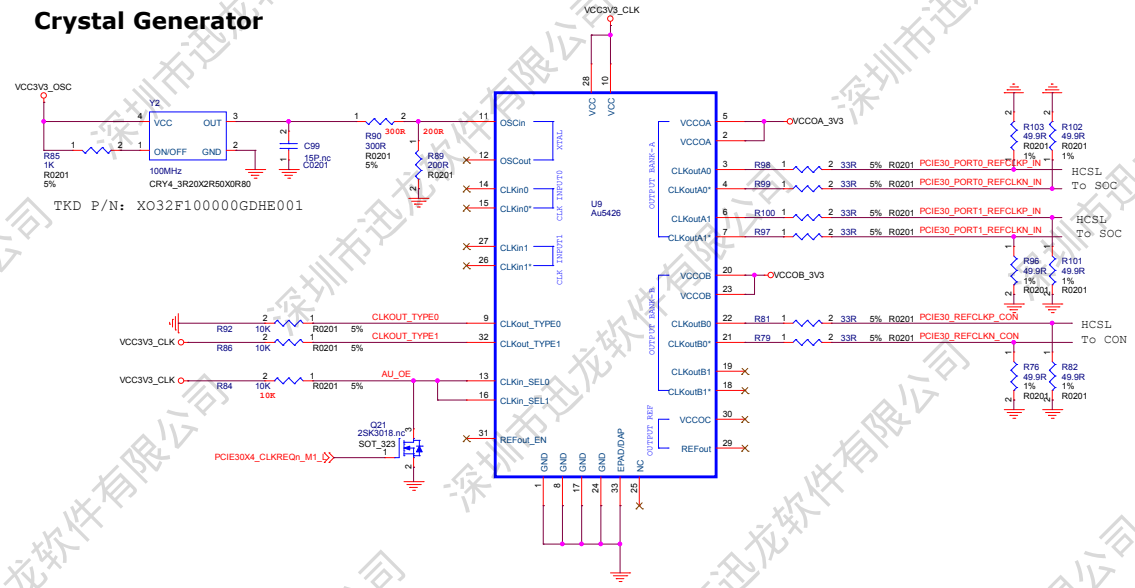
- PCIe30M4_WAKEN_M1_L
- PCIe30M4_PERSTn_M1_L
- PCIe30M4_CLKREQn_M1_L
- PCIe30M4_CLKREQn_M1_L
- PCIe_PWREN_H



8 3
2280



Crystal Generator



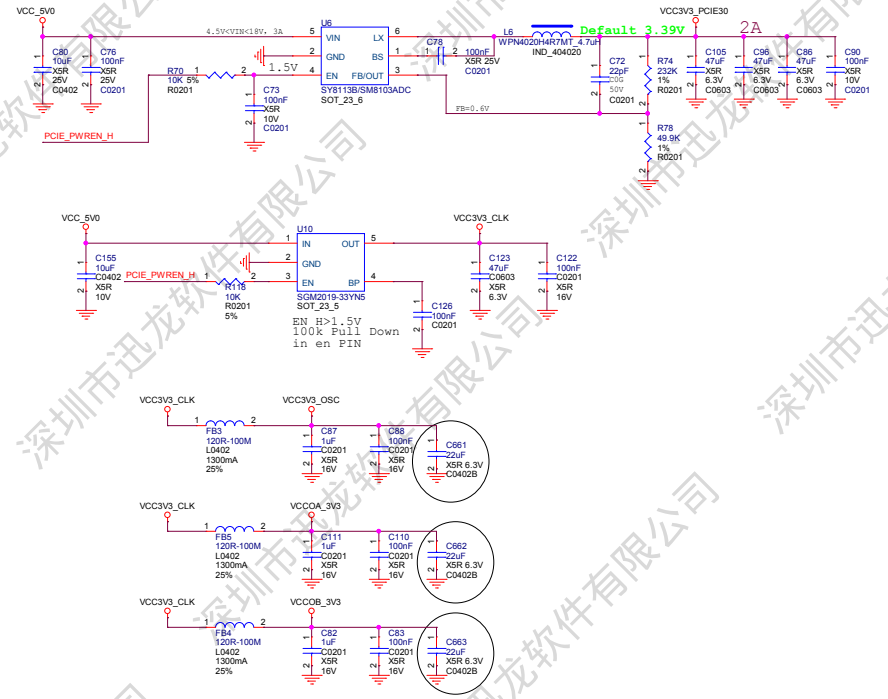
CLKIN SELECT

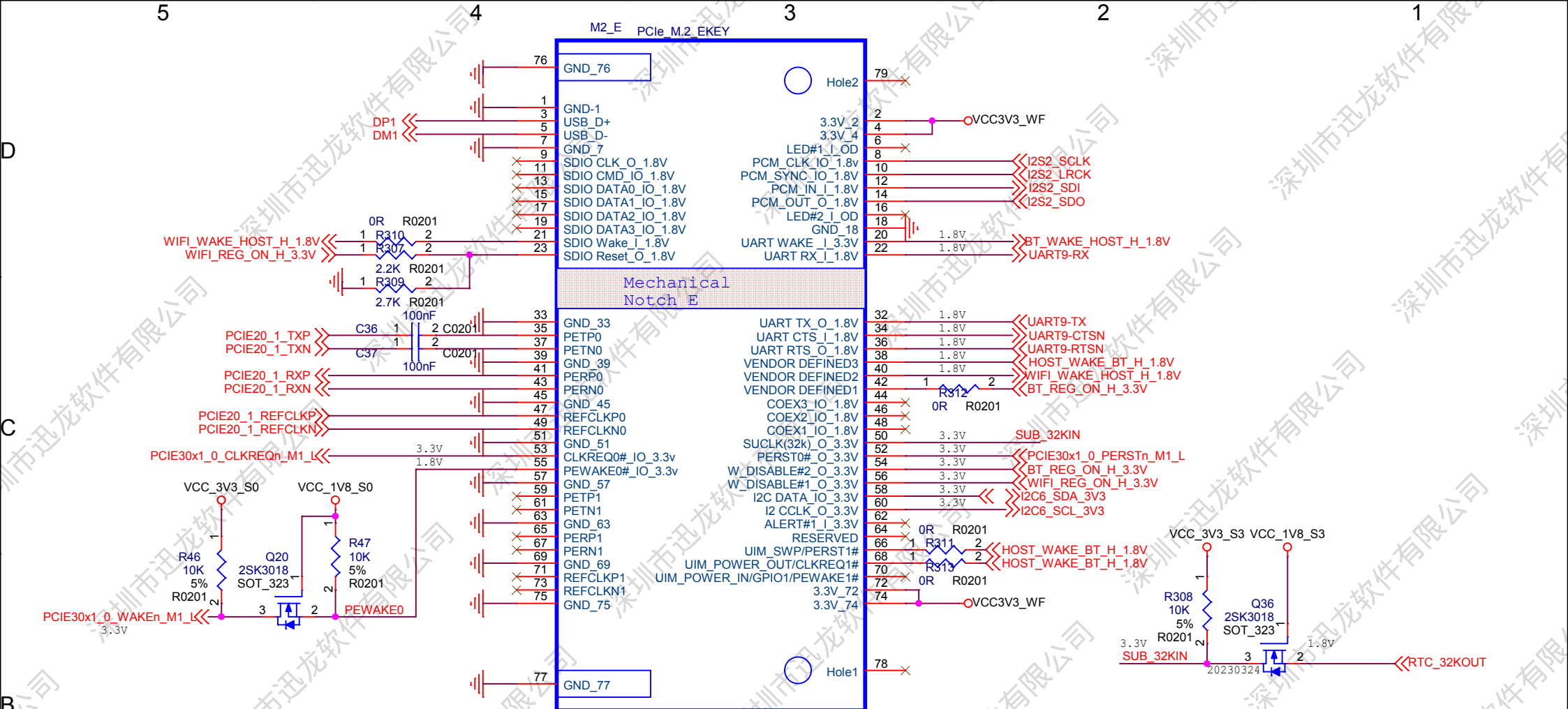
CLKIN_SEL1	CLKIN_SEL0	CLK Buffer Type
0	0	CLKIN0
0	1	CLKIN1
1	0	CRYSTAL (No. MODE)
1	1	CRYSTAL (No. MODE)

CLKOUT TYPE SELECT

CLKOUT_TYPE1	CLKOUT_TYPE0	CLK Buffer Type
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0	1	TYPE0
1	0	TYPE1
1	1	TYPE1

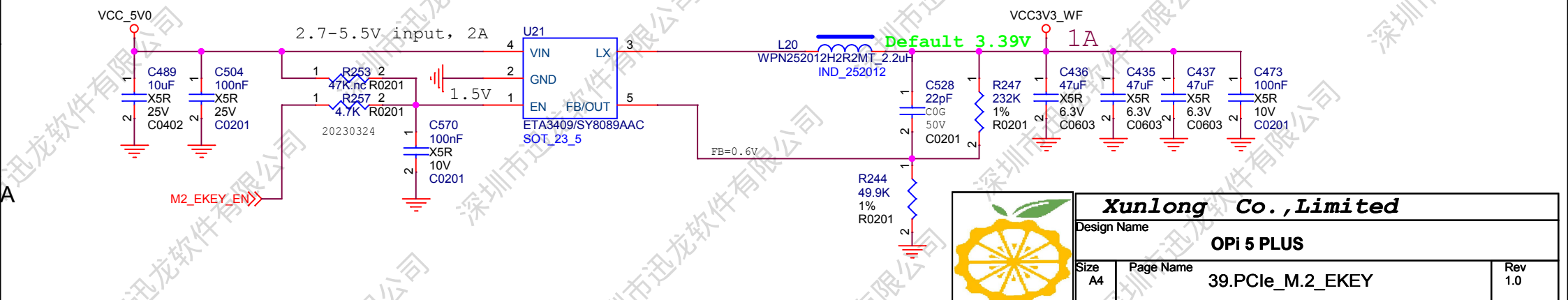
M.2 Power





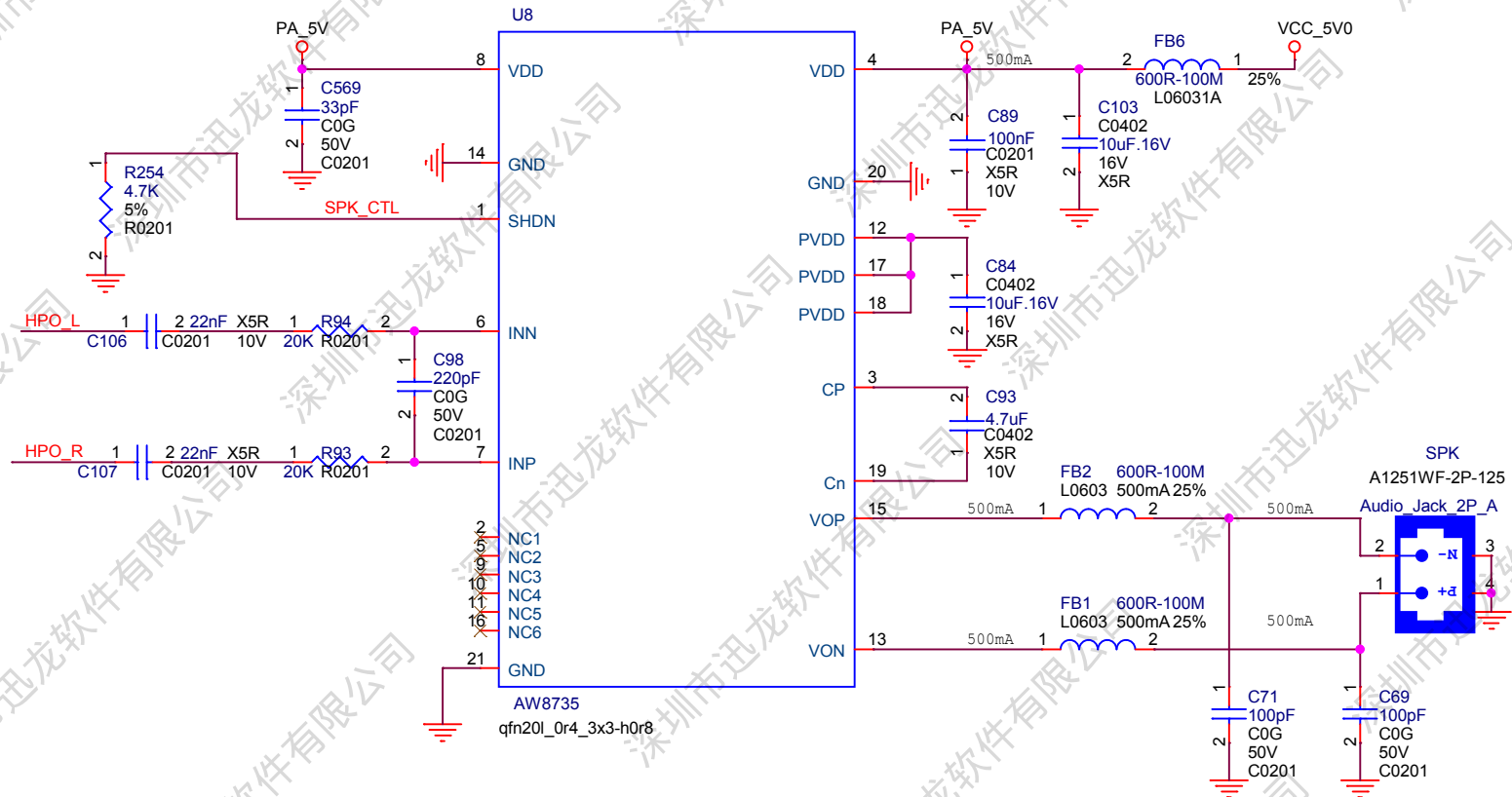
AW-XB533NF-PUR

AP12275_M2P



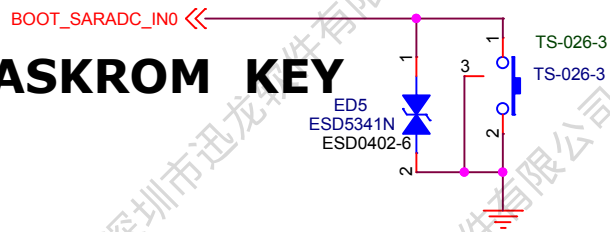
Xunlong Co., Limited		
Design Name		
OPI 5 PLUS		
Size	Page Name	Rev
A4	39.PCIE_M.2_EKEY	1.0
Date:	Friday, May 19, 2023	Sheet 39 of 41

SPK PA

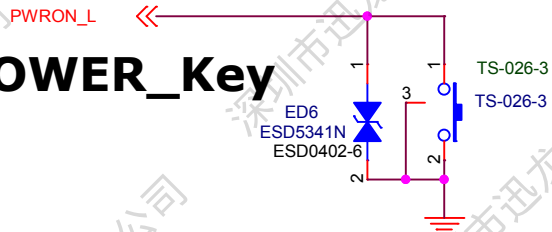


Xunlong Co., Limited		
Design Name		
OPI 5 PLUS		
Size	Page Name	Rev
A4	SPK PA	1.0
Date:	Friday, May 19, 2023	Sheet 40 of 41

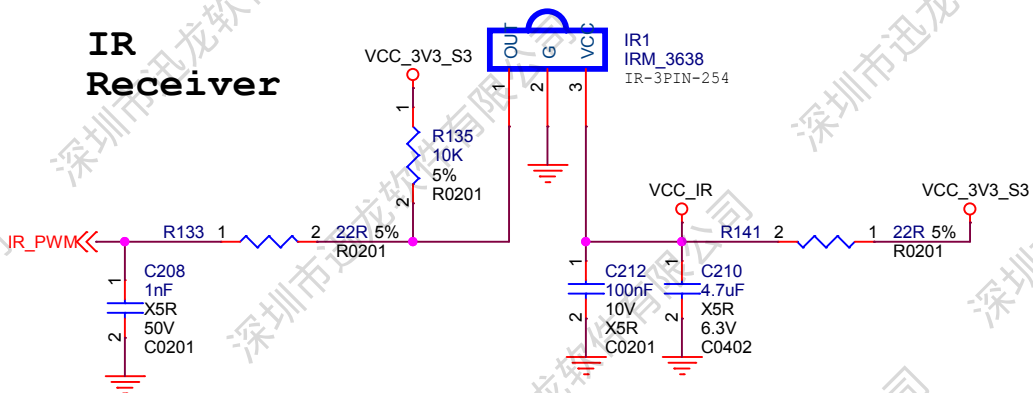
MASKROM KEY



POWER_Key



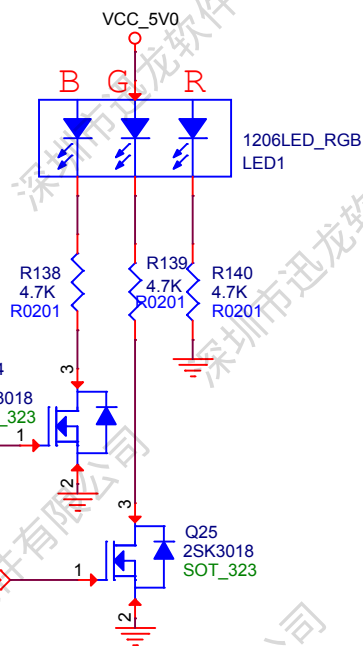
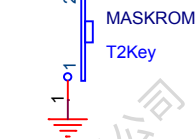
IR Receiver



RECOVERY



RECOVERY KEY



Xunlong Co., Limited			
Design Name		OPI 5 PLUS	
Size A4	Page Name	09 KEY/ Debug/LED	
Date:	Friday, May 19, 2023	Sheet	41 of 41
		Rev	1.0