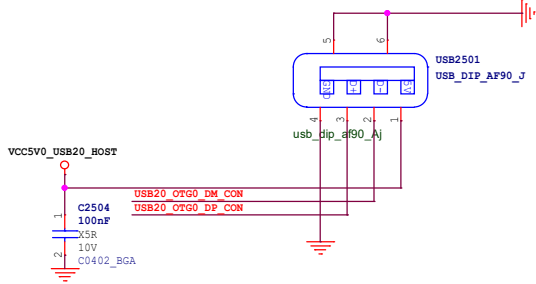
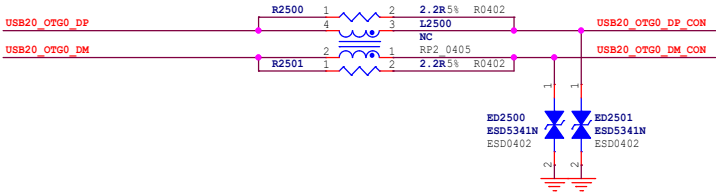


USB2.0_OTG/HOST

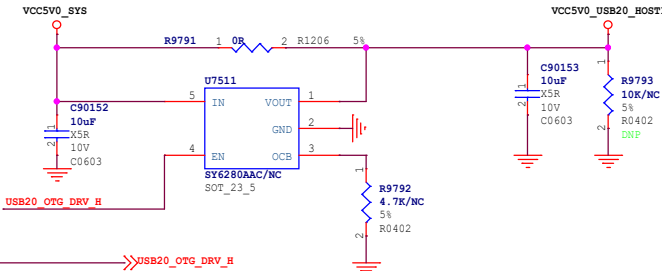
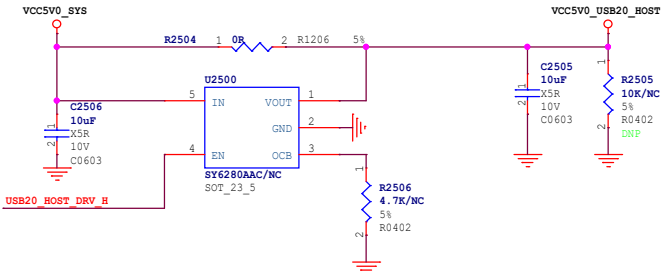
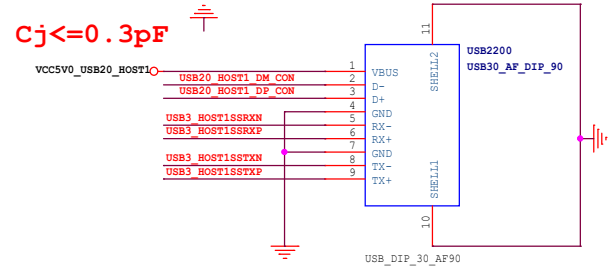
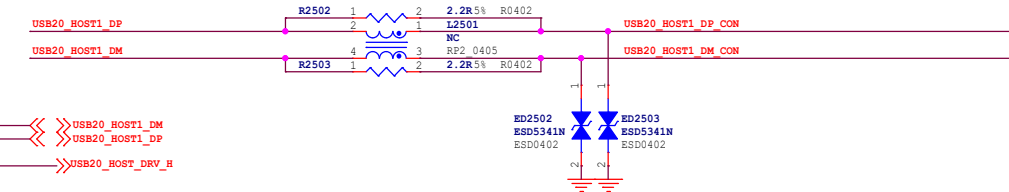
USB2.0_OTG_DM
USB2.0_OTG_DP



USB2.0 HOST

USB2.0_HOST1_DM
USB2.0_HOST1_DP

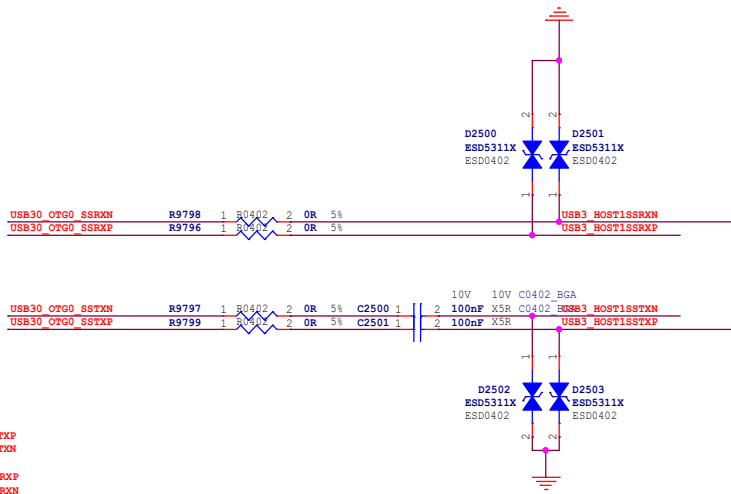
USB2.0_HOST1_DM
USB2.0_HOST1_DP
USB2.0_HOST_DRV_H



USB2.0_OTG_DRV_H

USB3.0_OTG_SSTXP
USB3.0_OTG_SSTXN
USB3.0_OTG_SSRXP
USB3.0_OTG_SSRXN

USB3.0_OTG_SSTXP
USB3.0_OTG_SSTXN
USB3.0_OTG_SSRXP
USB3.0_OTG_SSRXN



DEMO Schematics For RK3518

RK_DEMO_RK3518_EMCP LPDDR3_221P_V10

Main Functions Introduction

- 1) Power: DiscretePower
- 2) RAM: EMCP LP3 or DDR3 8x4Bit or 4x8Bit
- 3) ROM: eMMC5.1
- 4) Support: 1 x USB2.0 OTG + 1 x USB2.0 HOST
- 5) Support: 1 x HDMI2.0 TX
- 6) Support: 1 x AV OUT
- 7) Support: SDIO WIFI6/BT5.4(a/b/g/n/ac/ax Wi-Fi 1T1R)
- 8) Support: 1 x 10/100M Ethernet(Embed PHY)
- 9) Support: IR Receiver
- 10) Support: RECOVERY KEY
- 11) Support: Debug UART0

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Rockchip Rockchip Electronics Co., Ltd			
Project:	RK3518_DEMO_EMCP_SCH		
File:	00.Cover Page		
Date:	Tuesday, February 18, 2025	Rev:	V1.0
Designed by:	HXS	Reviewed by:	Default
Sheet:	1	of	31

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Page 2	01.Index and Notes
Page 3	02.Revision History
Page 4	03.Block Diagram
Page 5	04.Power Tree
Page 6	05.Power Sequence/IO Domain Map
Page 7	06.UART Map
Page 8	07.I2C Bus Map
Page 9	08.USB3 Fun Map
Page 10	10.RK3518 Power/GND
Page 11	11.RK3518 OSC/PLL/PMUIO
Page 12	12.RK3518 DDR Controller
Page 13	13.RK3518 FLASH/SD Controller
Page 14	14.RK3518 USB Controller
Page 15	15.RK3518 SARADC/OTP
Page 16	16.RK3518 HDMI Interface
Page 17	17.RK3518 AV OUT
Page 18	18.RK3518 Embed FEPHY
Page 19	19.RK3518_1.8V/3.3V GPIO
Page 20	20.Power-DCIN
Page 21	21.Power-DiscretePower
Page 22	25.USB Port
Page 23	30.eMCP_LPDDR3_221P
Page 24	50.VO-HDMI TX
Page 25	51.VO-AV Interface
Page 26	60.SDIO_WIF6I/BT
Page 27	65.10/100M-Embed PHY
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Generate Bill of Materials

Header:

Item\tPart\tDescription\tPCB Footprint\tReference\tQuantity\tOption

Combined property string:

{Item}\t{Value}\t{Description}\t{PCB Footprint}\t{Reference}\t{Quantity}\t{Option}

Description

Note

Option

Notes

- NOTE 1:
Component parameter description
1. DNP stands for component not mounted temporarily
2. If Value or option is DNP, which means the area is reserved without being mounted

NOTE 2:
Please use our recommended components to avoid too many changes.
For more informations about the second source,please refer to our AVL.

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Rockchip Electronics Co., Ltd

Project: RK3518_DEMO_EMCP_SCH

File: 01.Index and Notes

Date: Tuesday, February 18, 2025 Rev: V1.0

Designed by: HXS Reviewed by: Default Sheet: 2 of 31

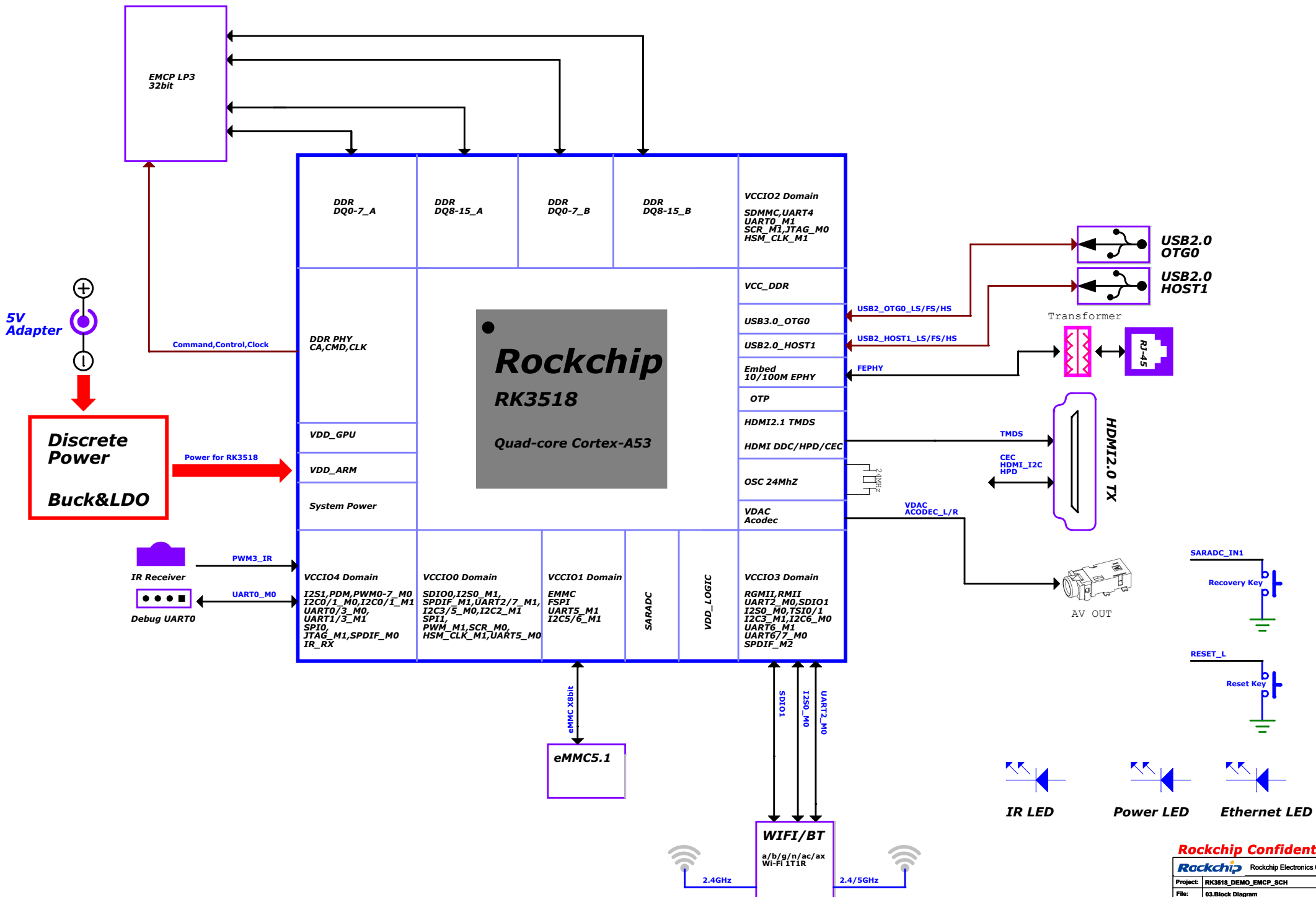
Version	Date	By	Change Description	Approved
V1.0	2025-02-18	HXS	1:Revision preliminary version	



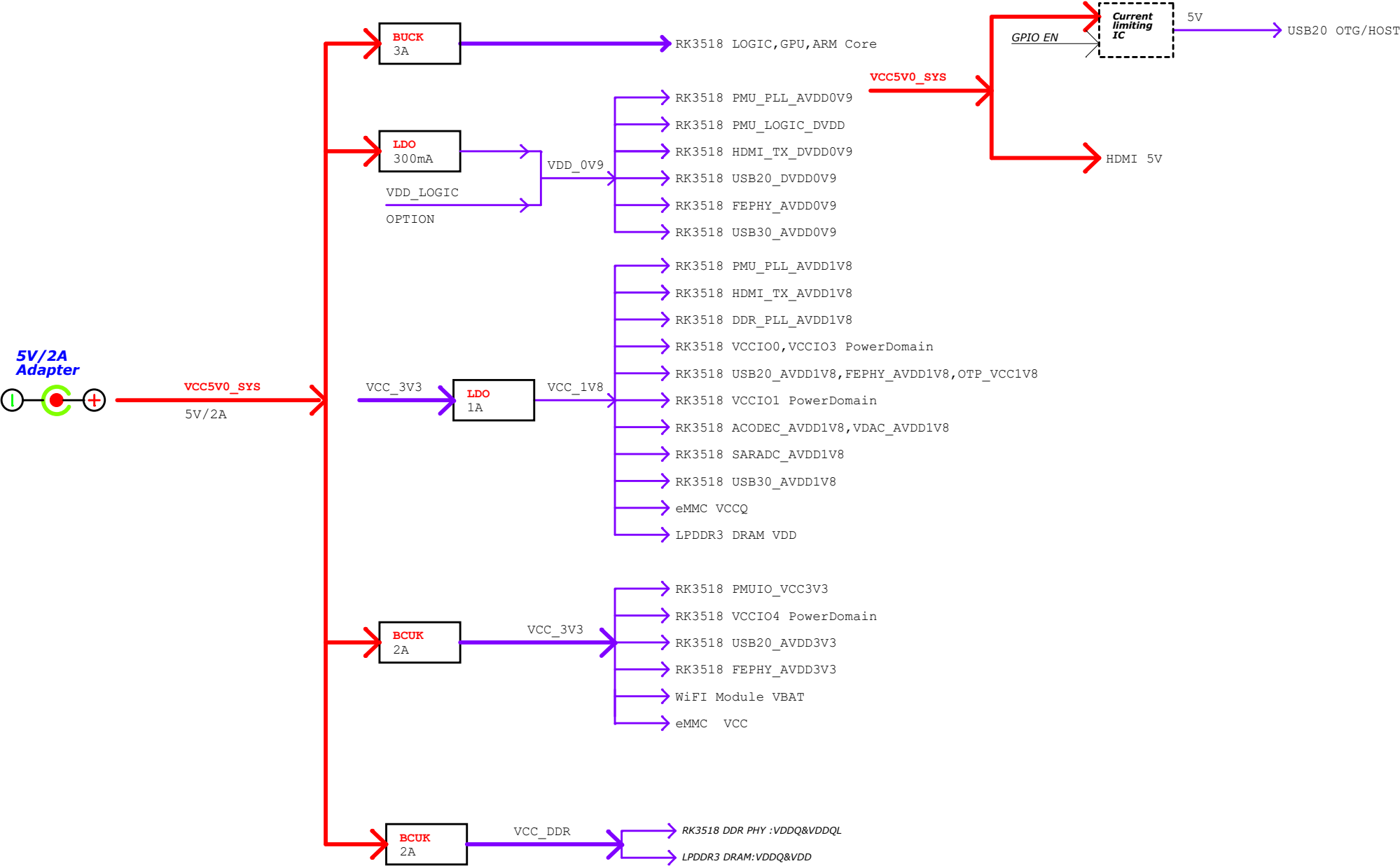
Rockchip Electronics Co., Ltd

Project:	RK3518_DEMO_EMCP_SCH		
File:	02.Revision History		
Date:	Tuesday, February 18, 2025		Rev: V1.0
Designed by:	HXS	Reviewed by:	Default
		Sheet:	3 of 31

RK3518 Block Diagram

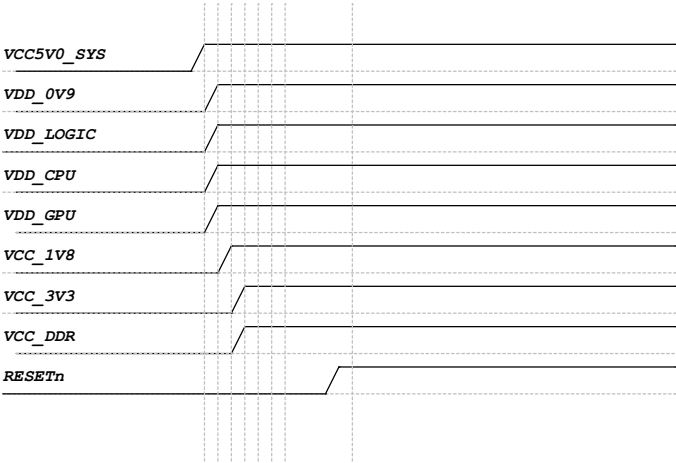


RK3518 Power Tree



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Power Sequence



Power Supply	EXT BUCK&LDO	Supply Limit	Power Name	Time Slot	Default Voltage	Default ON/OFF	Sleep ON/OFF	Peak Current	Sleep Current
VCC5V0_SYS	BUCK1	3.0A	VDD_LOGIC VDD_GPU VDD_ARM	Slot:1	0.95V	ON	ON	TBD	TBD
VCC5V0_SYS	LDO1	0.3A	VDD_0V9	Slot:1	0.9V	ON	ON	TBD	TBD
VCC_3V3	LDO2	1.0A	VCC_1V8	Slot:2	1.8V	ON	ON	TBD	TBD
VCC5V0_SYS	BUCK2	2.0A	VCC_3V3	Slot:3	3.3V	ON	ON	TBD	TBD
VCC5V0_SYS	BUCK3	2.0A	VCC_DDR	Slot:3	ADJ FB=0.6V	ON	ON	TBD	TBD

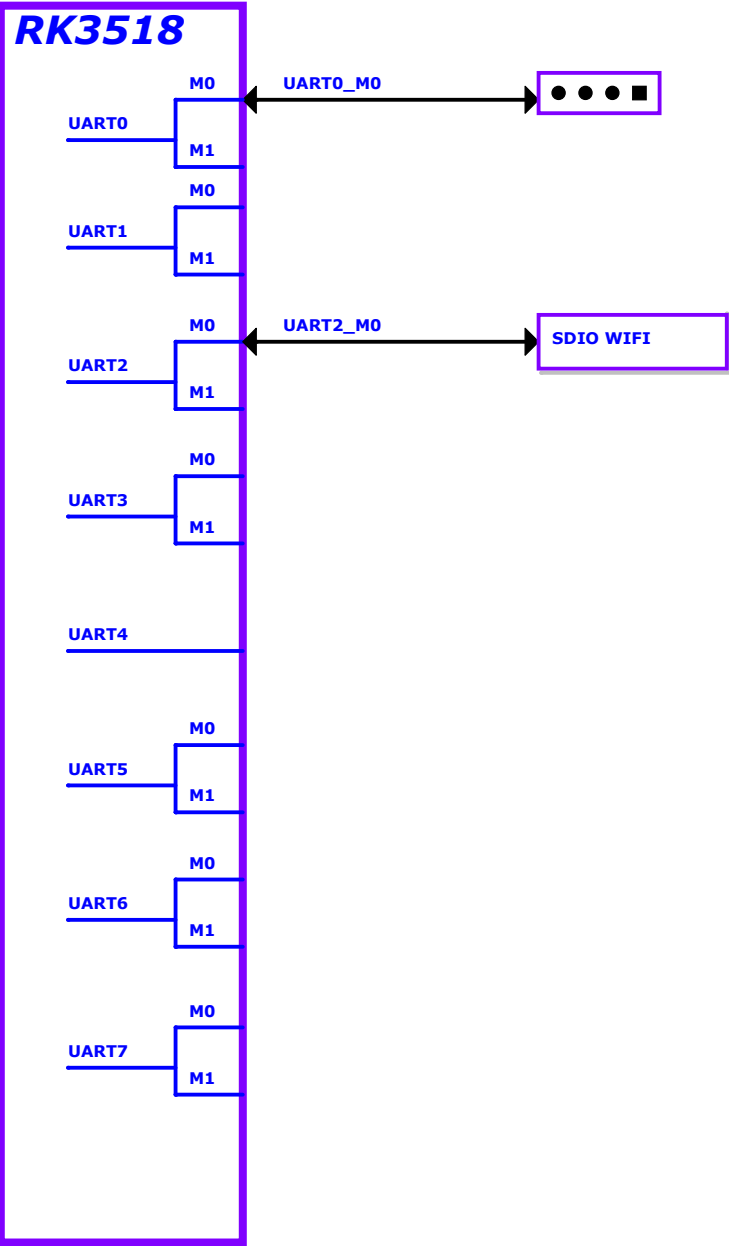
IO Power Domain Map

IO Domain	Pin Num	Support IO Voltage		Actual assigned IO Domain Voltage			Notes
		3.3V	1.8V	Supply Power Net Name	Power Source	Voltage	
PMUIO	Pin 1J13	✓	✗	VCCIO_PMU	VCC_3V3	3.3V	
VCCIO0	Pin 1N6	✓	✓	VCCIO0	VCCIO_WL	1.8V	
VCCIO1	Pin 1P8	✓	✓	VCCIO1	VCCIO_FLASH	1.8V/3.3V	Select as required
VCCIO2	Pin 1B14	✓	✓	VCCIO2	VCCIO_SD	1.8V/3.3V	SD3.0 Voltage=1.8V SD2.0 Voltage=3.3V 3.3V-->1.8V
VCCIO3	Pin 1M13	✓	✓	VCCIO3	VCC_1V8 VCC_3V3	1.8V 3.3V	Select as required
VCCIO4	Pin 1J3	✓	✓	VCCIO4	VCC_3V3	3.3V	

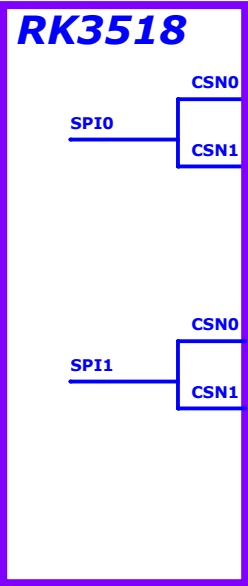
Rockchip Confidential

		Rockchip Electronics Co., Ltd	
Project:	RK3518_DEMO_EMCP_SCH		
File:	05.Power Sequence/IO Domain Map		
Date:	Tuesday, February 18, 2025		Rev: V1.0
Designed by:	HXS	Reviewed by:	Default
Sheet:	6 of 31		

UART MAP
RK3518



SPI MAP
RK3518

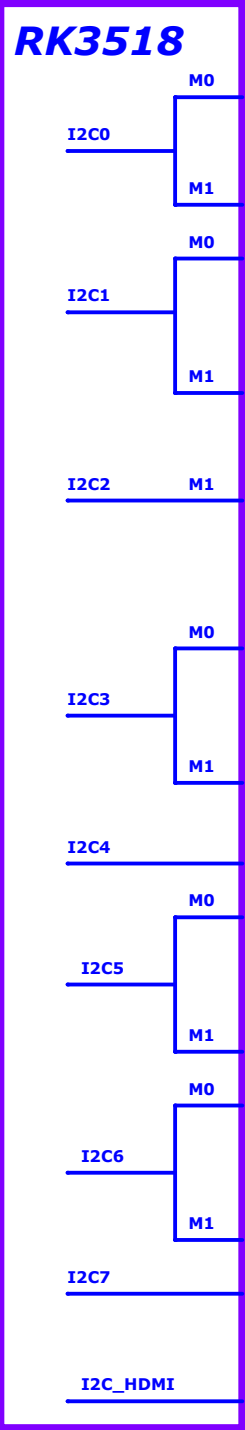


Rockchip Confidential

		Rockchip Electronics Co., Ltd				
Project:	RK3518_DEMO_EMCP_SCH					
File:	06.UART Map					
Date:	Tuesday, February 18, 2025				Rev:	V1.0
Designed by:	HXS	Reviewed by:	Default	Sheet:	7 of 31	

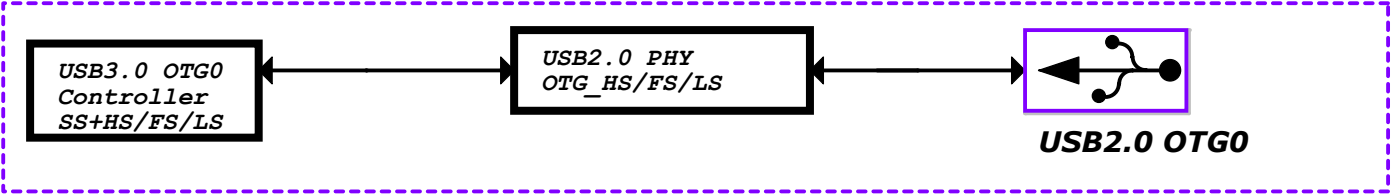
I2C MAP

RK3518



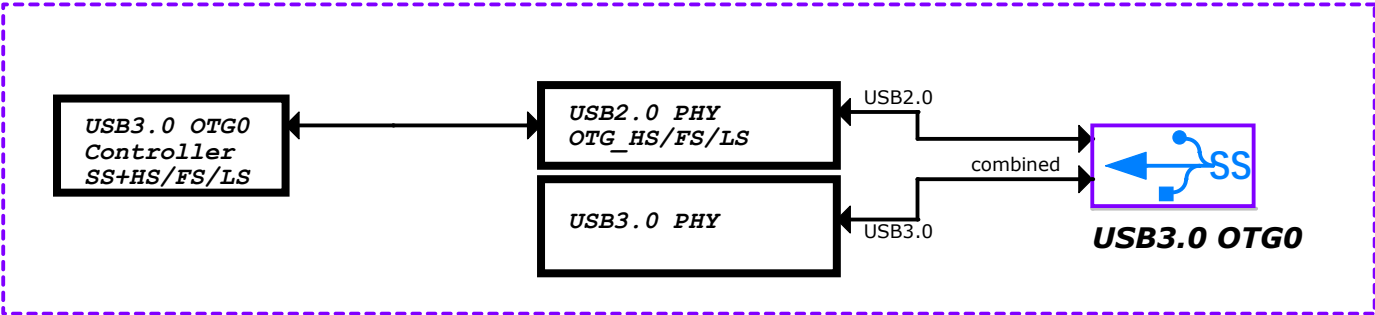
USB3 Map

Case1: USB2.0 OTG0

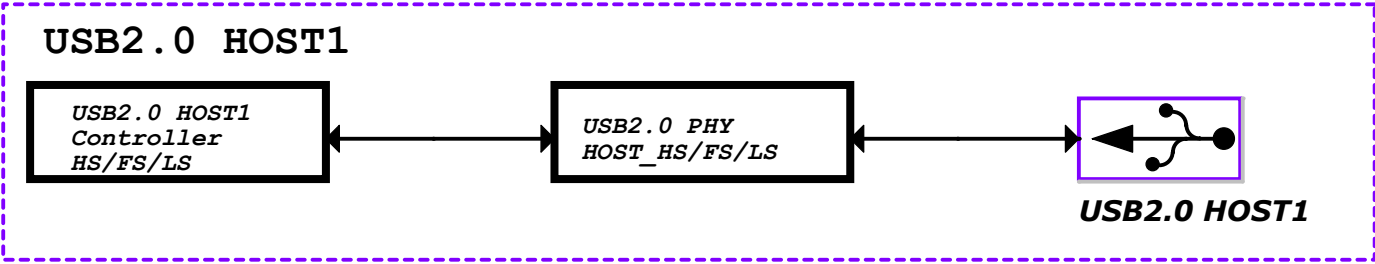


Note 1:
USB3.0 OTG is backward compatible with USB2.0, it needs to occupy the USB2.0 OTG signal pair.

Case2: USB3.0 OTG0



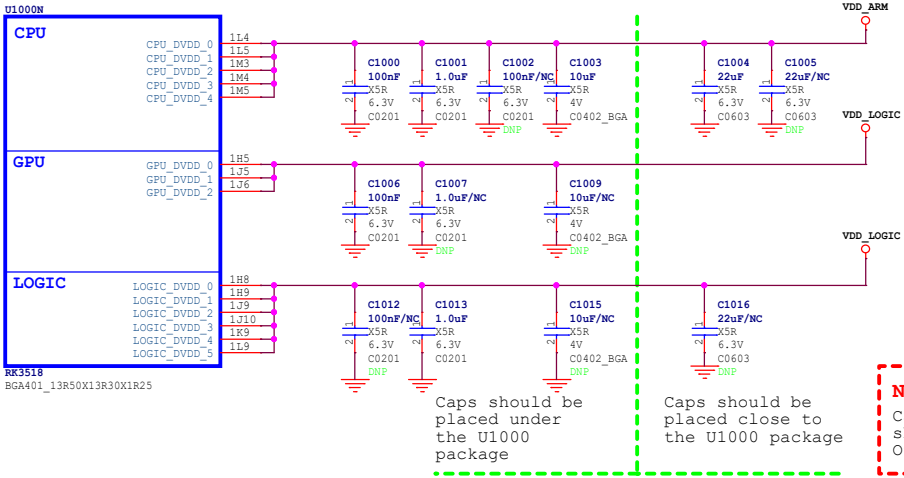
USB2.0 HOST1



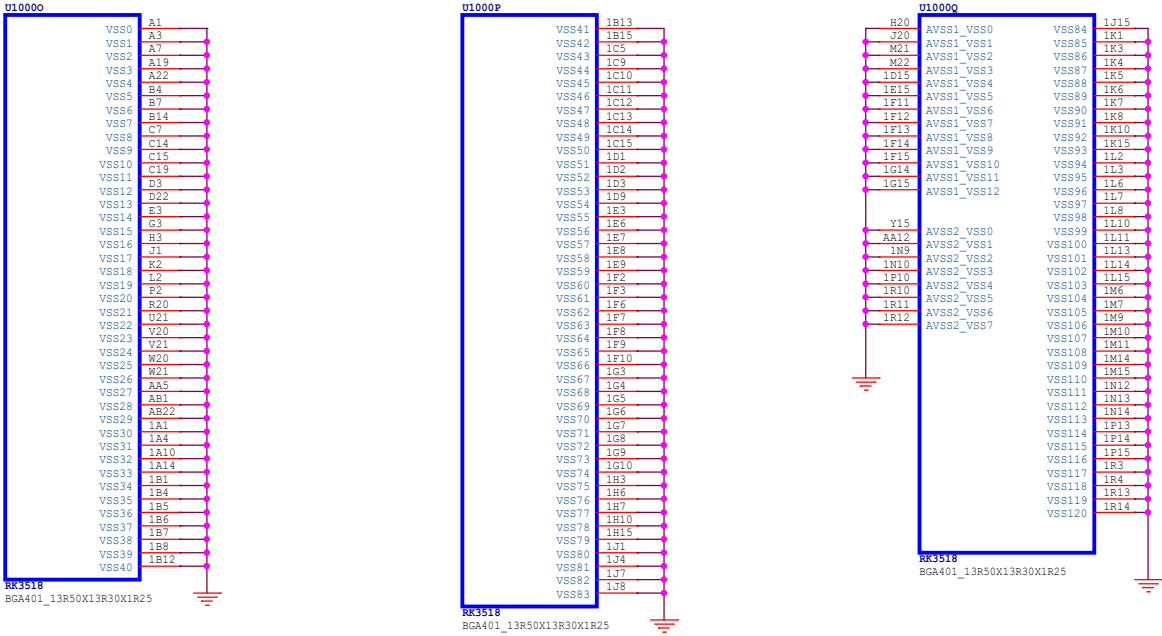
Rockchip Confidential

Rockchip Rockchip Electronics Co., Ltd	
Project:	RK3518_DEMO_EMCP_SCH
File:	08.USB3 Fun Map
Date:	Tuesday, February 18, 2025
Designed by:	HXS
Reviewed by:	Default
Rev:	V1.0
Sheet:	9 of 31

RK3518_N (POWER)



RK3518_O/P/Q (GND)

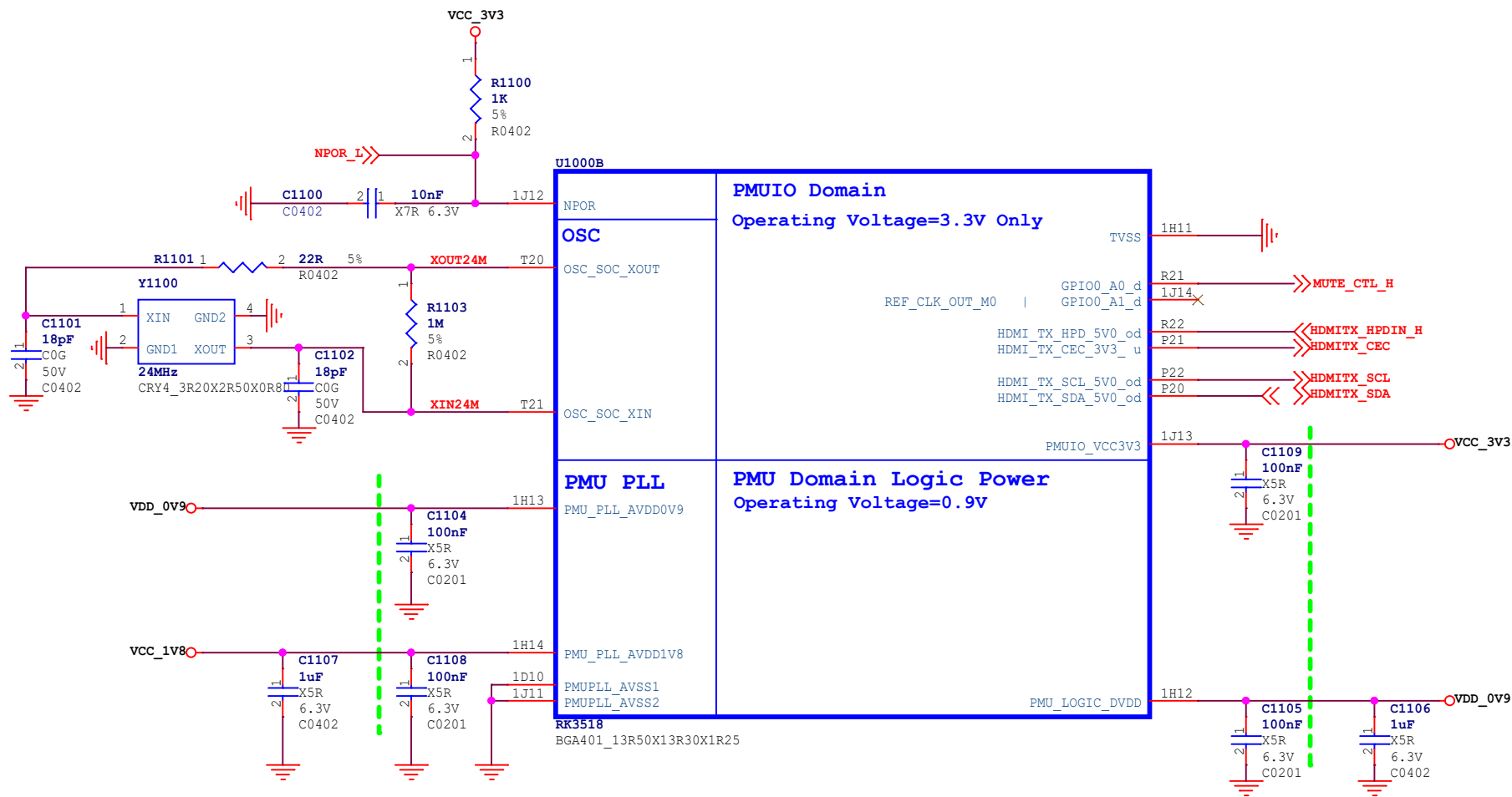


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Rockchip Electronics Co., Ltd

Project:	RK3518_DEMO_EMCP_SCH		
File:	10.RK3518 Power/GND		
Date:	Friday, December 05, 2025	Rev:	V1.0
Designed by:	HXS	Reviewed by:	Default
Sheet:	10	of	31

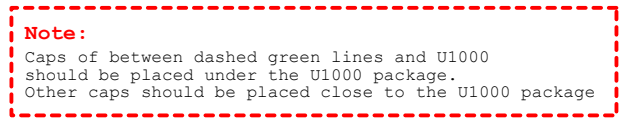
RK3518_B (OSC/PLL/PMUIO Domain)



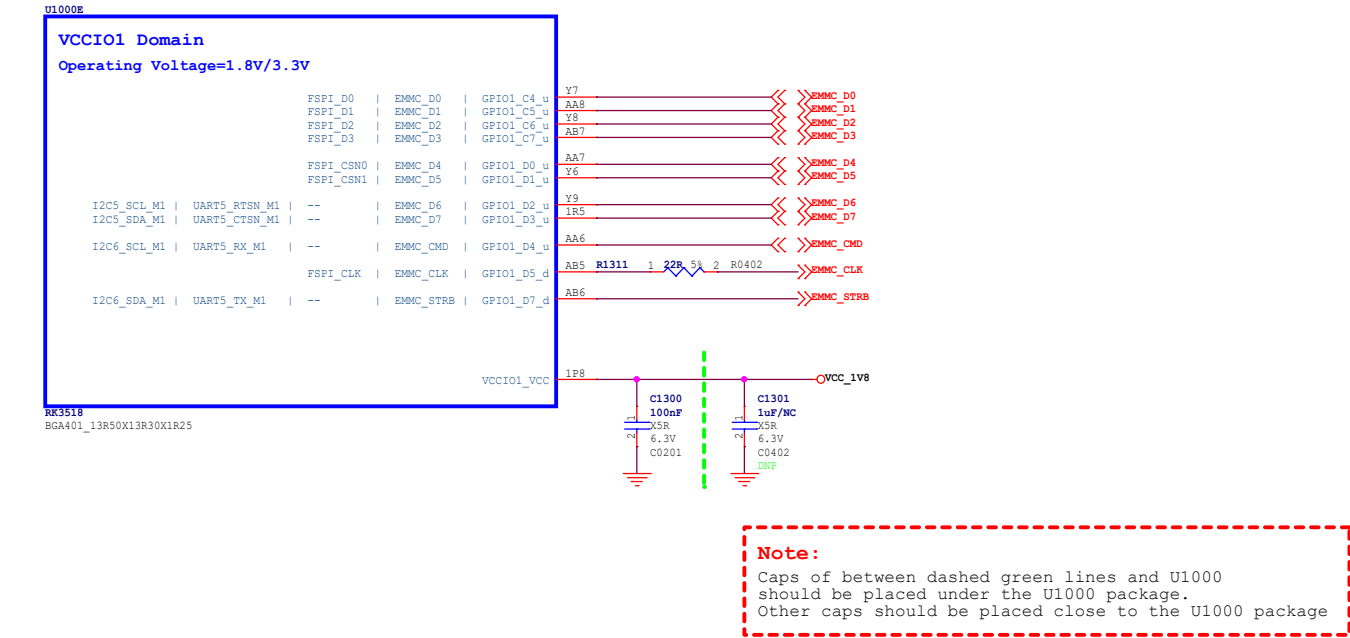
Rockchip Confidential

Rockchip Rockchip Electronics Co., Ltd			
Project:	RK3518_DEMO_EMCP_SCH		
File:	11.RK3518 OSC/PLL/PMUIO		
Date:	Thursday, February 27, 2025	Rev:	V1.0
Designed by:	HXS	Reviewed by:	Default
Sheet:	11	of	31

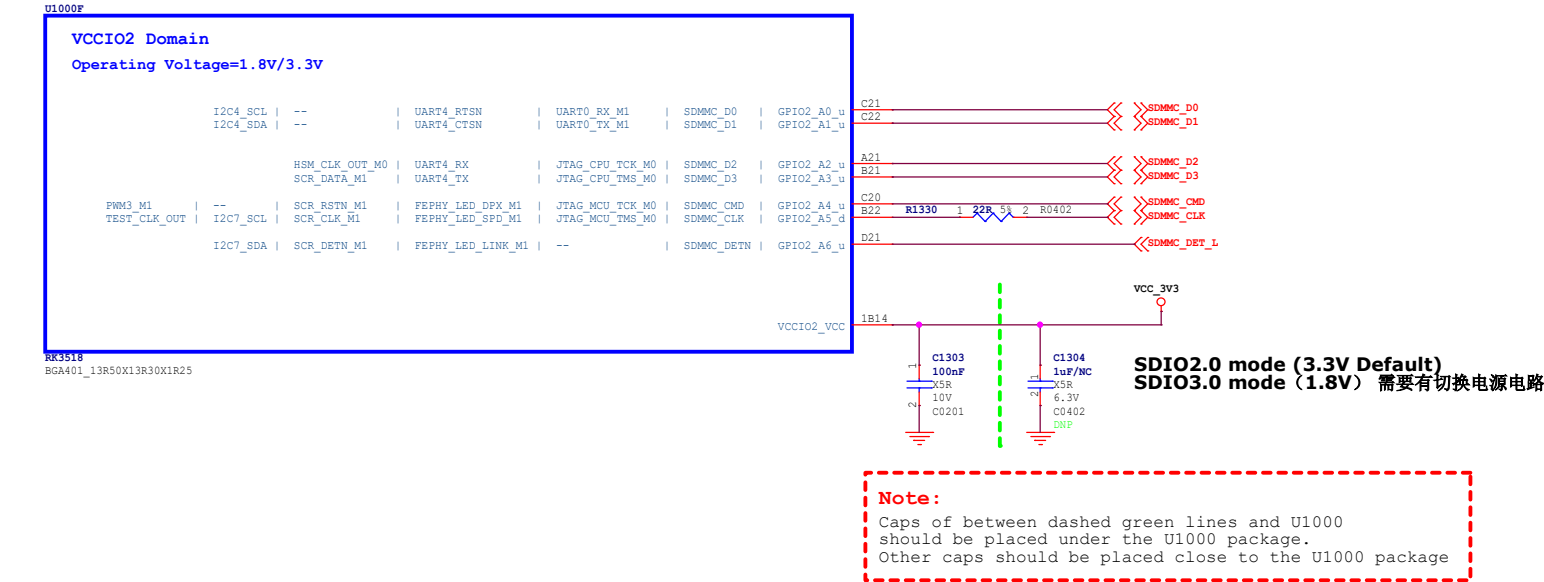
U1000A



RK3518_E (VCCIO1 Domain)



RK3518_F (VCCIO2 Domain)



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Rockchip Electronics Co., Ltd

Project: RK3518_DEMO_EMCP_SCH

File: 13.RK3518 FLASH/SD Controller

Date: Friday, February 21, 2025

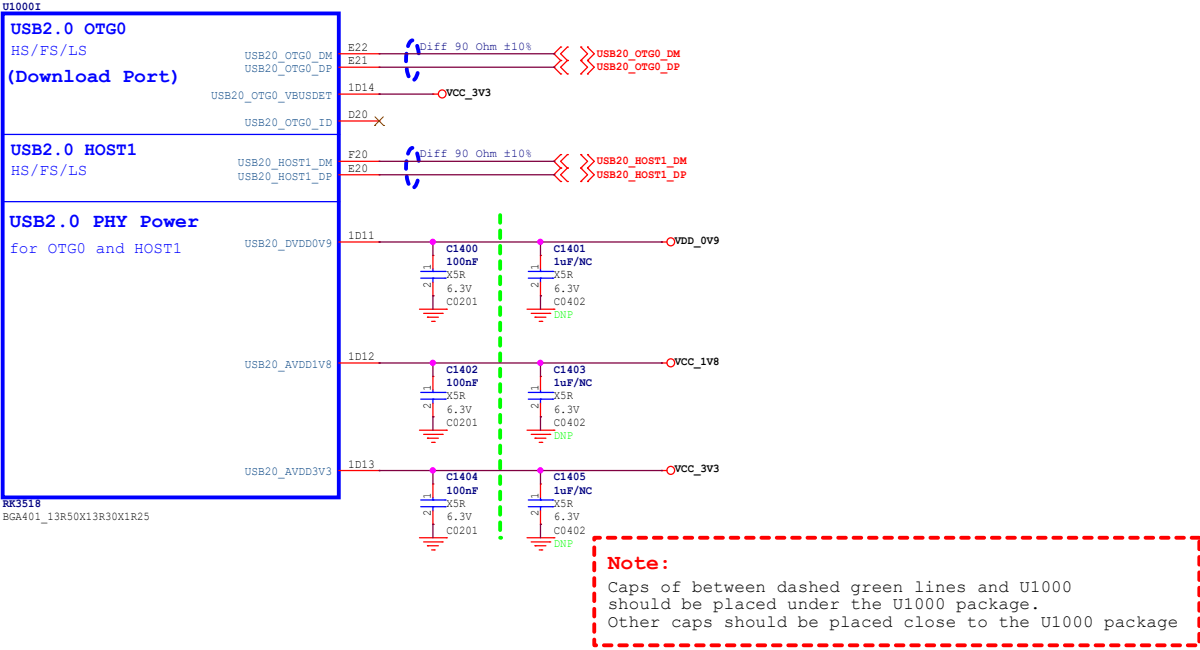
Designed by: HXS

Reviewed by: Default

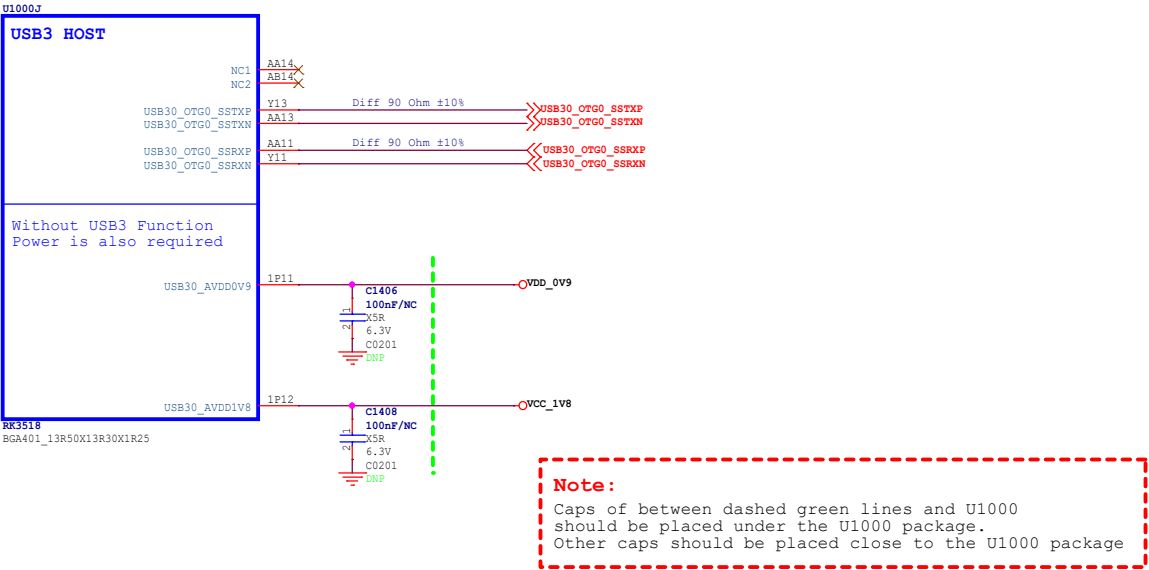
Rev: V1.0

Sheet: 13 of 31

RK3518_I (USB2.0 OTG/HOST)



RK3518_J (USB3.0 PHY)



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Project: RK3518_DEMO_EMCP_SCH

File: 14.RK3518 USB Controller

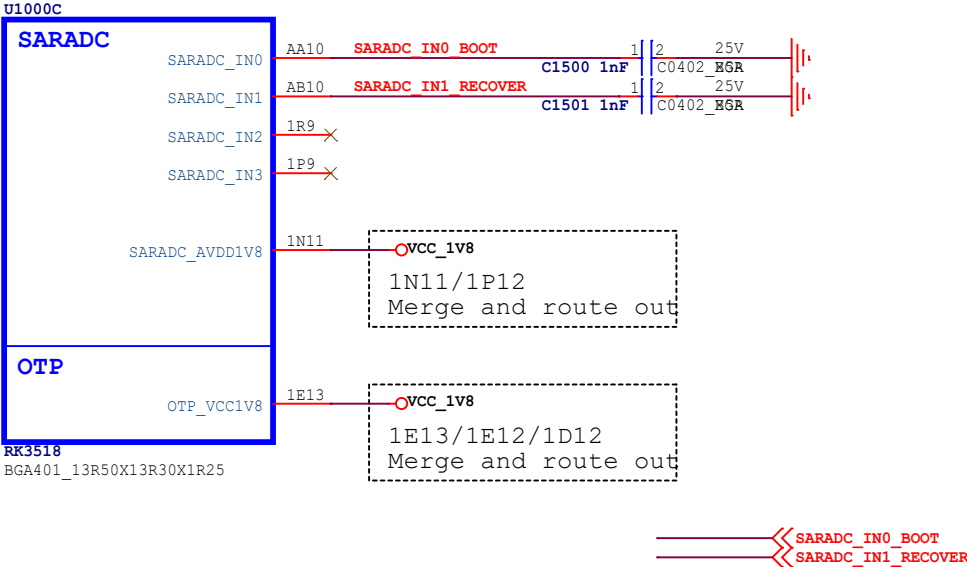
Date: Wednesday, February 26, 2025

Designed by: HXS

Reviewed by: Default

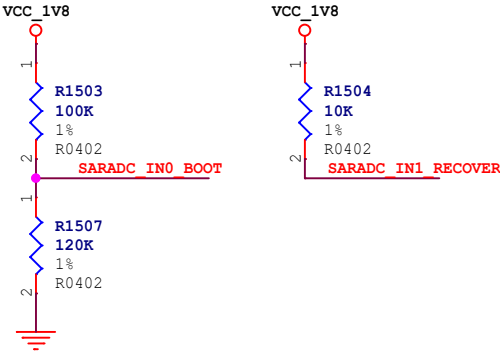
Sheet: 14 of 31

RK3518_C (Saradc/OTP)



Note:

Caps of between dashed green lines and U1000 should be placed under the U1000 package.
Other caps should be placed close to the U1000 package



TABLE

Item	Rup	Rdown	ADC	BOOT MODE
LEVEL1	DNP	100K	0	USB (Maskrom mode)
LEVEL2	100K	12K	114	
LEVEL3	100K	27K	228	FSPI--USB
LEVEL4	100K	51K	342	
LEVEL5	100K	82K	456	
LEVEL6	100K	120K	570	EMMC--USB
LEVEL7	100K	200K	683	EMMC--SD Card--USB
LEVEL8	100K	330K	796	SD Card--USB
LEVEL9	100K	820K	910	
LEVEL10	100K	DNP	1023	FSPI--EMMC--SD Card--USB

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Project:	RK3518_DEMO_EMCP_SCH		
File:	15.RK3518 SARADC/OTP		
Date:	Thursday, February 27, 2025	Rev:	V1.0
Designed by:	HXS	Reviewed by:	Default
Sheet:	15	of	31

RK3518_L (HDMI PHY)

U1000L

HDMI2.1 TMS

HDMI_TX_CLKN	N21	HDMI_TXCLKN	Diff 100 Ohm ±10%
HDMI_TX_CLKP	N20	HDMI_TXCLKP	Diff 100 Ohm ±10%
HDMI_TX_D0N	M20	HDMI_TX0N	Diff 100 Ohm ±10%
HDMI_TX_D0P	L20	HDMI_TX0P	Diff 100 Ohm ±10%
HDMI_TX_D1N	K20	HDMI_TX1N	Diff 100 Ohm ±10%
HDMI_TX_D1P	K21	HDMI_TX1P	Diff 100 Ohm ±10%
HDMI_TX_D2N	J21	HDMI_TX2N	Diff 100 Ohm ±10%
HDMI_TX_D2P	J22	HDMI_TX2P	Diff 100 Ohm ±10%
HDMI_REXT	1G11	HDMI_EXTR	R1608 1 2 1K 1%

HDMI PHY Power

HDMI_TX_DVDD0V9

HDMI_TX_AVDD1V8

RK3518

BGA401_13R50X13R30X1R25

VDD_0V9
1H12/1G12
Merge and route out

VCC_1V8

C1602
100nF
X5R
6.3V
C0201

C90137C90138C90139C90140C90141C90142C90143C90144
1pf/nc1pf/nc1pf/nc1pf/nc1pf/nc1pf/nc1pf/nc
X5R X5R X5R X5R X5R X5R X5R X5R
50V 50V 50V 50V 50V 50V 50V 50V
C0201 C0201 C0201 C0201 C0201 C0201 C0201 C0201

Note:

Caps of between dashed green lines and U1000 should be placed under the U1000 package.
Other caps should be placed close to the U1000 package

Rockchip Confidential

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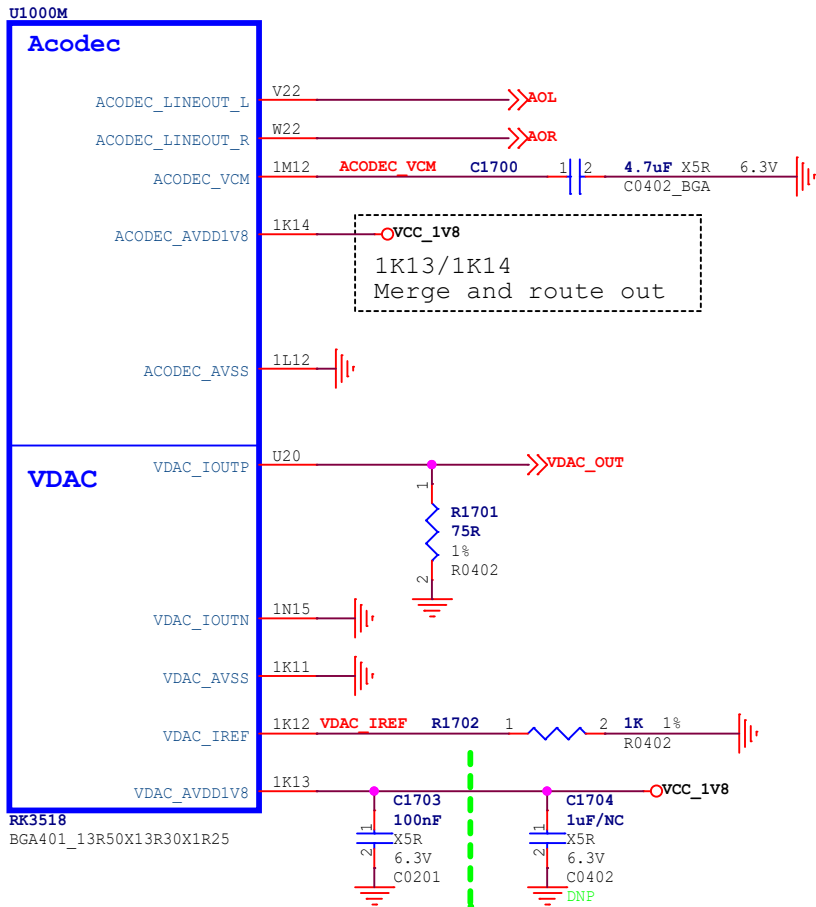
Project: RK3518_DEMO_EMCP_SCH

File: 16.RK3518 HDMI Interface

Date: Monday, May 12, 2025 Rev: V1.0

Designed by: HXS Reviewed by: Default Sheet: 16 of 31

RK3518_M (Acodec/VDAC)



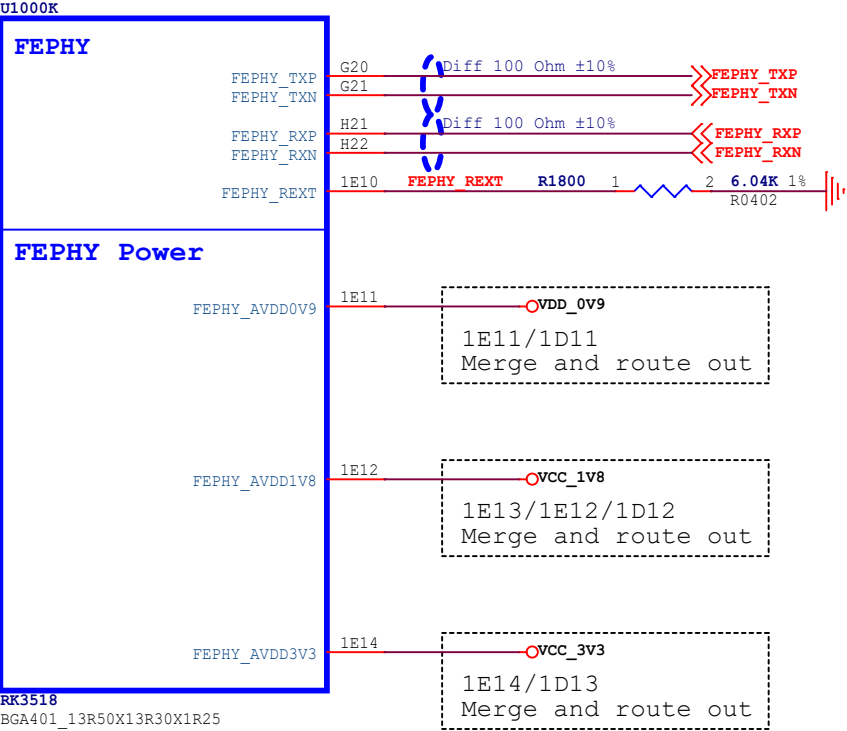
Note:
Caps of between dashed green lines and U1000 should be placed under the U1000 package.
Other caps should be placed close to the U1000 package

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Rockchip Rockchip Electronics Co., Ltd

Project:	RK3518_DEMO_EMCP_SCH			
File:	17.RK3518 AV OUT			
Date:	Thursday, February 27, 2025		Rev:	V1.0
Designed by:	HXS	Reviewed by:	Default	Sheet: 17 of 31

RK3518_K (Embed FEPHY)

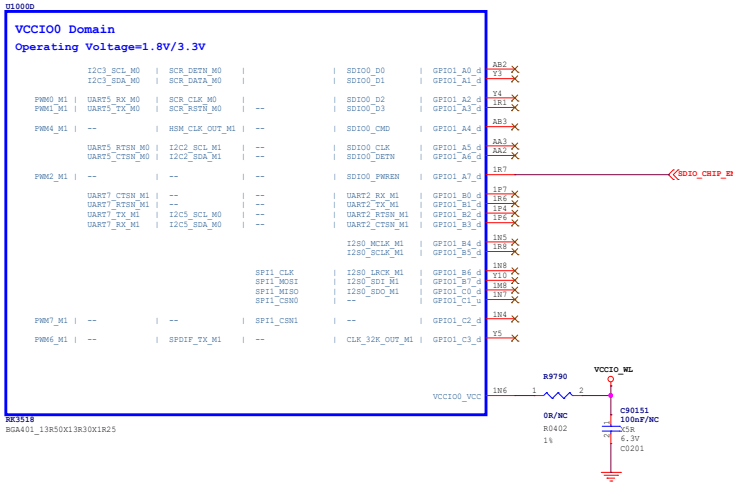


Note:
Caps of between dashed green lines and U1000 should be placed under the U1000 package.
Other caps should be placed close to the U1000 package

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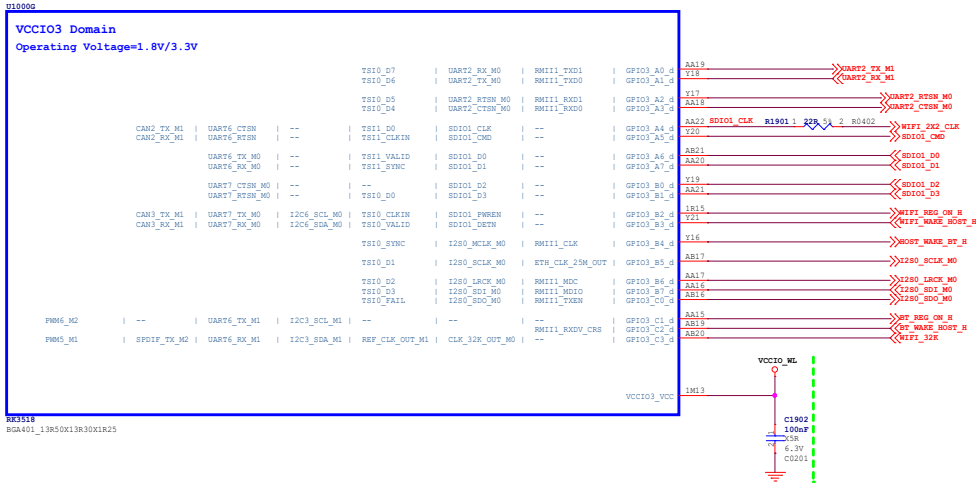
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Project:	RK3518_DEMO_EMCP_SCH				
File:	18.RK3518 Embed FEPHY				
Date:	Thursday, February 27, 2025			Rev:	V1.0
Designed by:	HXS	Reviewed by:	Default	Sheet:	18 of 31

RK3518_D(VCCIO0 Domain)



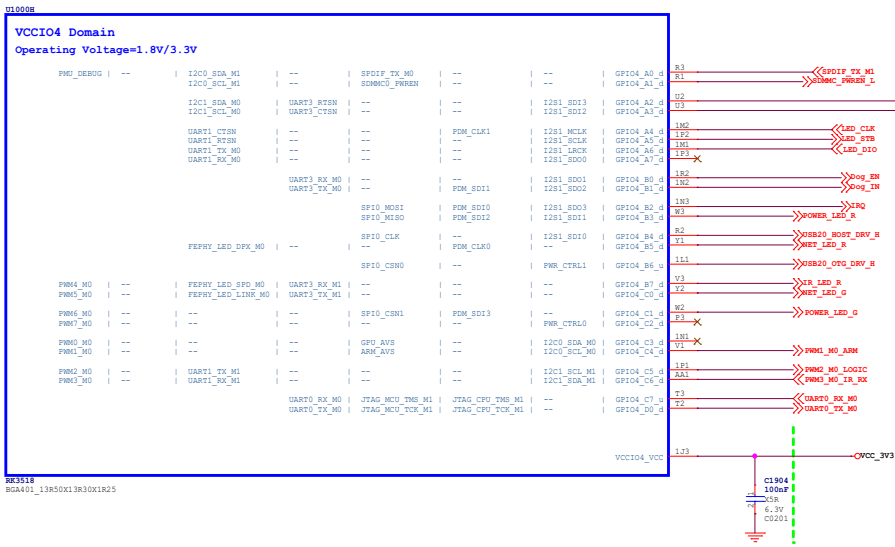
Note:
Caps of between dashed green lines and U1000
should be placed under the U1000 package.
Other caps should be placed close to the U1000 package

RK3518_G(VCCIO3 Domain)

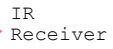


Note:
Caps of between dashed green lines and U1000
should be placed under the U1000 package.
Other caps should be placed close to the U1000 package

RK3518_H(VCCIO4 Domain)



Note:
Caps of between dashed green lines and U1000
should be placed under the U1000 package.
Other caps should be placed close to the U1000 package



3V_RTC VC



J600
DC-Jack DIP
positive DC Jack DIP ID3.0mm OD 5.5mm

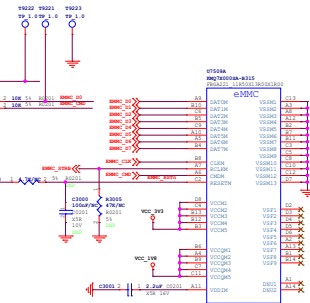
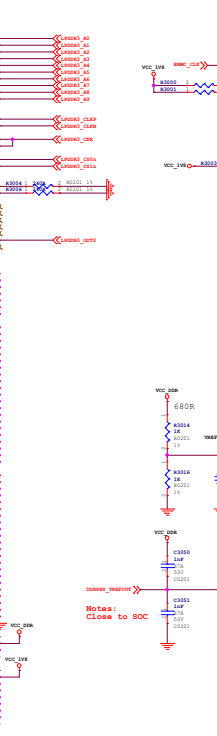
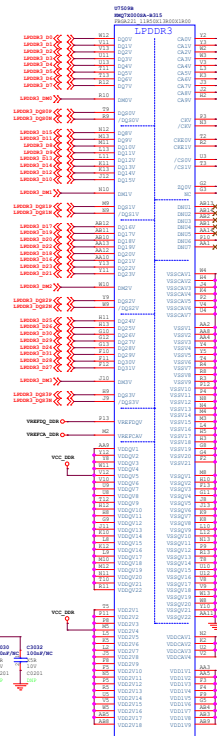
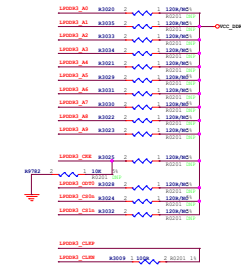


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Rockchip Rockchip Electronics Co., Ltd

Project:	RK3588_DEMO_EMCP_SCH		
File:	20.Power-DC5VIN		
Date:	Wednesday, December 31, 2025	Rev:	V1.0
Designed by:	IGDS	Reviewed by:	Default
Sheet:	20 of 31		

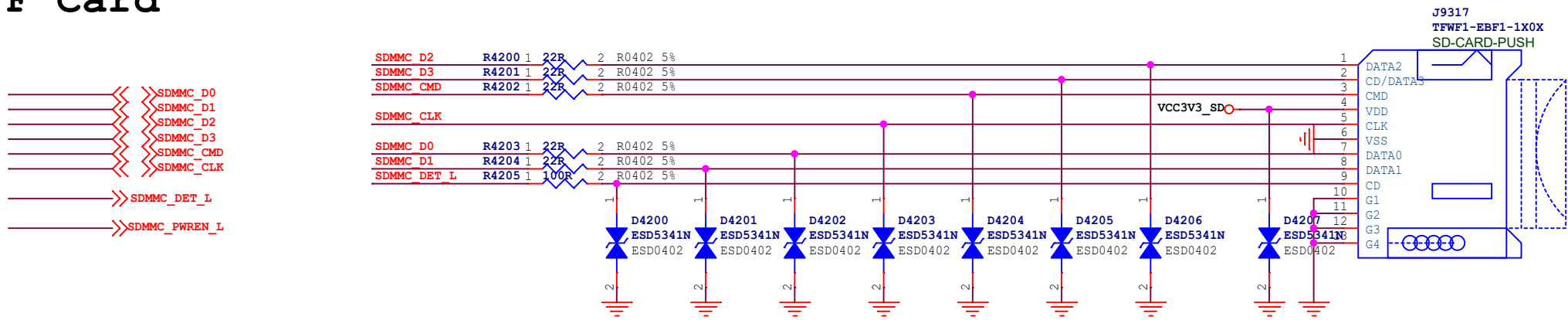
eMCP 221ball



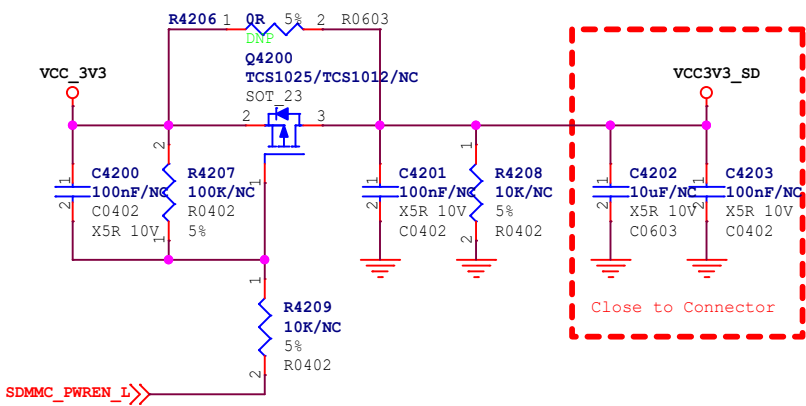
Rockchip Confidential

Project:	ROCKCHIP_DEMO_E2MCP_RICH
File:	221ball
Rev:	1.0
Created by:	Rockchip
Reviewed by:	Rockchip
Date:	2017.10.11

TF Card



VCC3V3_SD



SDMMC_PWREN=L VCC_SD=3.3V(Default)
SDMMC_PWREN=H VCC_SD=0V

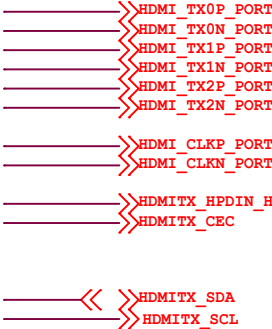
Rockchip Confidential



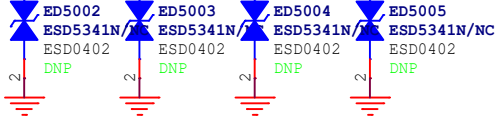
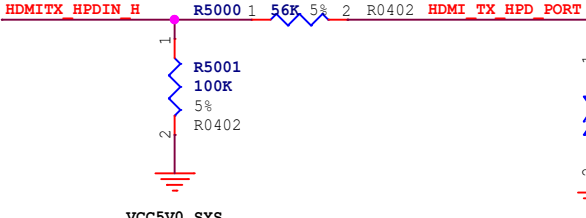
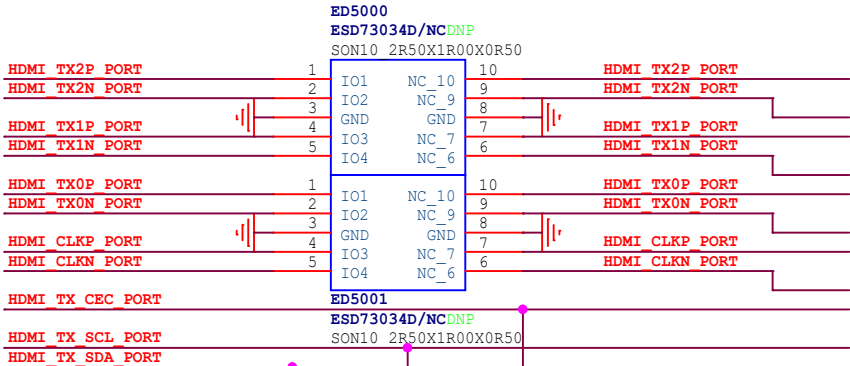
Rockchip Electronics Co., Ltd

Project:	RK3518_DEMO_EMCP_SCH				
File:	42.Flash-Micro-SD Card				
Date:	Friday, March 21, 2025			Rev:	V1.0
Designed by:	HXS	Reviewed by:	Default	Sheet:	24 of 31

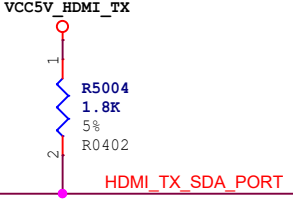
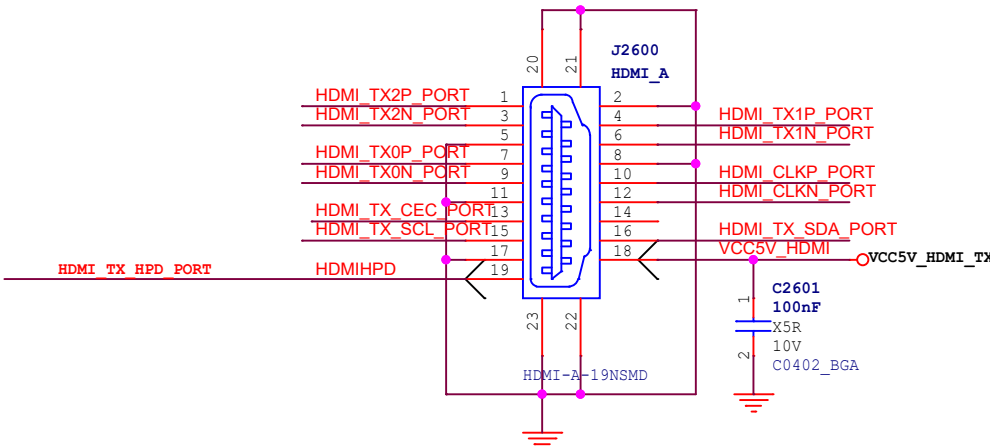
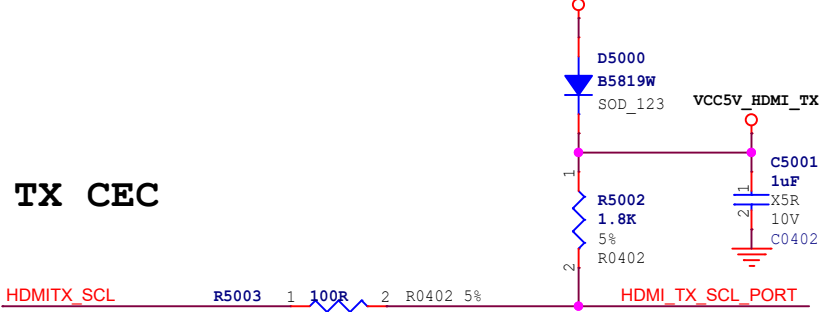
HDMI2.0 TX



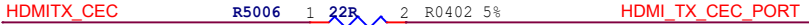
$C_j \leq 0.2\text{pF}$



HDMI0 TX CEC



HDMI0 TX DDC



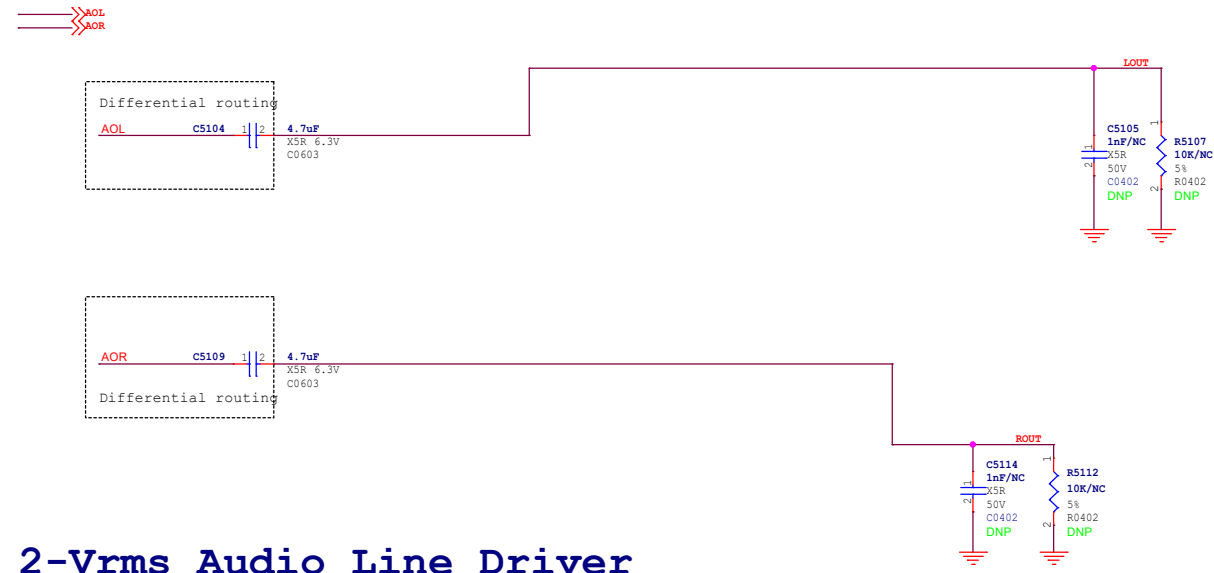
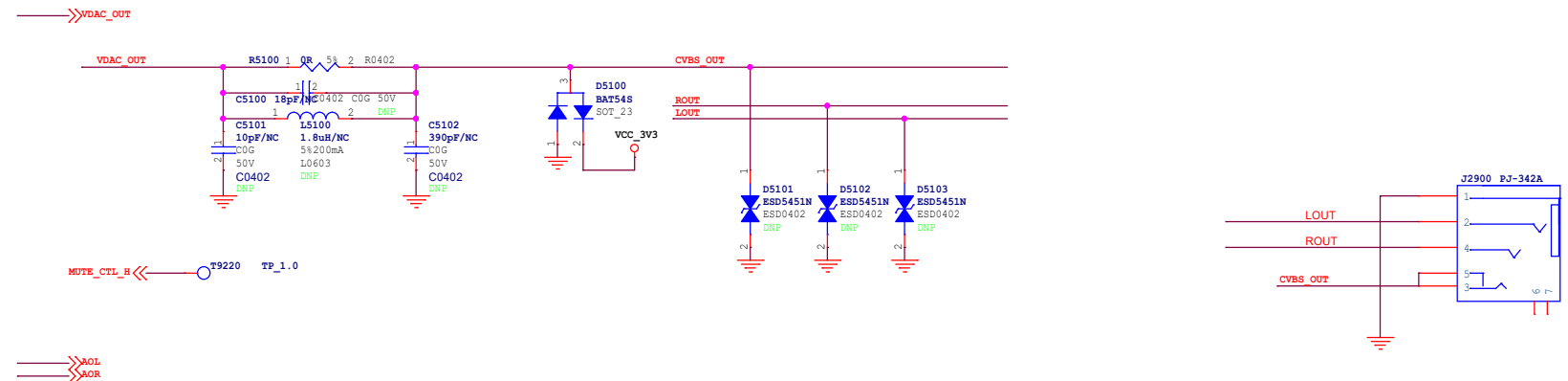
HDMI **Rockchip Confidential**



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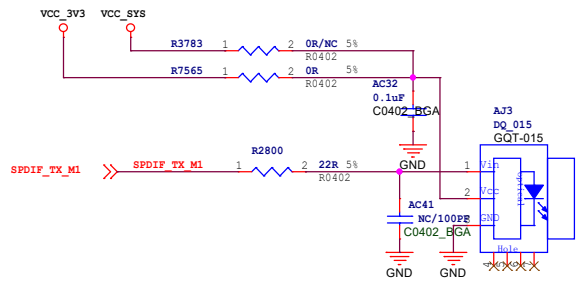
Project:	RK3518_DEMO_EMCP_SCH				
File:	50.VO-HDMI TX				
Date:	Friday, March 21, 2025			Rev:	V1.0
Designed by:	HXS	Reviewed by:	Default	Sheet:	25 of 31

CVBS/AV_OUT



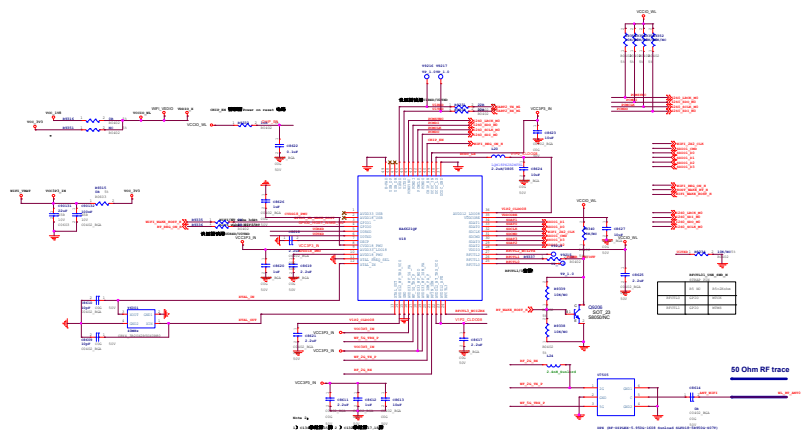
2-Vrms Audio Line Driver

SPDIF OUT



UOTXD 复用为 Strep pin
1:SDIO ROOT
0:USER ROOT

⇒

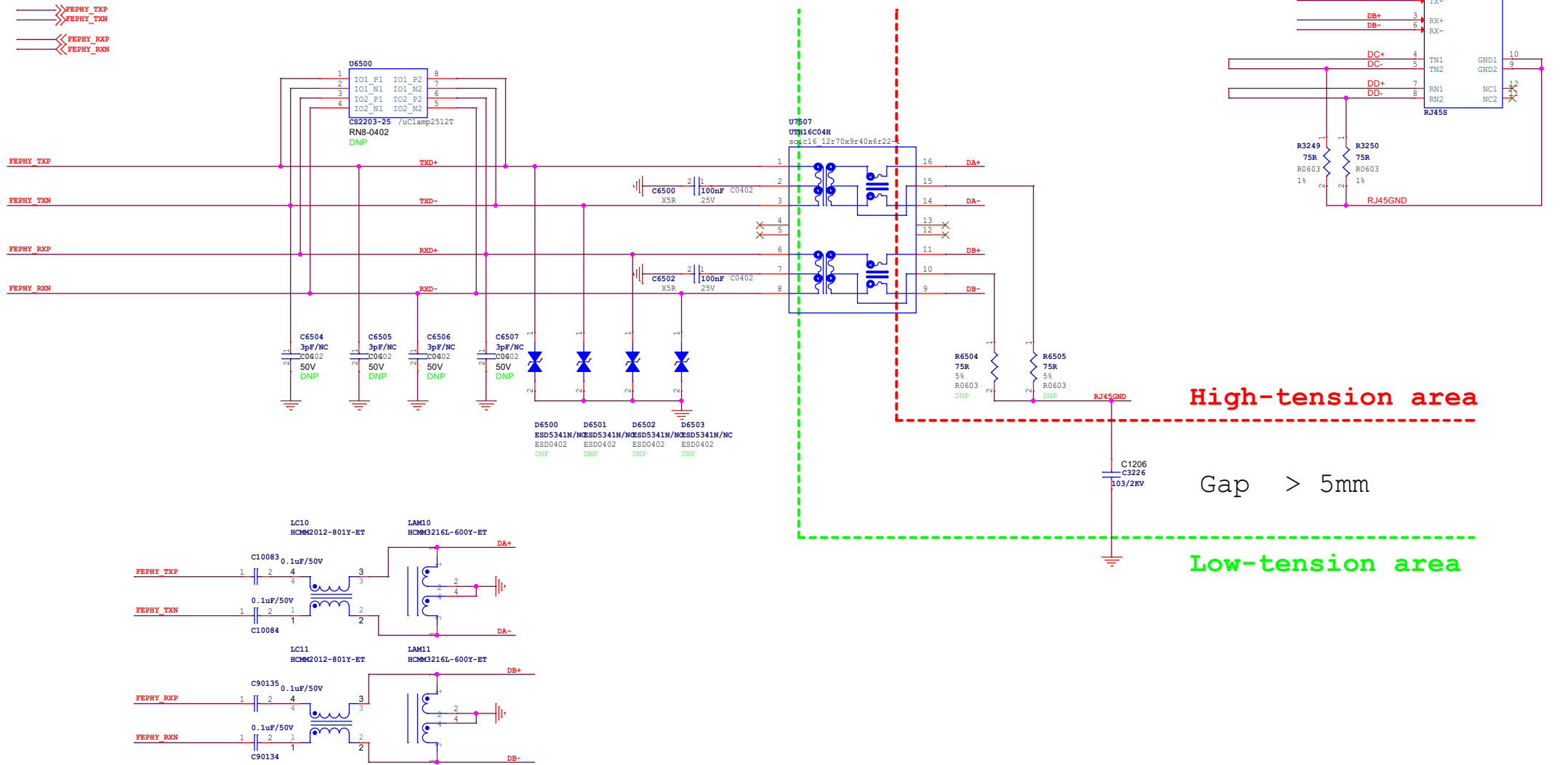


```

U0TXD 复用为 Strap pin
1:SDIO ROOT
0:USR ROOT

```

10/100M Embed FEPHY



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Project:		RK3518_DEMO_EMCP_SCH	
File:		65.10/100M-Embed PHY	
Date:	Monday, March 24, 2025	Rev:	V1.0
Designed by:	HXS	Reviewed by:	Default
Sheet:		28 of 31	

IR Receiver

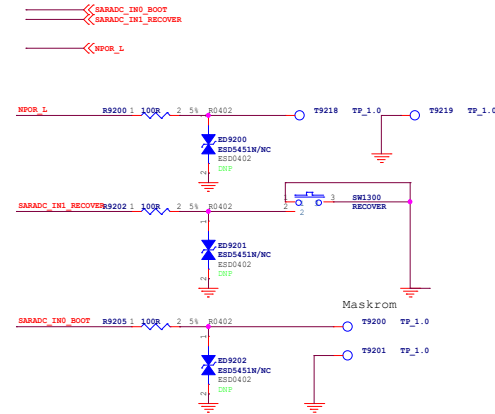
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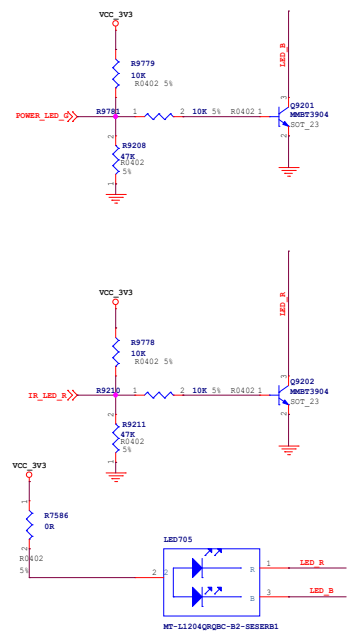
Rockchip Electronics Co., Ltd

Project:	RK3518_DEMO_EMCP_SCH				
File:	90.IR_RX				
Date:	Friday, December 05, 2025			Rev:	V1.0
Designed by:	HXS	Reviewed by:	Default	Sheet:	29 of 31

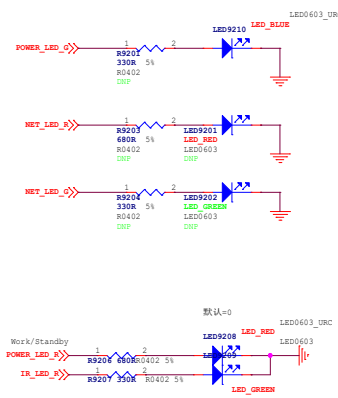
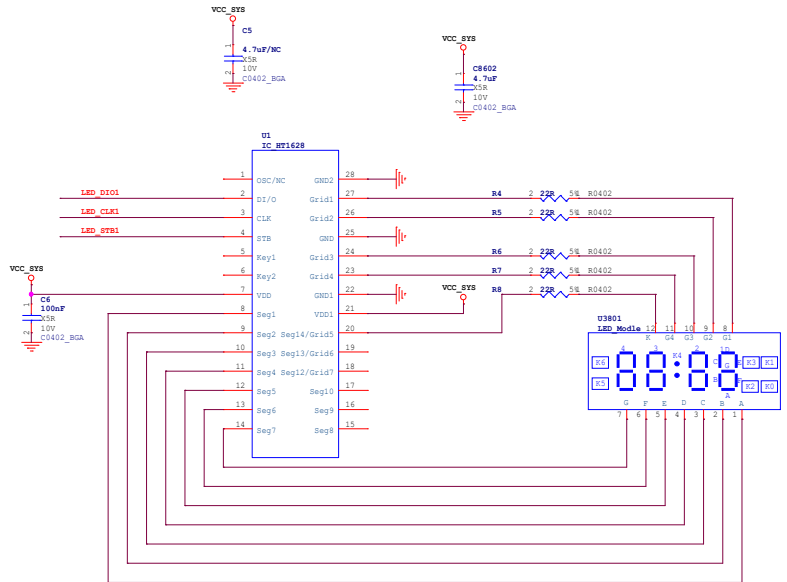
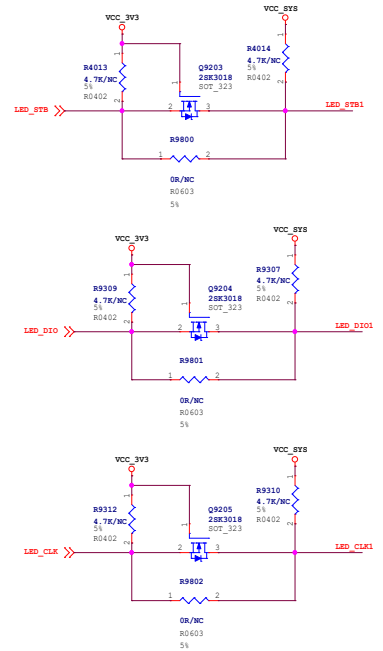
KEY



LED DISPLAY

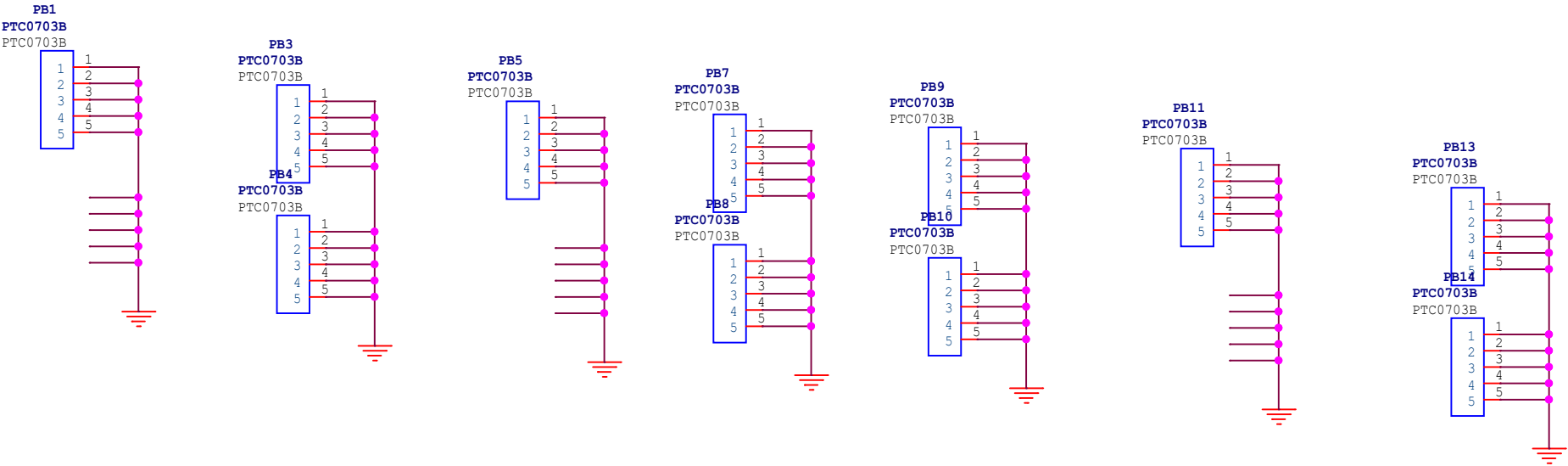
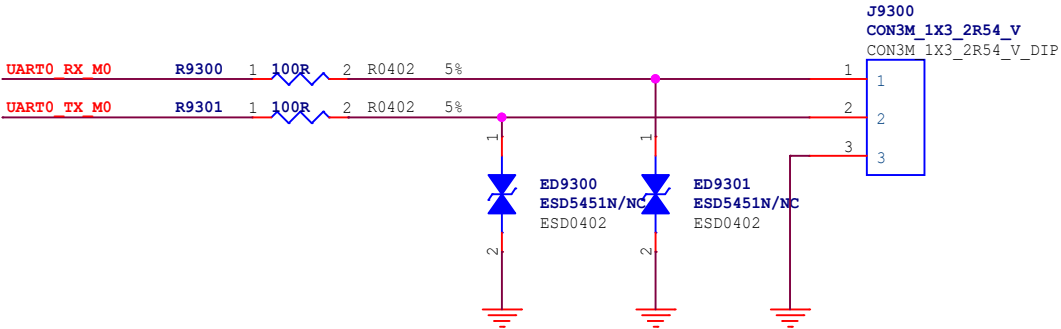


LED DISPLAY



Debug UART0

UART0_RX_M0
UART0_TX_M0



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Rockchip Electronics Co., Ltd

Project:	RK3518_DEMO_EMCP_SCH					
File:	93.Debug UART0					
Date:	Tuesday, January 06, 2026				Rev:	V1.0
Designed by:	HXS	Reviewed by:	Default	Sheet:	31 of 31	