

Schematics For RK3566 BOX

RK3566_BOX_Demo1_DDR4P408DD4_V10

Main Functions Introduction

- 1) PMIC: DiscretePower(DCIN 12V)
- 2) RAM: DDR4 4x8Bit
- 3) ROM: eMMC,Nand Flash(Optional)
- 4) Support: 1 x Micro SD Card3.0
- 5) Support: 1 x SATA3.0 Connector (7pin)
- 6) Support: 1 x USB2.0 OTG + 1 x USB3.0 HOST + 2 x USB2.0 HOST
- 7) Support: 1 x HDMI2.0 TX
- 8) Support: 1 x Optical S/PDIF TX
- 9) Support: 1 x 4Lane MIPI CSI RX
- 10) Support: 1 x 10/100/1000 Ethernet(RGMII)
- 11) Support: 1 x a/b/g/n/ac Wi-Fi + BT 5.0(2T2R)
- 12) Support: 1 x IR Receiver
- 13) Support: 1 x Recovery Key
- 14) Support: 1 x Power LED,1 x Working LED,1 x IR LED,1 x SATA ACT LED
- 15) Support: Debug UART

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Generate Bill of Materials

Header:

Item\Part\Description\PCB Footprint\Reference\Quantity\Option

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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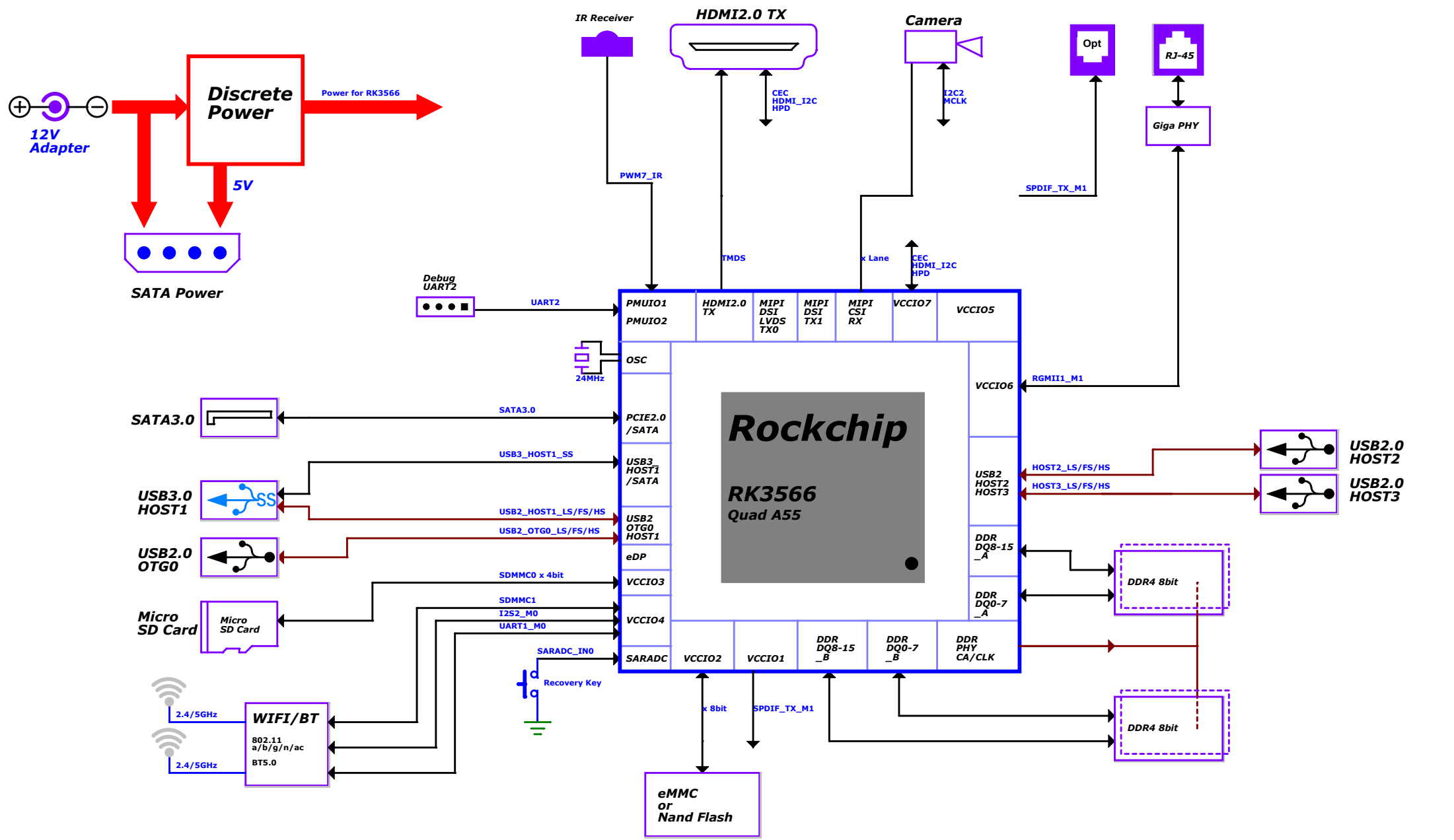


瑞芯微电子

Rockchip Electronics Co., Ltd

Project:	RK3566_BOX_Demo1_DDR4P408DD4		
File:	02.Revision History		
Date:	Wednesday, March 24, 2021	Rev:	V1.0
Designed by:	Zhangdz	Reviewed by:	Default
		Sheet:	3 of 35

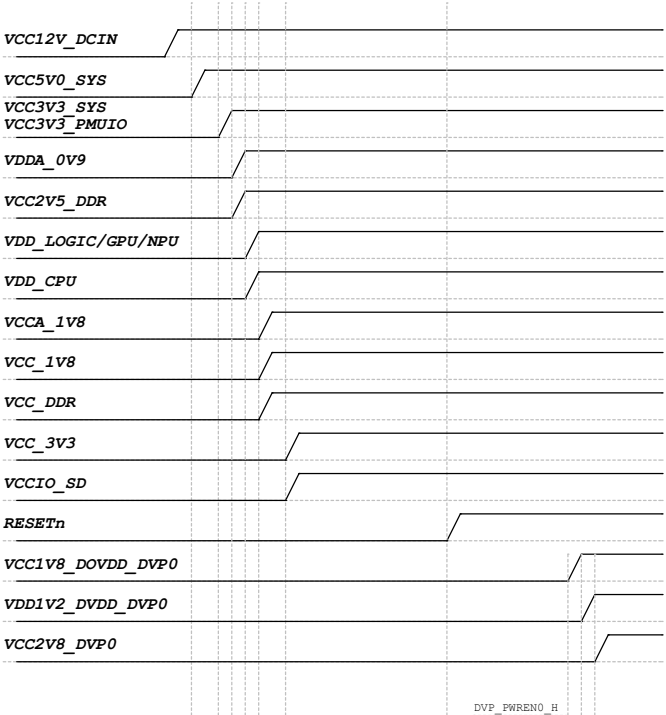
RK3566 Ref Block Diagram



12V Adapter



Power Sequence



Power Supply	Channel	Supply Limit	Power Name	Time Slot	Default Voltage
VCC12V_DCIN	BUCK	3.0A	VCC5V0_SYS	Slot:0	3.3V
VCC12V_DCIN	BUCK	3.0A	VCC3V3_SYS	Slot:1	5.2V
VCC3V3_SYS			VCC3V3_PMUIO	Slot:1	3.3V
VCC3V3_SYS	LDO	0.3A	VDDA_0V9	Slot:2	0.9V
VCC3V3_SYS	LDO	0.3A	VCC2V5_DDR	Slot:2	2.5V
VCC5V0_SYS	BUCK	3.0A	VDD_LOGIC/GPU/NPU	Slot:3	0.9V
VCC5V0_SYS	BUCK	5.0A	VDD_CPU	Slot:3	0.9V
VCC3V3_SYS	LDO	0.5A	VCC_1V8	Slot:4	1.8V
VCC3V3_SYS	LDO	0.5A	VCCA_1V8	Slot:4	1.8V
VCC5V0_SYS	BUCK	1.5A	VCC_DDR	Slot:4	1.2V DDR4
VCC3V3_SYS	MOS	2A	VCC_3V3	Slot:5	3.3V
VCC5V0_SYS	LDO	0.5A	VCCIO_SD	Slot:5A	3.3V
VCC3V3_PMUIO	RESETn				
VCC3V3_SYS	LDO	0.5A	VCC1V8_DOVDD_DVP0		1.8V
VCC3V3_SYS	LDO or BUCK	0.5A/1A	VDD1V2_DVDD_DVP0		1.2V
VCC5V0_SYS	LDO	0.5A	VCC2V8_DVP0		2.8V

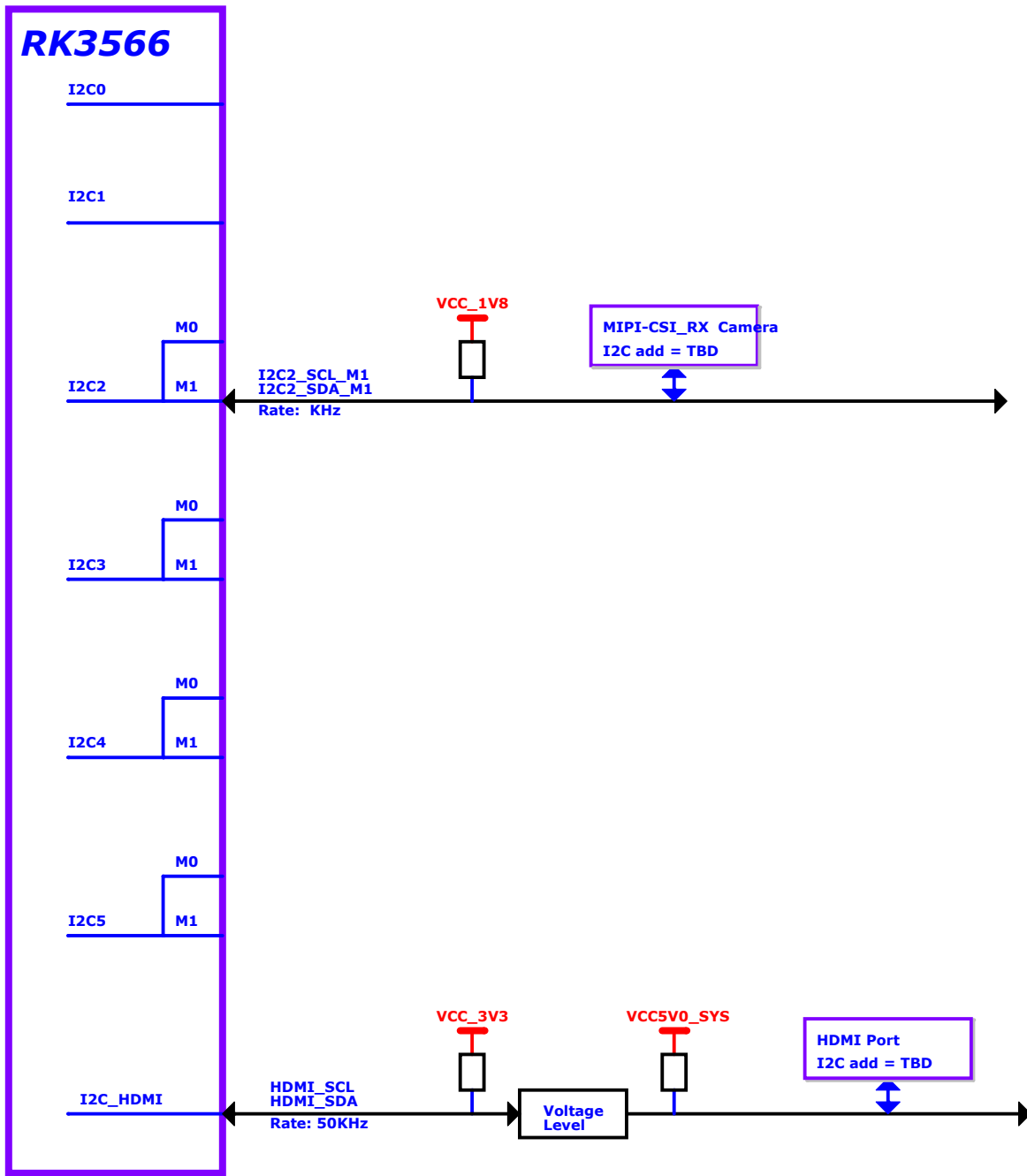
IO Power Domain Map

Updates must be Revision accordingly!

IO Domain	Pin Num	Support IO Voltage		Actual assigned IO Domain Voltage			Notes
		3.3V	1.8V	Supply Power Net Name	Power Source	Voltage	
PMUIO1	Pin Y20	✓	✗	VCC3V3_PMUIO	VCC3V3_SYS	3.3V	
PMUIO2	Pin W19	✓	✓	VCC3V3_PMUIO	VCC3V3_SYS	3.3V	
VCCIO1	Pin H17	✓	✓	VCC_3V3	VCC_3V3	3.3V	
VCCIO2	Pin H18	✓	✓	VCCIO_FLASH	VCC_1V8	1.8V	PIN "FLASH_VOL_SEL" must be logic High if VCCIO_FLASH=3.3V,FLASH_VOL_SEL must be logic low
VCCIO3	Pin L22	✓	✓	VCCIO_SD	VCCIO_SD	3.3V	SD2.0=3.3V-->SD3.0=1.8V
VCCIO4	Pin J21	✓	✓	VCCIO_WL	VCC_1V8	1.8V	
VCCIO5	Pin V10 Pin V11	✓	✓				
VCCIO6	Pin R9 Pin U9	✓	✓	VCC_1V8	VCC_1V8	1.8V	
VCCIO7	Pin V12	✓	✓	VCC_3V3	VCC_3V3	3.3V	

I2C MAP

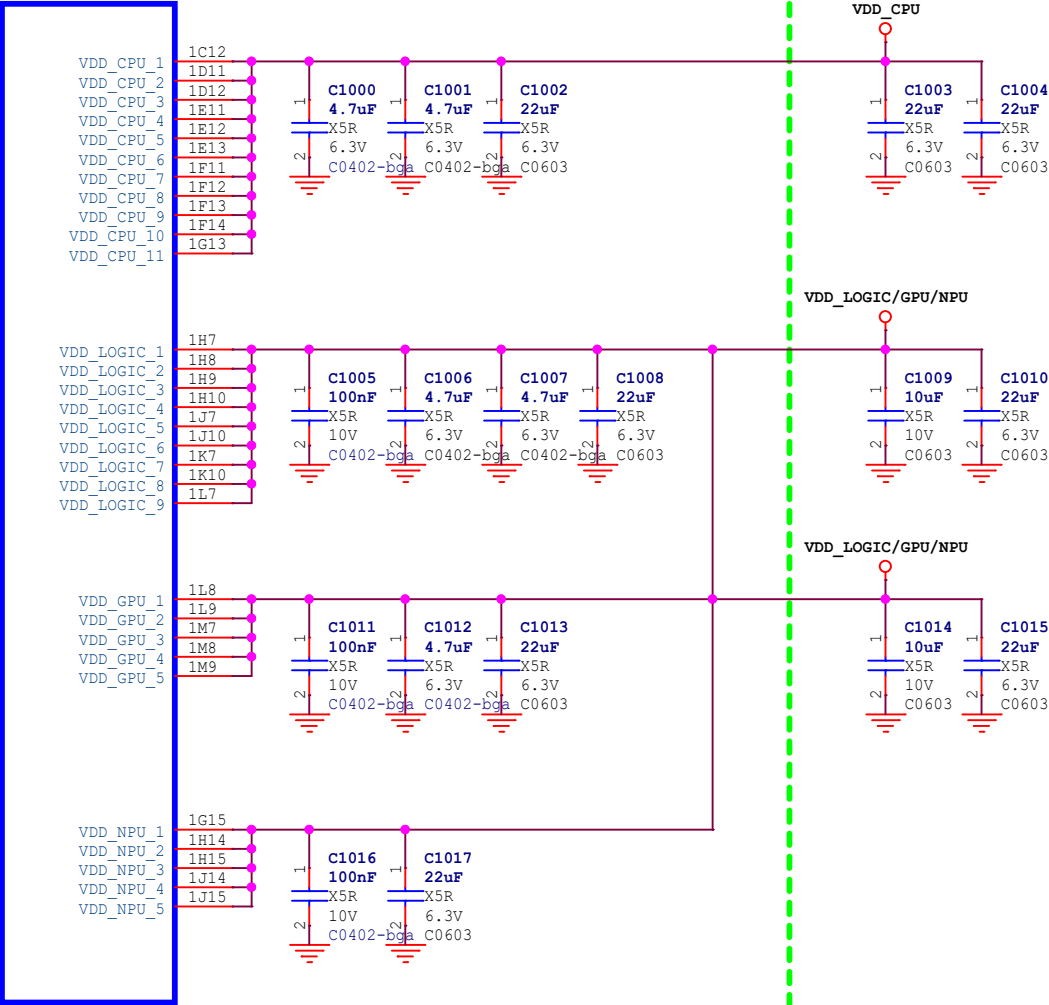
RK3566



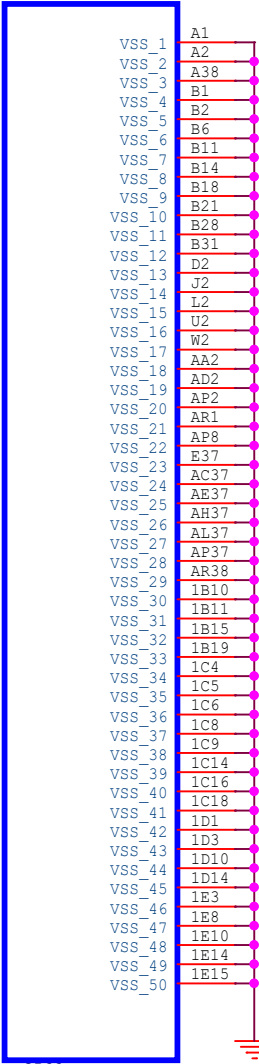
RK3566_ABCDE

(Power&GND)

U1000A

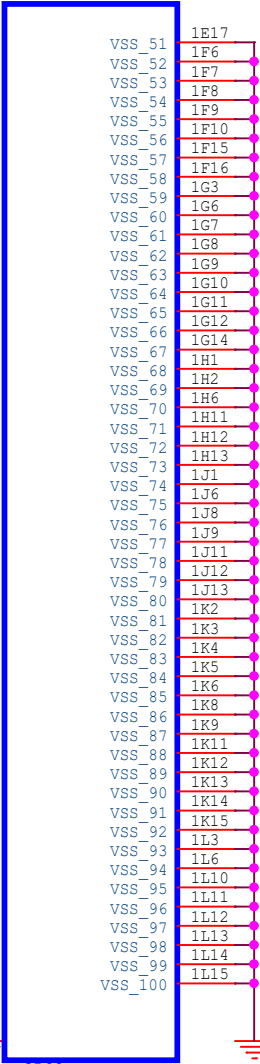


U1000B



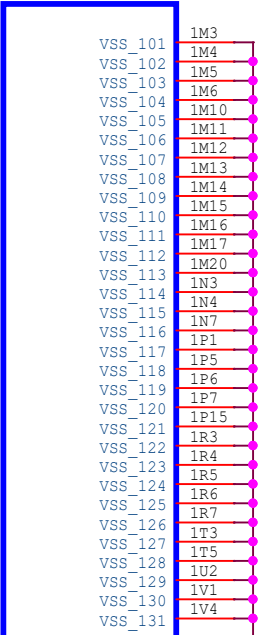
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U1000C



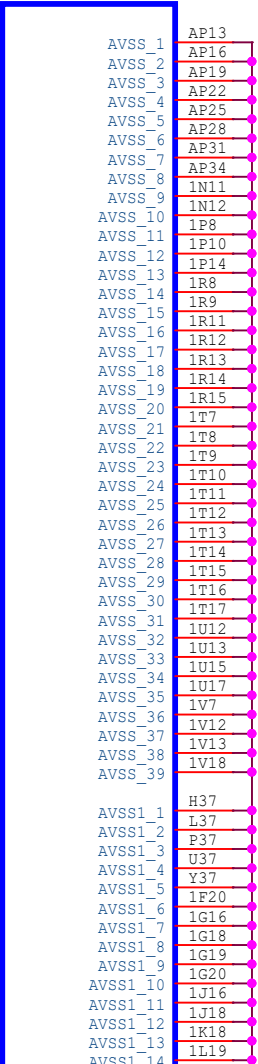
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BGA565_15R50x14R40x0R90

U1000D



RK3566
BGA565_15R50x14R40x0R90

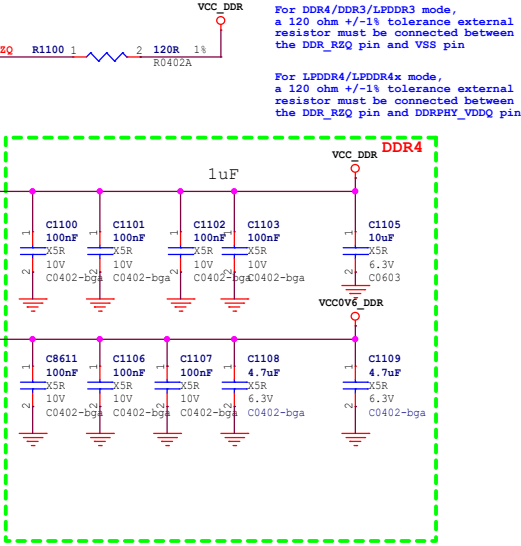
U1000E



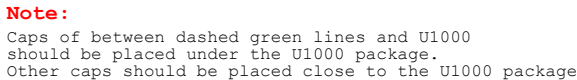
RK3566
BGA565_15R50x14R40x0R90

 瑞芯微电子		Rockchip Electronics Co., Ltd	
Project:	RK3566_BOX_Demo1_DDR4P408DD4		
File:	10.RK3566_Power/GND		
Date:	Monday, July 12, 2021		Rev: V1.0
Designed by:	Zhangdz	Reviewed by:	Default
		Sheet:	8 of 35

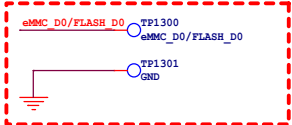
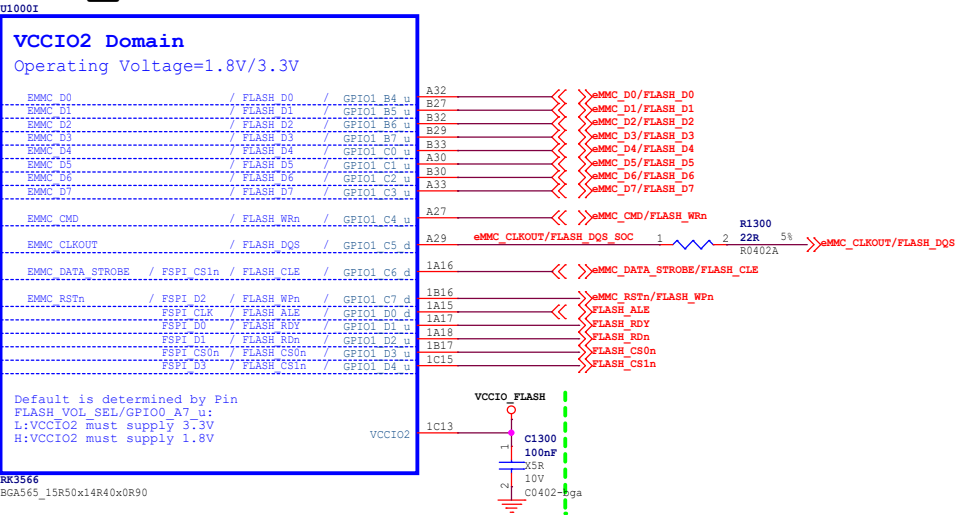
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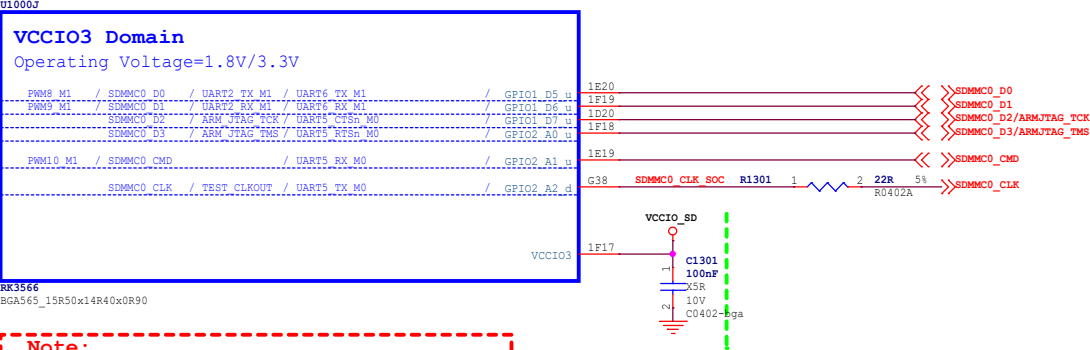


RK3566_I (VCCIO2 Domain)



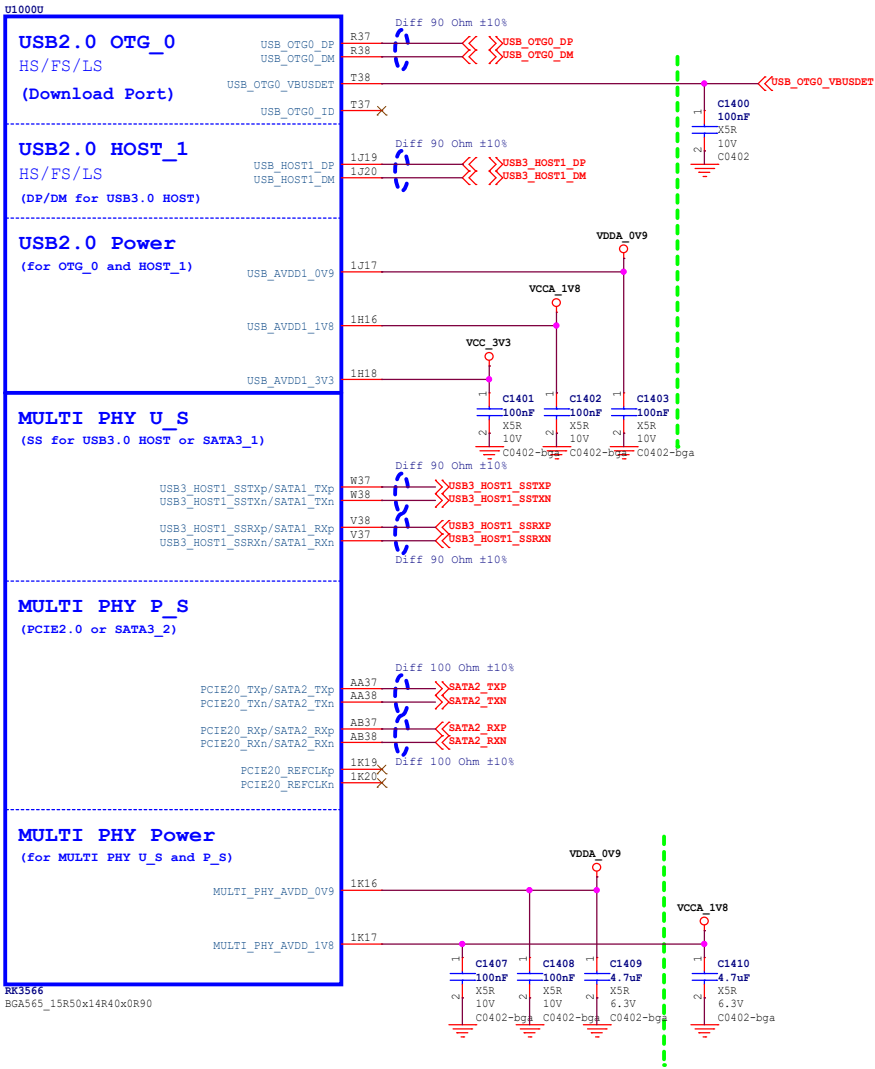
Note:
Reserve TestPoint for put the system into Maskrom mode to update the firmware

RK3566_J (VCCIO3 Domain)

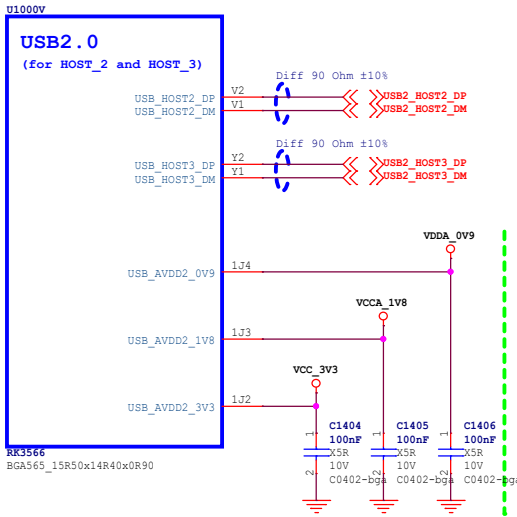


Note:
Caps of between dashed green lines and U1000 should be placed under the U1000 package

RK3566_U (USB3.0/PCIe2.0 x1)

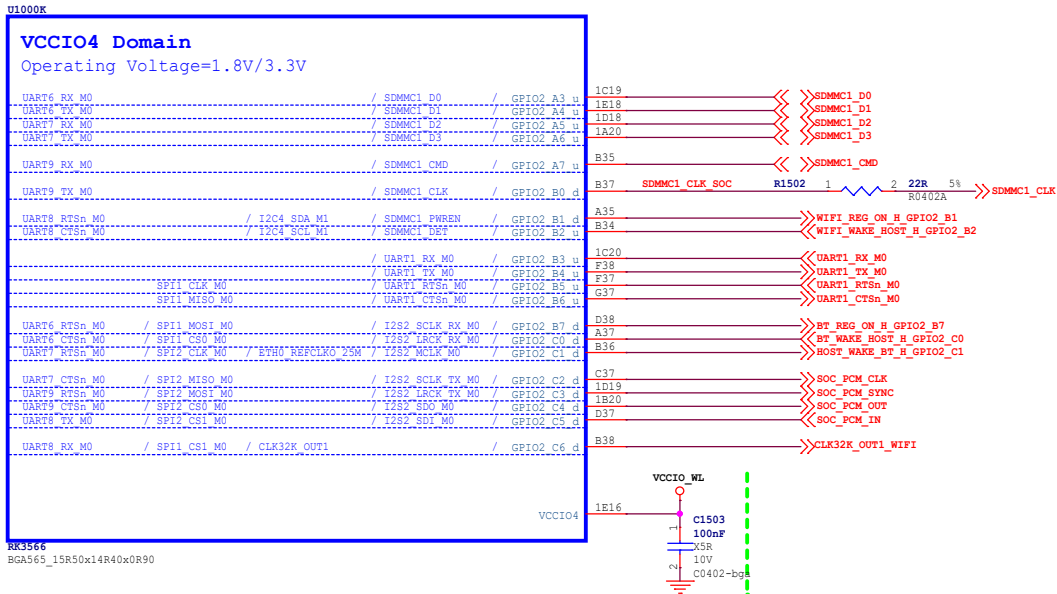


RK3566_V (USB2.0 HOST)

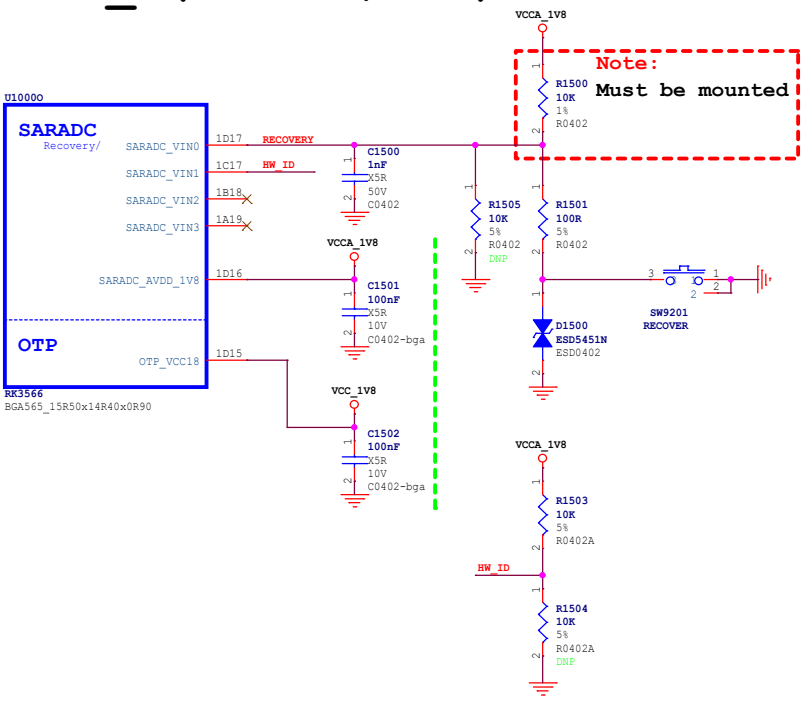


Note:
Caps of between dashed green lines and U1000 should be placed under the U1000 package.
Other caps should be placed close to the U1000 package

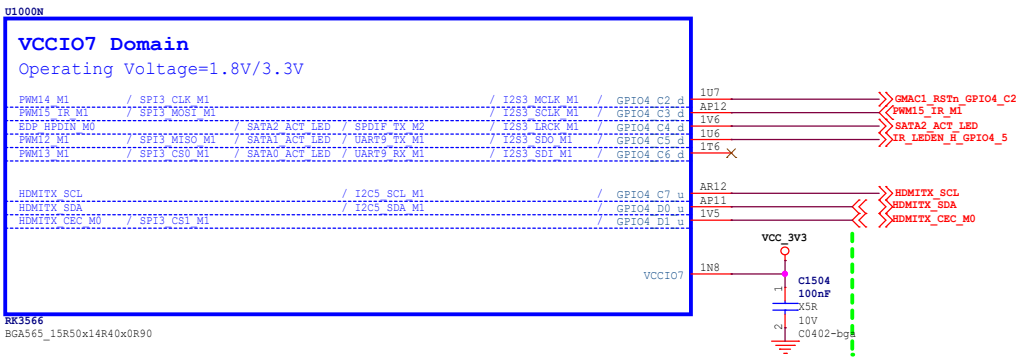
RK3566_K(VCCIO4 Domain)



RK3566_O(SARADC/OTP)



RK3566_N(VCCIO7 Domain)

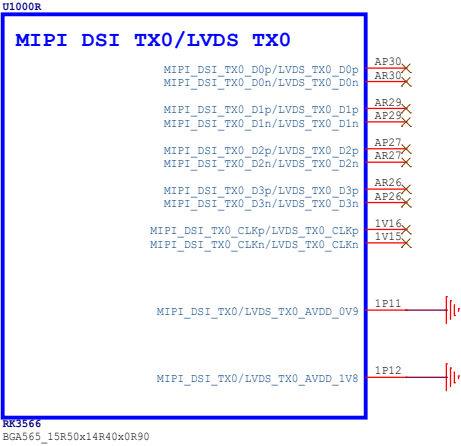


Note:
Caps of between dashed green lines and U1000 should be placed under the U1000 package

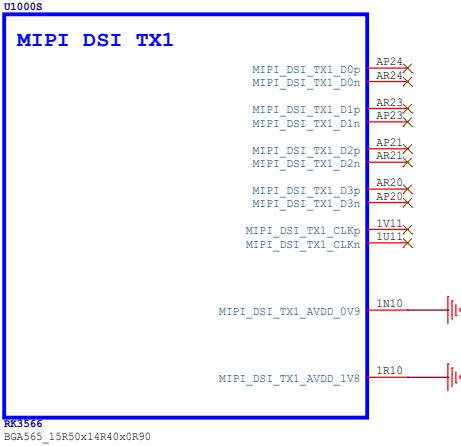
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Project:	RK3566_BOX_Demo1_DDR4P408DD4		
File:	15.RK3566_SARADC/GPIO		
Date:	Monday, July 12, 2021	Rev:	V1.0
Designed by:	Zhangtz	Reviewed by:	Default
Sheet:	13 of 35		

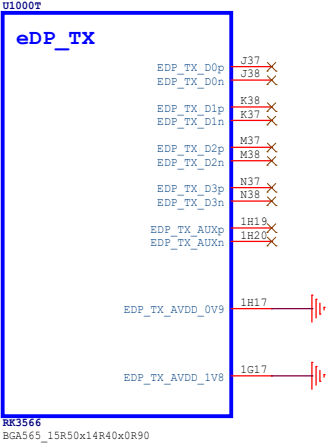
RK3566_R (MIPI_DSI_TX0/LVDS_TX0)



RK3566_S (MIPI_DSI_TX1)



RK3566_T (eDP_TX)



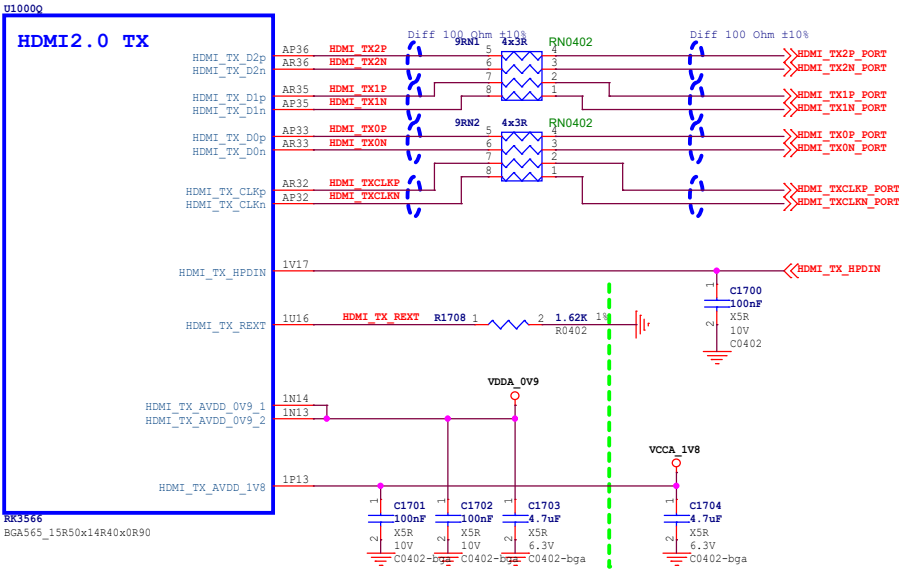
Note:

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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RK3566_Q (HDMI2.0_TX)



 Rockchip Electronics Co., Ltd	
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Project:	RK3566_BOX_Demo1_DDR4P408DD4
File:	17.RK3566_VO Interface_1
Date:	Monday, July 12, 2021
Rev:	V1.0
Designed by:	Zhangtz
Reviewed by:	Default
Sheet:	15 of 35

RK3566_L (VCCIO5 Domain)

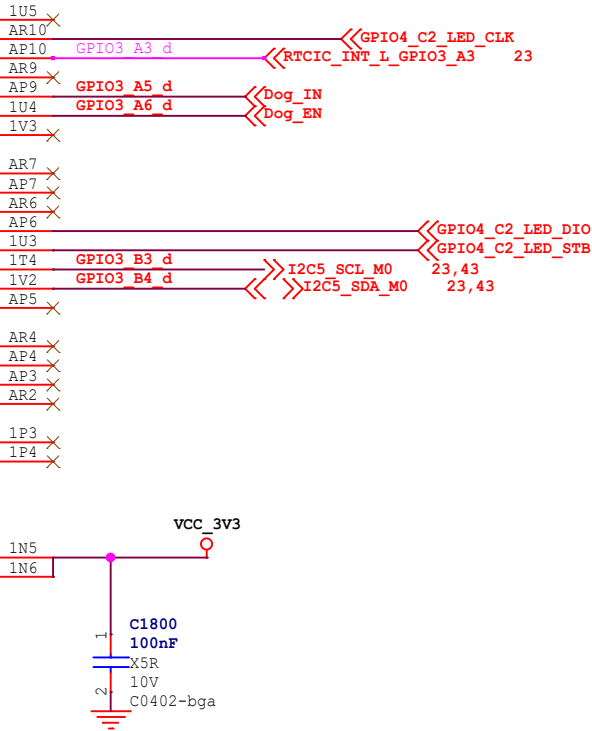
U1000L

VCCIO5 Domain

Operating Voltage=1.8V/3.3V

VOP BT1120 D0	/ SPI1 CS0 M1	/ GMAC1 TXD2 M0	/ I2S3 MCLK M0	/ SDMMC2 D0 M1	/ GPIO3 A1 d
VOP BT1120 D1		/ GMAC1 TXD3 M0	/ I2S3 SCLK M0	/ SDMMC2 D1 M1	/ GPIO3 A2 d
VOP BT1120 D2		/ GMAC1 RXD2 M0	/ I2S3 LRCK M0	/ SDMMC2 D2 M1	/ GPIO3 A3 d
VOP BT1120 D3		/ GMAC1 RXD3 M0	/ I2S3 SDO M0	/ SDMMC2 D3 M1	/ GPIO3 A4 d
VOP BT1120 D4		/ GMAC1 TXCLK M0	/ I2S3 SDI M0	/ SDMMC2 CMD M1	/ GPIO3 A5 d
VOP BT1120 CLK		/ GMAC1 RXCLK M0		/ SDMMC2 CLK M1	/ GPIO3 A6 d
VOP BT1120 D5				/ SDMMC2 DET M1	/ GPIO3 A7 d
VOP BT1120 D6		ETH1 REFCLK0 25M M0		/ SDMMC2 PWREN M1	/ GPIO3 B0 d
PWM8 M0	/ VOP BT1120 D7	/ GMAC1 RXD0 M0	/ UART4 RX M1		/ GPIO3 B1 d
PWM9 M0	/ VOP BT1120 D8	/ GMAC1 RXD1 M0	/ UART4 TX M1		/ GPIO3 B2 d
VOP BT1120 D9	/ I2C5 SCL M0	/ GMAC1 RXDV CRS M0	/ PDM SDI0 M2		/ GPIO3 B3 d
VOP BT1120 D10	/ I2C5 SDA M0	/ GMAC1 RXER M0	/ PDM SDI1 M2		/ GPIO3 B4 d
PWM10 M0	/ VOP BT1120 D11	/ I2C3 SCL M1	/ GMAC1 TXD0 M0		/ GPIO3 B5 d
PWM11 IR M0	/ VOP BT1120 D12	/ I2C3 SDA M1	/ GMAC1 TXD1 M0		/ GPIO3 B6 d
PWM12 M0		/ GMAC1 TXEN M0	/ UART3 TX M1	/ PDM SDI2 M2	/ GPIO3 B7 d
PWM13 M0		/ GMAC1 MCLKINOUT M0	/ UART3 RX M1	/ PDM SDI3 M2	/ GPIO3 C0 d
VOP BT1120 D13	/ SPI1 MOSI M1		/ PCIE20 PERSTn M1	/ I2S1 SDO2 M2	/ GPIO3 C1 d
VOP BT1120 D14	/ SPI1 MISO M1		/ UART5 TX M1	/ I2S1 SDO3 M2	/ GPIO3 C2 d
VOP BT1120 D15	/ SPI1 CLK M1		/ UART5 RX M1	/ I2S1 SCLK RX M2	/ GPIO3 C3 d
PWM14 M0	/ VOP PWM M1	/ GMAC1 MDC M0	/ UART7 TX M1	/ PDM CLK1 M2	/ GPIO3 C4 d
PWM15 IR M0	/ SPDIF TX M1	/ GMAC1 MDIO M0	/ UART7 RX M1	/ I2S1 LRCK RX M2	/ GPIO3 C5 d

RK3566
BGA565_15R50x14R40x0R90

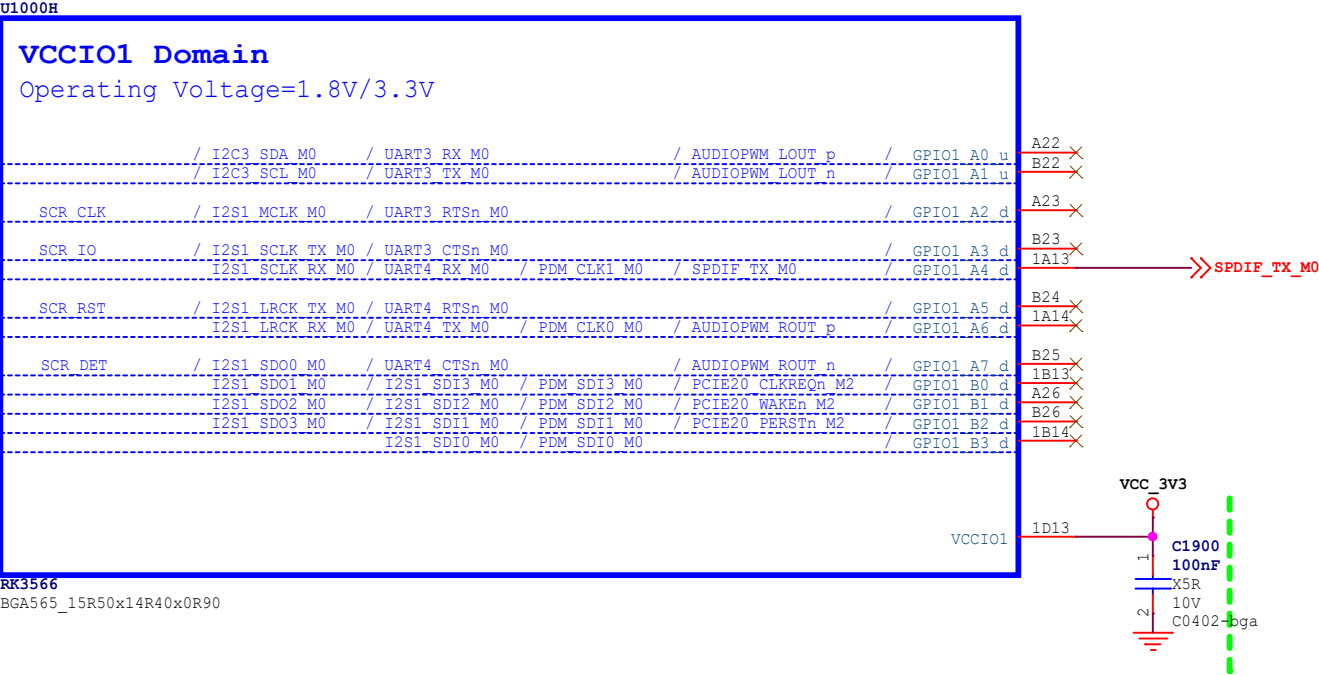


Note:

Caps of between dashed green lines and U1000 should be placed under the U1000 package

 瑞芯微电子		Rockchip Electronics Co., Ltd				
Project:	RK3566_BOX_Demo1_DDR4P408DD4					
File:	18.RK3566_VO Interface_2					
Date:	Monday, July 12, 2021				Rev:	V1.0
Designed by:	Zhangdz	Reviewed by:	Default	Sheet:	16 of 35	

RK3566_H (VCCIO1 Domain)



RK3566
BGA565_15R50x14R40x0R90

Note:

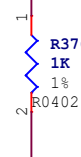
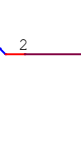
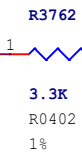
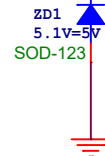
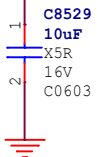
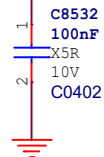
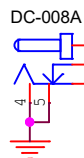
Caps of between dashed green lines and U1000 should be placed under the U1000 package

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Project:	RK3566_BOX_Demo1_DDR4P408DD4				
File:	19.RK3566_Audio Interface				
Date:	Monday, July 12, 2021			Rev:	V1.0
Designed by:	Zhangdz	Reviewed by:	Default	Sheet:	17 of 35

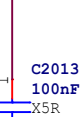
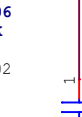
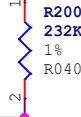
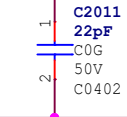
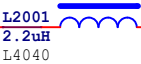
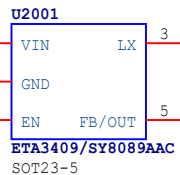
DC IN

J600
DC-JaCK_DIP
power DC JaCK DIP ID2.0mm OD 5.5mm
DC_5V



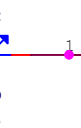
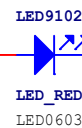
Default 3.39V

VCC5V0_SYS



VCC3V3_SYS

VCC3V3_SYS



WORKING_LEDEN H GPIO0_C3



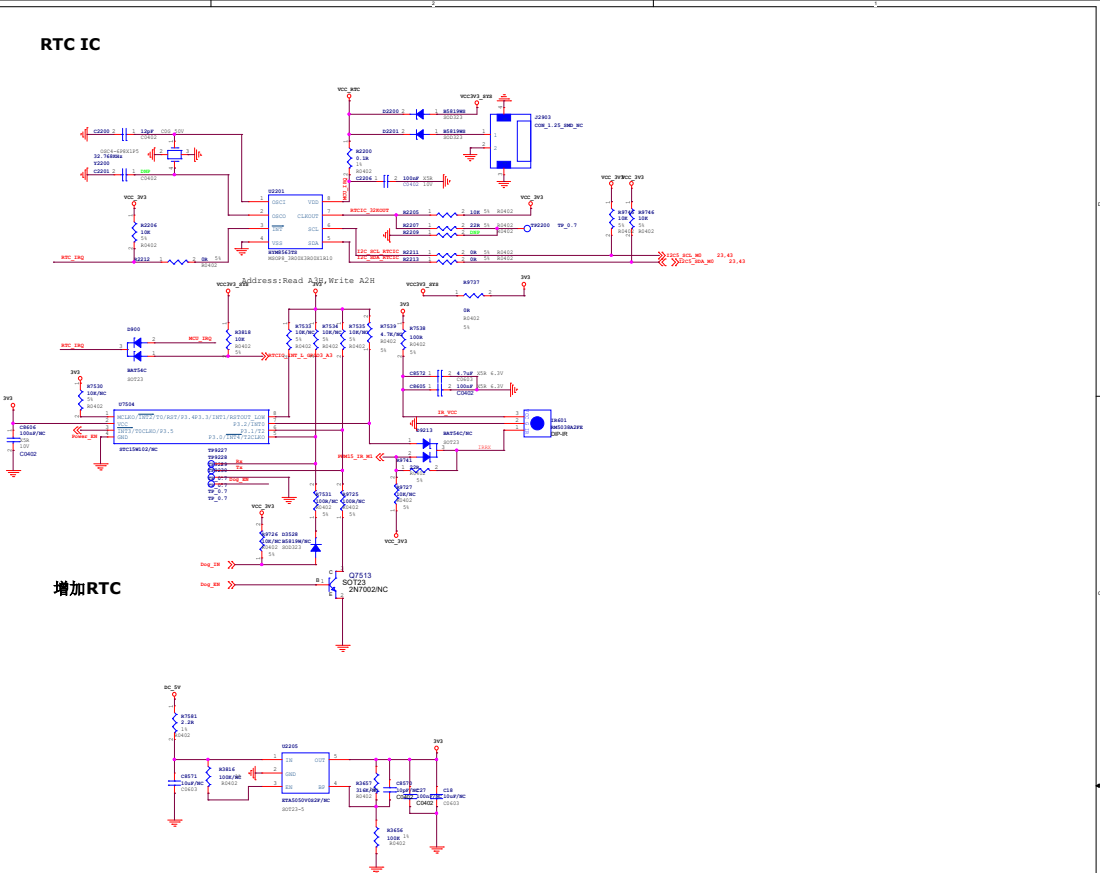
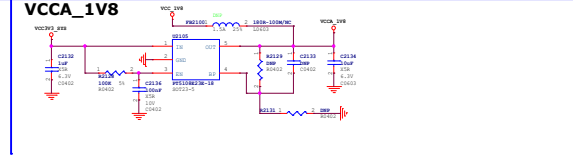
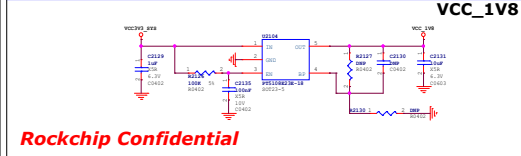
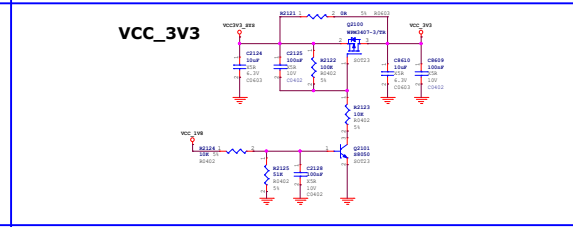
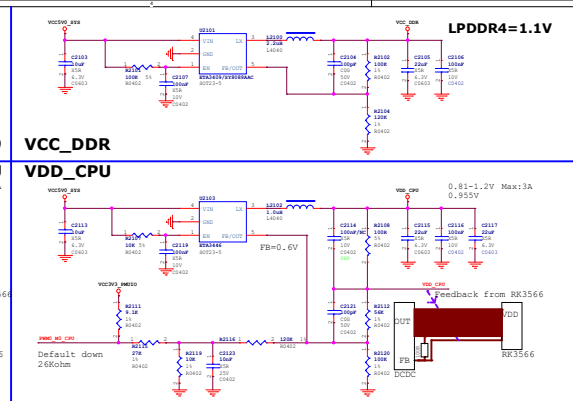
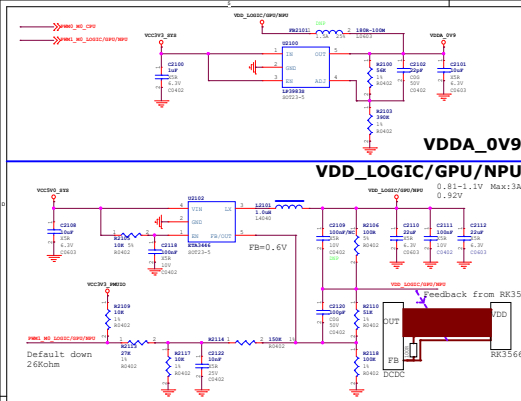
设备正常运行时呈蓝色常亮状态；
设备待机时呈呼吸灯状态。

WORKING_LEDEN H GPIO0_C3

Rockchip
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Rockchip Electronics Co., Ltd

Project:	RK3566_BOX_Demo1_DDR4P408DD4		
File:	20.Power_DC IN 5V		
Date:	Wednesday, March 24, 2021	Rev:	V1.0
Designed by:	Zhangdz	Reviewed by:	Default
Sheet:	18	of	35

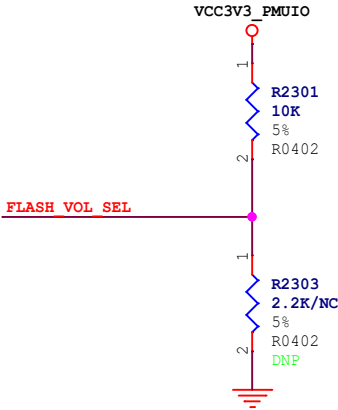
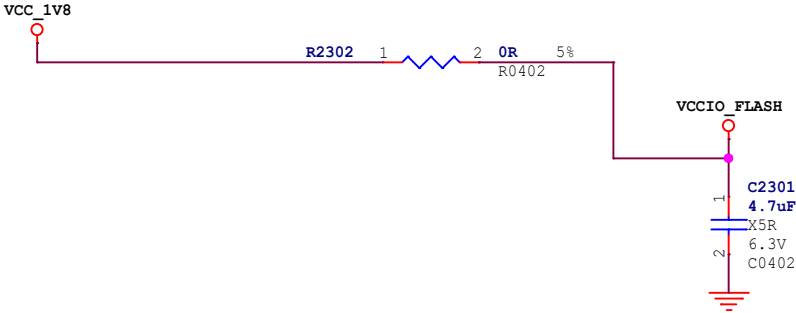


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FLASH_VOL_SEL

Flash Power Manage

	VCCIO2 domain voltage: Recommend voltage value (VCCIO_FLASH)	FLASH_VOL_SEL state decided to VCCIO2 domain IO driven by default
eMMC	1.8V	FLASH_VOL_SEL --> Logic=H
Nand flash	Default 3.3V, Adjust according to demand 1.8V	FLASH_VOL_SEL --> Logic=L(Default)
SPI flash	Default 3.3V, Adjust according to demand 1.8V	FLASH_VOL_SEL --> Logic=L(Default)



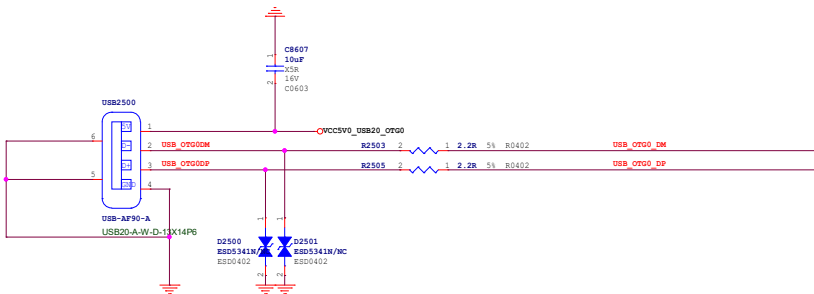
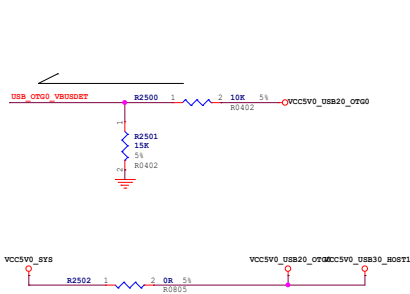
Note:
FLASH_VOL_SEL state decided
to VCCIO2-domain IO driven by default
Logic=L: 3.3V IO driven
Logic=H: 1.8V IO driven

USB_OTG0_DP
USB_OTG0_DM
USB_OTG0_VBUSDET

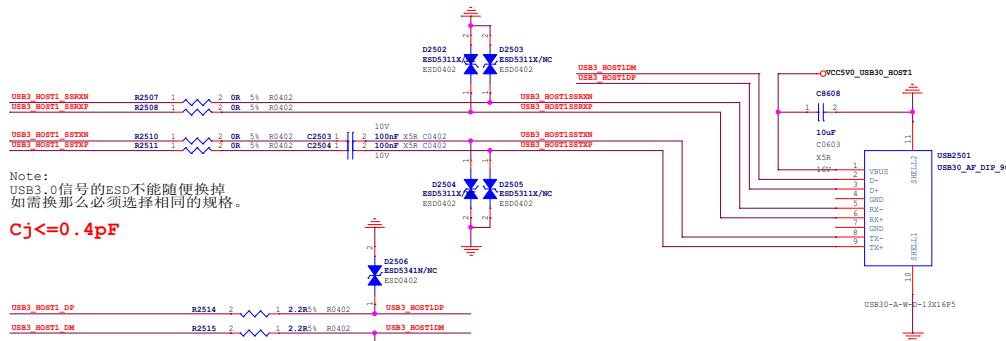
USB3_HOST1_DP
USB3_HOST1_DM
USB3_HOST1_STTXN
USB3_HOST1_STRXN
USB3_HOST1_SERRXN
USB3_HOST1_SERRXN

USB3_HOST2_DP
USB3_HOST2_DM
USB3_HOST3_DP
USB3_HOST3_DM

USB_OTG0_PWDEN_R_GP100_C6
USB_HOST_PWDEN_R_GP100_A6



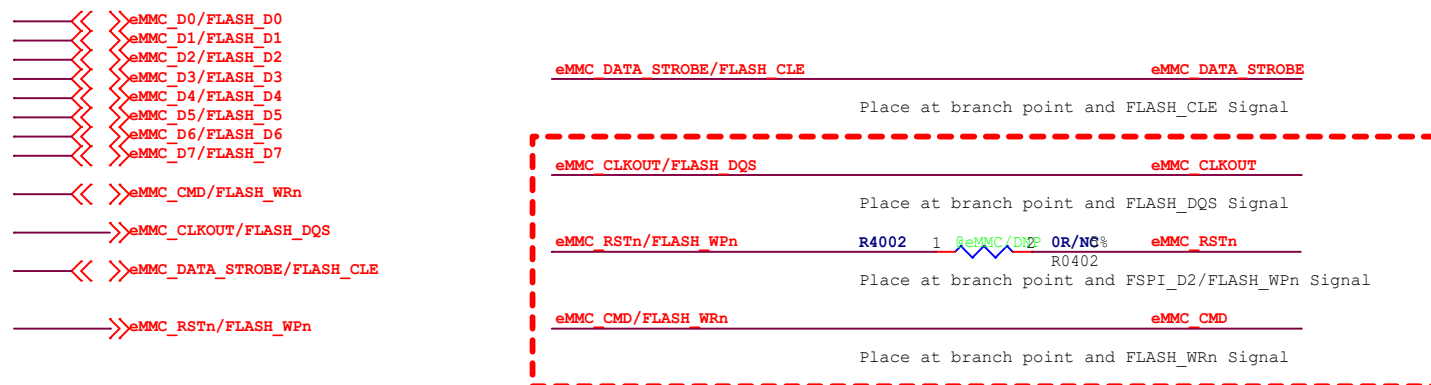
USB2.0 OTG0



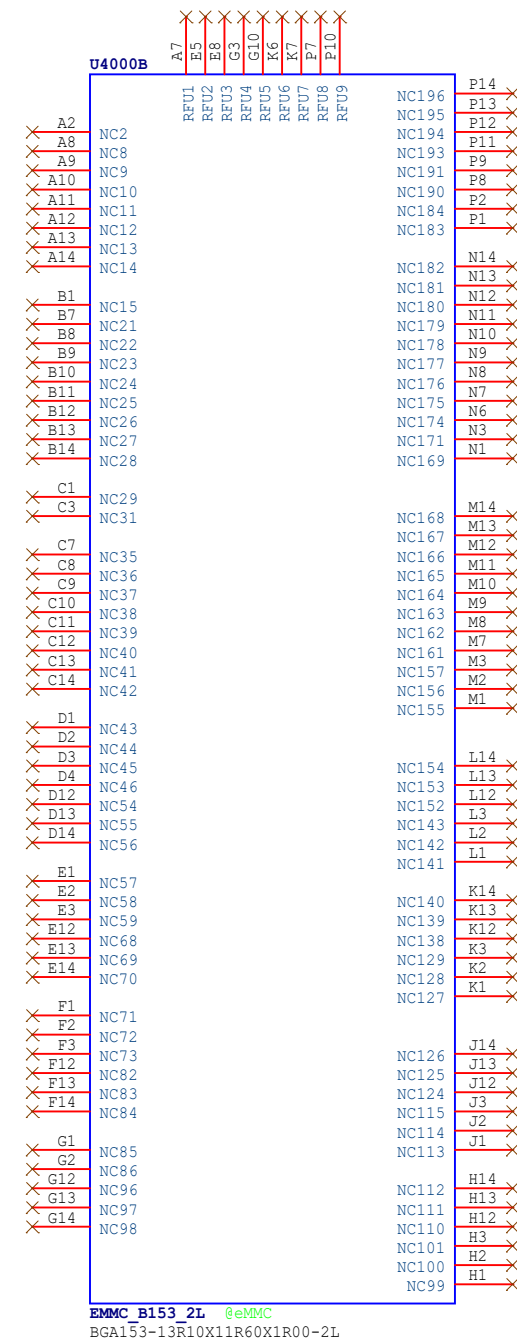
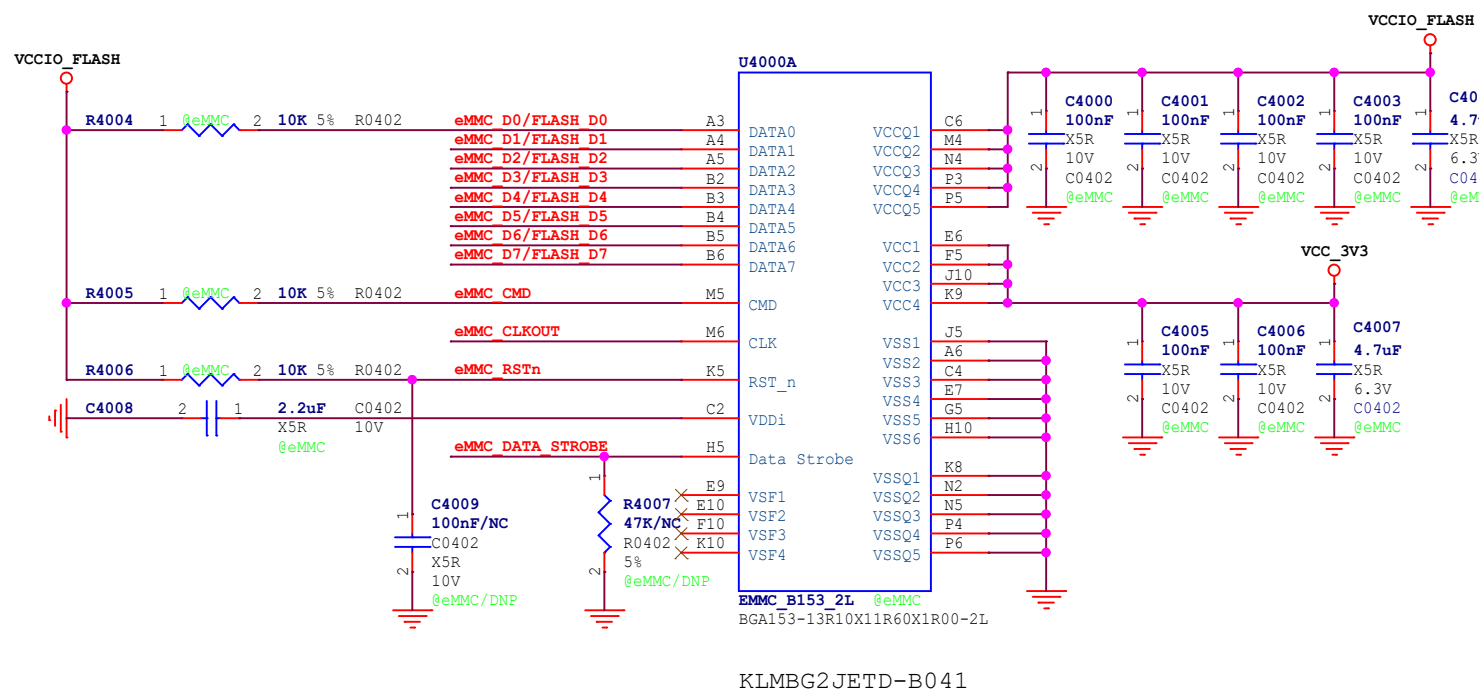
Note:
USB3.0信号的ESD不能随便换掉
如需换那么必须选择相同的规格。

Cj<=0.4pF

USB3.0 HOST



No need to double layout with Nand Flash, 0R resistor can be omitted



If Flash is compatible, please notice
when eMMC is used, the option is that @eMMC is mounted, @Nand is not mounted,@SPI Flash is not mounted
when Nand is used, the option is that @Nand is mounted, @eMMC is not mounted,@SPI Flash is not mounted
when SPI Flash is used, the option is that SPI Flash is mounted, @eMMC is not mounted,@Nand is not mounted

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>>SDMMC0_D0
>>SDMMC0_D1
>>SDMMC0_D2/ARMJTAG_TCK
>>SDMMC0_D3/ARMJTAG_TMS

<<SDMMC0_CMD

>>SDMMC0_CLK

<<SDMMC0_DET_L

>>SDMMC0_PWREN

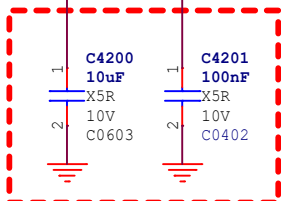
>>SDMMC0_VOL_CTL_GPIO0_B6

VCC3V3_SD

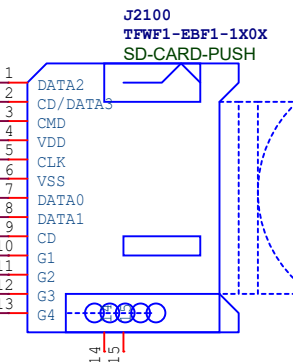
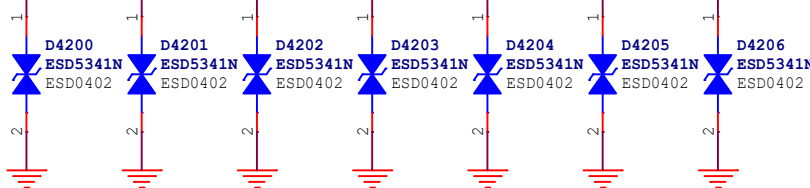
SDMMC0_D2/ARMJTAG_TCK 1 2 R4200 22R 5% R0402
SDMMC0_D3/ARMJTAG_TMS 1 2 R4201 22R 5% R0402
SDMMC0_CMD 1 2 R4202 22R 5% R0402

SDMMC0_CLK

SDMMC0_D0 1 2 R4203 22R 5% R0402
SDMMC0_D1 1 2 R4204 22R 5% R0402
SDMMC0_DET_L 1 2 R4205 22R 5% R0402



Close to MicroSD Card



MicroSD Card

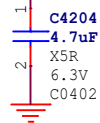
VCC_3V3

VCCIO_SD

Default 3.3V

VCC_3V3

VCC3V3_SD

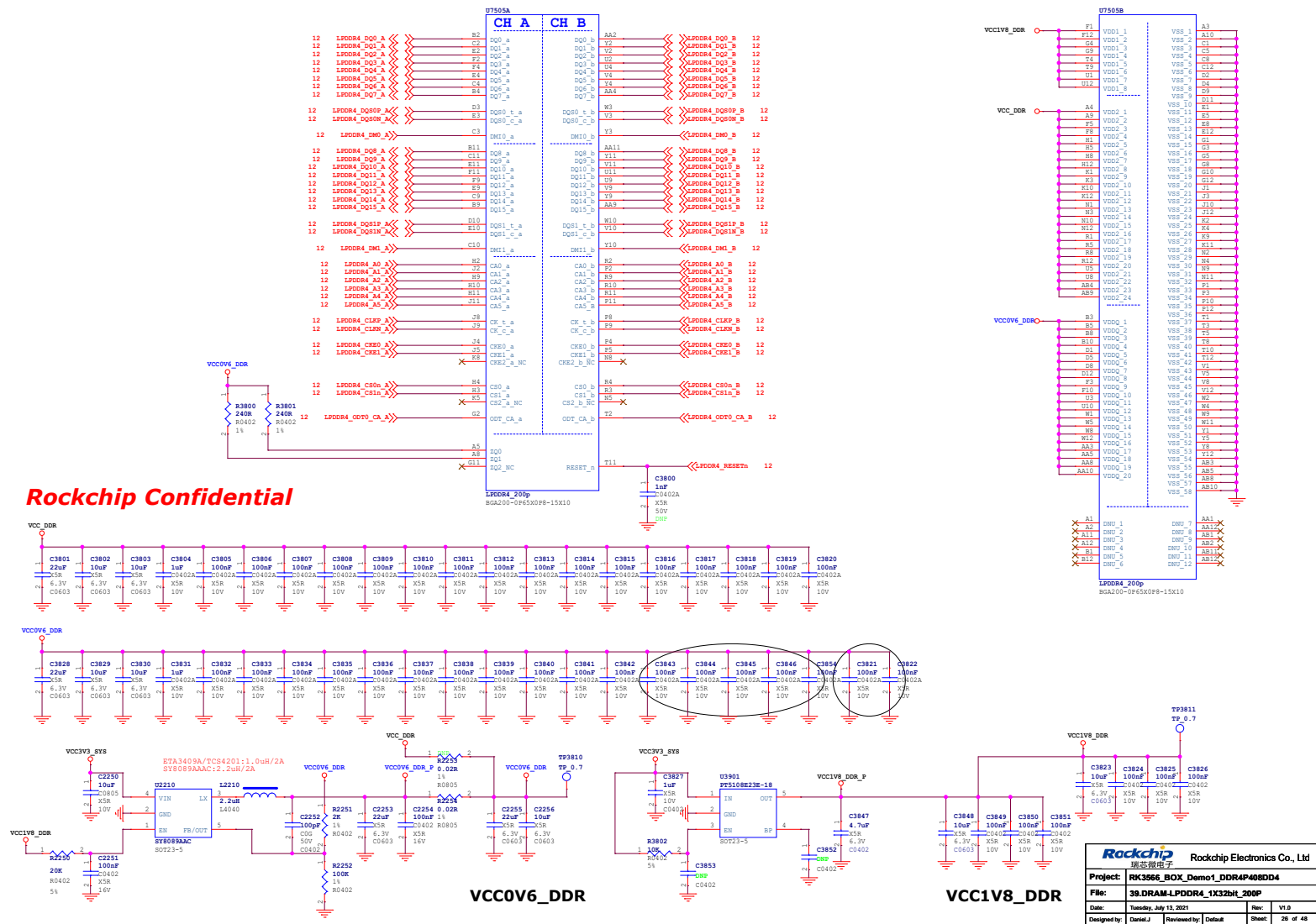


SDIO2.0 H; 3.26V
SDIO3.0 L; 1.8V
Default HIGH

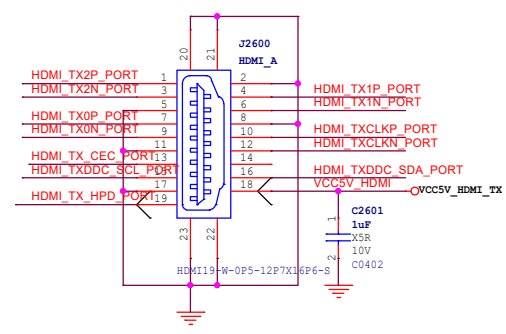
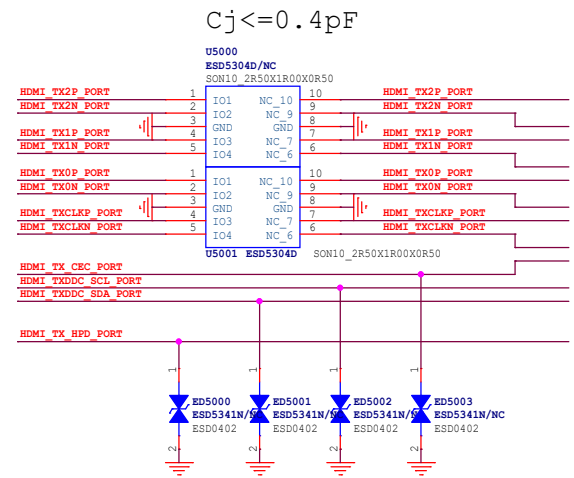
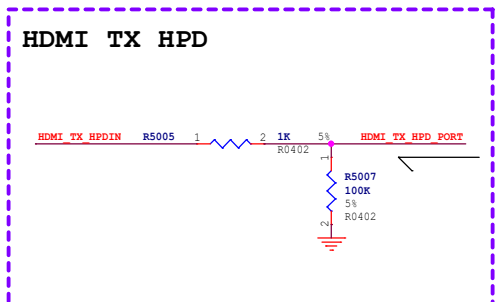
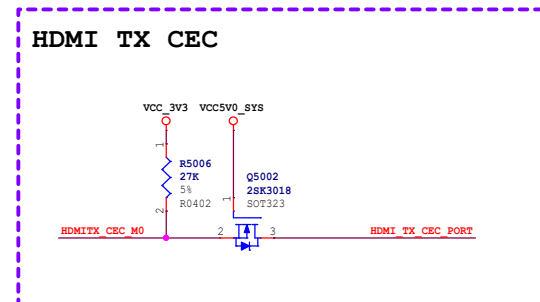
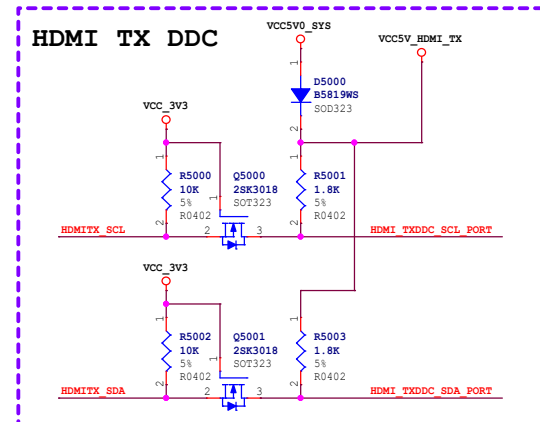
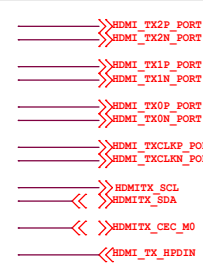
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 Rockchip Electronics Co., Ltd			
Project:	RK3566_BOX_Demo1_DDR4P408DD4		
File:	42.Flash-MicroSD Card		
Date:	Wednesday, March 24, 2021	Rev:	V1.0
Designed by:	Zhangdz	Reviewed by:	Default
Sheet:	25	of	35

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Rockchip 瑞芯微电子			
Rockchip Electronics Co., Ltd			
Project: RK3566_BOX_Demo1_DDR4P4080D4			
File: 38.DRAM-LPDDR4_1X32bit_200P			
Date: Tuesday, July 13, 2021	Rev: V1.0		
Designed by: Daniel.J	Reviewed by: Default	Sheet: 26 of 48	



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>>SDMMC1_D0
>>SDMMC1_D1
>>SDMMC1_D2
>>SDMMC1_D3

>>SDMMC1_CMD

>>SDMMC1_CLK

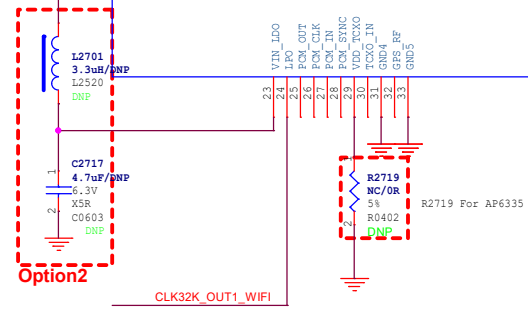
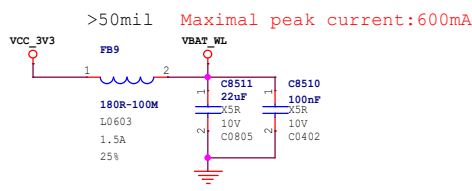
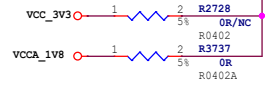
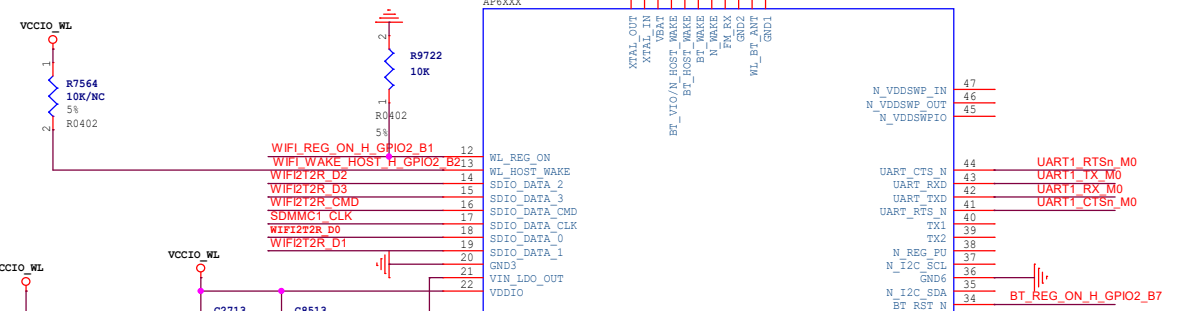
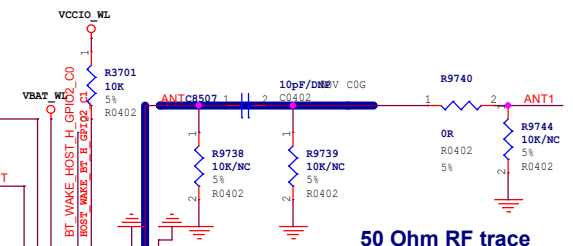
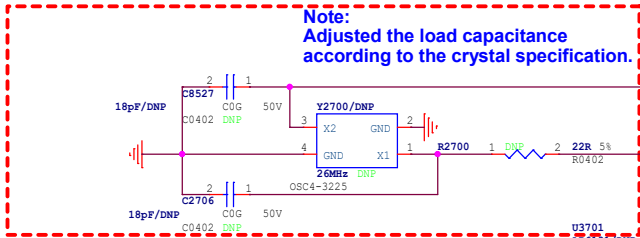
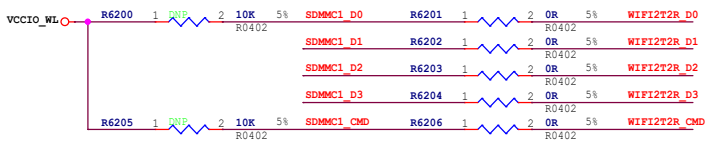
>>WIFI_REG_ON_H_GPIO2_B1
>>WIFI_WAKE_HOST_H_GPIO2_B2

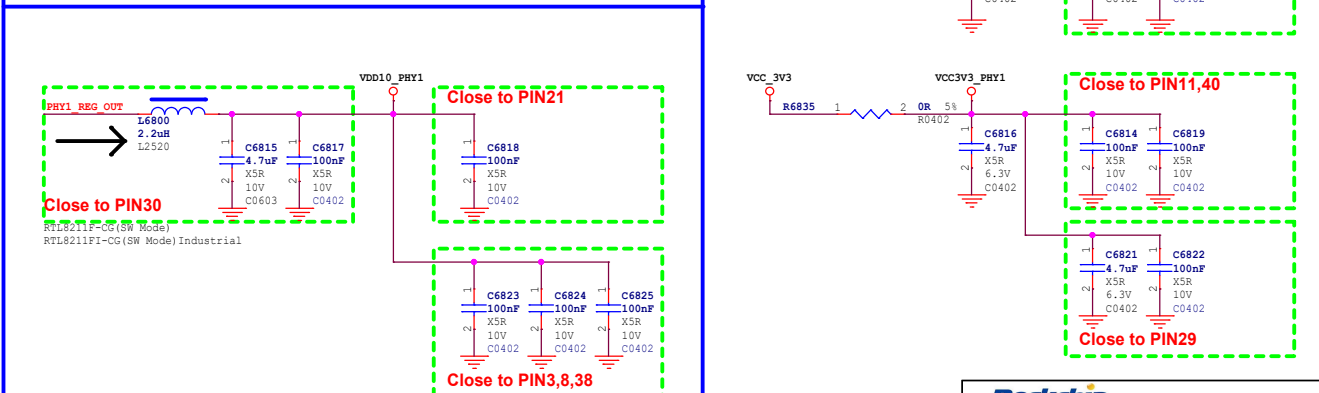
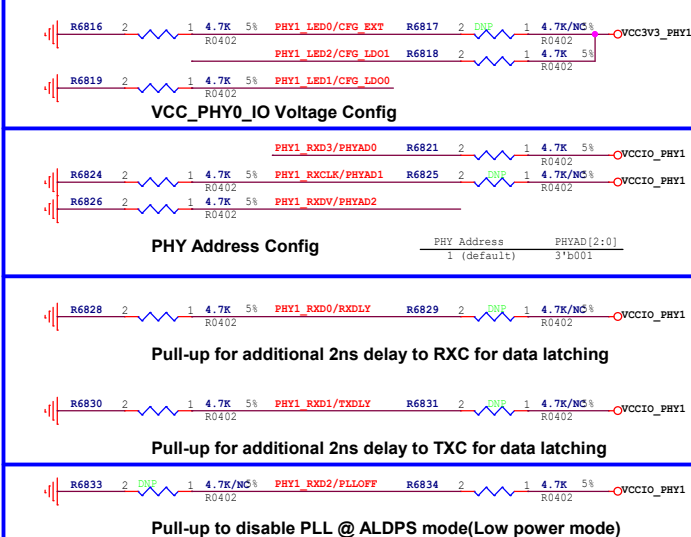
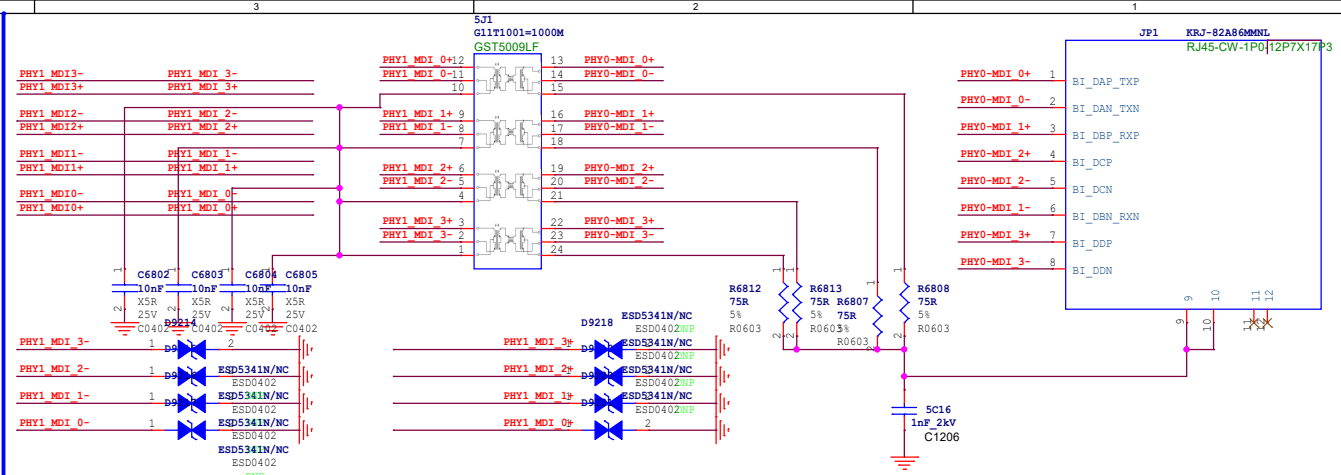
>>UART1_RX_M0
>>UART1_TX_M0
>>UART1_RTSn_M0
>>UART1_CTSn_M0

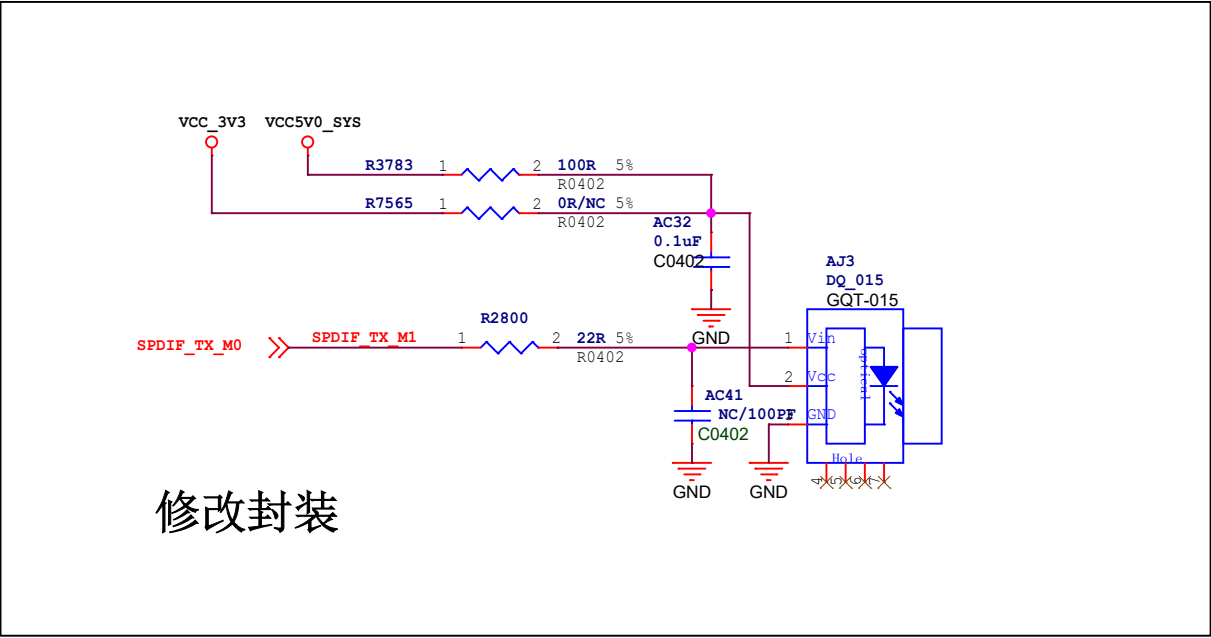
>>BT_REG_ON_H_GPIO2_B7
>>BT_WAKE_HOST_H_GPIO2_C0
>>HOST_WAKE_BT_H_GPIO2_C1

>>SOC_PCM_SYNC
>>SOC_PCM_OUT
>>SOC_PCM_IN
>>SOC_PCM_CLK

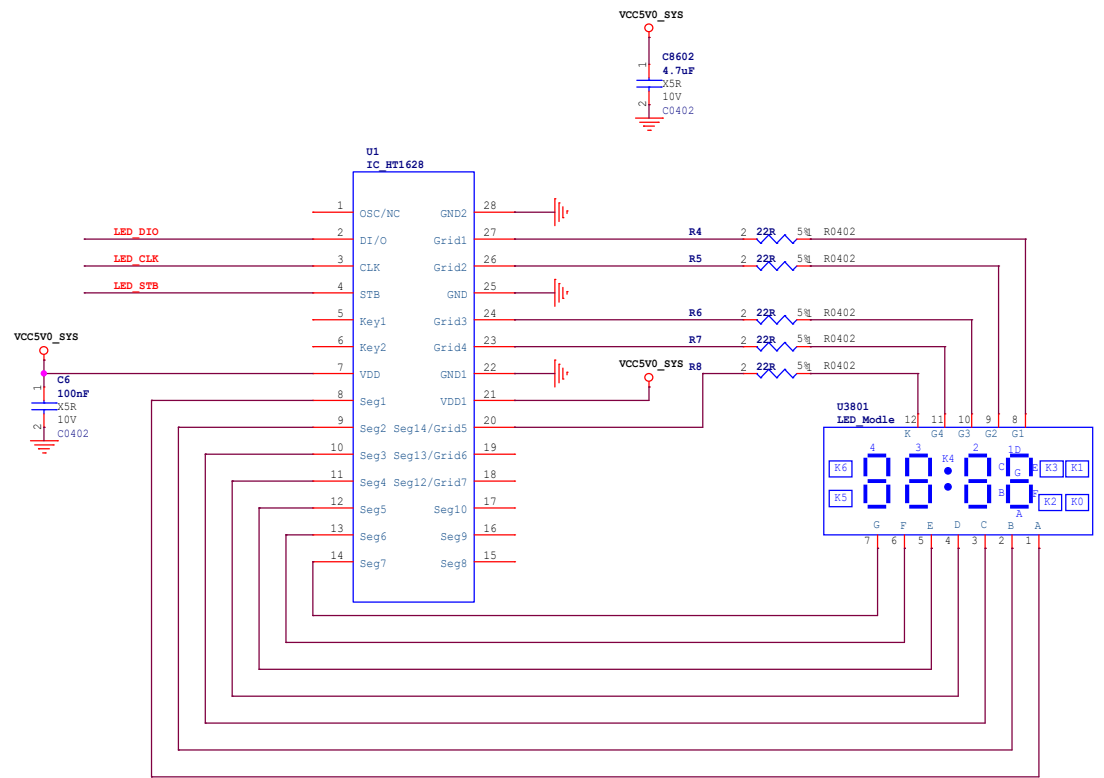
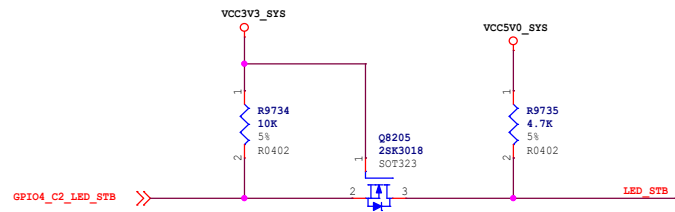
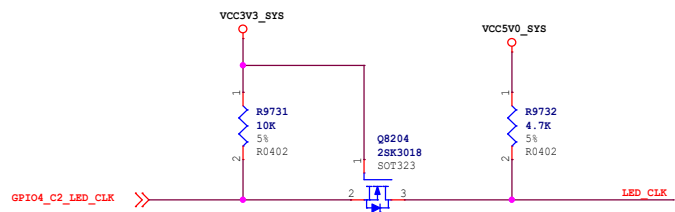
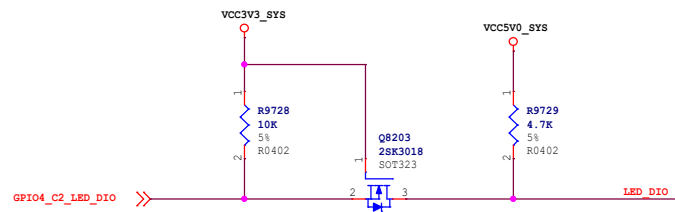
>>CLK32K_OUT1_WIFI





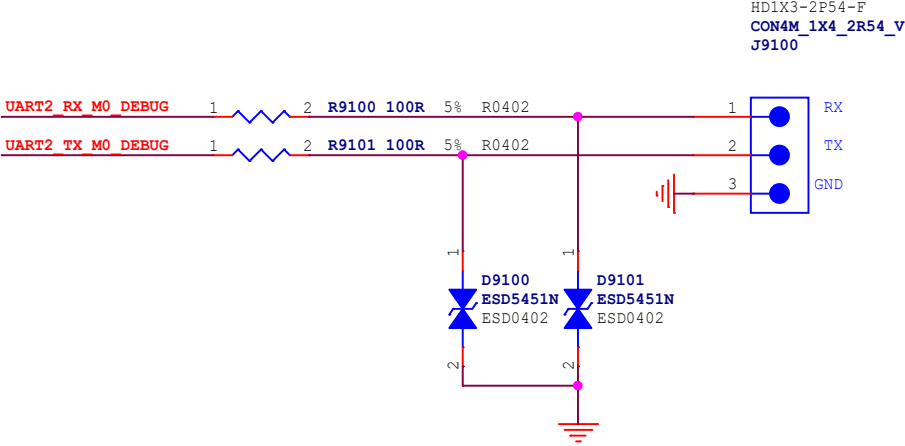


 瑞芯微电子		Rockchip Electronics Co., Ltd			
Project:	RK3566_BOX_Demo1_DDR4P408DD4				
File:	76.Audio-S/PDIF TX Port				
Date:	Wednesday, March 24, 2021			Rev:	V1.0
Designed by:	Zhangdz	Reviewed by:	Default	Sheet:	31 of 35



UART2_RX_M0_DEBUG
UART2_TX_M0_DEBUG

Debug UART2



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 瑞芯微电子		Rockchip Electronics Co., Ltd			
Project:	RK3566_BOX_Demo1_DDR4P408DD4				
File:	91.Debug UART				
Date:	Wednesday, March 24, 2021			Rev:	V1.0
Designed by:	Zhangdz	Reviewed by:	Default	Sheet:	34 of 35

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TOP Mark



BOTTOM Mark



 瑞芯微电子		Rockchip Electronics Co., Ltd		
Project:	RK3566_BOX_Demo1_DDR4P408DD4			
File:	99.Mark/Hole/Heatsink			
Date:	Wednesday, March 24, 2021		Rev:	V1.0
Designed by:	Zhangdz	Reviewed by:	Default	Sheet: 35 of 35