NuMicro® Family

Arm® Cortex®-A35-based Microprocessor

NuMaker-IoT-MA35D0-A2
Chili Pro
User Manual

Evaluation Board for NuMicro® MA35D0 Series

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1 OVERVIEW

The NuMaker-IoT-MA35D0-A2 evaluation board based on the NuMicro MA35D05KI67C microprocessor has rich peripherals such as one set of Gigabit Ethernet, USB2.0 high-speed host and device, one set of SD3.0 in SD slot, one user-defined key button, one user-defined LED and two GPIO extension connectors that can implement UART, CAN FD, SPI, I^2C, I^2S and ADC functions for users to facilitate the evaluation in edge device application, such as industrial control, home appliances, new energy applications, or your creative applications.

The MA35D05Kx67C (x = H, I or J) series is a high-performance microprocessor targeted to industrial edge device applications. It is based on dual 64-bit Arm Cortex-A35 cores with speed up to 650 MHz and 32/32 KB I/D L1 cache for each core, a 512 KB shared L2 cache, and an additional 180 MHz Arm Cortex-M4 core acts as a real-time processor. Based on these high-performance cores, the MA35D05Kx67C series facilities tiny AI/ML for edge computing.

The MA35D05Kx67C series has a built-in 128 KB IBR (Internal Boot ROM) and supports secure booting from three modes, USB, SD/eMMC and SPI Flash (SPI NOR/SPI NAND). To provide easy system design and manufacture, the MA35D05Kx67C series also offers LQFP128 with EPAD package stacked with a DDR3L SDRAM and the size up to 512 MB, which significantly reduces PCB layer, size and electromagnetic interference (EMI).

The MA35D05Kx67C series is a trusted system for IoT products' security requirements. It includes several advanced security mechanisms such as Nuvoton Trusted Secure Island (TSI), an isolated secure hardware unit, TrustZone, secure boot, built-in cryptographic accelerators, and a TRNG, as well as Key Store and OTP memory. All the security operations are performed in the TSI to protect sensitive and high-value data. The features also satisfy customers in IEC 62443 certification requirements.

For high-end edge IIoT gateway requirements, the MA35D05Kx67C series provides multiple advanced and high-speed connection interfaces, such as Gigabit Ethernet, SDIO3.0, USB 2.0 HS, and CAN FD, for edge gateway and new energy applications.

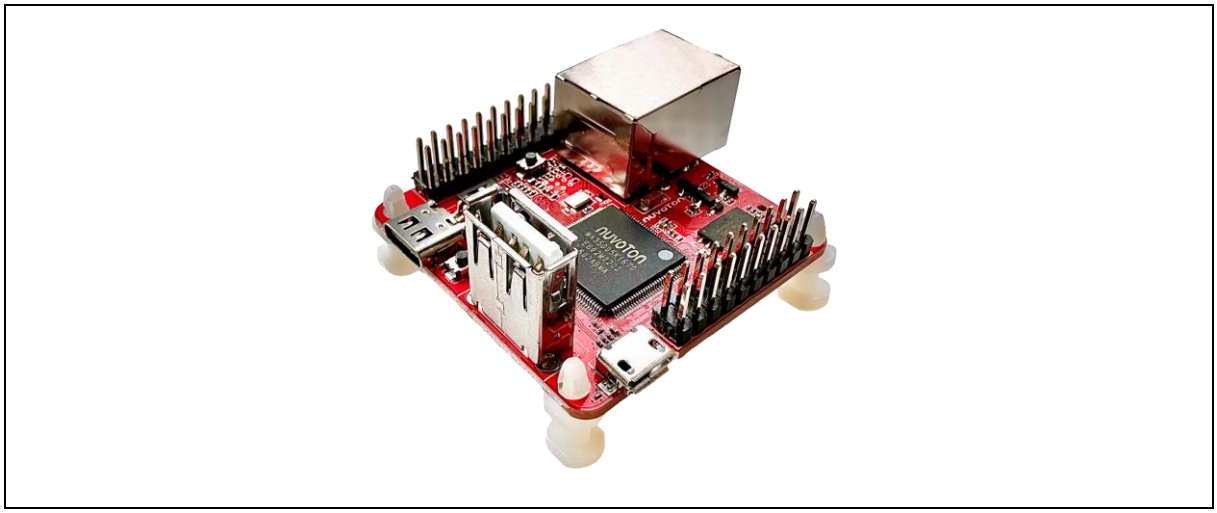


Figure 1-1 NuMaker-IoT-MA35D0-A2 Board

1.1 Board Part Number and Information

The following table lists the part number, board name and order number of this evaluation board (EVB) based on the MA35D05KI67C microprocessor.

Part Number of EVB	Board Name	Order Number
NuMaker-IoT-MA35D0-A2	NuMaker-IoT-MA35D05KI1 Chili Pro	NK-IMA35D0A2

Table 1-1 Board Part Number and Information

2 FEATURES

- Target Chip: MA35D05KI67C (LQFP-EP 128-Pin) MCP package with DDR3L (256 MB), which can run up to 650 MHz
- Power:
  - USB Type-C 5V/2A Power Input Receptacle
  - PMIC DA9062-3A
- Debug:
  - UART0 debug port
  - Debug port: SWJ (JTAG + SWD) header
- Memory Devices:
  - An on-board Quad SPI NAND Flash device (256 MB)
  - MicroSD memory card (SD1, supporting SD3.0)
- One power-on setting DIP-Switch for evaluation boot source selection
- One set of Gigabit Ethernet port: One Gigabit Ethernet (RGMII) PHY device and one RJ45 port connector with 1G transformer
- Two sets of high-speed USB ports: One Host/Device port and one Host port
- Two GPIO extension connectors that include the following default peripherals:
  - SWJ
  - UART 4-bit x 1
  - UART 2-bit x 5
  - CAN FD x 4
  - SPI x 1
  - I^2C x 2
  - I^2S x 1
  - ADC x 2
- One user key button
- One user LED

3 HARDWARE CONFIGURATION

3.1 Front View

Figure 3-1 shows the main components and connectors from the front side of NuMaker-IoT-MA35D0-A2 board.

- Target Chip (U1): MA35D05KI67C (LQFP-EP*1 128-Pin) MCP package with DDR3L (256MB).

  Note *1: The LQFP-EP 128-Pin package has an exposed die pad (EPAD) on the bottom of IC. Please log in Nuvoton's website and download the MA35 Series LQFP-EP 216-Pin Package Application Note for reference in PCB design and layout as well as PCBA assembly and soldering.

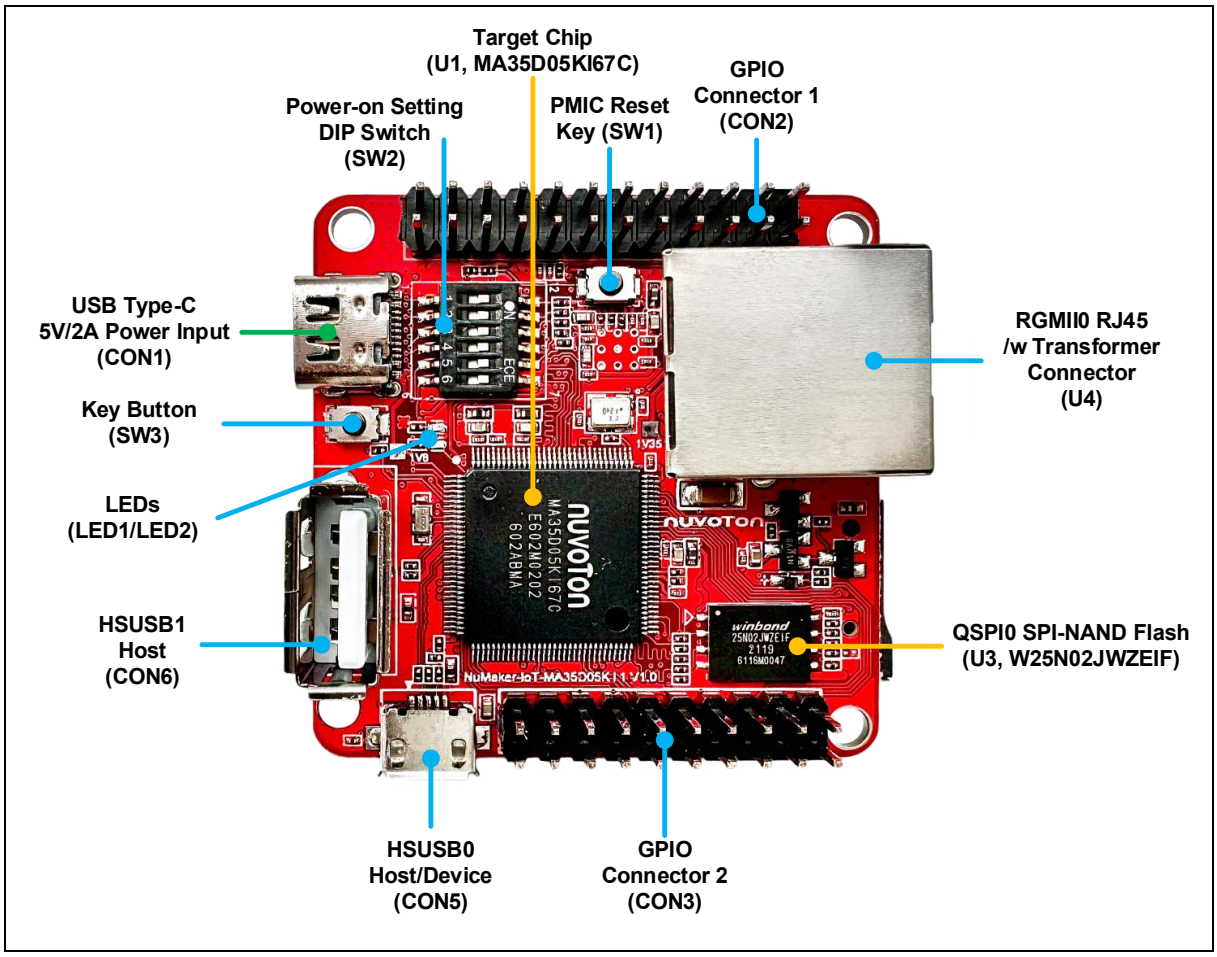


Figure 3-1 Front View of NuMaker-IoT-MA35D0-A2

3.2 Rear View

Figure 3-2 shows the main components and connectors from the rear side of NuMaker-IoT-MA35D0-A2 board.

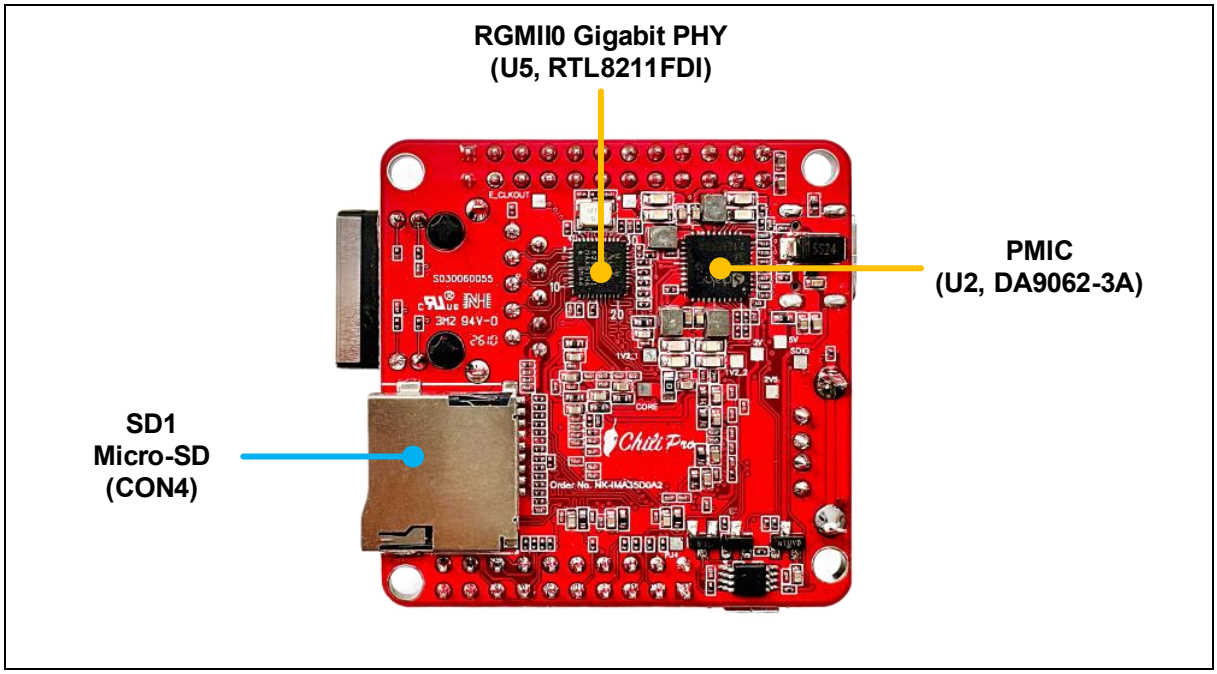


Figure 3-2 Rear View of NuMaker-IoT-MA35D0-A2

3.3 USB Type-C 5V/2A Power Input

- USB Type-C 5V/2A Power Input Receptacle (CON1): This USB Type-C power input receptacle requires an additional adapter connected via a USB Type-A/Type-C to Type-C cable to provide this board with a DC 5V and at least 2A power input.

3.4 PMIC

- PMIC Reset Key Button (SW1): Press this key to pull the nRESETREQ (pin 16) of PMIC device DA9062-3A (U2) low to reset this PMIC device to supply the output voltages and control the nRESET signal following the default power-on sequence stored in the internal configured initialization.
- PMIC (U2): After system power-on and pull the SYS_EN (pin 30) of the PMIC device DA9062-3A (U2) to high, the PMIC will follow the configured power-on sequence to supply all necessary and different voltages to the target chip MA35D05KI67C and dedicated peripherals on this NuMaker-IoT-MA35D0-A2 board, and release the nRESET signal from low to high at the last one sequence step.

U2.#	Pin Name	Output Voltage / MAX. Current
U2.26	VBUCK1	DC 1.2V ~ 1.34V / 2.5A
U2.27	VBUCK2	DC 1.2V / 2.5A
U2.25	VBUCK3	DC 3.3V / 2A
U2.24	VBUCK4*[1]	DC 1.35V
U2.1	VLDO1	DC 3V / 100mA
U2.2	VLDO2	DC 1.8V / 300mA
U2.9	VLDO3	DC 2.5V / 300mA

U2.11	VLDO4*2	DC 3.3V or 1.8V / 300mA
Note *1: The output voltage of VBUCK4 depends on the status of U2.28 pin and to supply the voltage to the internal DDR memory and DDR PHY of the target chip MA35D05KI67C (MCP package with DDR3L SDRAM memory). By default, the U2.28 pin is pulled to low on board to force VBUCK4 pin of PMIC to output 1.35V on this NuMaker-IoT-MA35D0-A2 board. **Note** *2: The output voltage of VLDO4 is 3.3V or 1.8V that controlled by the I2C0 bus (PMIC_I2C0_SDA/PD6 and PMIC_I2C0_SCL/PD7) from the target chip and supplies this output voltage to SD1 card to meet the SD3.0 specifications.		

Table 3-1 PMIC (U2) Output Voltages

U2.#	Pin Name	GPIO Function / Pin Name of MA35D0
U2.13	SDA	PMIC_I2C0_SDA / PD6*1
U2.14	SCL	PMIC_I2C0_SCL / PD7*2
U2.37	nIRQ	PMIC_nIRQ / PA15*3
Note *1: This PD6 pin is dedicated to PMIC_I2C0_SDA function for controlling the external PMIC by default. **Note** *2: This PD7 pin is dedicated to PMIC_I2C0_SCL function for controlling the external PMIC by default. **Note** *3: The resistor R12 is NC by default, pin PA15 is preset to be dedicated to GPIO function (CON3.6) instead of the reserved PMIC_nIRQ input function from the external PMIC.		

Table 3-2 PMIC (U2) Control Pins

3.5 Power-on Setting

- Power-on Setting DIP-Switch (SW2): The GPIO PG0, PG2, PG3, PG4 and PG6 determine how to boot the evaluation environment on the NuMaker-IoT-MA35D0-A2 board. These GPIO pins are internal weak pull-down.
- Options for secure boot enable or disable:

SW2.1 / PG0*	Secure Booting
Low	Enable
High	Disable
Note *: The GPIO PG0 is internal weak pull-down.	

Table 3-3 Secure Boot Options

- Options for boot source selection:

SW2.3 / PG3*1	SW2.2 / PG2*1	Booting Source
Low	Low	QSPI0 Flash
Low	High	SD/eMMC*2

High	Low	-
High	High	USB
Note *1: These GPIO PG2 and PG3 are internal weak pull-down. **Note** *2: There's only SD1 micro card slot on this NuMaker-IoT-MA35D0-A2 board.		

Table 3-4 Booting Source Options

- Options for booting from SD0/1 card or eMMC0/1 NAND Flash memory device:

SW2.5 / PG6*1	Boot from SD/eMMC
Low	-
High	SD1/eMMC1 Boot*2
Note *1: The GPIO PG6 is internal weak pull-down. **Note** *2: There's only SD1 micro card slot on this NuMaker-IoT-MA35D0-A2 board.	

Table 3-5 Options for SD Card 0/1 or eMMC 0/1 NAND Flash Device Boot Source

- Options for booting from QSPI0 Flash device:

SW2.5 / PG6*1	Boot from QSPI0 Flash
Low	SPI NAND 1-bit*2
High	-
Note *1: The GPIO PG6 is internal weak pull-down. **Note** *2: This NuMaker-IoT-MA35D0-A2 board only supports SPI NAND 1-bit booting.	

Table 3-6 1-bit Options for QSPI0 NAND Flash Boot Source

- Options for booting from USBD or USBH:

SW2.4 / PG4*1*2	Boot from USB
Low	USB Device Booting
High	USB Host Booting*3
Note *1: The GPIO PG4 is internal weak pull-down. **Note** *2: Since the resistor R50 (0-ohm) on the board is pre-mounted, the state of PG4 will be affected by the nRESET signal. To support USB Host booting, please remove the resistor R50 from this board. **Note** *3: This NuMaker-IoT-MA35D0-A2 board only supports USB Host Port 0 booting.	

Table 3-7 Options for USBD or USBH Booting Source

SW2.5 / PG6*1	Boot from USBH*2
Low	Over-current Low-active Detect
High	Over-current High-active Detect

Note *1: The GPIO PG6 is internal weak pull-down.
Note *2: This NuMaker-IoT-MA35D0-A2 board only supports USB Host Port 0 booting.

Table 3-8 Over-current High/Low-active Detect Options for USBH Booting Source

3.6 QSPI Flash

- QSPI0 Flash (U3): Winbond SPI NAND Flash (W25N02JWZEIF, 256 MB) for optional boot source, supporting dual / quad mode. The functions of the relevant pins are shown in the table below.

Pin No.	Pin Name	GPIO pin of MA35D0
1	QSPI0_SS0	PD0
2	QSPI0_MISO0	PD3
3	QSPI0_MOSI1	PD4
4	VSS	-
5	QSPI0_MOSI0	PD2
6	QSPI0_CLK	PD1
7	QSPI0_MISO1	PD5
8	QSPI0_VDD*1	
Note *1: The power group of these GPIO PD0~PD5 belongs to the VDDIO5 power domain of MA35D0 series, the default voltage of VDDIO5 (power input VDD_QSPI0) is VDD1V8 (DC 1.8V) on this NuMaker-IoT-MA35D0-A2 board.		

Table 3-9 QSPI0 Flash (U3) Pin Function

3.7 MicroSD Card Slot

- SD1 MicroSD Card Slot (CON4): Supports SD1 (SD3.0) for optional system booting. The functions of the relevant pins are shown in the table below.

Pin No.	Pin Name	GPIO pin of MA35D0	Default Connected R#
1	SD1_DTA2*1	PJ10	R59
2	SD1_DAT3*1	PJ11	R60
3	SD1_CMD*1	PJ6	R61
4	VDD (VDD_SDCard*2)	-	-
5	SD1_CLK*1	PJ7	R62
6	VSS	-	-
7	SD1_DAT0*1	PJ8	R63
8	SD1_DAT1*1	PJ9	R64
9	SD1_nCD*1	PJ5	-

10	VSS	-	-
11	VSS	-	-
12	VSS	-	-
13	VSS	-	-
Note *1: The target chip controls the PMIC by the I2C0 bus (PMIC_I2C0_SDA/PD6 and PMIC_I2C0_SCL/PD7) to output VDD_SDIO power 3.3V or 1.8V voltage on the I/O and pull-up voltage of these SD1 group signals. **Note** *2: The GPIO PG4 pin or nRESET signal controls the fixed VDD_SDCard 3.3V power ON or OFF on the MicroSD card slot.			

Table 3-10 SD1 MicroSD Card Slot (CON4) Pin Function

- SD1 MicroSD Card Power (VDD_SDCard) ON/OFF Control: The GPIO PG4 pin or nRESET signal controls the fixed VDD_SDCard 3.3V power ON or OFF on the MicroSD card slot.

PG4 or nRESET State	SD1 VDD_SDCard Power ON/OFF
Low	OFF
High	ON

Table 3-11 PG4 or nRESET Pin State Control for SD1 MicroSD Card Power ON or OFF

3.8 HS USB2.0 Connectors

- USB0_ID Switch (SW2.6): Optional to pull low the ID pin of HSUSB0 by an 'ON' state on the DIP-Switch (SW2.6) to force HSUSB0 to always act as a USB Host.
- HSUSB0 Host/Device (CON5, Micro USB Type-A/B Receptacle): HSUSB0 can act as a USB Host or Device that depends on the ID pin state of plugged-in USB cable or always acts as Host by switching to the 'ON' state on the DIP-Switch (SW2.6) to force the ID pin of HSUSB0 at low state.
- HSUSB1 Host (CON6, USB Type-A Receptacle): HSUSB1 for USB Host with type-A connector.

3.9 RGMII Gigabit Ethernet

- RGMII0 Gigabit PHY (U5): The RGMII0 MAC of MA35D0 series needs an external Gigabit PHY (RTL8211FDI) to connect with the 1G transformer that embedded in the RJ45 connector (U4) to connect with the Ethernet network.

Function Name	GPIO pin of MA35D0
RGMII0_MDC	PE0
RGMII0_MDIO	PE1
RGMII0_TXCTL	PE2
RGMII0_TXD0	PE3
RGMII0_TXD1	PE4
RGMII0_RXCLK	PE5
RGMII0_RXCTL	PE6

RGMII0_RXD0	PE7
RGMII0_RXD1	PE8
RGMII0_RXD2	PE9
RGMII0_RXD3	PF0
RGMII0_TXCLK	PF1
RGMII0_TXD2	PF2
RGMII0_TXD3	PF3

Table 3-12 RGMII0 PHY (U5) Pin Function

- RGMII0 RJ45 Connector with 1G Transformer (U4): The Ethernet RGMII0 RJ45 connector.

3.10 UART0 Debug Port

- UART0 Debug Port (CON2): The UART0 debug port is on CON2 connector. The functions of the relevant pins are shown in the table below.

Pin No.	Function Name	GPIO pin of MA35D0
13	UART0_TXD	PE14
14	UART0_RXD	PE15

Table 3-13 UART0 Debug Port (CON2) Pin Function

3.11 Key Button and LED

- User-defined Key Button (KEY_0): The function of the relevant pin is shown in the table below.

KEY_#	Function / SW#	GPIO pin of MA35D0	Pull-up Power
KEY_0	INT2 / SW3	PL15	VDD3V3

Table 3-14 Key Button (KEY_0) Pin Function

- User Indication LED (LED_0): The function of the relevant pin is shown in the table below.

LED_#	Function / Color	GPIO pin of MA35D0
LED_0	LED2 / Green	PB8

Table 3-15 LED (LED_0) Pin Function

3.12 GPIO Extension Connector 1

- GPIO Extension Connector 1 (CON2)

Figure 3-3 shows the pin functions of GPIO Extension Connector 1 (CON2).

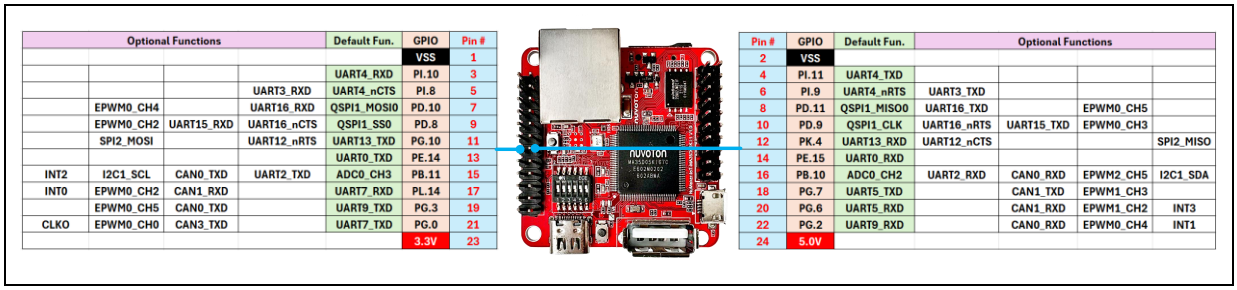


Figure 3-3 Pin Functions of GPIO Extension Connector 1 (CON2)

- Default Pin Functions of GPIO Extension Connector 1 (CON2)

Table 3-16 shows the default pin functions of GPIO Extension Connector 1 (CON2).

Pin No.	GPIO of MA35D0 or Power/GND	Default Pin Function	Pin No.	GPIO of MA35D0 or Power/GND	Default Pin Function
1	VSS	-	2	VSS	-
3	PI10	UART4_RXD	4	PI11	UART4_TXD
5	PI8	UART4_nCTS	6	PI9	UART4_nRTS
7	PD10	QSPI1_MOSI0	8	PD11	QSPI1_MISO0
9	PD8	QSPI1_SS0	10	PD9	QSPI1_CLK
11	PG10	UART13_TXD	12	PK4	UART13_RXD
13	PE14	UART0_TXD	14	PE15	UART0_RXD*1
15	PB11	ADC0_CH3*2	16	PB10	ADC0_CH2*2
17	PL14	UART7_RXD	18	PG7	UART5_TXD
19	PG3	UART9_TXD	20	PG6	UART5_RXD
21	PG0	UART7_TXD	22	PG2	UART9_RXD
23	3.3V	-	24	5.0V	-

Note *1: By default, this signal is pulled to high by a pre-mounted 10K resistor (R32) on this board.

Note *2: By default, there are two pre-mounted 0.1u capacitors (C95 and C96) connected to these two ADC input signals respectively on this board.

Table 3-16 Default Pin Functions of GPIO Extension Connector 1 (CON2)

3.13 GPIO Extension Connector 2

- GPIO Extension Connector 2 (CON3)

Figure 3-4 shows the pin functions of GPIO Extension Connector 1 (CON3).

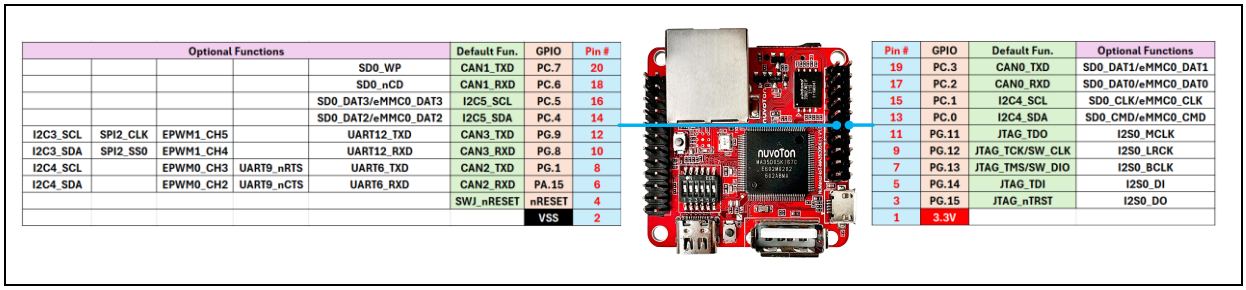


Figure 3-4 Pin Functions of GPIO Extension Connector 2 (CON3)

- Default Pin Functions of GPIO Extension Connector 2 (CON3)

Table 3-17 shows the default pin functions of GPIO Extension Connector 2 (CON3).

Pin No.	GPIO of MA35D0 or Power/GND	Default Pin Function	Pin No.	GPIO of MA35D0 or Power/GND	Default Pin Function
1	3.3V	-	2	VSS	-
3	PG15*1	JTAG_nTRST*2	4	nRESET	SWJ_nRESET
5	PG14*1	JTAG_TDI*2	6	PA15	CAN2_RXD
7	PG13*1	JTAG_TMS*2, SW_DIO*2	8	PG1	CAN2_TXD
9	PG12*1	JTAG_TCK*3, SW_CLK*3	10	PG8	CAN3_RXD
11	PG11*1	JTAG_TDO	12	PG9	CAN3_TXD
13	PC0	I2C4_SDA*4	14	PC4	I2C5_SDA*4
15	PC1	I2C4_SCL*4	16	PC5	I2C5_SCL*4
17	PC2	CAN0_RXD	18	PC6	CAN1_RXD
19	PC3	CAN0_TXD	20	PC7	CAN1_TXD

Note *1: When the chip enters debug mode, these GPIO PG11 ~ PG15 pins will be automatically forced to JTAG and SWD functionality by hardware, and other pinout functions of these GPIO pins will be disabled.

Note *2: By default, these signals are pulled to high by three pre-mounted 10K resistors (R34~R36) on this board.

Note *3: By default, this signal is pulled to low by a pre-mounted 10K resistor (R33) on this board.

Note *4: By default, these signals are pulled to high by four pre-mounted 4.7K resistors (R28~R31) on this board for I^2C function.

Table 3-17 Default Pin Functions of GPIO Extension Connector 2 (CON3)

4 QUICK START

This chapter guides users step by step to start the NuMicro MA35D0 evaluation system based on the NuMaker-IoT-MA35D0-A2 board.

4.1 Configure Power-on Setting

Secondly, make sure the power-on setting for the boot source selection on the DIP-Switch (SW2) followed the correct ON/OFF states shown in Table 4-1 ~ Table 4-3.

After choosing the correct power-on setting on these DIP switches, the evaluation environment will boot from the image stored in the SPI NAND Flash device (QSPI0) when power is supplied to the NuMaker-IoT-MA35D0-A2 board.

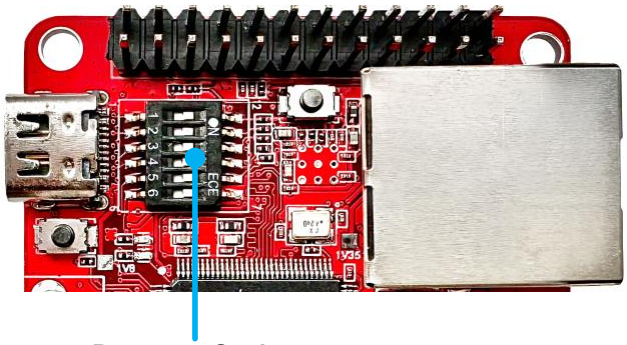


Figure 4-1 Power-on Setting DIP-Switch (SW2)

- Options for secure boot enable or disable:

SW2.1 / PG0*	Secure Booting
Low	Enable
High (ON)	**Disable**
Note *: The GPIO PG0 is internal weak pull-down.	

Table 4-1 Secure Boot Disable Configuration

- Options for boot source selection:

SW2.3 / PG3*1	SW2.2 / PG2*1	Booting Source
Low (OFF)	**Low (OFF)**	**QSPI0 Flash**
Low	High	SD/eMMC*2
High	Low	-
High	High	USB
Note *1: These GPIO PG2 and PG3 are internal weak pull-down. **Note** *2: There's only SD1 micro card slot on this NuMaker-IoT-MA35D0-A2 board.		

Table 4-2 QSPI0 Boot Source Configuration

- Options for booting from QSPI0 Flash device:

SW2.5 / PG6*1	Boot from QSPI0 Flash
Low (OFF)	**SPI NAND 1-bit*2**
High	-
Note *1: The GPIO PG6 is internal weak pull-down. **Note** *2: This NuMaker-IoT-MA35D0-A2 board only supports SPI NAND 1-bit booting.	

Table 4-3 QSPI0 Boot Source SPI NAND 1-bit Configuration

4.2 Power On the System

The third step is to power on the system. There are three ways to provide the power to this NuMaker-IoT-MA35D0-A2 board:

- To plug the head of an adapter that can supply 5V/2A power into the USB Type-C receptacle (CON1). (Must)
- To connect the HSUSB0 Device connector (CON5, Micro USB Type-A/B Receptacle) to PC USB Host with a USB Type-A to Micro Type-A/B cable if it is needed to connect with NuWritter. (Optional)

4.3 UART0 Debug Port (Optional)

Users can use a USB to UART bridge interface hardware to connect the UART0 debugging ports (UART0_TXD and UART0_RXD) and plug them into the PC Host via a USB cable to display debugging information on the PC when the evaluation environment starts up or the CPU is running in the Linux kernel.

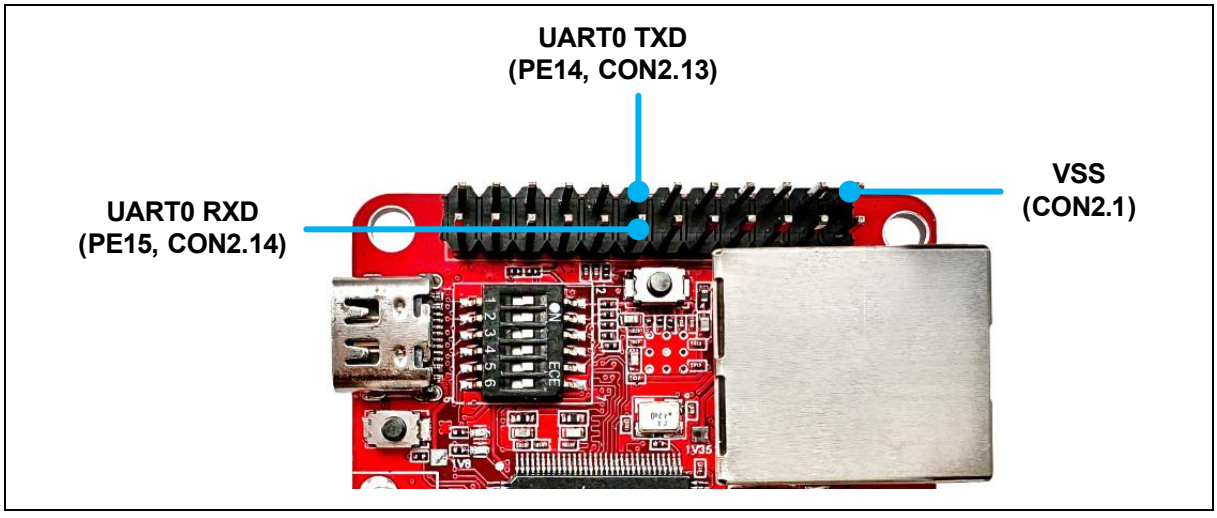


Figure 4-2 UART0 Debug Port (UART0_TXD and UART0_RXD on CON2)

4.4 Press the PMIC Reset Key (Optional)

If it is necessary to press the PMIC Reset Key (SW1) to reset the power output of PMIC device again to power on this NuMaker-IoT-MA35D0-A2 board and finally output the nRESET signal to reset the target chip MA35D05KI67C.

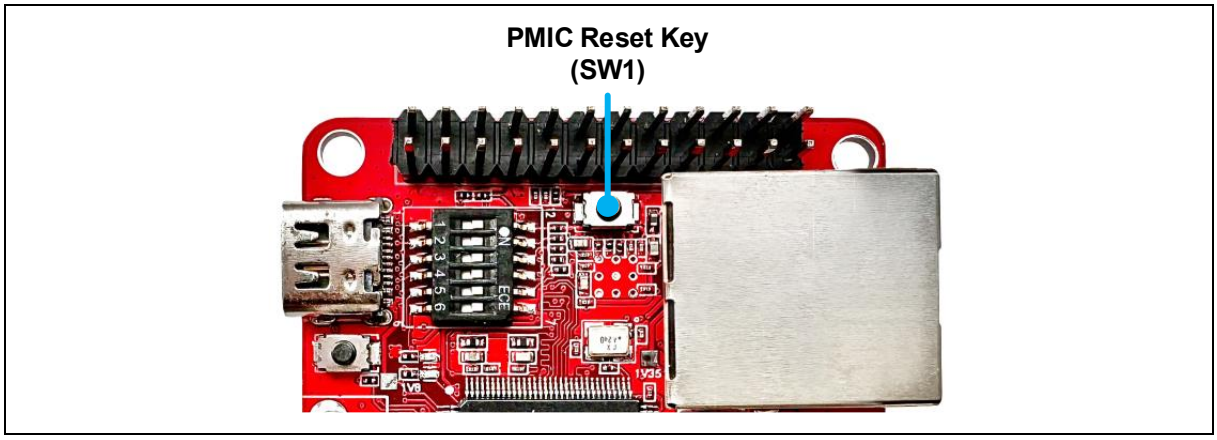


Figure 4-3 PMIC Reset Key (SW1)

5 DEMONSTRATION

The NuMaker-IoT-MA35D0-A2 automatically launches the IoT demo application when this EVB is powered on. The IoT demo image is available from Nuvoton Web Resources. Alternatively, the SPI NAND device (U3) on this EVB may already be programmed with the factory-default demo image.

The demo application provides an RTSP server. Users can use VLC media player to connect to the RTSP stream and view the live video on a PC or mobile device. The following example uses VLC media player to demonstrate how to access the RTSP video stream.

Follow the steps below:

- Download and install VLC media player on your PC or mobile device.
- Connect the EVB to the network using an Ethernet cable and note the IP address assigned by the DHCP server.
- Launch VLC media player, then select Media > Open Network Stream. Enter the following RTSP URL and click Play.

```
rtsp://192.168.0.175:8554/test
```

```
Starting network: OK
udhcpc: started, v1.36.1
[    3.227469] ma35d1-gmac 40120000.ethernet eth0: PHY [stmmac-0:01] driver [RTL8211F Gigabit Ethernet] (irq=POLL)
[    3.229325] ma35d1-gmac 40120000.ethernet eth0: No Safety Features support found
[    3.229462] ma35d1-gmac 40120000.ethernet eth0: No MAC Management Counters available
[    3.229493] ma35d1-gmac 40120000.ethernet eth0: IEEE 1588-2008 Advanced Timestamp supported
[    3.238690] ma35d1-gmac 40120000.ethernet eth0: configuring for phy/rgmii-id link mode
udhcpc: broadcasting discover
udhcpc: broadcasting discover
[    7.398218] ma35d1-gmac 40120000.ethernet eth0: Link is Up - 1Gbps/Full - flow control rx/tx
[    7.398303] IPv6: ADDRCONF(NETDEV_CHANGE): eth0: link becomes ready
udhcpc: broadcasting discover
udhcpc: broadcasting select for 192.168.0.175, server 192.168.0.1
udhcpc: lease of 192.168.0.175 obtained from 192.168.0.1, lease time 7200
deleting routers
adding dns 192.168.0.1

Welcome to Buildroot
buildroot login: stream ready at rtsp://127.0.0.1:8554/test
```

Figure 5-1 Booting Log Shows the Assigned IP Address

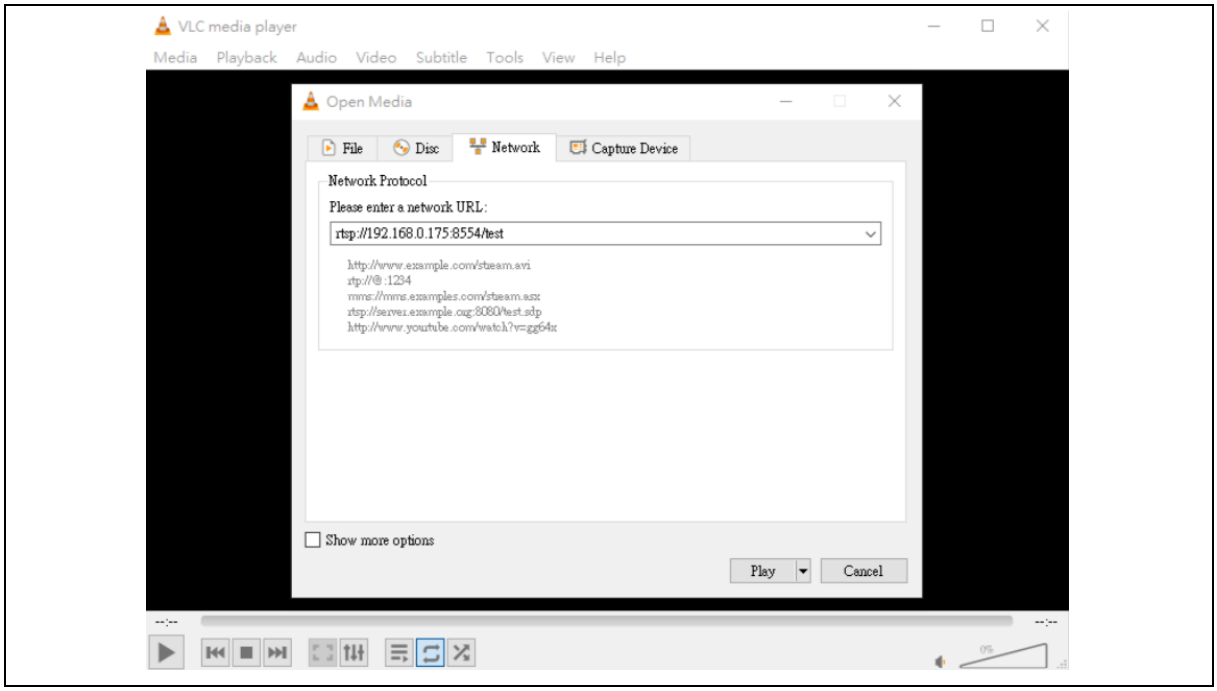


Figure 5-2 Opening the RTSP Stream in VLC Media Player

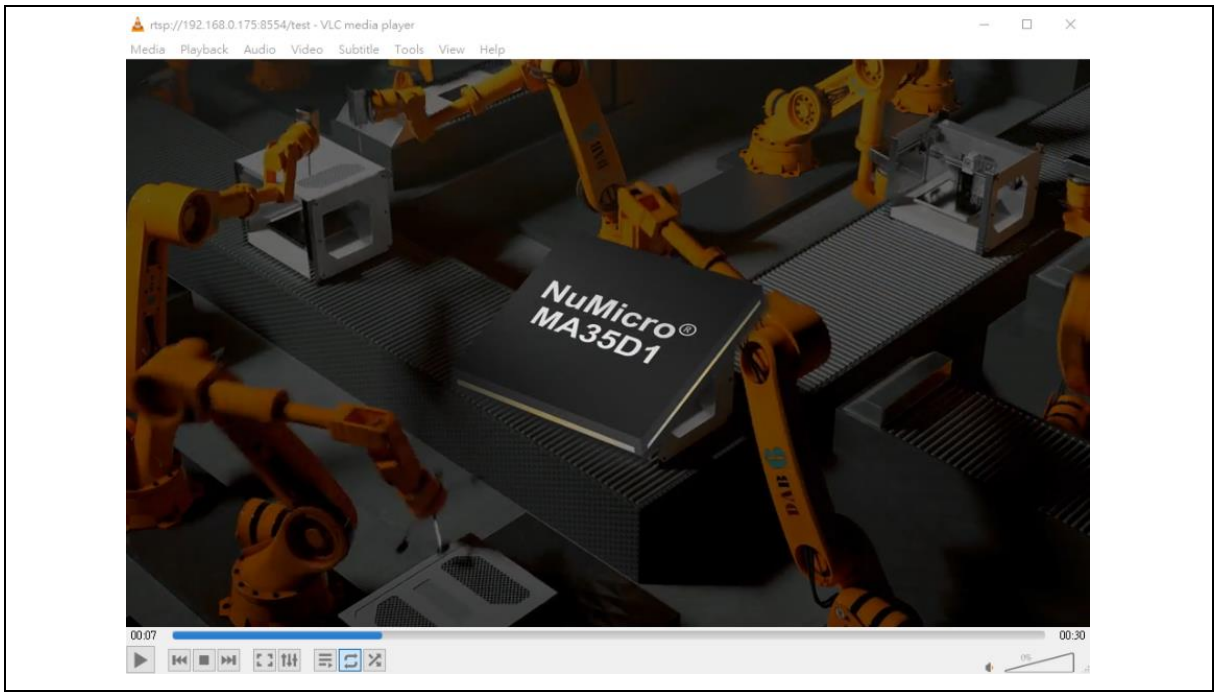


Figure 5-3 Video Stream Displayed in VLC Media Player

6 SUPPORTING RESOURCES

6.1 Documents

For more details about MA35D0 series documents, for example, Technical Reference Manual, Datasheet, Application Note and User Manual documents, please visit Nuvoton website and search for the Arm Cortex-A35 MPUs product line for the MA35D0 series products from the “Products” menu on the Nuvoton website homepage.

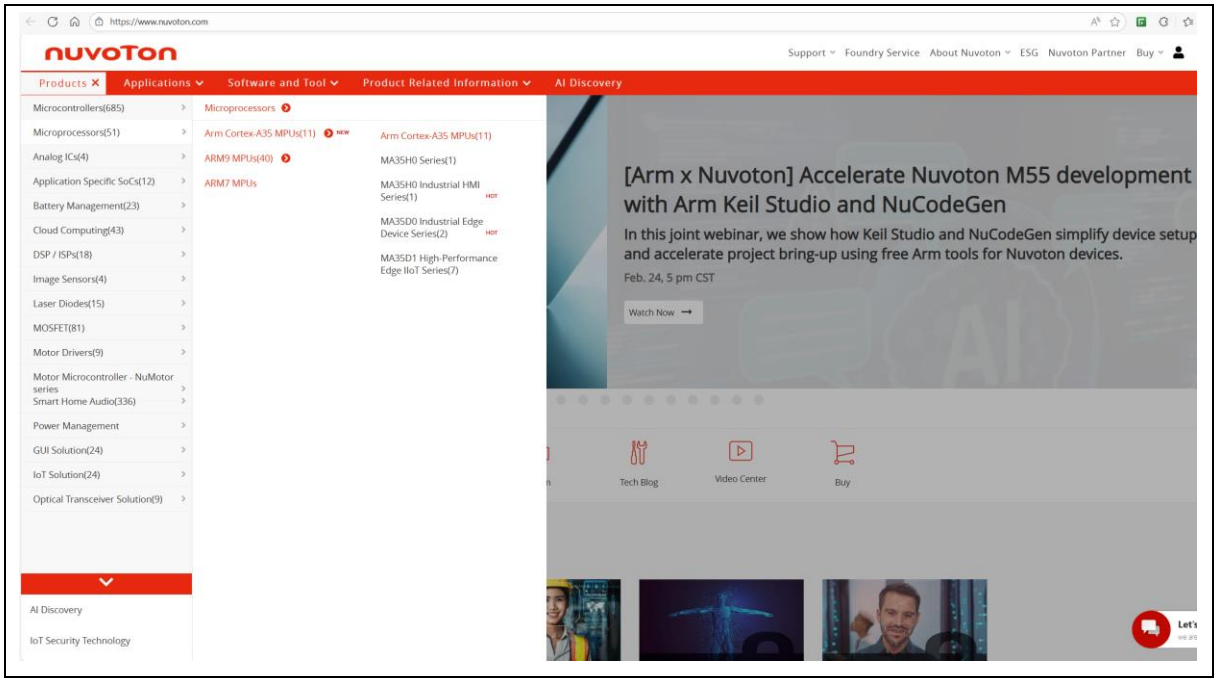


Figure 6-1 Nuvoton Website

6.2 Software

For more details about MA35D0 series software, for example, BSP (Board Support Package), Yocto, Buildroot, U-Boot, Linux, software NuWriter tool and example code, please visit GitHub’s website. The related Github resources are listed and shown as Figure 6-2.

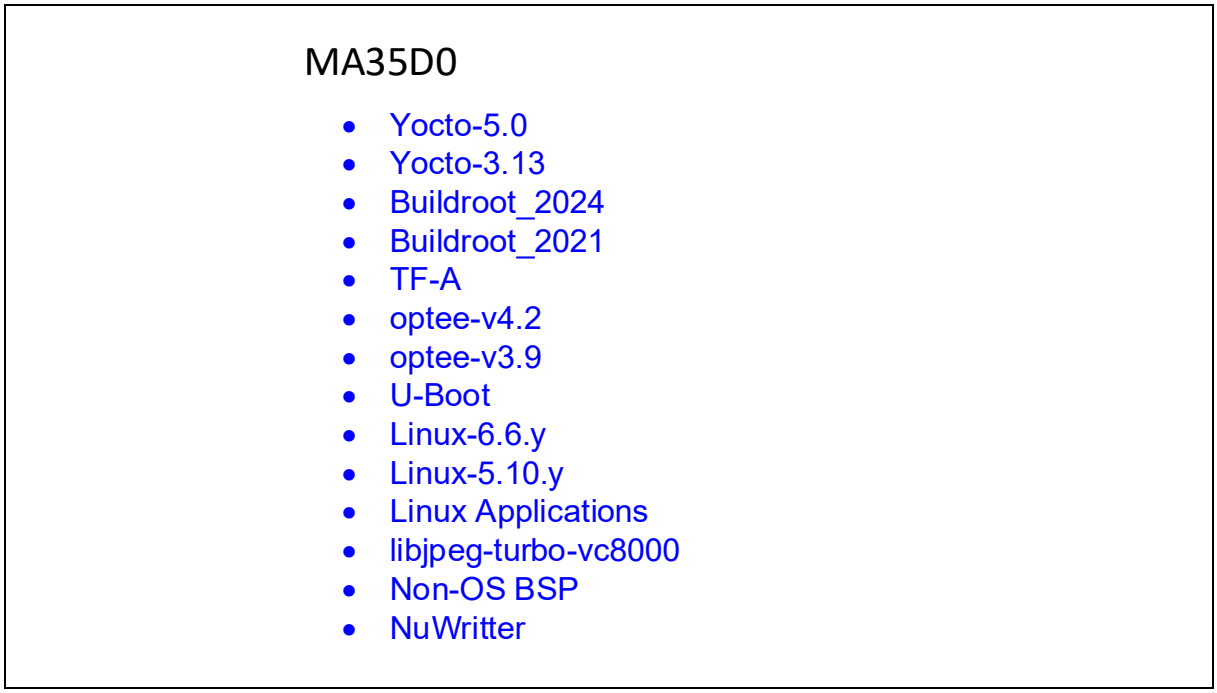


Figure 6-2 MA35D0 GitHub Resources

7 NUMAKER-IOT-MA35D0-A2 SCHEMATICS

7.1 System Block

Figure 7-1 shows the system block of the NuMaker-IoT-MA35D0-A2 board.

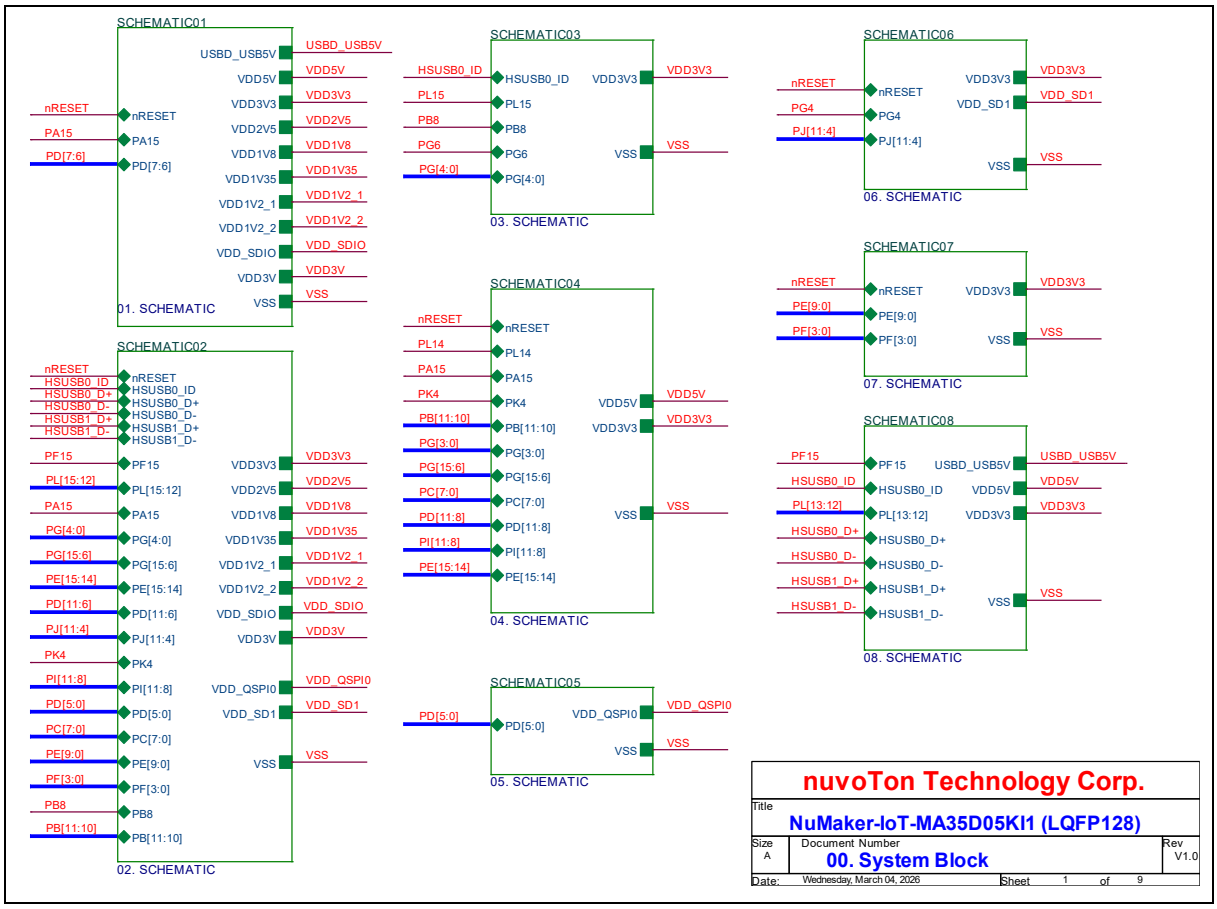


Figure 7-1 System Block

7.2 Power Input Schematic

Figure 7-2 shows the power circuit of the NuMaker-IoT-MA35D0-A2 board.

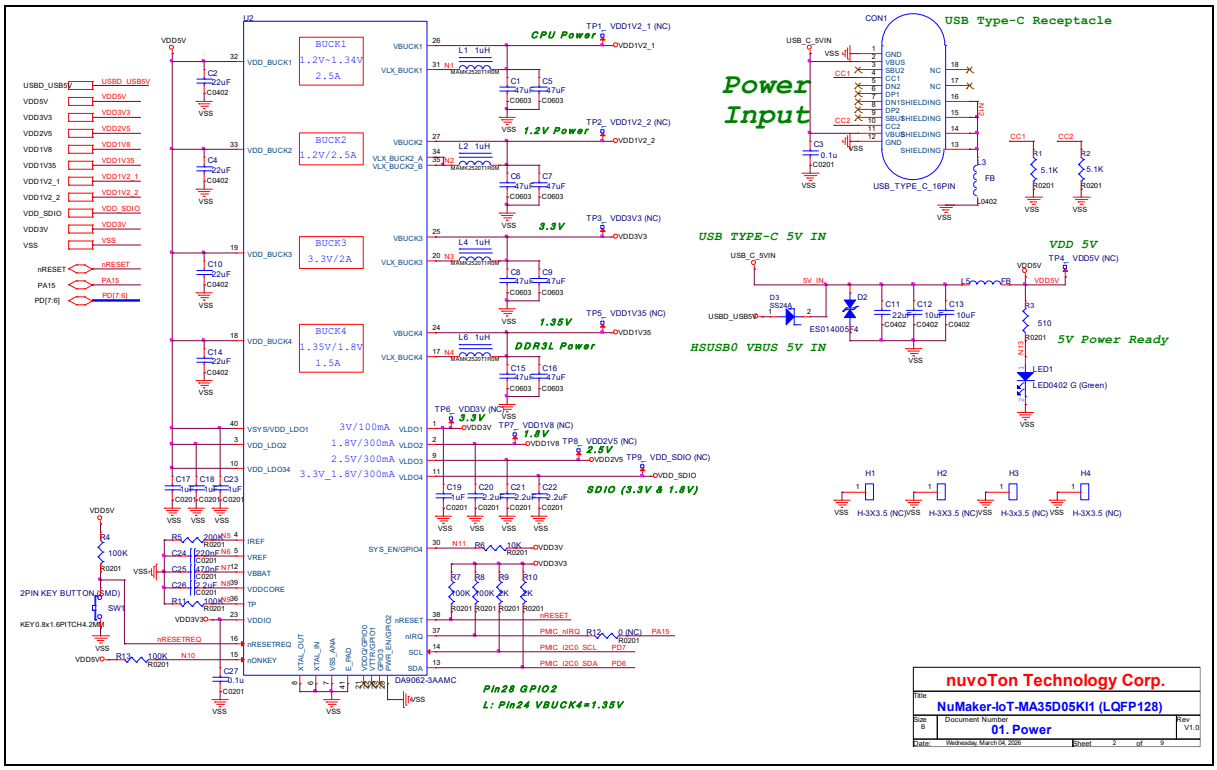


Figure 7-2 Power Input Schematic

7.3 Main Chip and Filters Schematic

Figure 7-3 shows the main chip and filters circuit of the NuMaker-IoT-MA35D0-A2 board.

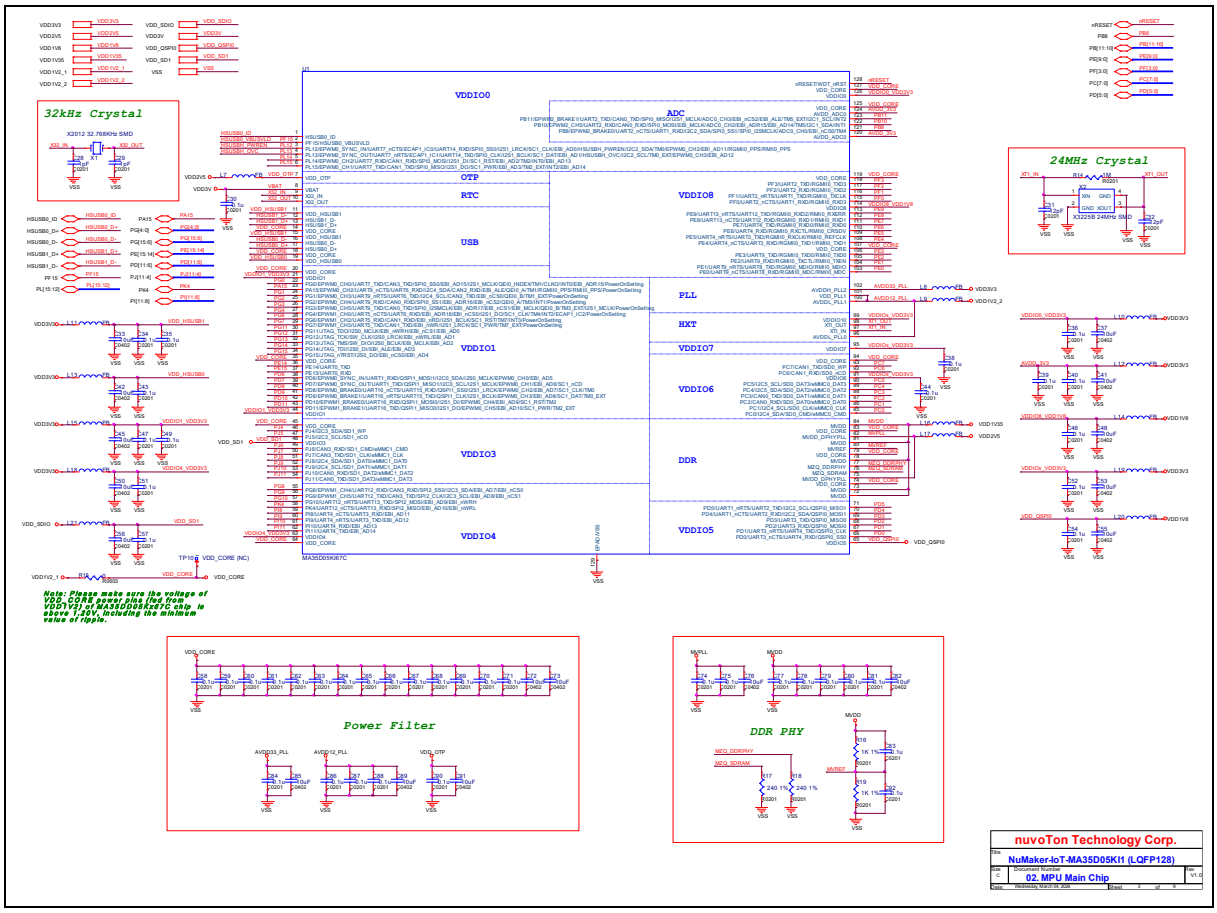


Figure 7-3 Main Chip and Filters Schematic

7.4 Power-on Setting, Key Button and LED Schematic

Figure 7-4 shows the power-on setting, key button and LED circuit of the NuMaker-IoT-MA35D0-A2 board.

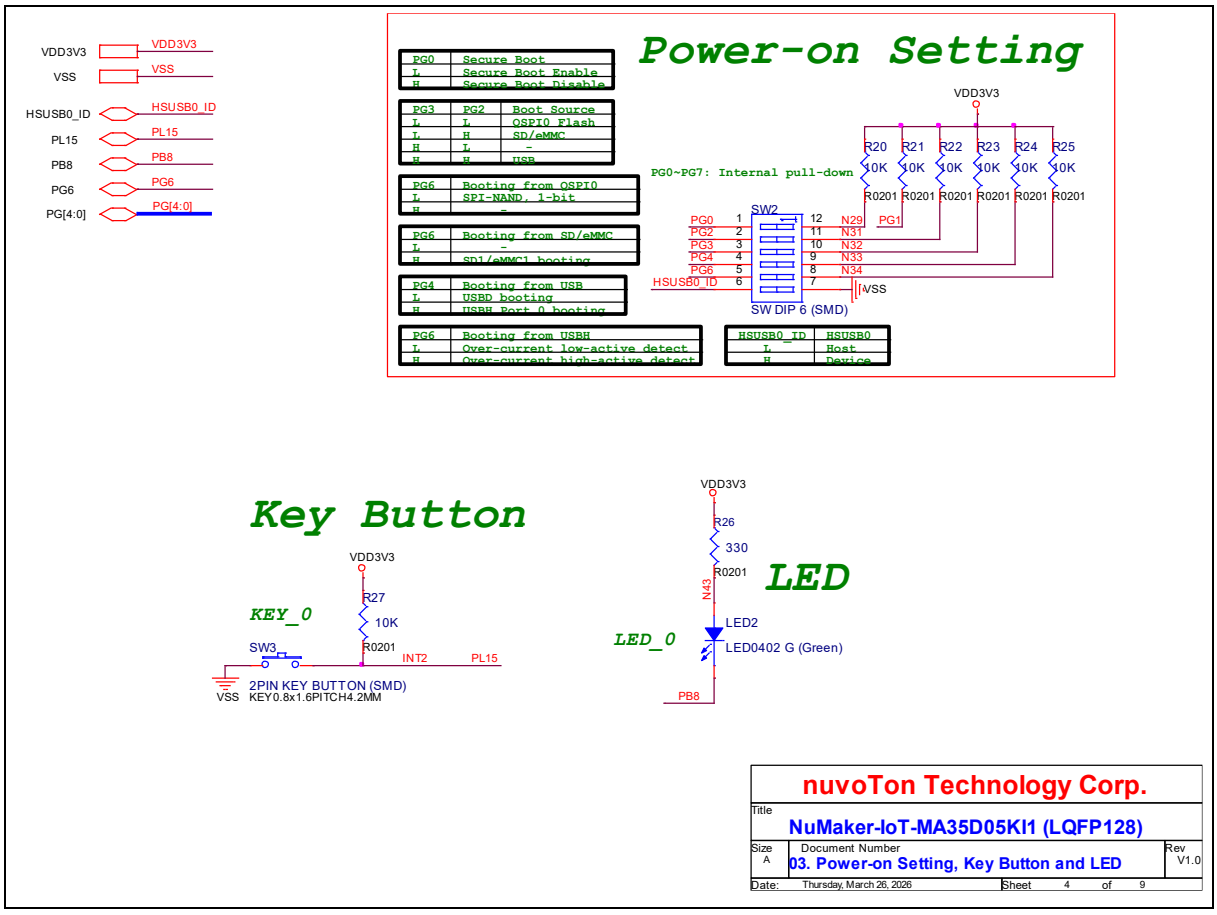


Figure 7-4 Power-on Setting, Key Button and LED Schematic

7.5 GPIO Extension Connectors Schematic

Figure 7-5 shows the GPIO extension connectors circuit of the NuMaker-IoT-MA35D0-A2 board.

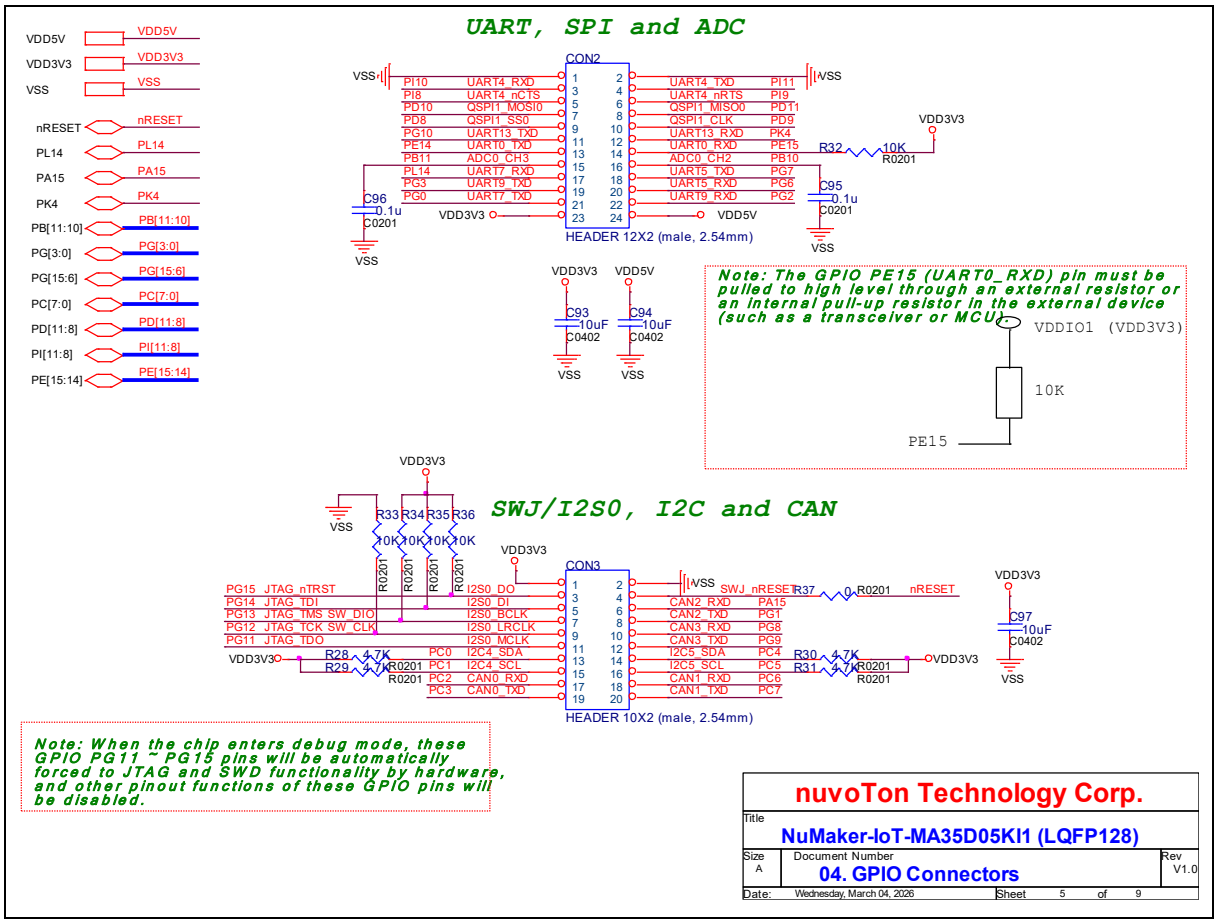


Figure 7-5 GPIO Extension Connectors Schematic

7.6 QSPI0 Schematic

Figure 7-6 shows the QSPI0 (SPI NAND Flash device) circuit of the NuMaker-IoT-MA35D0-A2 board.

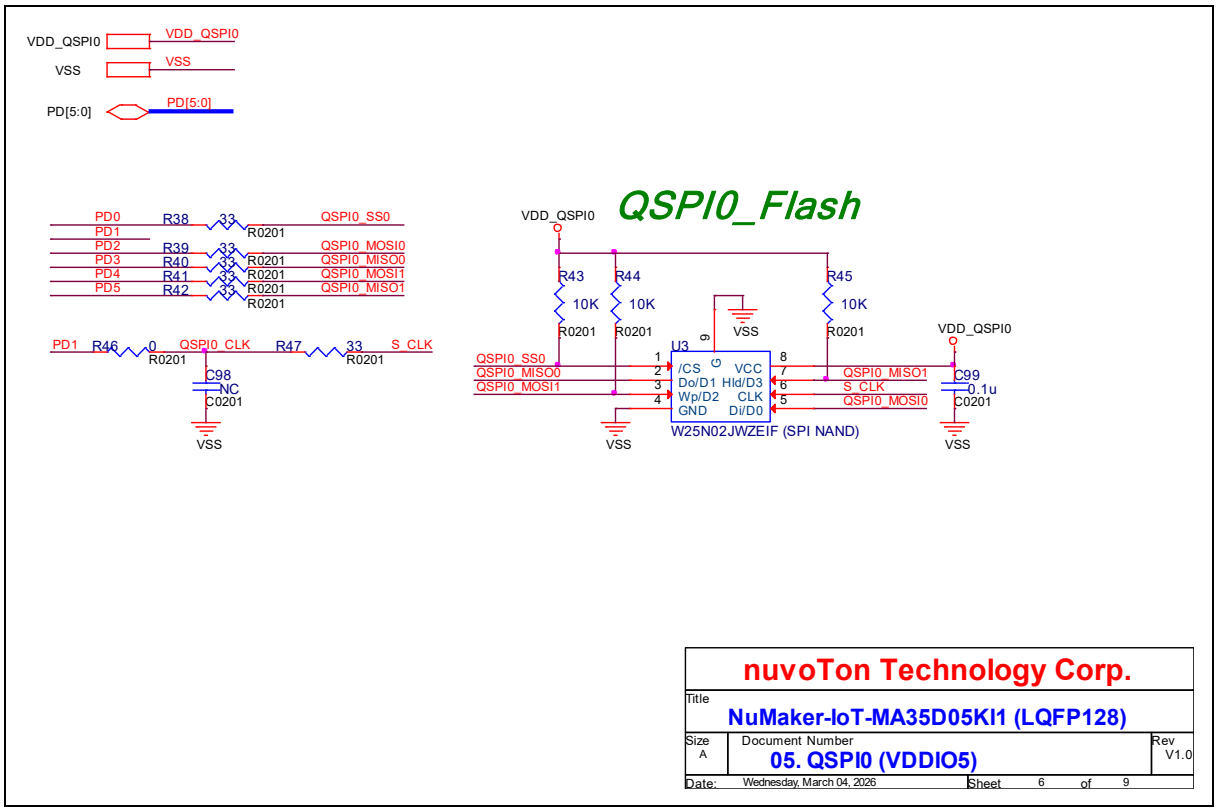


Figure 7-6 QSPI0 Schematic

7.7 SD1 Schematic

Figure 7-7 shows the SD1 card slot (T-Flash card) circuit of the NuMaker-IoT-MA35D0-A2 board.

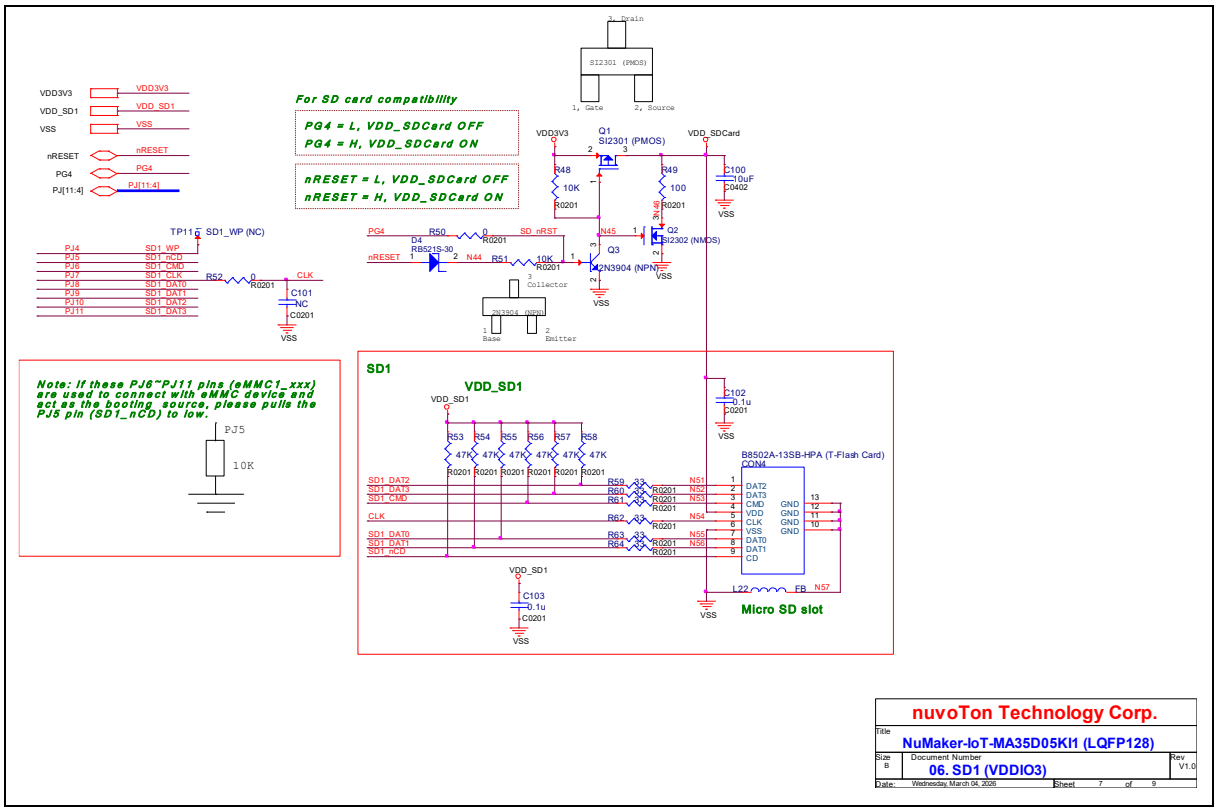


Figure 7-7 SD1 Schematic

7.8 RGMII0 Ethernet Schematic

Figure 7-8 shows the RGMII0 ethernet circuit of the NuMaker-IoT-MA35D0-A2 board.

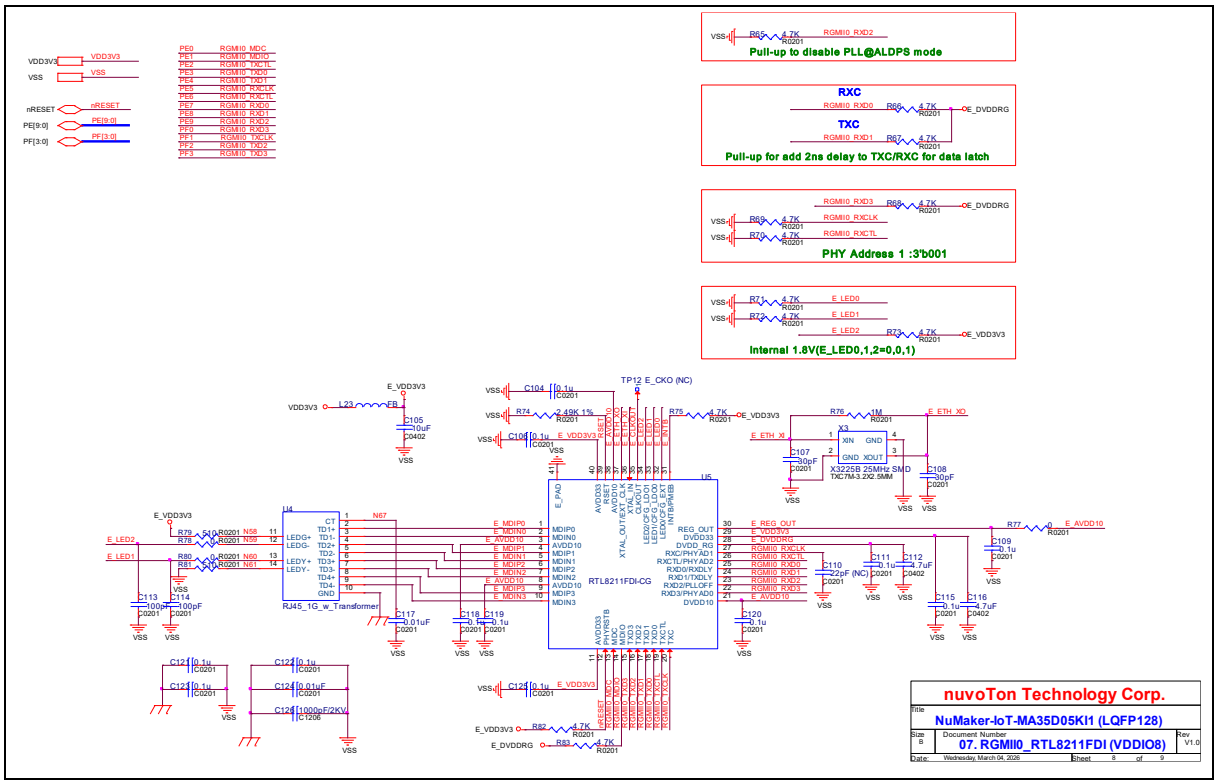


Figure 7-8 RGMII0 Ethernet Schematic

7.9 HSUSB 0/1 Schematic

Figure 7-9 shows the HS (high-speed) USB 0/1 circuit of the NuMaker-IoT-MA35D0-A2 board.

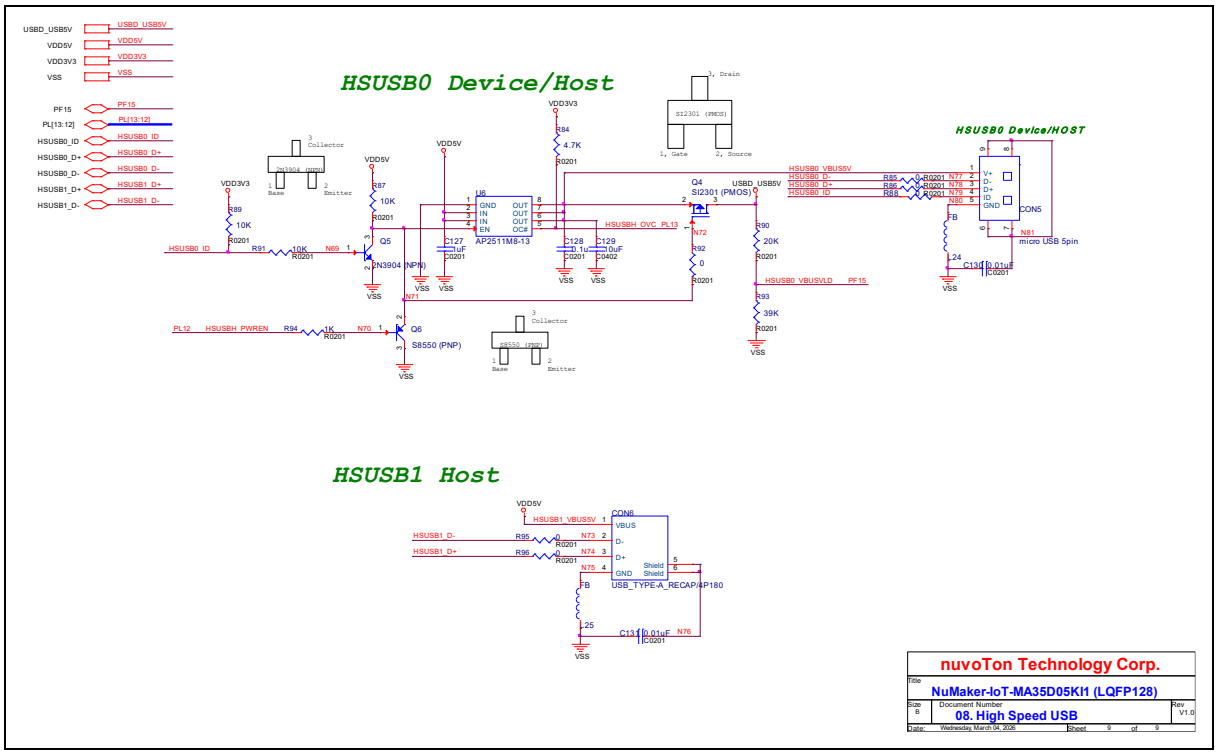


Figure 7-9 HSUSB 0/1 Schematic

7.10 PCB Placement

Figure 7-10, Figure 7-11, Figure 7-12 and Figure 7-13 show the front and rear PCB component placements of the NuMaker-IoT-MA35D0-A2 board.

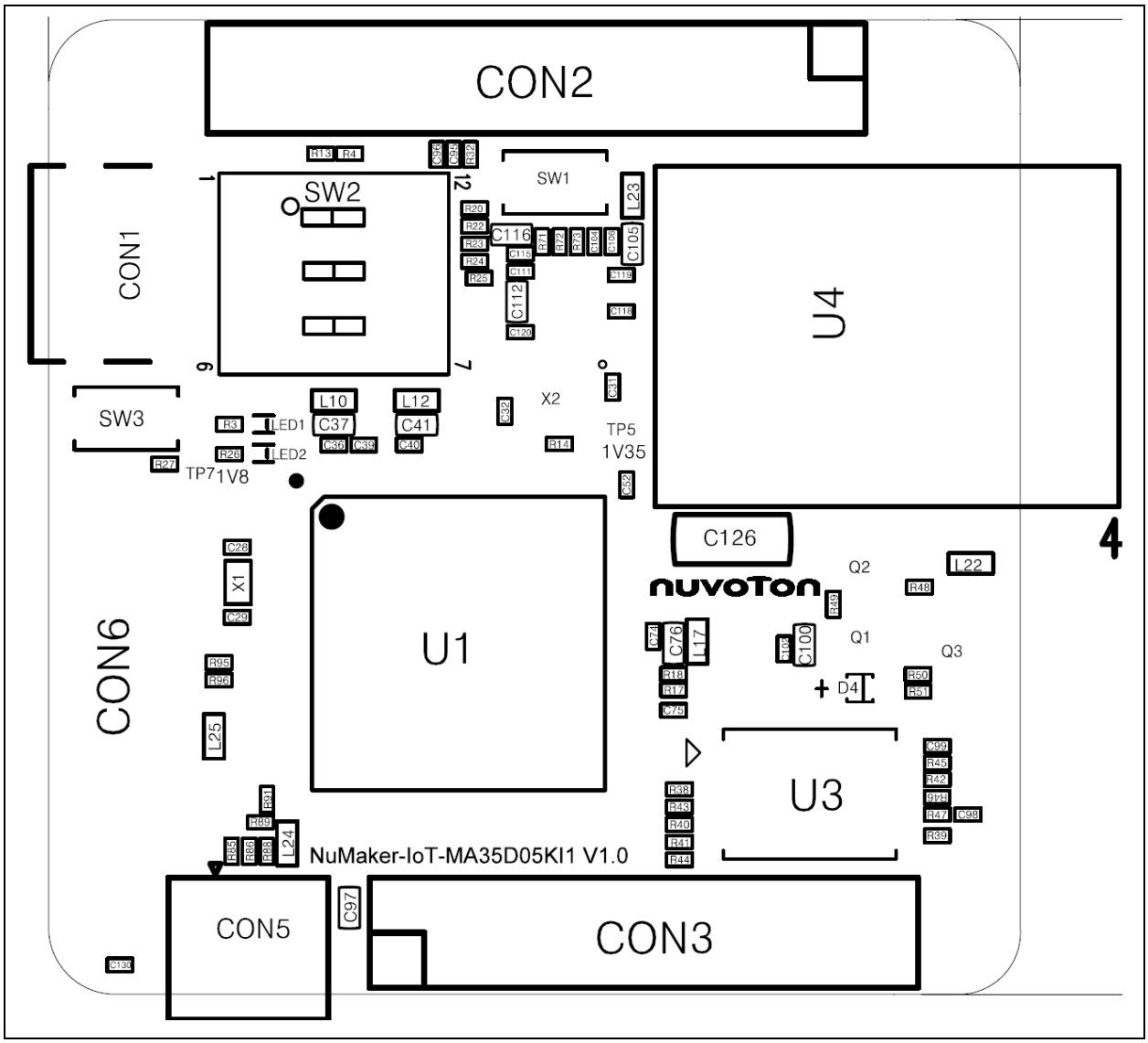


Figure 7-10 Front PCB Placement of NuMaker-IoT-MA35D0-A2 Board (1/2)

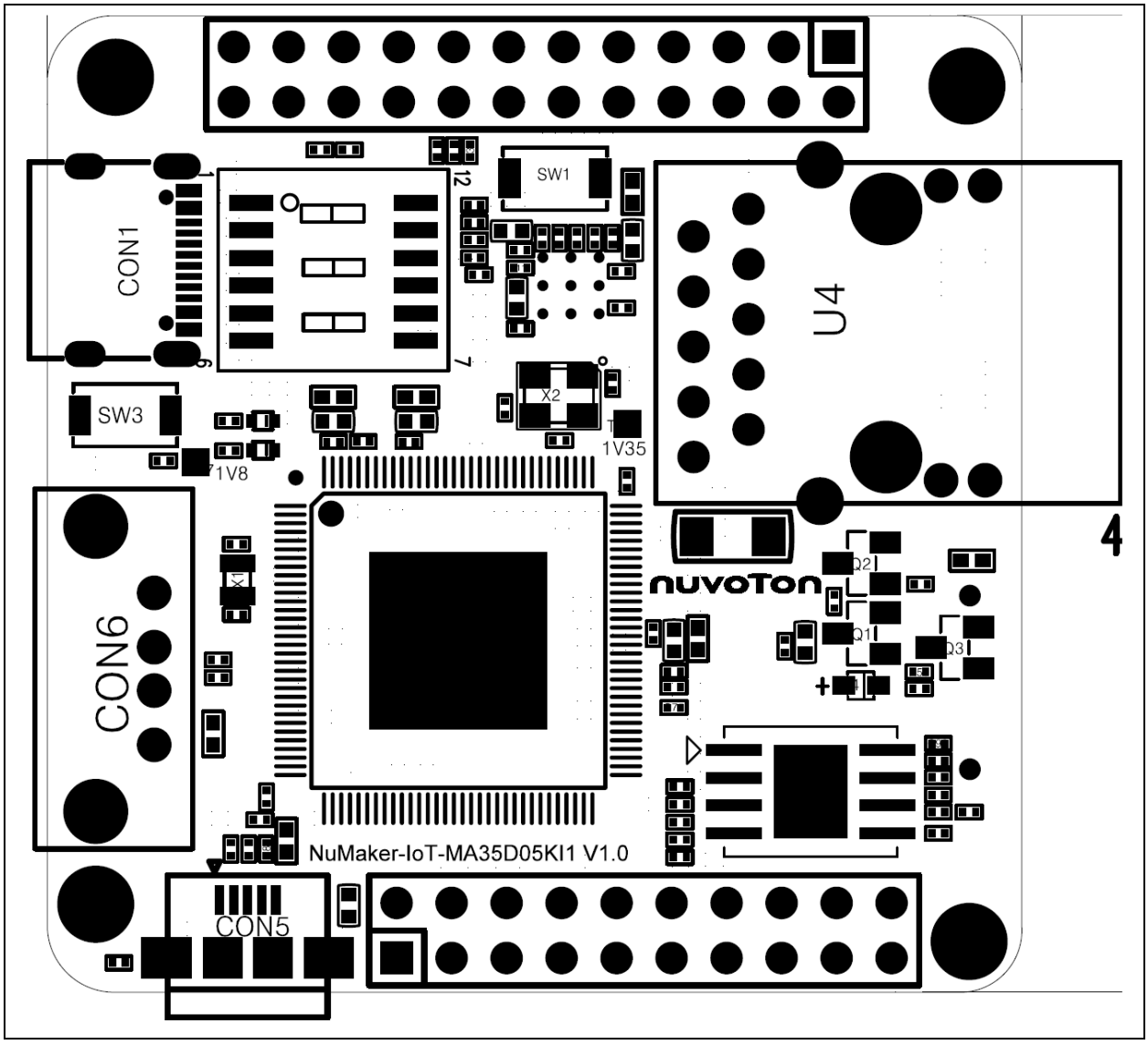


Figure 7-11 Front PCB Placement of NuMaker-IoT-MA35D0-A2 Board (2/2)

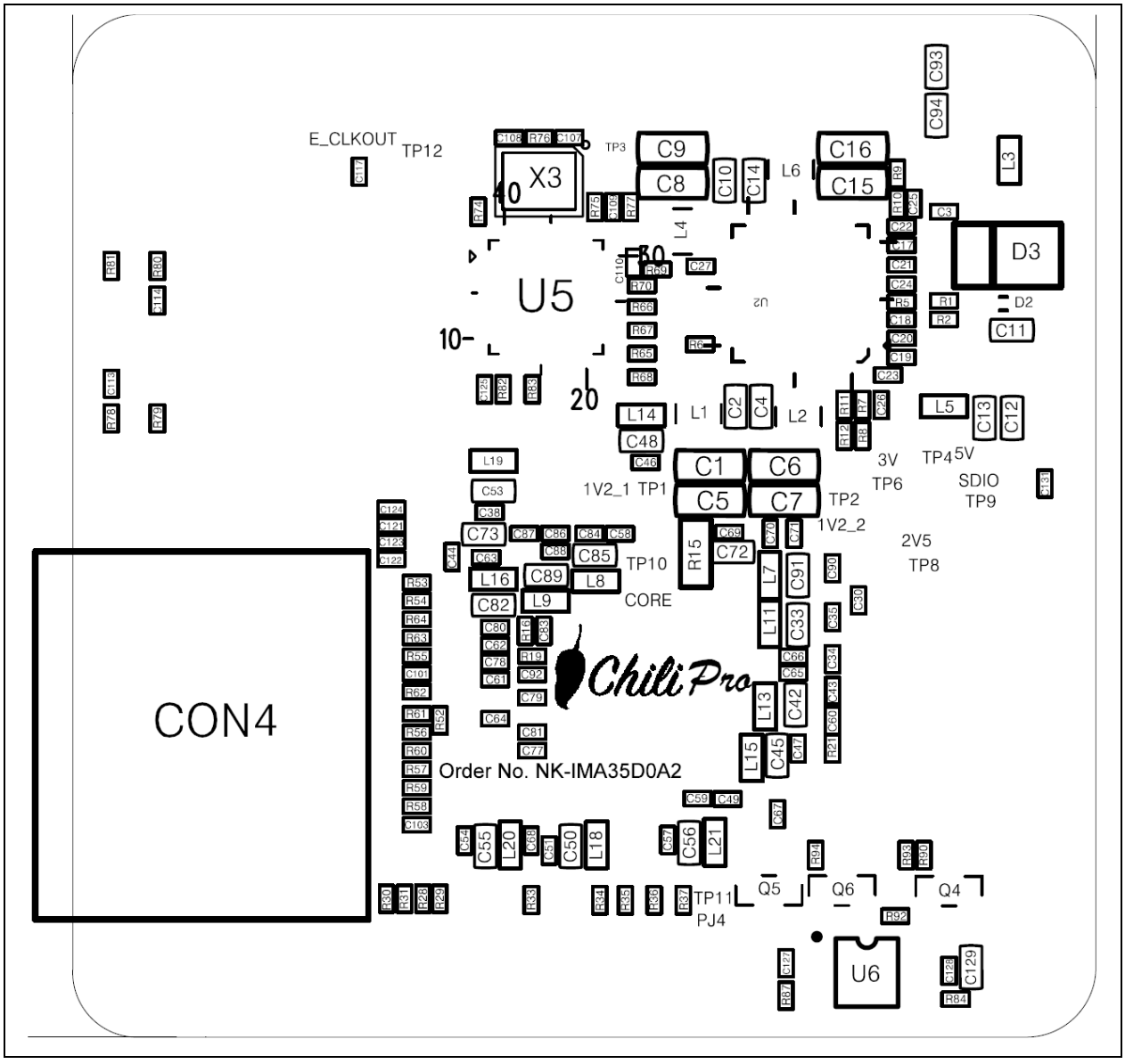


Figure 7-12 Rear PCB Placement of NuMaker-IoT-MA35D0-A2 Board (1/2)

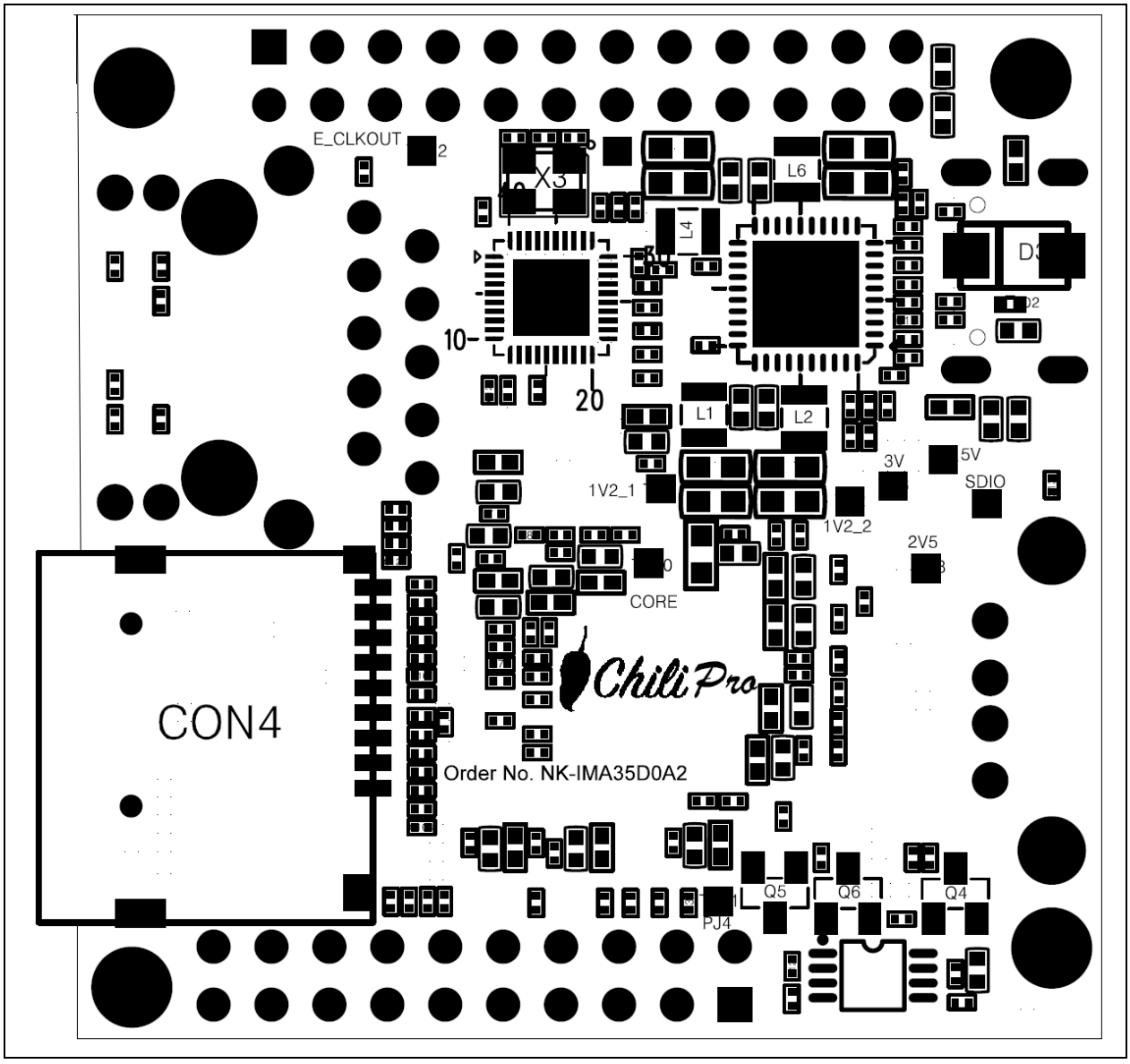


Figure 7-13 Rear PCB Placement of NuMaker-IoT-MA35D0-A2 Board (2/2)

8 REVISION HISTORY

Date	Revision	Description
2026.3.31	1.00	• Initial version.
2026.8.13	1.01	• Added the chapter 5.

Important Notice

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