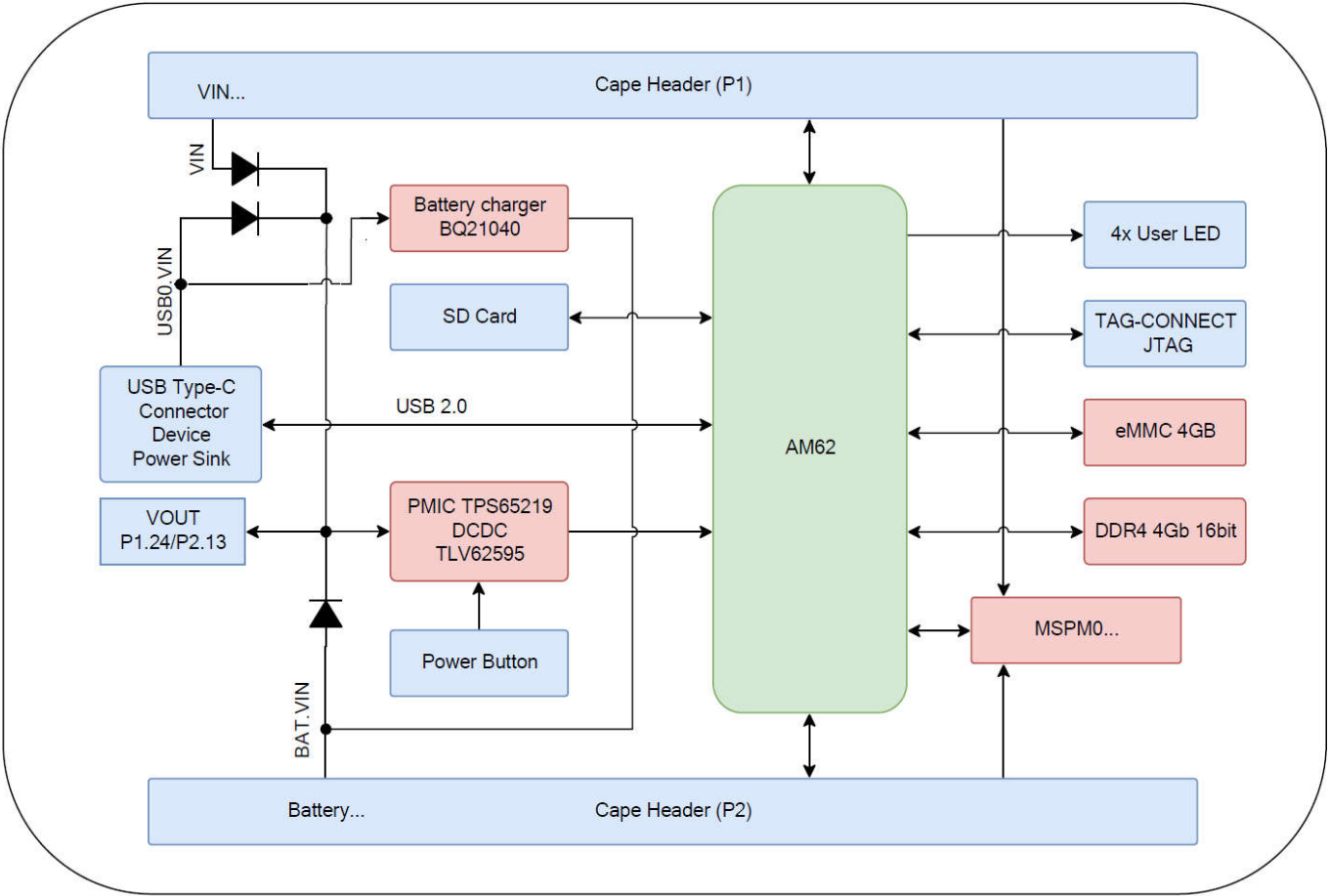


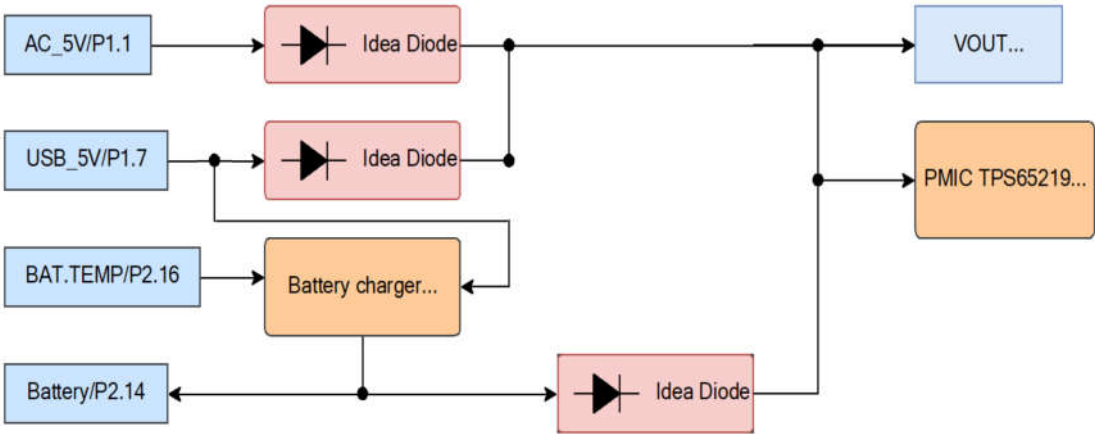
PAGE LIST	
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004	004_I2C Usage Diagram
005	005_PMIC & Charger
006	006_SoC Power
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009	009_SoC MMC & eMMC & SD
010	010_SoC WKUP/MCU/System
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012	012_SoC 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
0.6	09 Oct.2023	1. Add a buffer on reset 2. Correct typo - WKUP_I2C0_SDL 3. Add decoupling capacitors for LM73100 4. Change R44 to 100k 0.1% 5. Add pulldown resistors on RESETSTATz and PORZ_OUT 6. Correct the ideal diode control logic 7. Change C17 to 10uF 8. Change the SD card holder to lower profile with insertion detection 9. Move C11 to be in parallel with R260 10. Add pullup resistors to WKUP_I2C0 11. Add voltage divider on USB1_VBUS	qxn
0.7	05 Mar.2024	1. Add 3-pin JST connector for UART debug 2. Add buffer to debug UART	qxn
0.8	21 Nov.2024	1. Fix typo of 'debug' in schematic 2. Correct ideal diode control logic.	qxn
0.9	3 Dec.2024	1. Modify the boot order of non-emmc version, add a pull-down resistor on non-emmc version to force SD boot as primary boot	qxn
1.0	4 Dec.2024	Change USB_5V to charger input to prevent battery voltage flowing back to the charger input through the ideal diode, causing charger indicator light problems	qxn

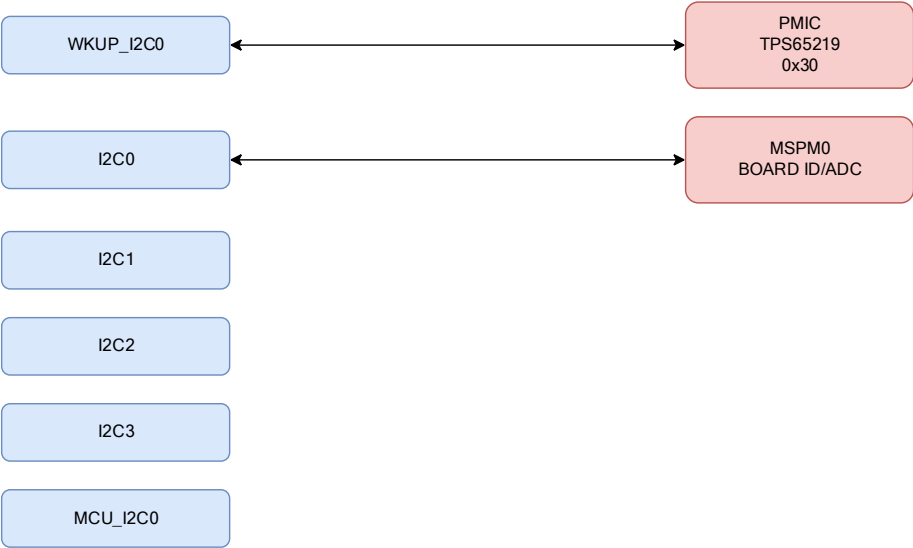
Block Diagram



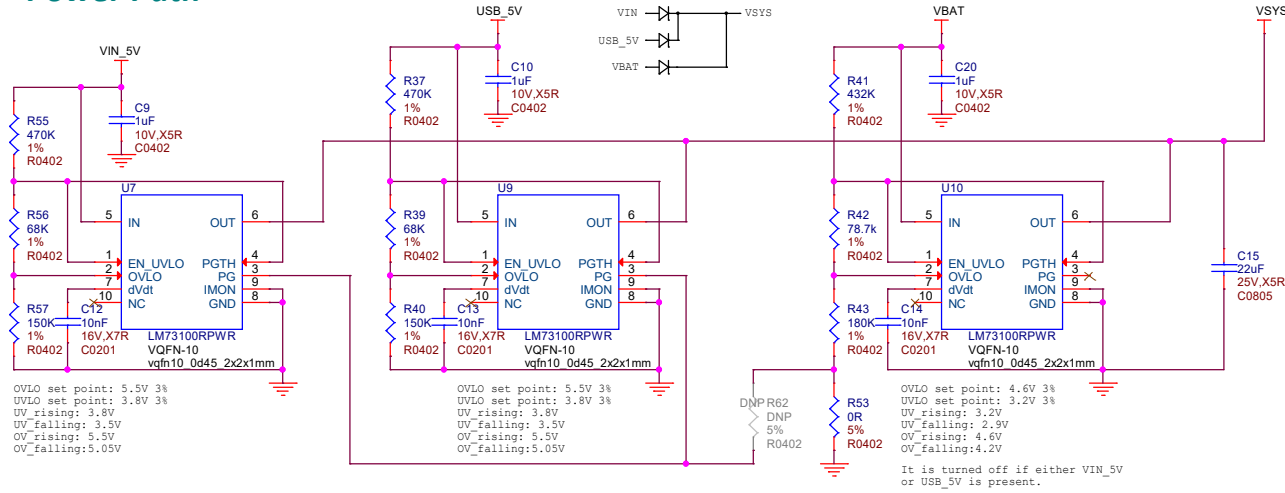
Power tree



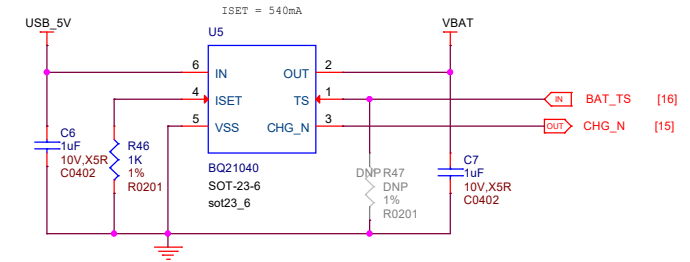
I2C Usage Diagram



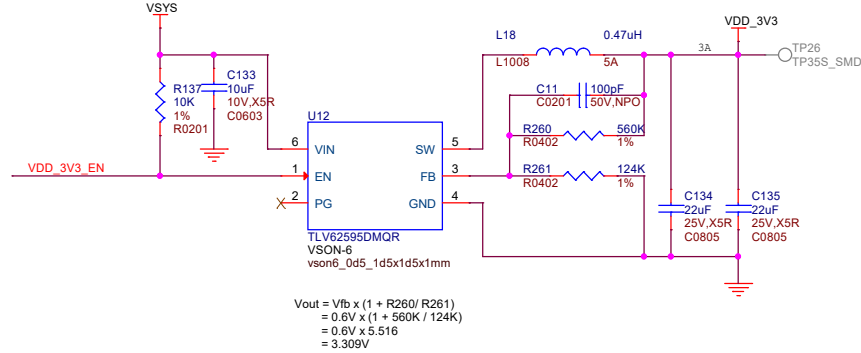
Power Path



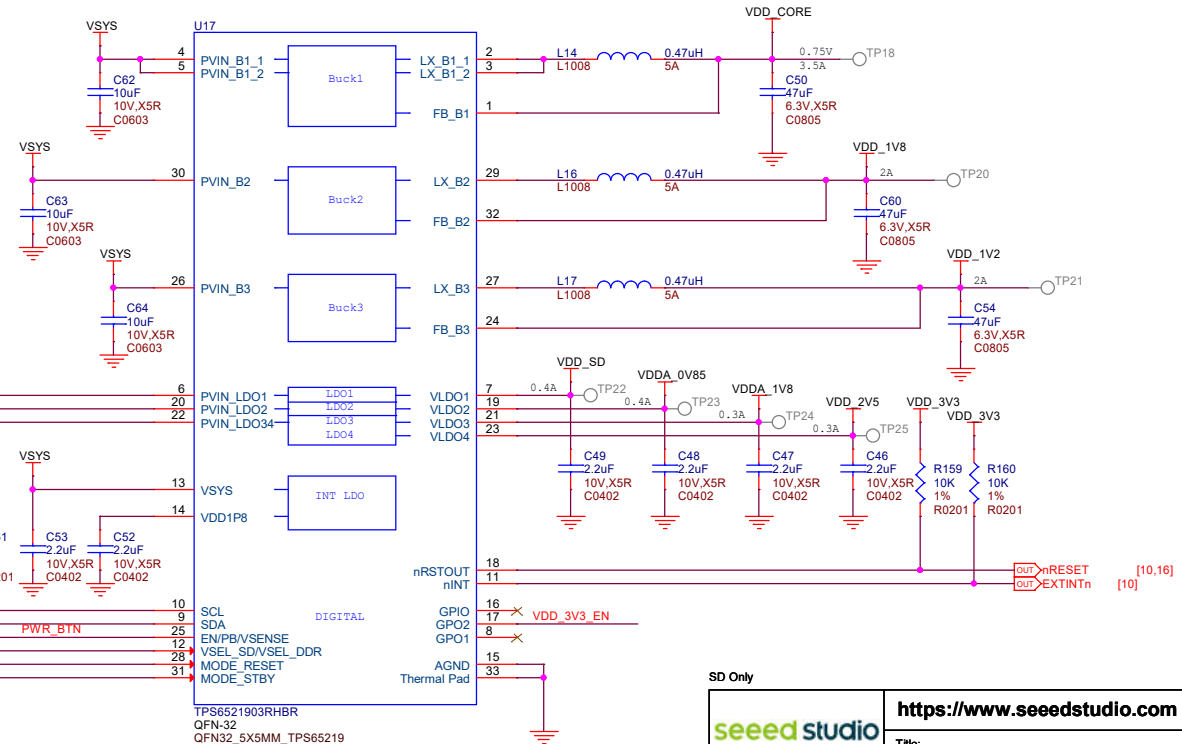
Battery Charger



DCDC 3V3



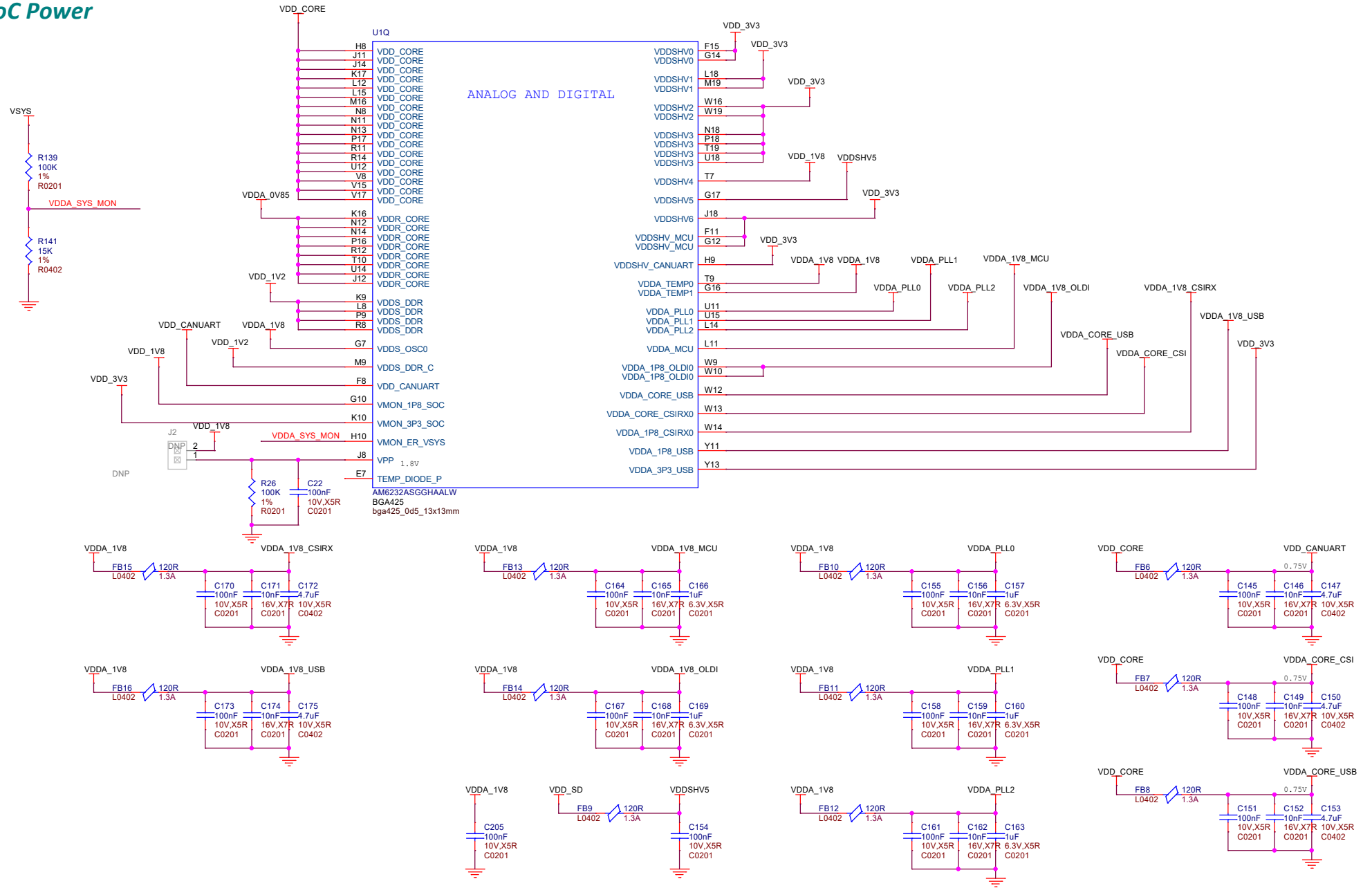
PMIC



SD Only

https://www.seeedstudio.com		Rev: v1.0	
Size: A3	Document Number: 005_PMIC & Charger	Rev: v1.0	
Draw By: qxn	Date: Thursday, December 05, 2024	Sheet: 5 of 16	

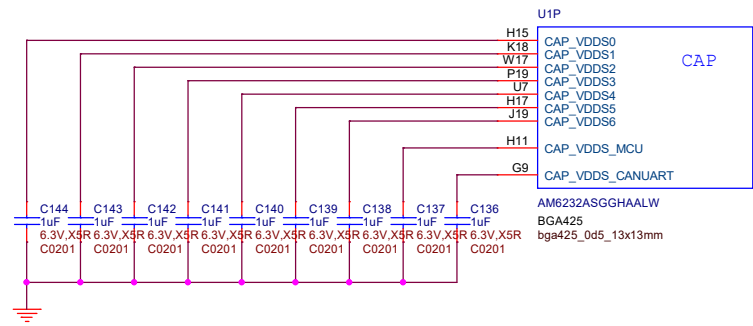
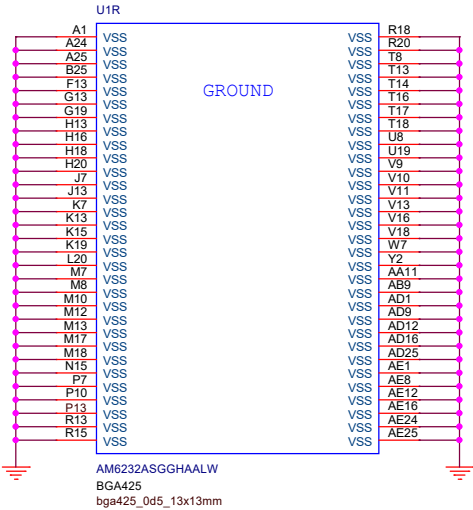
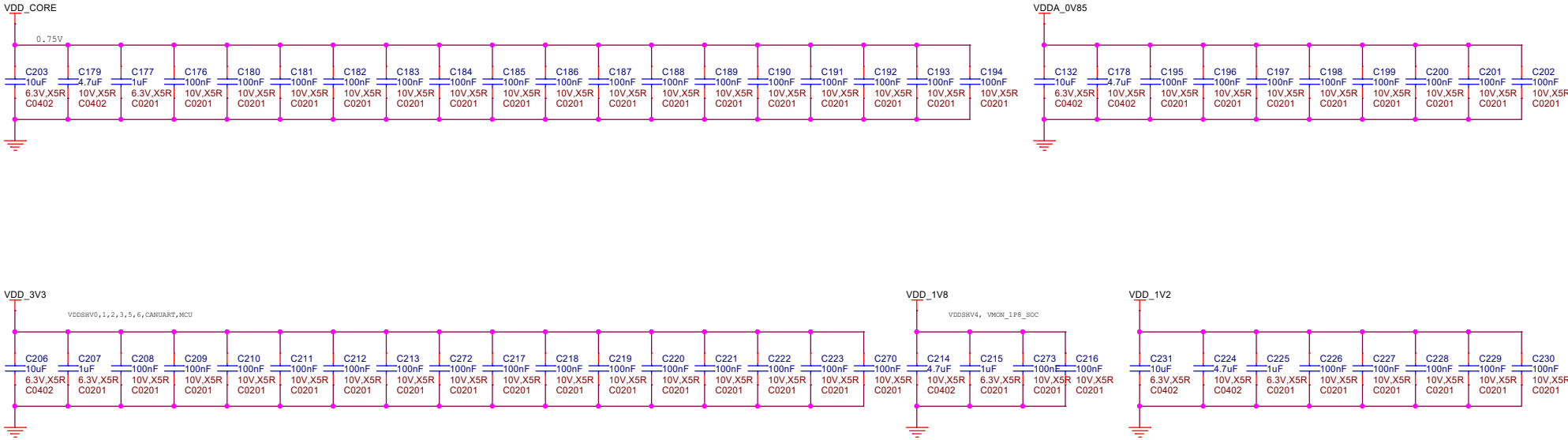
SoC Power



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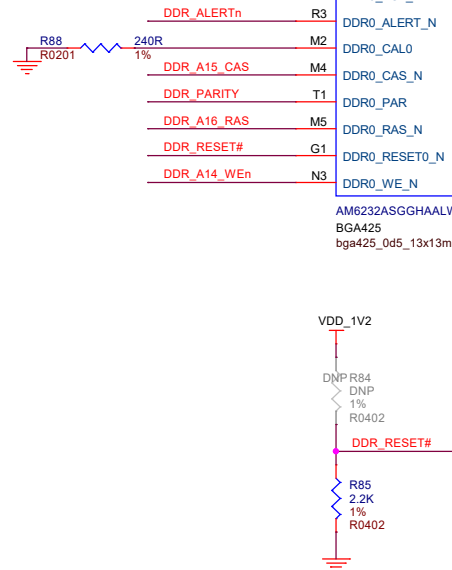
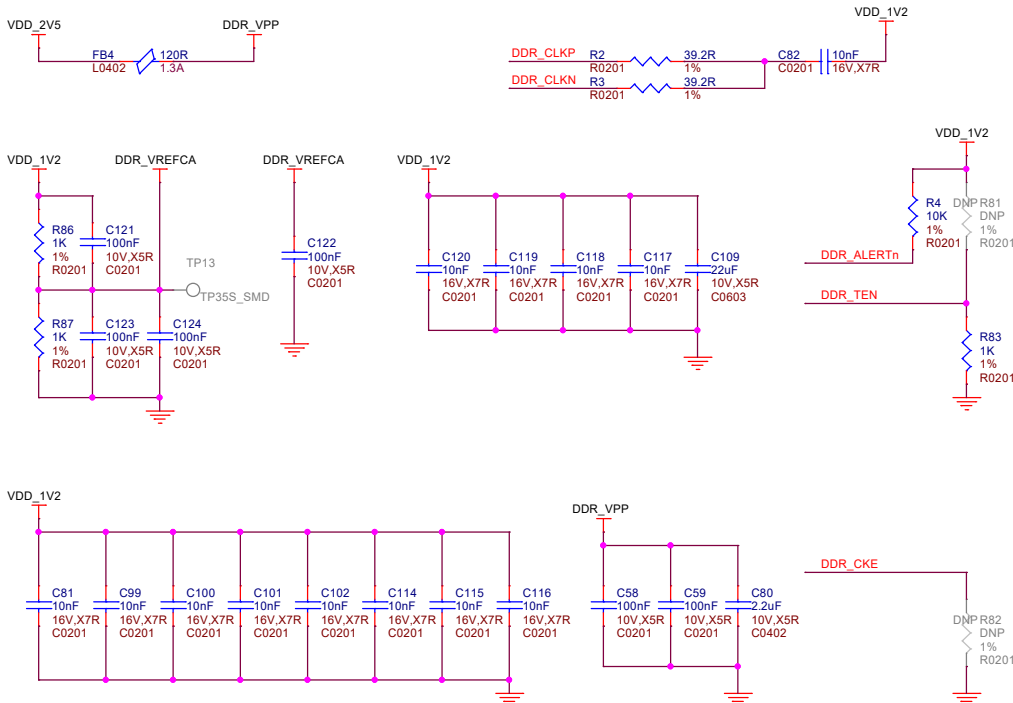
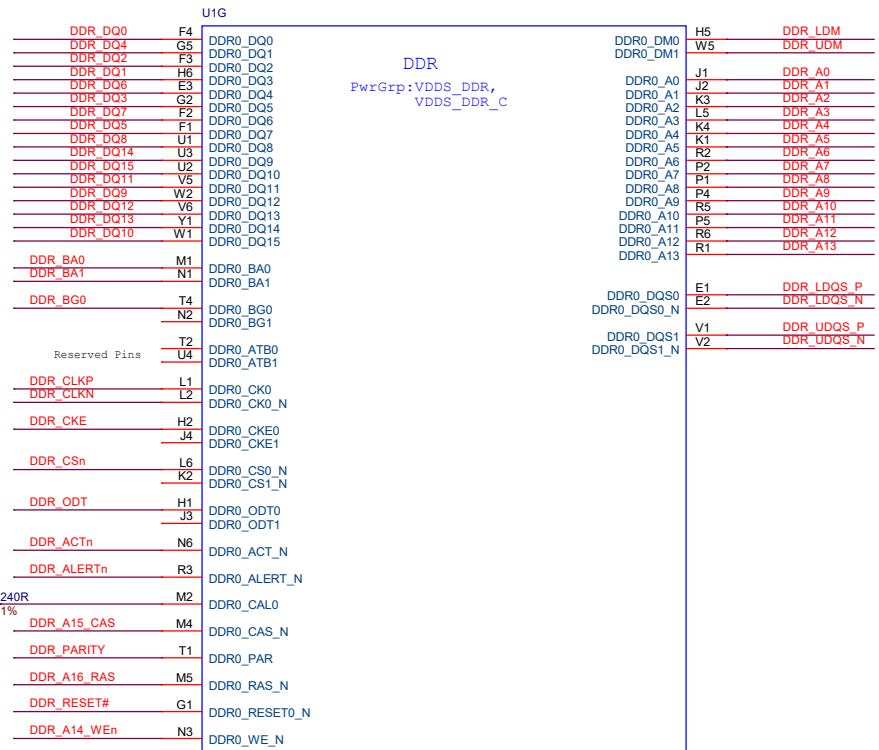
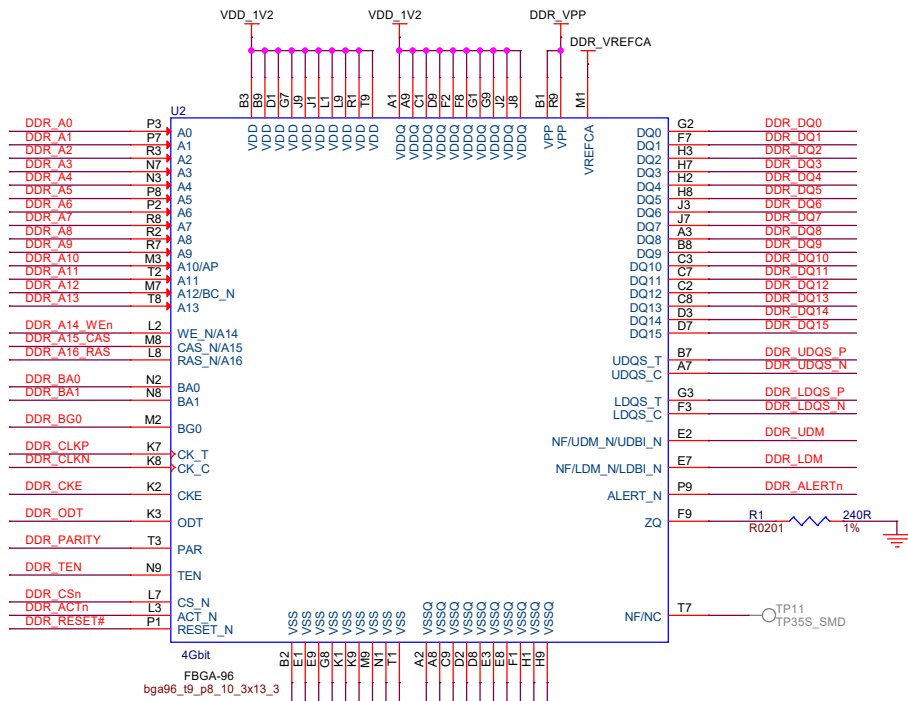
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Size: A3	Document Number:	006_SoC Power	Rev: v1.0
Draw By: qxm	Date: Wednesday, December 04, 2024	Sheet: 6 of 16	

SoC DCAPs



DDR4

SoC DDR controller

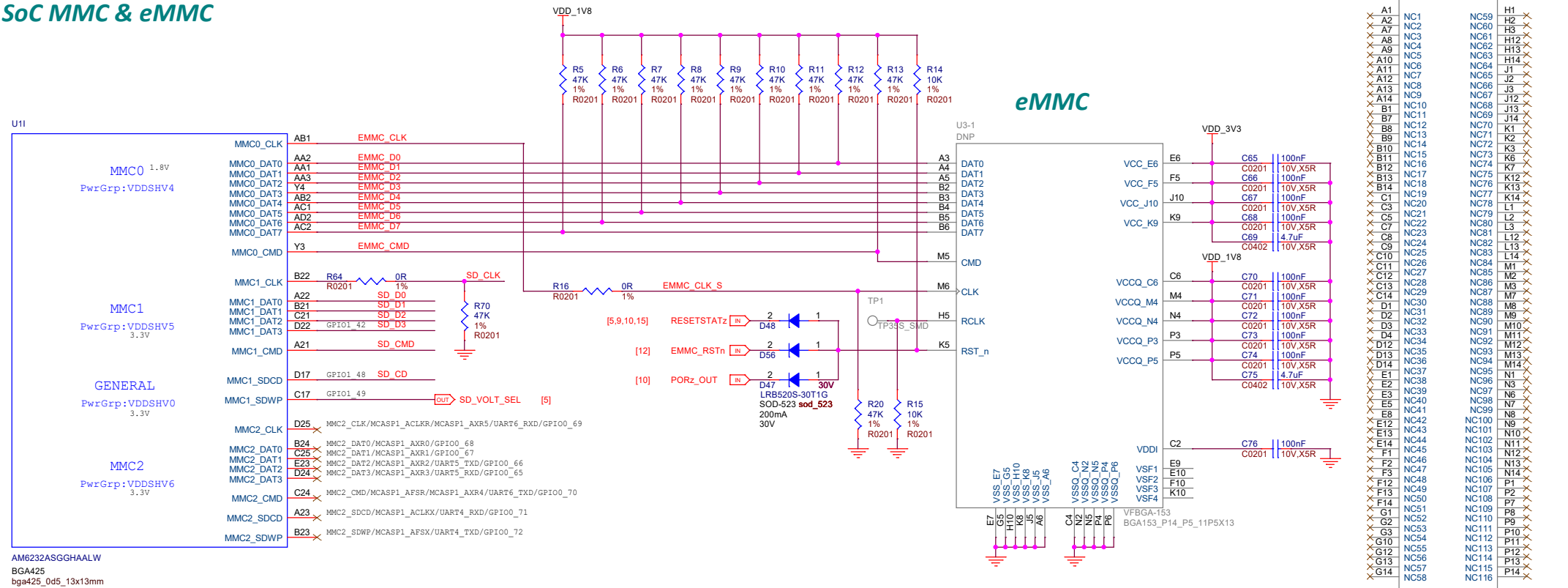


NOTE: DDR DQ Lines Swapped Within Data Byte

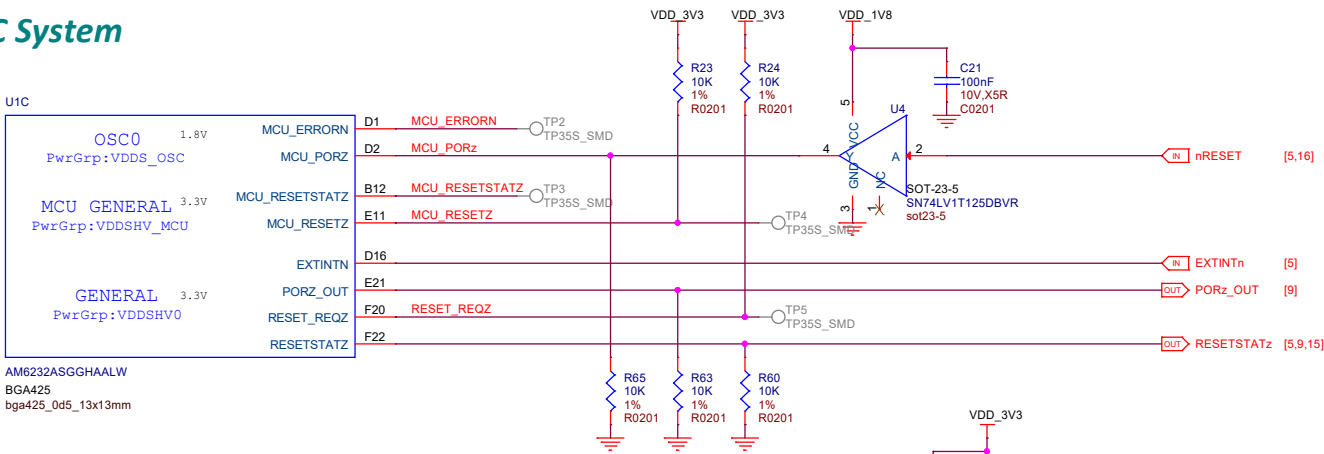
SD Only

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Document Number: 008_SoC DDR & DDR4		Rev: v1.0	
Draw By: qm		Date: Wednesday, December 04, 2024	
		Sheet: 8 of 16	

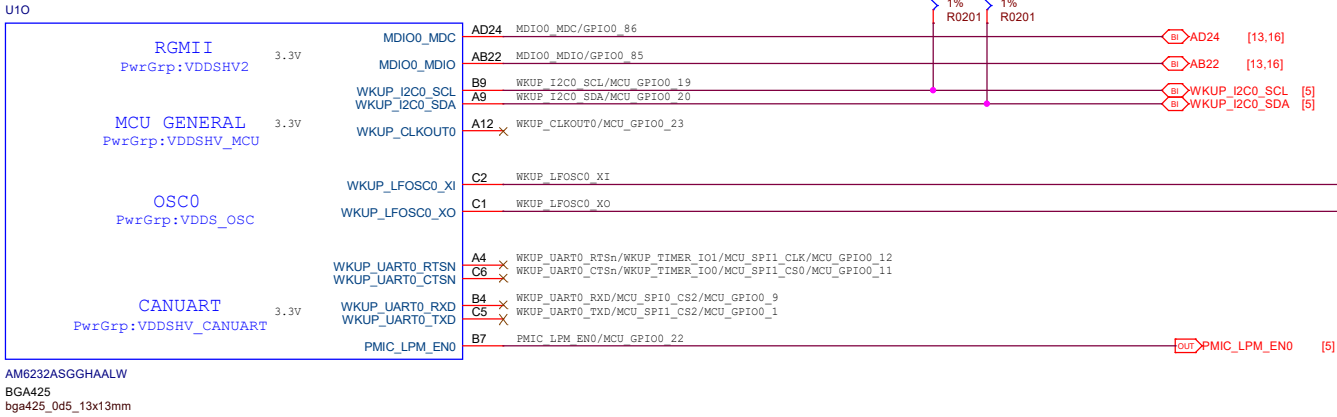
SoC MMC & eMMC



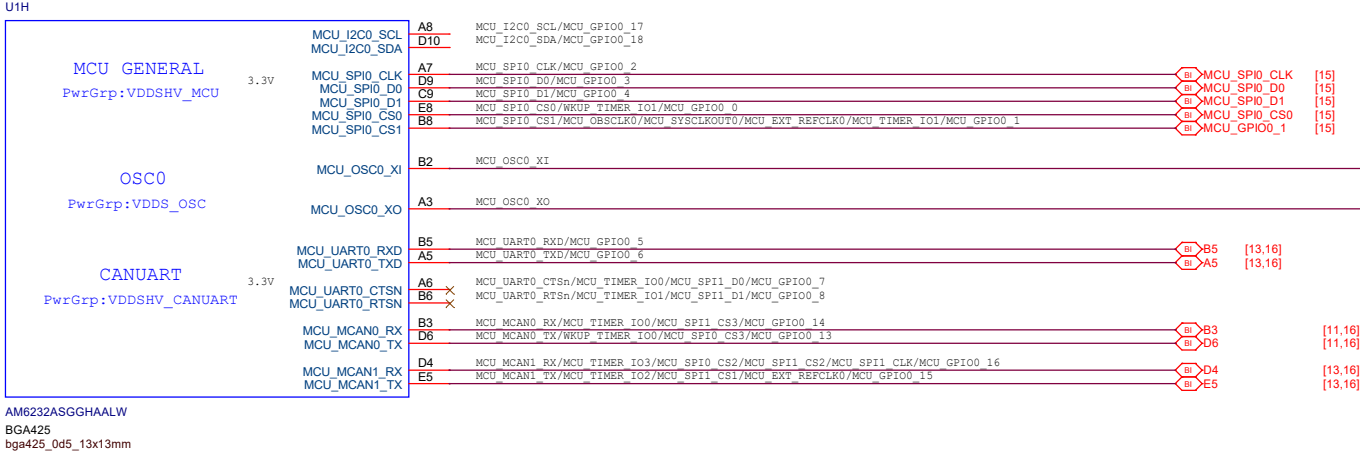
SoC System



WKUP Domain

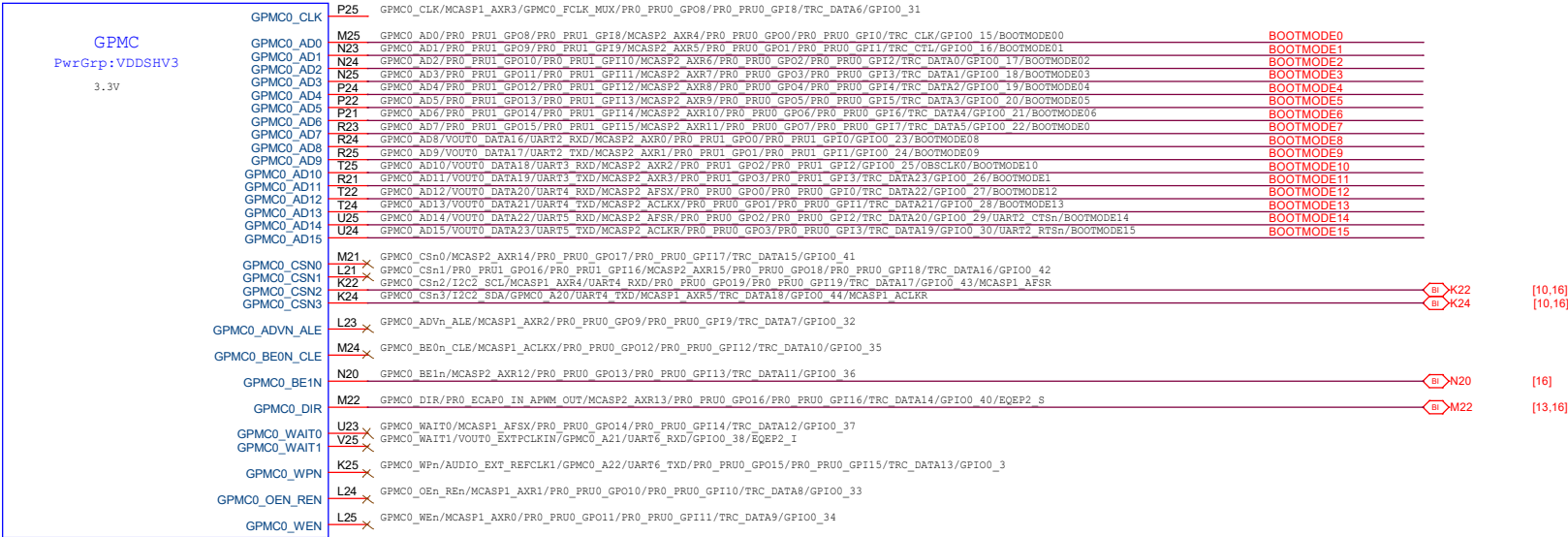


MCU Domain



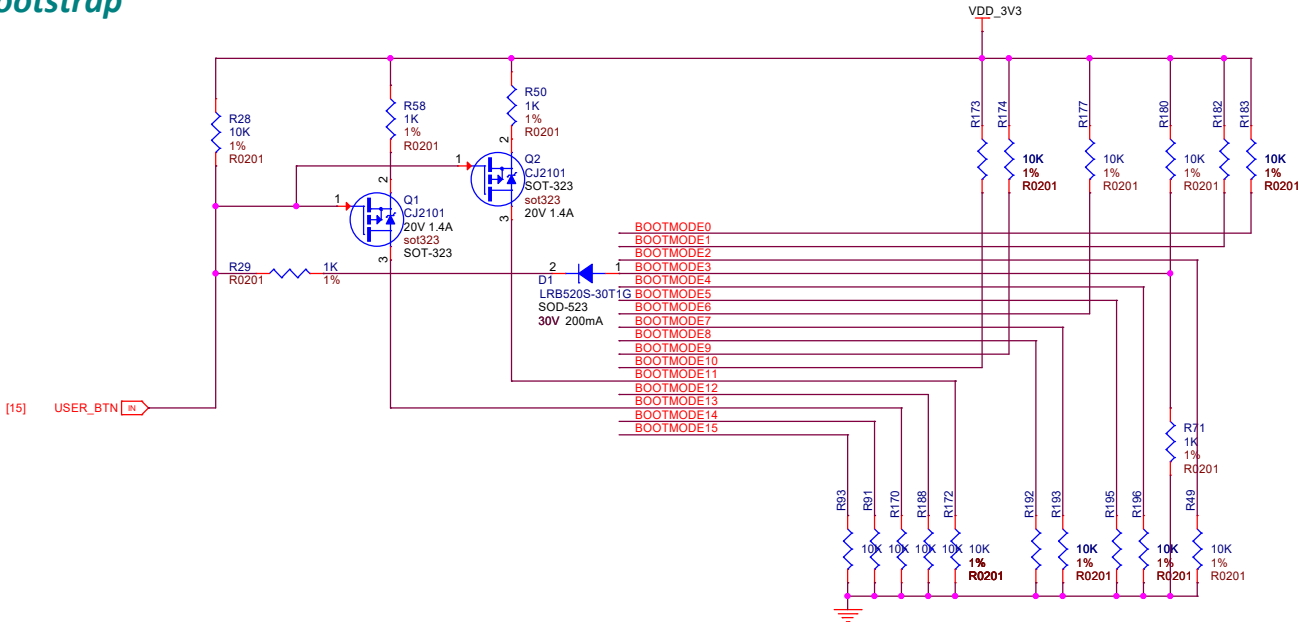
SoC GPIO

U1F



AM6232ASGGHAALW
BGA425
bga425_0d5_13x13mm

Bootstrap

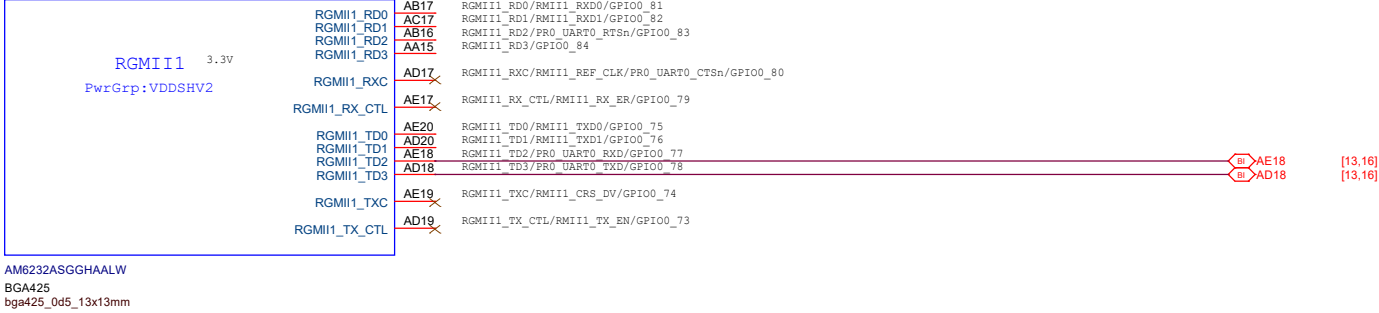


EMMC Version
Button Not-pressed:
1, PLL Config B[2:0] = 0b011 : Ref Colck -> 25MHz
2, Primary Boot B[9:3] = 0b1001001 : eMMC Boot
3, Backup Boot B[13:10] = 0b0001 : USB DPU Boot
Button Pressed:
1, PLL Config B[2:0] = 0b011 : Ref Colck -> 25MHz
2, Primary Boot B[9:3] = 0b1001000 : SDCard FS Boot
3, Backup Boot B[13:10] = 0b1011 : UART Boot

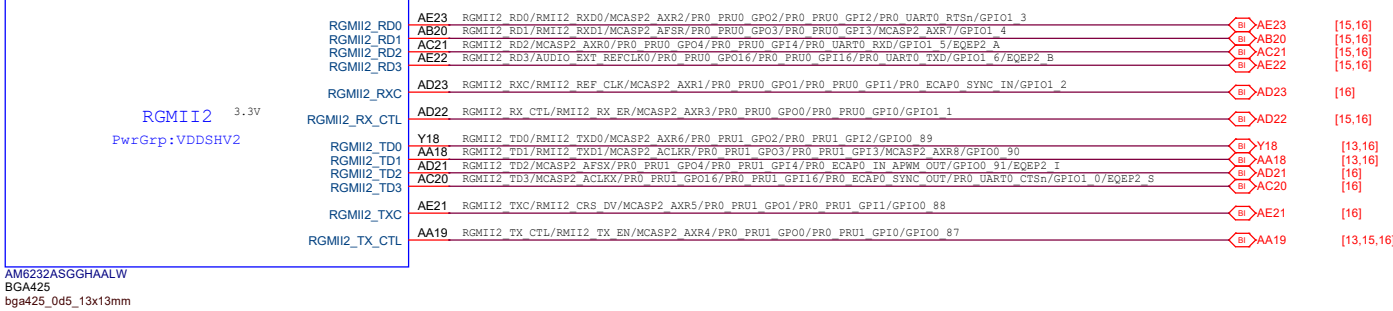
SD Version
Button Not-pressed:
1, PLL Config B[2:0] = 0b011 : Ref Colck -> 25MHz
2, Primary Boot B[9:3] = 0b1001000 : SDCard FS Boot
3, Backup Boot B[13:10] = 0b0001 : USB DPU Boot
Button Pressed:
1, PLL Config B[2:0] = 0b011 : Ref Colck -> 25MHz
2, Primary Boot B[9:3] = 0b1001000 : SDCard FS Boot
3, Backup Boot B[13:10] = 0b1011 : UART Boot

RGMII

U1M

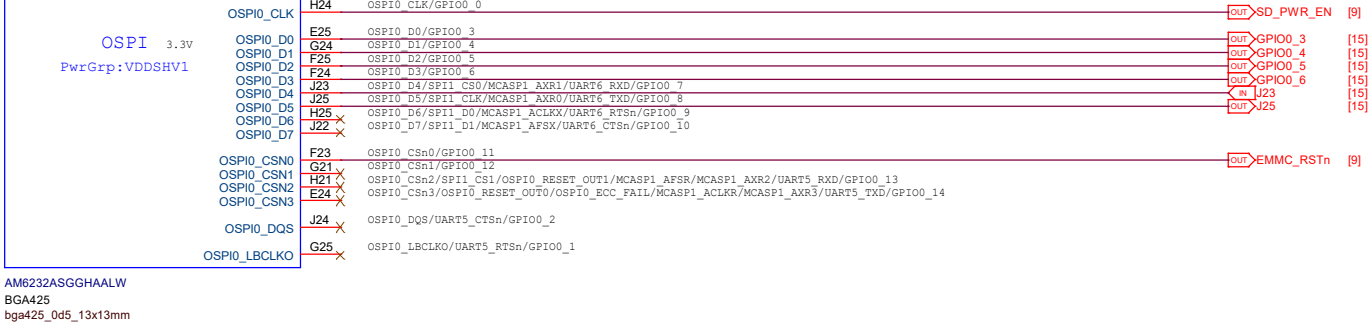


U1S



OSPI

U1J



SD Only

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Document Number: 012_SoC RGMII/OSPI	Rev: v1.0		
Draw By: qxn	Date: Wednesday, December 04, 2024	Sheet: 12 of 16	

SoC GPIO 3.3V

Diagram showing the connection of the SoC GPIO 3.3V to the BGA425 package. The diagram includes the SoC pinout, the BGA425 package pinout, and the connection points for the 3.3V supply.

SoC Pinout:

- [15] I2C0_SCL
- [15] I2C0_SDA
- [16] B17
- [16] A17
- [11,16] A14
- [16] B13
- [16] B14
- [12,16] A13
- [15,16] C13

BGA425 Pinout:

- E15
- C15
- A15
- B15
- D14
- E14
- A18
- E18
- B18
- A19
- B19
- B20
- A20
- D20
- E19
- U22
- V24
- W25
- W24
- Y25
- Y24
- Y23
- AA25
- V21
- W21
- V20
- AA23
- AB25
- AA24
- Y22
- AA21
- AC24
- Y20
- AC25
- AB24

Connections:

- I2C0_SCL to E15
- I2C0_SDA to C15
- B17 to A15
- A17 to B15
- A14 to D14
- B13 to E14
- B14 to A18
- A13 to E18
- C13 to B18
- A19 to A19
- B19 to B19
- B20 to B20
- A20 to A20
- D20 to D20
- E19 to E19
- U22 to U22
- V24 to V24
- W25 to W25
- W24 to W24
- Y25 to Y25
- Y24 to Y24
- Y23 to Y23
- AA25 to AA25
- V21 to V21
- W21 to W21
- V20 to V20
- AA23 to AA23
- AB25 to AB25
- AA24 to AA24
- Y22 to Y22
- AA21 to AA21
- AC24 to AC24
- Y20 to Y20
- AC25 to AC25
- AB24 to AB24

3.3V Supply:

- VDD_3V3
- R25 (10K)
- R27 (10K)
- R0201
- R0201

SoC Internal Blocks:

- GENERAL (PwrGrp:VDDSHV0)
- OSC0 (PwrGrp:VDDSHV0)
- MCASP0 (PwrGrp:VDDSHV0)
- VOUT0 (PwrGrp:VDDSHV3)

SoC Internal Signals:

- I2C0_SCL
- I2C0_SDA
- I2C1_SCL
- I2C1_SDA
- SPI0_CLK
- SPI0_D0
- SPI0_D1
- SPI0_CS0
- SPI0_CS1
- MCAN0_RX
- MCAN0_TX
- UART0_CTSn
- UART0_RTSn
- UART0_RXD
- UART0_TXD
- EXT_REFCLK1
- ATEST0
- ATEST1
- IFORCE
- MCASP0_AXR0
- MCASP0_AXR1
- MCASP0_AXR2
- MCASP0_AXR3
- MCASP0_ACLKX
- MCASP0_ACLKR
- MCASP0_AFSX
- MCASP0_AFSR
- VOUT0_DATA0
- VOUT0_DATA1
- VOUT0_DATA2
- VOUT0_DATA3
- VOUT0_DATA4
- VOUT0_DATA5
- VOUT0_DATA6
- VOUT0_DATA7
- VOUT0_DATA8
- VOUT0_DATA9
- VOUT0_DATA10
- VOUT0_DATA11
- VOUT0_DATA12
- VOUT0_DATA13
- VOUT0_DATA14
- VOUT0_DATA15
- VOUT0_PCLK
- VOUT0_DE
- VOUT0_VSYNC
- VOUT0_HSYNC

SD Only

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Title: PocketBeagle2

Size: A3

Document Number: 013_SoC_GPIO/MCASP/VOUT

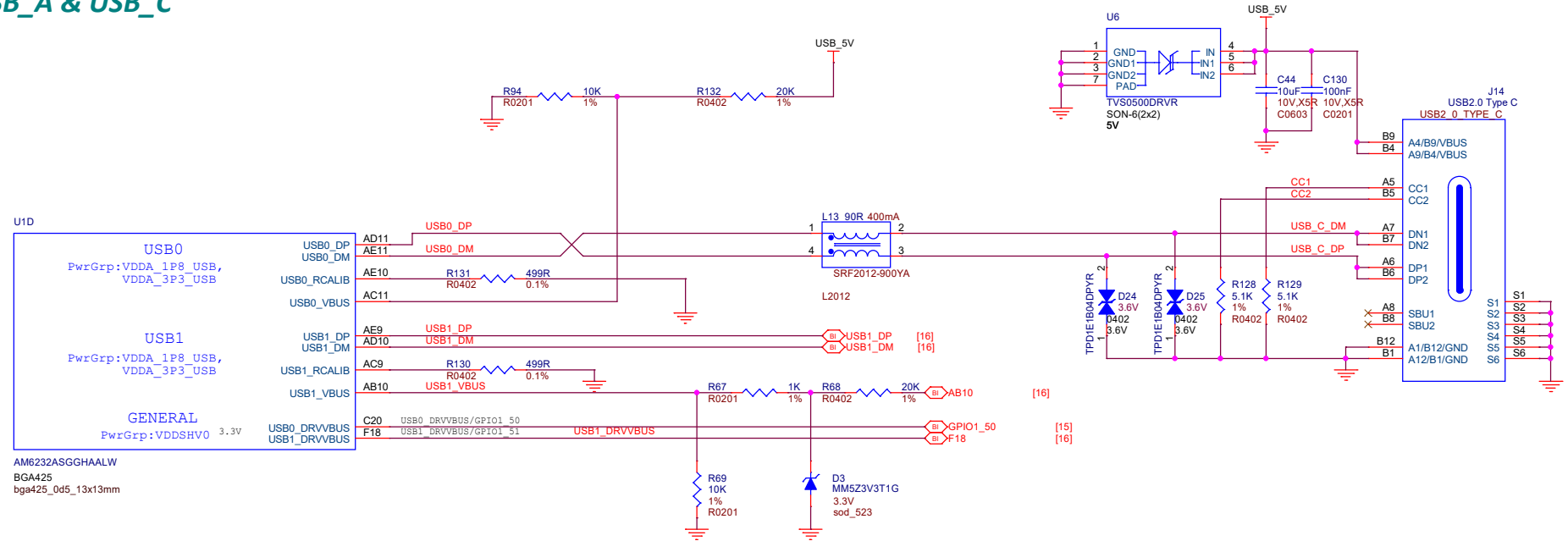
Rev: v1.0

Draw By: qxn

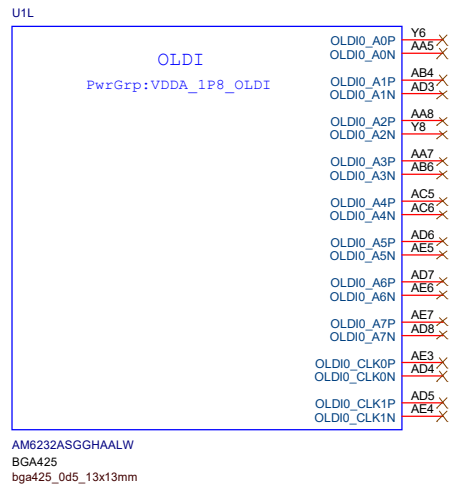
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Sheet: 13 of 16

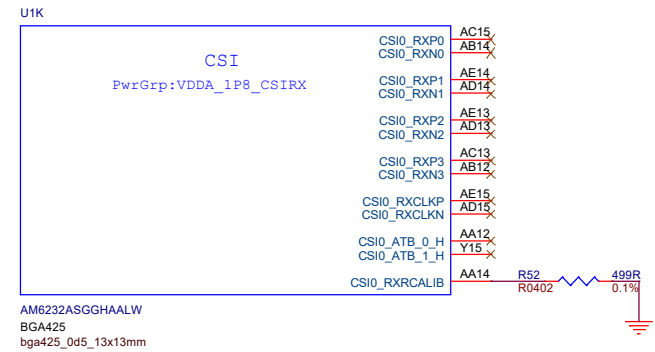
USB_A & USB_C



OLDI



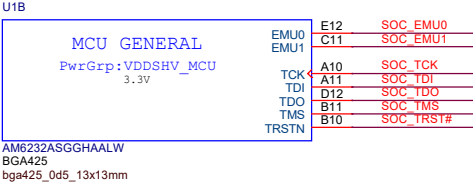
CSI



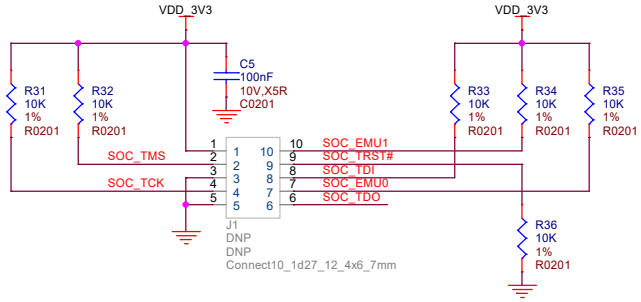
SD Only

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Draw By: qm	Date: Wednesday, December 04, 2024	Sheet: 14 of 16	

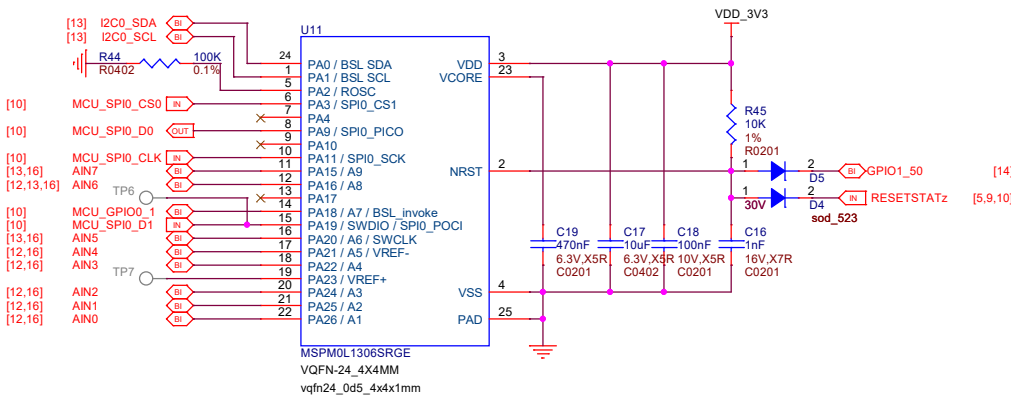
JTAG



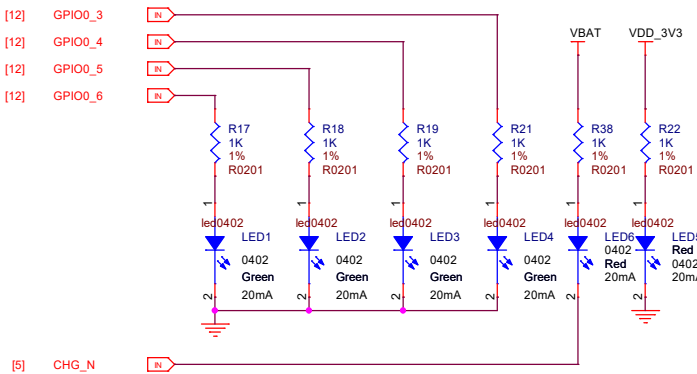
Tag-Connect



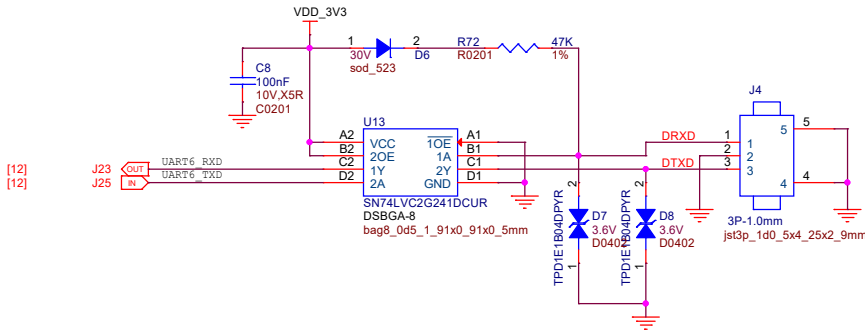
MCU



LEDs



Debug



Power Button

