

Reference Schematics For RK3528

RK3528_BOX_REF_SCH_V10

Main Functions Introduction

- 1) Power: DiscretePower:BUCK+LDO or PMIC RK805-6
- 2) RAM: DDR3 4x16bit
DDR4 2x16Bit
DDR4 4x16Bit
LPDDR3 1x32bit
LPDDR4/LPDDR4X 1x32bit
- 3) ROM: eMMC5.1 or FSPI Flash
- 4) Support: Micro SD Card3.0
- 5) Support: 1 x USB3.0 OTG + 1 x USB2.0 HOST
- 6) Support: 1 x HDMI2.0 TX
- 7) Support: 1 x AV OUT
- 8) Support: SDIO WiFi5 + UART/PCM BT
PCIE WIFI5 + UART/PCM BT
- 9) Support: 1 x Ethernet(Embed PHY) + 1x Ethernet(RGMII or RMII)
- 10) Support: Optical S/PDIF TX
- 11) Support: IR Receiver
- 12) Support: Audio-MicArray 2xI2S-DMIC or 4xPDM-DMIC
- 13) Support: RECOVER/RESET/SARADC_BOOT_KEY,HW_ID
- 14) Support: 1 x PCIE2.0 Slot
- 15) Support: Debug UART

https://www.nas-ya.com/		
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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

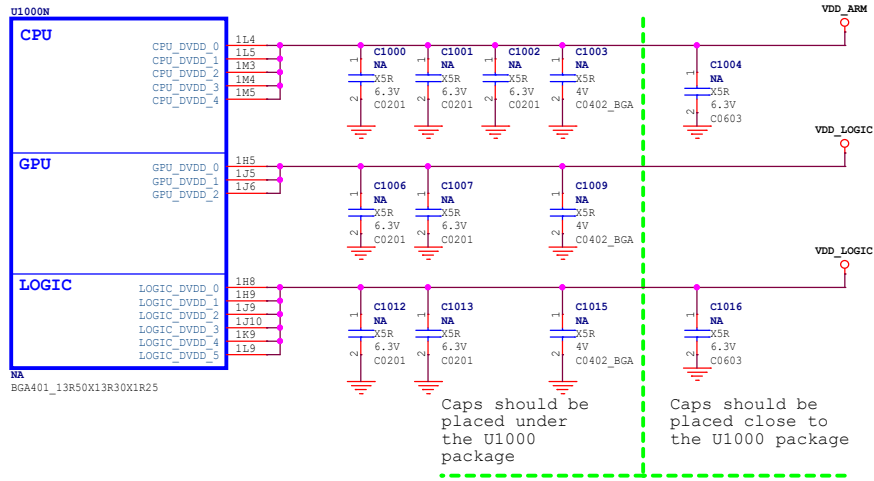
1. DNP stands for component not mounted temporarily
2. If Value or option is DNP, which means the area is reserved without being mounted

NOTE 2:

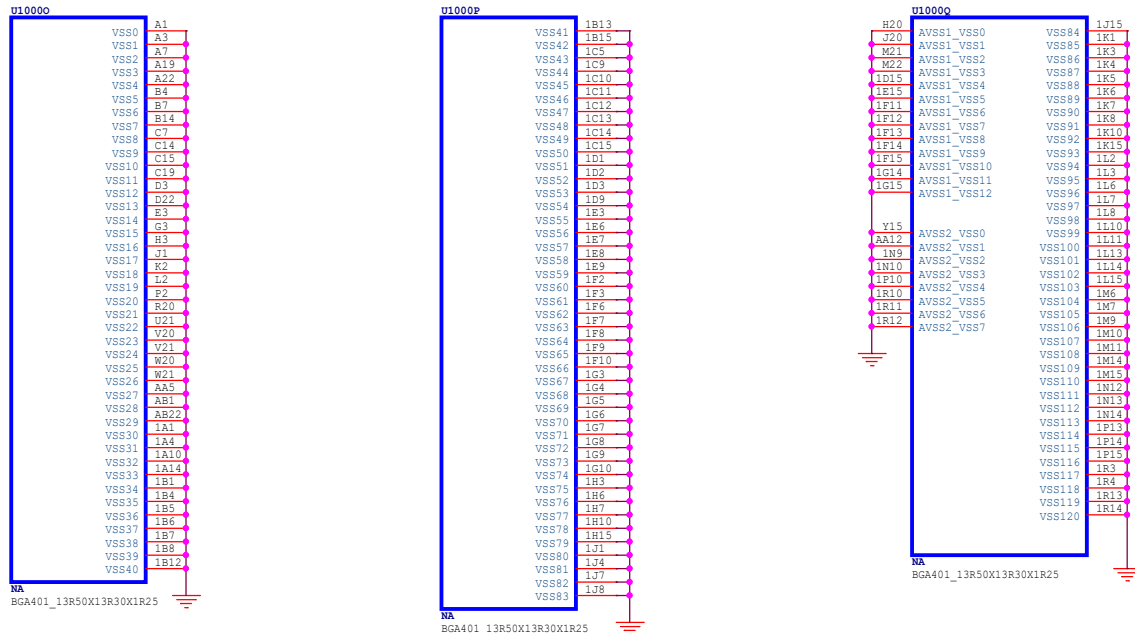
Please use our recommended components to avoid too many changes.
For more informations about the second source,please refer to our AVL.

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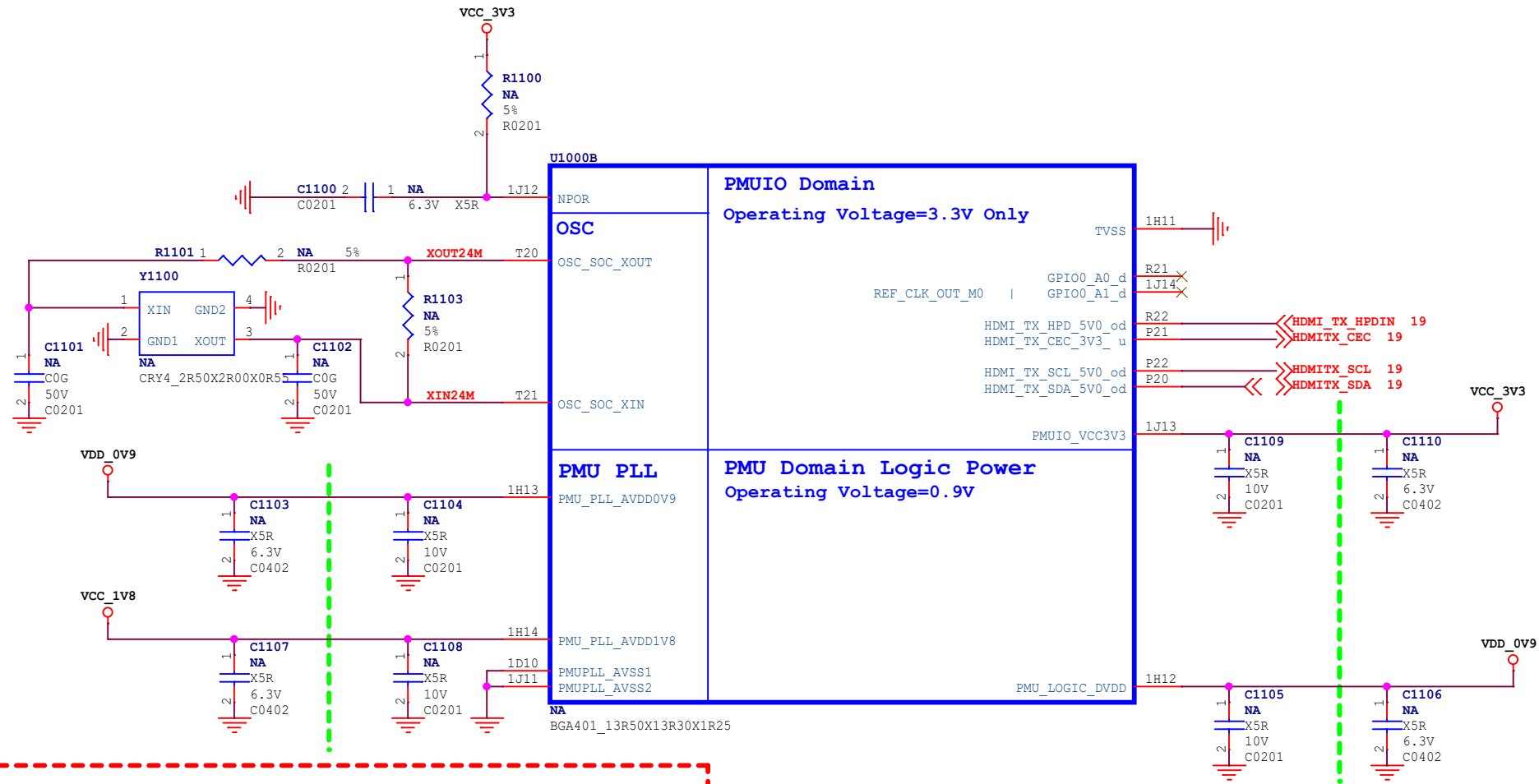
RK3528_N (POWER)



RK3528_O/P/Q (GND)



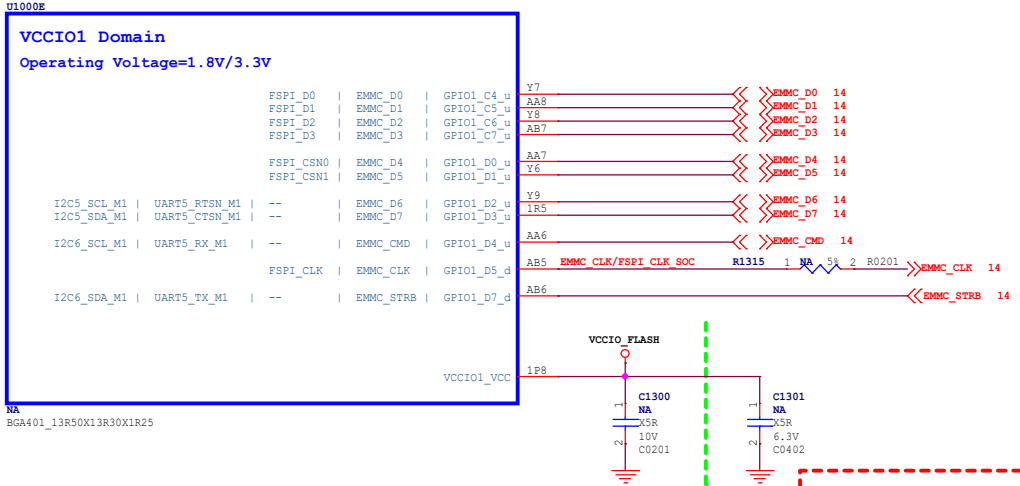
RK3528_B (OSC/PLL/PMUIO Domain)



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

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RK3528_E (VCCIO1 Domain)

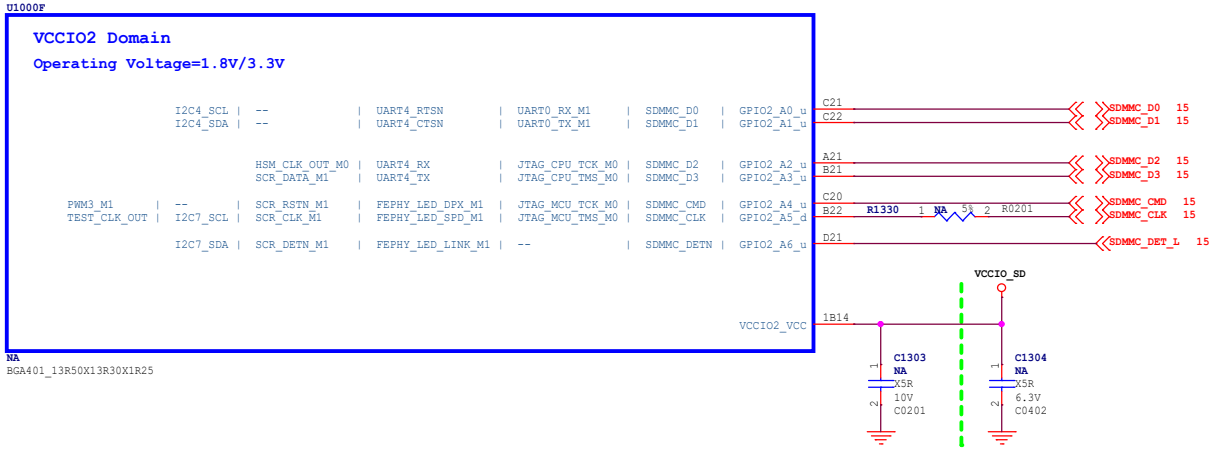


FSPI (Flexible Serial Peripheral Interface) is only used to connect SPI Flash/Memory devices. Do not use for connecting to other SPI devices

Default DiscretePower solution, power by VCC_1V8
 PMIC solution, power by VCC1V8_EMMC, only 1.8V

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

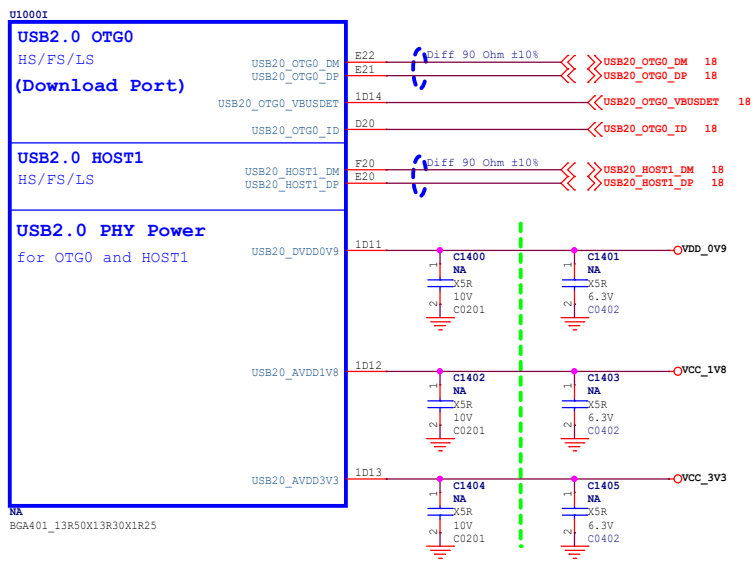
RK3528_F (VCCIO2 Domain)



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

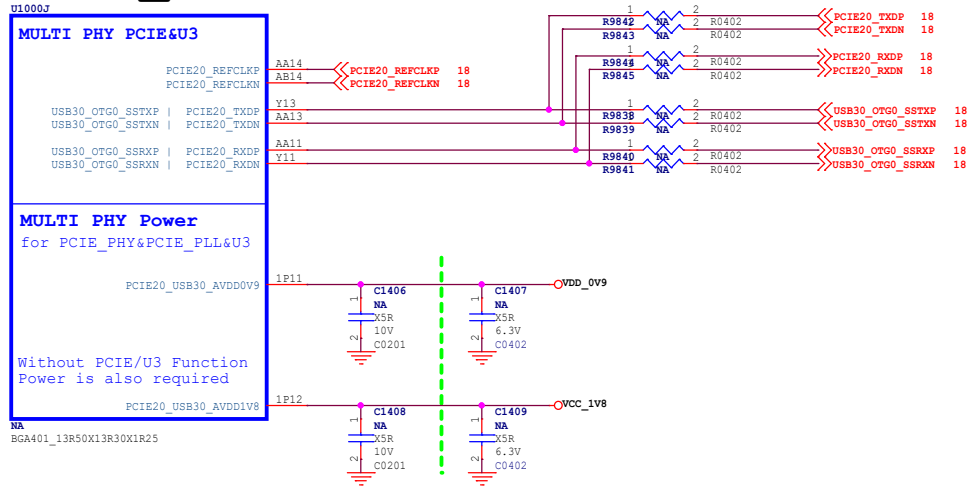
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RK3528_I (USB2.0 OTG/HOST)



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

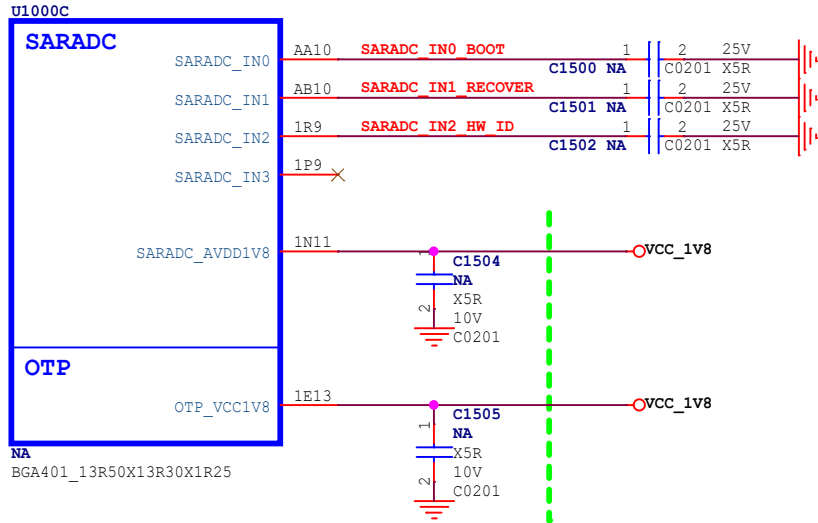
RK3528_J (PCIE2.0/U3 PHY)



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

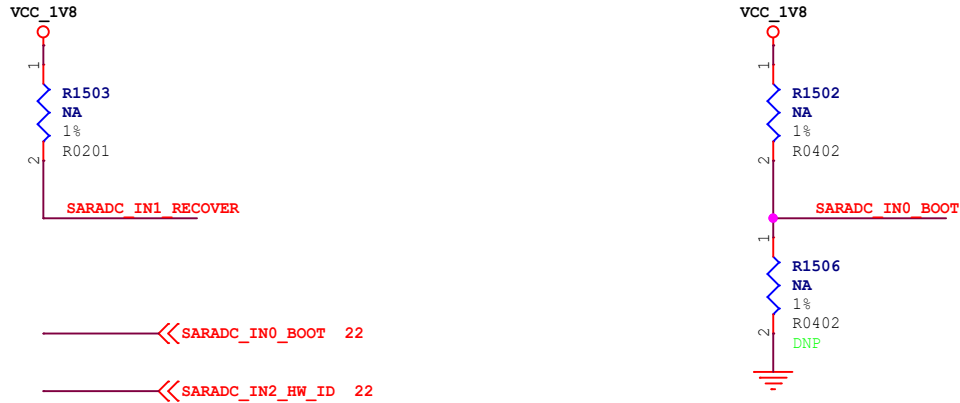
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RK3528_C (Saradc/OTP)



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



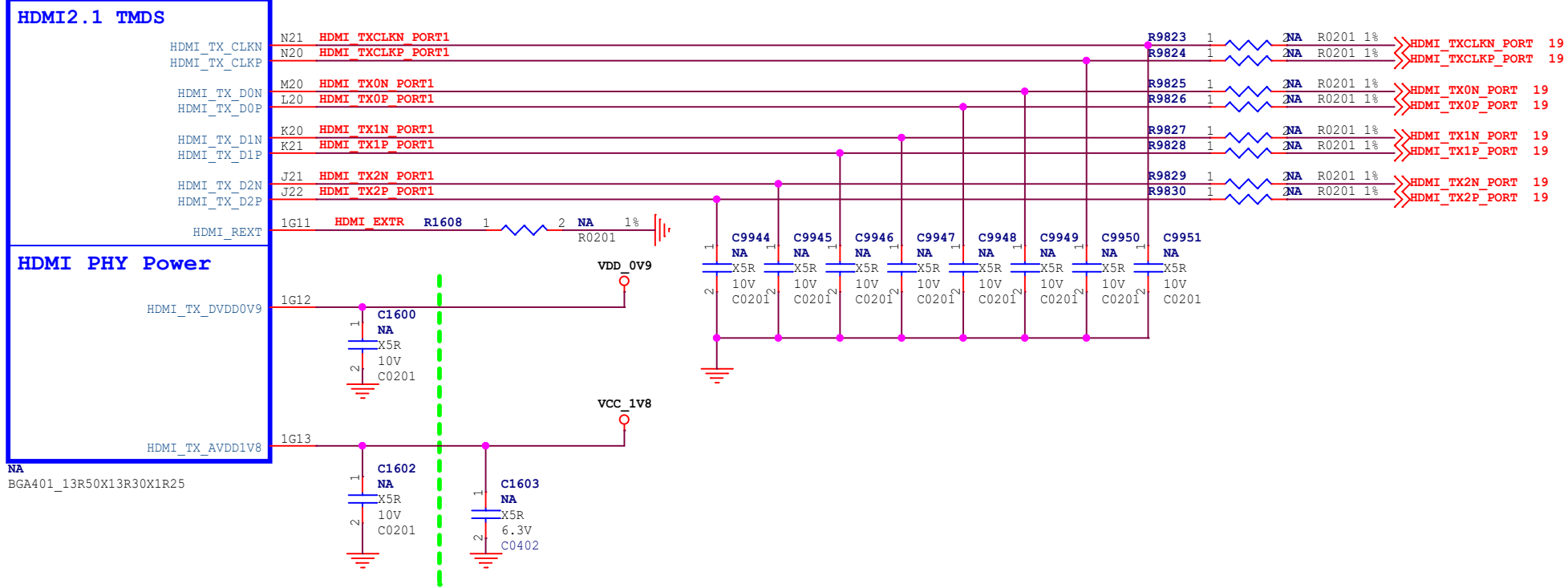
TABLE

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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RK3528_L (HDMI PHY)

U1000L

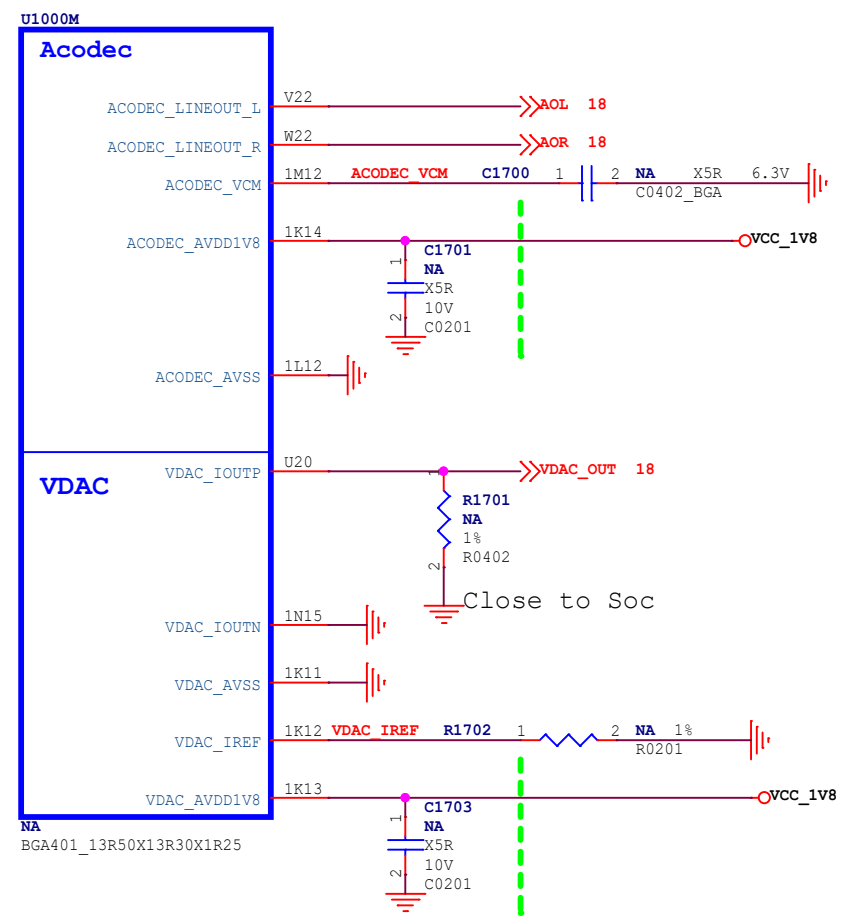


NA
BGA401_13R50X13R30X1R25

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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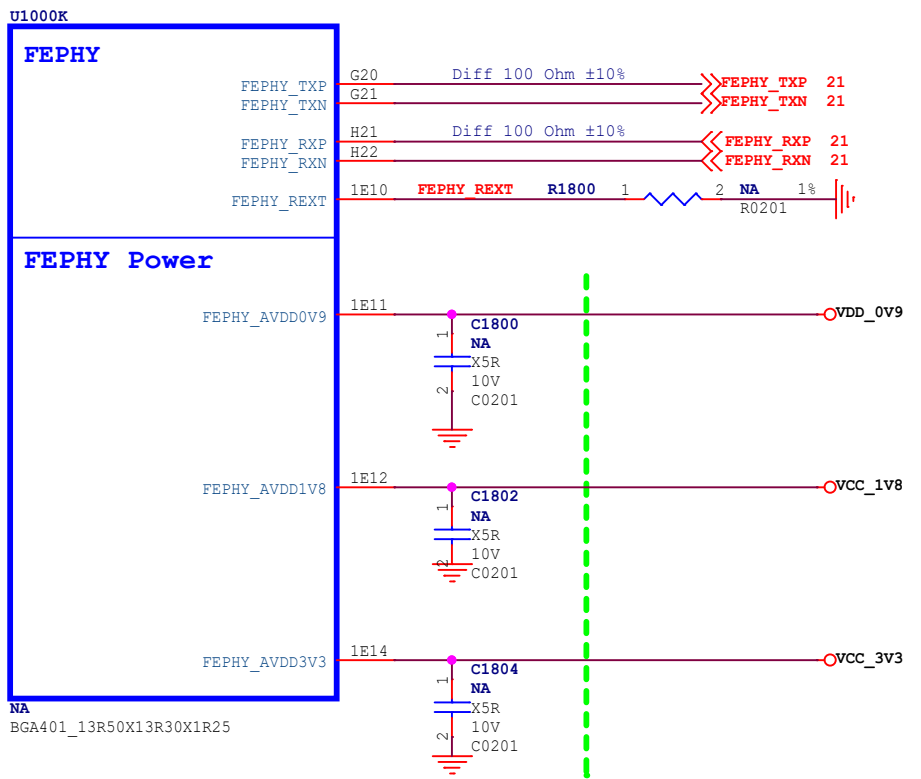
RK3528_M (Acodec/VDAC)



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

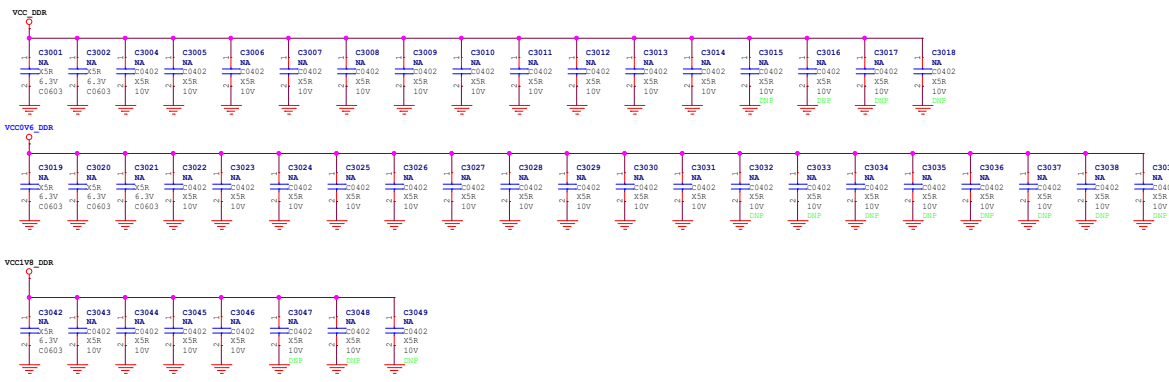
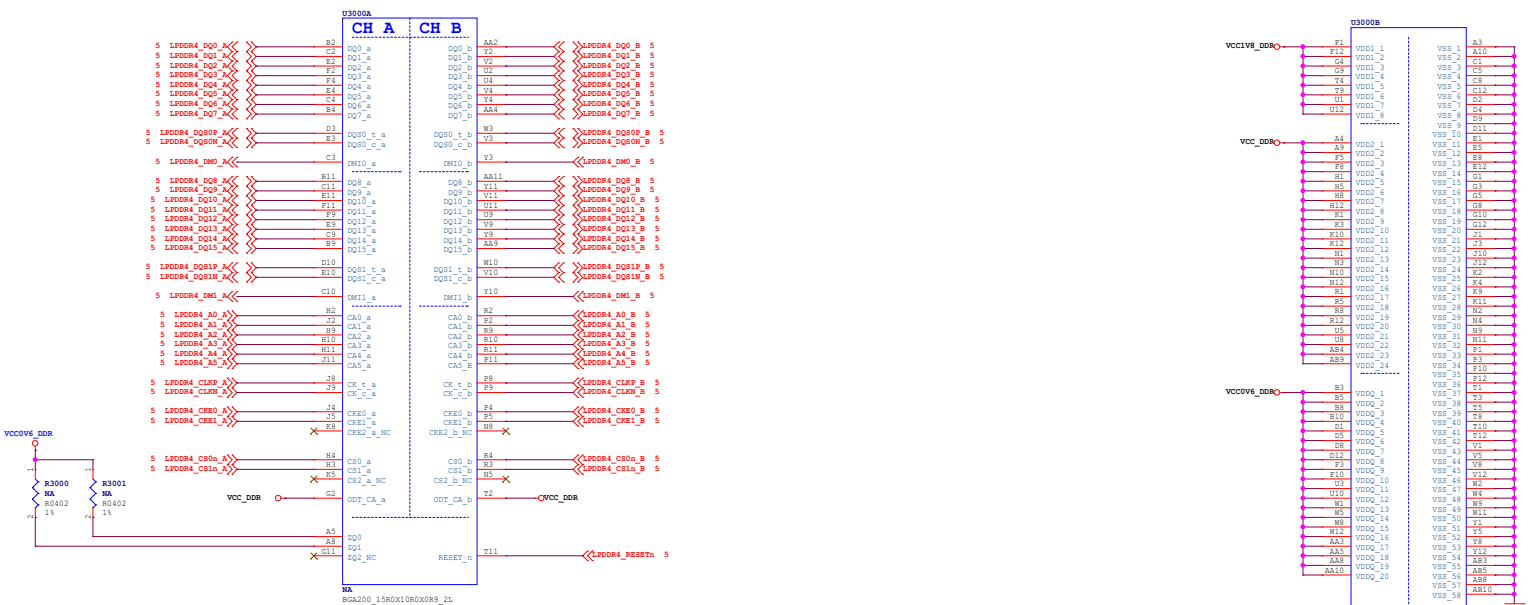
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RK3528_K (Embed FEPHY)



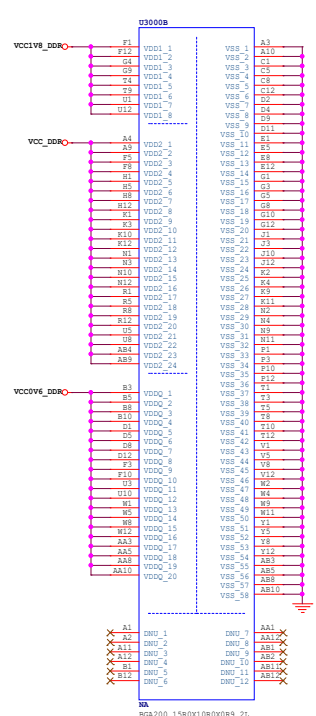
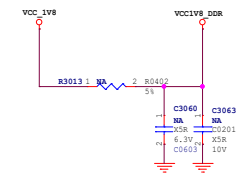
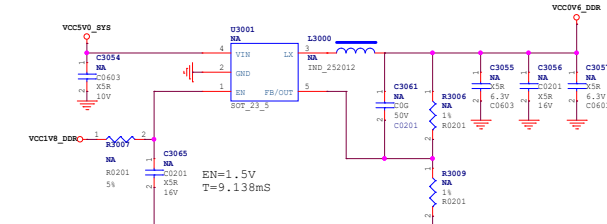
Note:
 Caps of between dashed green lines and U1000 should be placed under the U1000 package.
 Other caps should be placed close to the U1000 package

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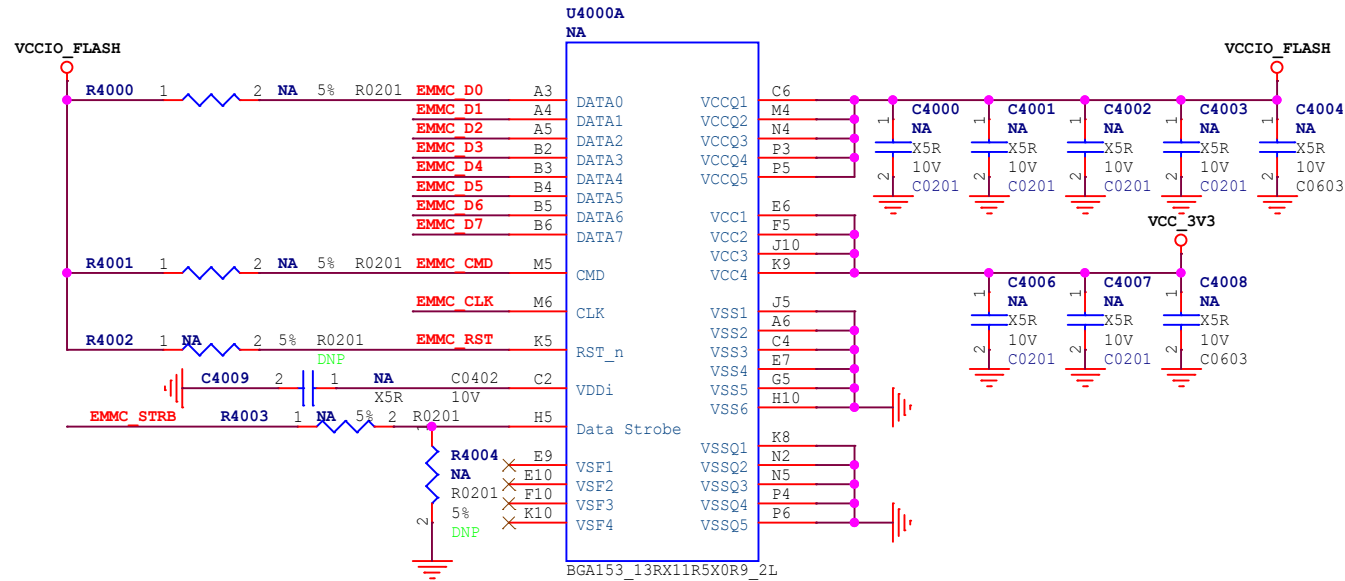
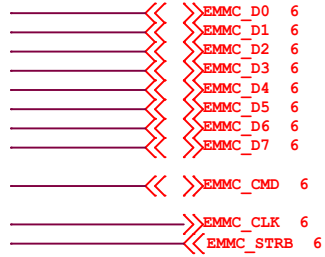
VCC0V6_DDR

VCC1V8_DDR



EMMC

FSPI

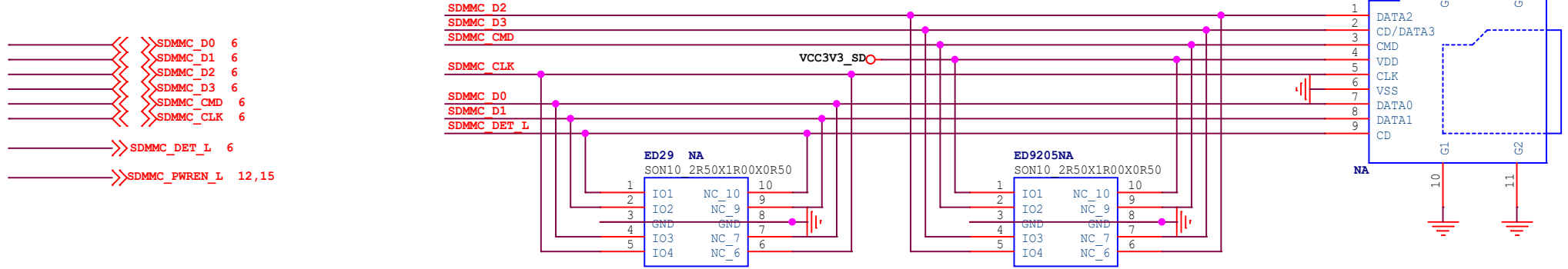


U4000B		A7	E5	E8	G3	G10	K6	K7	P7	P10	RF09
NA											
A2	NC2	RFU1	RFU2	RFU3	RFU4	RFU5	RFU6	RFU7	RFU8	RFU9	
A8	NC8										NC196
A9	NC9										NC195
A10	NC10										NC194
A11	NC11										NC193
A12	NC12										NC191
A13	NC13										NC190
A14	NC14										NC189
B1	NC15										NC188
B7	NC21										NC187
B8	NC22										NC186
B9	NC23										NC185
B10	NC24										NC184
B11	NC25										NC183
B12	NC26										NC182
B13	NC27										NC181
B14	NC28										NC180
C1	NC29										NC179
C3	NC31										NC178
C7	NC35										NC177
C8	NC36										NC176
C9	NC37										NC175
C10	NC38										NC174
C11	NC39										NC173
C12	NC40										NC172
C13	NC41										NC171
C14	NC42										NC170
D1	NC43										NC169
D2	NC44										NC168
D3	NC45										NC167
D4	NC46										NC166
D12	NC54										NC165
D13	NC55										NC164
D14	NC56										NC163
E1	NC57										NC162
E2	NC58										NC161
E3	NC59										NC160
E12	NC68										NC159
E13	NC69										NC158
E14	NC70										NC157
F1	NC71										NC156
F2	NC72										NC155
F3	NC73										NC154
F12	NC82										NC153
F13	NC83										NC152
F14	NC84										NC151
G1	NC85										NC150
G2	NC86										NC149
G12	NC96										NC148
G13	NC97										NC147
G14	NC98										NC146
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											NC99

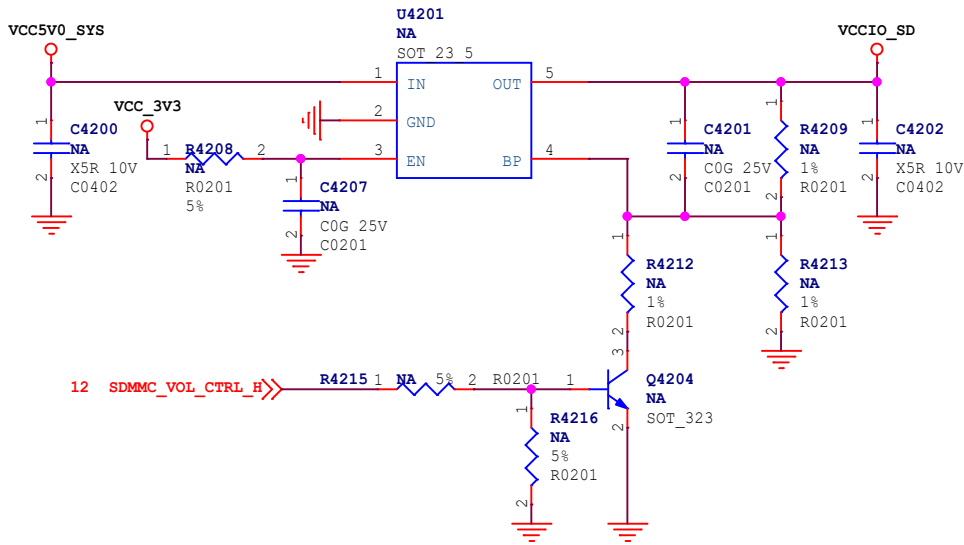
BGA153_13RX11R5X0R9_2L

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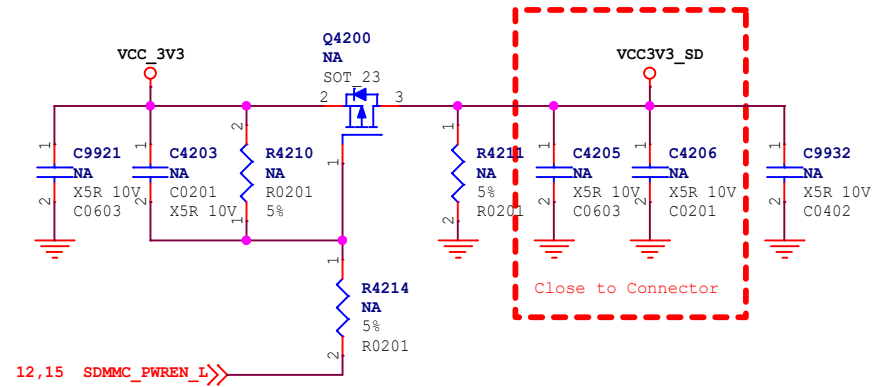
TF Card



VCCIO_SD



VCC3V3_SD



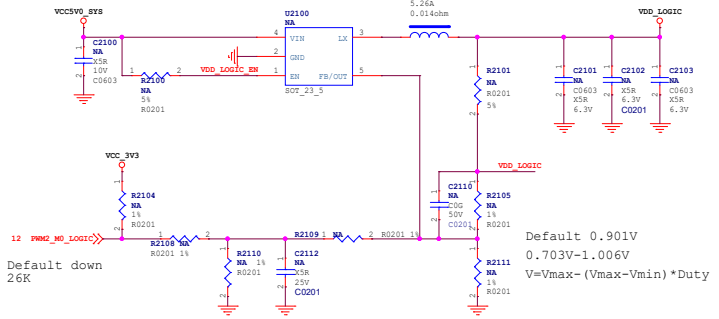
SDMMC_PWREN=L VCC_SD=3.3V(Default)
SDMMC_PWREN=H VCC_SD=0V

SDIO2.0 SDMMC0_VOL_CTRL=H VCCIO_SD=3.34V(Default)
SDIO3.0 SDMMC0_VOL_CTRL=L VCCIO_SD=1.816V

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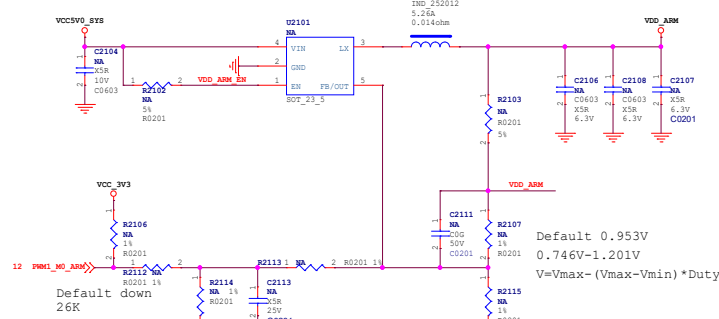
VCC5V0_SYS-->VDD_LOGIC

Step 1



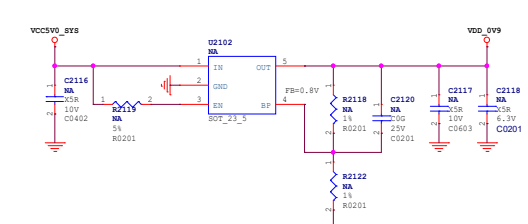
VCC5V0_SYS-->VDD_ARM

Step 1



VCC5V0_SYS-->VDD_0V9

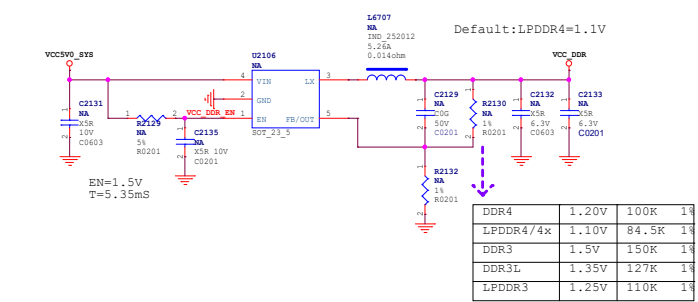
Step 1



Note:
When LAYOUT, a star must be used,
Branch to each load

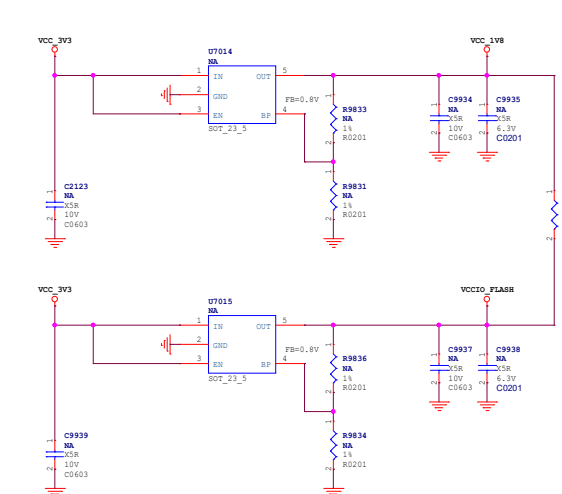
VCC5V0_SYS-->VCC_DDR

Step 2



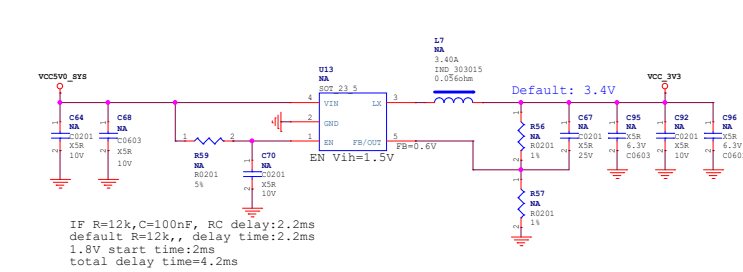
VCC_3V3->VCC_1V8(LDO)

Step 2

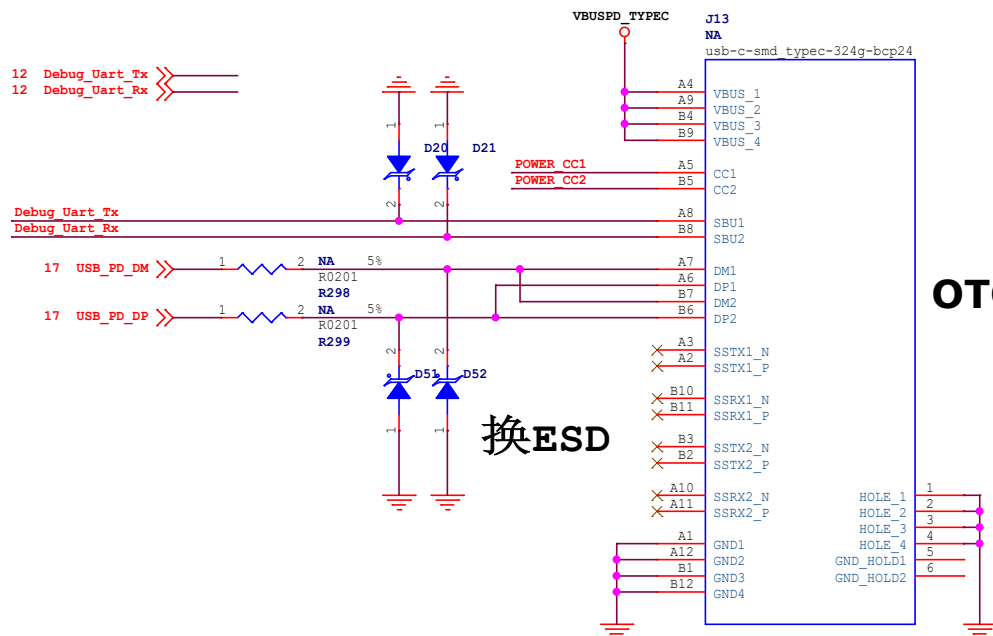
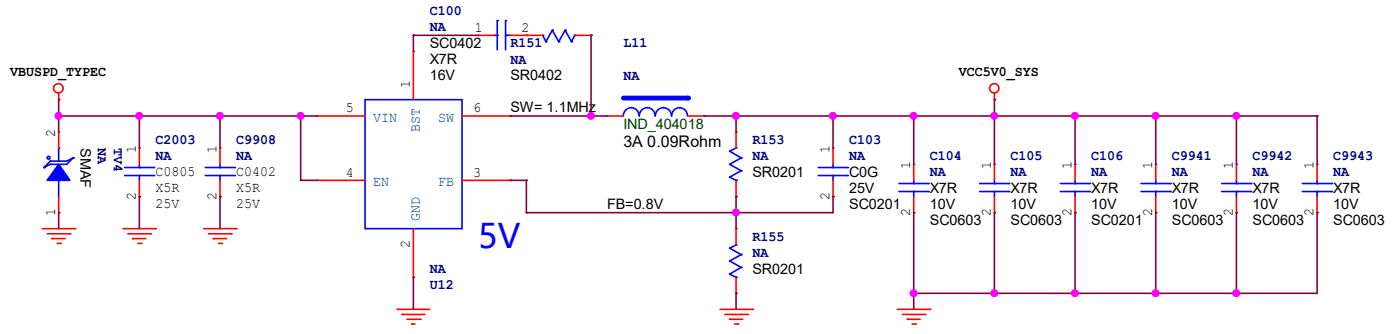


VCC5V0_SYS-->VCC_3V3

Step 2

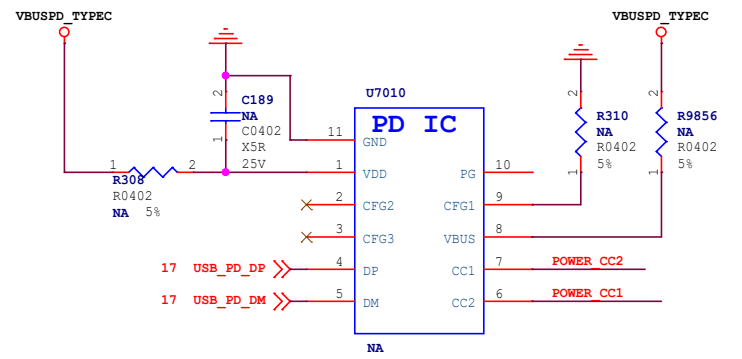


5V_SYS

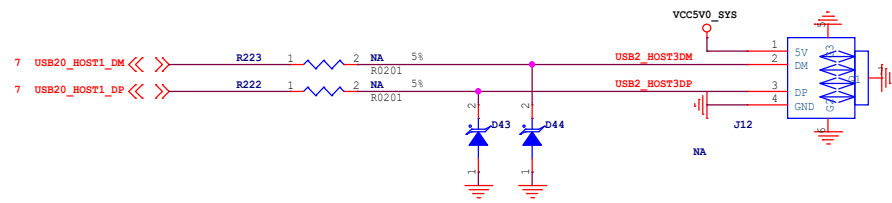


OTG USB+Debug

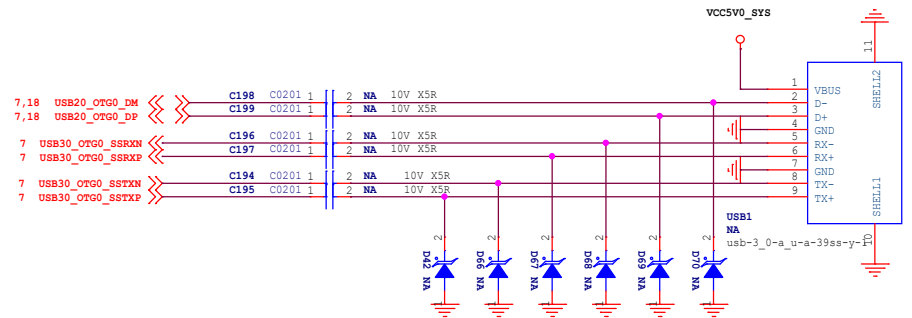
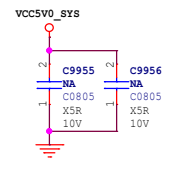
换ESD



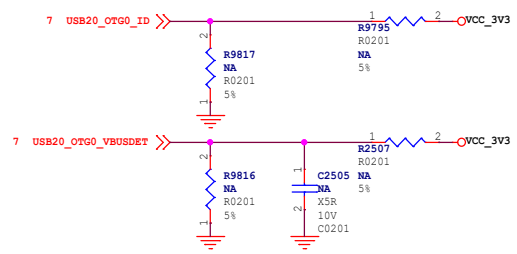
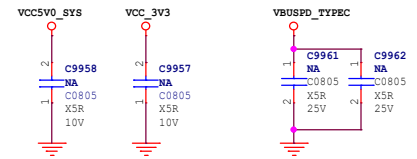
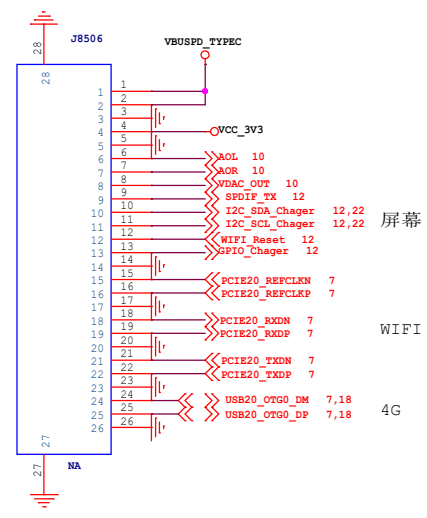
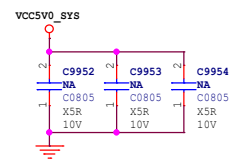
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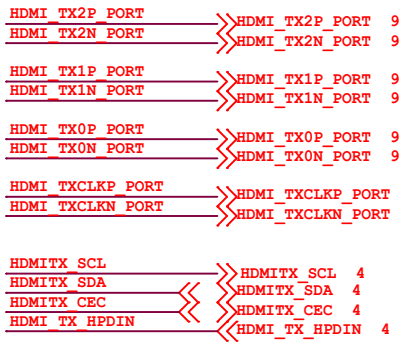
USB2.0 HOST1



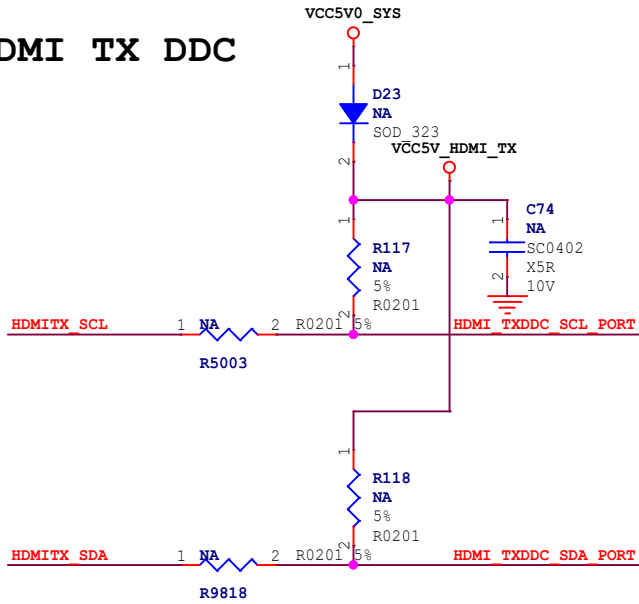
USB3.0 HOST1



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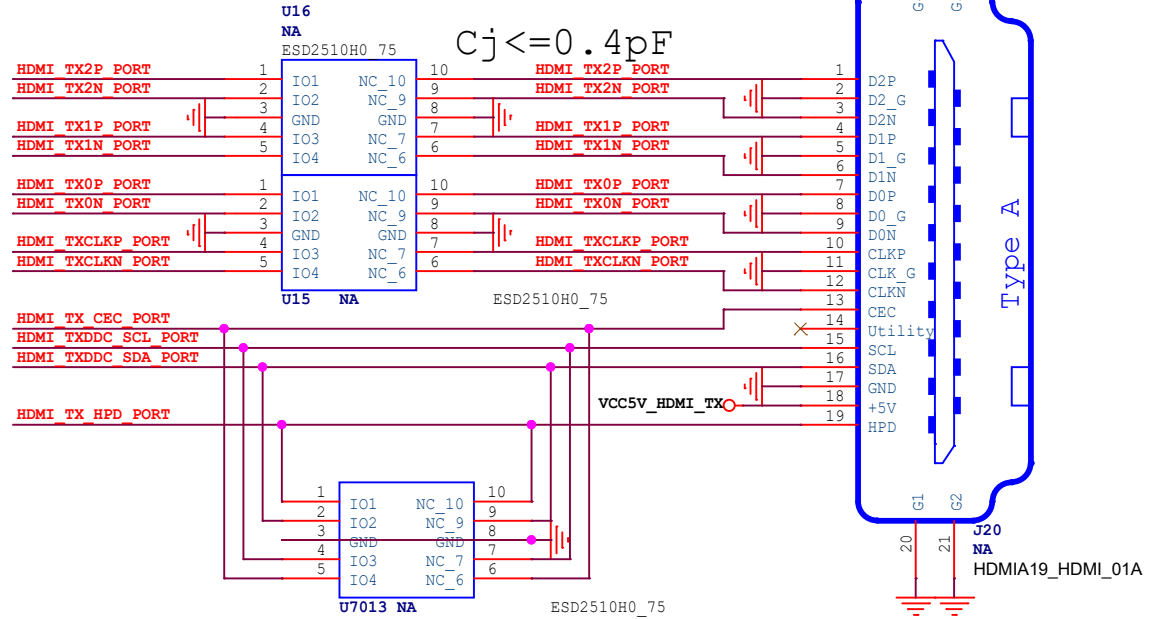
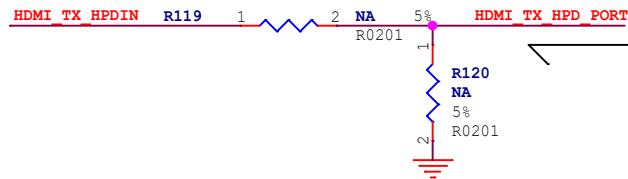
HDMI TX DDC



HDMI TX CEC

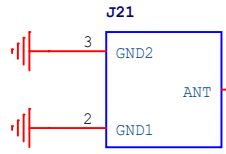
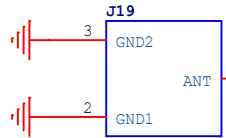


HDMI TX HPD

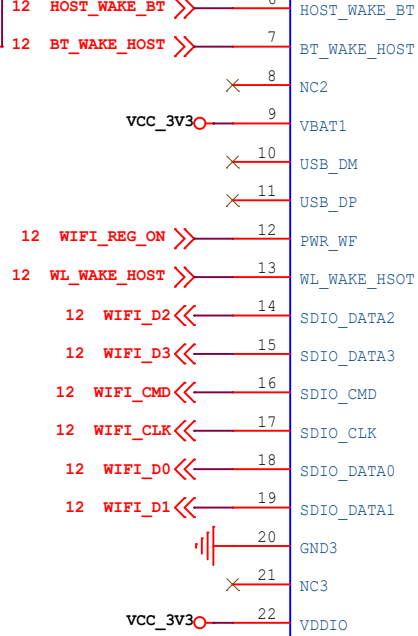


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WIFI

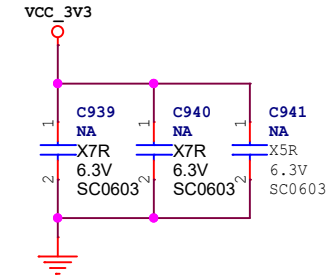
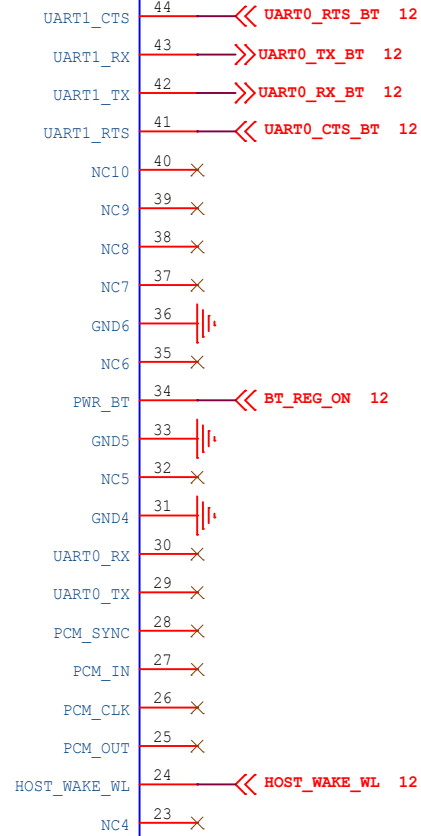


WIFI/BT



SKI.WB800D80S.1

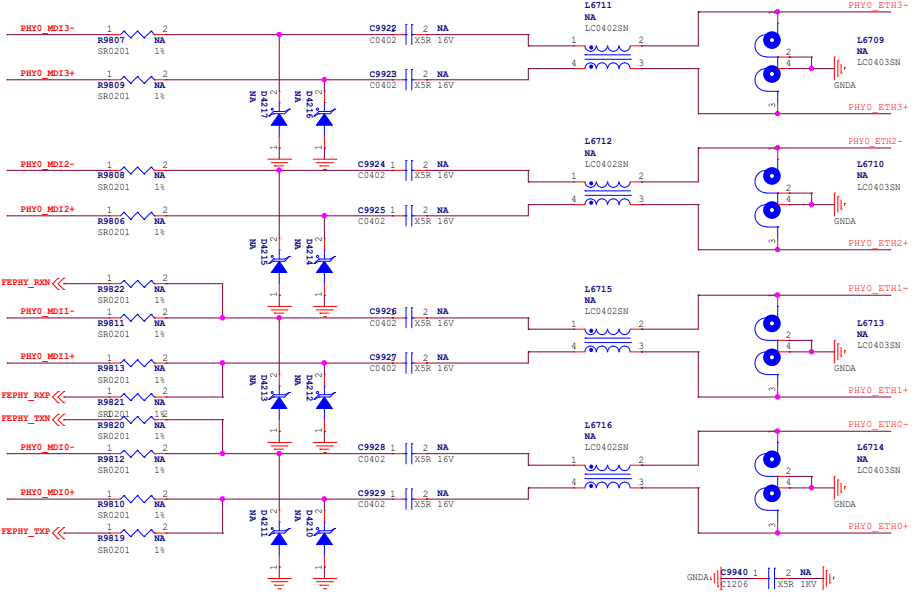
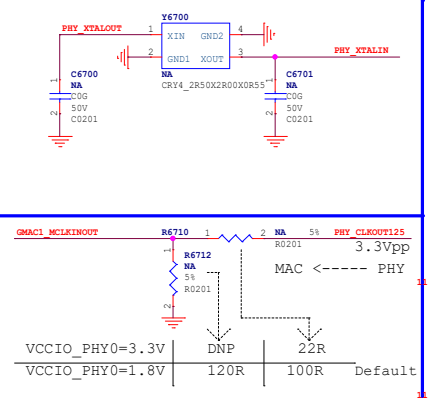
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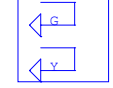
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RGMI I

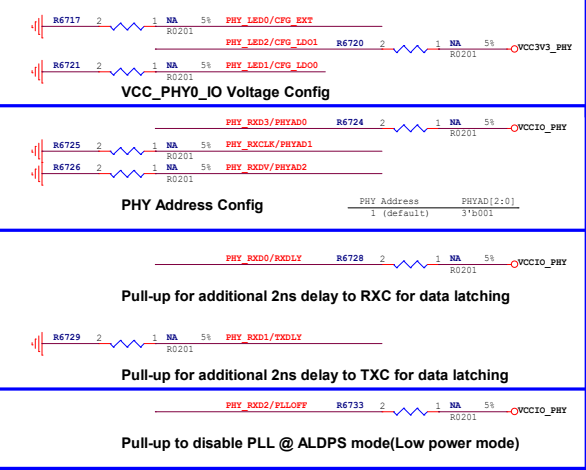
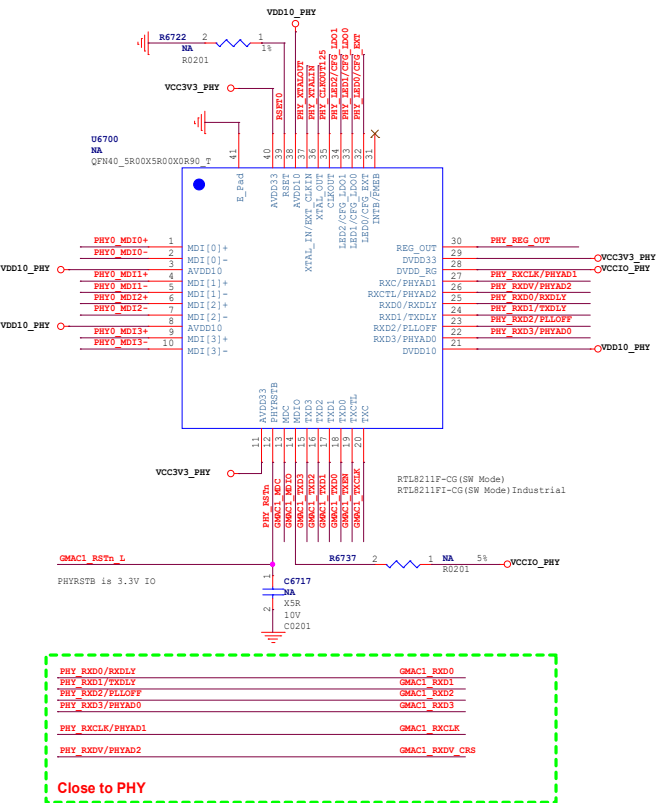
- >>> GMAC1_TXD0 12
- >>> GMAC1_TXD1 12
- >>> GMAC1_TXD2 12
- >>> GMAC1_TXD3 12
- >>> GMAC1_TXEN 12
- >>> GMAC1_TXCLK 12
- >>> GMAC1_RXD0 12
- >>> GMAC1_RXD1 12
- >>> GMAC1_RXD2 12
- >>> GMAC1_RXD3 12
- >>> GMAC1_RXDV_CRS 12
- >>> GMAC1_RXCLK 12
- >>> GMAC1_MCLKINOUT 12
- >>> GMAC1_MDC 12
- >>> GMAC1_MDIO 12
- >>> GMAC1_RSTn_L 12



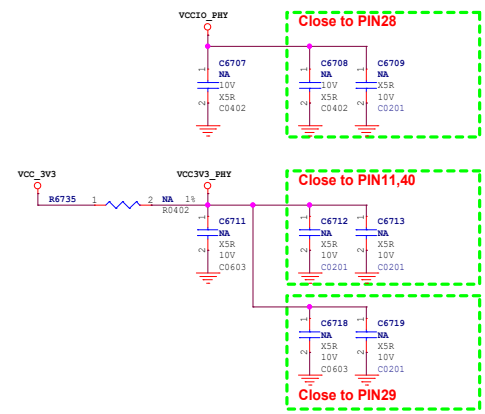
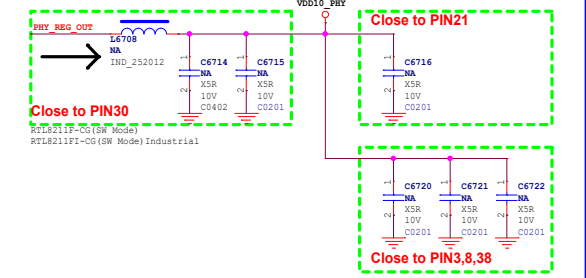
- PHY0_ETH0+ 1
- PHY0_ETH0- 2
- PHY0_ETH1+ 3
- PHY0_ETH1- 4
- PHY0_ETH2+ 5
- PHY0_ETH2- 6
- PHY0_ETH3+ 7
- PHY0_ETH3- 8



默认不带灯



ROM1 Power Source	CFG EX1	CFG LDD[1:0]
External 3.3V	1'b1	2'b00
External 1.8V	1'b1	2'b10
Internal 1.8V(default)	1'b0	2'b10

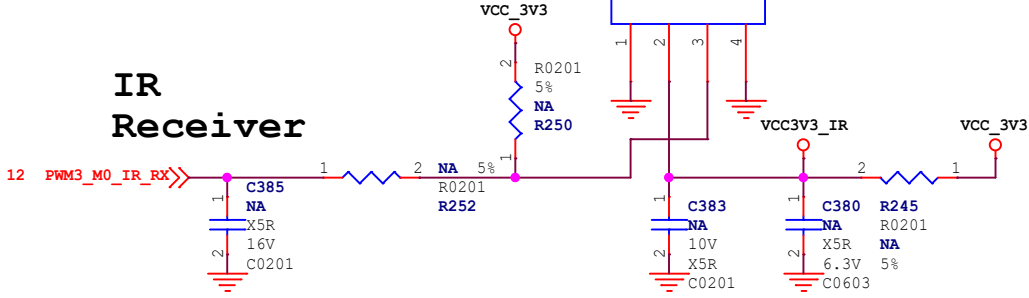


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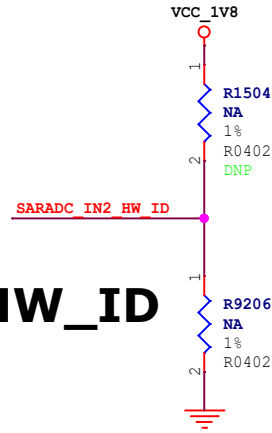
KEY

SARADC_IN0_BOOT 8
SARADC_IN2_HW_ID 8

IR Receiver



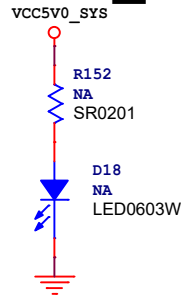
HW_ID



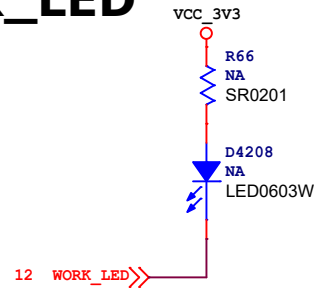
V1.0 TABLE

SARADC_IN2	Rup	Rdown	ADC
HW_ID0	DNP	100K	0
HW_ID1	100K	12K	114
HW_ID2	100K	27K	228
HW_ID3	100K	51K	342
HW_ID4	100K	82K	456
HW_ID5	100K	120K	570
HW_ID6	100K	200K	683
HW_ID7	100K	330K	796
HW_ID8	100K	820K	910
HW_ID9	100K	DNP	1023

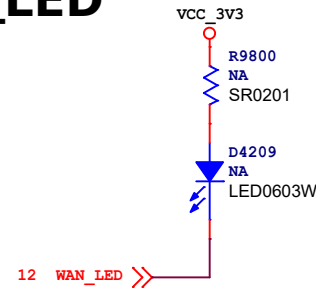
POWER_LED



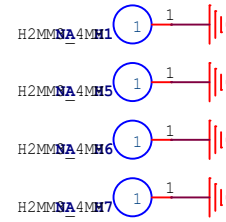
WORK_LED



WAN_LED



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MARK4
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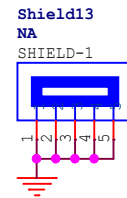
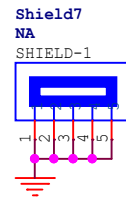
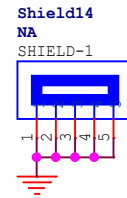
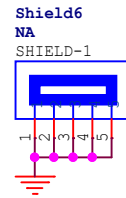
MARK2
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MARK1
NA



MARK3
NA



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