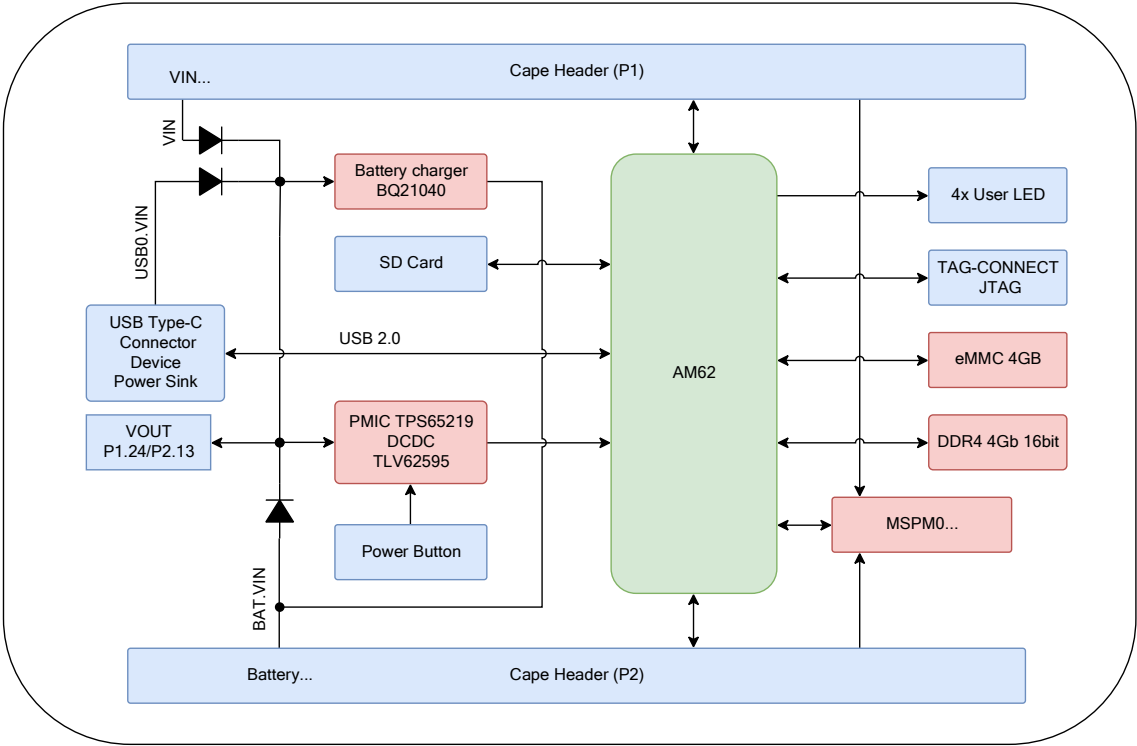


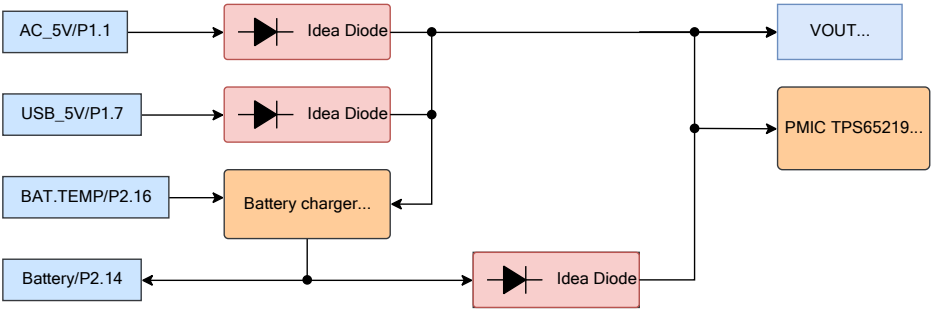
| PAGE LIST | |
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| 001 | Revision History |
| 002 | 002_Block Diagram |
| 003 | 003_Power Tree |
| 004 | 004_I2C Usage Diagram |
| 005 | 005_PMIC & Charger |
| 006 | 006_SoC Power |
| 007 | 007_SoC DCAPs |
| 008 | 008_SoC DDR & DDR4 |
| 009 | 009_SoC MMC & eMMC & SD |
| 010 | 010_SoC WKUP/MCU/System |
| 011 | 011_SoC Bootstrap |
| 012 | 012_SoC RGMII/OSPI |
| 013 | 013_SoC GPIO/MCASP/VOUT |
| 014 | 014_SoC USB/OLDI/CSI & USB C |
| 015 | 015_SoC JTAG & MISC |
| 016 | 016_BP P1 & P2 |

| REVISION HISTORY | | | |
|------------------|--------------|--|--------|
| VER # | DATE | DESCRIPTION OF CHANGES | AUTHOR |
| 0.1 | 28 Oct. 2022 | First release | qxn |
| 0.2 | 1 Nov. 2022 | 1. Remove unused nets 2. Use WKUP_I2C0 for PMIC 3. Add pull-down to VPP 4. Move eMMC_RSTn to GPIO0_7 5. Add USER button for boot mode seletion 6. Try to add a CSI connector 7. Using processor boall numbers for signal name on P1 and P2 8. Change SoC to AM6232, change eMMC to 4GB, change DDR to 512MB | qxn |
| 0.3 | 2 Nov. 2022 | 1. Remove CSI 2. Add SD card, move LDO0 to VDD_SD 3. Power the VPP with VDD_1V8 through a jumper 4. Connect P2.19 to AC20 instead | qxn |
| 0.4 | 23 Dec.2022 | 1. Replace the ideal diode with LM73100RPWR 2. Replace EEPROM and ADC with MSPM0 3. Correct the boot settings 4. Connect AD24(MDC) to P2.17 and AB22(MDIO) to P2.20 which is same as pocketbeagle. | qxn |
| 0.5 | 28 Dec.2022 | 1. Add B5 (MCU_UART0_RXD) to P2_5. 2. Add A5 (MCU_UART0_TXD) to P2_7. 3. Add A18 (EXT_REFCLK1) to P1_10. 4. Add AD24 (MDIO0_MDC) to P2_1. 5. Add AB22 (MDIO0_MDIO) to P2_3. | qxn |

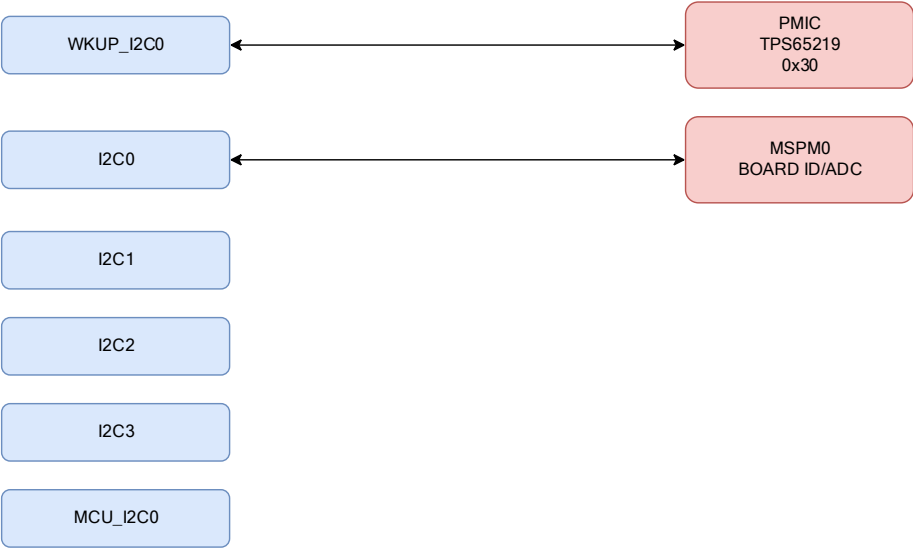
Block Diagram



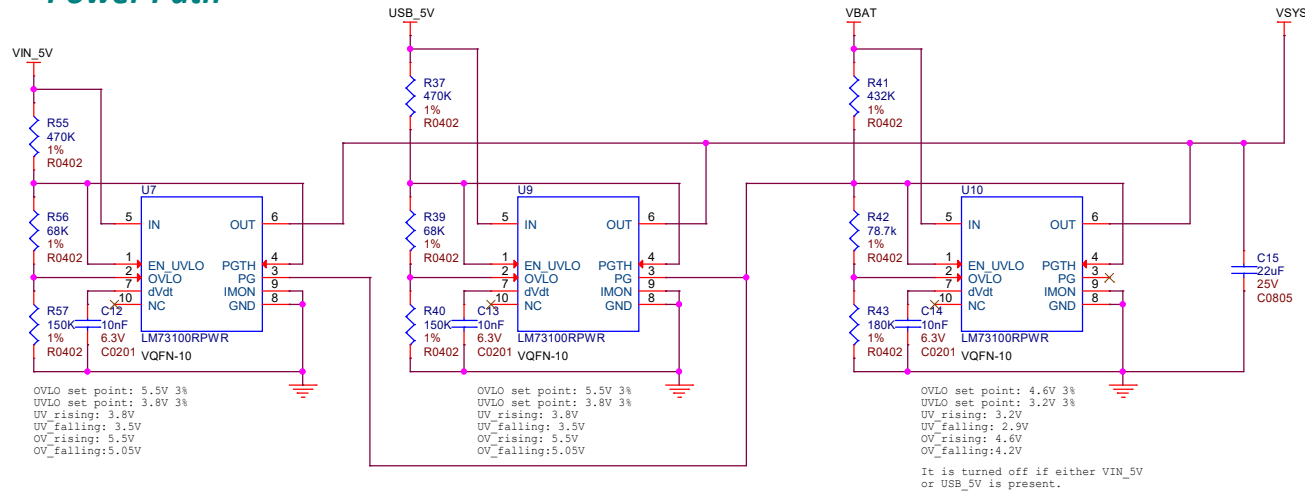
Power tree



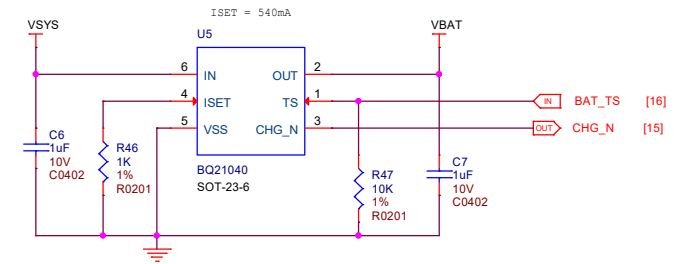
I2C Usage Diagram



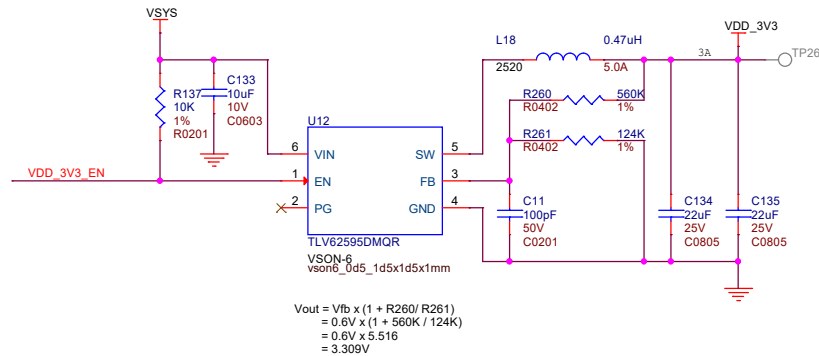
Power Path



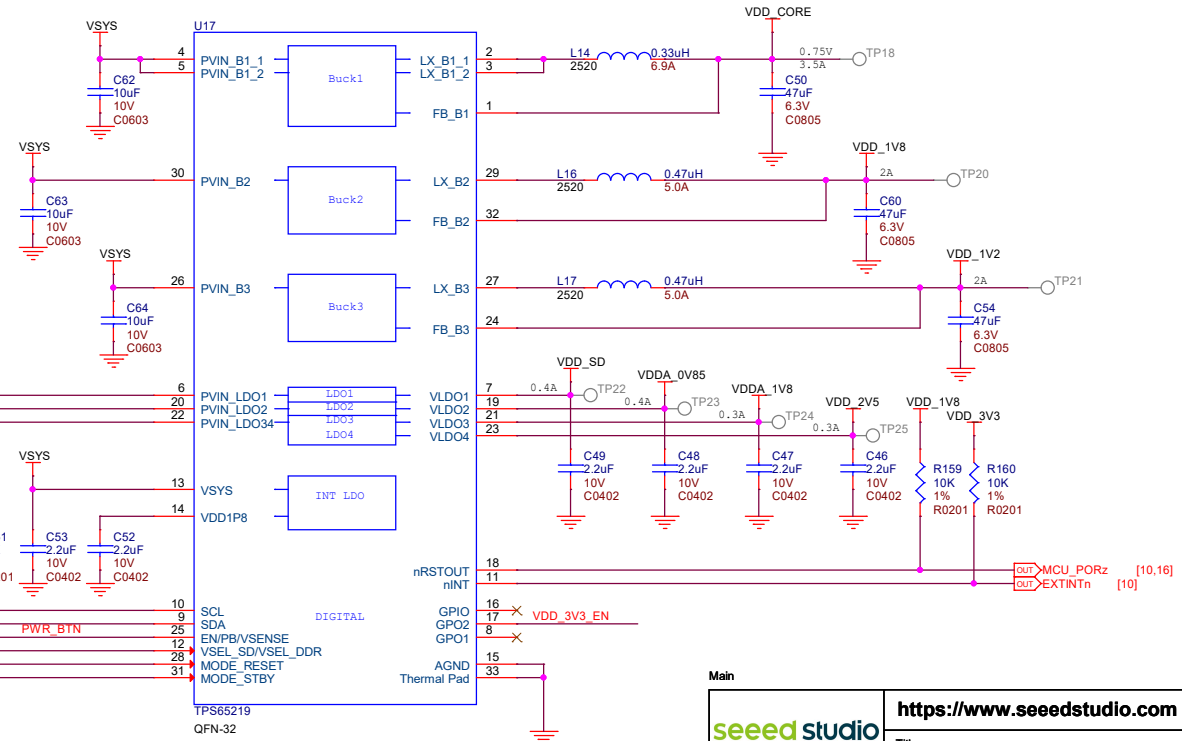
Battery Charger



DCDC 3V3

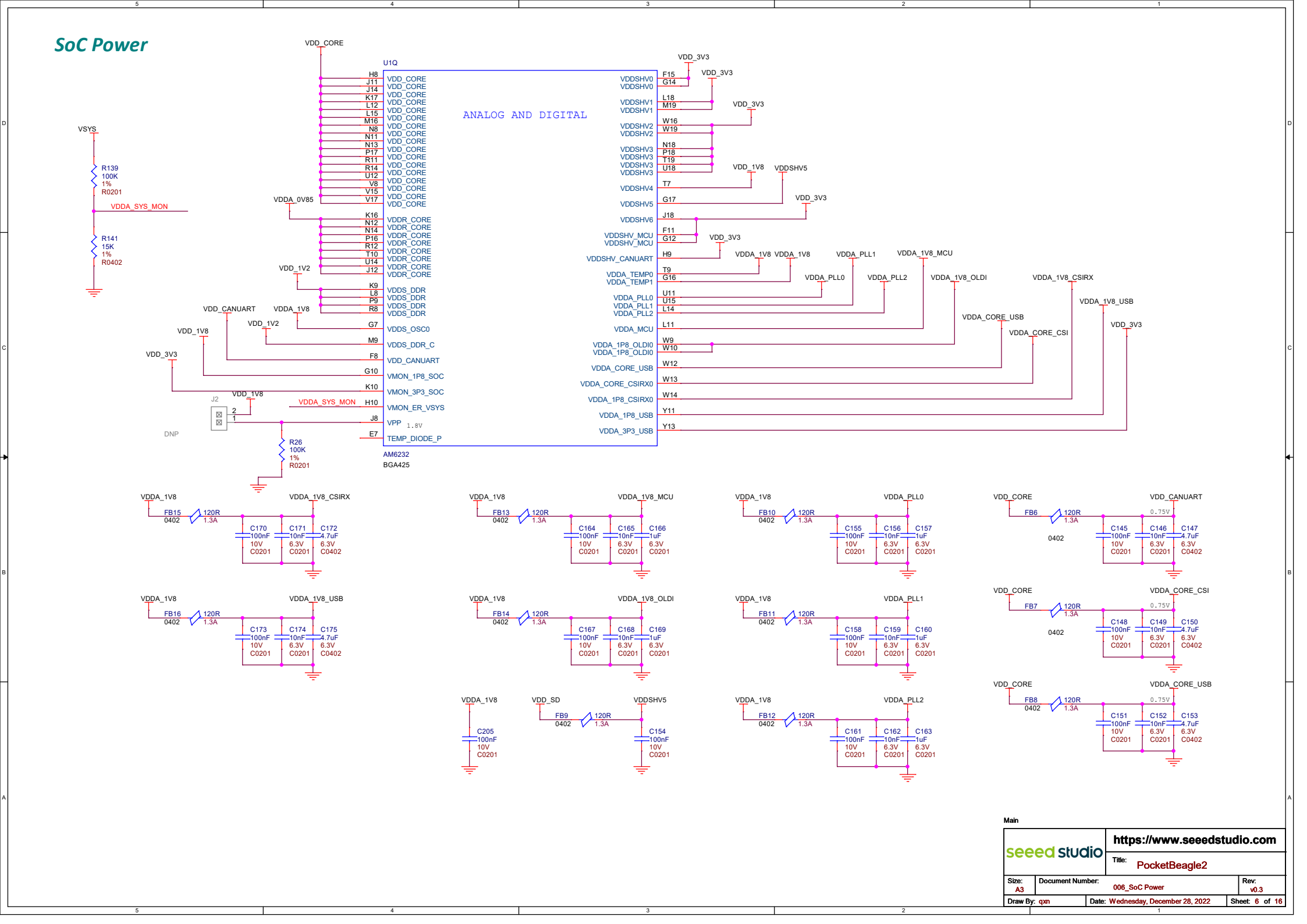


PMIC

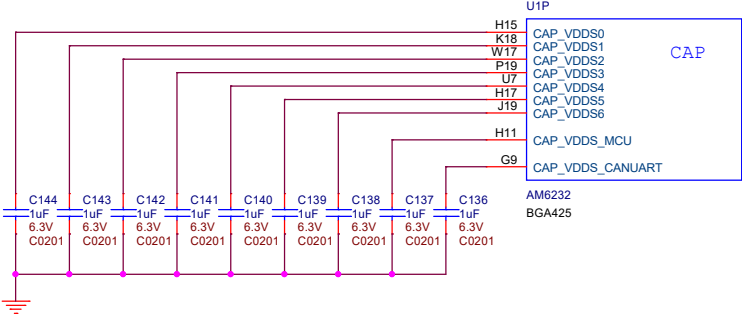
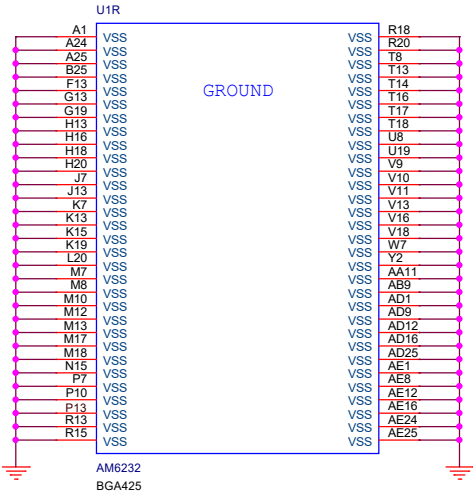
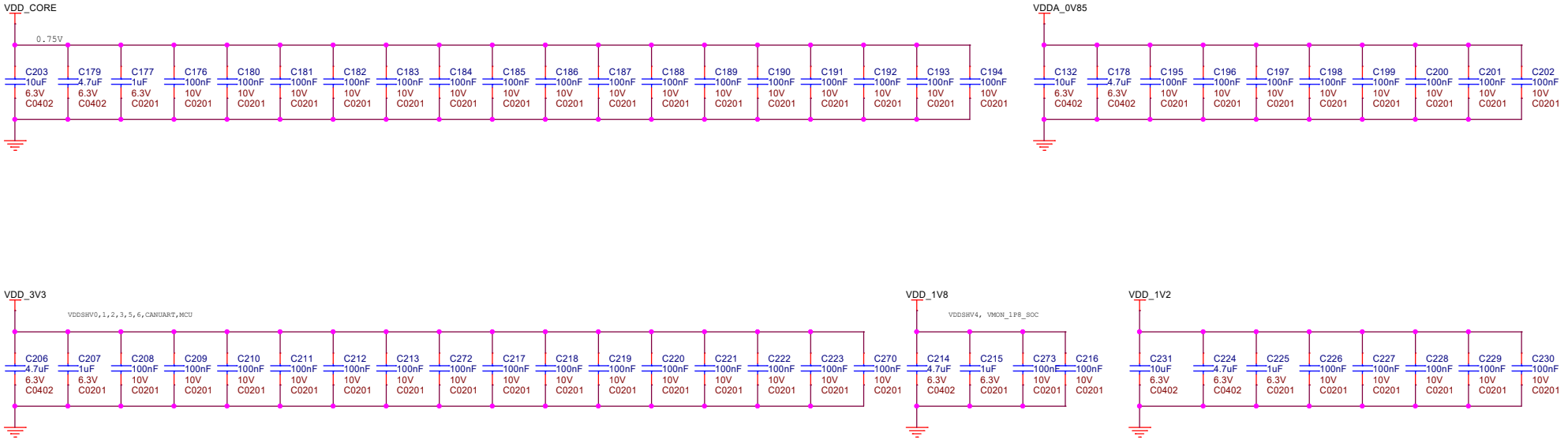


Main

| | | | |
|--|--|---|--|
| seeed studio | | https://www.seeedstudio.com | |
| Title: PocketBeagle2 | | Rev: v0.3 | |
| Size: A3 | Document Number: 005_PMIC & Charger | Rev: v0.3 | |
| Draw By: qm | Date: Wednesday, December 28, 2022 | Sheet: 5 of 16 | |

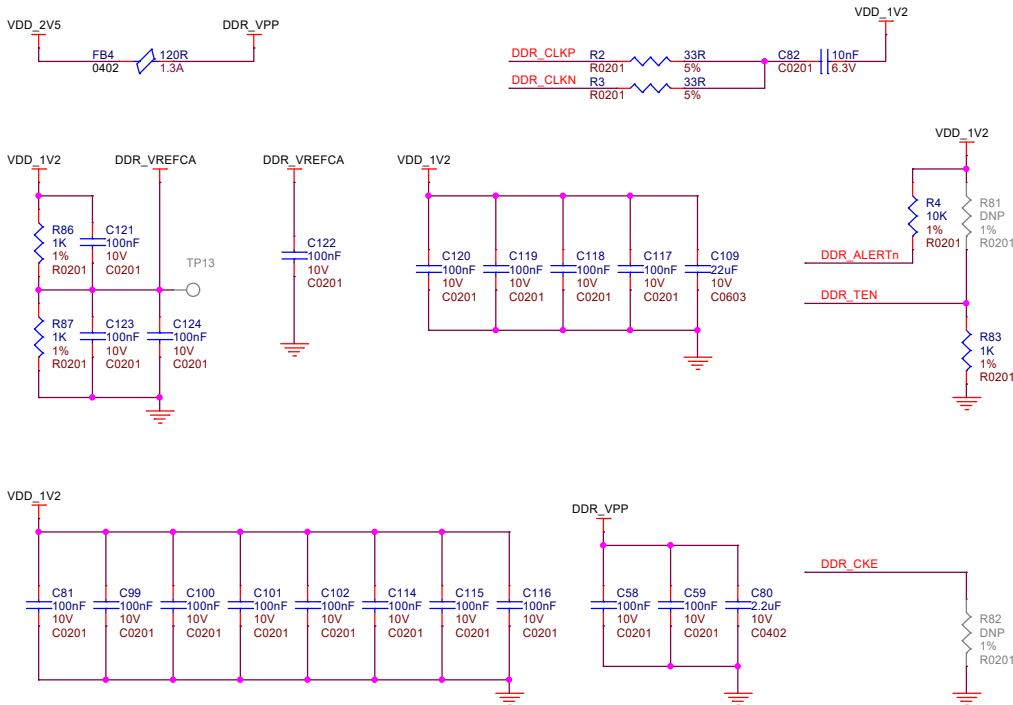
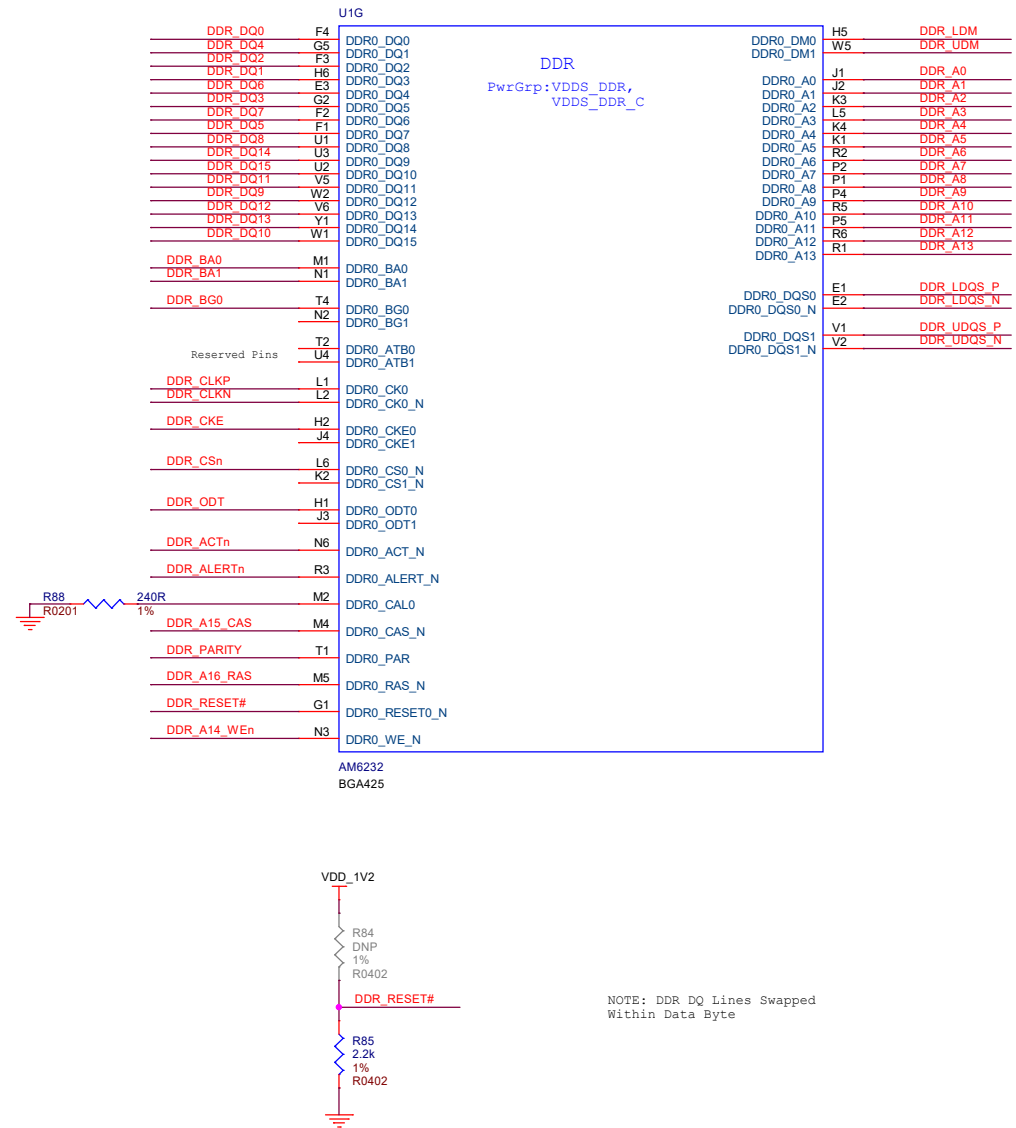
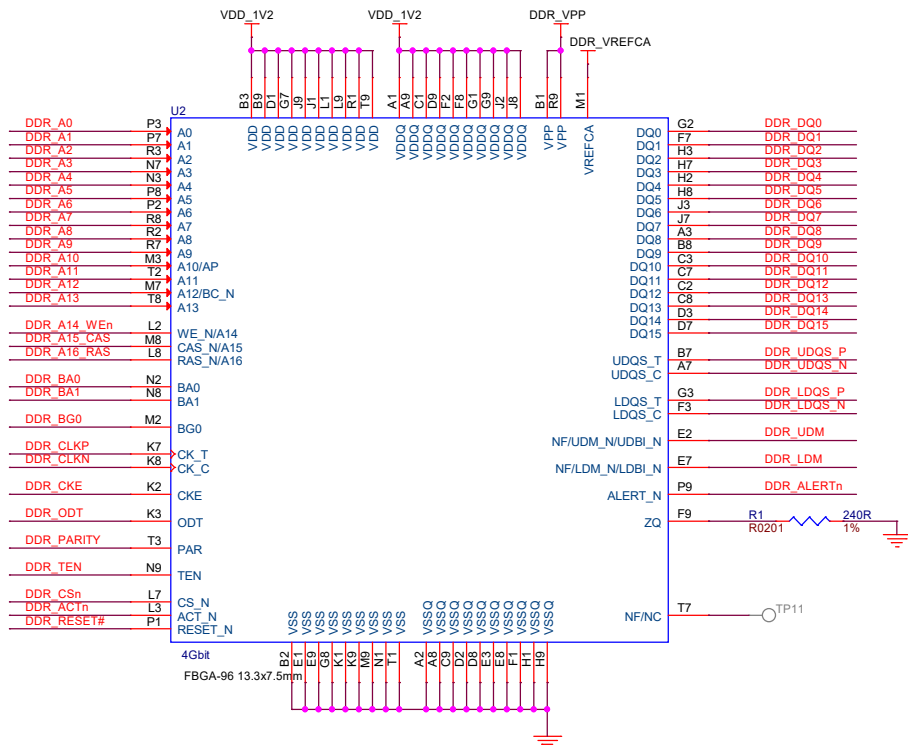


SoC DCAPs

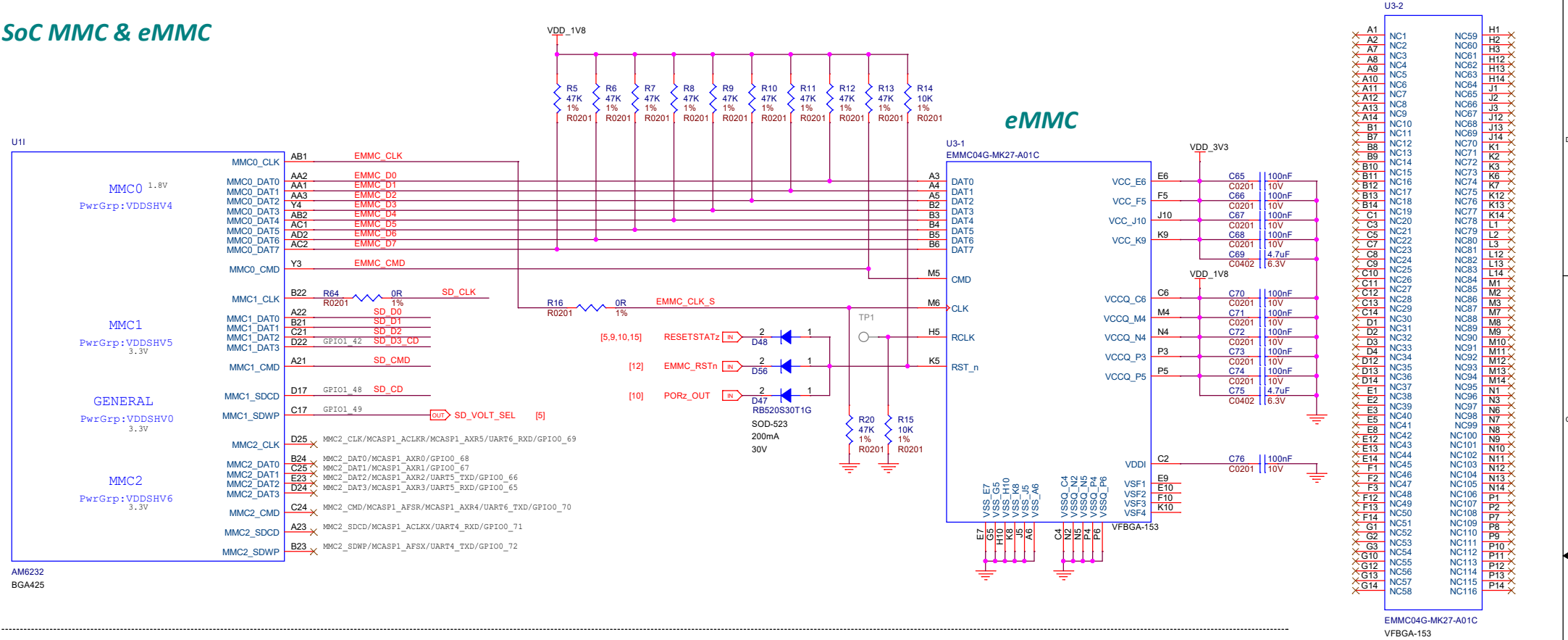


DDR4

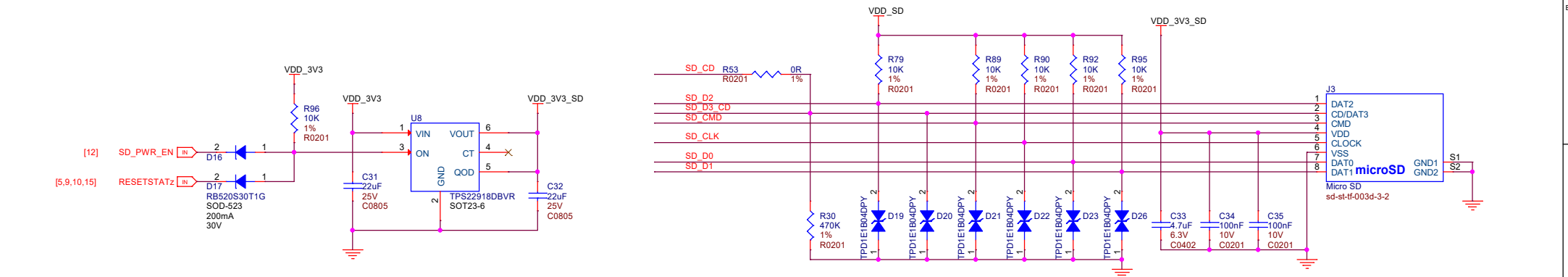
SoC DDR controller



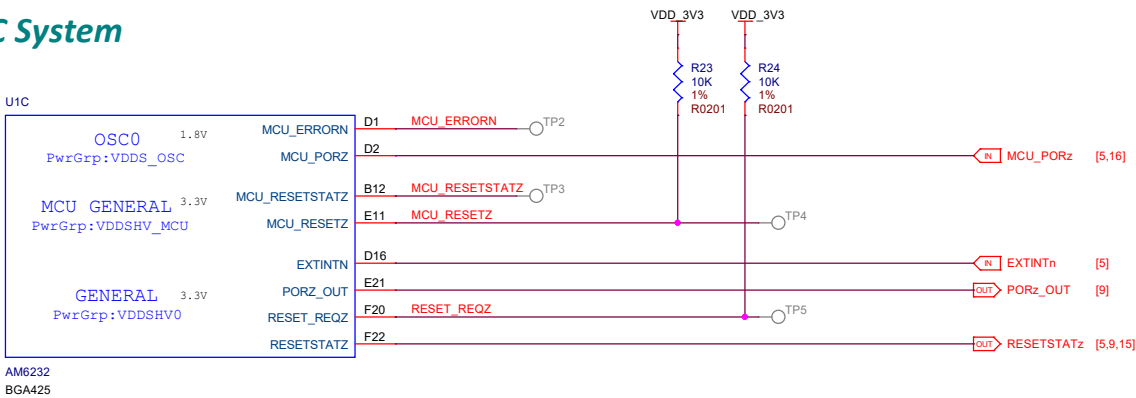
SoC MMC & eMMC



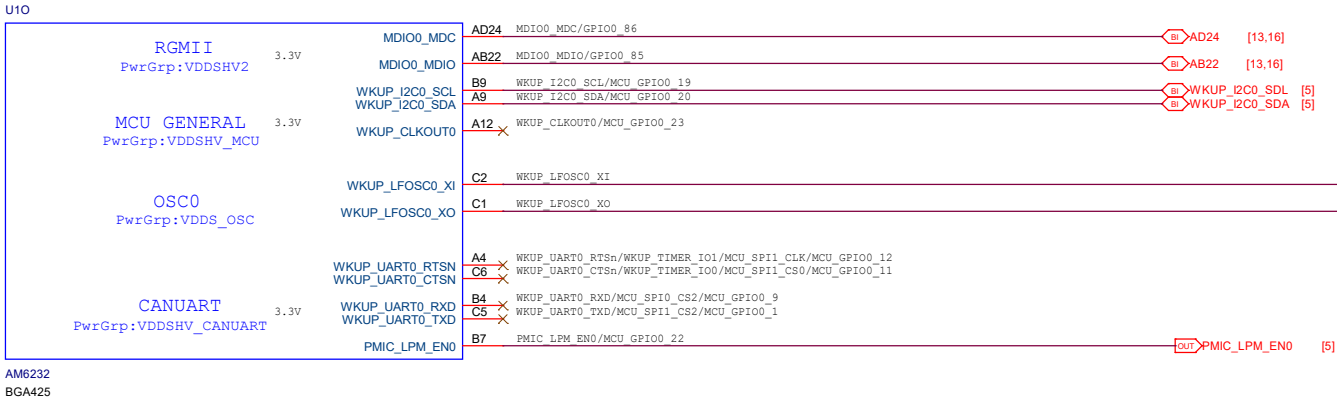
MICRO SD CARD



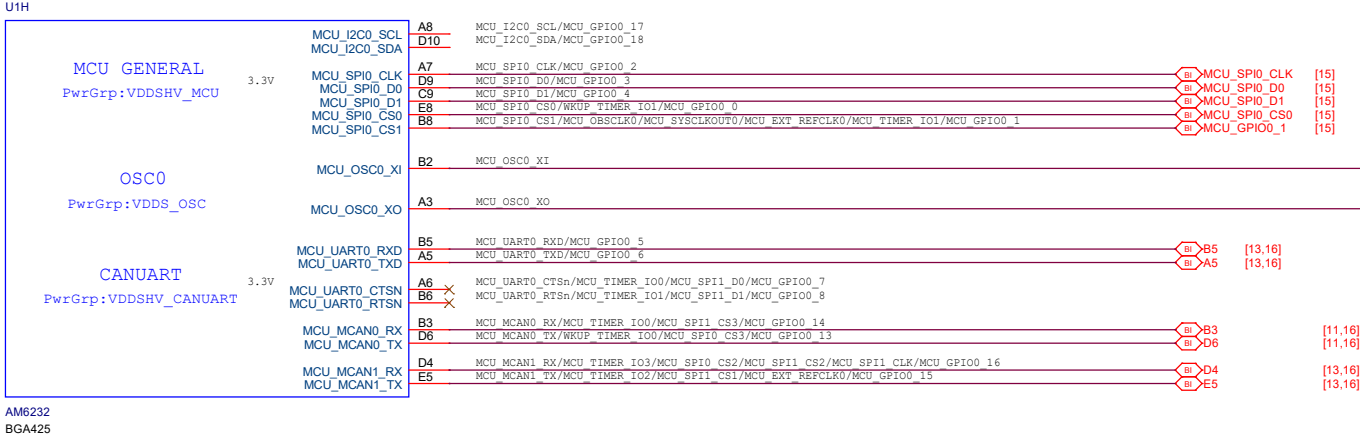
SoC System



WKUP Domain



MCU Domain

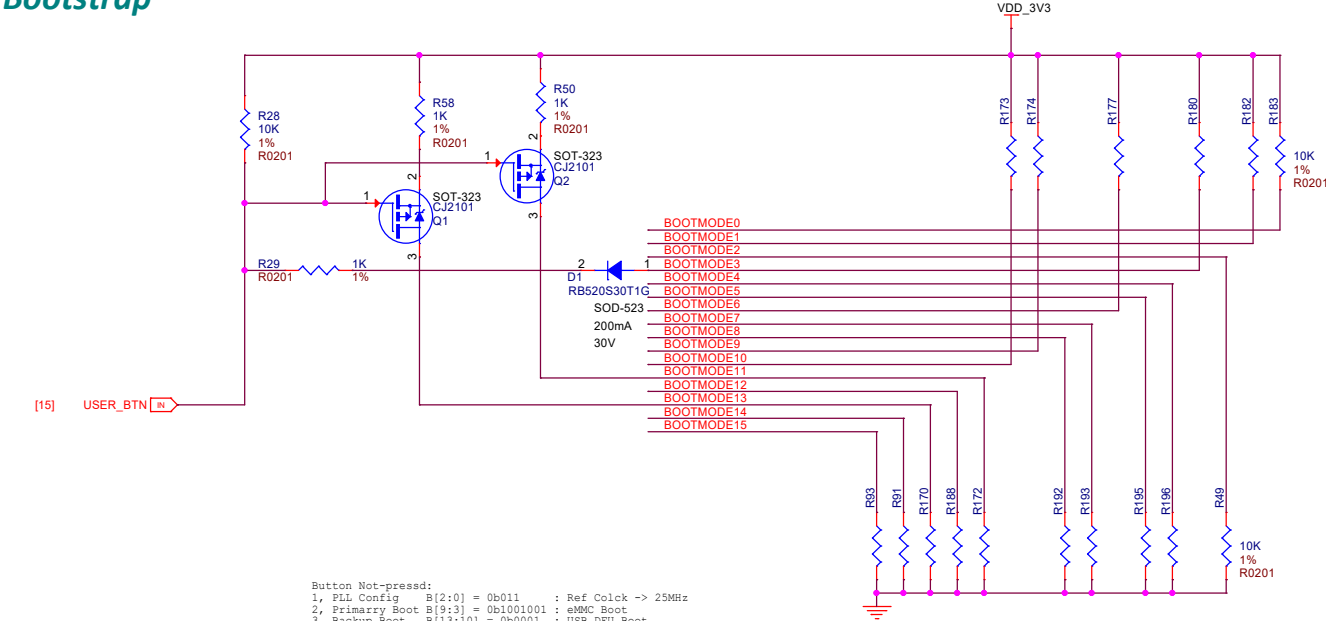


SoC GPIO 1.8V

U1F



Bootstrap

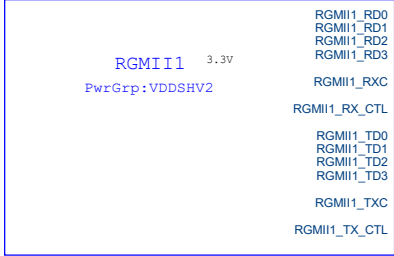


Button Not-pressed:
1, PLL Config B[2:0] = 0b011 : Ref Clck -> 25MHz
2, Primary Boot B[9:3] = 0b1001001 : eMMC Boot
3, Backup Boot B[13:10] = 0b0001 : USB DPU Boot

Button Pressed:
1, PLL Config B[2:0] = 0b011 : Ref Clck -> 25MHz
2, Primary Boot B[9:3] = 0b1001000 : SDCard FS Boot
3, Backup Boot B[13:10] = 0b1011 : UART Boot

RGMII

U1M

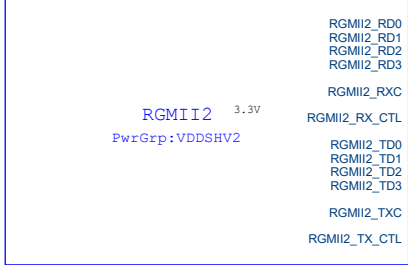


AM6232
BGA425

| | | | |
|------|--|--|--|
| AB17 | RGMII1_RD0/RMII1_RXD0/GPIO0_81 | | |
| AC17 | RGMII1_RD1/RMII1_RXD1/GPIO0_82 | | |
| AB16 | RGMII1_RD2/PR0_UART0_RTSn/GPIO0_83 | | |
| AA15 | RGMII1_RD3/GPIO0_84 | | |
| AD17 | RGMII1_RXC/RMII1_REF_CLK/PR0_UART0_CTSn/GPIO0_80 | | |
| AE17 | RGMII1_RX_CTL/RMII1_RX_ER/GPIO0_79 | | |
| AE20 | RGMII1_TD0/RMII1_TXD0/GPIO0_75 | | |
| AD20 | RGMII1_TD1/RMII1_TXD1/GPIO0_76 | | |
| AE18 | RGMII1_TD2/PR0_UART0_RXD/GPIO0_77 | | |
| AD18 | RGMII1_TD3/PR0_UART0_TXD/GPIO0_78 | | |
| AE19 | RGMII1_TXC/RMII1_CRS_DV/GPIO0_74 | | |
| AD19 | RGMII1_TX_CTL/RMII1_TX_EN/GPIO0_73 | | |

AE18 [13,16]
AD18 [13,16]

U1S



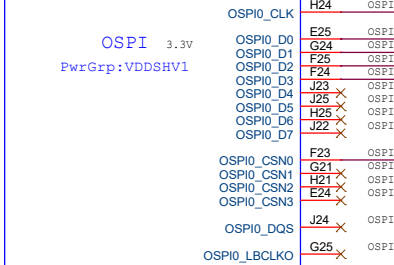
AM6232
BGA425

| | | | |
|------|---|--|--|
| AE23 | RGMII2_RD0/RMII2_RXD0/MCASP2_AXR2/PR0_PRU0_GPO2/PR0_PRU0_GPI2/PR0_UART0_RTSn/GPIO1_3 | | |
| AB20 | RGMII2_RD1/RMII2_RXD1/MCASP2_AFSR/PR0_PRU0_GPO3/PR0_PRU0_GPI3/MCASP2_AXR7/GPIO1_4 | | |
| AC21 | RGMII2_RD2/MCASP2_AXR0/PR0_PRU0_GPO4/PR0_PRU0_GPI4/PR0_UART0_RXD/GPIO1_5/EQEP2_A | | |
| AE22 | RGMII2_RD3/AUDIO_EXT_REFCLK0/PR0_PRU0_GPO16/PR0_PRU0_GPI16/PR0_UART0_TXD/GPIO1_6/EQEP2_B | | |
| AD23 | RGMII2_RXC/RMII2_REF_CLK/MCASP2_AXR1/PR0_PRU0_GPO1/PR0_PRU0_GPI1/PR0_ECAP0_SYNC_IN/GPIO1_2 | | |
| AD22 | RGMII2_RX_CTL/RMII2_RX_ER/MCASP2_AXR3/PR0_PRU0_GPO0/PR0_PRU0_GPI0/GPIO1_1 | | |
| Y18 | RGMII2_TD0/RMII2_TXD0/MCASP2_AXR6/PR0_PRU1_GPO2/PR0_PRU1_GPI2/GPIO0_89 | | |
| AA18 | RGMII2_TD1/RMII2_TXD1/MCASP2_ACLKR/PR0_PRU1_GPO3/PR0_PRU1_GPI3/MCASP2_AXR8/GPIO0_90 | | |
| AD21 | RGMII2_TD2/MCASP2_AFSX/PR0_PRU1_GPO4/PR0_PRU1_GPI4/PR0_ECAP0_IN_APMW_OUT/GPIO0_91/EQEP2_1 | | |
| AC20 | RGMII2_TD3/MCASP2_ACLKX/PR0_PRU1_GPO16/PR0_PRU1_GPI16/PR0_ECAP0_SYNC_OUT/PR0_UART0_CTSn/GPIO1_0/EQEP2_8 | | |
| AE21 | RGMII2_TXC/RMII2_CRS_DV/MCASP2_AXR5/PR0_PRU1_GPO1/PR0_PRU1_GPI1/GPIO0_88 | | |
| AA19 | RGMII2_TX_CTL/RMII2_TX_EN/MCASP2_AXR4/PR0_PRU1_GPO0/PR0_PRU1_GPI0/GPIO0_87 | | |

AE23 [15,16]
AB20 [15,16]
AC21 [15,16]
AE22 [15,16]
AD23 [16]
AD22 [15,16]
Y18 [13,16]
AA18 [13,16]
AD21 [16]
AC20 [16]
AE21 [16]
AA19 [13,15,16]

OSPI

U1J



AM6232
BGA425

| | | | |
|-----|--|--|--|
| H24 | OSPI0_CLK/GPIO0_0 | | |
| E25 | OSPI0_D0/GPIO0_3 | | |
| G24 | OSPI0_D1/GPIO0_4 | | |
| F25 | OSPI0_D2/GPIO0_5 | | |
| F24 | OSPI0_D3/GPIO0_6 | | |
| J23 | OSPI0_D4/SP11_CSN0/MCASP1_AXR1/UART6_RXD/GPIO0_7 | | |
| J25 | OSPI0_D5/SP11_CLK/MCASP1_AXR0/UART6_TXD/GPIO0_8 | | |
| H25 | OSPI0_D6/SP11_D0/MCASP1_ACLKX/UART6_RTSn/GPIO0_9 | | |
| J22 | OSPI0_D7/SP11_D1/MCASP1_AFSX/UART6_CTSn/GPIO0_10 | | |
| F23 | OSPI0_CSN0/GPIO0_11 | | |
| G21 | OSPI0_CSN1/GPIO0_12 | | |
| H21 | OSPI0_Csn2/SP11_CSN1/OSPI0_RESET_OUT1/MCASP1_AFSR/MCASP1_AXR2/UART5_RXD/GPIO0_13 | | |
| E24 | OSPI0_Csn3/OSPI0_RESET_OUT0/OSPI0_ECC_FAIL/MCASP1_ACLKR/MCASP1_AXR3/UART5_TXD/GPIO0_14 | | |
| J24 | OSPI0_DQS/UART5_CTSn/GPIO0_2 | | |
| G25 | OSPI0_LBCLKO/UART5_RTSn/GPIO0_1 | | |

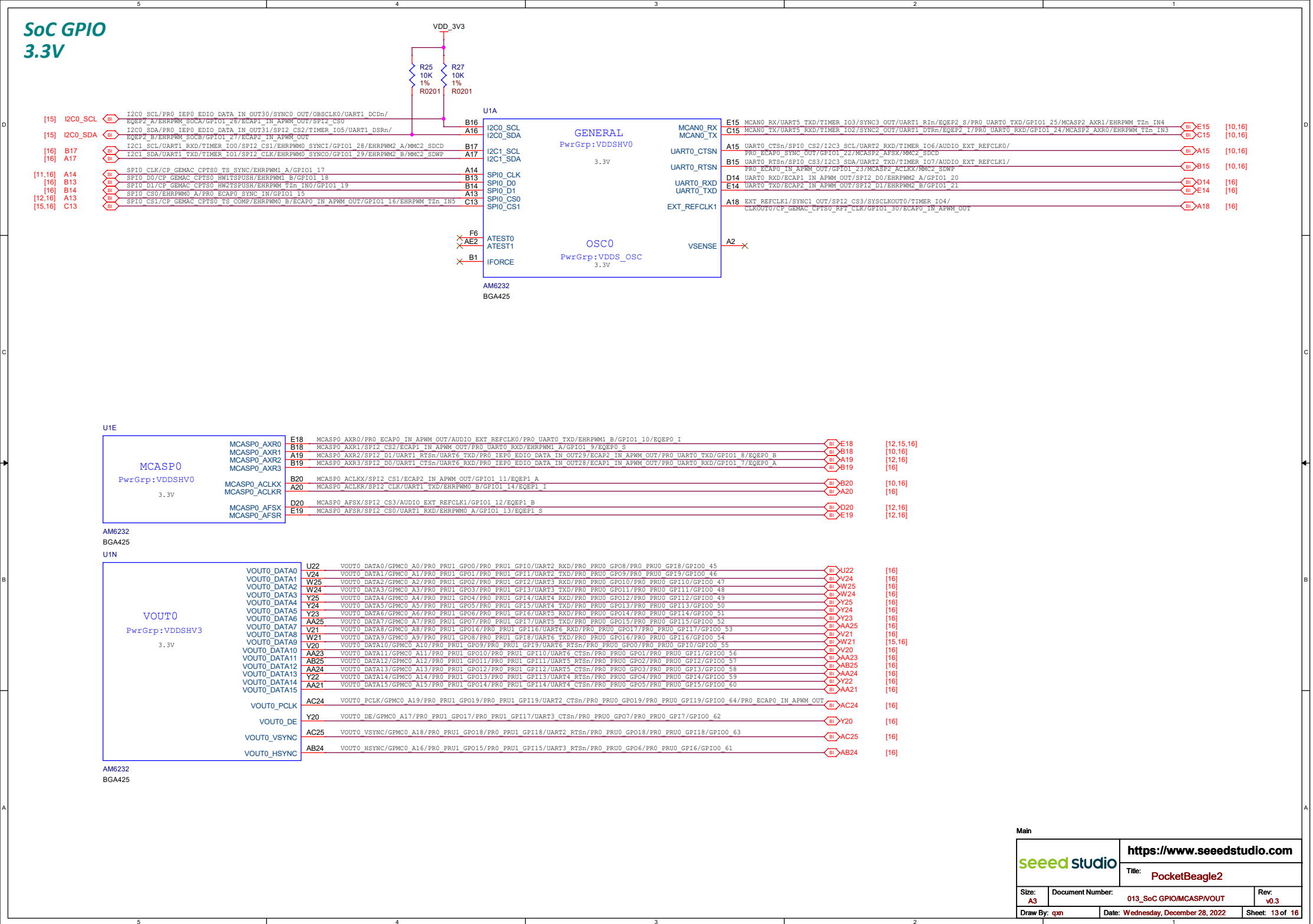
SD_PWR_EN [9]
GPIO0_3 [15]
GPIO0_4 [15]
GPIO0_5 [15]
GPIO0_6 [15]


EMMC_RSTn [9]

Main

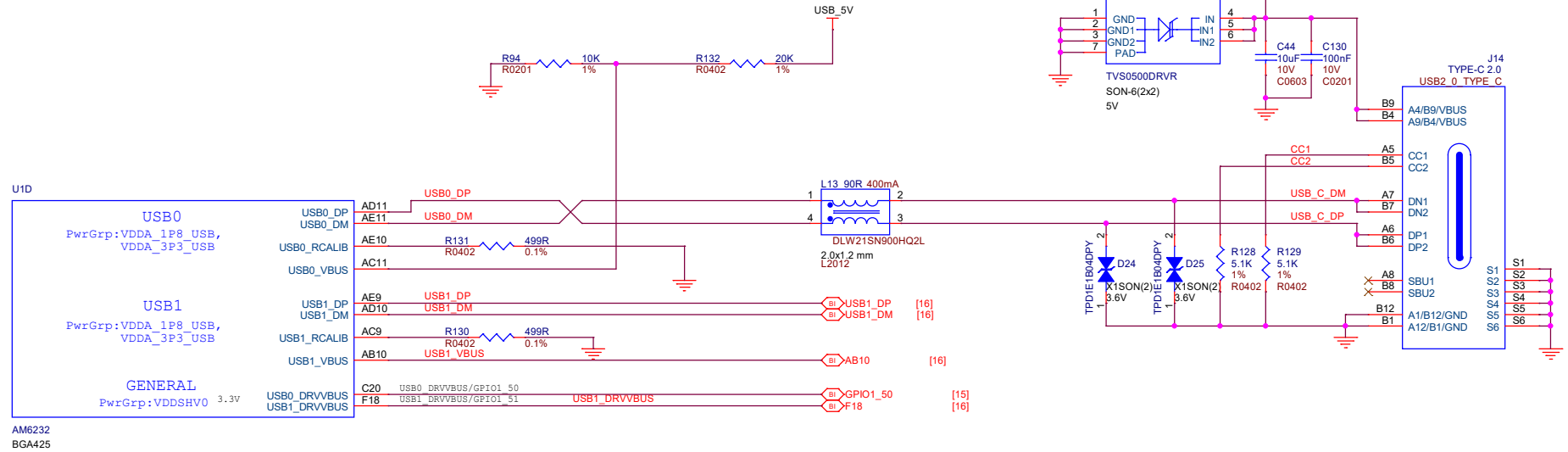
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| seeed studio | | https://www.seeedstudio.com | |
| | | Title: PocketBeagle2 | |
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| Draw By: qm | Date: Wednesday, December 28, 2022 | Sheet: 12 of 16 | |

Main

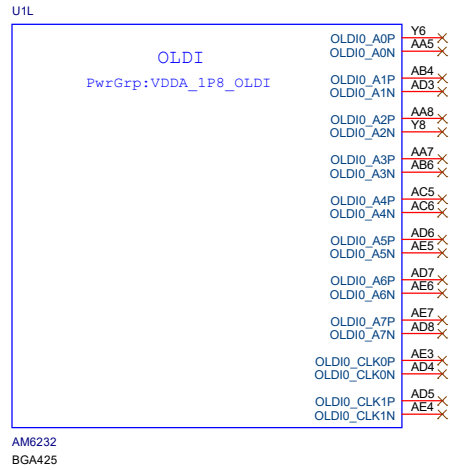


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|  | | https://www.seeedstudio.com | |
| | | Title: PocketBeagle2 | |
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| Draw By: qxn | Date: Wednesday, December 28, 2022 | Sheet: 13 of 16 | |

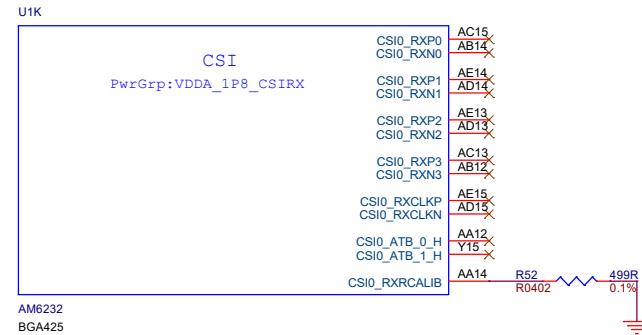
USB_A & USB_C



OLDI



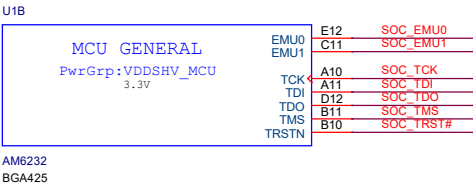
CSI



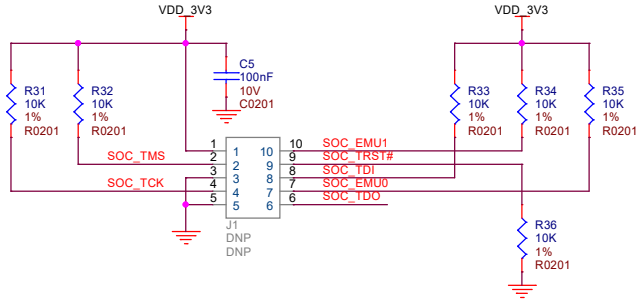
Main

| | | | |
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| seeed studio | | https://www.seeedstudio.com | |
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| Draw By: qm | Date: Wednesday, December 28, 2022 | Sheet: 14 of 16 | |

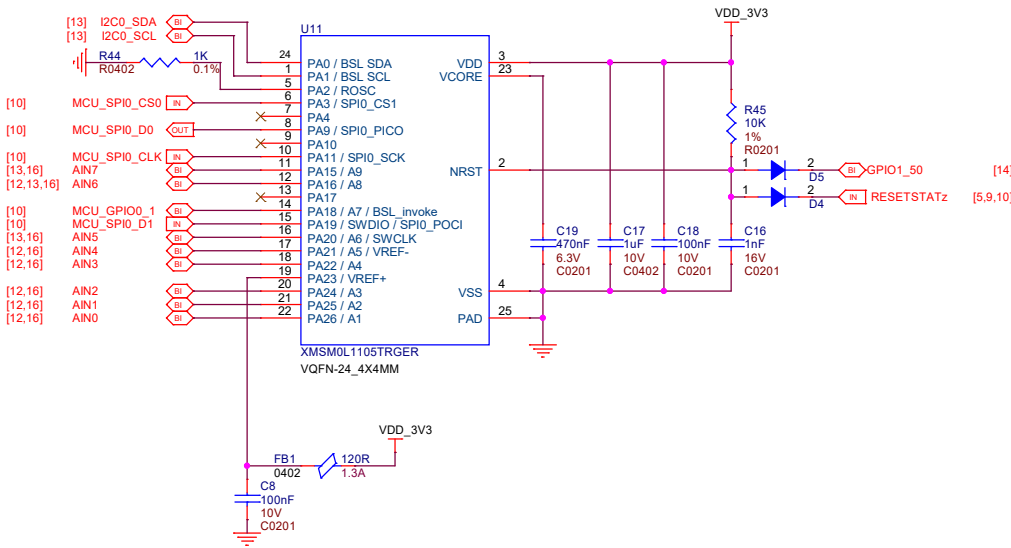
JTAG



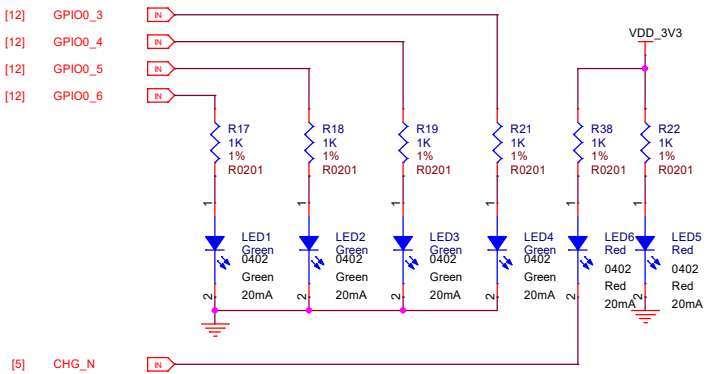
Tag-Connect



MCU



LEDs



Power Button

