



Radxa ROCK 3B+

Schematic

V1.60

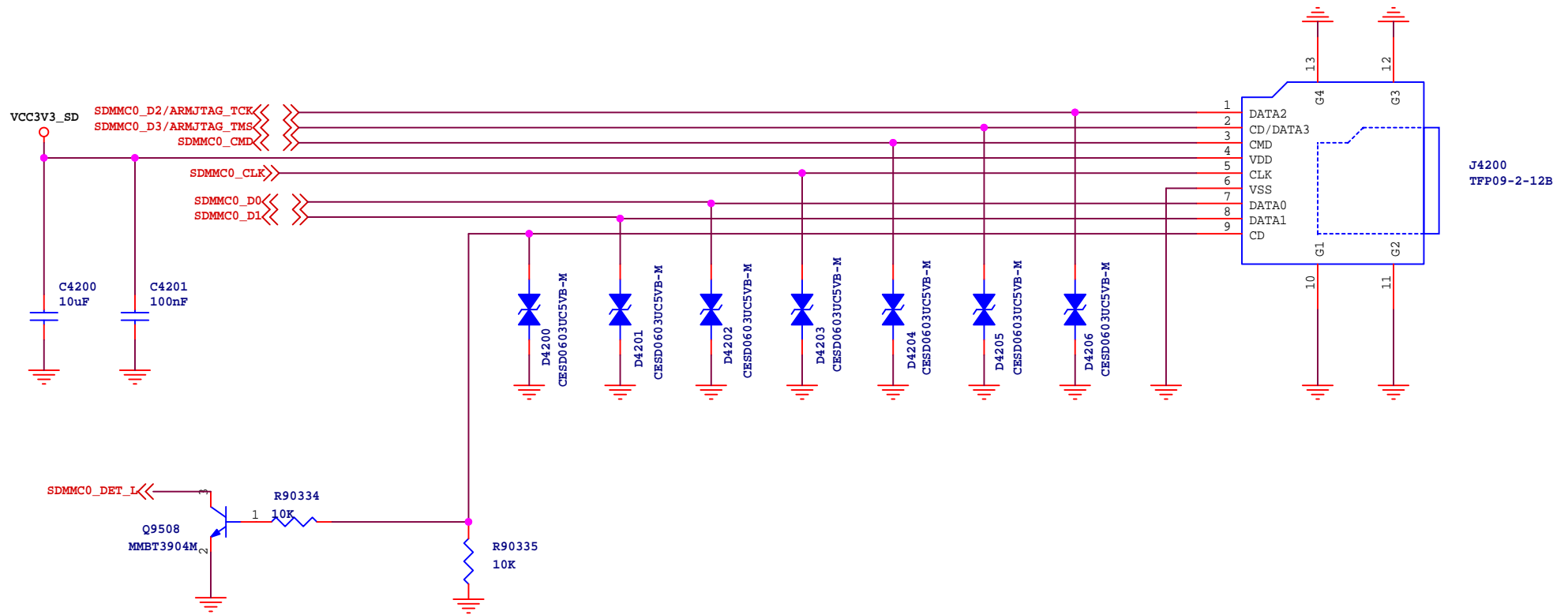
CONTENT

- 01.Cover
- 02.Content
- 03.Framwork
- 04.RK3568_Flash/SD Controller
- 05.RK3568_USB/PCIe/SATA PHY
- 06.RK3568_SARADC/GPIO
- 07.RK3568_VI Interface
- 08.RK3568_VO Interface_1
- 09.RK3568_VO Interface_2
- 10.RK3568_Audio Interface
- 11.RK3568_Power/GND
- 12.RK3568_OSC/PLL/PMUIO
- 13.Power_Ext Discrete/RTC IC
- 14.Power_Flash Power Manage
- 15.RK3568_DDR PHY
- 16.DRAM-LPDDR4X_1x32bit_200P
- 17.Flash-eMMC Flash
- 18.Flash-MicroSD Card
- 19.Flash-SPI FLASH(Optional)
- 20.VI-Camera_MIPI_CSI_1x 2Lanes
- 21.VO-HDMI2.0 TX
- 22.VO-LCM_MIPI_DSI_TX0
- 23.VO-LCM_eDP TX
- 24.TP Connector_COF
- 25.WIFI/BT-M.2-KEY-E
- 26.Ethernet-GEPHY_RGMII0
- 27.Ethernet-GEPHY_RGMII1_M1
- 28.Audio-Headphone Port
- 29.KEY Array/SARADC
- 30.USB2HUB
- 31.M2_KEYE_and_M2_KEYB
- 32.IR Receiver
- 33.CONNECTOR
- 34.Power_DC IN
- 35.Power_PMIC
- 36.USB2/USB3 Port

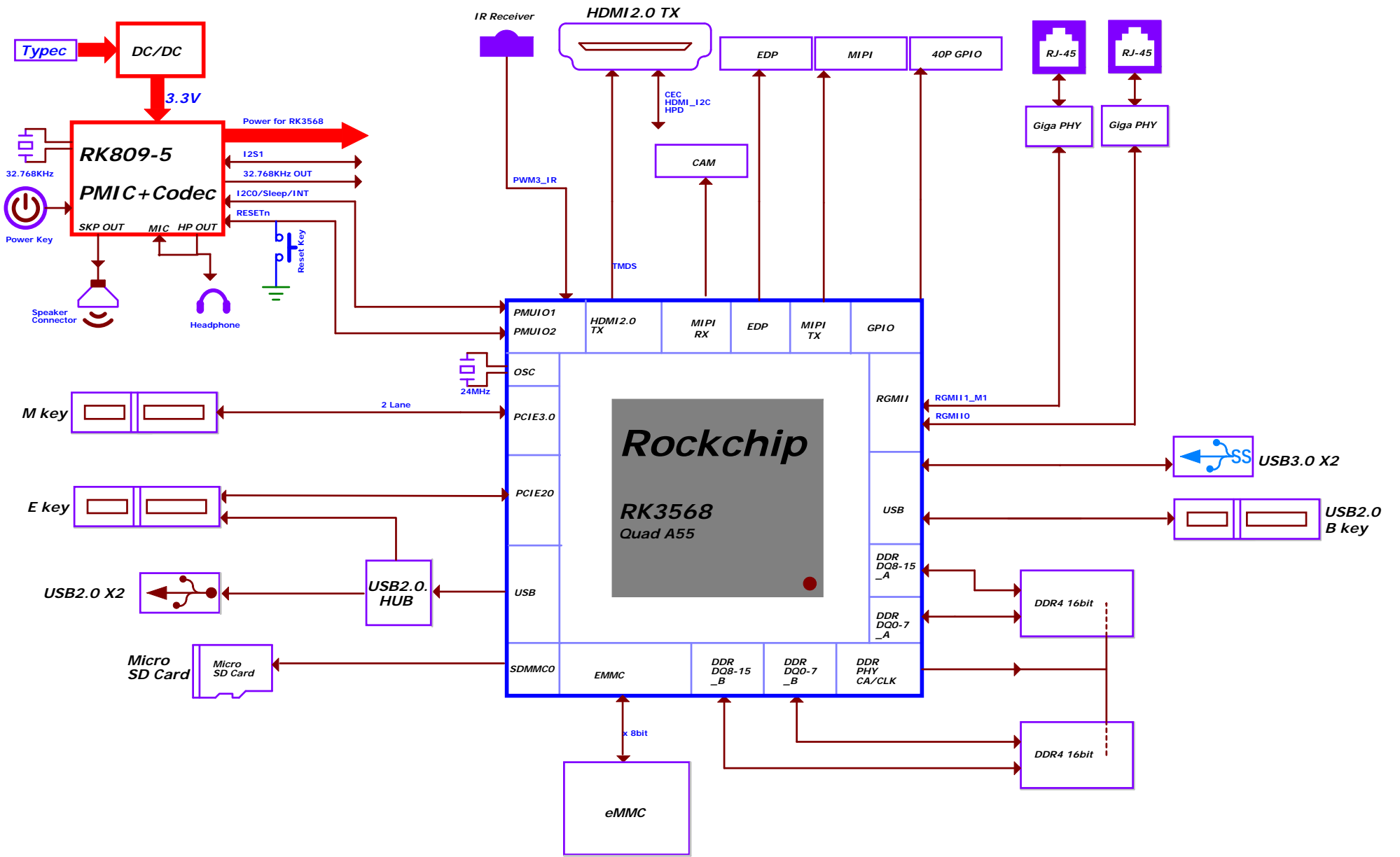


Size	Title: ROCK 3B+	REV
A4	Page Name: 02.Content	1.6
Date: Tuesday, May 14, 2024	Sheet	2 of 36

MicroSD Card

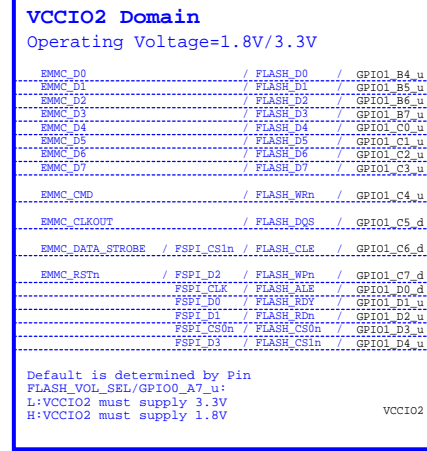


Size	Title: ROCK 3B+	REV
A4	Page Name: Block Diagram	1.6
Date: Tuesday, May 14, 2024	Sheet 3 of 36	

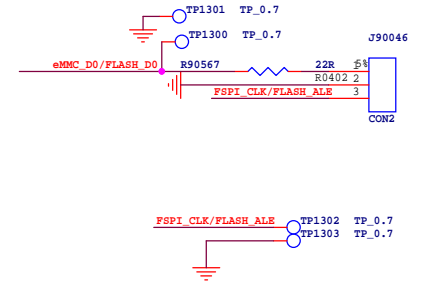


RK3568_I (VCCIO2 Domain)

U1000I

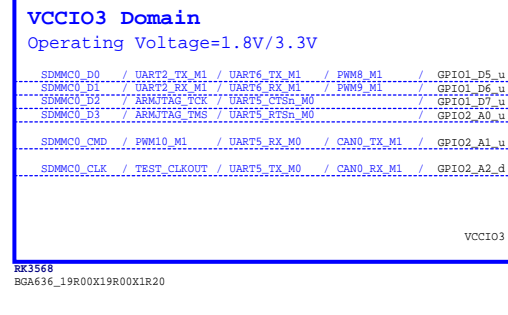


RK3568
BGAG36_19R00X19R00X1R20




RK3568_J (VCCIO3 Domain)

U1000J

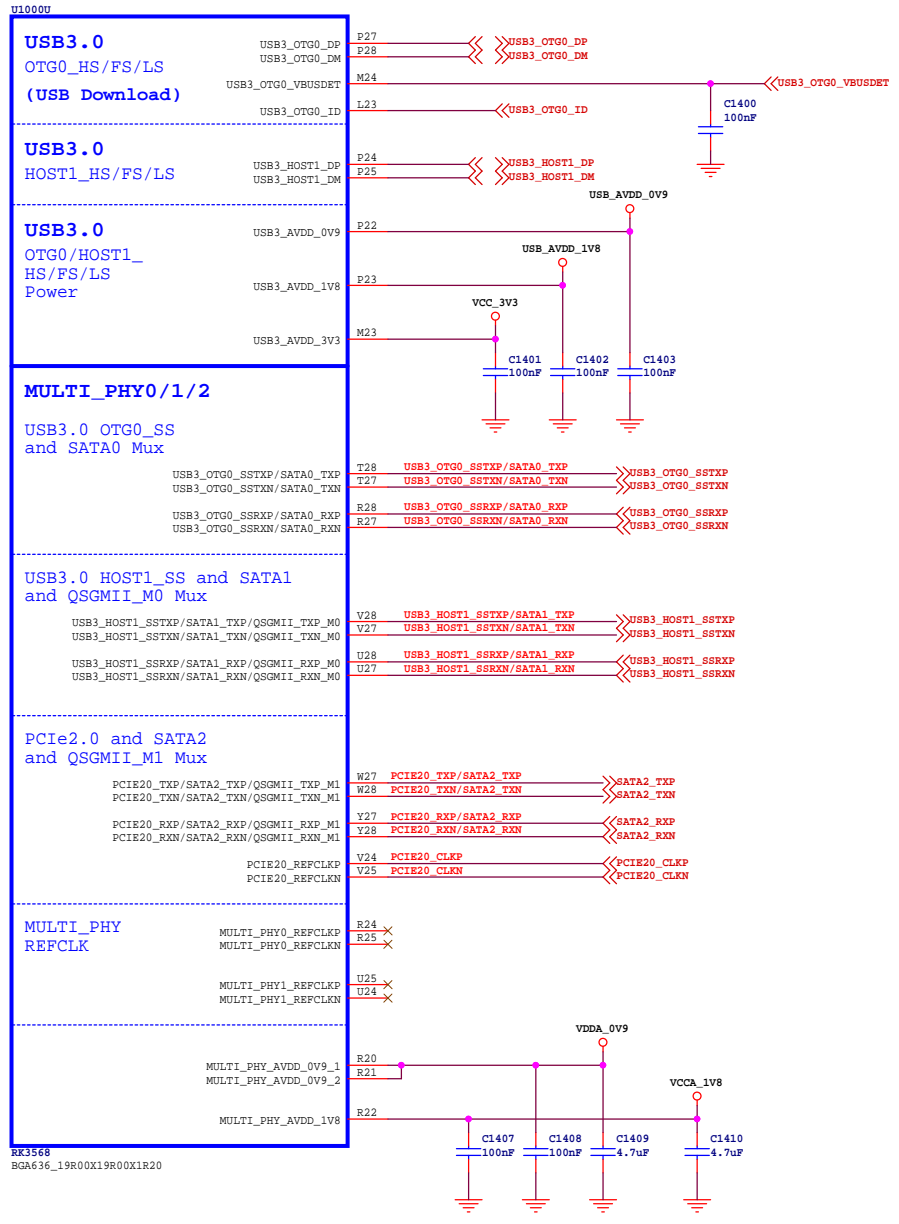


RK3568
BGAG36_19R00X19R00X1R20



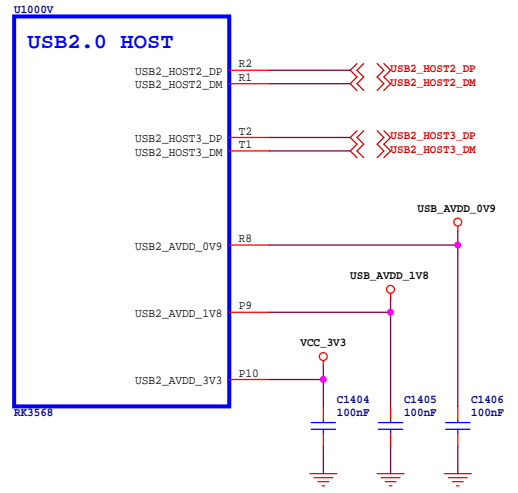
Size	Title: ROCK 3B+	REV
A3	Page Name: 04.RK3568_Flash/SD Controller	1.6
Date: Tuesday, May 14, 2024	Sheet 4 of 36	

RK3568_U(USB3.0/SATA/QSGMII/PCIe2.0 x1)

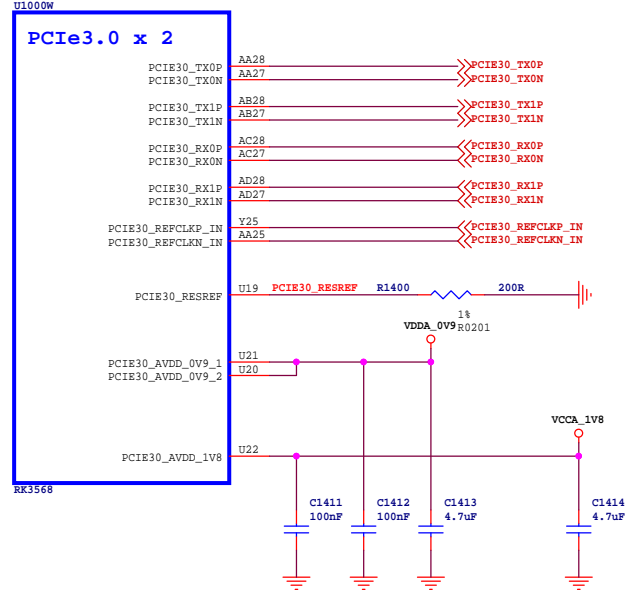


RK3568
BGA636_19R00X19R00X1R20

RK3568_V(USB2.0 HOST)



RK3568_W(PCIe3.0 x2)

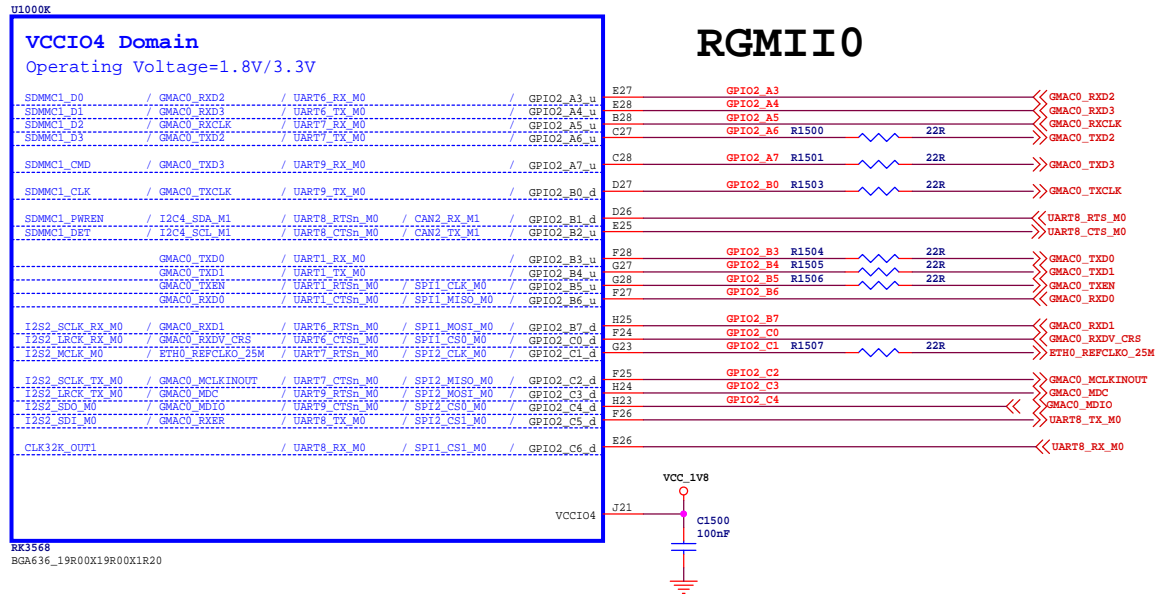


RK3568

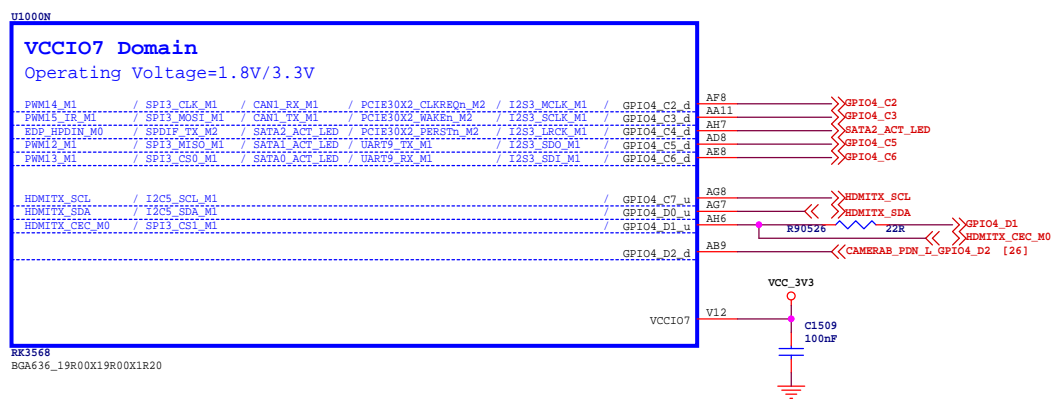


Size	Title:	ROCK 3B+	REV
A3	Page Name:	05.RK3568_USB/PCIe/SATA PHY	1.6
Date:	Tuesday, May 14, 2024	Sheet	5 of 36

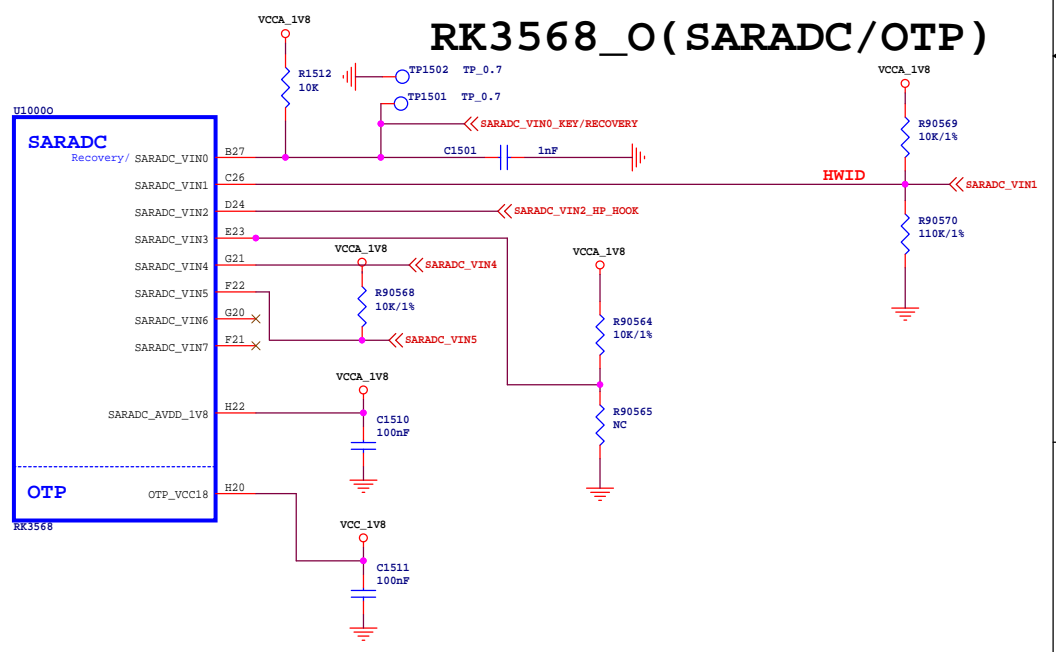
RK3568_K (VCCIO4 Domain)



RK3568_N (VCCIO7 Domain)



RK3568_O (SARADC/OTP)

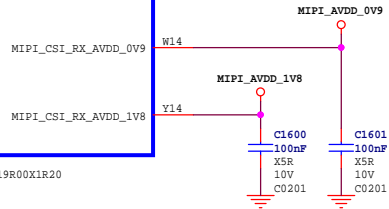
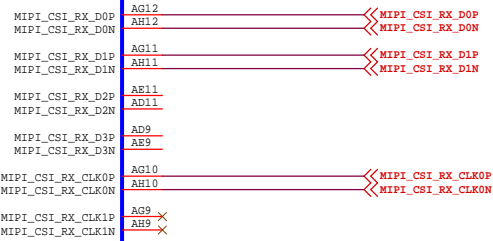


Size	Title: ROCK 3B+	REV
A3	Page Name: 06.RK3568_SARADC/GPIO	1.6
Date: Tuesday, May 14, 2024	Sheet 6 of 36	

RK3568_P(MIPI_CSI_RX)

U1000P

MIPI CSI RX



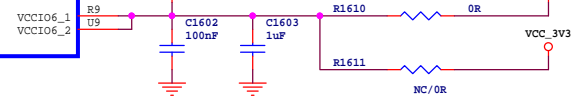
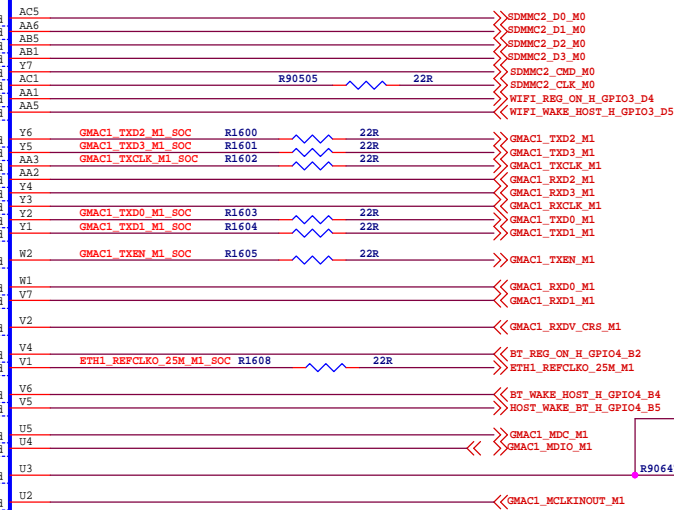
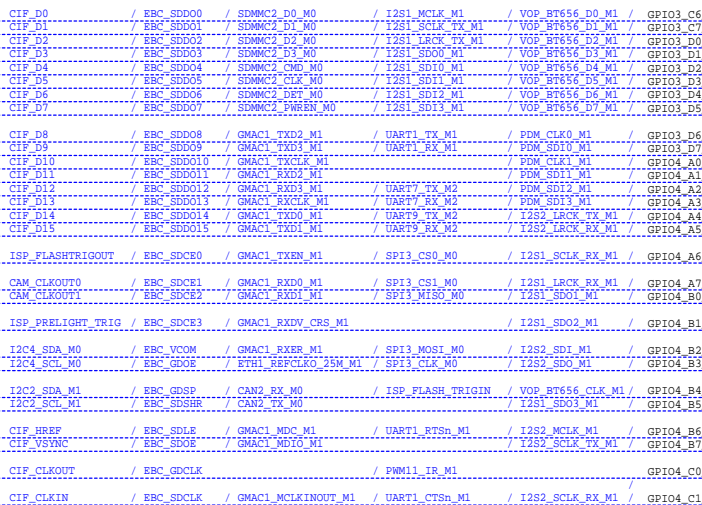
RK3568
BGA636_19R00X19R00X1R20

RK3568_M(VCCIO6 Domain)

U1000M

VCCIO6 Domain

Operating Voltage=1.8V/3.3V



RK3568
BGA636_19R00X19R00X1R20

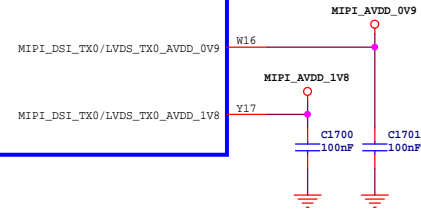
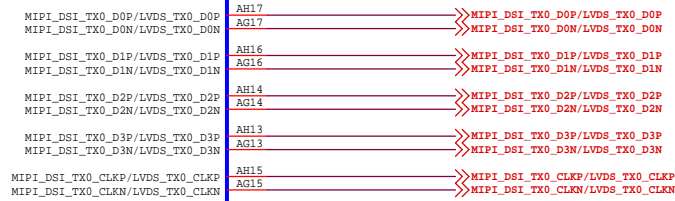


Size	Title: RK3568_	REV
A3	Page Name: 07.RK3568_VI Interface	1.6
Date: Tuesday, May 14, 2024	Sheet 7 of 36	

RK3568_R(MIPI_DSI_TX0/LVDS_TX0)

U1000R

MIPI DSI TX0/LVDS TX0

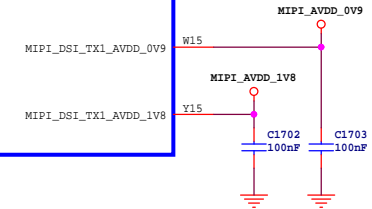
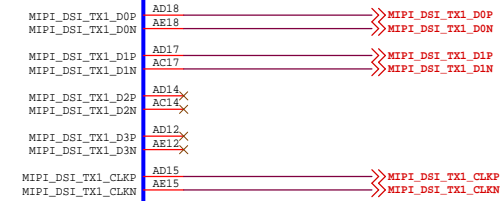


RK3568

RK3568_S(MIPI_DSI_TX1)

U1000S

MIPI DSI TX1

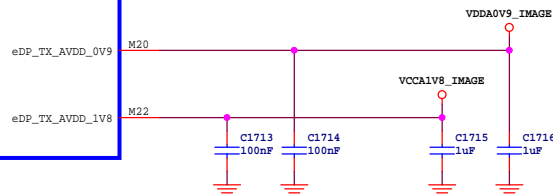
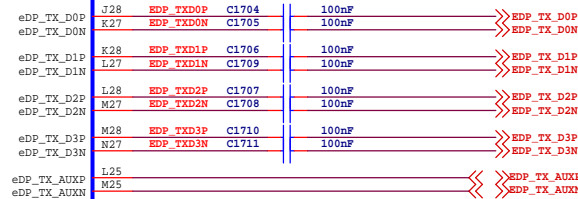


RK3568

RK3568_T(eDP TX)

U1000T

eDP_TX

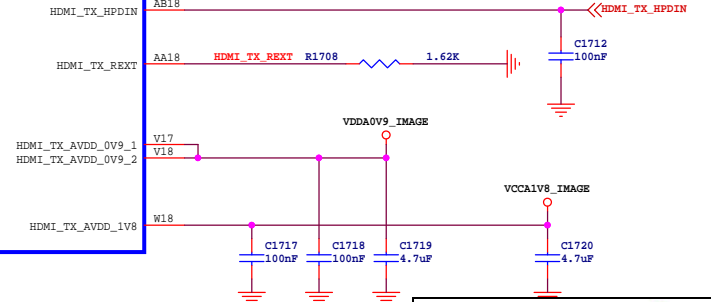
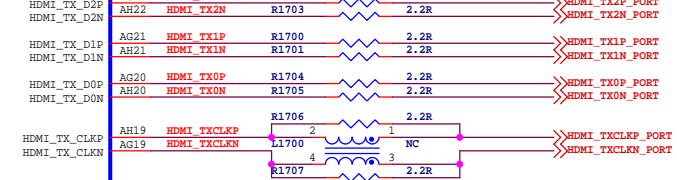


RK3568

RK3568_Q(HDMI2.0 TX)

U1000Q

HDMI2.0 TX



RK3568



Size	Title: ROCK 3B+	REV
A3	Page Name: 08.RK3568_VO Interface_1	1.6
Date: Tuesday, May 14, 2024	Sheet 8 of 36	

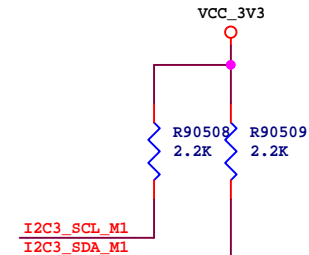
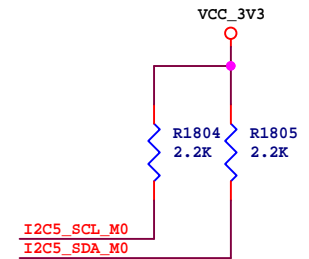
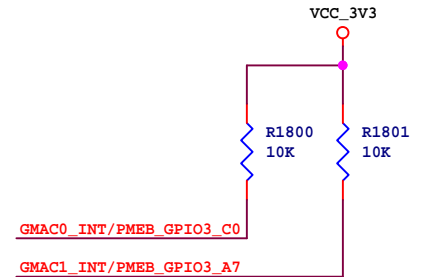
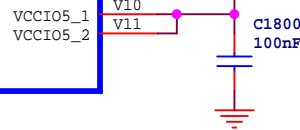
RK3568_L (VCCIO5 Domain)

U1000L

VCCIO5 Domain

Operating Voltage=1.8V/3.3V

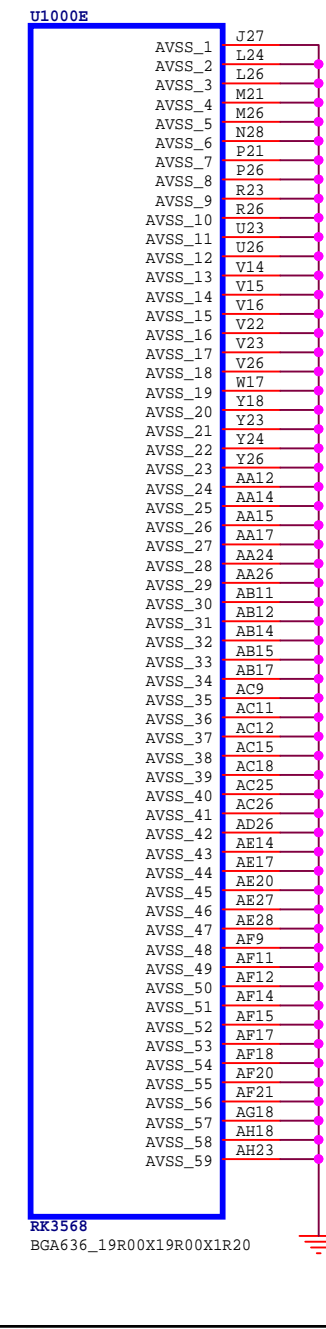
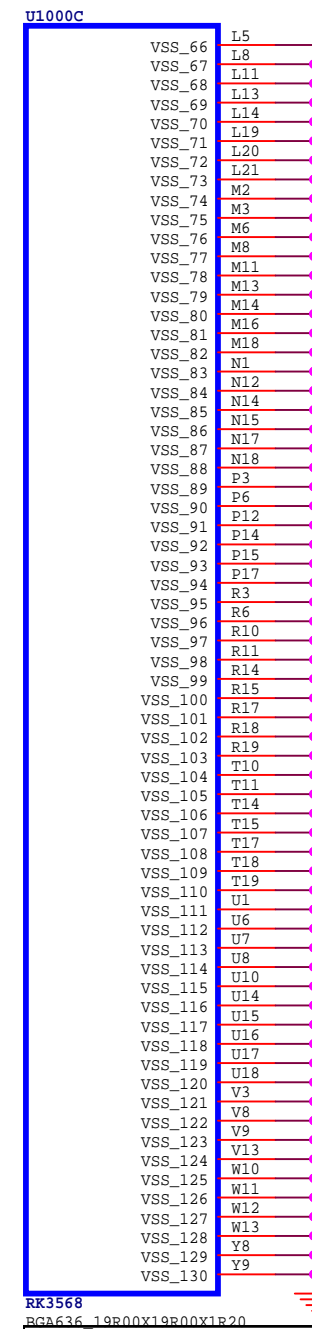
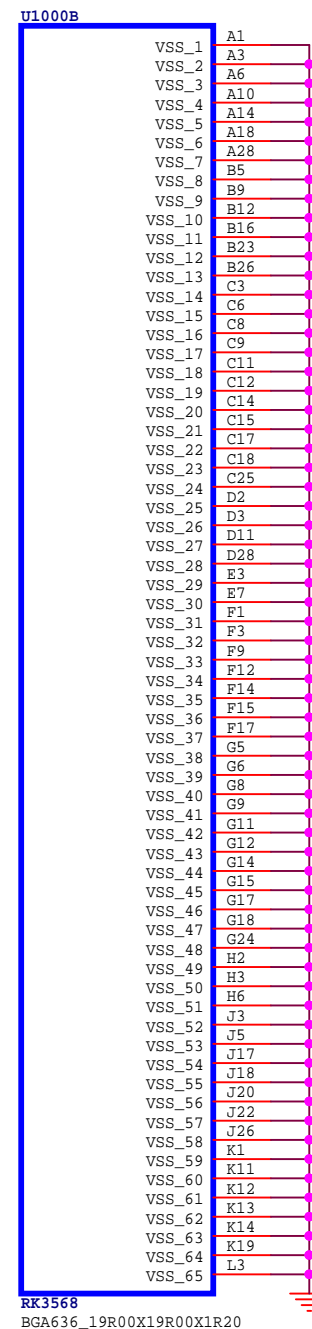
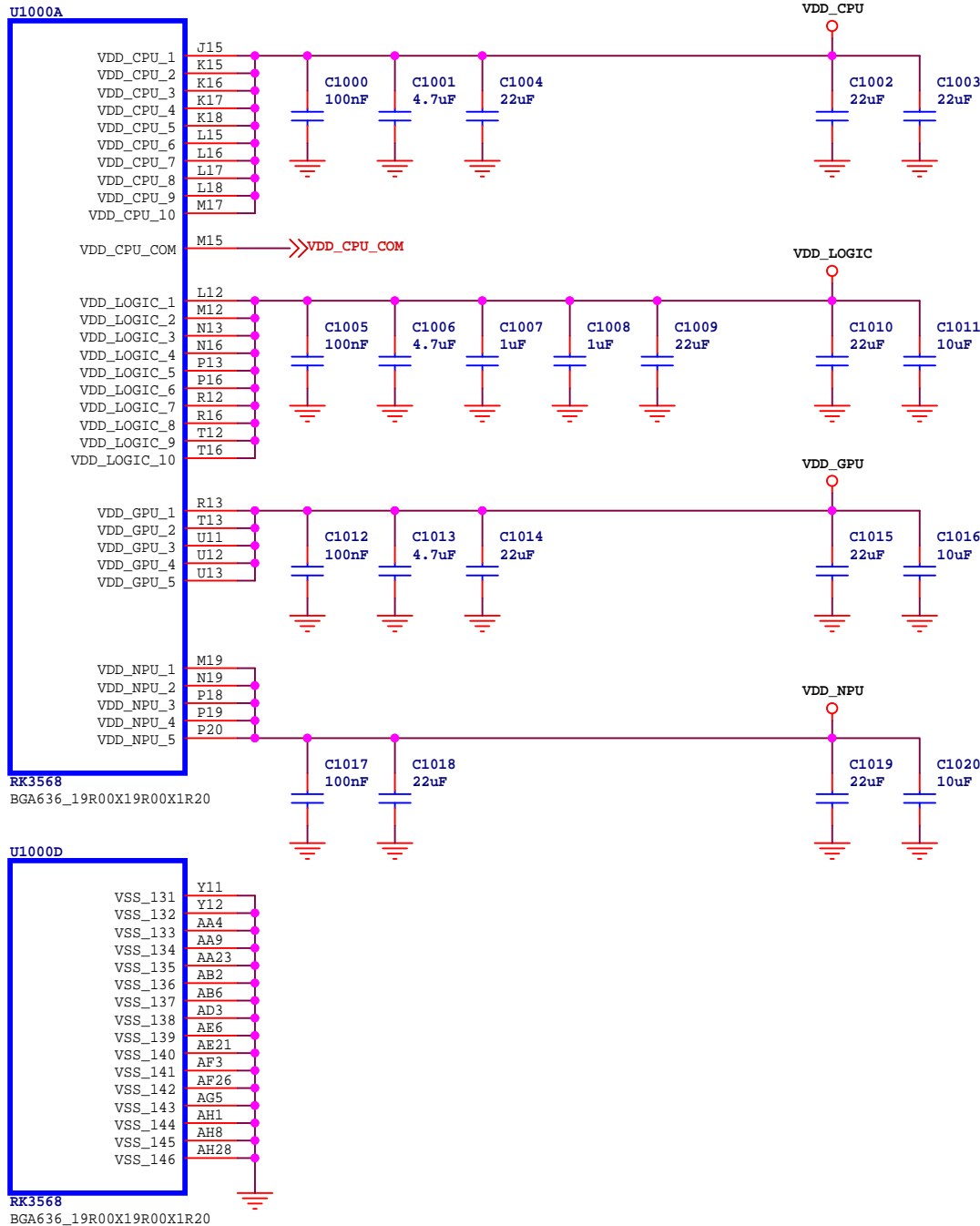
LCDC_D0	/ VOP_BT656_D0_M0	/ SPI0_MISO_M1	/ PCIE20_CLKREQn_M1	/ I2S1_MCLK_M2	/ GPIO2_D0_d	AG6	PCIE20-CLKREQn
LCDC_D1	/ VOP_BT656_D1_M0	/ SPI0_MOSI_M1	/ PCIE20_WAKEn_M1	/ I2S1_SCLK_TX_M2	/ GPIO2_D1_d	AD7	PCIE20-WAKEn
LCDC_D2	/ VOP_BT656_D2_M0	/ SPI0_CS0_M1	/ PCIE30X1_CLKREQn_M1	/ I2S1_LRCK_TX_M2	/ GPIO2_D2_d	AC8	GPIO2-D2
LCDC_D3	/ VOP_BT656_D3_M0	/ SPI0_CLK_M1	/ PCIE30X1_WAKEn_M1	/ I2S1_SDI0_M2	/ GPIO2_D3_d	AC7	GPIO2-D3
LCDC_D4	/ VOP_BT656_D4_M0	/ SPI2_CSI_M1	/ PCIE30X2_CLKREQn_M1	/ I2S1_SDI1_M2	/ GPIO2_D4_d	AF5	PCIE30X2_CLKREQn_M1
LCDC_D5	/ VOP_BT656_D5_M0	/ SPI2_CS0_M1	/ PCIE30X2_WAKEn_M1	/ I2S1_SDI2_M2	/ GPIO2_D5_d	AF6	PCIE30X2_WAKEn_M1
LCDC_D6	/ VOP_BT656_D6_M0	/ SPI2_MOSI_M1	/ PCIE30X2_PERSTn_M1	/ I2S1_SDI3_M2	/ GPIO2_D6_d	AD6	PCIE30X2_PERSTn_M1
LCDC_D7	/ VOP_BT656_D7_M0	/ SPI2_MISO_M1	/ UART8_TX_M1	/ I2S1_SDO0_M2	/ GPIO2_D7_d	AH5	GPIO2_D7
LCDC_CLK	/ VOP_BT656_CLK_M0	/ SPI2_CLK_M1	/ UART8_RX_M1	/ I2S1_SDO1_M2	/ GPIO3_A0_d	AH4	GPIO3_A0
LCDC_D8	/ VOP_BT1120_D0	/ SPI1_CS0_M1	/ PCIE30X1_PERSTn_M1	/ SDMMC2_D0_M1	/ GPIO3_A1_d	AB8	GPIO3-A1-HP-DET-L
LCDC_D9	/ VOP_BT1120_D1	/ GMAC1_TXD2_M0	/ I2S3_MCLK_M0	/ SDMMC2_D1_M1	/ GPIO3_A2_d	AE5	GPIO3_A2
LCDC_D10	/ VOP_BT1120_D2	/ GMAC1_TXD3_M0	/ I2S3_SCLK_M0	/ SDMMC2_D2_M1	/ GPIO3_A3_d	AG4	GPIO3_A3
LCDC_D11	/ VOP_BT1120_D3	/ GMAC1_RXD2_M0	/ I2S3_LRCK_M0	/ SDMMC2_D3_M1	/ GPIO3_A4_d	AF4	GPIO3_A4
LCDC_D12	/ VOP_BT1120_D4	/ GMAC1_RXD3_M0	/ I2S3_SDO_M0	/ SDMMC2_CMD_M1	/ GPIO3_A5_d	AH3	GPIO3_A5
LCDC_D13	/ VOP_BT1120_CLK	/ GMAC1_TXCLK_M0	/ I2S3_SDI_M0	/ SDMMC2_CLK_M1	/ GPIO3_A6_d	AG3	GPIO3_A6
LCDC_D14	/ VOP_BT1120_D5	/ GMAC1_RXCLK_M0	/ I2S3_SDI_M0	/ SDMMC2_DET_M1	/ GPIO3_A7_d	AH2	GMAC1_INT/PMEB_GPIO3_A7
LCDC_D15	/ VOP_BT1120_D6	/ ETH1_REFCLKO_25M_M0	/ I2S3_SDI_M0	/ SDMMC2_PWREN_M1	/ GPIO3_B0_d	AG2	GMAC1_RSTn_GPIO3_B0
LCDC_D16	/ VOP_BT1120_D7	/ GMAC1_RXD0_M0	/ UART4_RX_M1	/ PWM8_M0	/ GPIO3_B1_d	AG1	GPIO3_B1
LCDC_D17	/ VOP_BT1120_D8	/ GMAC1_RXD1_M0	/ UART4_TX_M1	/ PWM9_M0	/ GPIO3_B2_d	AF2	GPIO3_B2
LCDC_D18	/ VOP_BT1120_D9	/ GMAC1_RXDV_CRS_M0	/ I2C5_SCL_M0	/ PDM_SDI0_M2	/ GPIO3_B3_d	AF1	I2C5_SCL_M0
LCDC_D19	/ VOP_BT1120_D10	/ GMAC1_RXER_M0	/ I2C5_SDA_M0	/ PDM_SDI1_M2	/ GPIO3_B4_d	AE1	I2C5_SDA_M0
LCDC_D20	/ VOP_BT1120_D11	/ GMAC1_TXD0_M0	/ I2C3_SCL_M1	/ PWM10_M0	/ GPIO3_B5_d	AE2	I2C3_SCL_M1
LCDC_D21	/ VOP_BT1120_D12	/ GMAC1_TXD1_M0	/ I2C3_SDA_M1	/ PWM11_IR_M0	/ GPIO3_B6_d	AE3	I2C3_SDA_M1
LCDC_D22	/ PWM12_M0	/ GMAC1_TXEN_M0	/ UART3_TX_M1	/ PDM_SDI2_M2	/ GPIO3_B7_d	AD4	GMAC0_RSTn_GPIO3_B7
LCDC_D23	/ PWM13_M0	/ GMAC1_MCLKINOUT_M0	/ UART3_RX_M1	/ PDM_SDI3_M2	/ GPIO3_C0_d	AD2	GMAC0_INT/PMEB_GPIO3_C0
LCDC_HSYNC	/ VOP_BT1120_D13	/ SPI1_MOSI_M1	/ PCIE20_PERSTn_M1	/ I2S1_SDO2_M2	/ GPIO3_C1_d	AD1	PCIE20-PERSTn
LCDC_VSYNC	/ VOP_BT1120_D14	/ SPI1_MISO_M1	/ UART5_TX_M1	/ I2S1_SDO3_M2	/ GPIO3_C2_d	AA7	GPIO3_C2
LCDC_DEN	/ VOP_BT1120_D15	/ SPI1_CLK_M1	/ UART5_RX_M1	/ I2S1_SCLK_RX_M2	/ GPIO3_C3_d	AC4	GPIO3_C3
PWM14_M0	/ VOP_PWM_M1	/ GMAC1_MDC_M0	/ UART7_TX_M1	/ PDM_CLK1_M2	/ GPIO3_C4_d	AC3	GPIO3_C4
PWM15_IR_M0	/ SPBIF_TX_M1	/ GMAC1_MDI0_M0	/ UART7_RX_M1	/ I2S1_LRCK_RX_M2	/ GPIO3_C5_d	AC2	GPIO3_C5



RK3568
BGA636_19R00X19R00X1R20

Size	Title:	REV
A4	ROCK 3B+	1.6
Page Name: 09.RK3568_VO Interface_2		
Date: Tuesday, May 14, 2024	Sheet 9 of 36	

RK3568_ABCDE (Power&Gnd)



RK3568
BGA636_19R00X19R00X1R20

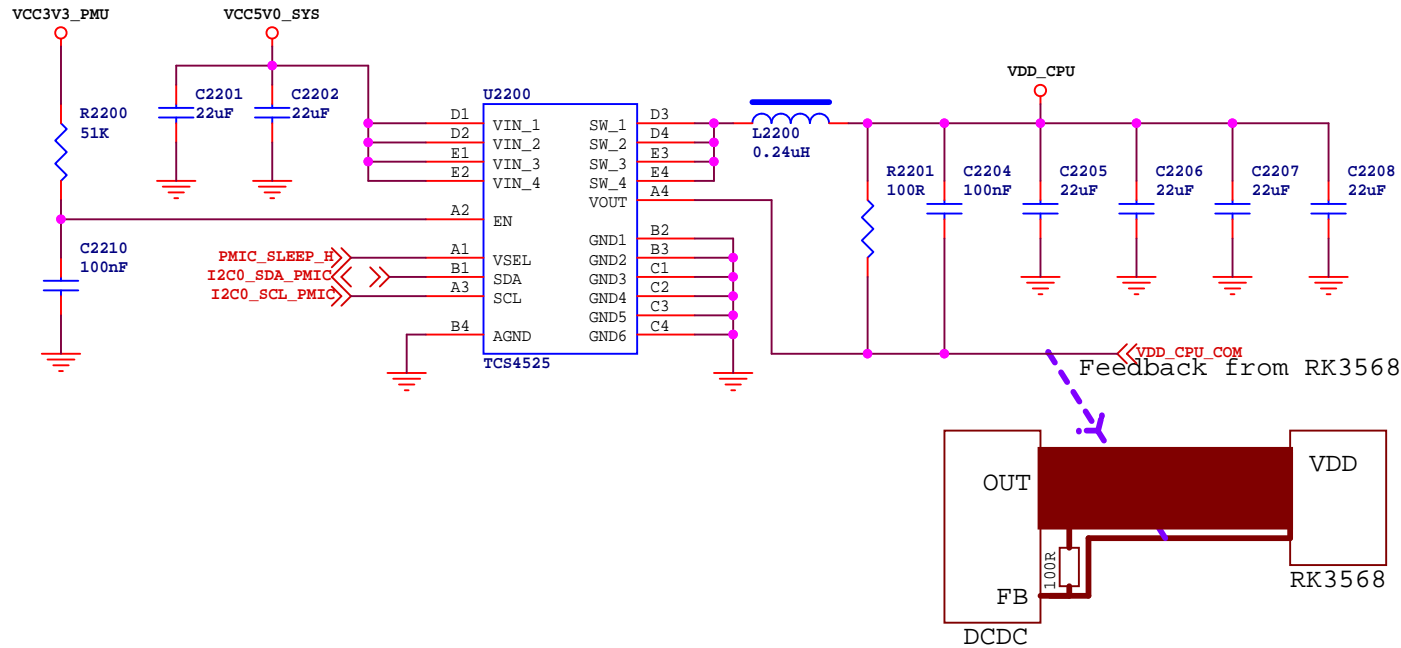
RK3568
BGA636_19R00X19R00X1R20

RK3568
BGA636_19R00X19R00X1R20

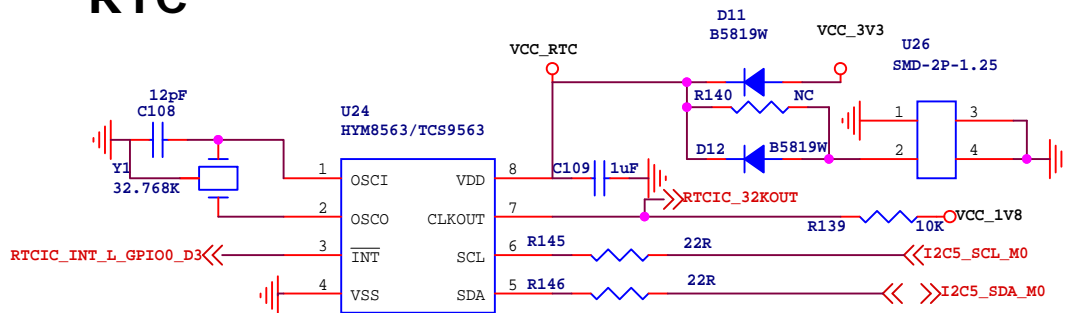


Size	Title: ROCK 3B+	REV
A4	Page Name: 11.RK3568_Power/GND	1.6
Date: Tuesday, May 14, 2024	Sheet 11 of 36	

VDD_CPU

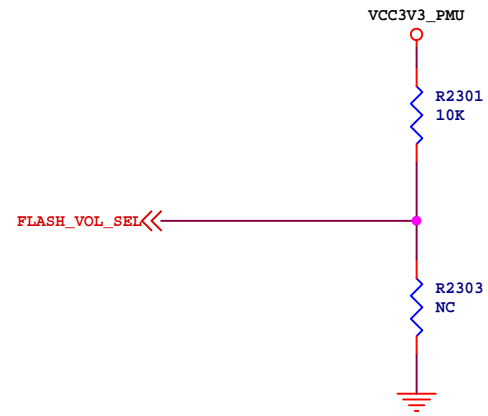
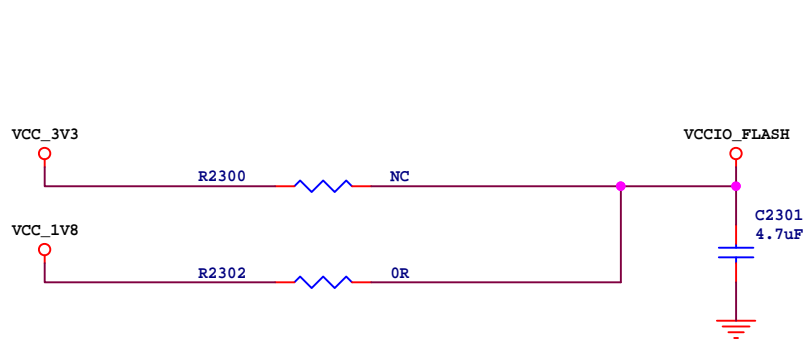


RTC



Size	Title: ROCK 3B+	REV
A4	Page Name: 13.Power_Ext Discrete/RTC IC	1.6
Date: Tuesday, May 14, 2024	Sheet 13 of 36	

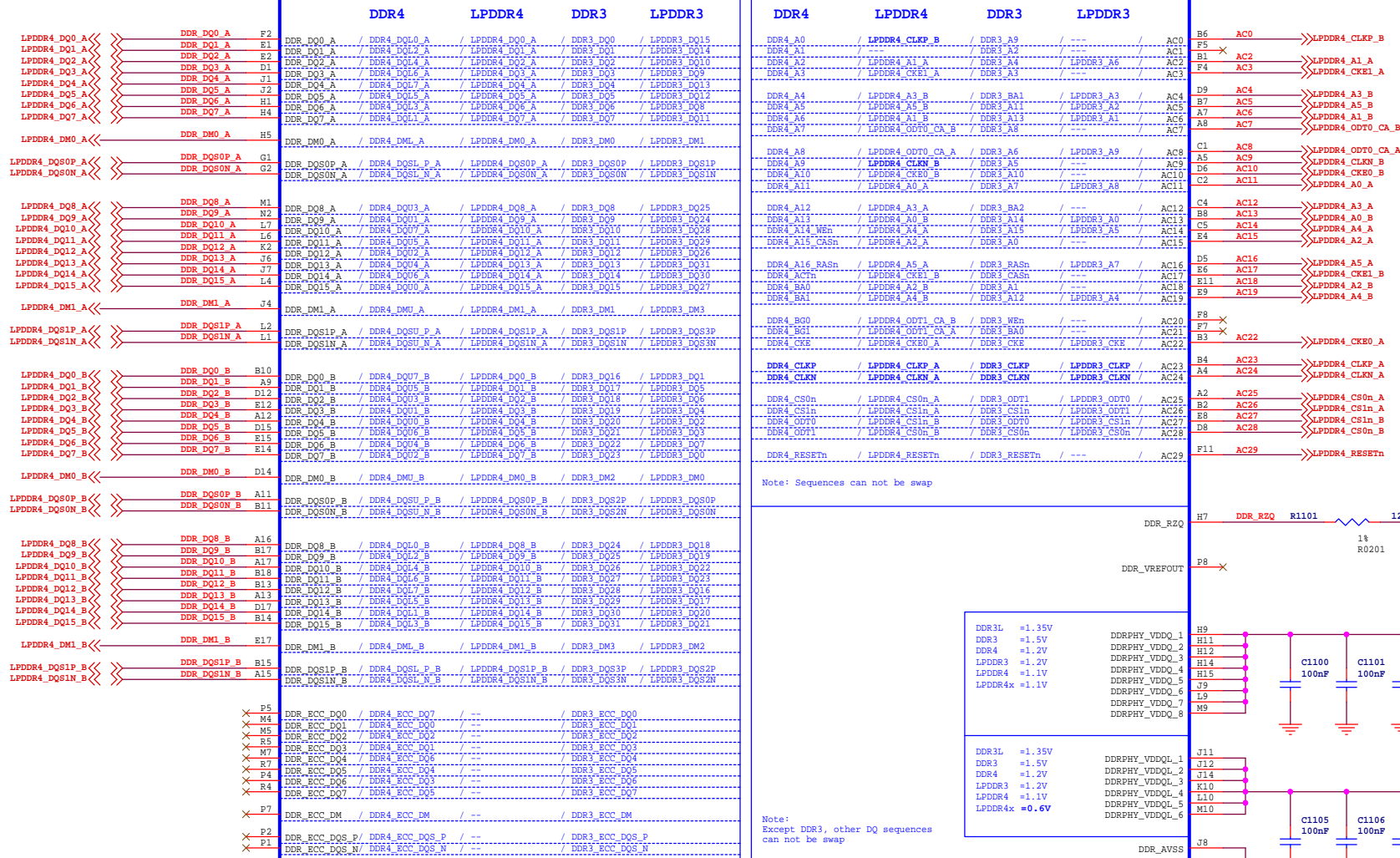
Flash Power Manage



Size	Title: ROCK 3B+	REV
A4	Page Name: 14.Power_Flash Power Manage	1.6
Date: Tuesday, May 14, 2024	Sheet	14 of 36

RK3568_F (DDR PHY)

U1000F

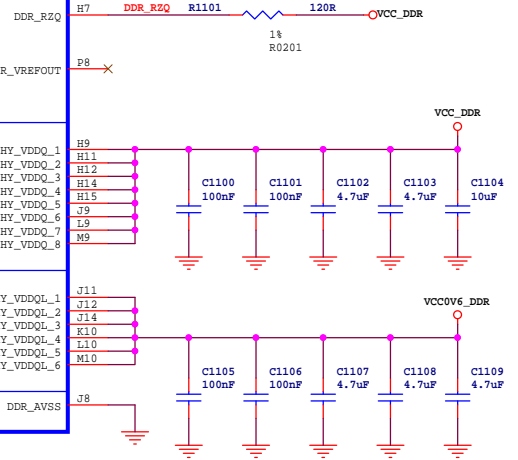


Note: Sequences can not be swap

DDR3L = 1.35V
 DDR4 = 1.5V
 DDR3 = 1.2V
 LPDDR4 = 1.1V
 LPDDR4x = 1.1V

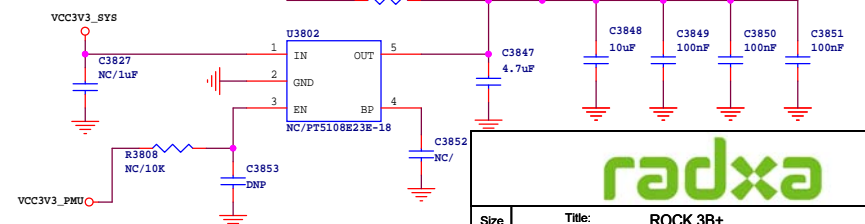
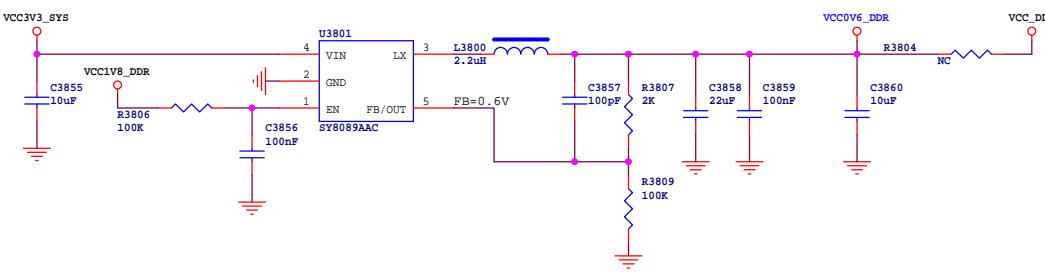
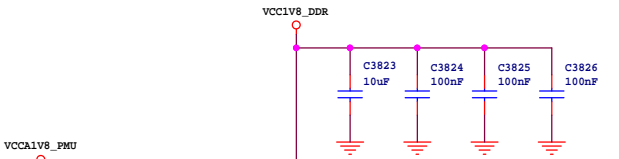
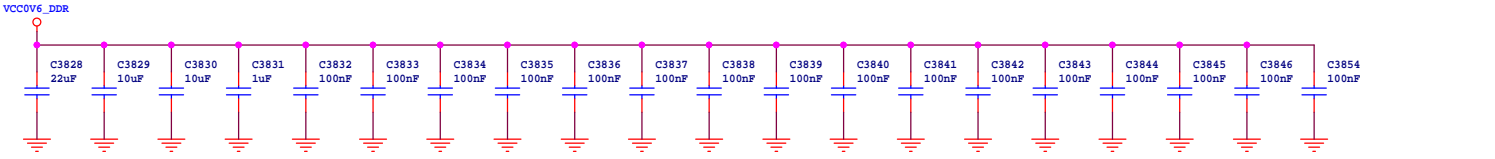
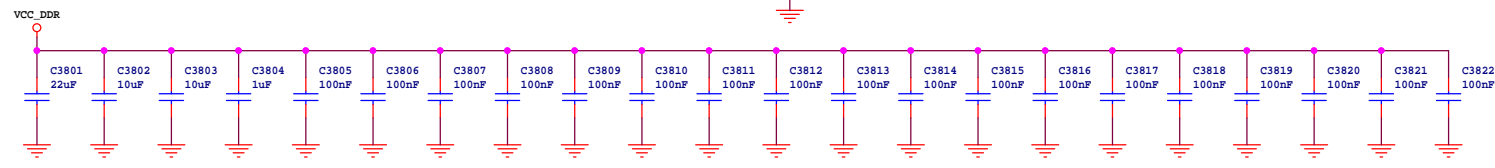
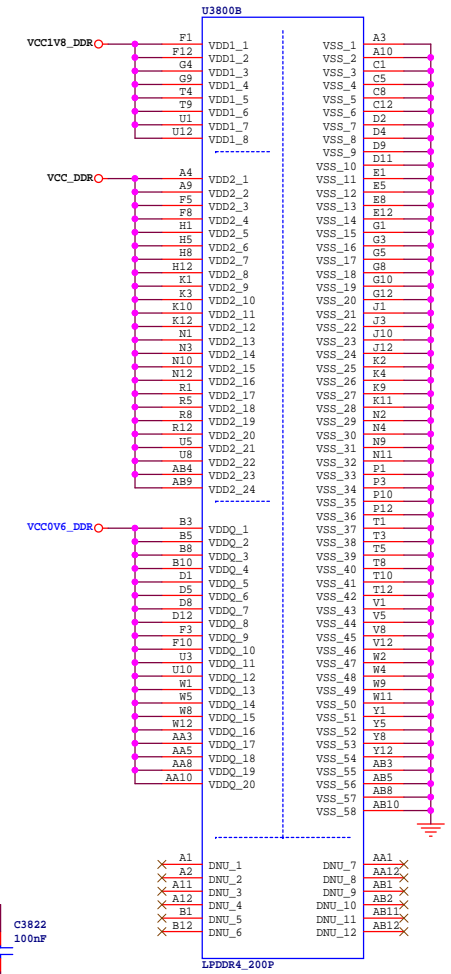
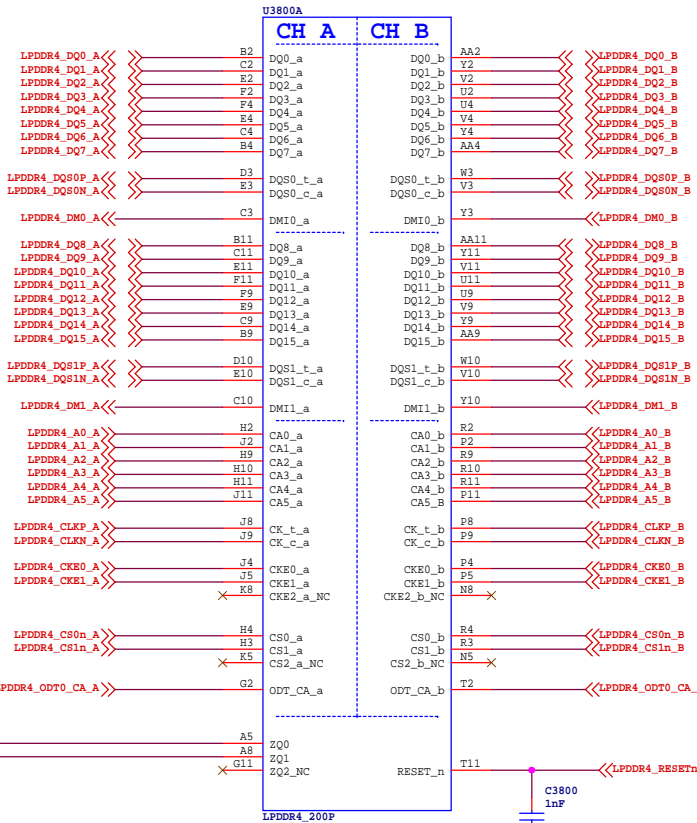
DDR3L = 1.35V
 DDR3 = 1.5V
 DDR4 = 1.2V
 LPDDR4 = 1.2V
 LPDDR4x = 0.6V

Note: Except DDR3, other DQ sequences can not be swap



RK3568
 BGA636_19R00X19R00X1R20

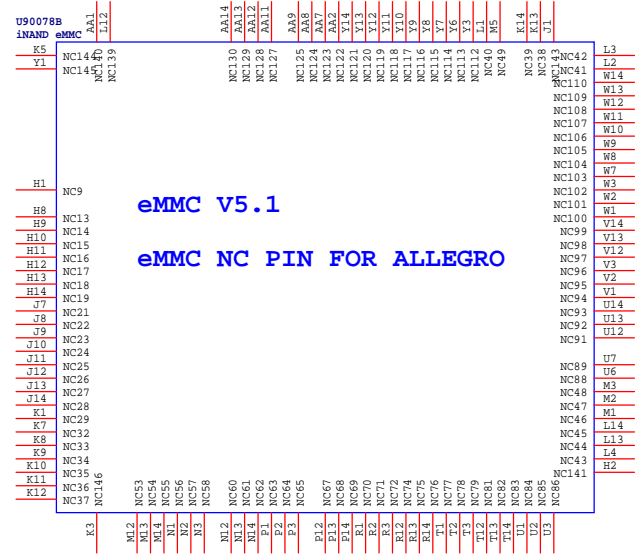
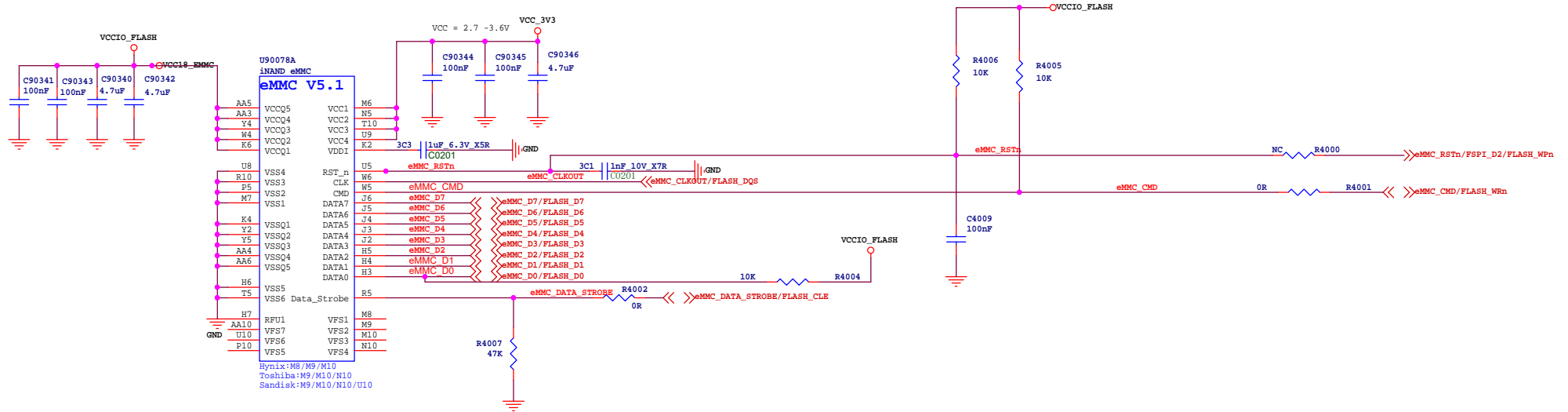




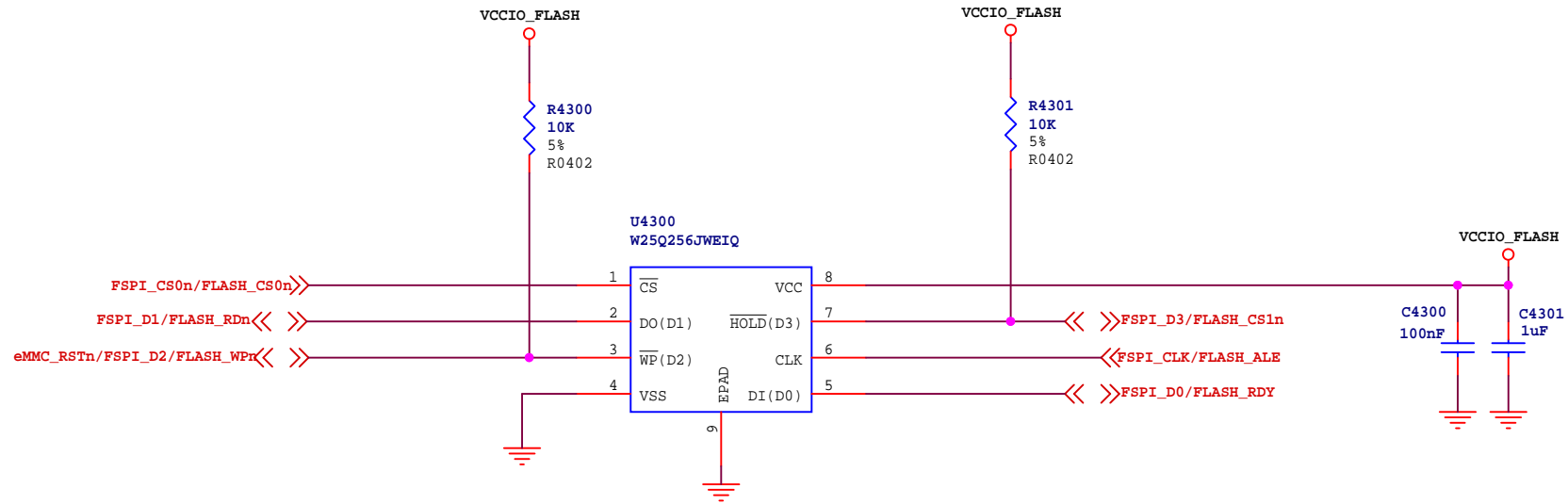
radxa

Size	Title:	ROCK 3B+	REV
A3	Page Name:	16.DRAM-LPDDR4X_1X32bit_200P	1.6
Date:	Tuesday, May 14, 2024	Sheet	16 of 36

eMMC Flash



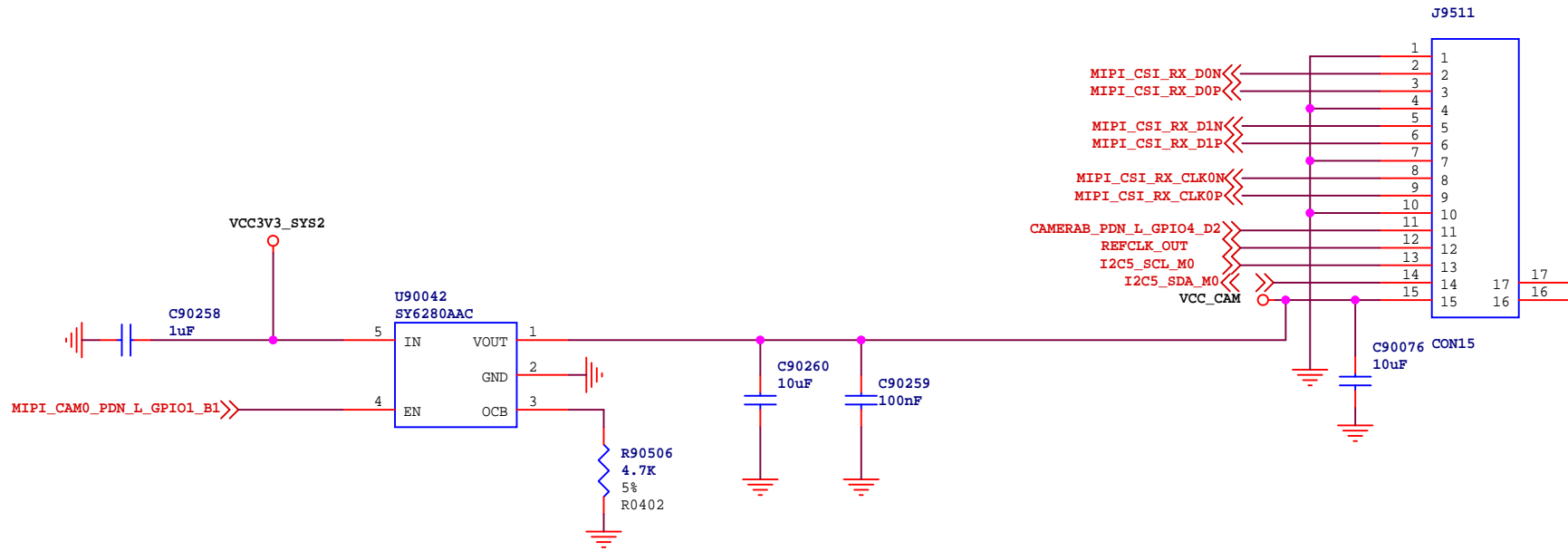
SPI Flash



radxa

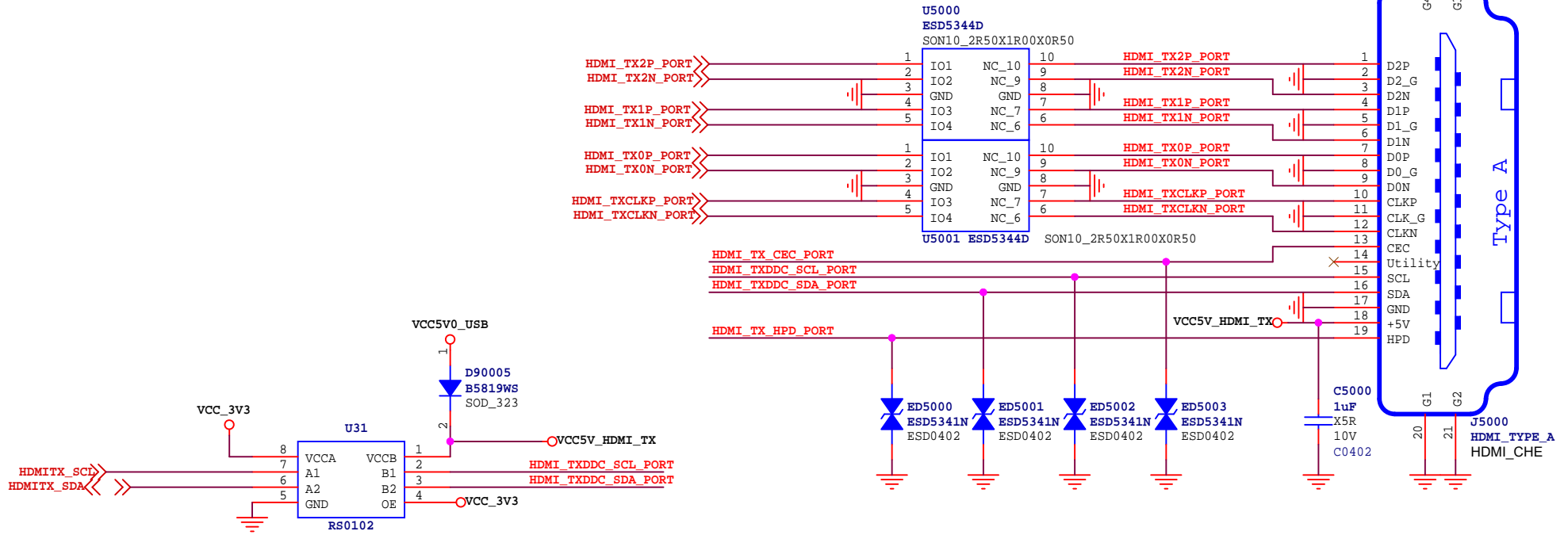
Size	Title: ROCK 3B+	REV
A4	Page Name: 19.Flash-SPI FLASH(Optional)	1.6
Date: Tuesday, May 14, 2024	Sheet 19 of 36	

Camera

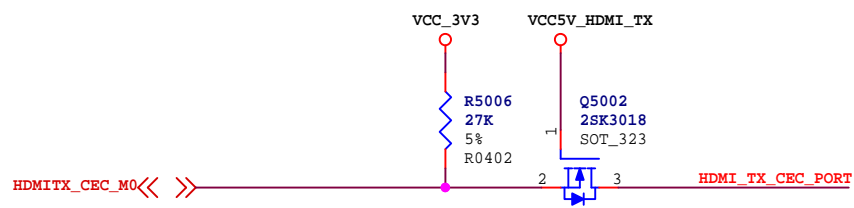


Size	Title: ROCK 3B+	REV
A4	Page Name: 20.VI-Camera_MIPI_CSI_1x 2Lanes	1.6
Date: Tuesday, May 14, 2024	Sheet 20 of 36	

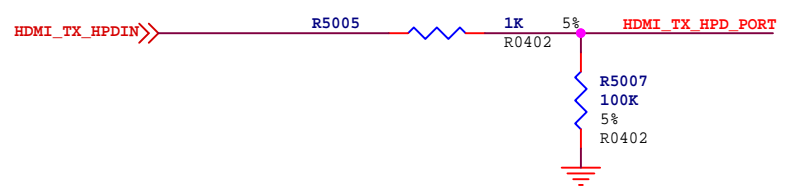
HDMI 2.0 TX



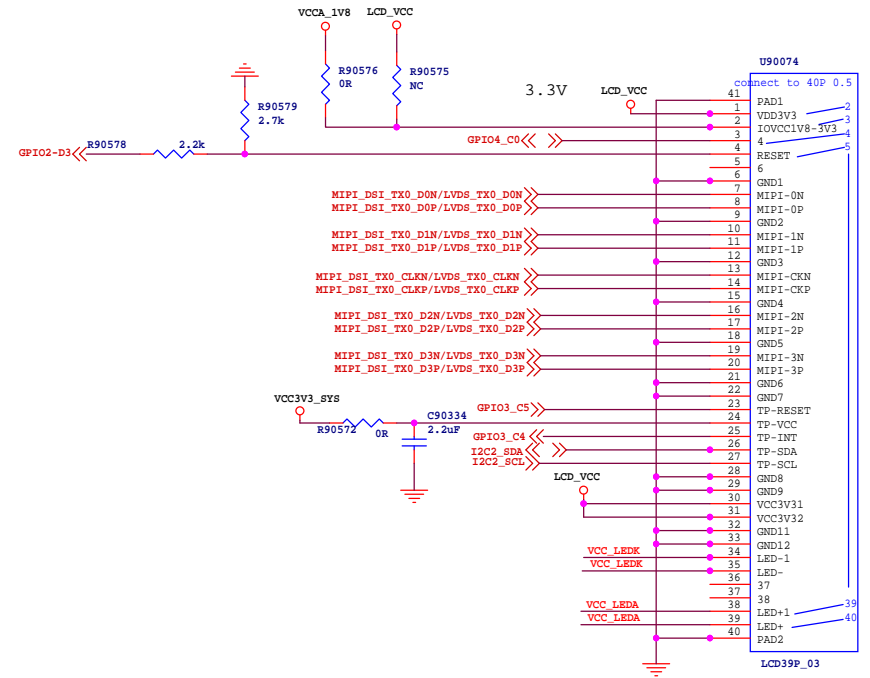
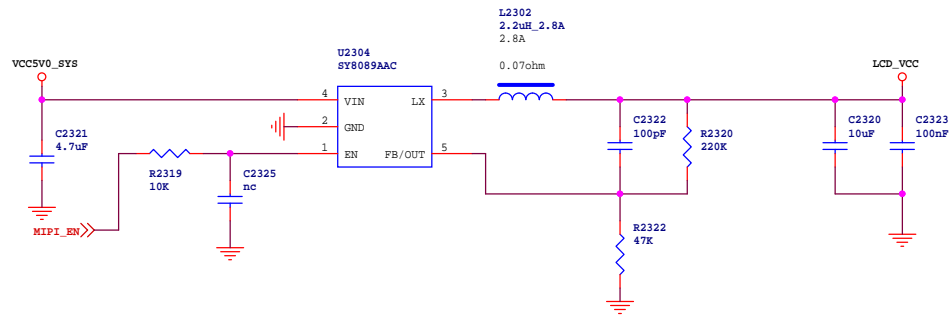
HDMI TX CEC



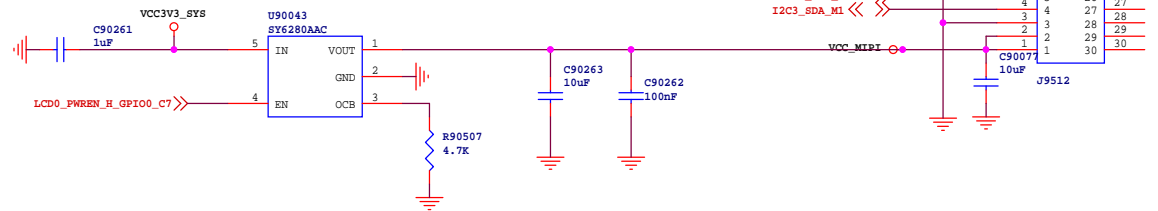
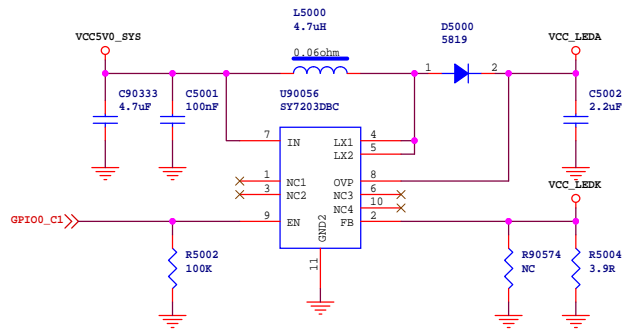
HDMI TX HPD



Size	Title: ROCK 3B+	REV
A4	Page Name: 21.VO-HDMI2.0 TX	1.6
Date: Tuesday, May 14, 2024	Sheet 21 of 36	



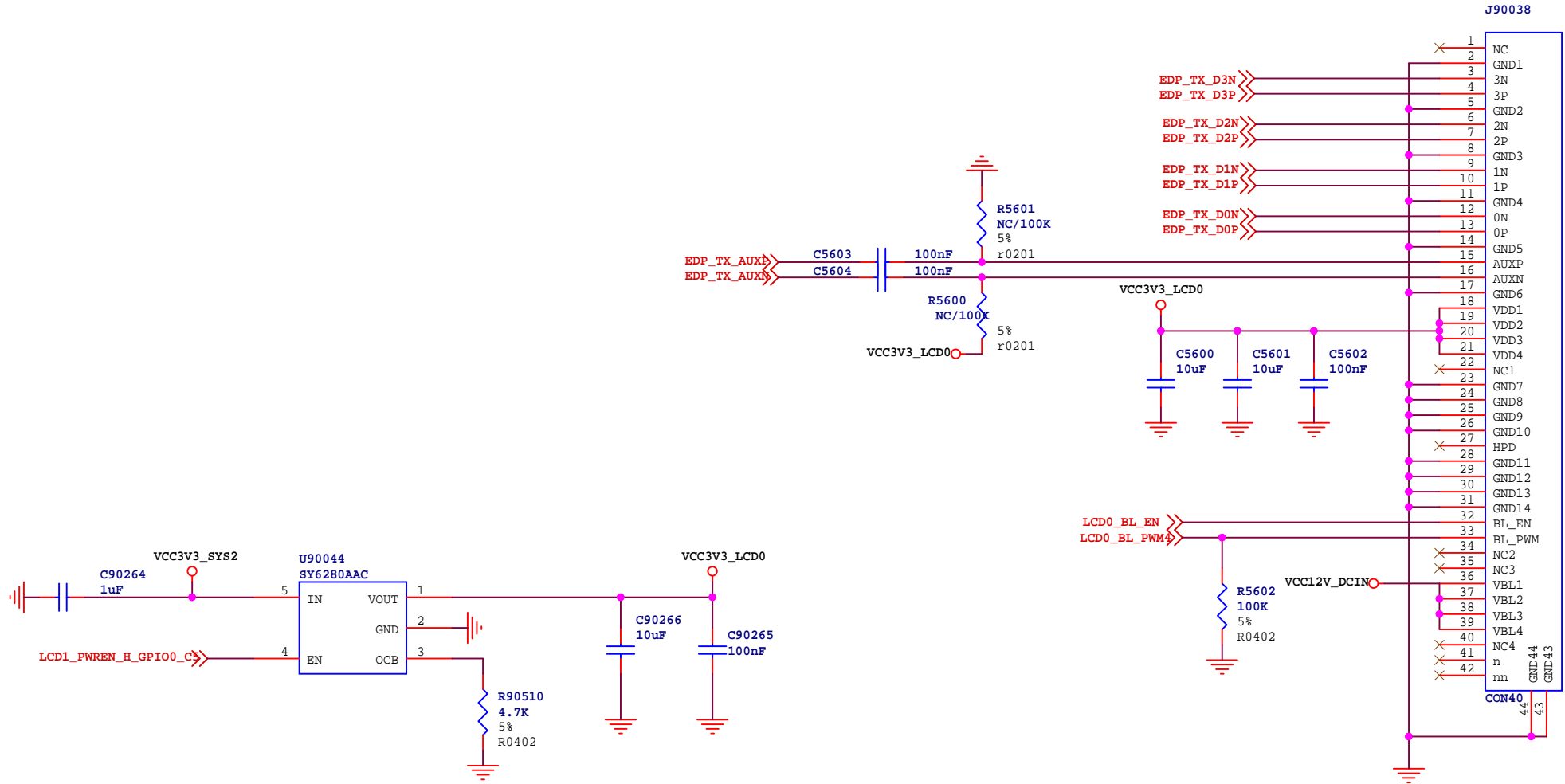
LCD



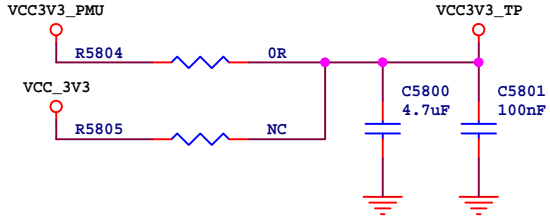
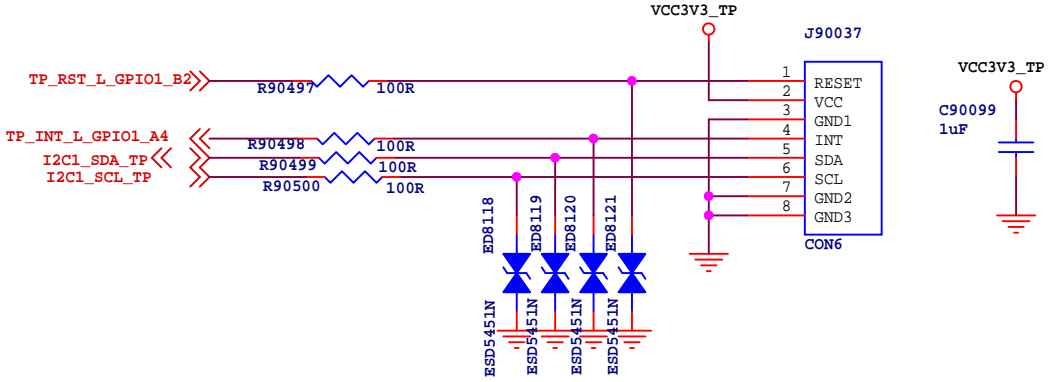
radxa


Size	Title: ROCK 3B+	REV
A3	Page Name: 22.VO-LCM_MIPI_DSI_TX0	1.6
Date: Tuesday, May 14, 2024	Sheet 22 of 36	

Single-eDP LCM



Touch Panel connector

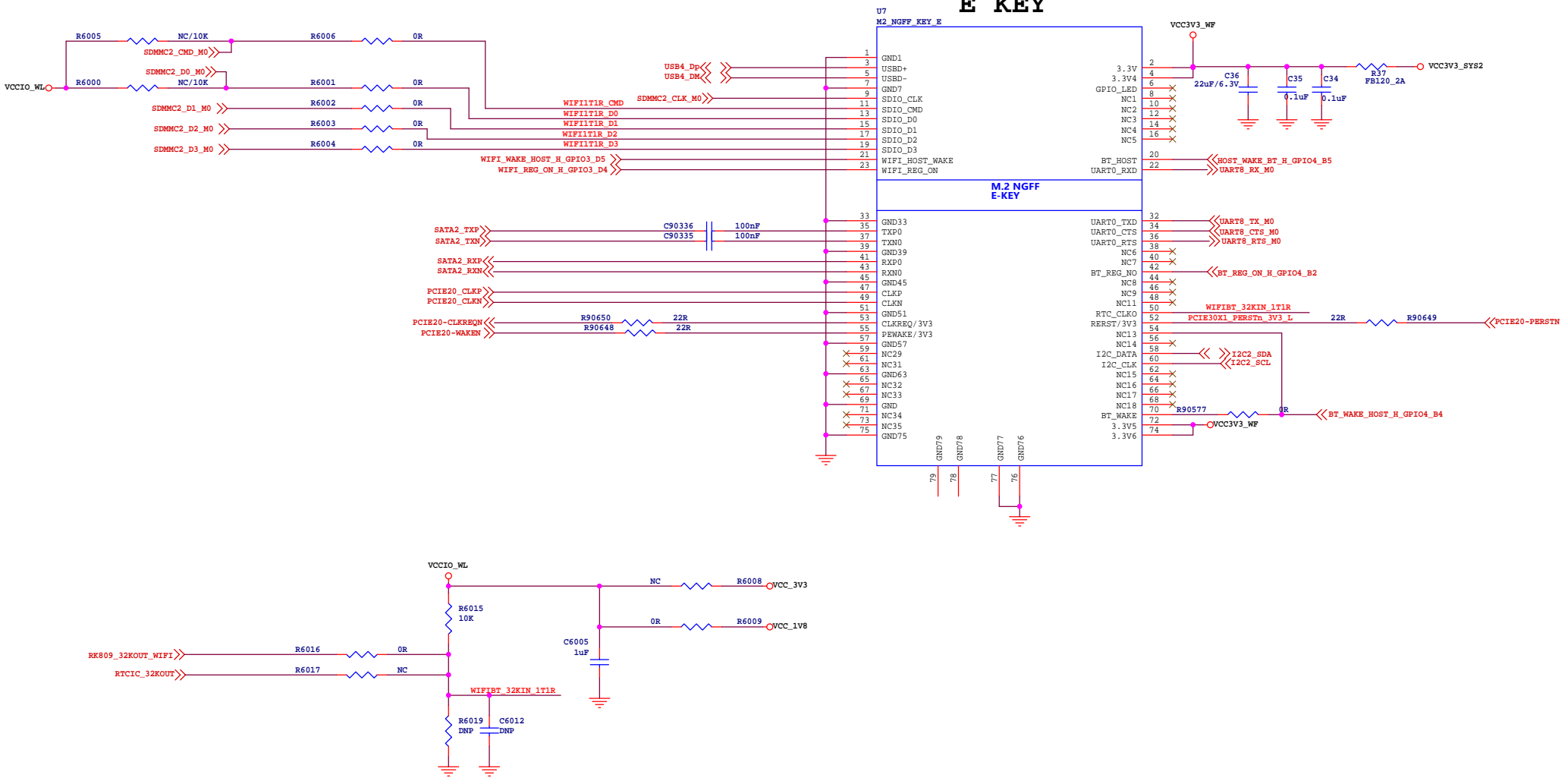




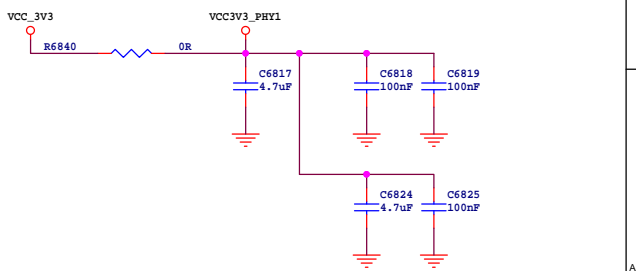
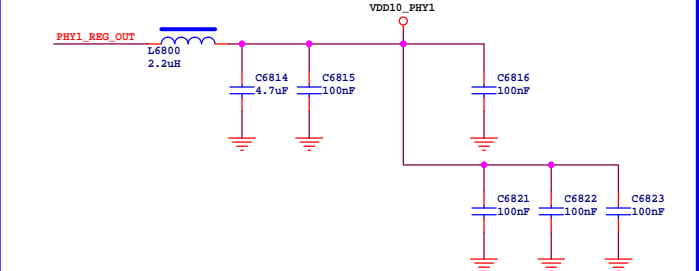
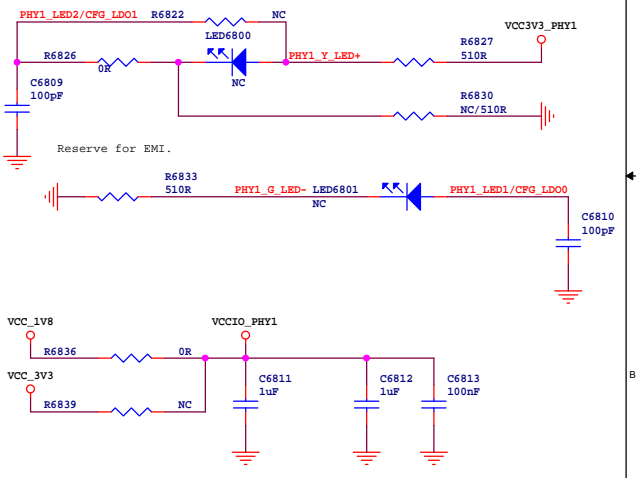
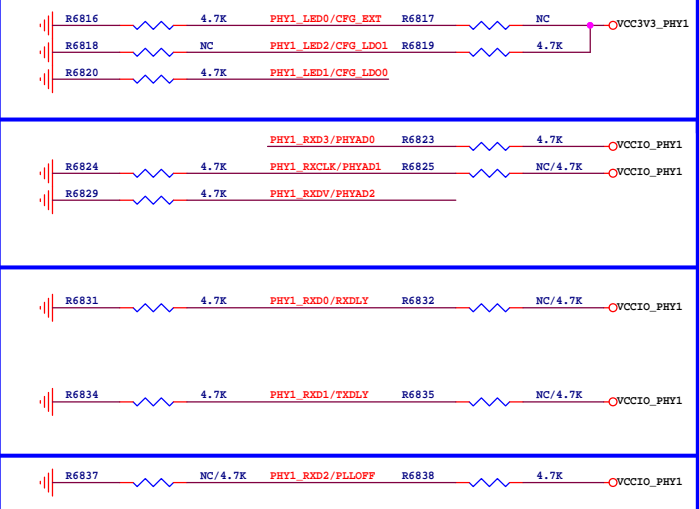
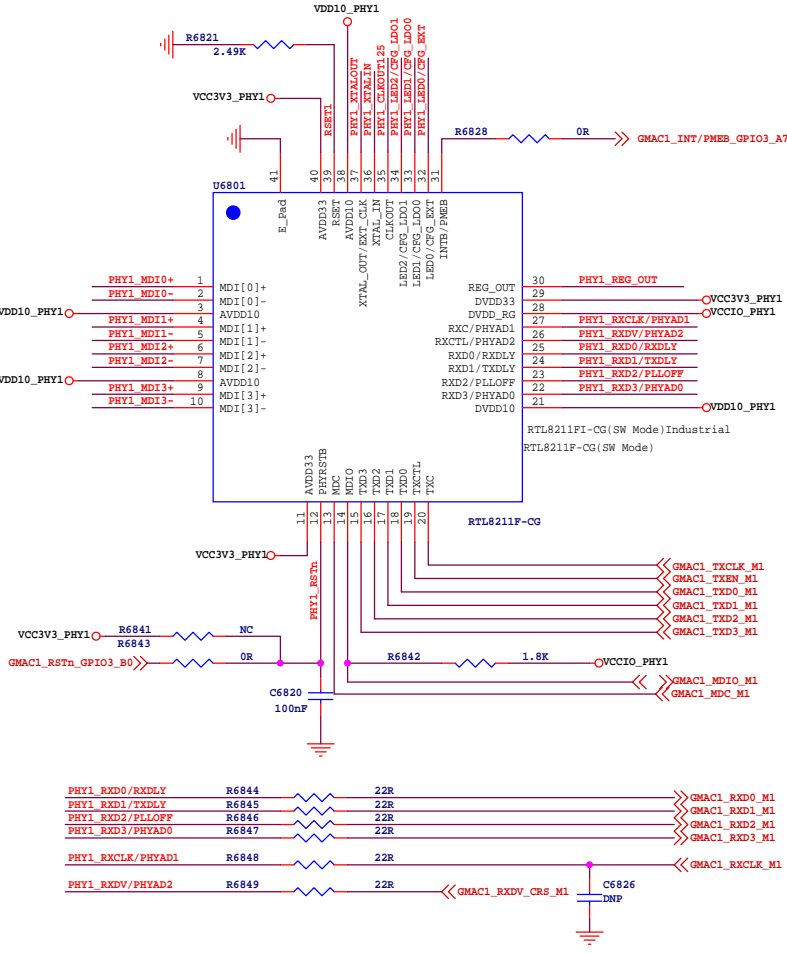
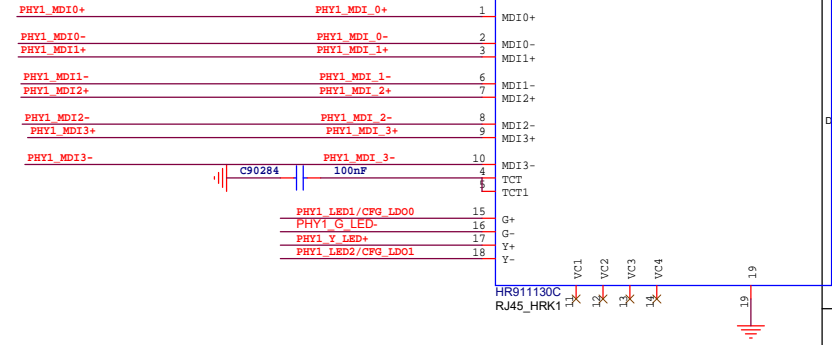
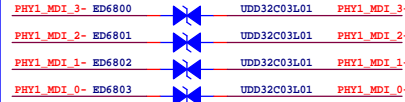
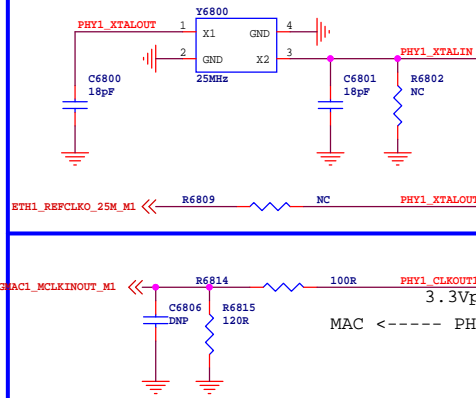
Size	Title: ROCK 3B+	REV
A4	Page Name: 24.TP Connector_COF	1.6
Date: Tuesday, May 14, 2024	Sheet 24 of 36	


SDIO WIFI/BT MODULE

E KEY

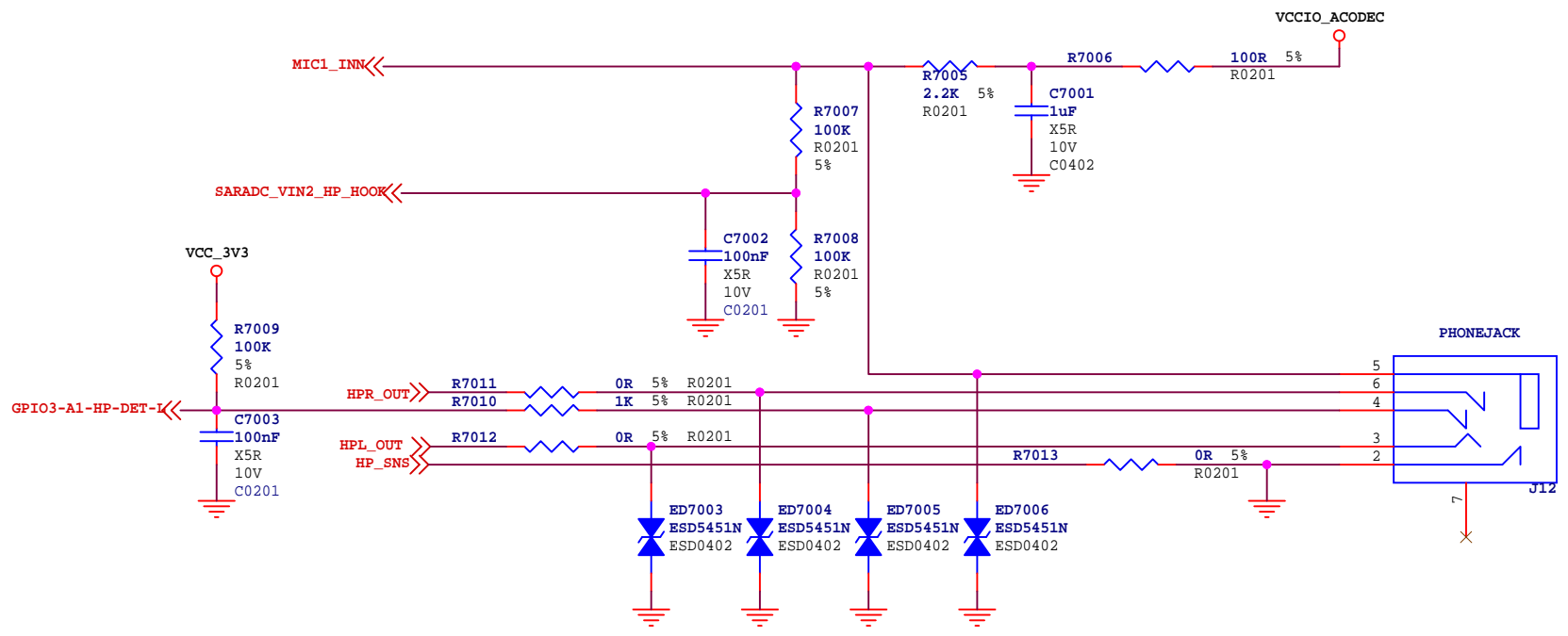


Giga PHY1

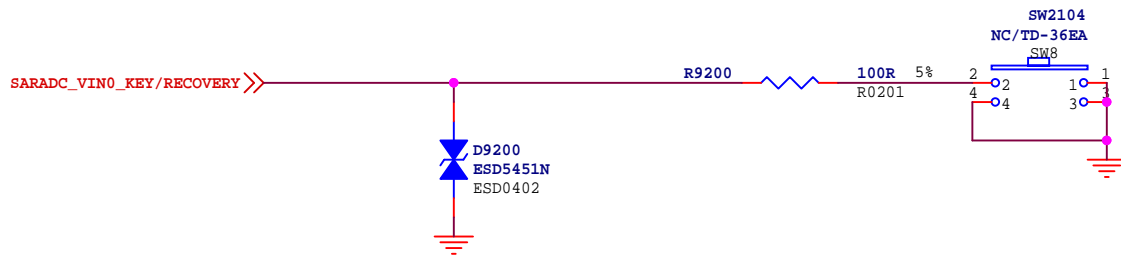
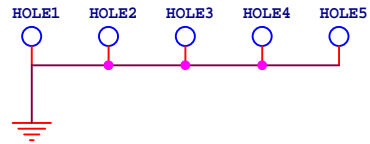




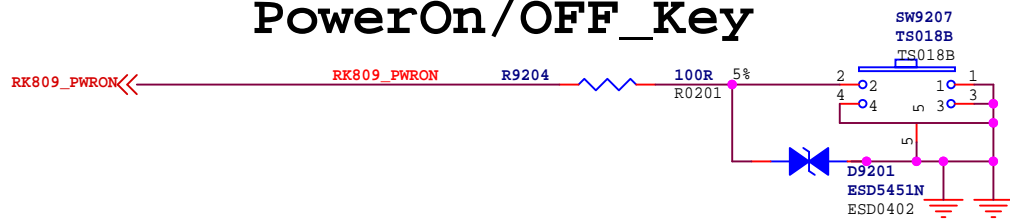
Size	Title: ROCK 3B+	REV
A3	Page Name: 27.Ethernet-GEPHY_RGMII1_M1	1.6
Date: Tuesday, May 14, 2024	Sheet 27 of 36	



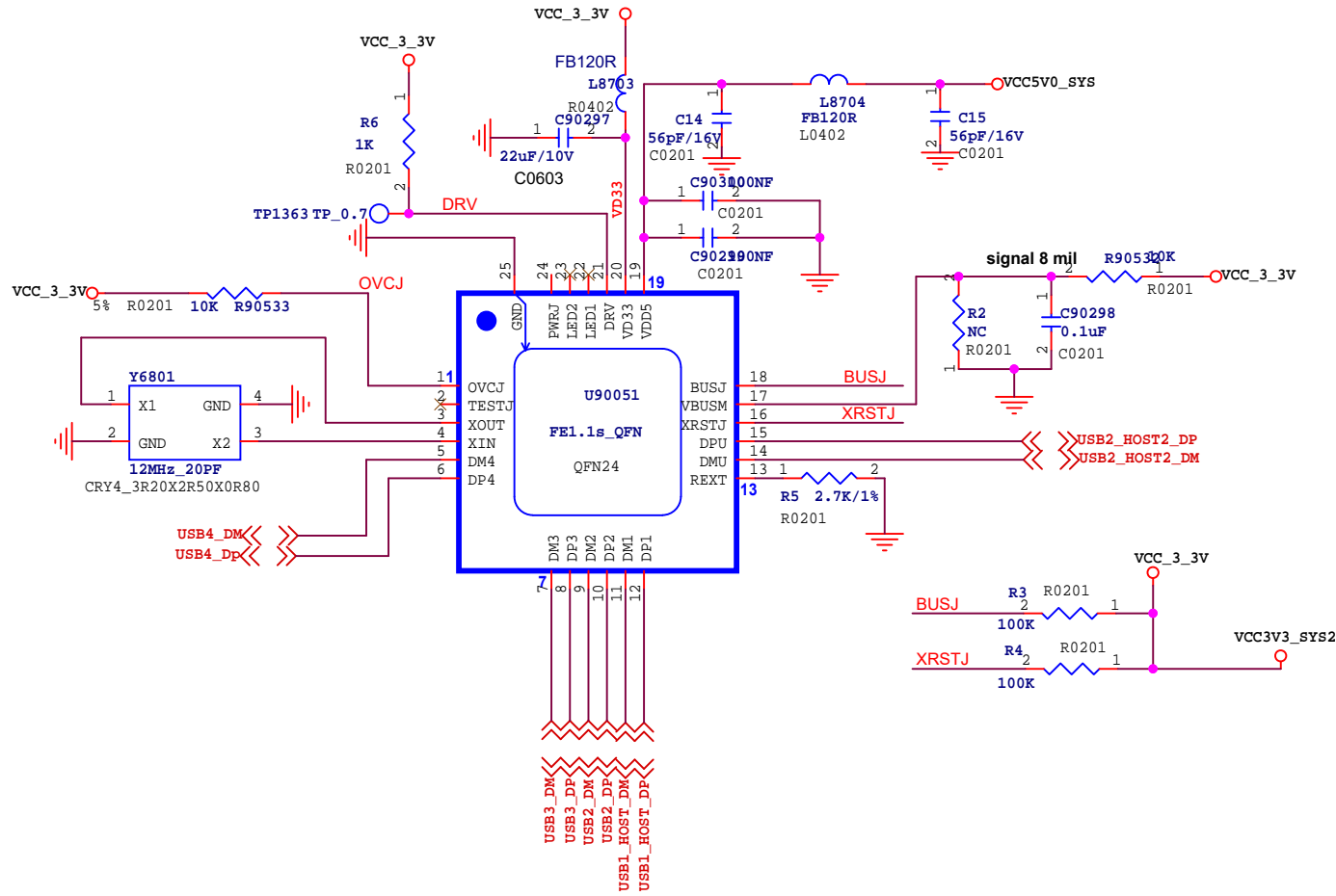
Size	Title: ROCK 3B+	REV
A4	Page Name: 28.Audio-Headphone Port	1.6
Date: Tuesday, May 14, 2024	Sheet 28 of 36	



PowerOn/OFF_Key

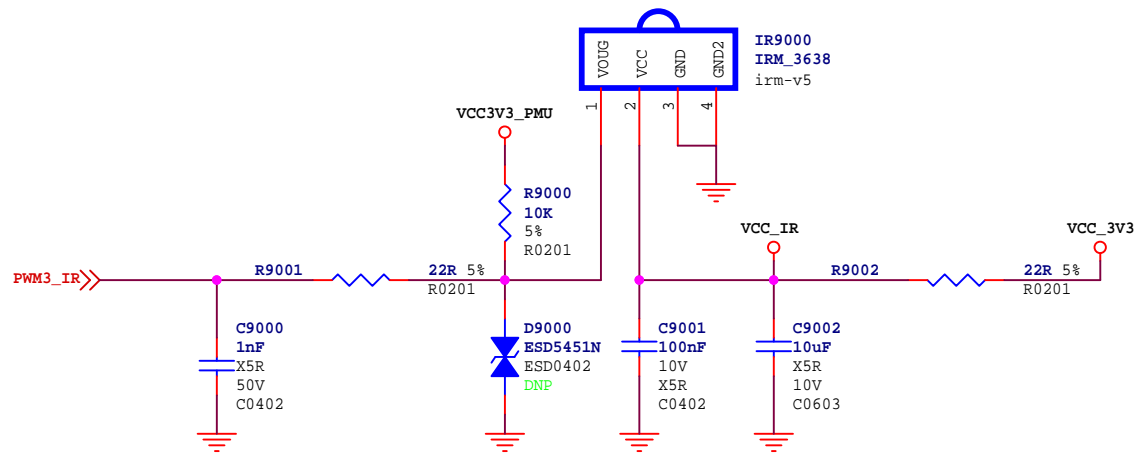


Size	Title: ROCK 3B+	REV
A4	Page Name: 29.KEY Array/SARADC	1.6
Date: Tuesday, May 14, 2024	Sheet 29 of 36	



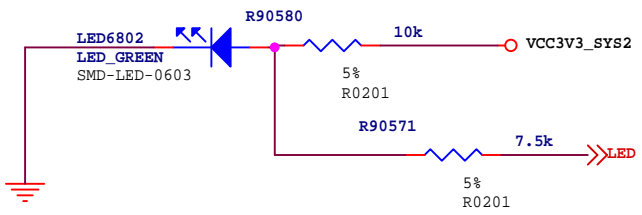
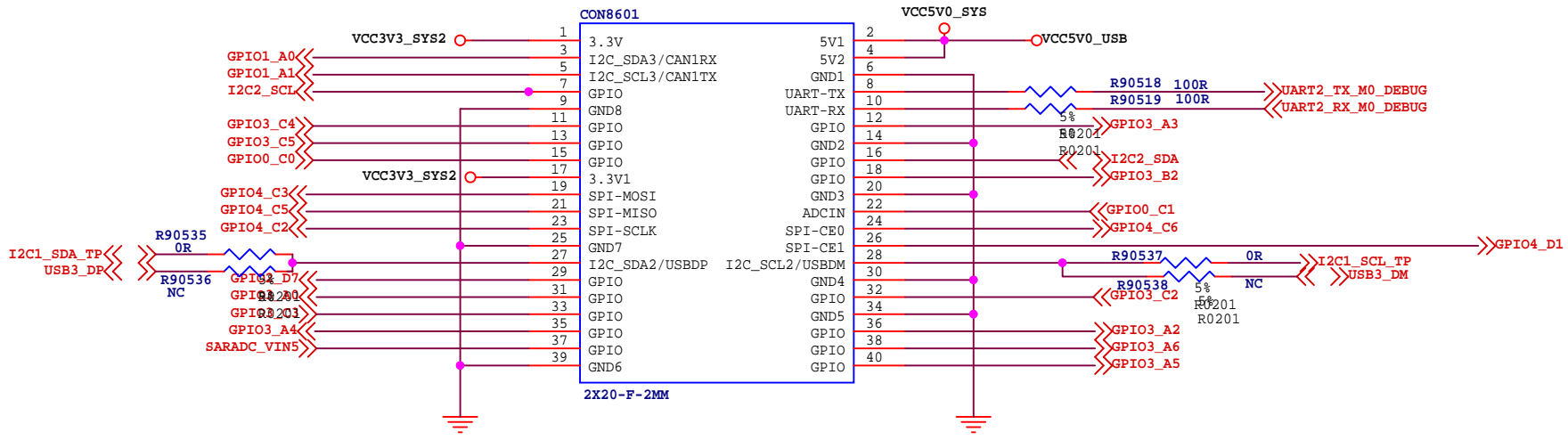
Size	Title: ROCK 3B+	REV
A4	Page Name: 30.USB2HUB	1.6
Date: Tuesday, May 14, 2024	Sheet 30 of 36	

IR Receiver

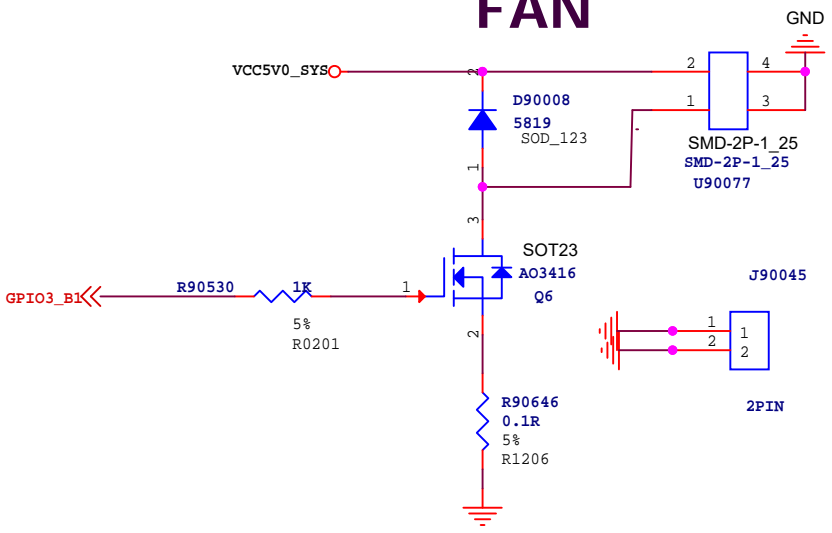


radxa

Size	Title: ROCK 3B+	REV
A4	Page Name: 32.IR Receiver	1.6
Date: Tuesday, May 14, 2024	Sheet 32 of 36	

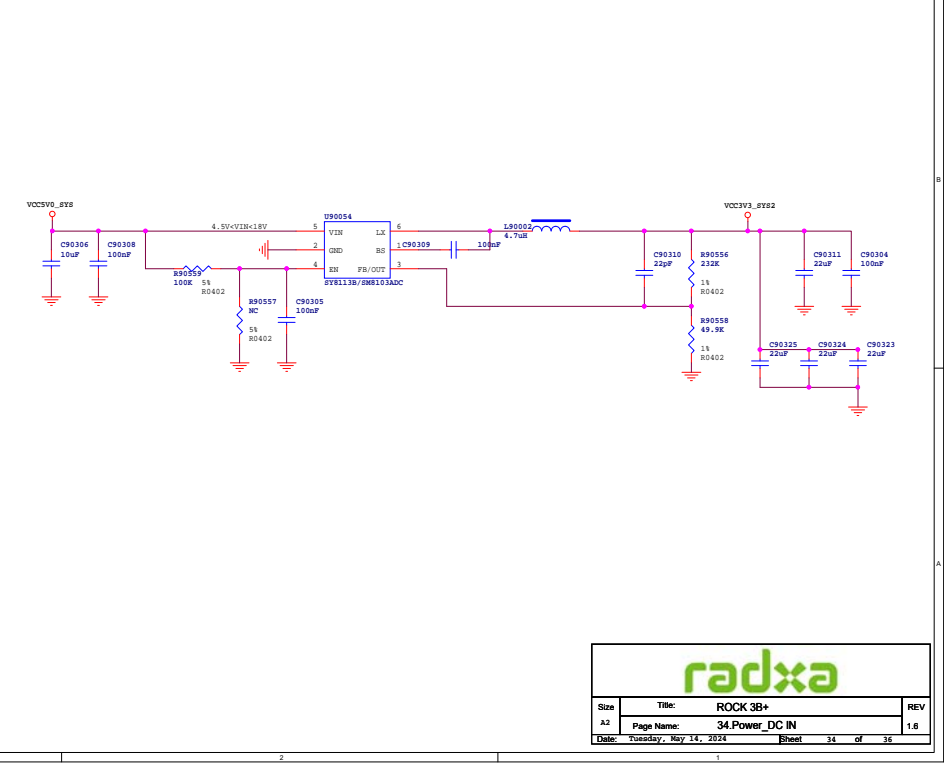
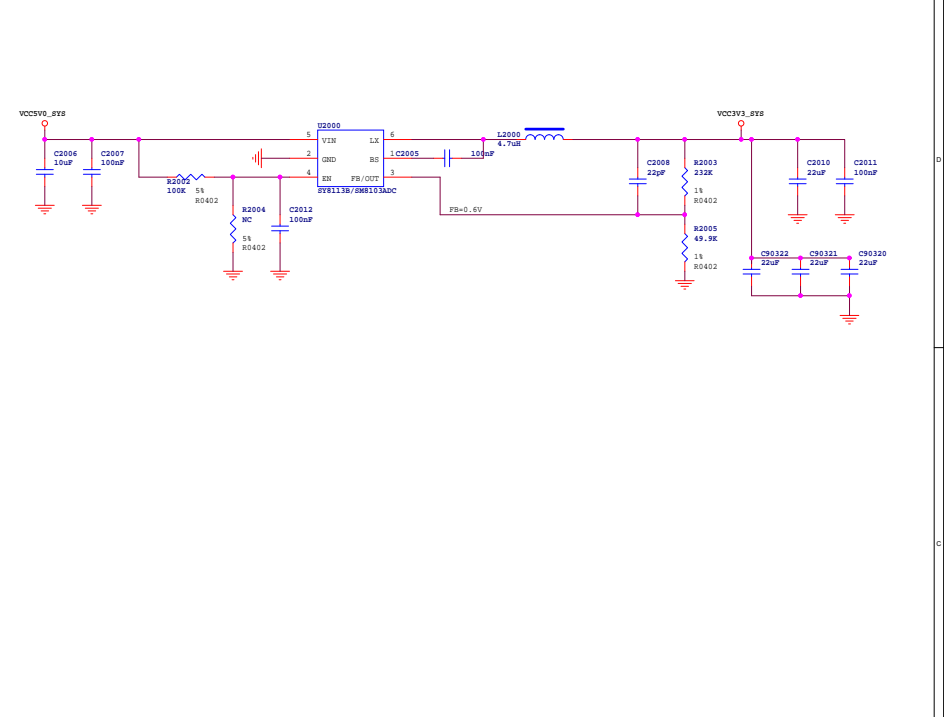
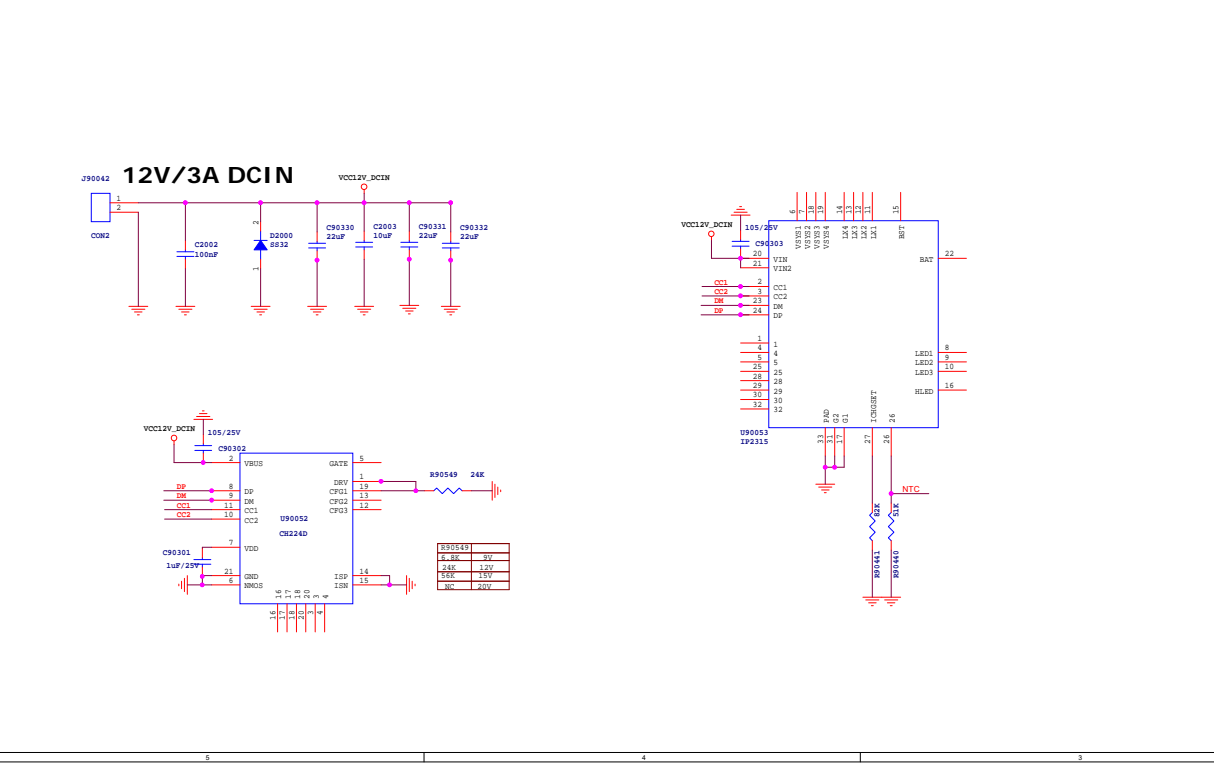
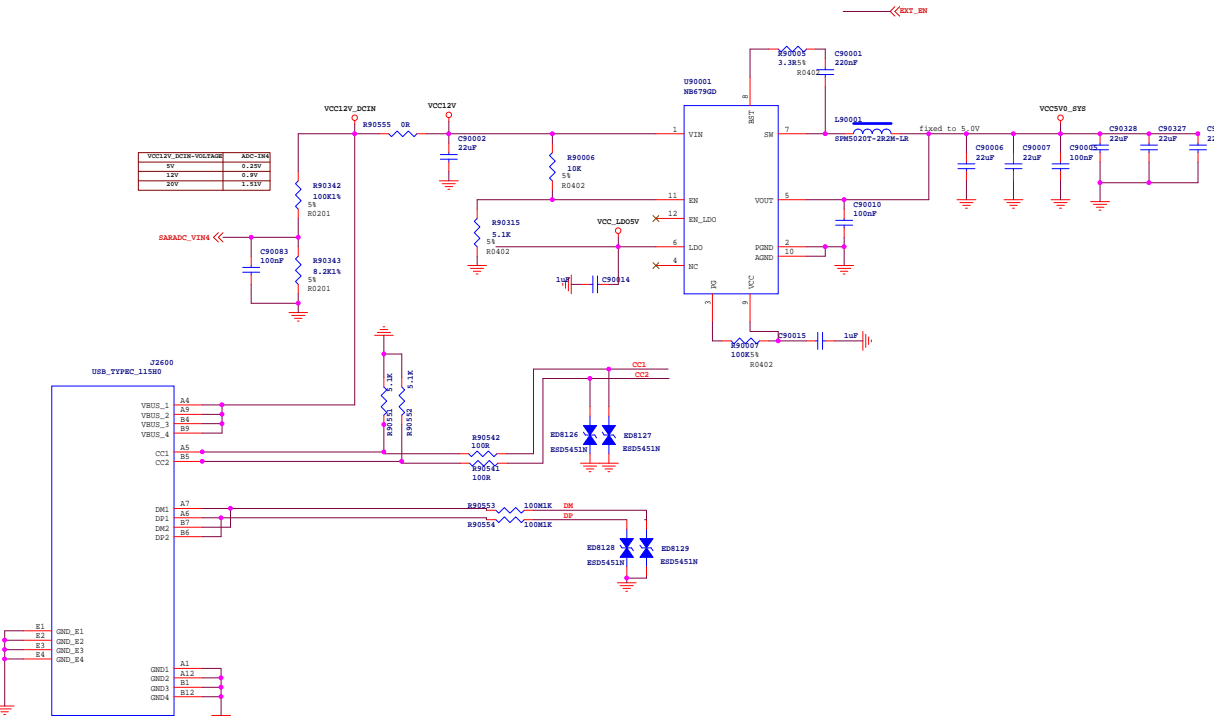


FAN

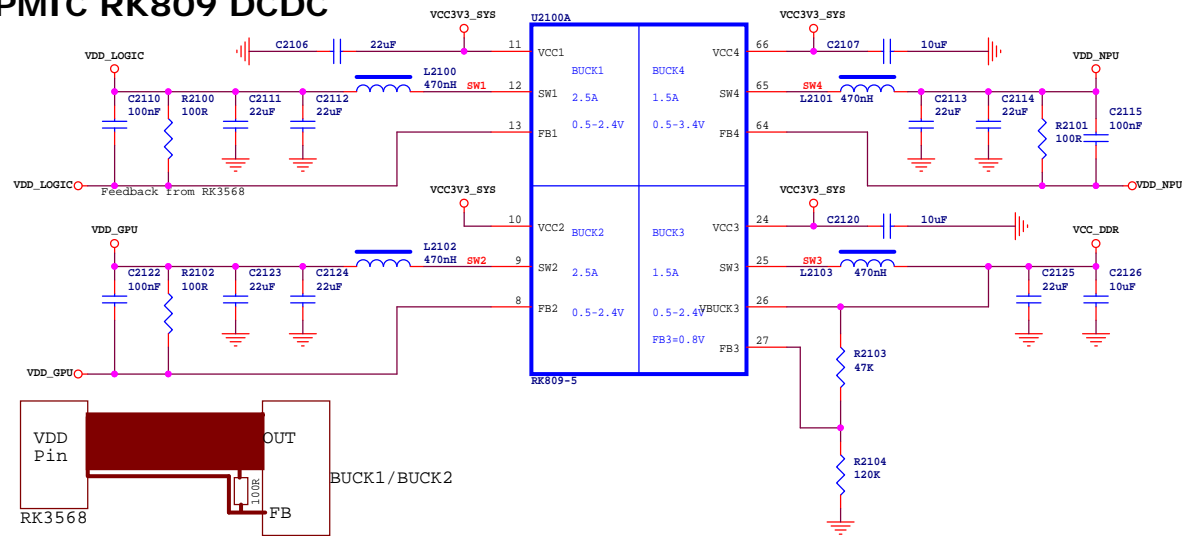


Size	Title: ROCK 3B+	REV
A4	Page Name: 33.CONNECTOR	1.6
Date: Tuesday, May 14, 2024	Sheet 33 of 36	

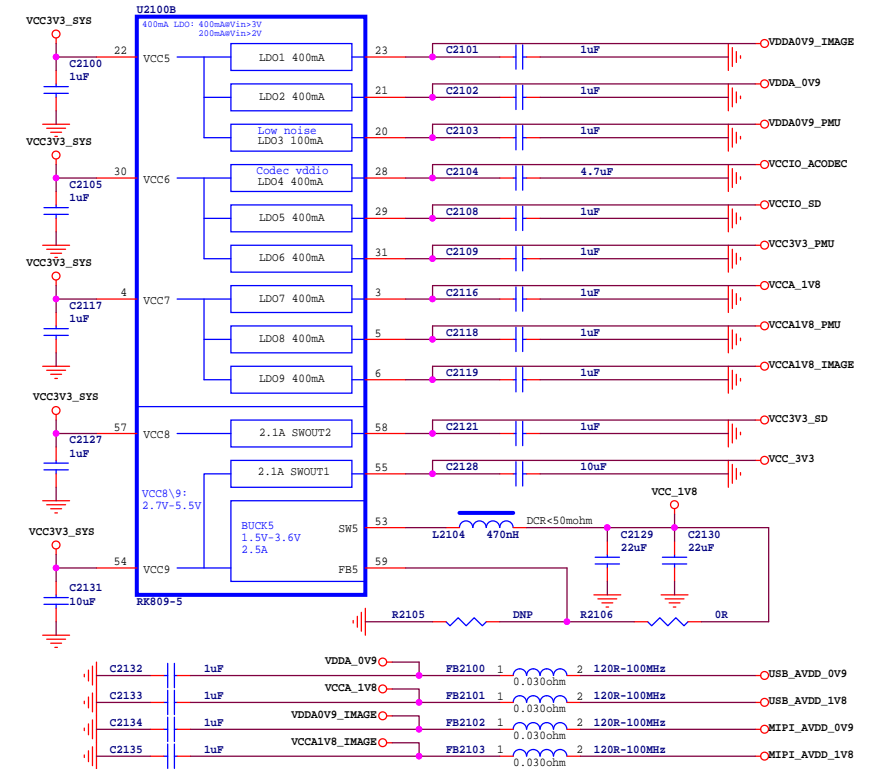
DC IN&SYSTEM Power



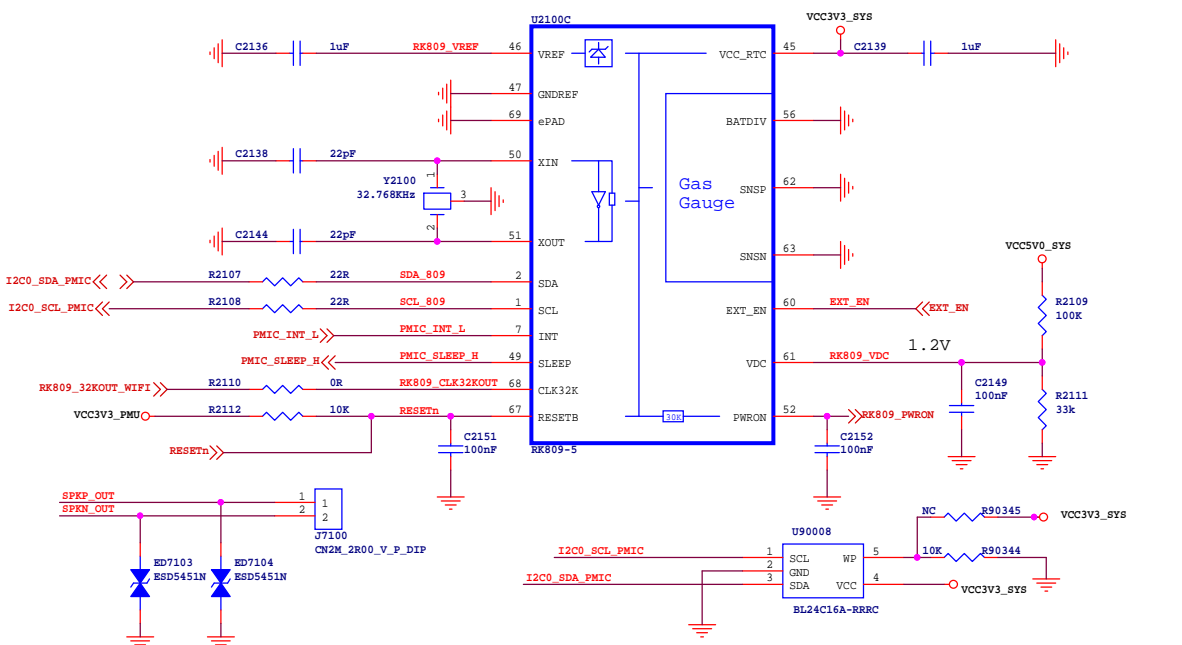
PMIC RK809 DCDC



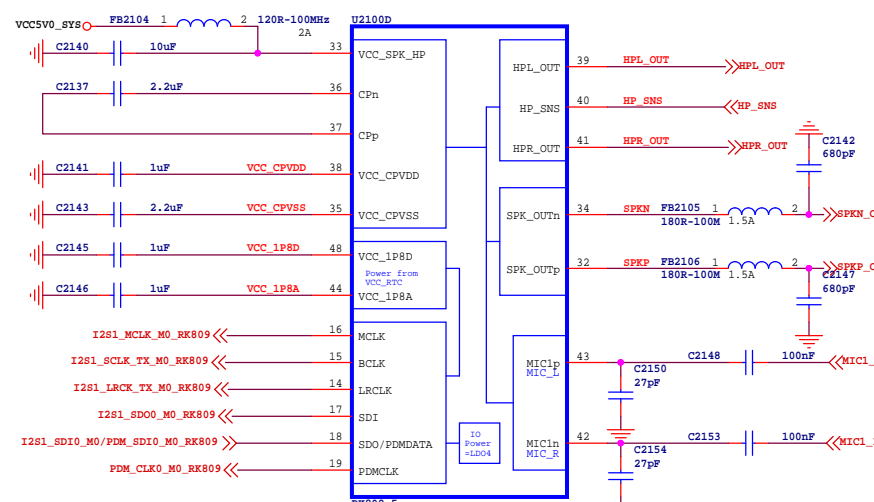
PMIC RK809 LDO




PMIC RK809 Management

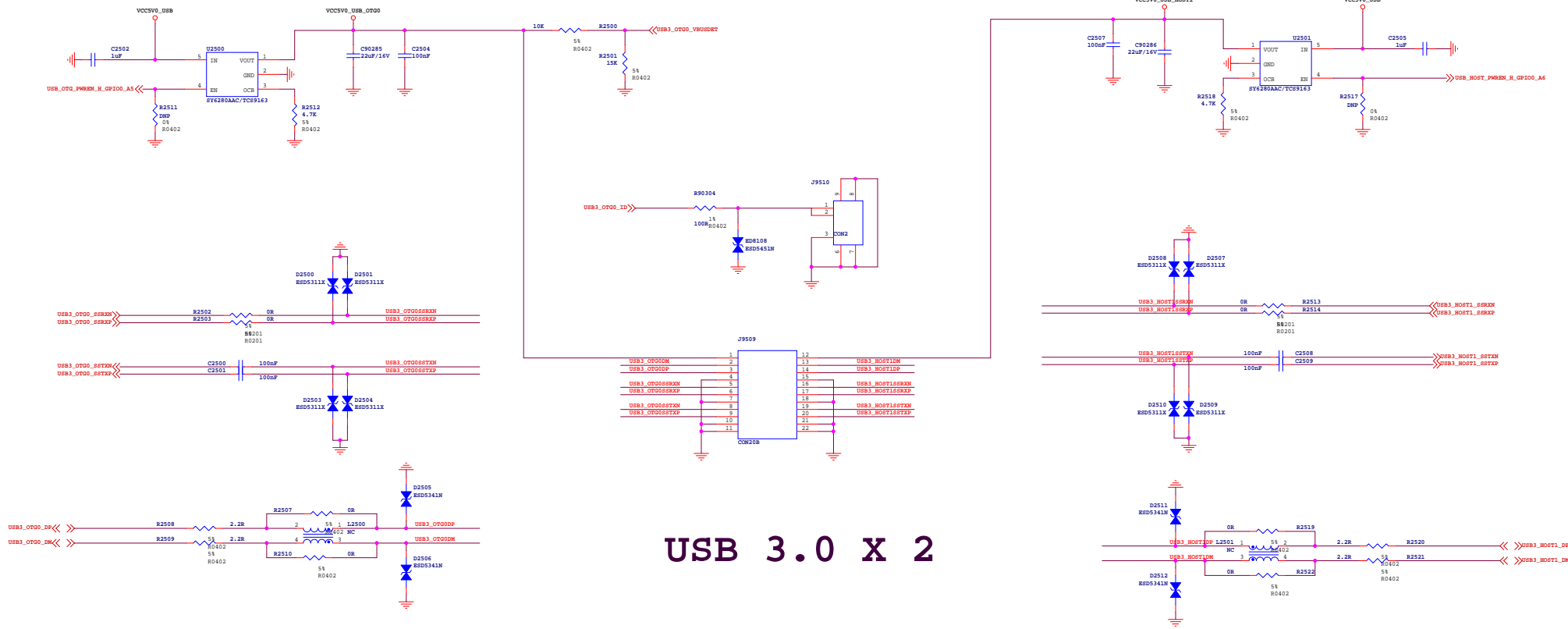


PMIC RK809 CODEC

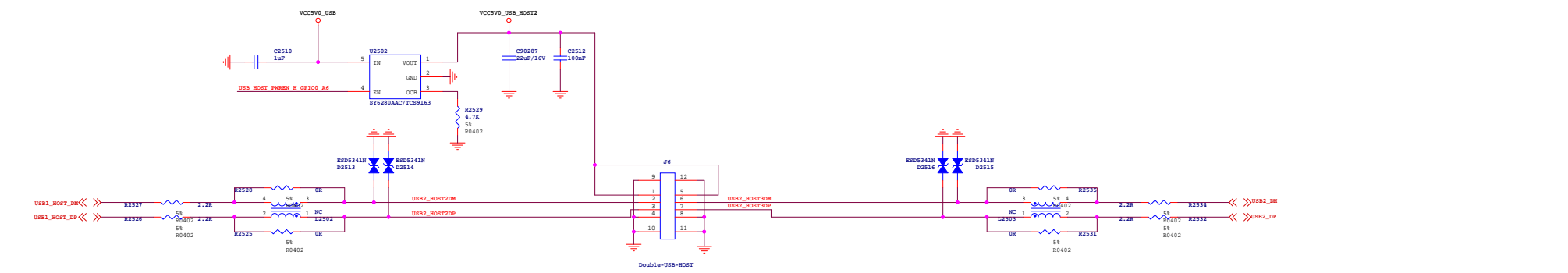




Size	Title: ROCK 3B+	REV
A3	Page Name: 35.Power_PMIC	1.6
Date: Tuesday, May 14, 2024	Sheet 35 of 36	



USB 3.0 X 2



USB 2.0 X 2