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X-MR-NAVQ95-V2

NOTES:

1. Interrupted lines coded with the same letter or letter combinations are electrically connected.
2. Device type number is for reference only. The number varies with the manufacturer.
3. Greyed out components indicate Do Not Populate (DNP) during assembly.
4. Special signal usage:
 -B denotes an active-low signal.
 -P and -N denote a differential signal.
5. Interpret diagram in accordance with American National Standards Institute specifications, current revision, with the exception of logic block symbology.
6. All SILK display properties will be in this color
7. All schematic annotations will be in this color

 System Innovation High Tech Campus 60 5656 AE Eindhoven, The Netherlands	Classification: Company Internal/Proprietary		
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© NXP SEMICONDUCTORS	Drawing Title:	X-MR-NAVQ95-V2	
Designer: Jari van Ewijk	Drawn by: Jari van Ewijk	Page Title: Cover	
Approved: Costin Onofrei	Size C	Document Number: SCH-95869 PDF: SPF-95869	Rev A
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1 Sheet 1 of 26			

DNP Components

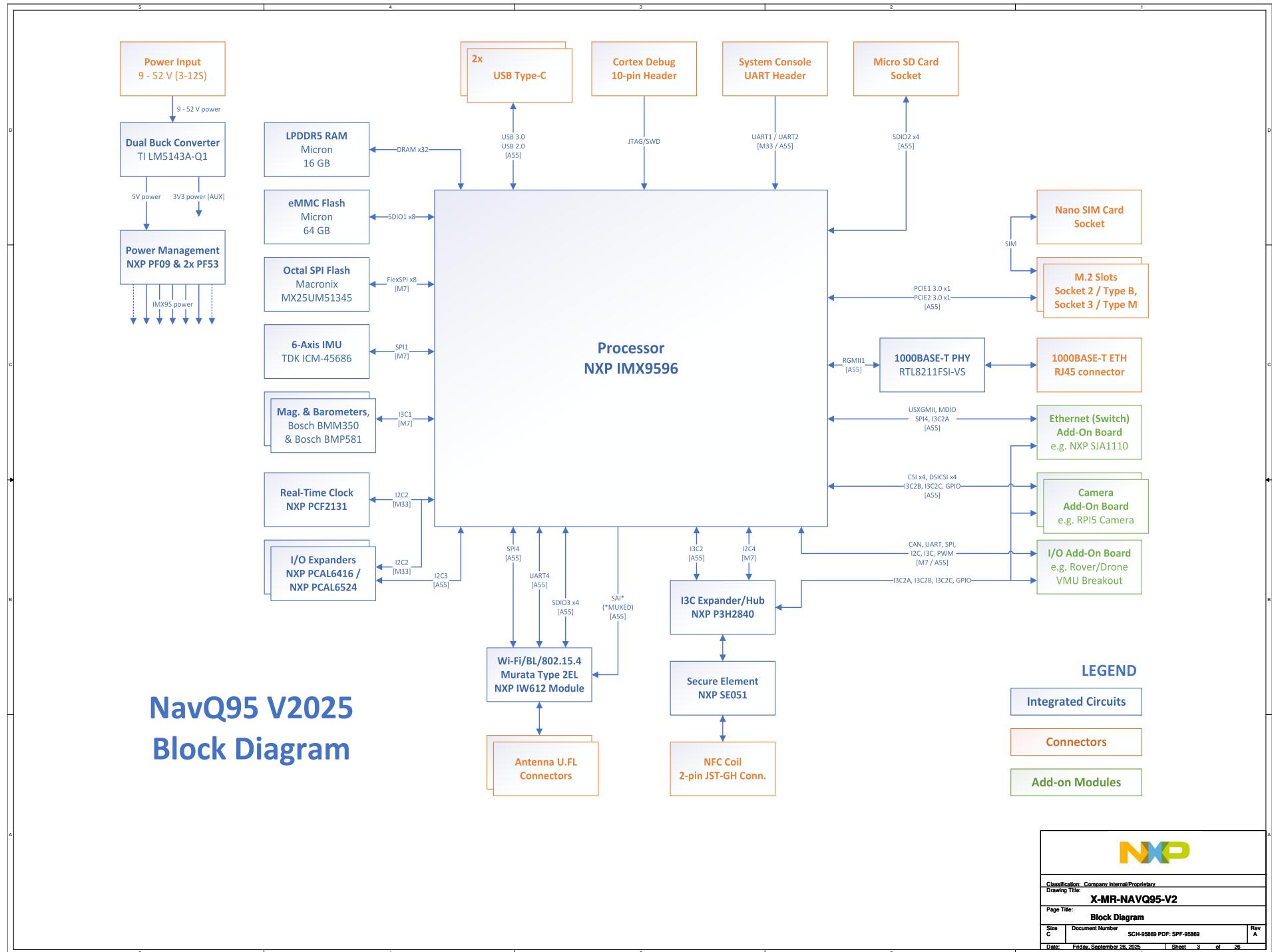
REF DES	ASSY / OPT	PAGE NAME
R124, R126, R269	DNP	05 - HV Buck Converter
C23, C29, C92, R65, P68, R73, R74, R145, R152, R156, R229, R230, R257	DNP	06 - LV PMICs
R112, R123, R137, R138, R139, R254	DNP	09 - MPU I/O
C181, D14, R250	DNP	10 - MPU Misc.
R292, R295, R296, R297, R298	DNP	11 - eMMC Flash
R141	DNP	12 - Octal SPI Flash
C81, R288, R290	DNP	13 - MicroSD Card
R52, R56, R60, R75, R78	DNP	17 - RTC & Clock Buffer
R378, R379	DNP	18 - Sensors
C427, R158, R159, R162, R164, R165, R166, R169, R361, R362, R364, R365	DNP	19 - Tri-Radio
R315, R317	DNP	20 - Gigabit Ethernet
R212	DNP	21 - M.2 Key M
R113, R114, R115, R266, R267, R268, R289	DNP	22 - M.2 Key B
R176, R177, R178, R179, R180, R181	DNP	23 - I/O Expanders
R185	DNP	24 - Secure Element

Switch Default Positions

REF DES	SWITCH	PAGE NAME
SW2	2-4-5-7	14 - Buttons & Boot Mode



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Tables		
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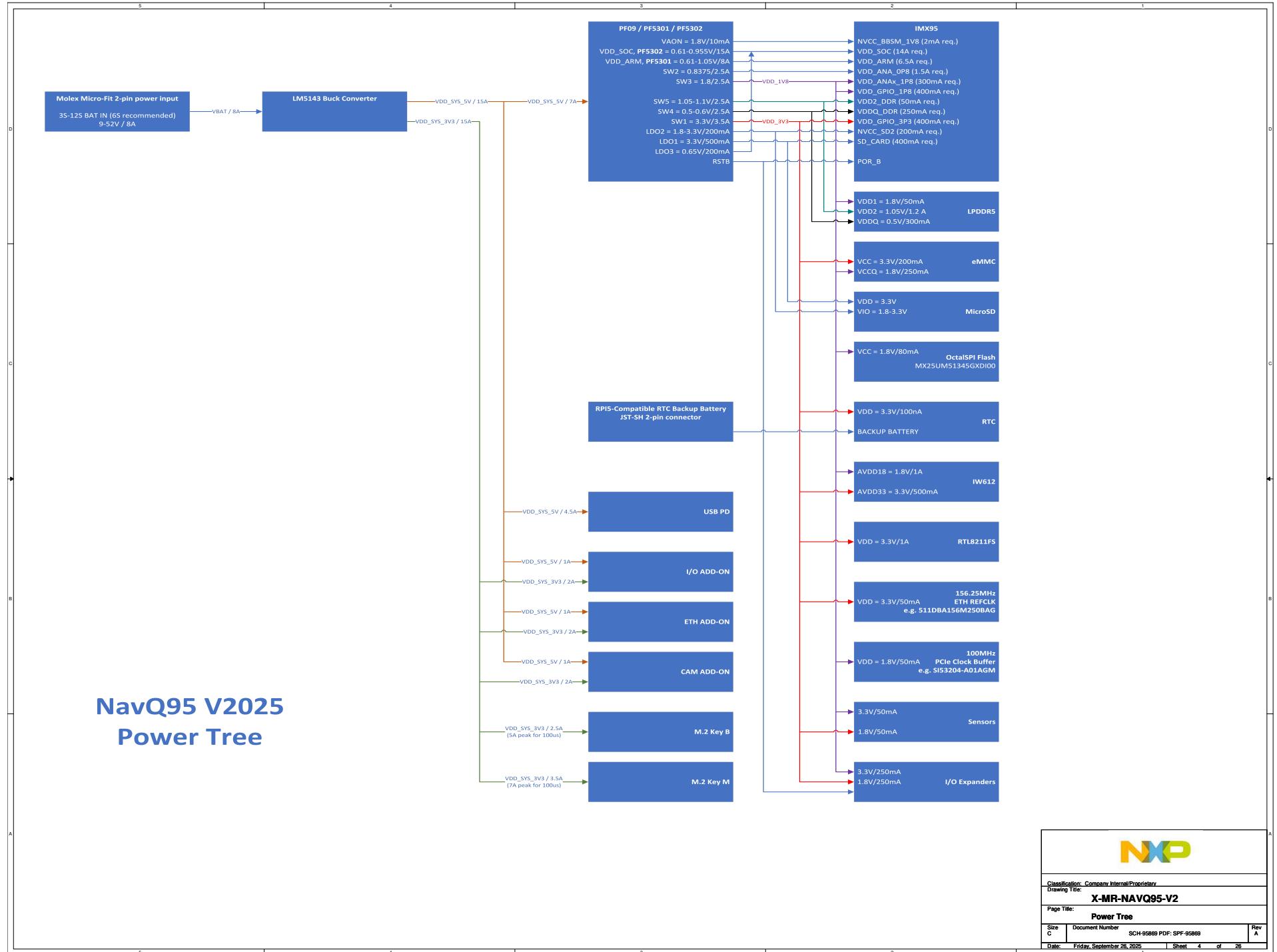
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Page Title: Block Diagram

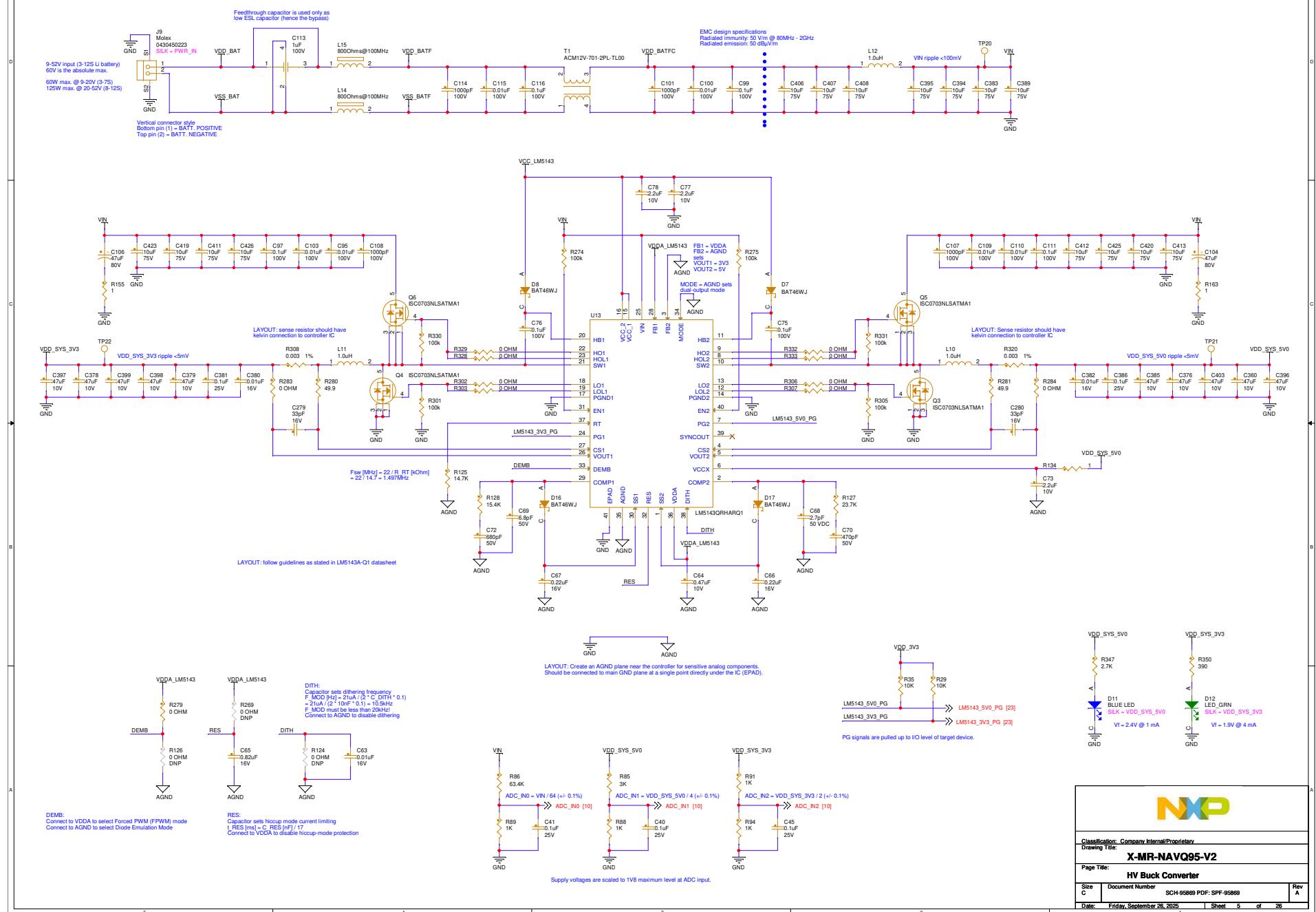
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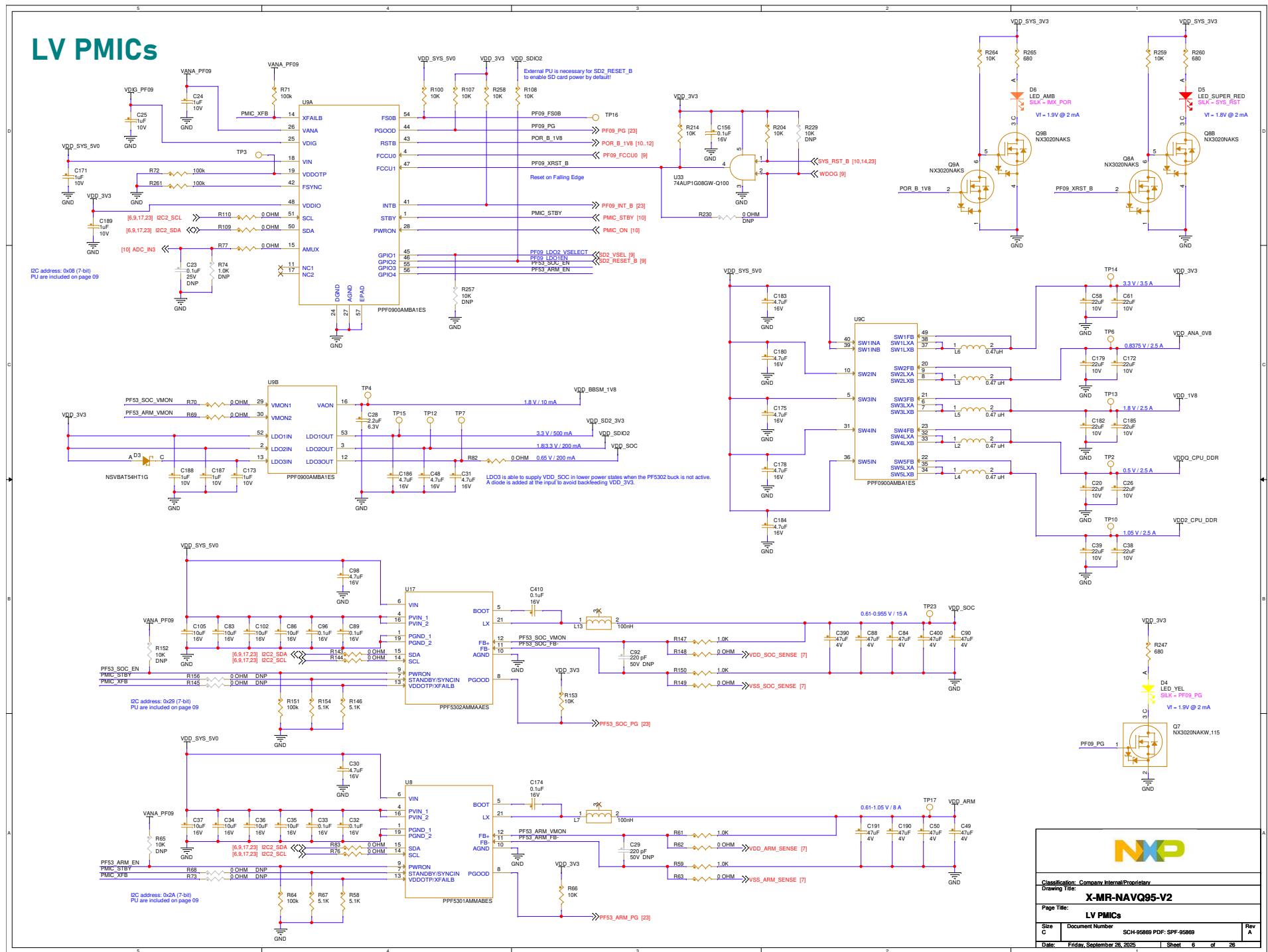


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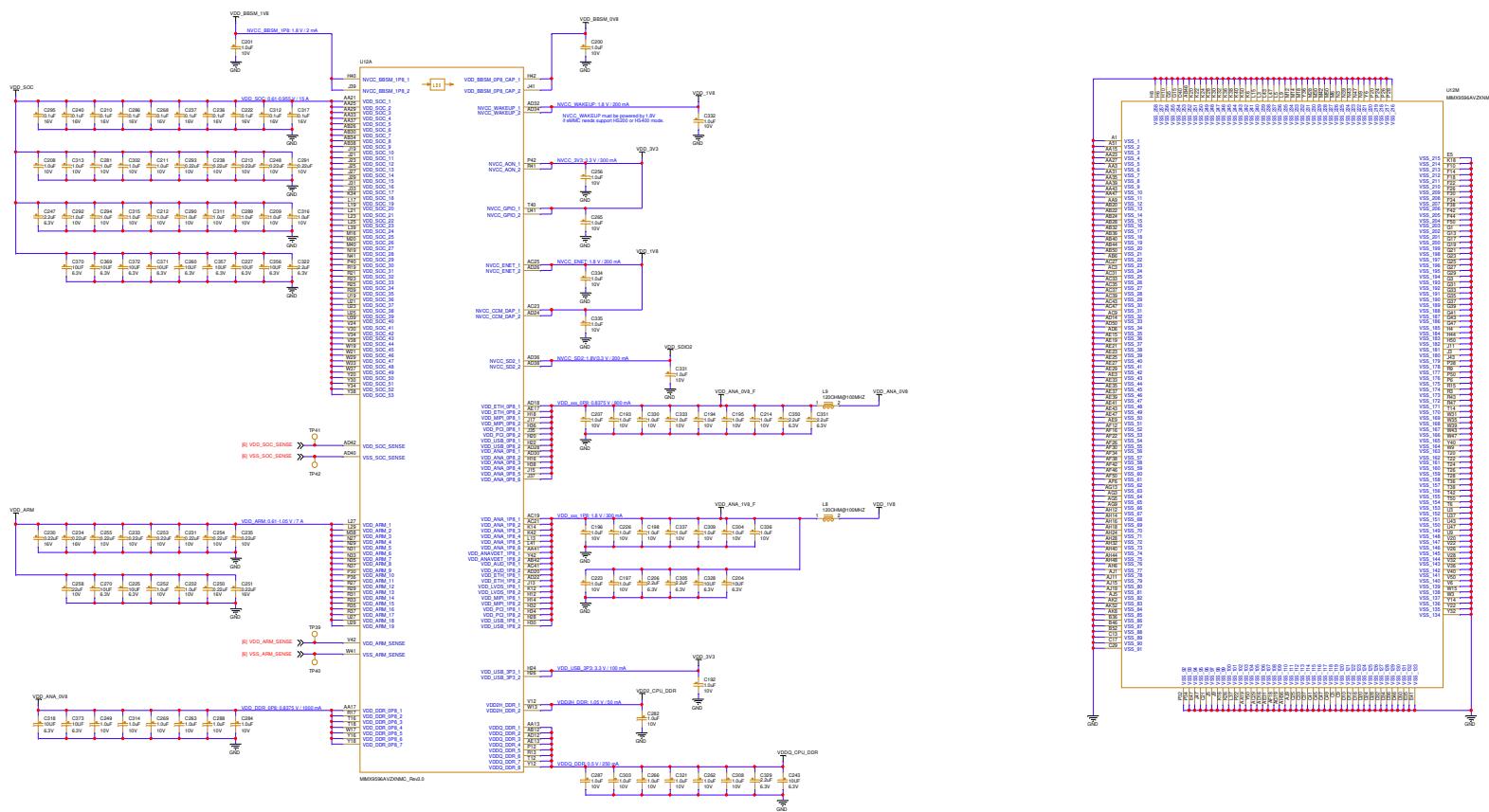
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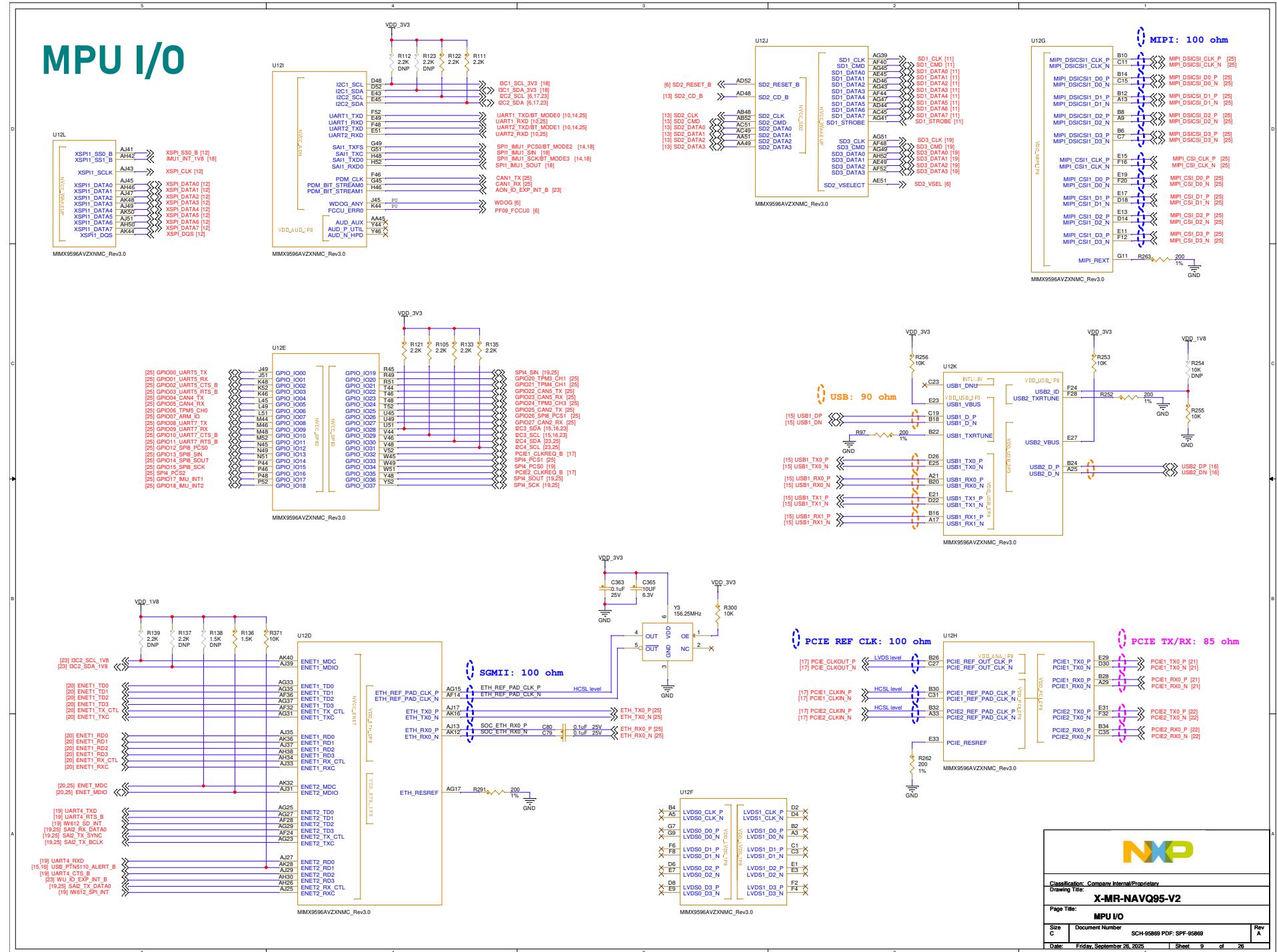
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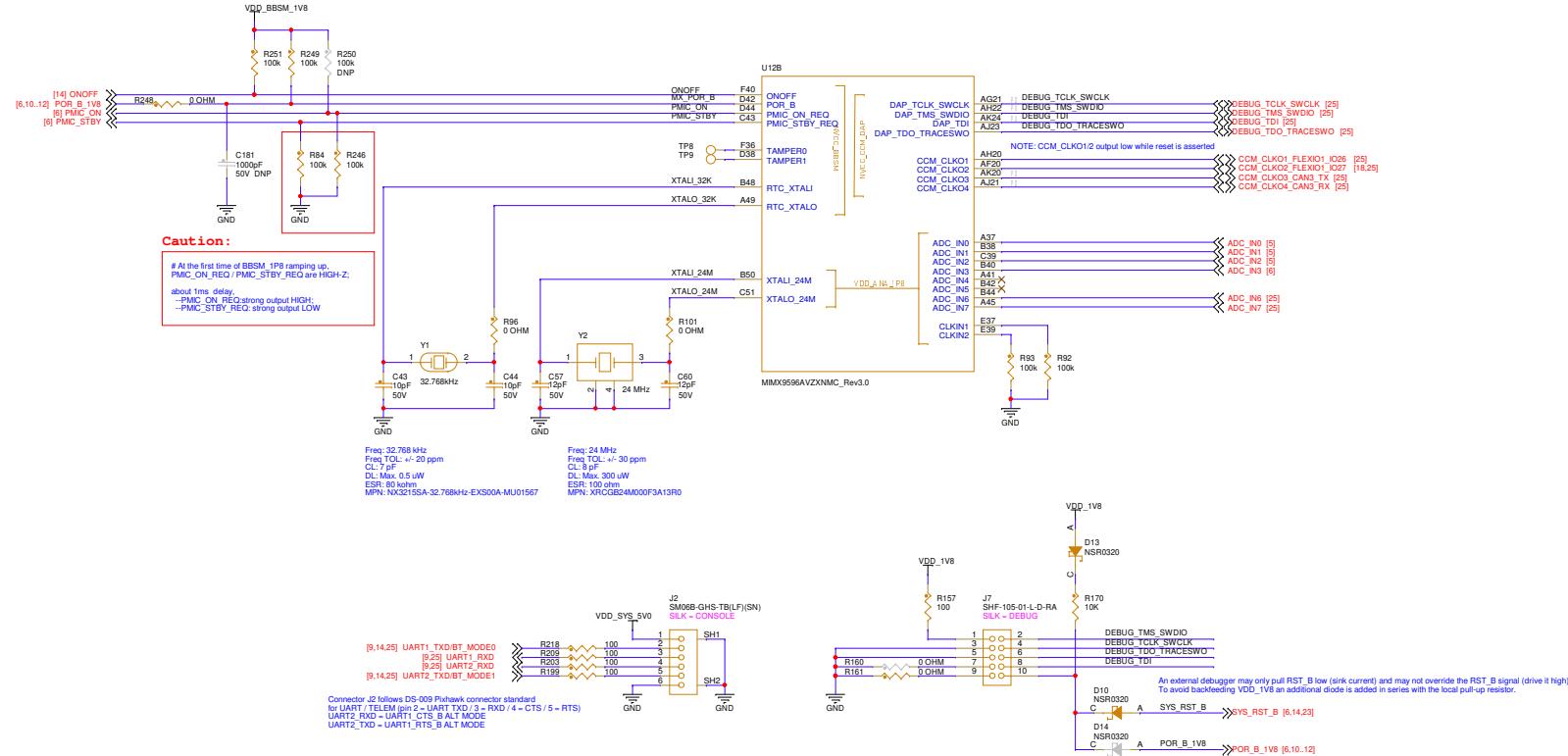
MPU Power



MPU I/O



MPU Misc.



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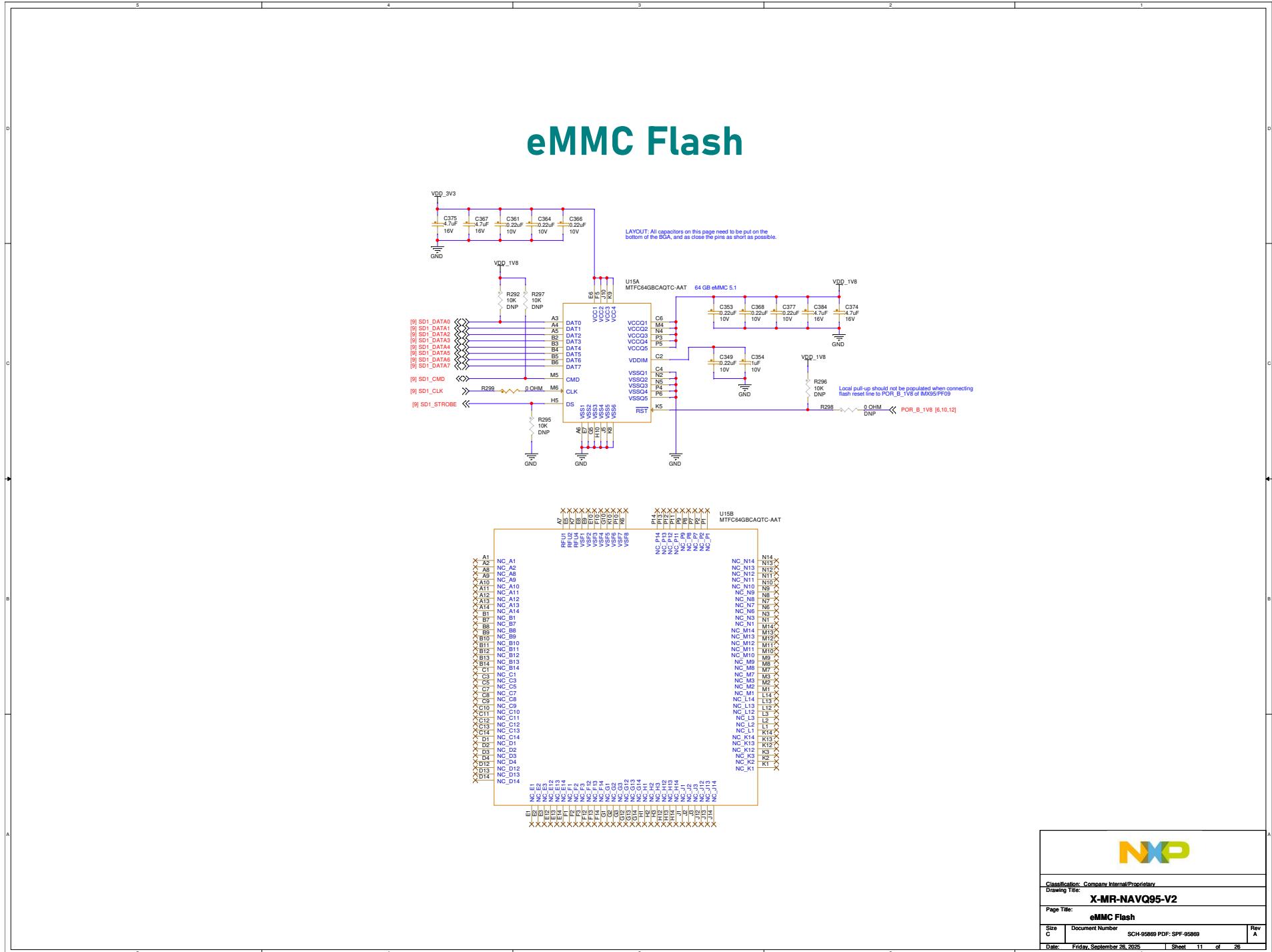
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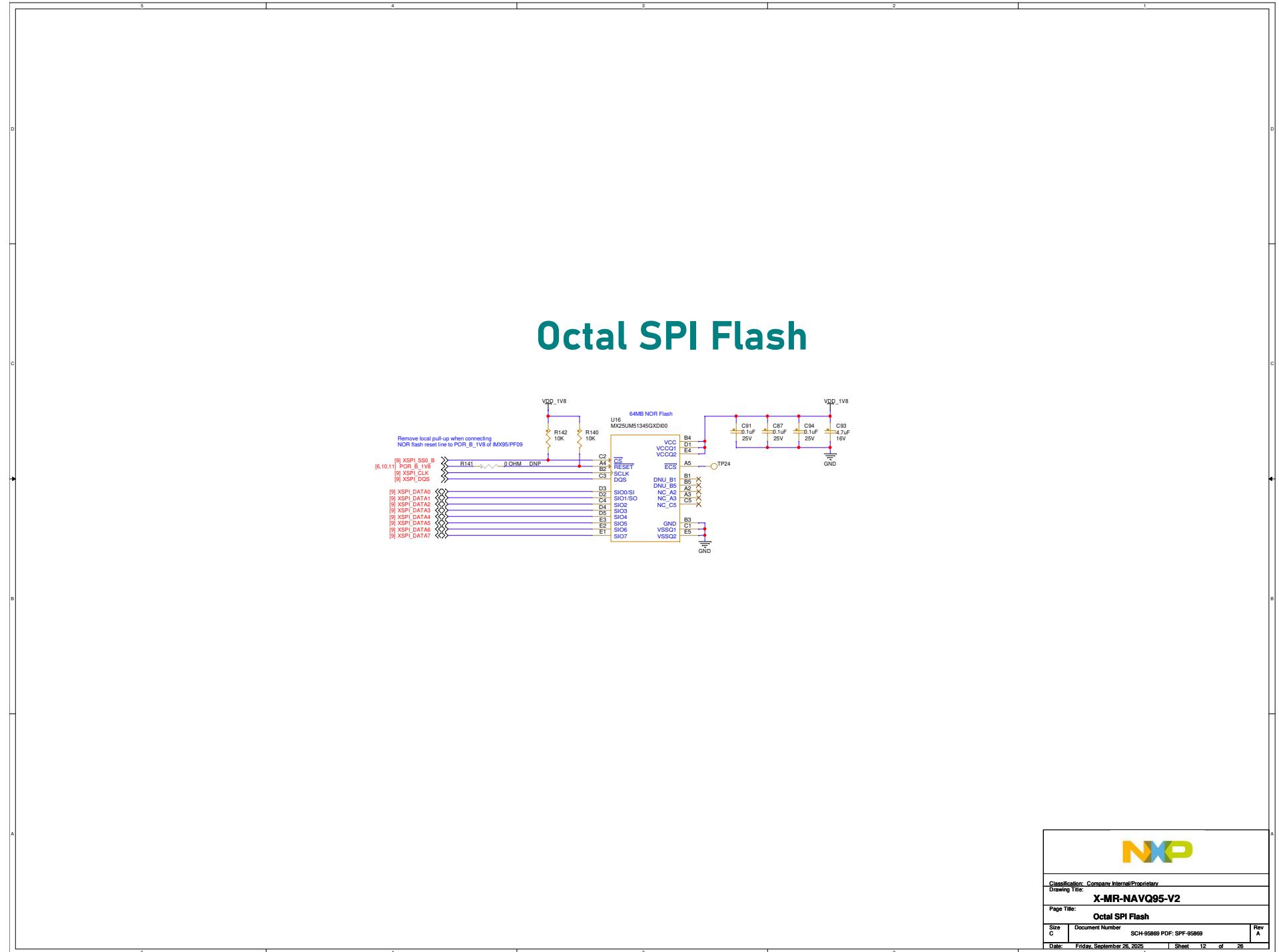
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Page Title: MPU Misc.

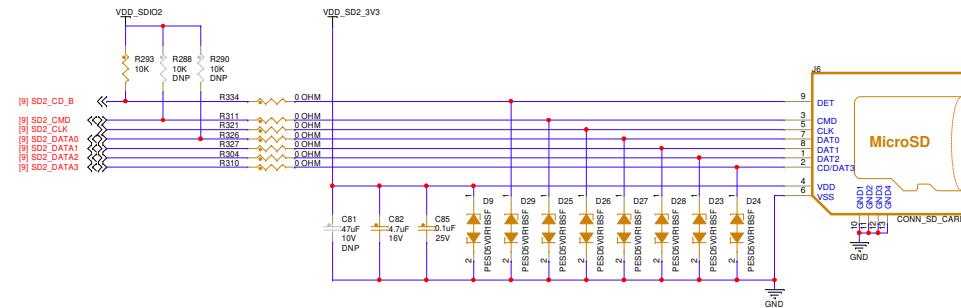
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MicroSD Card



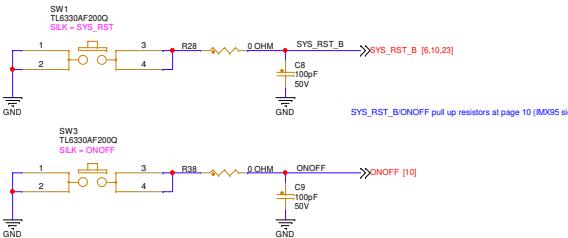
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Page Title: MICROSD Card		
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Buttons & Boot Mode

SYS RESET

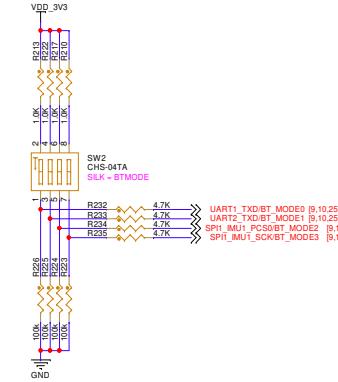
Short Press: Reset



ONOFF

Long Press 5 seconds: Turn OFF

Short Press: Turn ON



i.MX95 Boot Modes

BOOT_MODE[3:0]	BOOT CORE	BOOT DEVICE	COMMENT
0001	Cortex-A55	Serial Downloader	USB1/2
0010	Cortex-A55	USDHC1 8-bit eMMC 5.1	with SDFP (JESD-216) discoverable parameters
0011	Cortex-A55	USDHC2 4-bit SD3.0	
0100	Cortex-A55	FlexSPI Serial NOR	
0101	Cortex-A55	FlexSPI Serial NAND 2K page	
0110	Cortex-A55	FlexSPI Serial NAND 4K page	
1001	Cortex-M33	Serial Downloader	
1010	Cortex-M33	USDHC1 8-bit eMMC 5.1	
1011	Cortex-M33	USDHC2 4-bit SD3.0	
1100	Cortex-M33	FlexSPI Serial NOR	
1101	Cortex-M33	FlexSPI Serial NAND 2K page	with SDFP (JESD-216) discoverable parameters
1110	Cortex-M33	FlexSPI Serial NAND 4K page	



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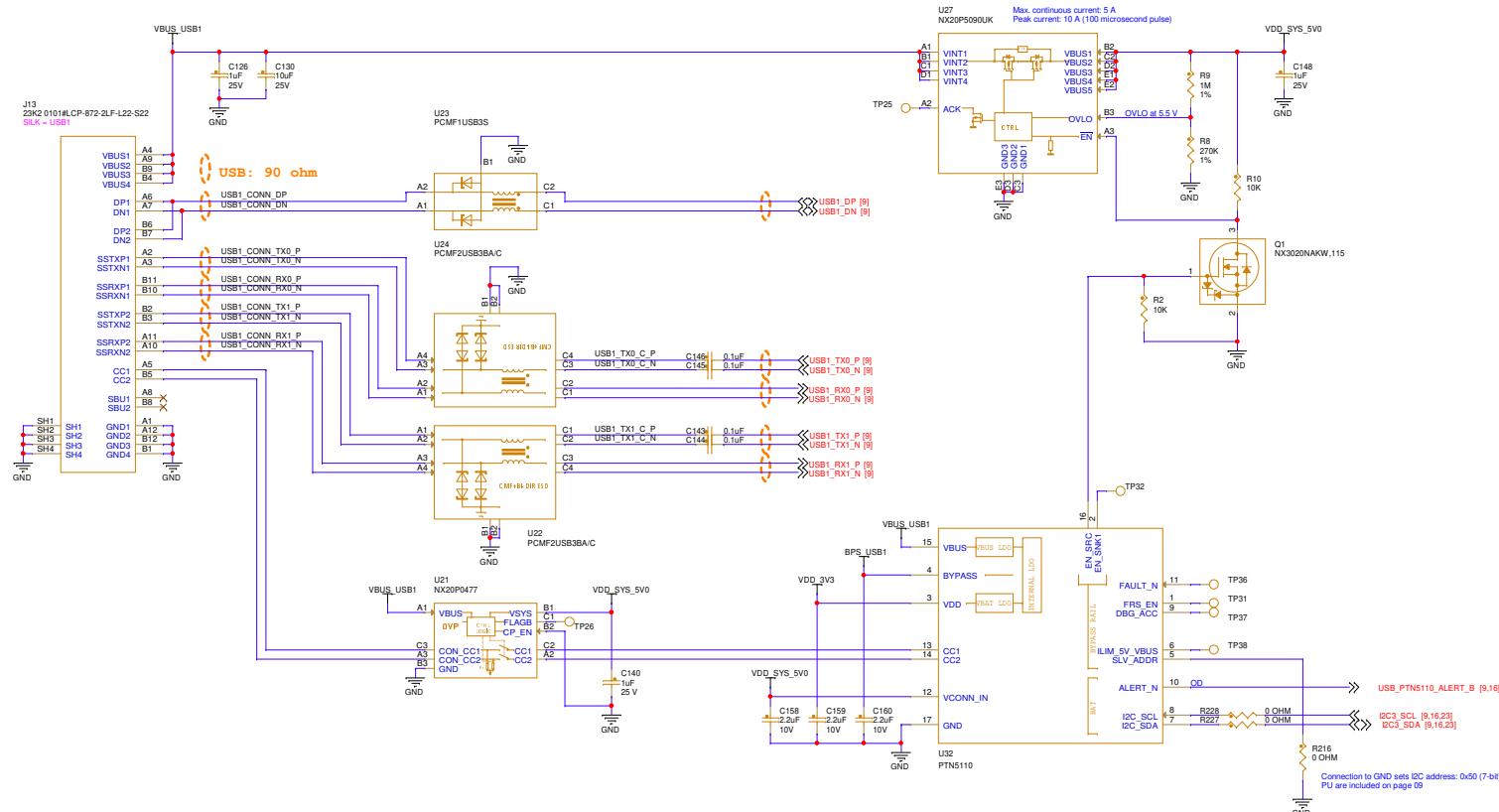
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USB1 3.0 Type C



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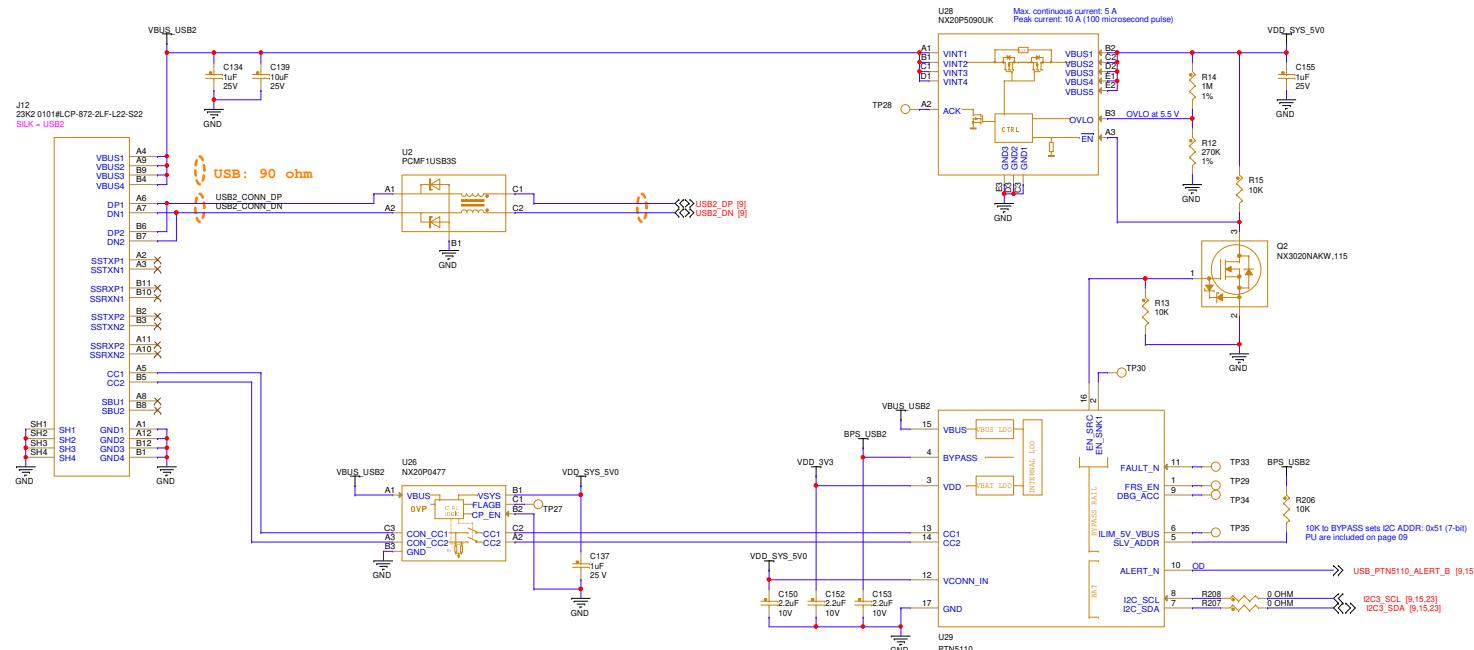
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X-MR-NAVQ5

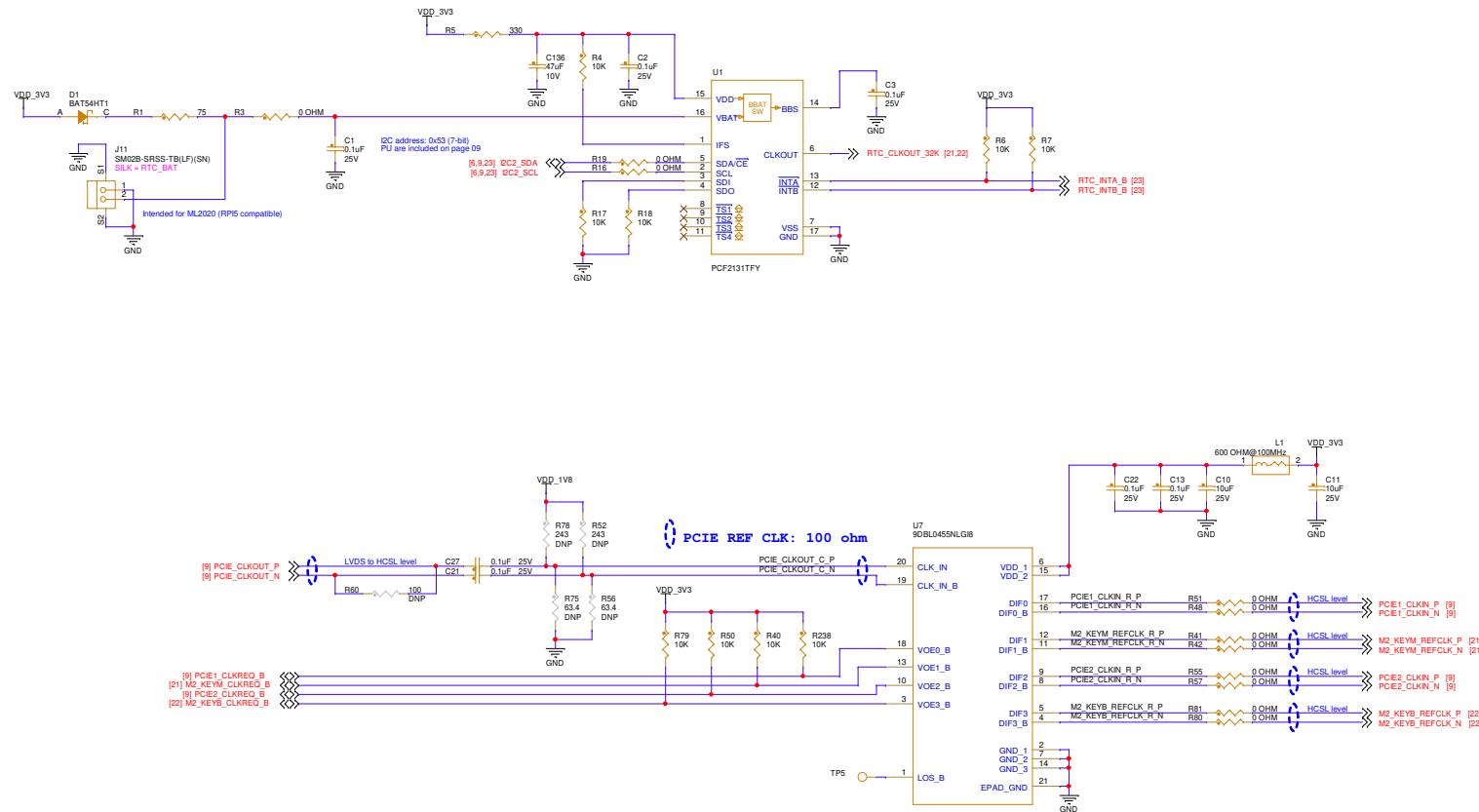
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USB2 2.0 Type C



RTC & Clock Buffer



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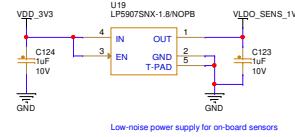
RTC & Clock Buffer

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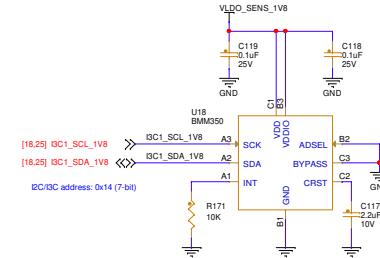
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Sensors

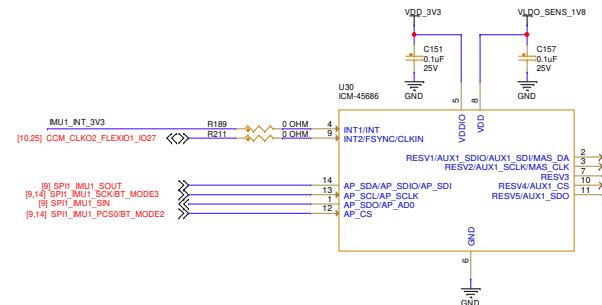
Low-Noise Regulator



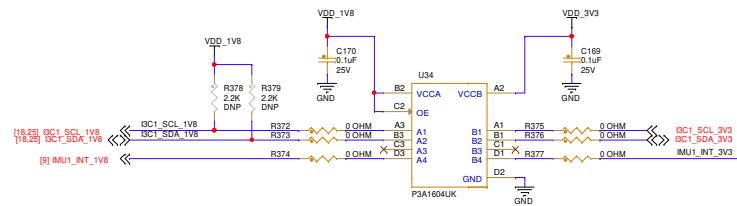
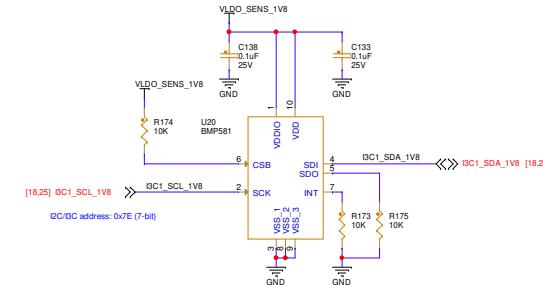
Magnetometer



6-Axis Accelerometer & Gyroscope



Barometer



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Drawing Title: X-MR-NAVQ95-V2

Page Title:

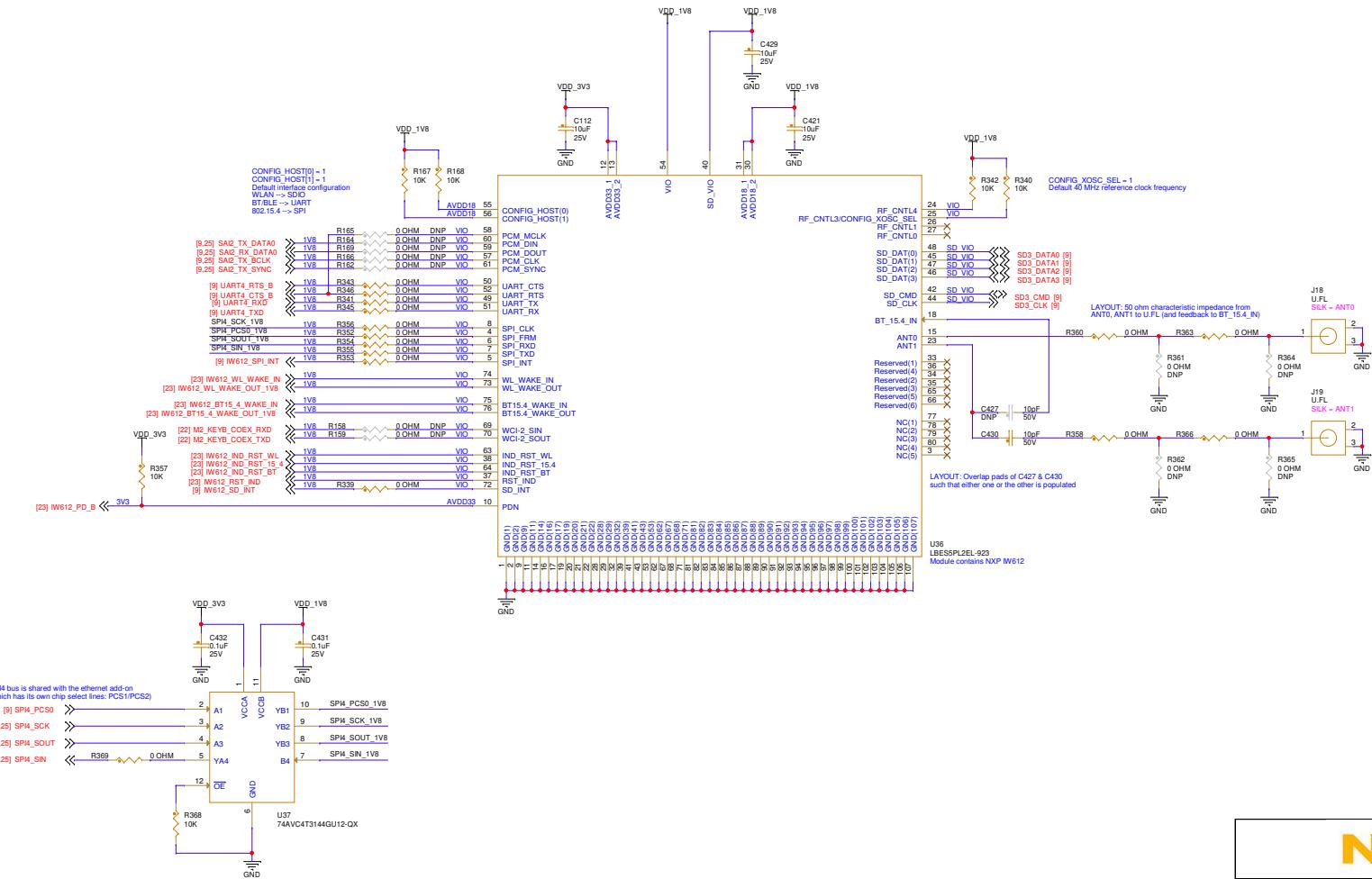
Sensors

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Tri-Radio

Wi-Fi 6 / Bluetooth 5.4 / IEEE 802.15.4



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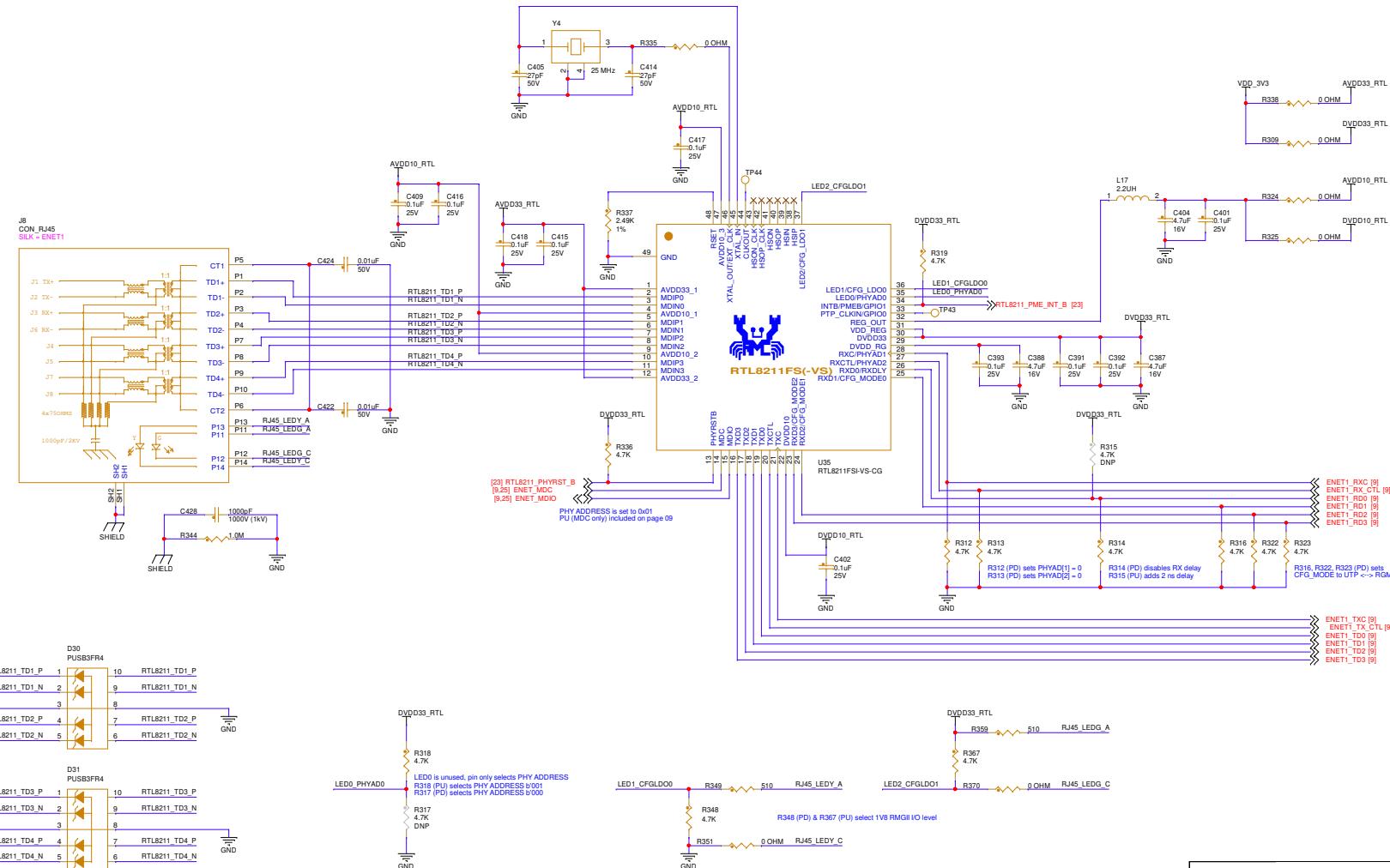
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X-MR-N

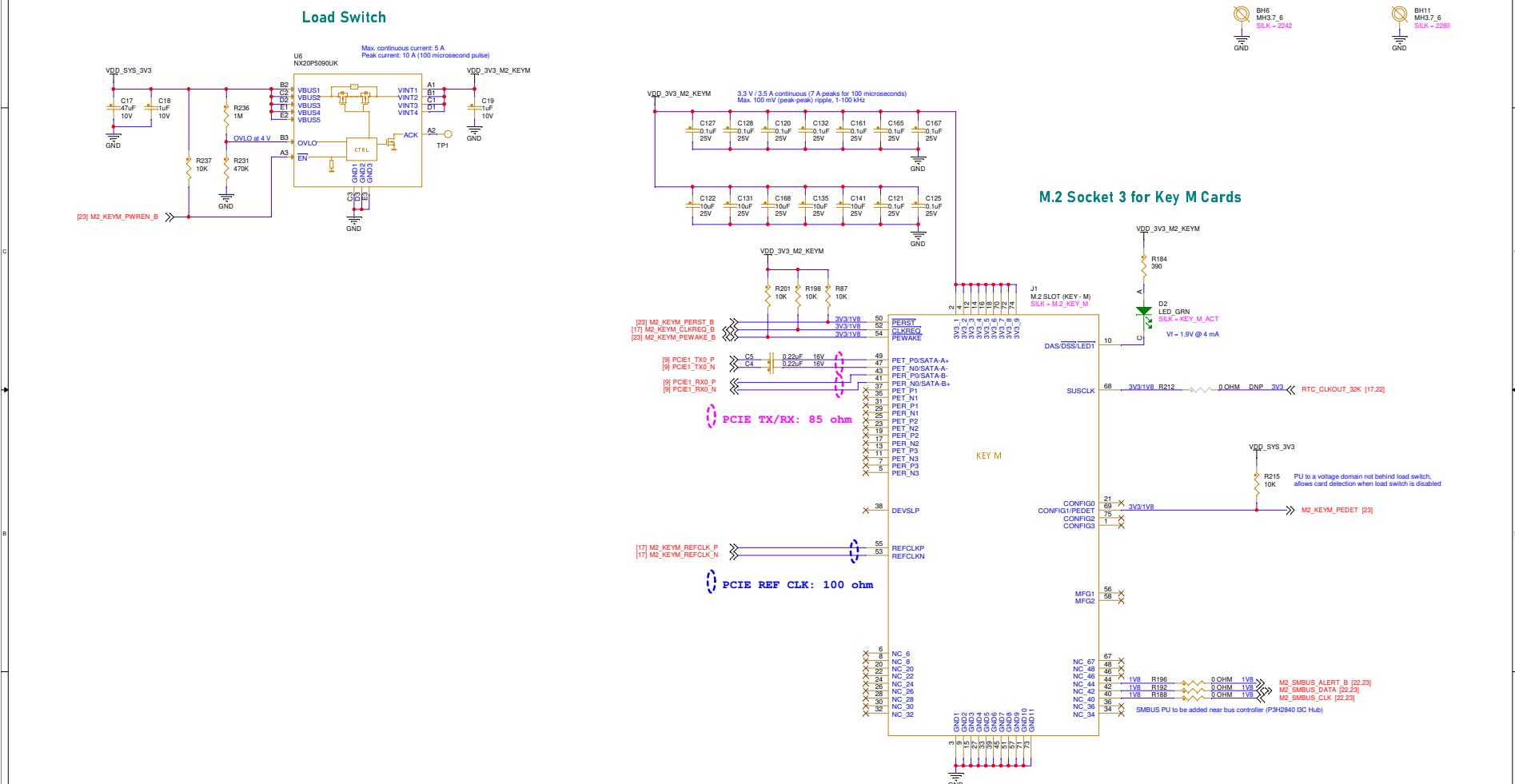
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Gigabit Ethernet



M.2 Key M



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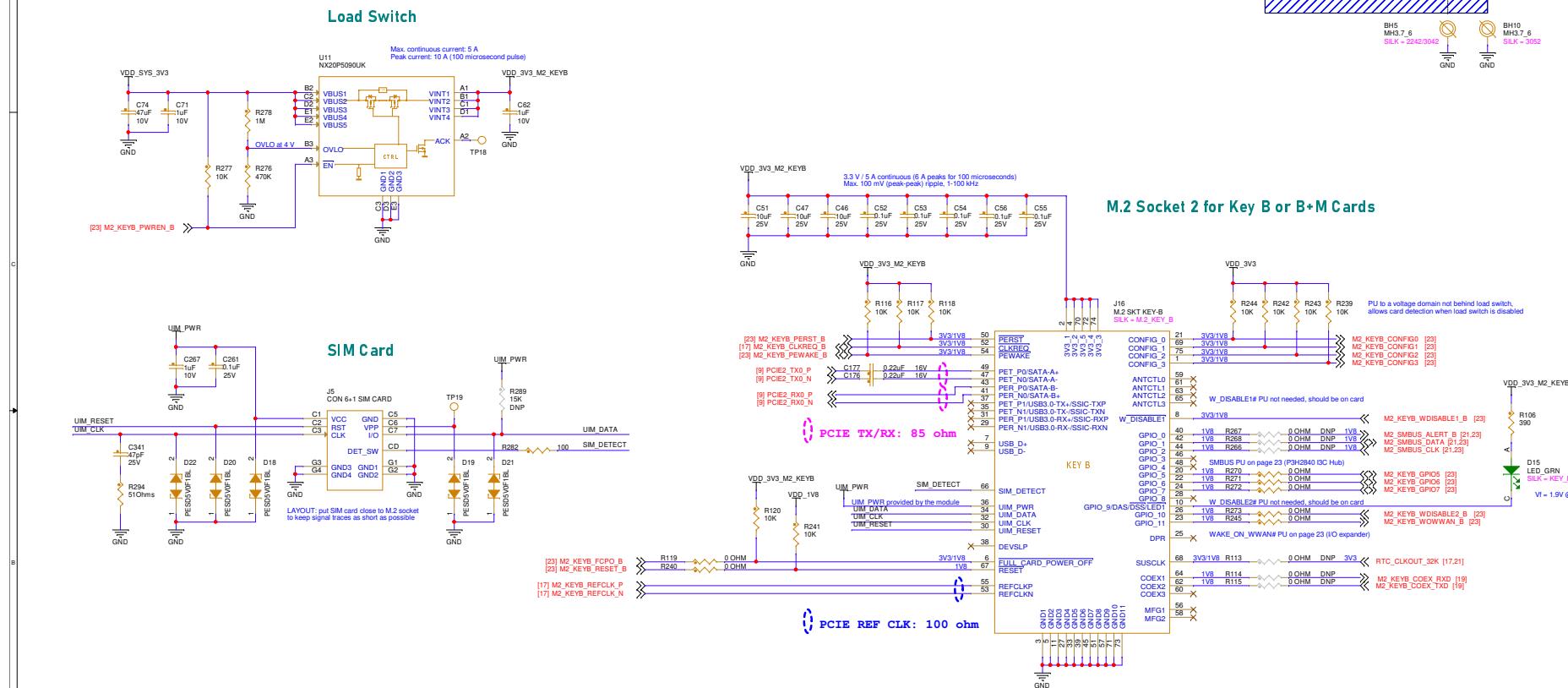
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A-MH-NA

M.2 Key ■

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M.2 Key B



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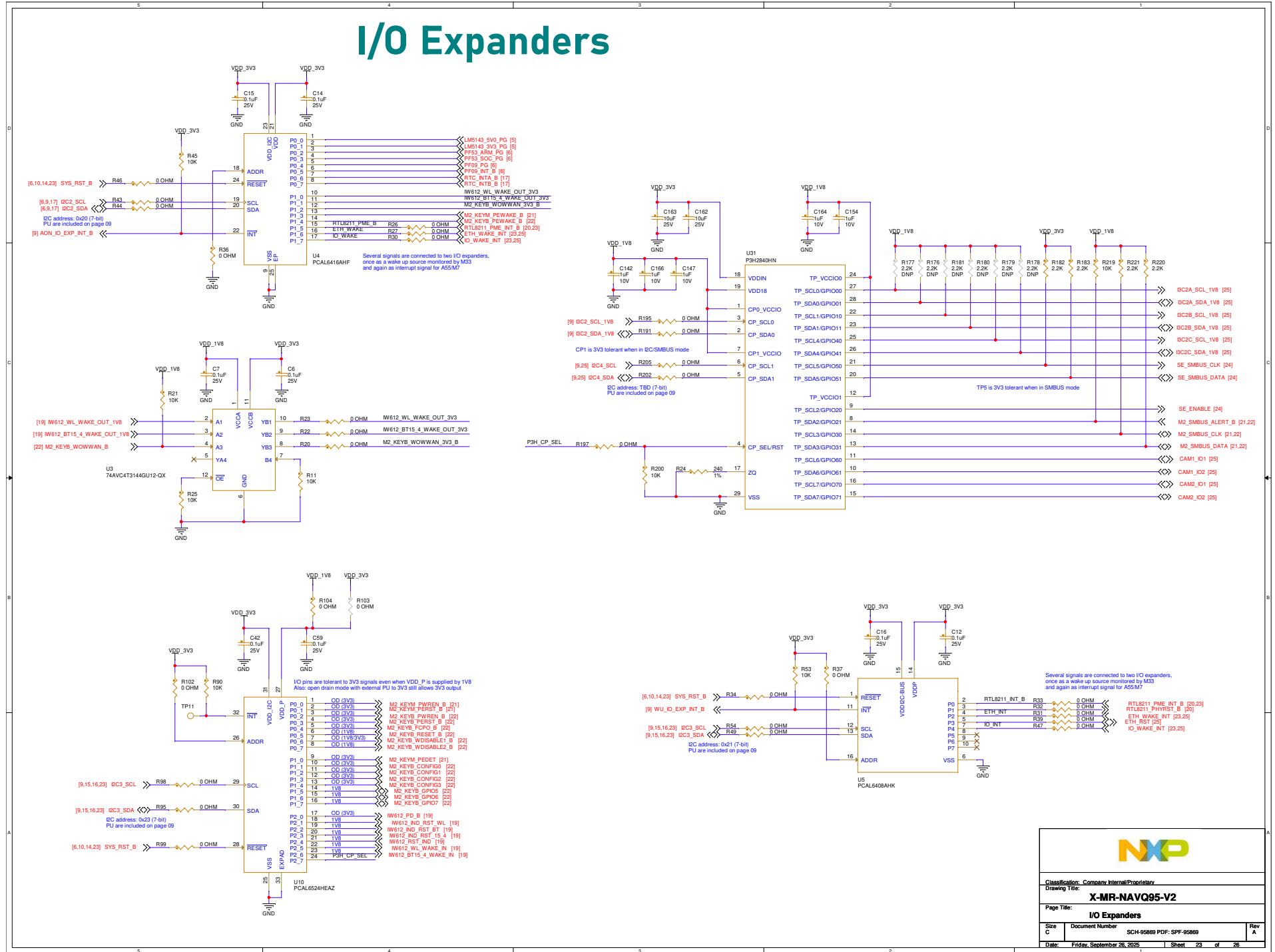
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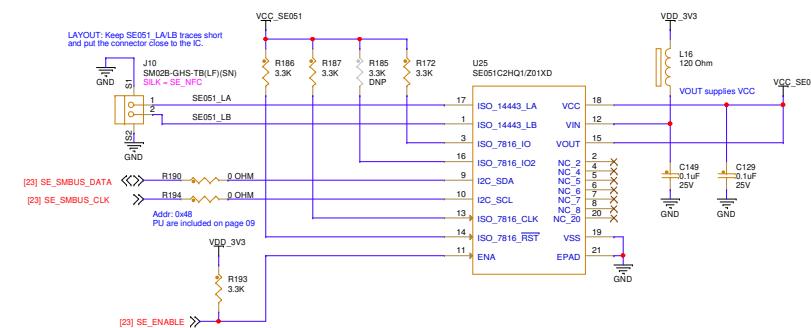
X-MR-N

Page No.		M.2 Key B		
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I/O Expanders



Secure Element



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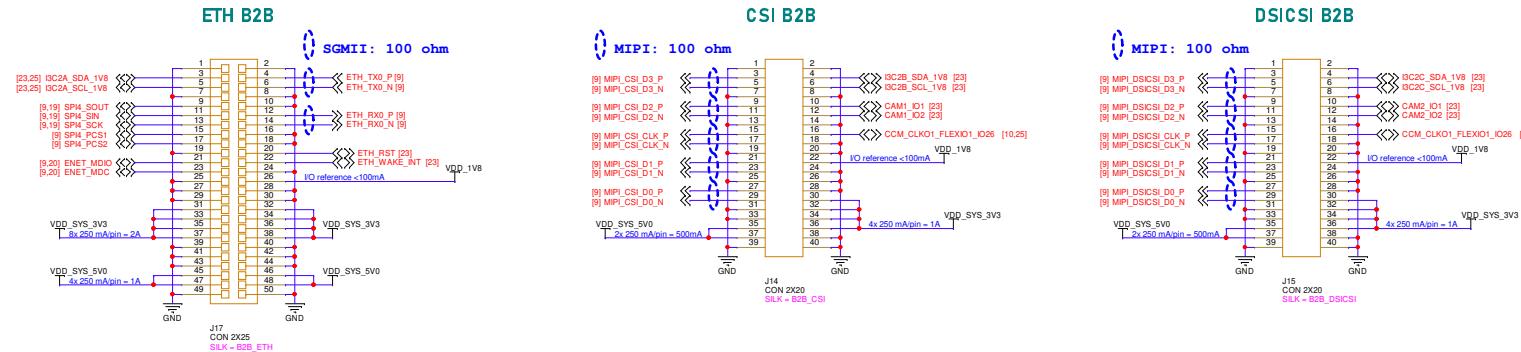
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X-MR-NAVQ9

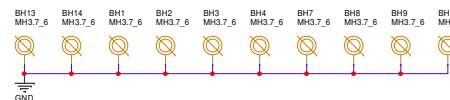
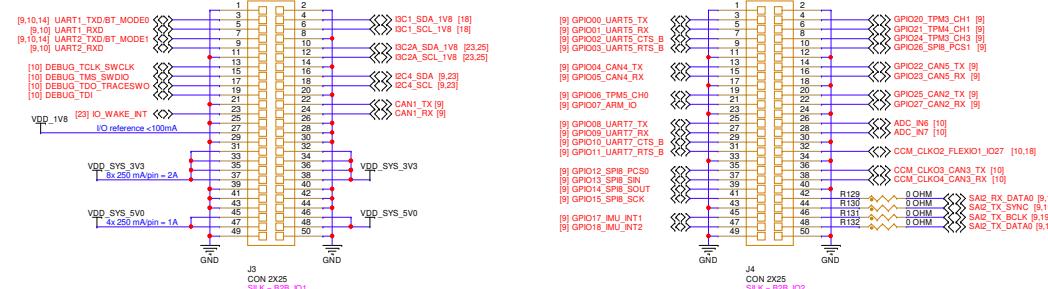
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Add-On B2B Interfaces



I/O B2B



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Rev.	Date	By	Description
X0	2025-07-04	JvE (CTO SI)	Initial version
X1	2025-07-10	JvE (CTO SI)	Release for A055 / preliminary BOM
X2	2025-07-21	JvE (CTO SI)	General cleanup of schematic. Pages 05-13 are ready.
X3	2025-07-22	JvE (CTO SI)	U1 (IMX95) part number updated. J22 replaced with different SIM card socket. Added JP1 header for console UART. Added SYSRST and ONOFF buttons.
X4	2025-07-24	JvE (CTO SI)	Visual updates / cleanup of pages 8 and 14-22 MPU I/O: Disconnect U1 C23 / USB1_DNU (previously USB1_ID) MPU I/O: Added pull up resistors for I2C3 and I2C4 USB1/2: Replace PTN5110 with a different variant USB1/2: NX20P5090UK swap VBUS and VINT connections RTC: Adjust R1246 for ML2020 RP15 compatible battery Clock Buffer: Implement circuit ICM45686: Add 0R on INT & SYNC lines and connect to MPU Tri-Radio: Add in missing connections M.2 slots: Add in missing connections Replace P3H2840 symbol
X5	2025-07-25	JvE (CTO SI)	Ethernet: Replaced ix industrial connector with an RJ45 including integrated magnetics Ethernet: Remove some optional components around RTL8211 M.2 Key B: ESD protection added to SIM card M.2 Key B: Connections finished, PU and jumpers added M.2 Key B/M: Page / connection cleanup Tri-Radio: C683 added
X6	2025-07-31	JvE (CTO SI)	BOM Optimizations Tri-Radio: Add several 0 ohm resistors (can be used as probe point and can be used to add series resistance) Tri-Radio: Change VIO to 1V8, add levelshifter on SPI I/O Expanders: Add decoupling capacitors, required pull-ups, levelshifter for some signals.
X7	2025-08-08	JvE (CTO SI)	Change SGMII differential impedance to 100 ohm Replace R187 with 100k, matching the PF09 EVB Replace R44 with 10k Replace C401 with similar part used on the same page Replace J30 with SHF-105-01-L-D-RA (RA, TH) Replace JP1 with TSW-106-08-F-S-RA (RA, TH)
X8	2025-08-18	JvE (CTO SI)	ADC inputs: replace resistors with 0.1% precision parts Added D82/D83 ESD protection on RJ45 connector Swapped I2C SDA/SCL pins on PCF2131TFY Added U75 level shifter Replace JP1 header with connector J64
X9	2025-09-03	JvE (CTO SI)	Cover page updated. Table page added. Changelog page added. Annotations updated. Netnames updated.
X10	2025-09-04	JvE (CTO SI)	Schematic update after refdes renumbering.
X11	2025-09-08	JvE (CTO SI)	Update PCB footprints of C247, C260, C270
X12	2025-09-18	JvE (CTO SI)	Change R182/R183 reference voltage to 3V3 Add R371 PU on PTN5110 ALERT_B Add R378/R379 PU on U34 (DNP by default) Add R372-R377 series resistors on U34
X13	2025-09-22	JvE (CTO SI)	Adjust J2 pinout and change pin 1 power supply Swap SW2 pinout



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