# SPACEMIT-K1_LP4XP200_32X1

| Revision | Date | Change Description |
|---|---|---|
| V1.0 | 20231207 | Initial version |
| V2.0 | 20240131 | Update based on test results |
| V3.0 | 20240401 | Update based on test results |

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| SPACEMIT | SPACEMIT | | |
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| | Size: A3 | Page Name: 01 REVISION HISTORY | Rev: <RevCode> |
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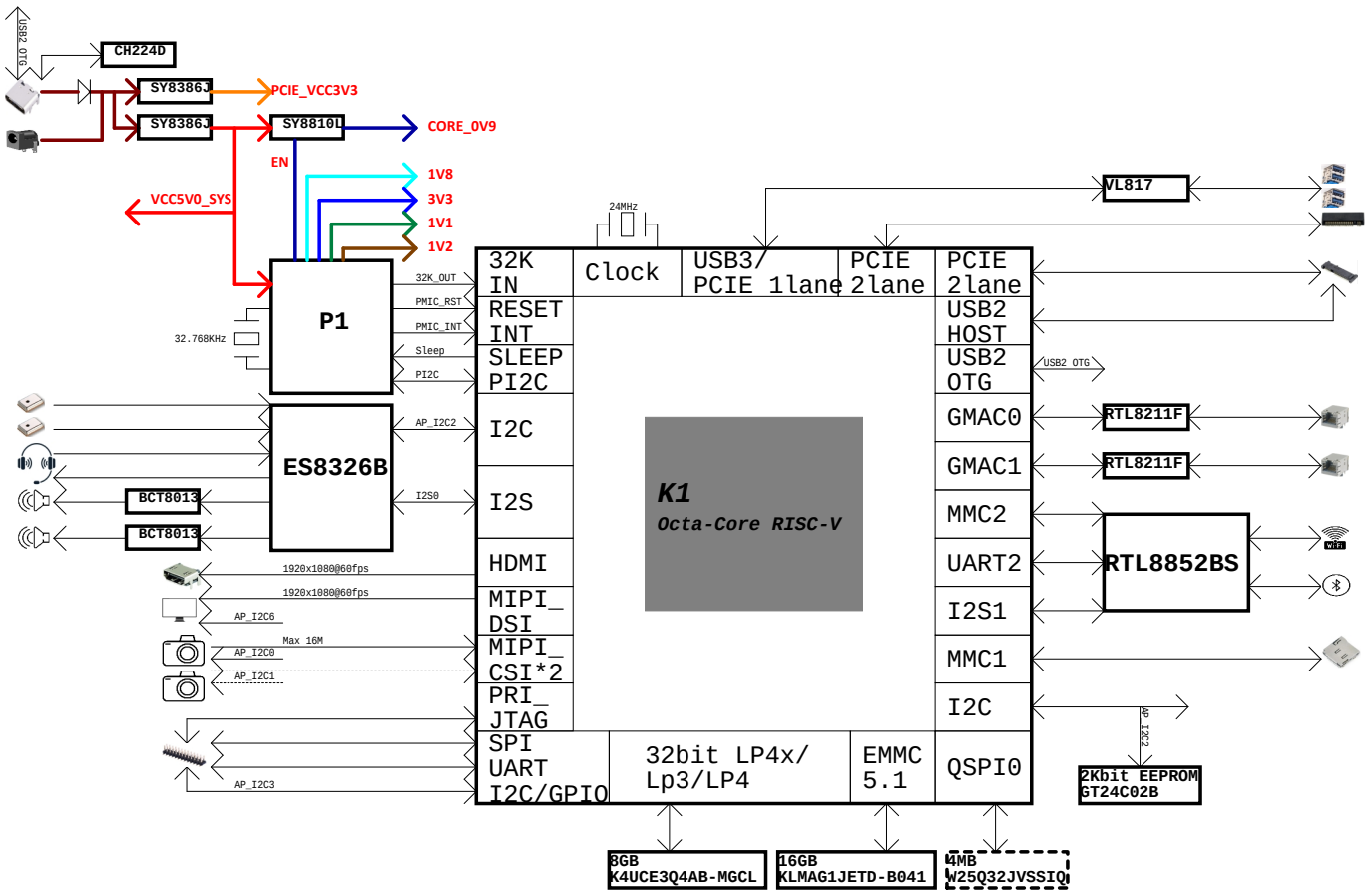
# BLOCK

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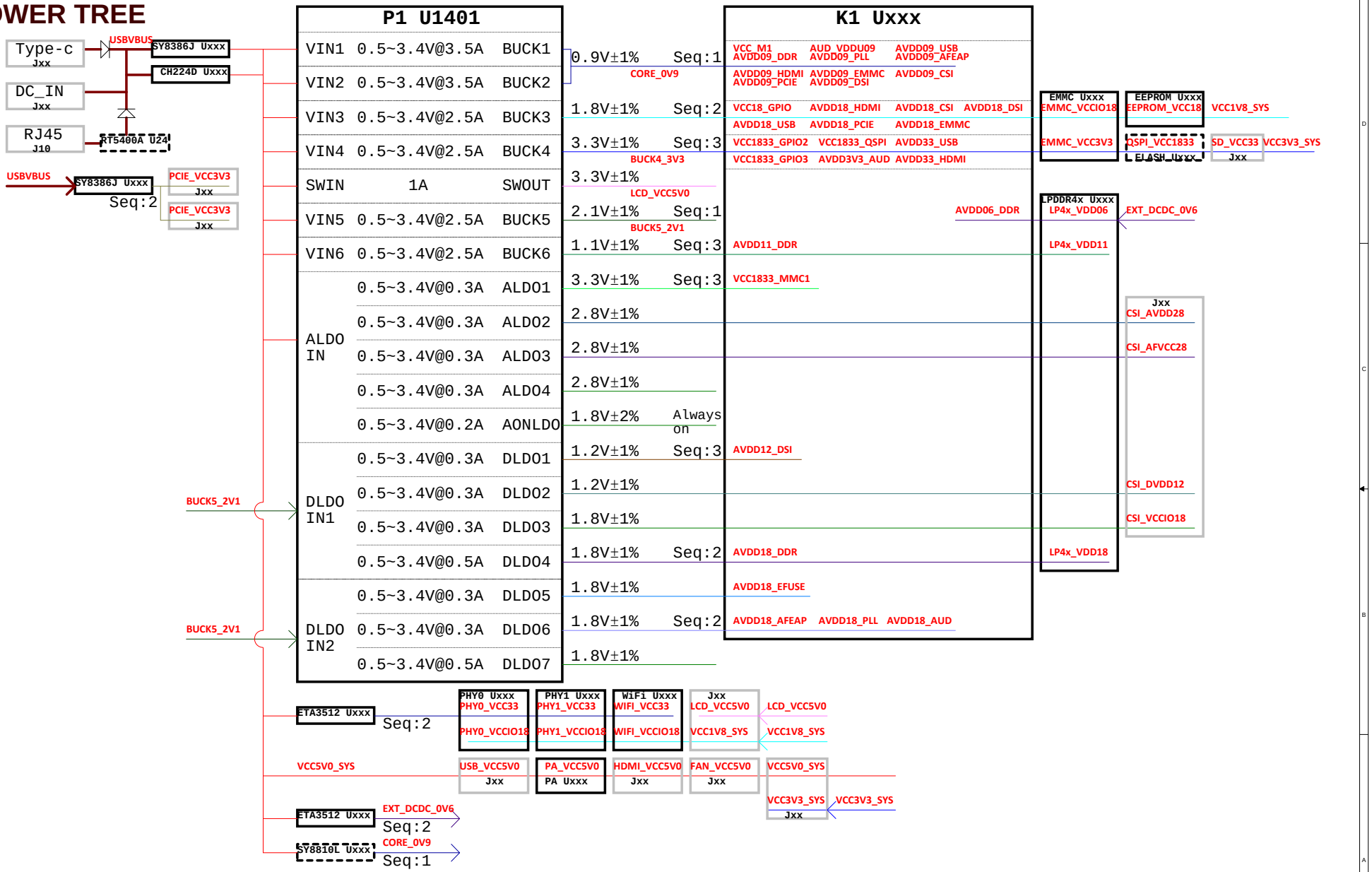
# POWER TREE

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| | Size: A3 | Page Name: 04 POWER TREE |
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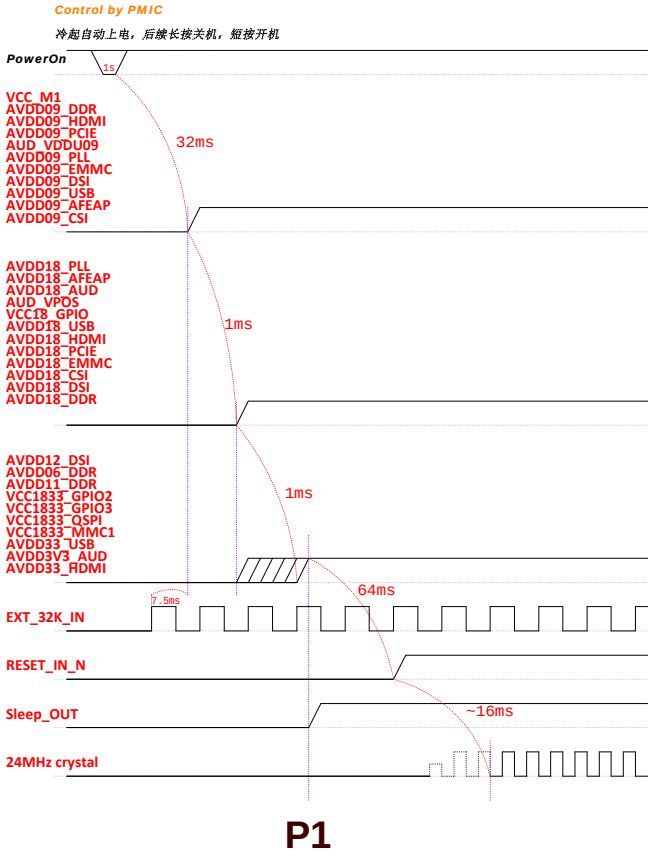
# POWER SEQUENCE




**P1**

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| www.spacemit.com | Size: A3 | Page Name: 05 POWER SEQUENCE | Rev: <RevCode> |
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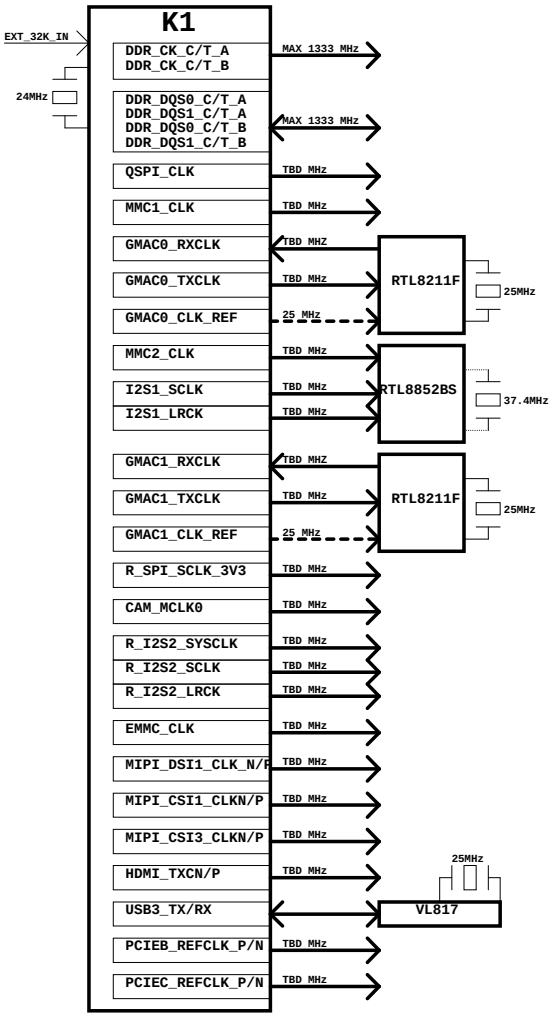
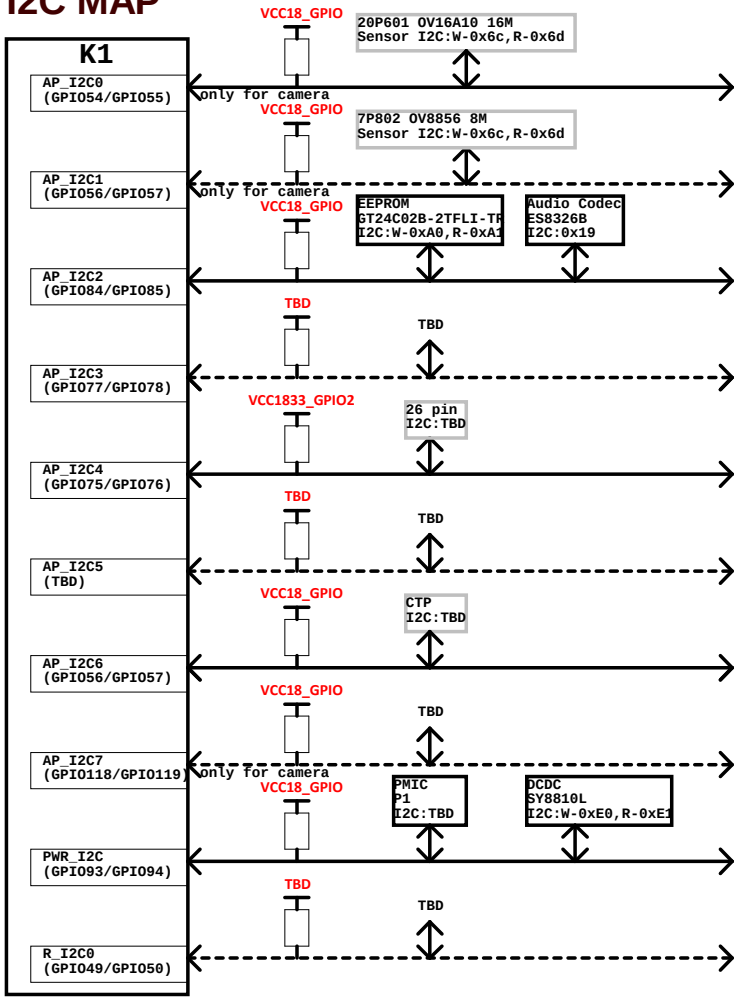
# CLOCK MAP




# I2C MAP

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| | Size: A3 | Page Name: 06 CLOCK MAP/I2C MAP |
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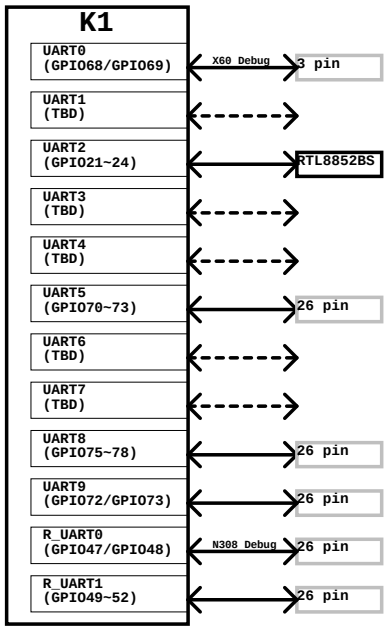
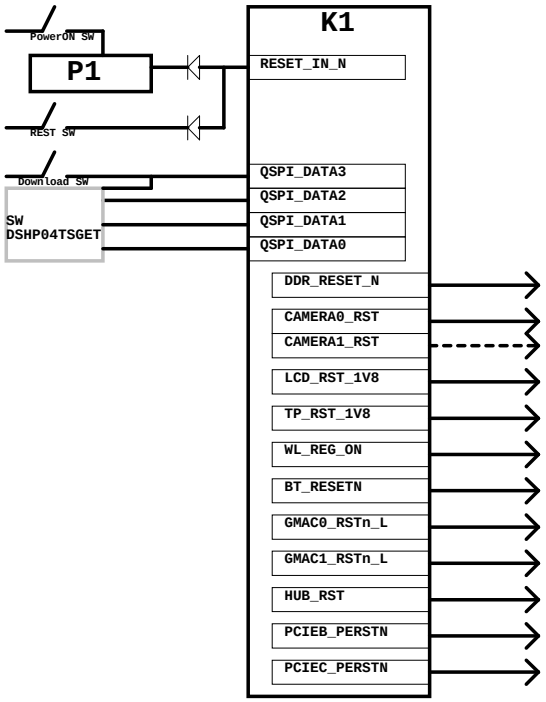
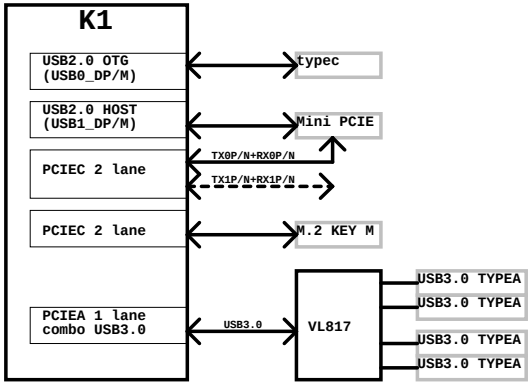
## UART MAP




## SW&RESET MAP




## PCIE/USB MAP

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# GPIO ASSIGNMENT

| PIN | Define | CFG | Function |
|---|---|---|---|
| GPIO0 | GMAC0_RXDV | 1 | Ethernet -GMAC0 |
| GPIO1 | GMAC0_RXD0 | 1 | |
| GPIO2 | GMAC0_RXD1 | 1 | |
| GPIO3 | GMAC0_RXCLK | 1 | |
| GPIO4 | GMAC0_RXD2 | 1 | |
| GPIO5 | GMAC0_RXD3 | 1 | |
| GPIO6 | GMAC0_TXD0 | 1 | |
| GPIO7 | GMAC0_TXD1 | 1 | |
| GPIO8 | GMAC0_TXCLK | 1 | |
| GPIO9 | GMAC0_TXD2 | 1 | |
| GPIO10 | GMAC0_TXD3 | 1 | |
| GPIO11 | GMAC0_TXEN | 1 | |
| GPIO12 | GMAC0_MDC | 1 | |
| GPIO13 | GMAC0_MDIO | 1 | |
| GPIO14 | GMAC0_INT_N | 1 | |
| GPIO15 | MMC2_DATA3 | 1 | WiFi/BT |
| GPIO16 | MMC2_DATA2 | 1 | |
| GPIO17 | MMC2_DATA1 | 1 | |
| GPIO18 | MMC2_DATA0 | 1 | |
| GPIO19 | MMC2_CMD | 1 | |
| GPIO20 | MMC2_CLK | 1 | |
| GPIO21 | UART2_TXD | 1 | |
| GPIO22 | UART2_RXD | 1 | |
| GPIO23 | UART2_CTS_N | 1 | |
| GPIO24 | UART2_RTS_N | 1 | |
| GPIO25 | I2S1_SCLK | 1 | |
| GPIO26 | I2S1_LRCK | 1 | |
| GPIO27 | I2S1_TXD | 1 | |
| GPIO28 | I2S1_RXD | 1 | |
| GPIO29 | GMAC1_RXDV | 1 | Ethernet -GMAC1 |
| GPIO30 | GMAC1_RXD0 | 1 | |
| GPIO31 | GMAC1_RXD1 | 1 | |
| GPIO32 | GMAC1_RXCLK | 1 | |
| GPIO33 | GMAC1_RXD2 | 1 | |
| GPIO34 | GMAC1_RXD3 | 1 | |
| GPIO35 | GMAC1_TXD0 | 1 | |
| GPIO36 | GMAC1_TXD1 | 1 | |
| GPIO37 | GMAC1_TXCLK | 1 | |
| GPIO38 | GMAC1_TXD2 | 1 | |
| GPIO39 | GMAC1_TXD3 | 1 | |
| GPIO40 | GMAC1_TXEN | 1 | |
| GPIO41 | GMAC1_MDC | 1 | |
| GPIO42 | GMAC1_MDIO | 1 | |
| GPIO43 | GMAC1_INT_N | 1 | |
| GPIO44 | LCD_BL_PWM_1V8 | 4 | LCD/CTP |
| GPIO45 | GMAC0_CLK_REF | 1 | GMAC0 |
| GPIO46 | GMAC1_CLK_REF | 1 | GMAC1 |

| PIN | Define | CFG | Function |
|---|---|---|---|
| GPIO110 | GMAC0_RSTn_L | 0 | GMAC0 |
| GPIO115 | GMAC1_RSTn_L | 0 | GMAC1 |
| GPIO116 | WL_DIS_N | 0 | WiFi/BT |
| GPIO117 | PCIEC_CLKREQN | 4 | PCIEC |
| GPIO118 | I2S0_SCLK | 3 | Audio Codec |
| GPIO119 | I2S0_LRCK | 3 | |
| GPIO120 | I2S0_OUT | 3 | |
| GPIO121 | I2S0_IN | 3 | |
| GPIO122 | I2S0_SYSCLK | 3 | |
| GPIO123 | HUB_PWREN | 0 | USB3_HUB |
| GPIO124 | HUB_RST | 0 | |
| GPIO125 | VBUS_ON0 | 1 | USB2 |
| GPIO126 | CODEC_IRQ | 0 | Audio Codec |
| GPIO127 | PA_SHUTDOWN | 0 | |

| PIN | Define | CFG | Function |
|---|---|---|---|
| GPIO53 | CAM_MCLK0 | 1 | CAMERA0 |
| GPIO54 | CAM_I2C0_SCL | 1 | |
| GPIO55 | CAM_I2C0_SDA | 1 | |
| GPIO56 | AP_I2C6_SCL | 5 | LCD/CTP |
| GPIO57 | AP_I2C6_SDA | 5 | |
| GPIO58 | TP_INT_1V8 | 0 | |
| GPIO111 | CAMERA0_RST | 1 | CAMERA0 |
| GPIO112 | PCIEC_WAKEN | 3 | PCIEC |
| GPIO113 | CAMERA0_PDN | 1 | CAMERA0 |
| GPIO114 | TP_RST_1V8 | 0 | LCD/CTP |
| GPIO63 | BT_RESETN | 0 | WiFi/BT |
| GPIO64 | AP_WAKE_BT | 0 | |
| GPIO65 | BT_WAKE_AP | 0 | |
| GPIO66 | WL_WAKE_AP | 0 | |
| GPIO67 | WL_REG_ON | 0 | |
| GPIO68 | UART0_TXD | 2 | X60 Debug |
| GPIO69 | UART0_RXD | 2 | |

| PIN | Define | CFG | Function |
|---|---|---|---|
| GPIO59 | PCIEB_PERSTN | 4 | PCIEB |
| GPIO60 | PCIEB_WAKEN | 4 | |
| GPIO61 | PCIEB_CLKREQN | 4 | |
| GPIO62 | PCIEC_PERSTN | 4 | PCIEC |
| GPIO70 | GPIO70 | 1 | 26 pin |
| GPIO71 | GPIO71 | 1 | |
| GPIO72 | GPIO72 | 1 | |
| GPIO73 | GPIO73 | 1 | |
| GPIO74 | GPIO74 | 0 | |

红色字体GPIO表示默认、持续上拉，等效上拉电阻约60K。需要软件修改才能解除默认上拉状态

| PIN | Define | CFG | Function |
|---|---|---|---|
| GPIO93 | PI2C_SCL | 0 | PMIC |
| GPIO94 | PI2C_SDA | 0 | |
| GPIO95 | SLEEP_OUT | 0 | |
| GPIO96 | GPIO96 | 1 | LED |
| GPIO97 | USB3_PWREN | 1 | USB3_HUB |
| GPIO81 | LCD_RST_1V8 | 0 | LCD/CTP |
| GPIO82 | LCD_BL_EN_1V8 | 0 | |
| GPIO83 | LCD_PWR_EN_1V8 | 0 | |
| GPIO84 | AP_I2C2_SCL | 4 | EEPROM Audio |
| GPIO85 | AP_I2C2_SDA | 4 | |
| GPIO86 | HDMI_SCL | 1 | HDMI_OUT |
| GPIO87 | HDMI_SDA | 1 | |
| GPIO88 | HDMI_CEC | 1 | |
| GPIO89 | HDMI_HPD | 1 | |
| GPIO90 | GPIO90 | 0 | 26 pin |
| GPIO91 | GPIO91 | 0 | |
| GPIO92 | GPIO92 | 0 | |

| PIN | Define | CFG | Function |
|---|---|---|---|
| GPIO98 | QSPI_DATA3 | 0 | SPI FLASH |
| GPIO99 | QSPI_DATA2 | 0 | |
| GPIO100 | QSPI_DATA1 | 0 | |
| GPIO101 | QSPI_DATA0 | 0 | |
| GPIO102 | QSPI_CLK | 0 | |
| GPIO103 | QSPI_CS1 | 0 | |

| PIN | Define | CFG | Function |
|---|---|---|---|
| GPIO104 | MMC1_DATA3 | 0 | TF CARD |
| GPIO105 | MMC1_DATA2 | 0 | |
| GPIO106 | MMC1_DATA1 | 0 | |
| GPIO107 | MMC1_DATA0 | 0 | |
| GPIO108 | MMC1_CMD | 0 | |
| GPIO109 | MMC1_CLK | 0 | |

| PIN | Define | CFG | Function |
|---|---|---|---|
| GPIO75 | SPI3_SCLK_3V3 | 2 | 26 pin |
| GPIO76 | SPI3_CS_3V3 | 2 | |
| GPIO77 | SPI3_MOSI_3V3 | 2 | |
| GPIO78 | SPI3_MISO_3V3 | 2 | |
| GPIO79 | FAN_PWM | 2 | FAN |
| GPIO80 | SD_CD_3V3 | 1 | TF CARD |

| PIN | Define | CFG | Function |
|---|---|---|---|
| GPIO47 | R_UART0_TXD_3V3 | 1 | 26 pin |
| GPIO48 | R_UART0_RXD_3V3 | 1 | |
| GPIO49 | GPIO_49_3V3 | 0 | |
| GPIO50 | GPIO_50_3V3 | 0 | |
| GPIO51 | AP_I2C4_SCL_3V3 | 4 | |
| GPIO52 | AP_I2C4_SDA_3V3 | 4 | |

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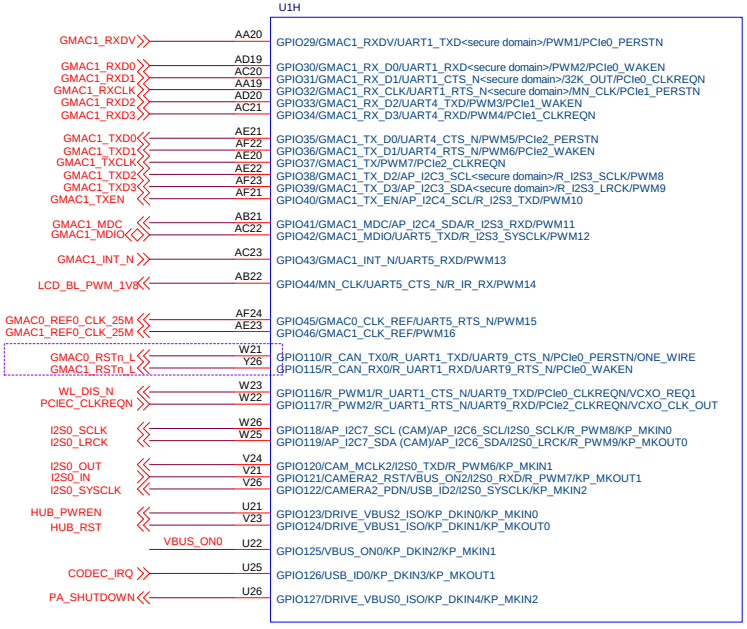
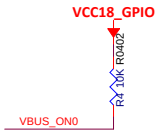
# eMMC+DDR


# GPIO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| www.spacemit.com | Size: A3 — Page Name: 09 CPU-eMMC-DDR-GPIO | Rev: <RevCode> |
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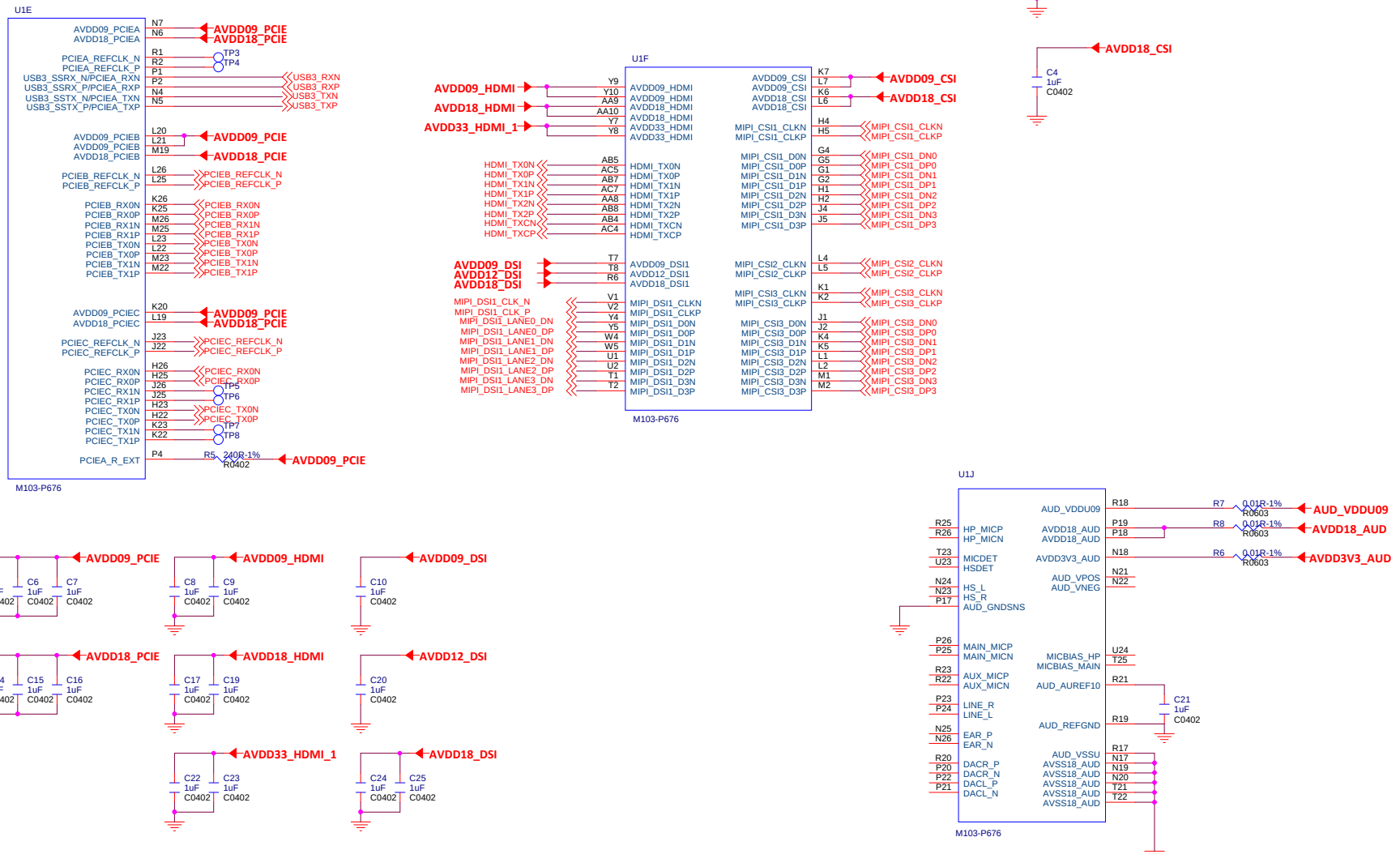
# Perphery

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| | Size: A3 | Page Name: 10 CPU-Perphery | Rev: <RevCode> |
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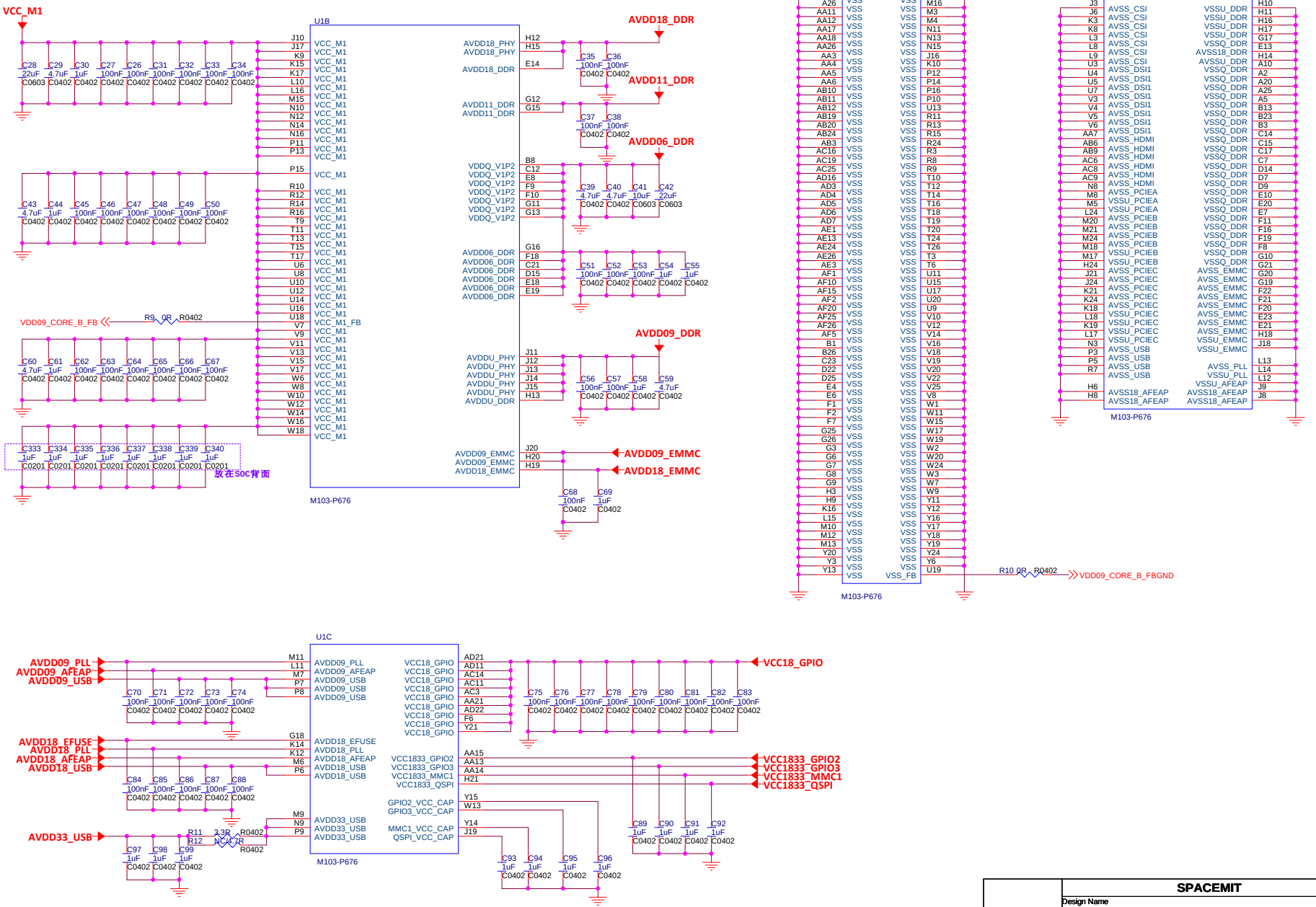
# CPU-PWR

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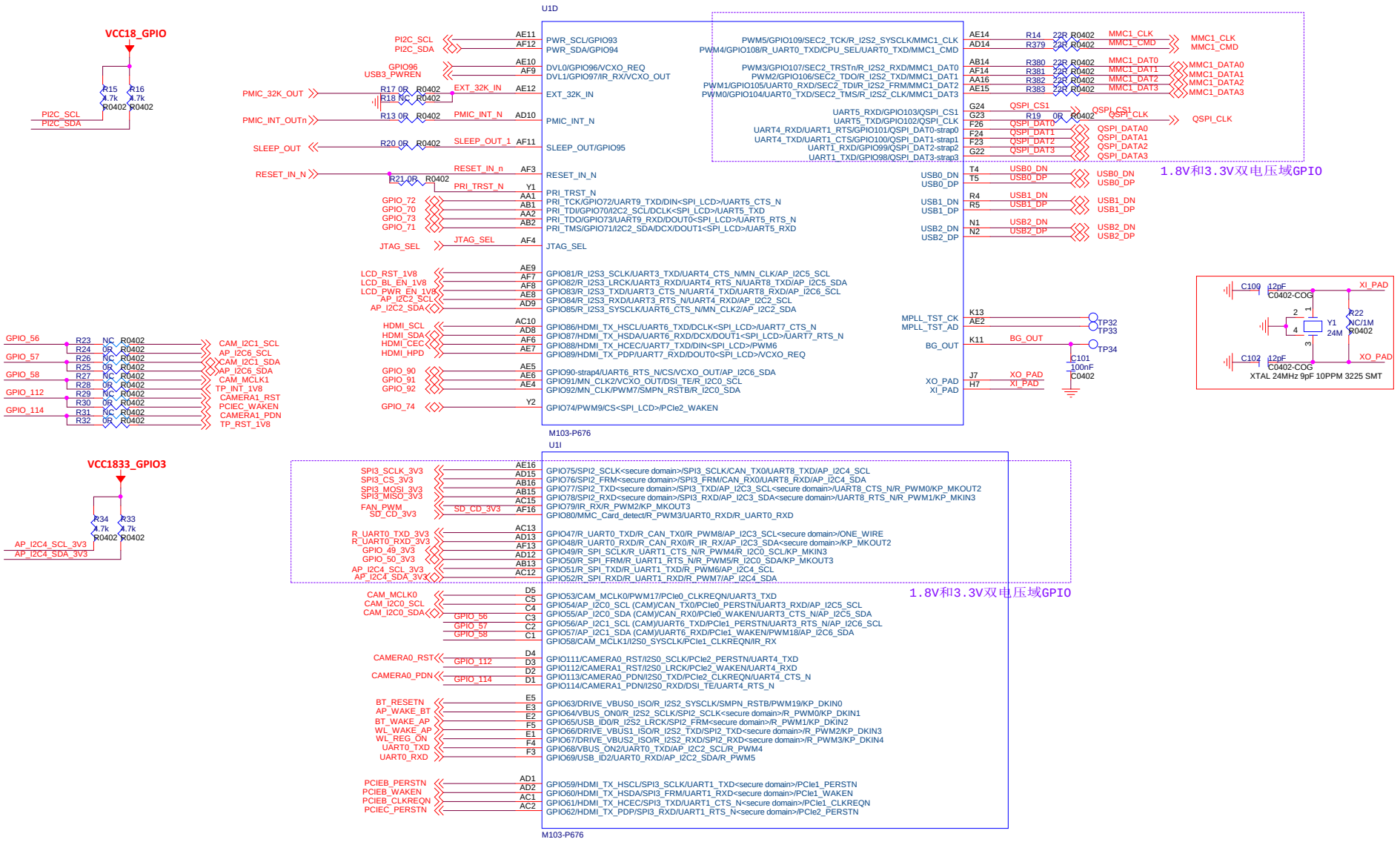
# SYS-GPIO

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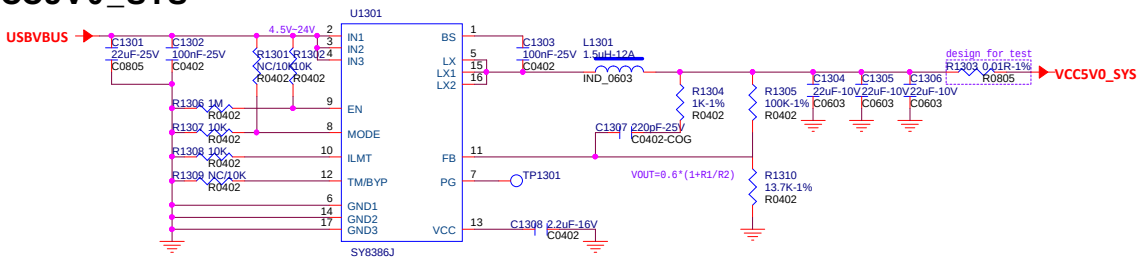
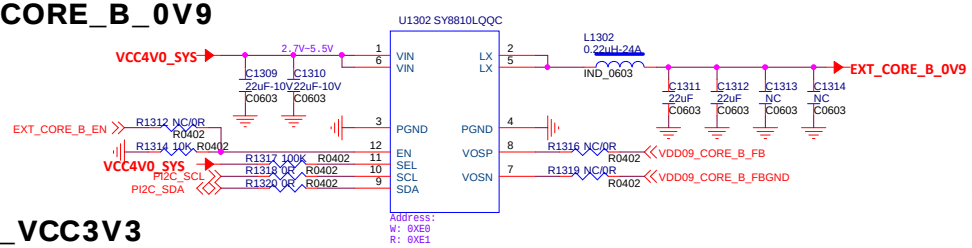
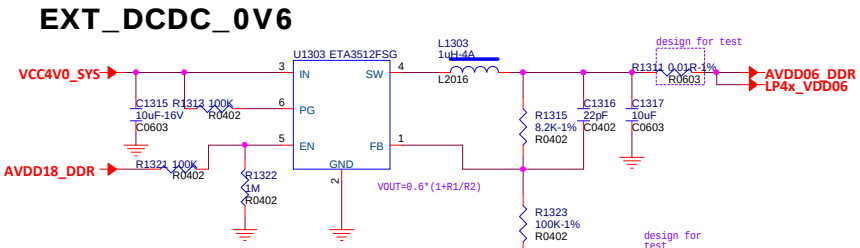
## VCC5V0_SYS



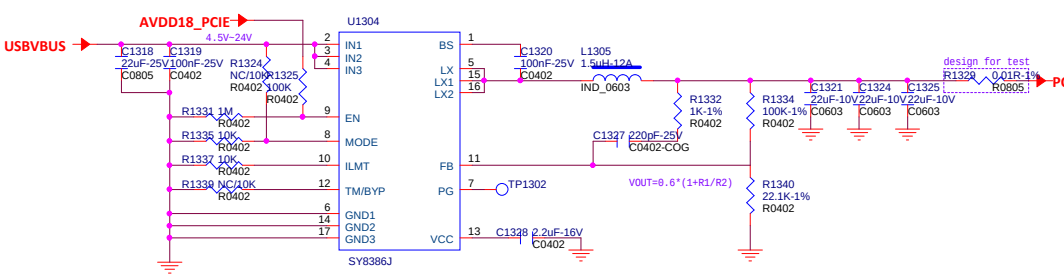

## EXT_CORE_B_0V9



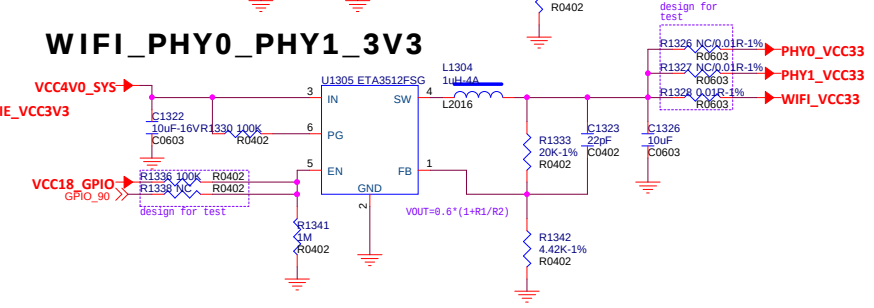

## EXT_DCDC_0V6



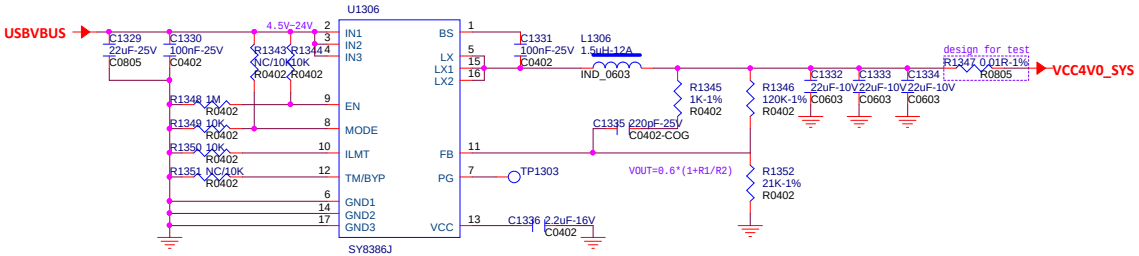

## PCIE_VCC3V3




## WIFI_PHY0_PHY1_3V3




## VCC4V0_SYS

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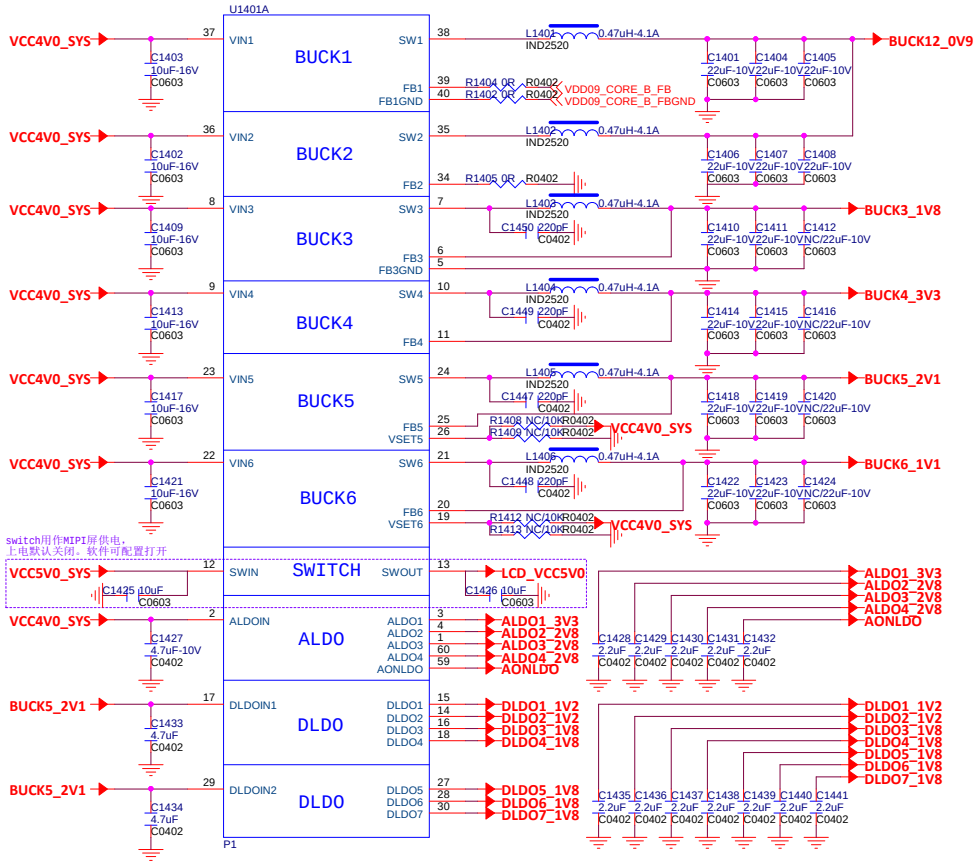
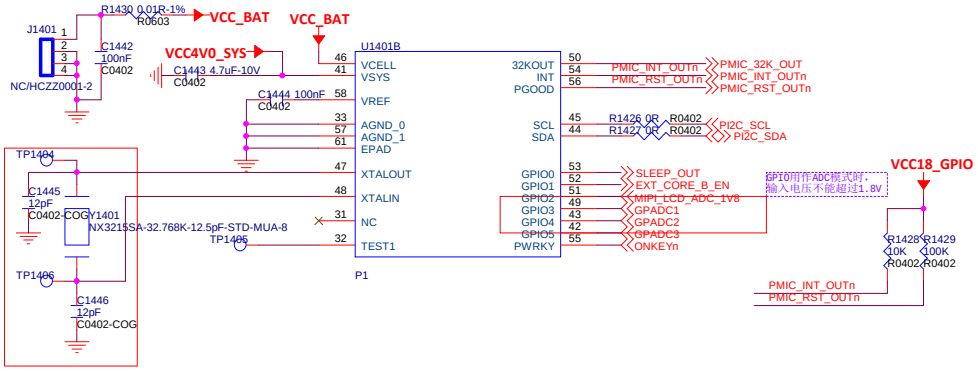
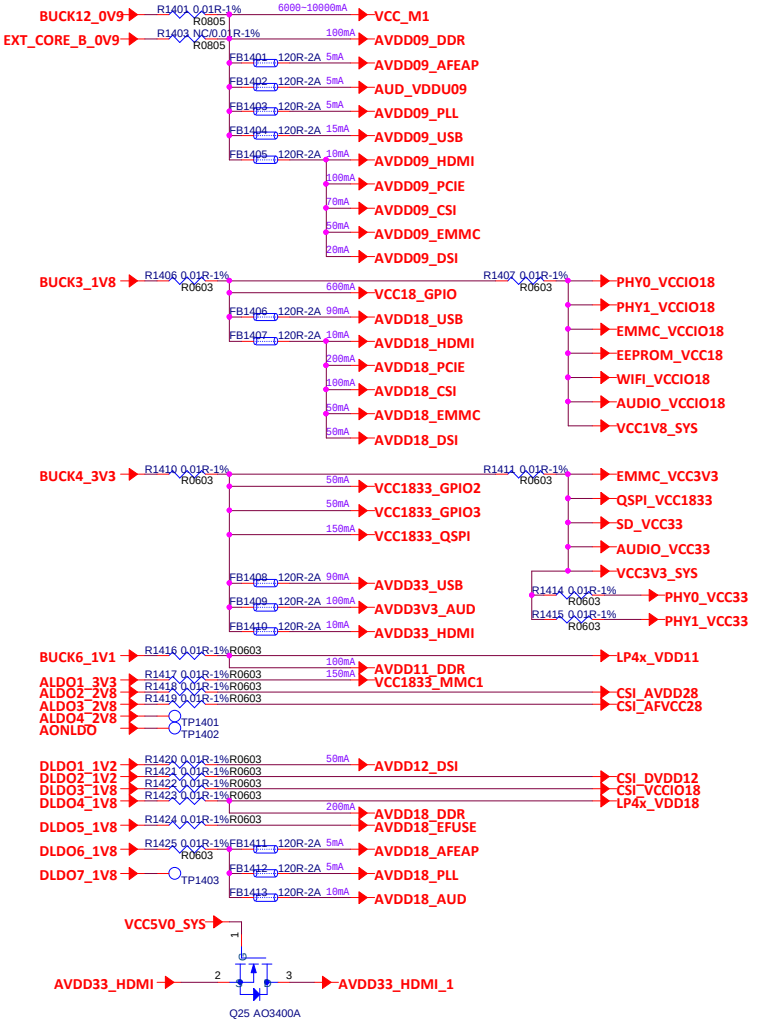
# P1

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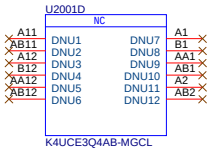
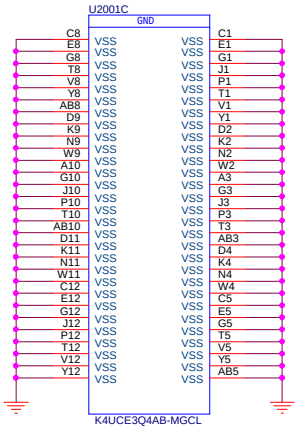
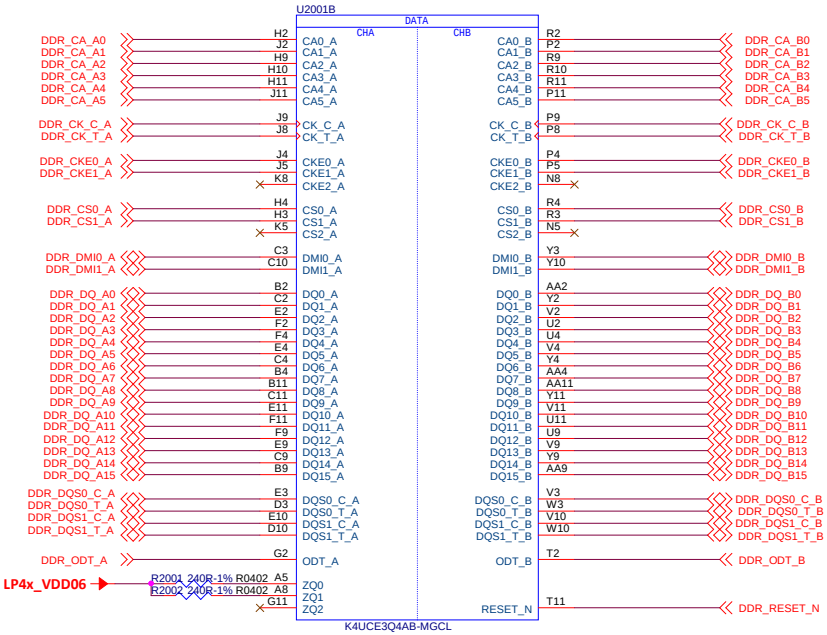
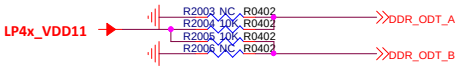
# LPDDR4X

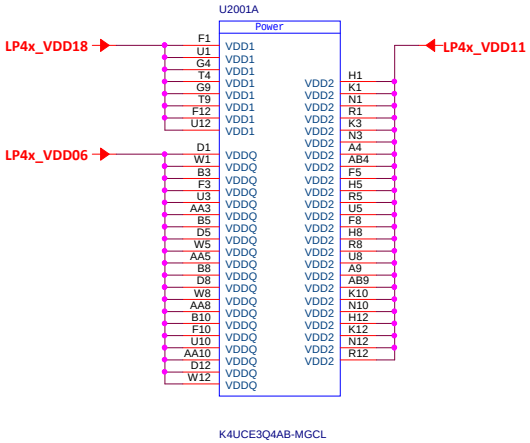
NOTE:CKE2/CS2/ZQ2 NC IN SUMSUNG

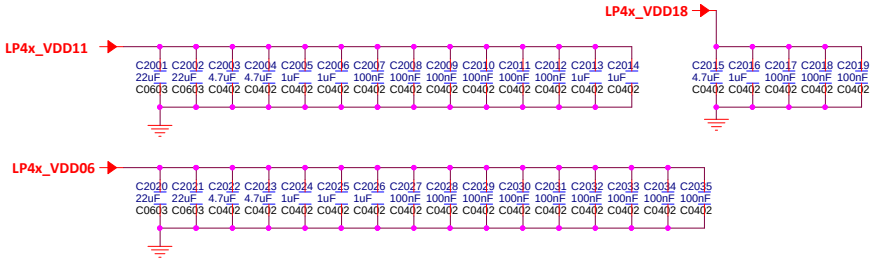
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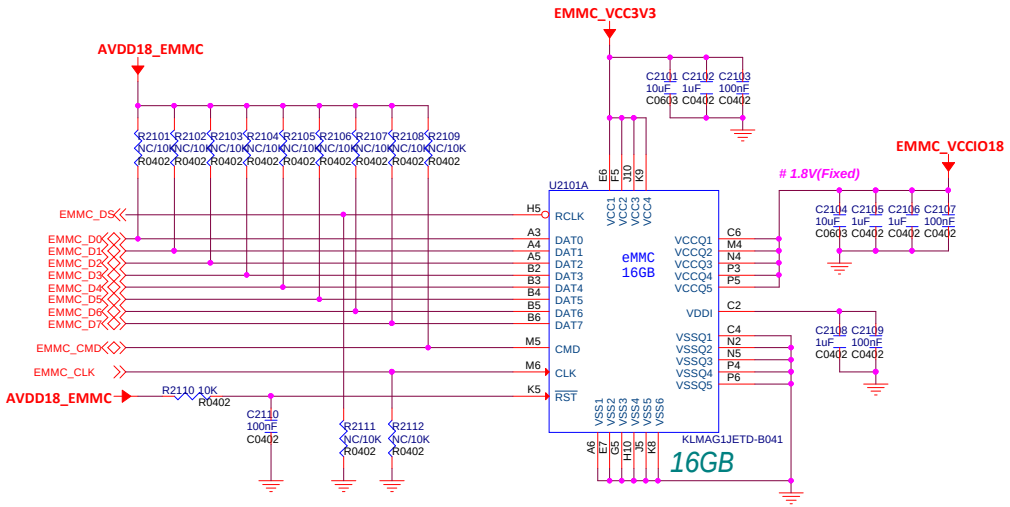
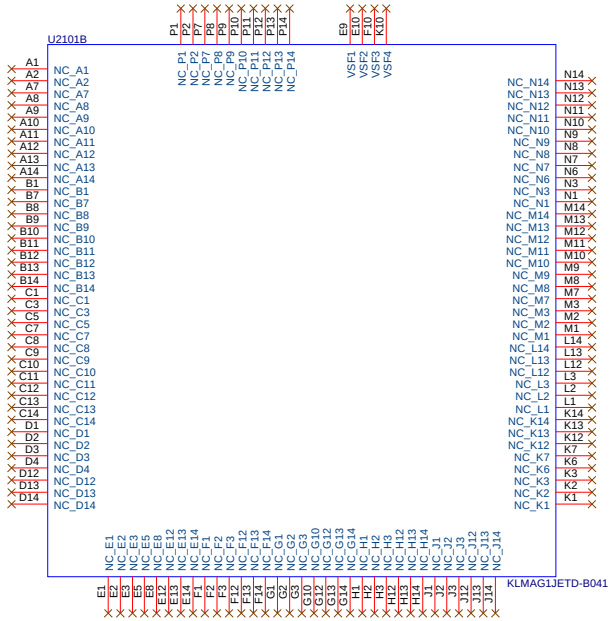
# EMMC

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|---|---|---|
| SPACEMIT | SPACEMIT | |
| | Design Name: SPACEMIT-K1_LP4XP200_32X1 | |
| | Size: A3 | Page Name: 16 Storage-eMMC |
| | Date: Wednesday, May 08, 2024 | Sheet 16 of 28 |

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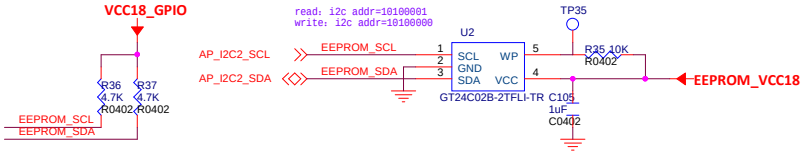
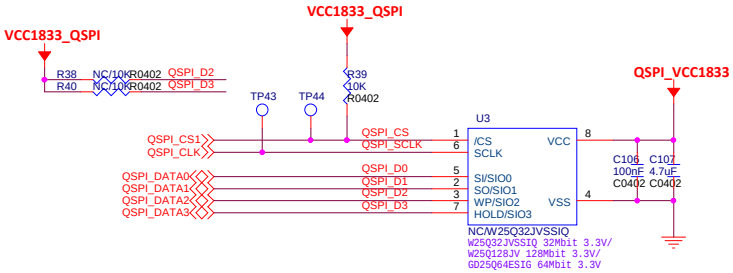
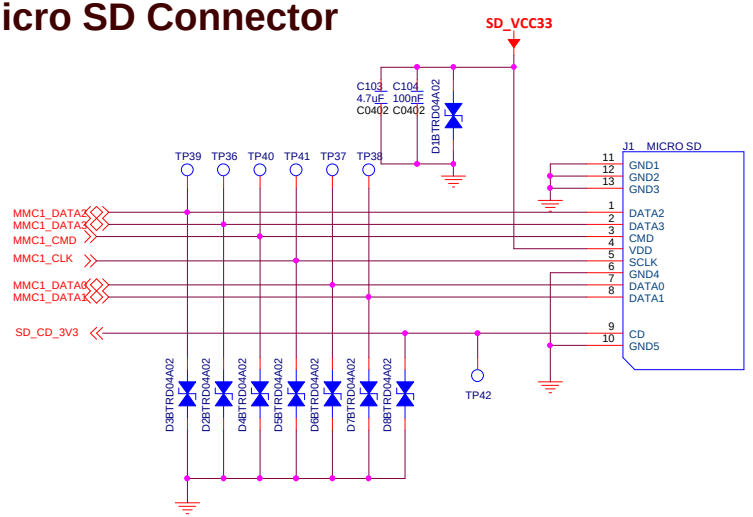
# EEPROM



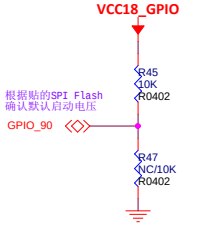

# SPI FLASH



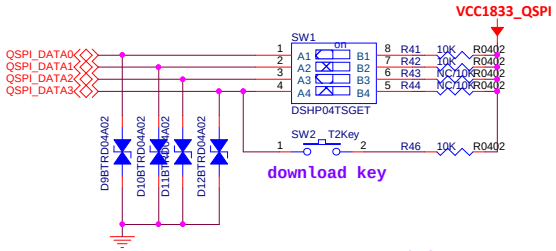

# Micro SD Connector




## Flash Boot voltage sel




| GPIO 90 | Function |
|---|---|
| 0 | 1V8 |
| 1 | 3V3 |




## boot download sel

| QSPI_DATA3 | Function |
|---|---|
| 0 | 启动 |
| 1 | 下载 |

## download sel

| QSPI_DATA2 | Function |
|---|---|
| 0 | USB |
| 1 | UART |

## Boot SEL

| QSPI_DATA1 | QSPI_DATA0 | Function |
|---|---|---|
| 0 | 0 | TF Card -> EMMC |
| 0 | 1 | TF Card -> SPI NOR |
| 1 | 0 | TF Card -> SPI NAND |
| 1 | 1 | TF Card -> SD |

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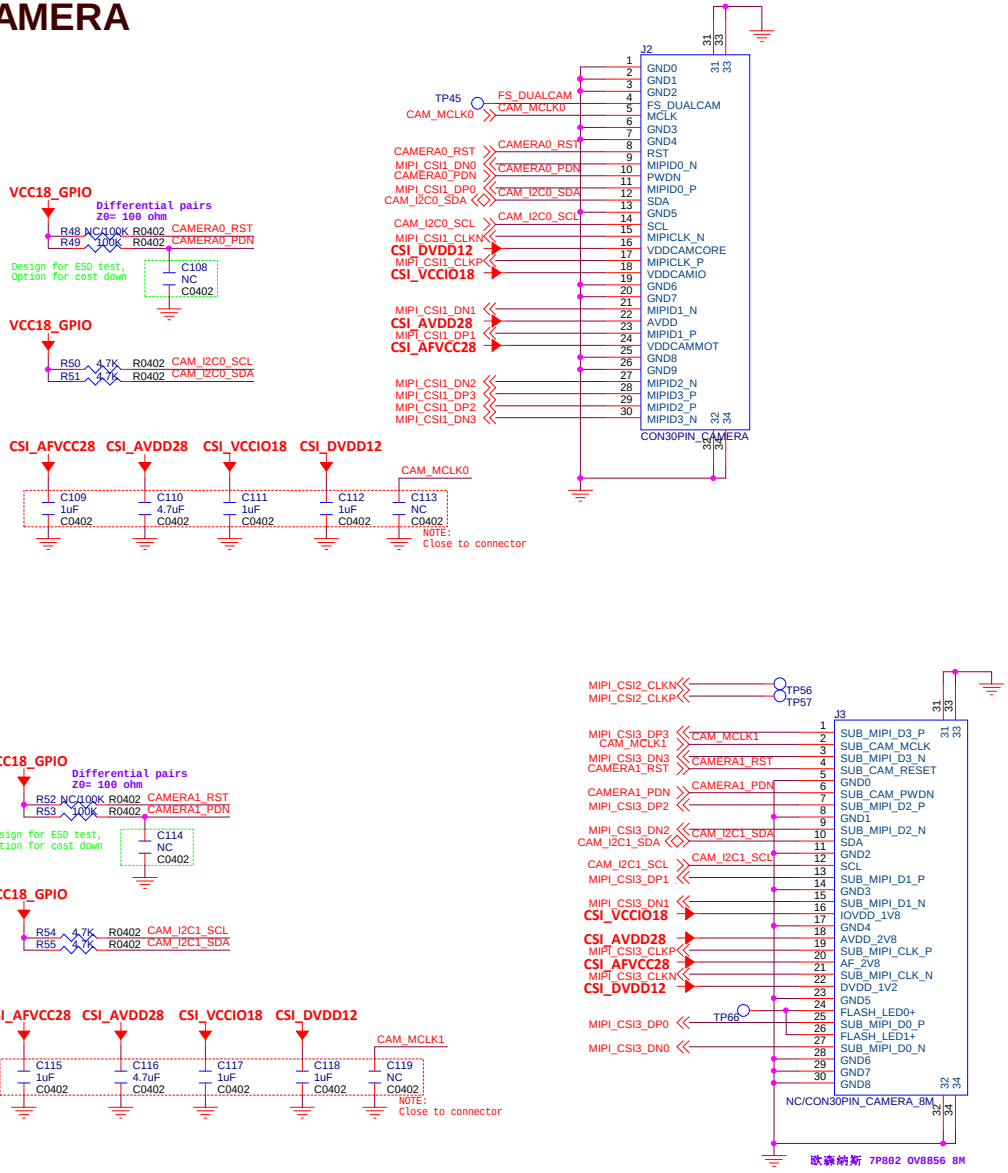
SPACEMIT
Design Name: SPACEMIT-K1_LP4XP200_32X1
Size: A3
Page Name: 17 Storage-FLASH-CARD-EEPROM
Rev: <RevCode>
Date: Wednesday, May 08, 2024
Sheet 17 of 28

# CAMERA

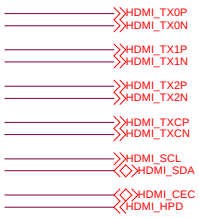


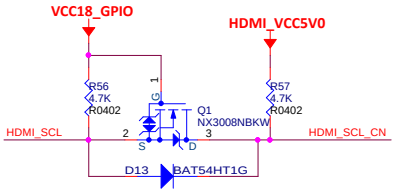


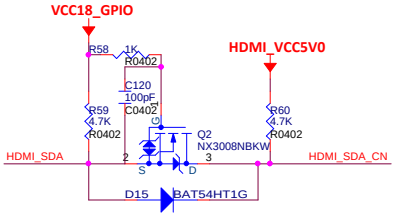


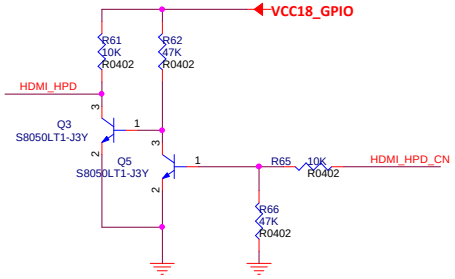
| | | |
|---|---|---|
| SPACEMIT | SPACEMIT | |
| www.spacemit.com | Design Name: SPACEMIT-K1_LP4XP200_32X1 | |
| | Size: A3 | Page Name: 18 VI-Camera |
| | Date: Wednesday, May 08, 2024 | Sheet 18 of 28 |

# HDMI

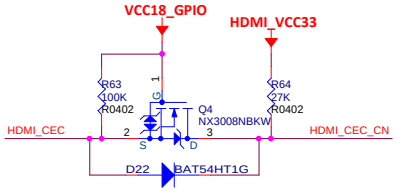


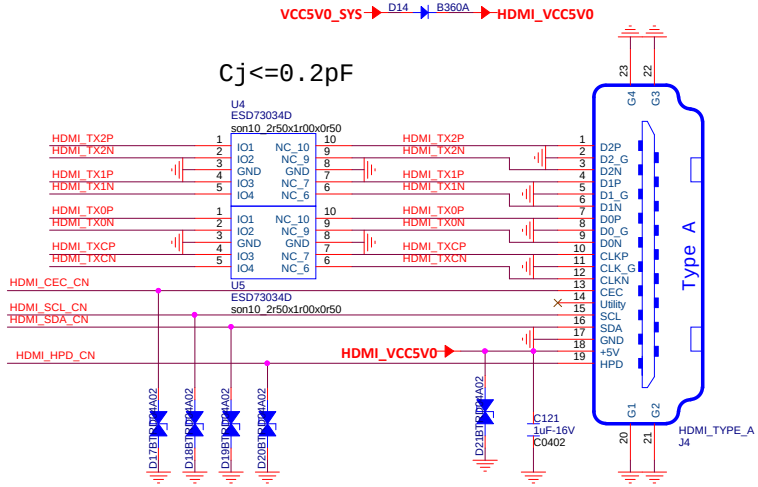





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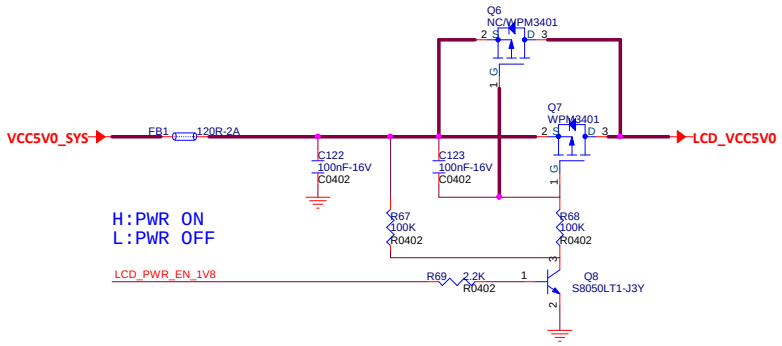
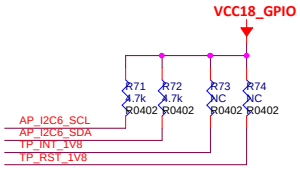
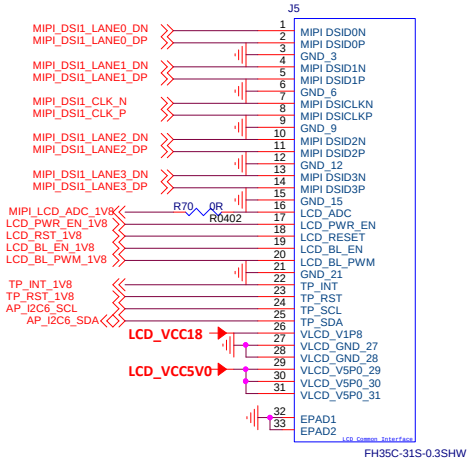
|---|---|---|
| SPACEMIT | SPACEMIT | |
| | Design Name: SPACEMIT-K1_LP4XP200_32X1 | |
| www.spacemit.com | Size: A3 | Page Name: 19 VO-HDMI |
| | Rev: <RevCode> | |
| | Date: Wednesday, May 08, 2024 | Sheet 19 of 28 |

# MIPI-DSI





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| SPACEMIT | SPACEMIT | |
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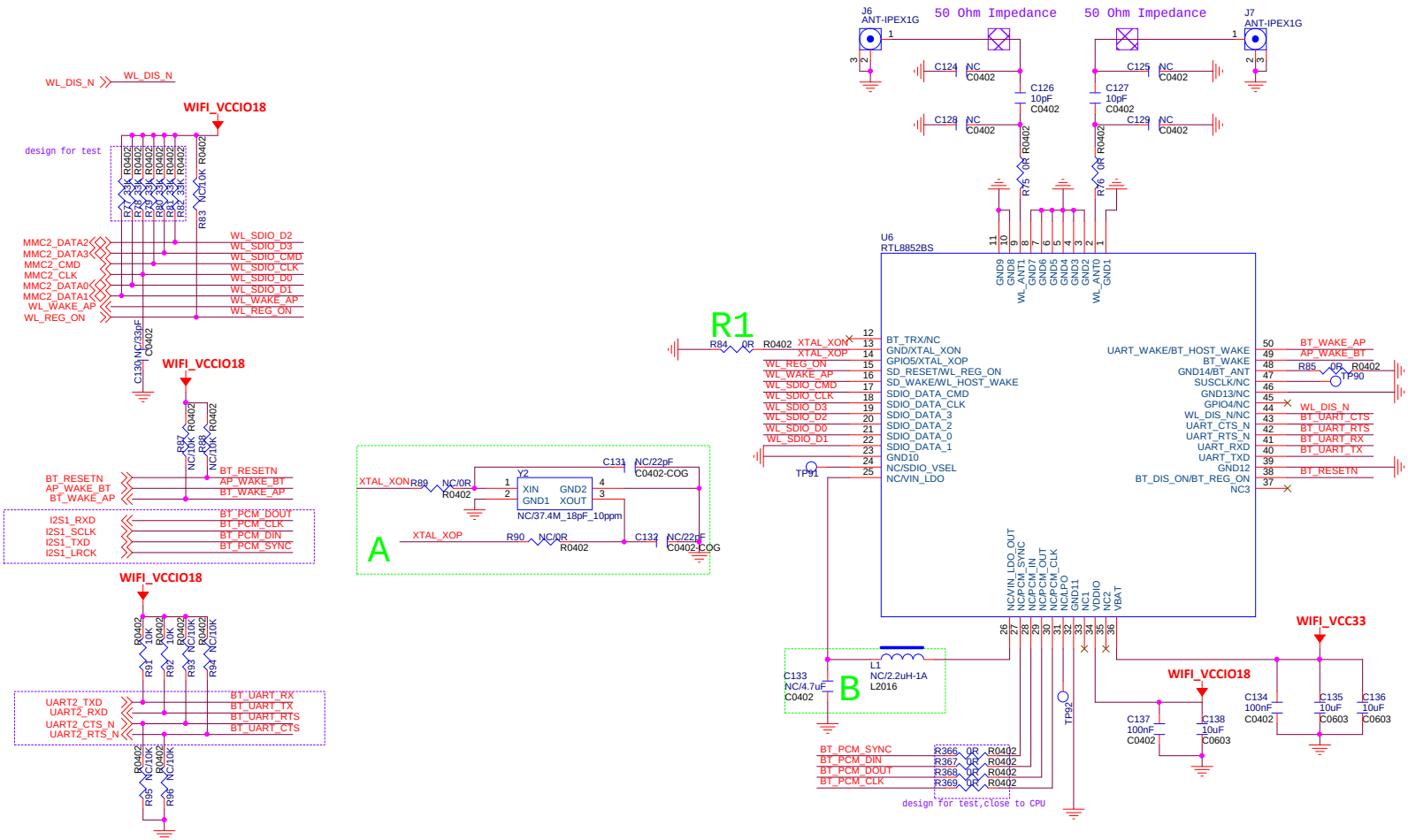
| www.spacemit.com | Size: A3 / Page Name: 20 VO-MIPI DSI | Rev: <RevCode> |
| | Date: Wednesday, May 08, 2024 / Sheet 20 of 28 | |

# RTL8852BS

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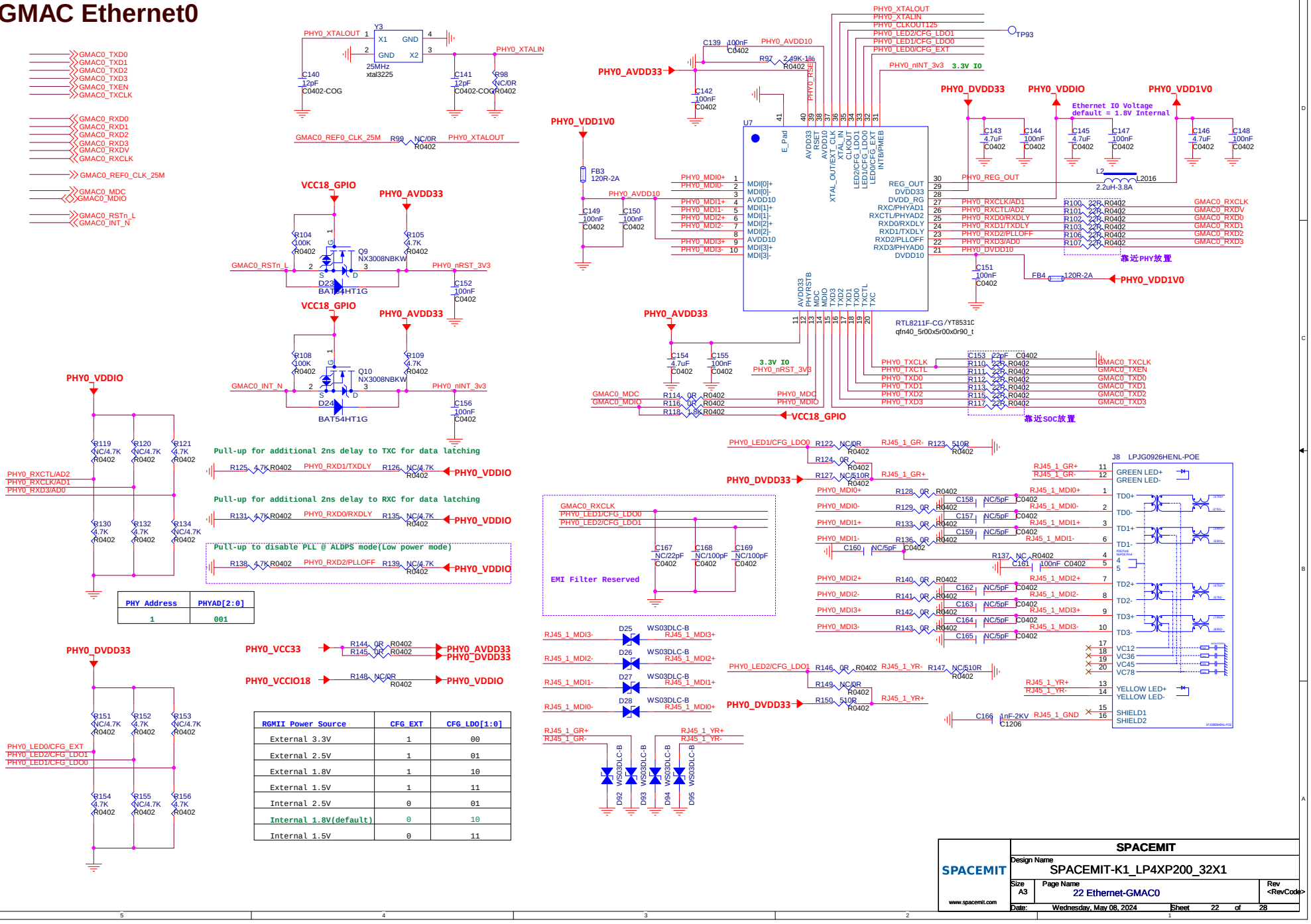
|---|---|
| SPACEMIT | SPACEMIT |
| www.spacemit.com | Design Name: SPACEMIT-K1_LP4XP200_32X1 |
| | Size: A3 — Page Name: 21 WiFi/BT-SDIO_2T2R/UART — Rev: <RevCode> |
| | Date: Wednesday, May 08, 2024 — Sheet 21 of 28 |

# GMAC Ethernet0

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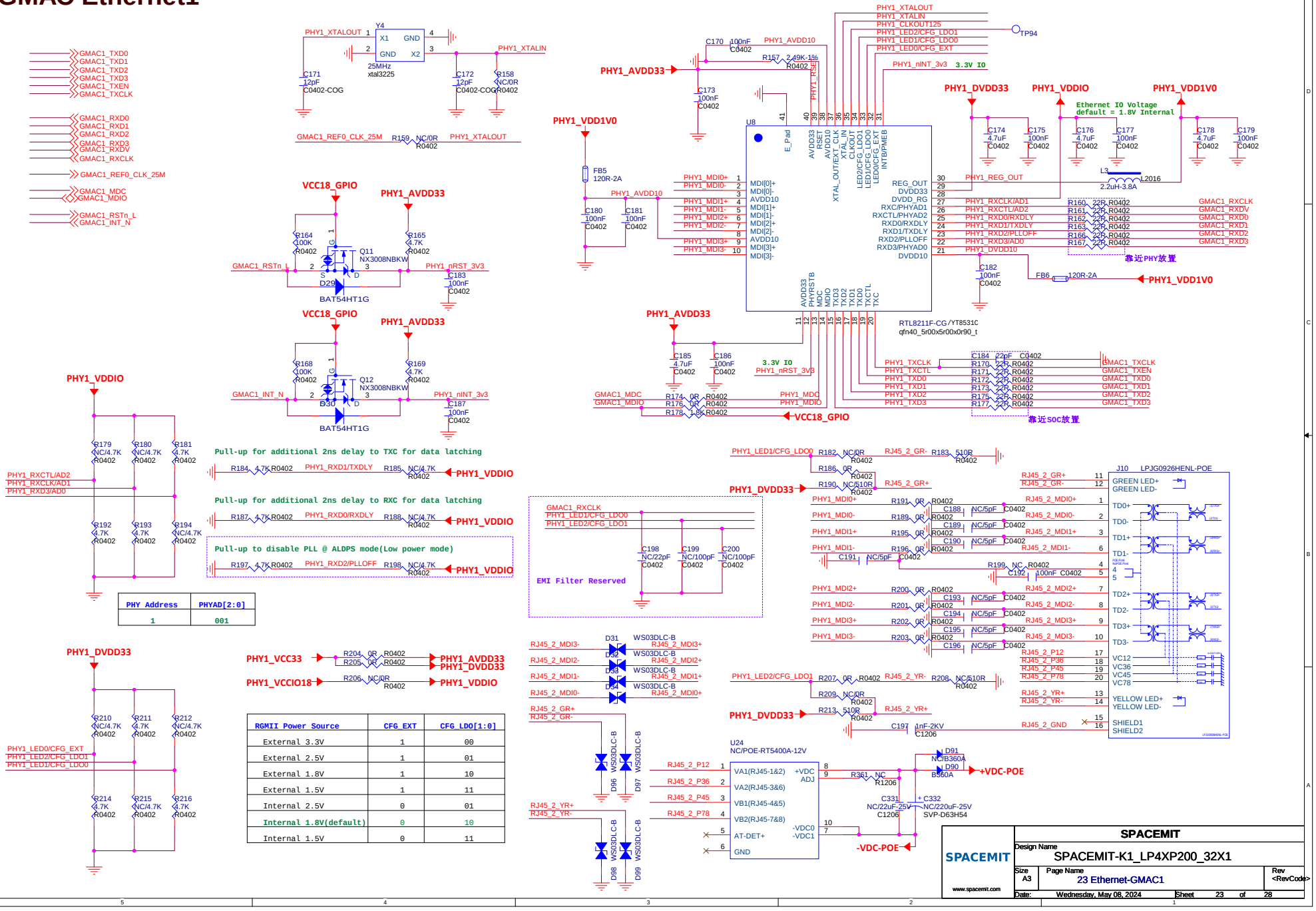
| SPACEMIT | SPACEMIT |
| www.spacemit.com | Design Name: SPACEMIT-K1_LP4XP200_32X1 |
| | Size: A3 — Page Name: 22 Ethernet-GMAC0 — Rev: <RevCode> |
| | Date: Wednesday, May 08, 2024 — Sheet 22 of 28 |

# GMAC Ethernet1

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| SPACEMIT | SPACEMIT |
| www.spacemit.com | Design Name: SPACEMIT-K1_LP4XP200_32X1 |
| Size: A3 | Page Name: 23 Ethernet-GMAC1 |
| Rev: <RevCode> | |
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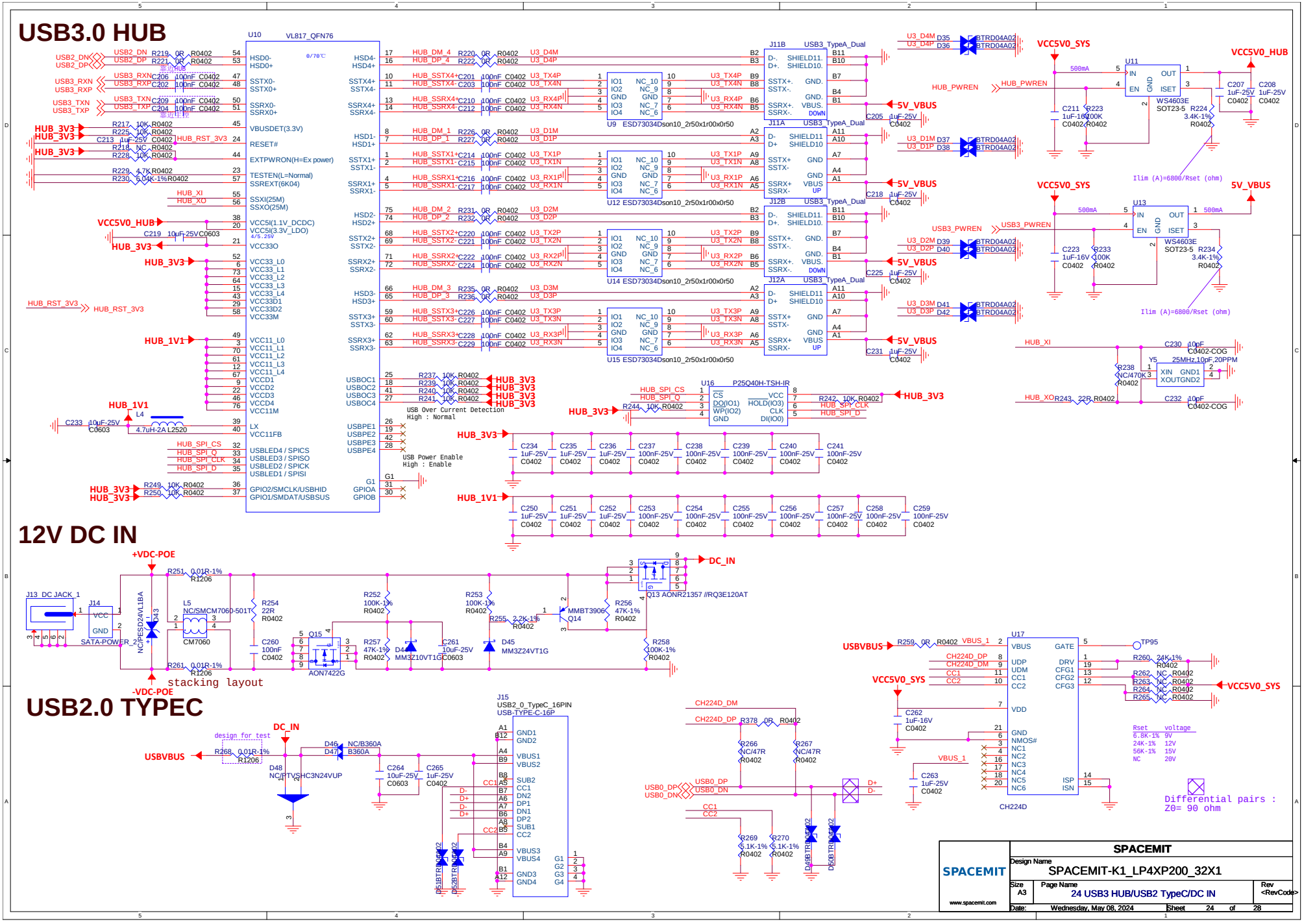
USB3.0 HUB
U10
VL817_QFN76
USB2_DN
USB2_DP
USB3_RXN
USB3_RXP
USB3_TXN
USB3_TXP
HUB_3V3
HUB_1V1
HUB_RST_3V3
HUB_XI
HUB_XO
VCC5V0_HUB
HUB_SPI_CS
HUB_SPI_Q
HUB_SPI_CLK
HUB_SPI_D
USB Over Current Detection
High : Normal
USB Power Enable
High : Enable
U9 ESD73034Dson10_2r50x1r00x0r50
U12 ESD73034Dson10_2r50x1r00x0r50
U14 ESD73034Dson10_2r50x1r00x0r50
U15 ESD73034Dson10_2r50x1r00x0r50
J11B USB3_TypeA_Dual
J11A USB3_TypeA_Dual
J12B USB3_TypeA_Dual
J12A USB3_TypeA_Dual
U16 P25Q40H-TSH-IR
5V_VBUS
VCC5V0_SYS
VCC5V0_HUB
HUB_PWREN
USB3_PWREN
U11
U13
WS4603E
SOT23-5
Ilim (A)=6800/Rset (ohm)
12V DC IN
+VDC-POE
-VDC-POE
DC_IN
J13 DC JACK_1
SATA-POWER_2
Q13 AONR21357 //RQ3E120AT
Q15
AON7422G
MMBT3906
Q14
D45
MM3Z24VT1G
D44
MM3Z10VT1G
stacking layout
USB2.0 TYPEC
J15
USB2_0_TypeC_16PIN
USB-TYPE-C-16P
USBVBUS
CH224D_DM
CH224D_DP
USB0_DP
USB0_DN
CC1
CC2
U17
CH224D
VCC5V0_SYS
TP95
Rset voltage
6.8K-1% 9V
24K-1% 12V
56K-1% 15V
NC 20V
Differential pairs :
Z0= 90 ohm
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Design Name
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Size A3
Page Name
24 USB3 HUB/USB2 TypeC/DC IN
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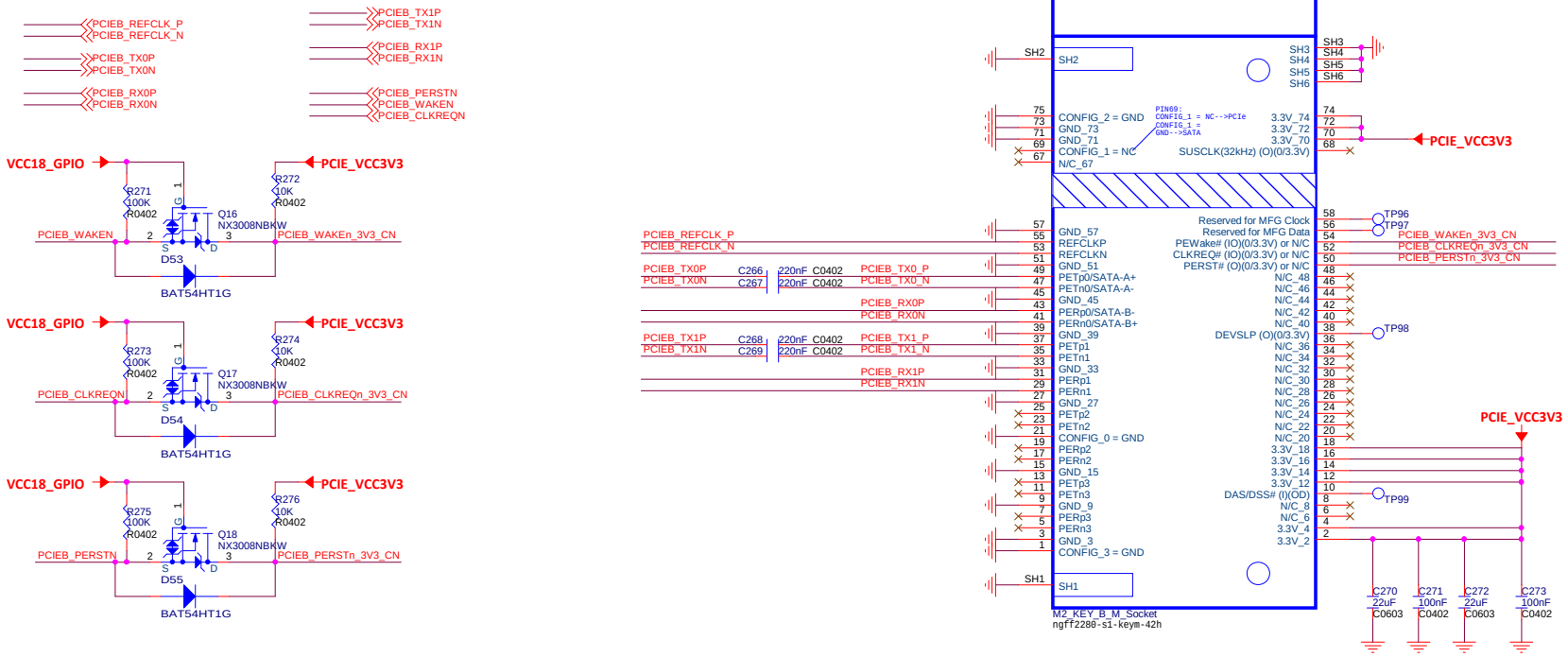
# PCIEB







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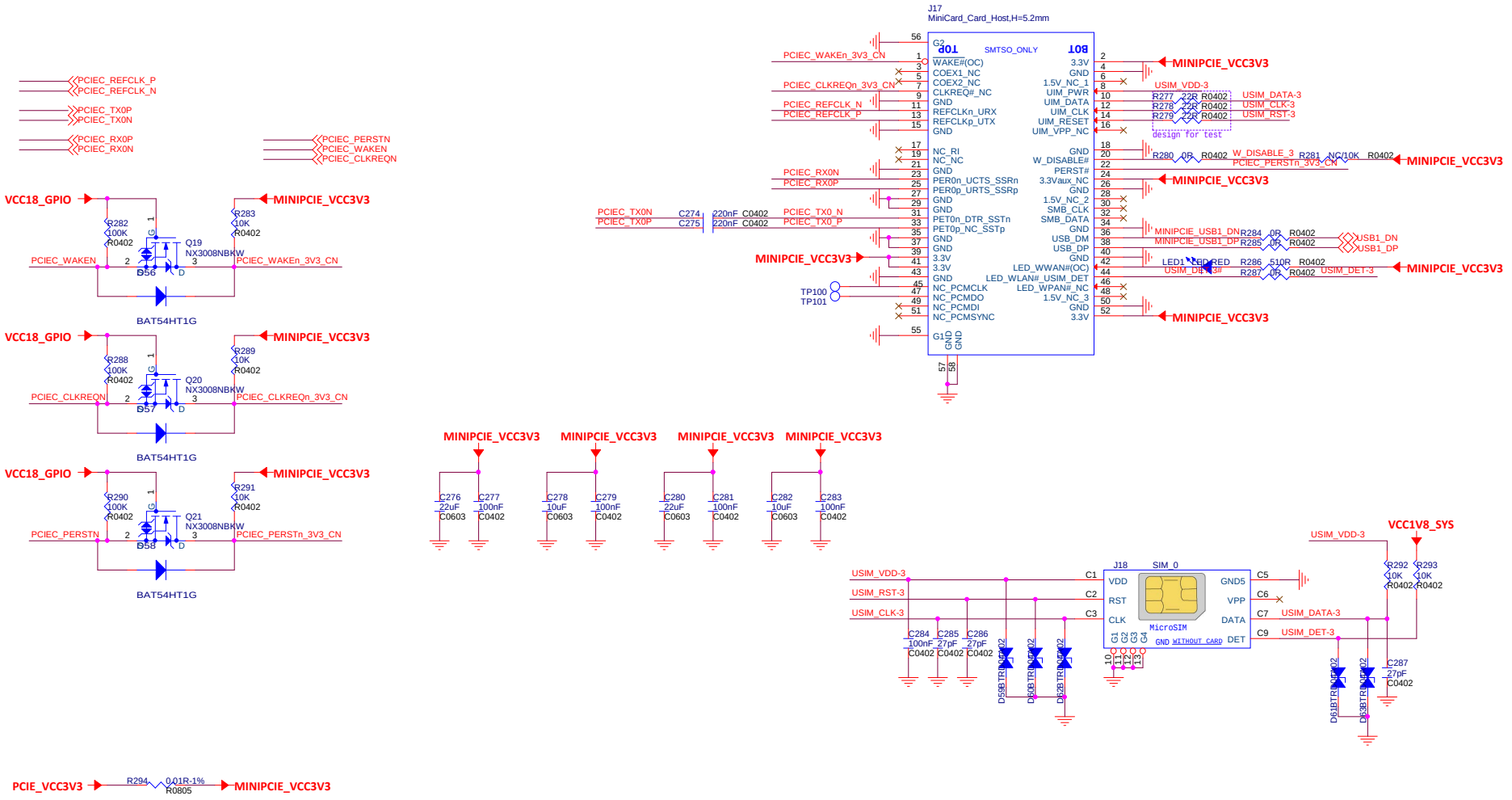
| SPACEMIT | SPACEMIT | | |
| | Design Name: SPACEMIT-K1_LP4XP200_32X1 | | |
| www.spacemit.com | Size: A3 | Page Name: 25 PCIEB M.2 KEY M | Rev: <RevCode> |
| | Date: Wednesday, May 08, 2024 | Sheet 25 of 28 | |

# PCIEC

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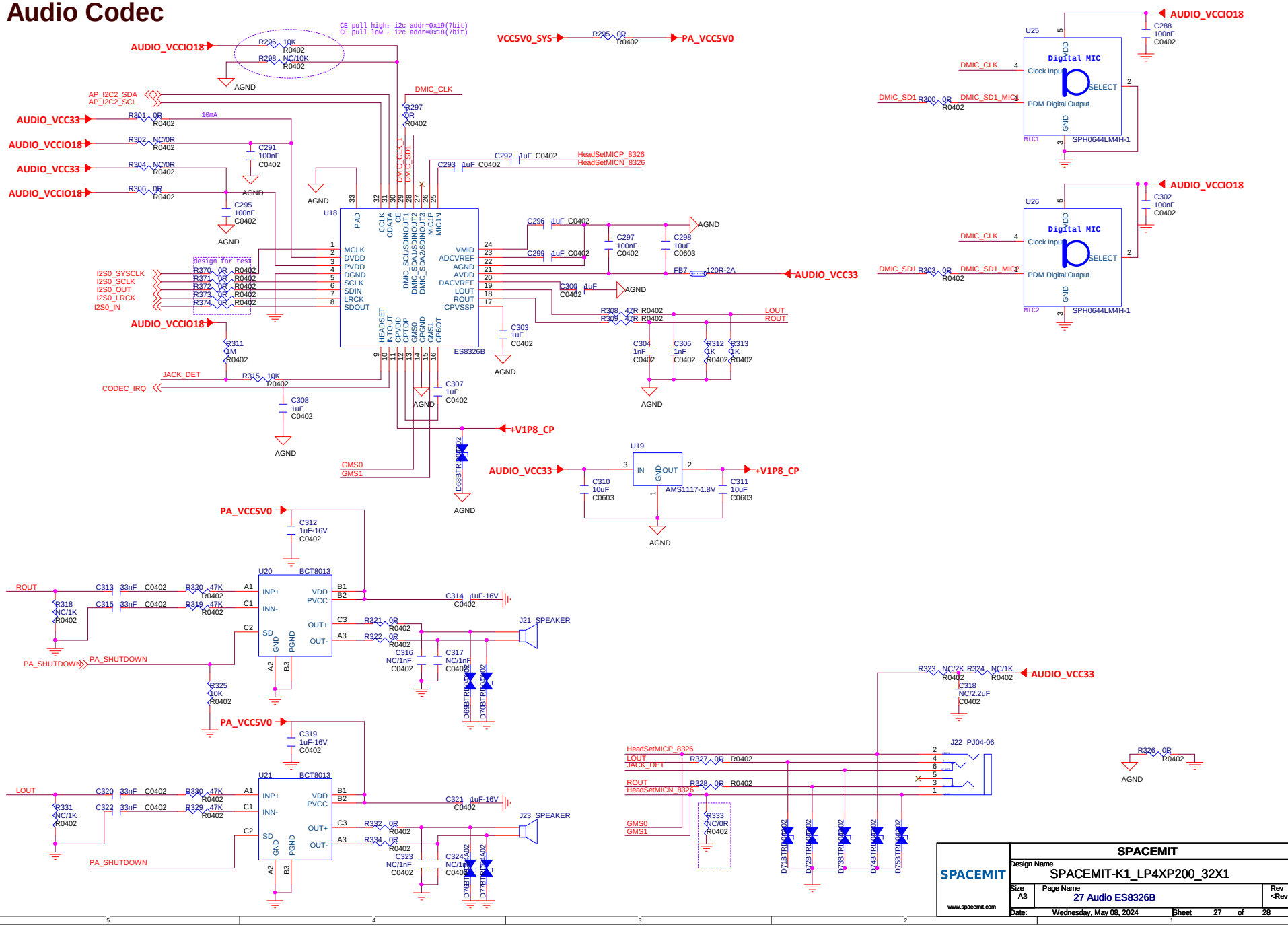
| SPACEMIT | SPACEMIT | | |
| | Design Name: SPACEMIT-K1_LP4XP200_32X1 | | |
| | Size: A3 | Page Name: 26 PCIEC Mini PCIE | Rev: <RevCode> |
| www.spacemit.com | Date: Wednesday, May 08, 2024 | Sheet 26 of 28 | |

# Audio Codec


CE pull high: i2c addr=0x19(7bit)
CE pull low : i2c addr=0x18(7bit)
AUDIO_VCCIO18
AUDIO_VCC33
VCC5V0_SYS
PA_VCC5V0
AGND
DMIC_CLK
DMIC_SD1
AP_I2C2_SDA
AP_I2C2_SCL
HeadSetMICP_8326
HeadSetMICN_8326
U18
ES8326B
I2S0_SYSCLK
I2S0_SCLK
I2S0_OUT
I2S0_LRCK
I2S0_IN
JACK_DET
CODEC_IRQ
+V1P8_CP
GMS0
GMS1
LOUT
ROUT
U19
AMS1117-1.8V
U25
U26
Digital MIC
SPH0644LM4H-1
U20
U21
BCT8013
PA_SHUTDOWN
J21 SPEAKER
J23 SPEAKER
J22 PJ04-06
SPACEMIT
SPACEMIT-K1_LP4XP200_32X1
27 Audio ES8326B
Wednesday, May 08, 2024
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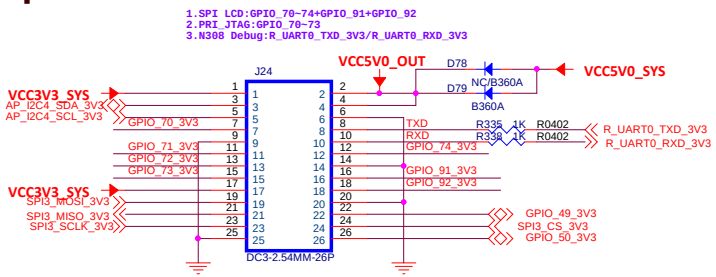
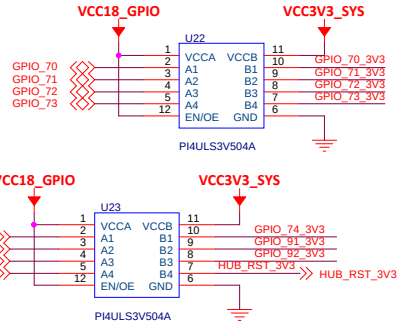
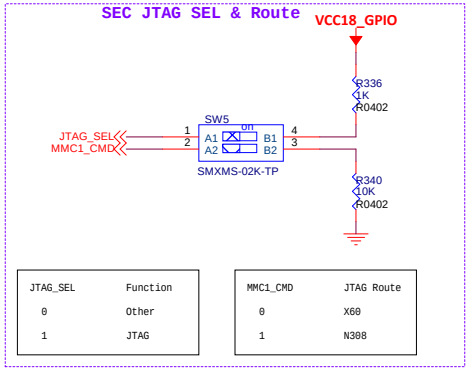
# 26 pin GPIO

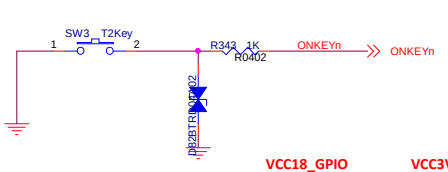



# JTAG SEL

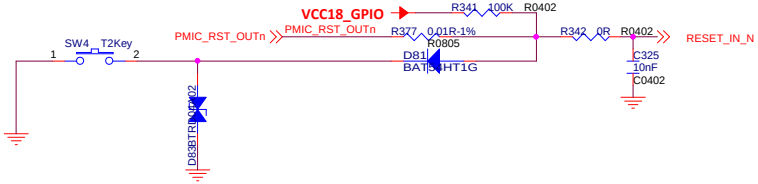


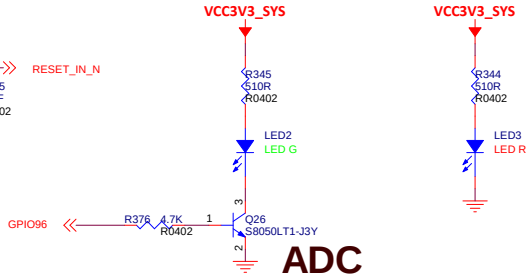

# PowerON



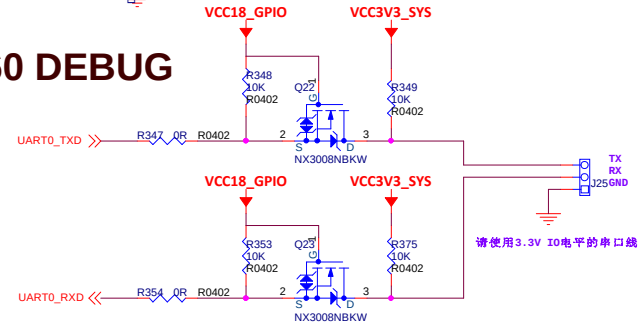

# REST



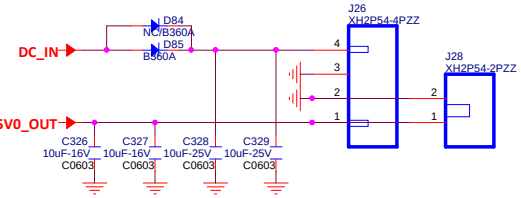

# LED



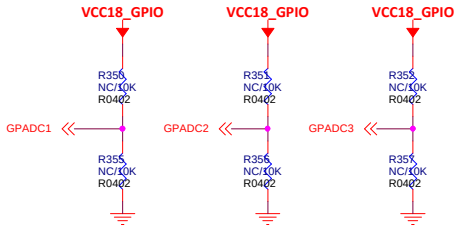

# X60 DEBUG



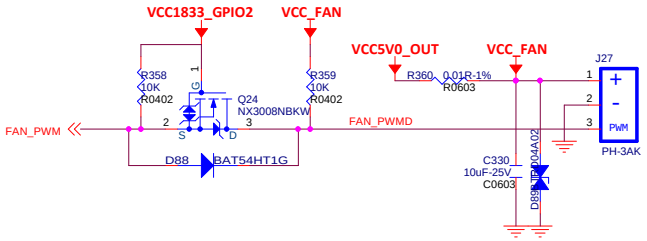

# SATA HDD



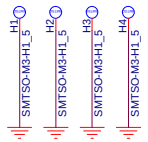

# ADC




# FAN




# Mark Port




| | | |
|---|---|---|
| SPACEMIT | SPACEMIT | |
| www.spacemit.com | Design Name: SPACEMIT-K1_LP4XP200_32X1 | |
| | Size: A3 | Page Name: 28 26pin GPIO/KEY/LED |
| | Date: Wednesday, May 08, 2024 | Sheet 28 of 28 |
| | | Rev <RevCode> |