NuMicro® Family

Arm® Cortex®-M4-based Microcontroller

NuMaker-UNO-M4

User Manual

Evaluation Board for NuMicro® M460 Series

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1 OVERVIEW

Arduino is an open-source electronics platform based on easy-to-use hardware and software. The NuMicro NuMaker-UNO-M4 evaluation board is an Arduino compatible board using NuMicro microcontroller (MCU) as the MCU. Its functions can be extended with Arduino add-ons. With the Arduino IDE, users can develop their applications and leverage large number of open source samples.

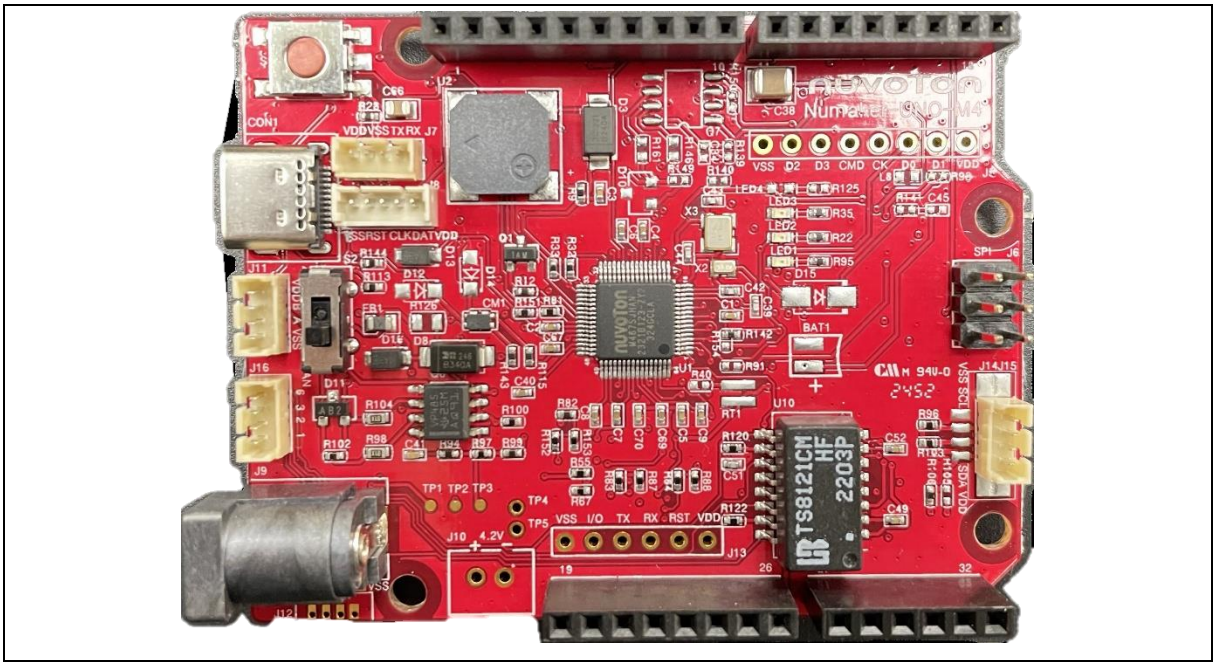

Figure 1-1 NuMaker-UNO-M4 Evaluation Board

The NuMaker-UNO-M4 is a specific development tool for NuMicro M467SJHAN by which users can develop and verify the application program easily. Its purpose is to provide a platform for development and learning. With ADC, PWM, I²C, SPI, UART and other peripheral functions, users can configure the NuMaker-UNO-M4 development kit with different functions or expand it with additional peripherals based on their specific needs.

The NuMaker-UNO-M4 is compatible with the Arduino UNO R4 board.

2 FEATURES

The NuMaker-UNO-M4 evaluation board provides the following features:

- Wide range of development tools for Learning/applications/debug
- Portable package development and debugging tools
- Rich MCU peripheral functions, such as ADC, PWM, I²C, SPI, and UART
- Able to connect to different application modules due to high scalability
- Supports compatible with Arduino UNO R4
- Supports USB virtual serial port (VCOM)
- Supported Arduino IDE, IAR EWARM and Keil RVMDK IDE
- Flexible board power supply
- LEDs
- One push button: RESET

3 HARDWARE CONFIGURATION

3.1 Front View

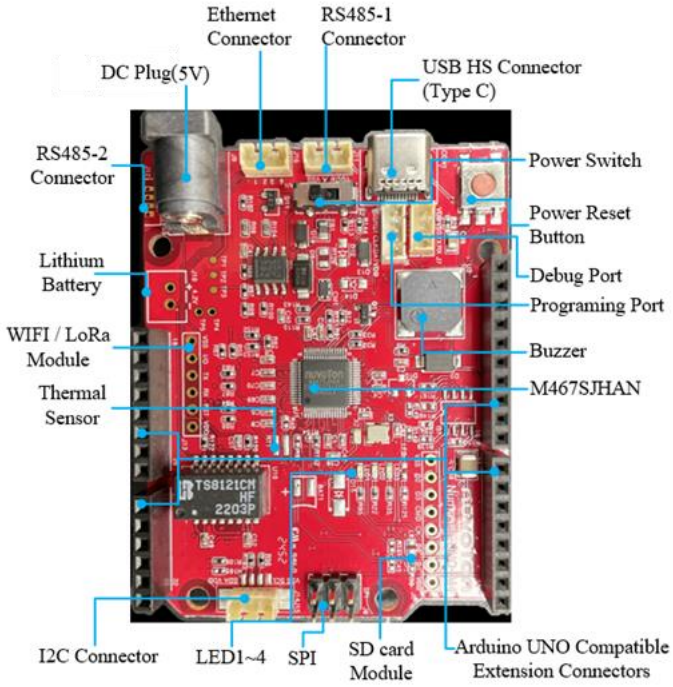

Figure 3-1 Front View of NuMaker-M4-UNO

Figure 3-1 shows the main components and connectors from the front side of NuMaker-UNO-M4. The following lists components and connectors from the front view:

- Target chip: M467SJHAN
- USB HS Connector
- Arduino UNO Compatible Extension Connectors
- External V_{DD} Power Connector
- External V_{SS} Power Connector

3.2 Rear View

Figure 3-2 shows the main components and connectors from the rear side of NuMaker-UNO-M4

The following lists components and connectors from the rear view:

- Ethernet RTL8201FI

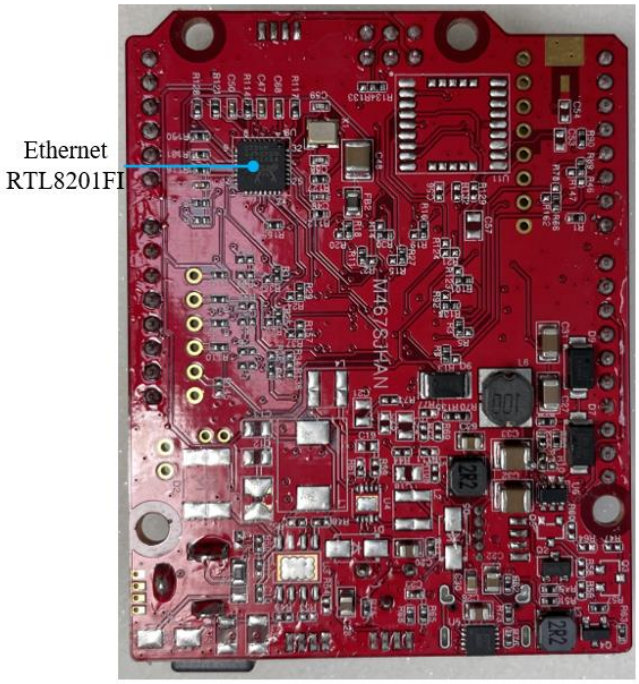

Figure 3-2 Rear View of NuMaker-UNO-M4

3.3 Extension Connectors

Table 3-1 presents the extension connectors.

Connector	Description
J1 / J2 / J3 / J4	Arduino UNO compatible pins on the NuMaker-UNO-M4.

Table 3-1 Extension Connectors

3.3.1

3.3.1 Arduino UNO Compatible Extension Connectors

Figure 3-3 shows the Arduino UNO compatible extension connectors.

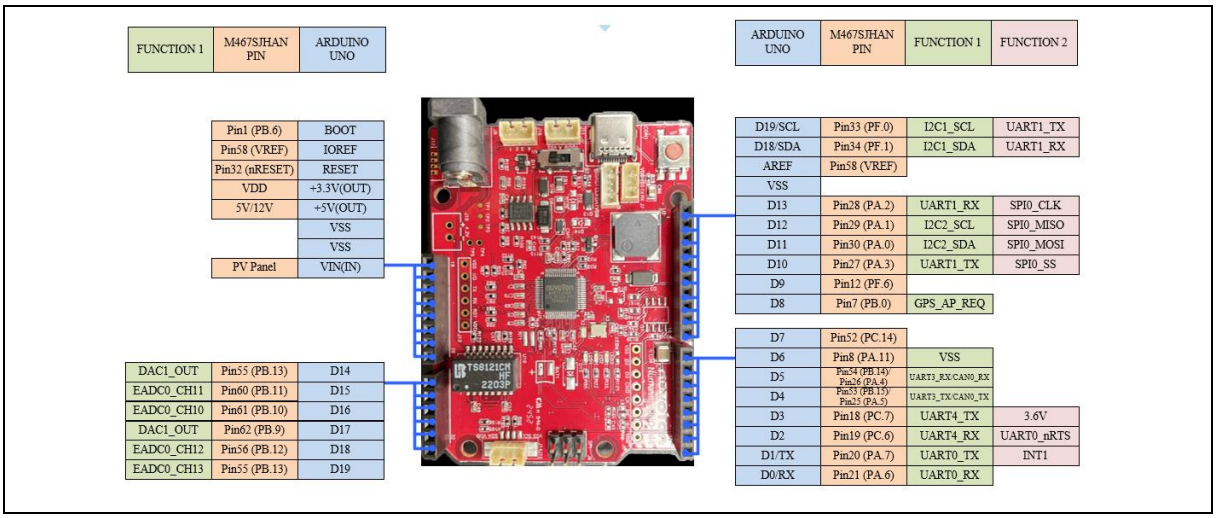

Figure 3-3 Arduino UNO Compatible Extension Connectors

Header		NuMaker-Uno-M4		Header		NuMaker-Uno-M4	
		Compatible to Arduino UNO	GPIO Pin of M467			Compatible to Arduino UNO	GPIO Pin of M467
J3	Pin1	BOOT		J1	Pin1	D19/SCL	PF.0
	Pin2	IOREF	VREF		Pin2	D18/SDA	PF.1
	Pin3	RESET	nRESET		Pin3	AREF	VREF
	Pin4	+3.3V(OUT)	VDD		Pin4	VSS	VSS
	Pin5	+5V(OUT)	5V		Pin5	D13	PA.2
	Pin6	VSS	VSS		Pin6	D12	PA.1
	Pin7	VSS	VSS		Pin7	D11	PA.0
	Pin8	VIN(IN)			Pin8	D10	PA.3
J4	Pin1	D14	PB.13		Pin9	D9	PF.6
	Pin2	D15	PB.11		Pin10	D8	PB.0
	Pin3	D16	PB.10	J2	Pin1	D7	PC.14
	Pin4	D17	PB.9		Pin2	D6	PA.11
	Pin5	D18	PB.12		Pin3	D5	PB.14/PA.4
	Pin6	D19	PB.13		Pin4	D4	PB.15/PA.5
					Pin5	D3	PC.7
					Pin6	D2	PC.6
					Pin7	D1 / TX	PA.7
					Pon8	D0 / RX	PA.6

Table 3-2 Arduino UNO Extension Connectors and M467SJHAN Pin Mapping List

3.4 Power Supply Configuration

The NuMaker-UNO-M4 is able to adopt multiple power supplies. External power sources include Vin (5 V), V_{DD} (depending on the target chip operating voltage), and PC through USB connector. By using switches and voltage regulator, multiple power domains can be created on the NuMaker-UNO-M4.

3.4.1 VIN Power Source

Table 3-3 presents the Vin power source.

Connector	Net Name in Schematic	Description
VIN(IN)	VIN(IN)	Board external power source, with voltage range from 5 V to 5.5V.

Table 3-3 Vin Power Source

3.4.2 5V Power Sources

Table 3-4 presents the 5V power sources.

Connector	Net Name in Schematic	Description
CON1	USB_VBUS	USB HS connector on NuMaker-UNO-M4 supplies 5V power from PC to M467 target board.
VIN(IN)	J3 Pin8	DC Jack connector on NuMaker-UNO-M4 supplies 5V power to M467 target board.

Table 3-4 5V Power Sources

3.4.3 3.3V Power Sources

Table 3-5 presents the 3.3V power sources.

Voltage Regulator	3V Source	Description
U5	J3 PIN4	Converts USB_VBUS / TI-5V to 3.3V and supplies 3.3V to M467SJHAN.

Table 3-5 3.3V Power Sources

3.4.4 Power Switch

Table 3-6 presents the power switches.

Connector	Description
S2	On/ Off switch Button, Cut off U5 Regulator.

Table 3-6 Power Connectors

3.4.5 USB Connectors

Table 3-7 presents the USB connectors.

Connector	Description
CON1	USB HS connector on NuMaker-M467SJ for power supply.

Table 3-7 USB Connectors

3.5 External Reference Voltage Connector

Table 3-9 presents the external reference voltage connector.

Connector	Description
VREF	Connector for user to connect to the external reference voltage pin of the target chip.

Table 3-8 External Reference Voltage Connector

3.6 Push Buttons

Table 3-9 presents the push buttons.

Connector	Description
S1	Reset button to reset the M467SJHAN.

Table 3-9 Push Buttons

3.7 LEDs

Table 3-10 presents the LEDs.

Component	Description
LED1	LED1 is connected to the M467SJHAN Pin1 (PB6).
LED2	LED2 is connected to the M467SJHAN Pin7 (PB0).
LED3	LED3 is connected to the M467SJHAN Pin52 (PC14).

Table 3-10 LEDs

4 QUICK START

4.1 Arduino IDE and Board Installation Guide

1. Download and Install the Nu-Link USB Driver.
2. Download and Install Arduino IDE development environment from https://www.arduino.cc/en/Main/Software.
3. Run and install the Arduino IDE onto your PC.
4. Double-click *arduino.exe*, and then go to **File** → **Preferences**.
5. Paste the following URL to 'Additional Boards Manager URLs' input field: https://raw.githubusercontent.com/OpenNuvoton/NuMaker_UNO/master/package_nuvoton_index.json
6. Under **Tools** → **Board** → **Boards Manger**, search NuMaker M4 and click **Install.** You can now select NuMaker M4 and install it in Arduino IDE.
7. After the package download is completed, go to **Tools** → **Board** and select NuMaker-UNO-M4 to use it.

Note: Please make sure that the network connection is active and unblocked.

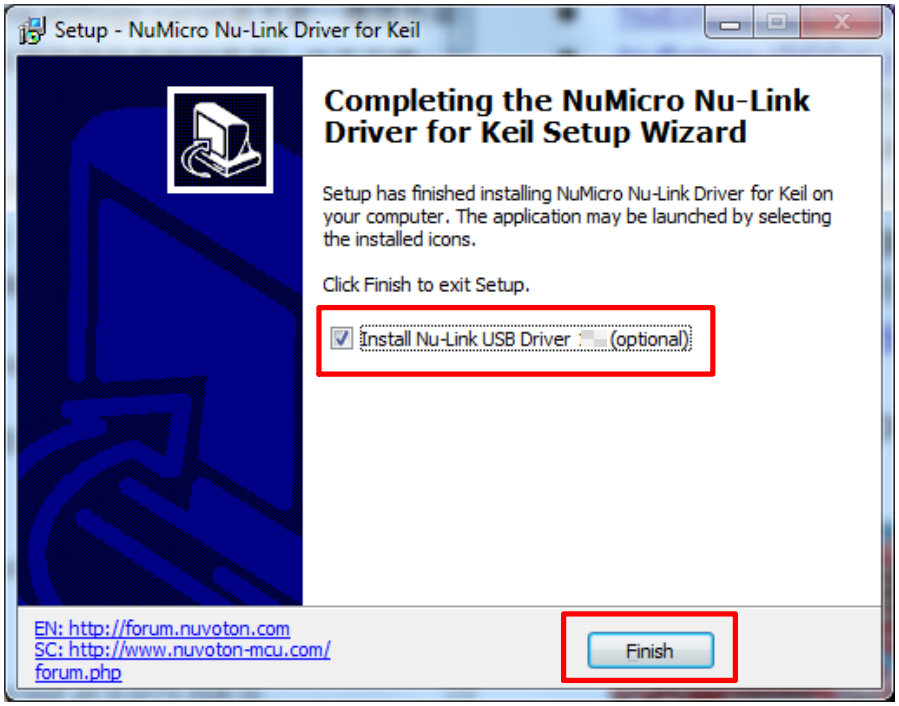

Figure 4-1 Nu-Link USB Driver Installation Setup

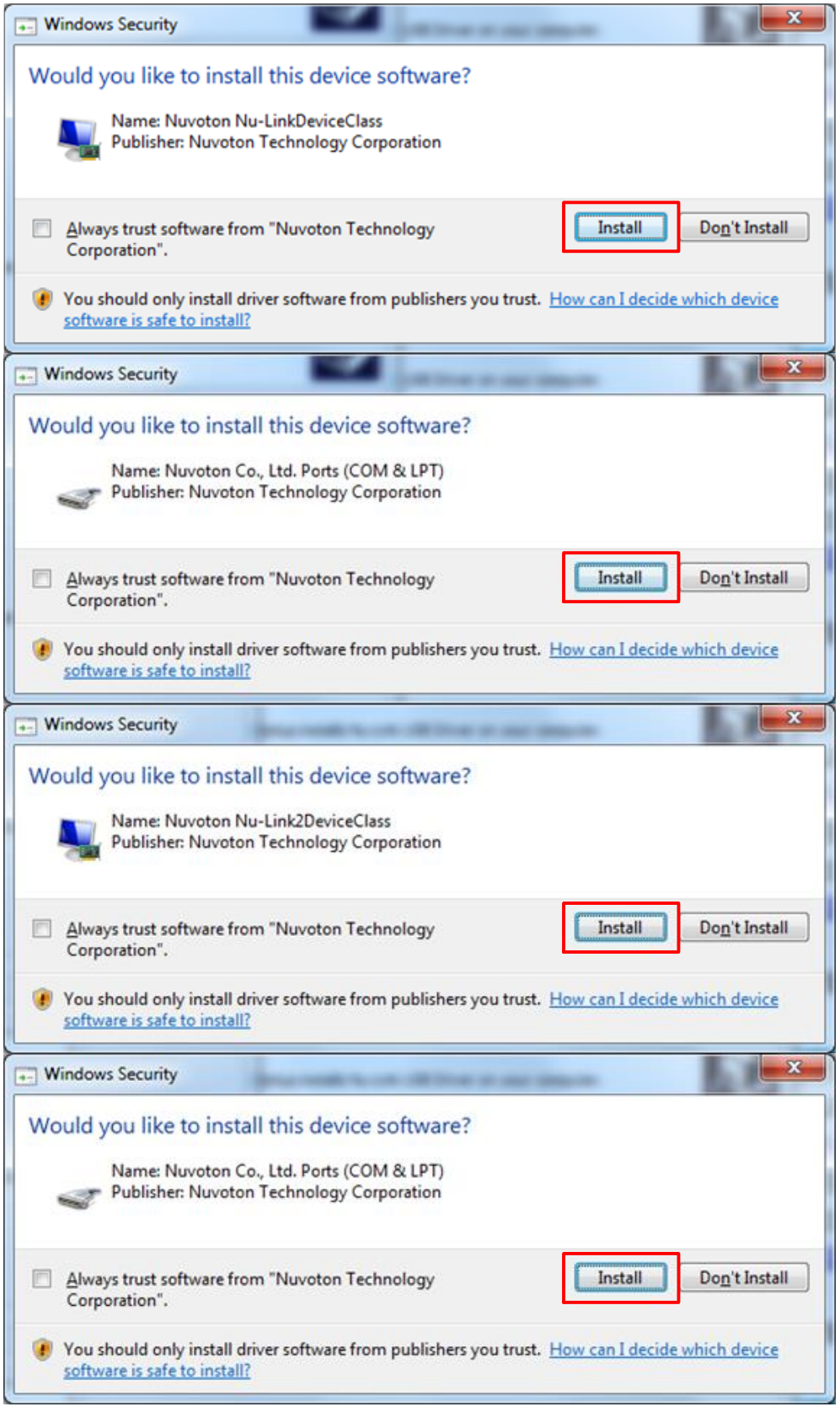

Figure 4-2 Nu-Link USB Driver Installation

5 NUMAKER-UNO-M4 SCHEMATICS

5.1 Power Source

Figure 5-1 shows the power source circuit.

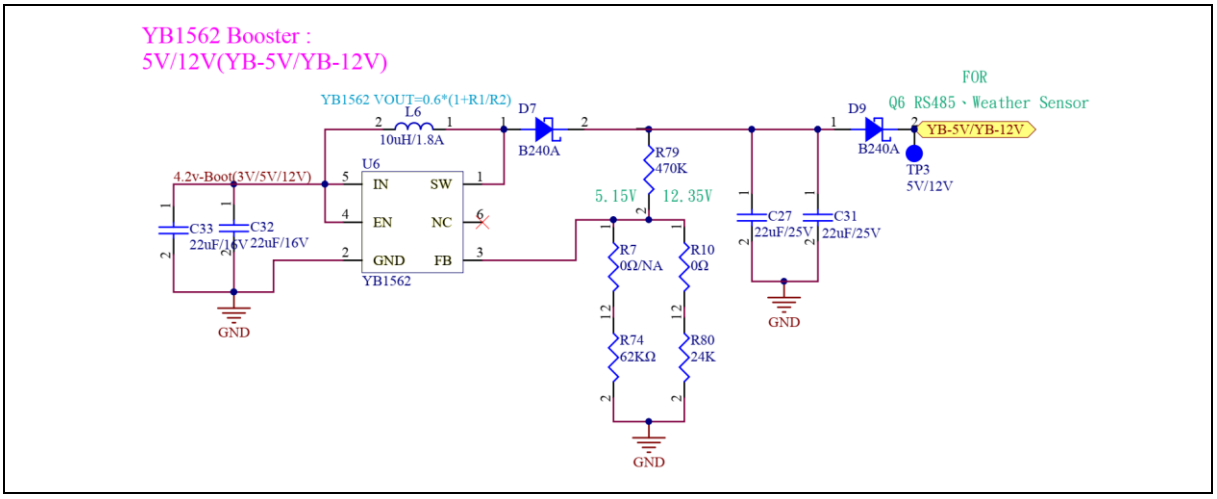

Figure 5-1 Power Source Circuit

5.2 M467SJHAN

Figure 5-2 shows the M467SJHAN circuit.

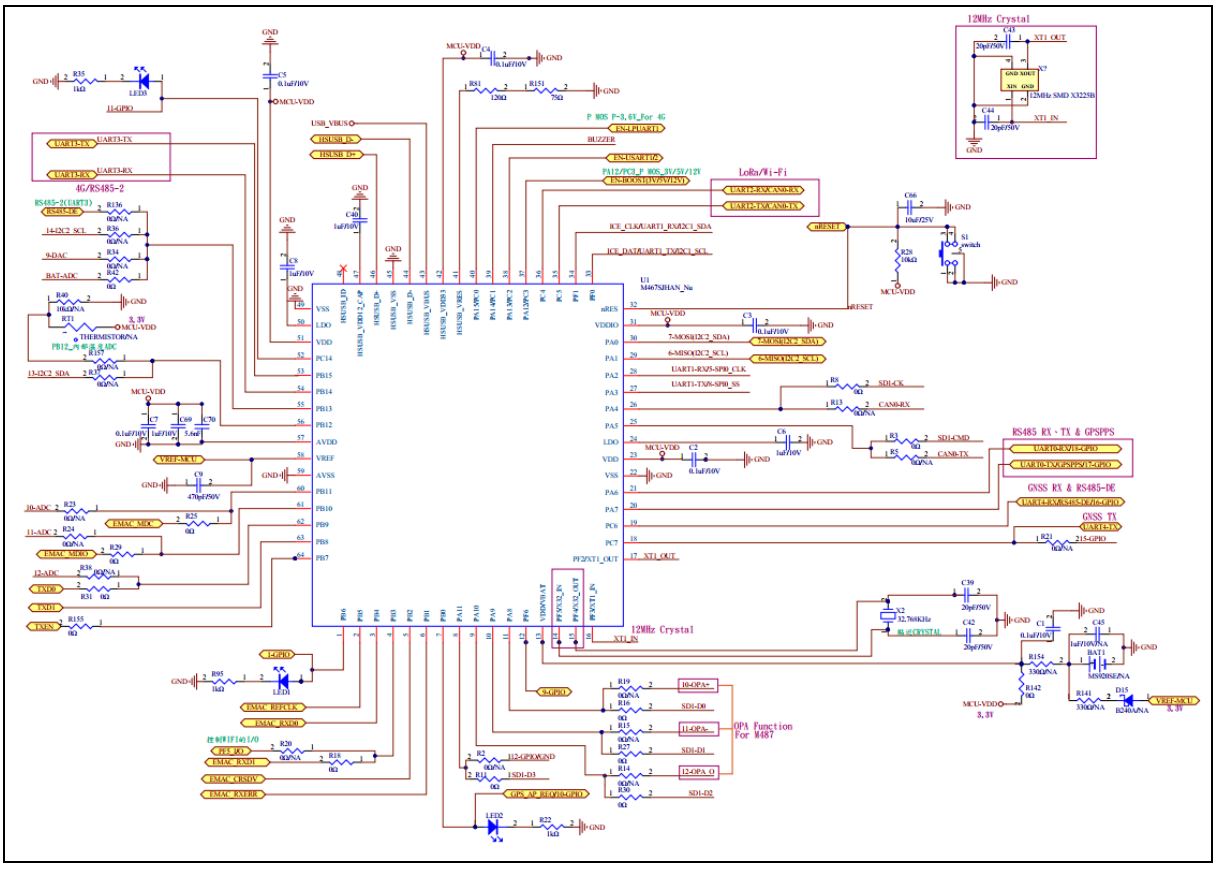

Figure 5-2 M467SJHAN Circuit

5.3 Arduino UNO Compatible Extension Connectors

Figure 5-3 shows Arduino UNO Compatible Extension Connectors.

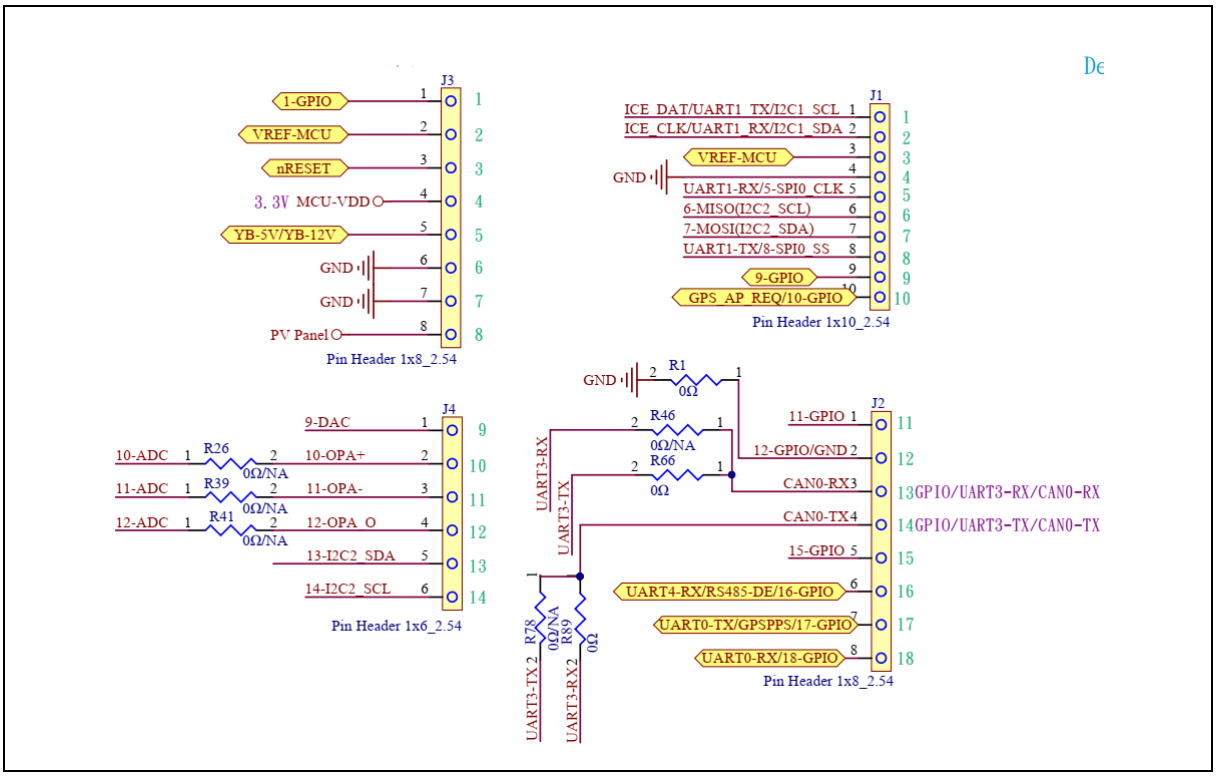

Figure 5-3 Arduino UNO Compatible Extension Connectors Circuit

5.4 SPI Connector

Figure 5-4 shows the SPI Connector

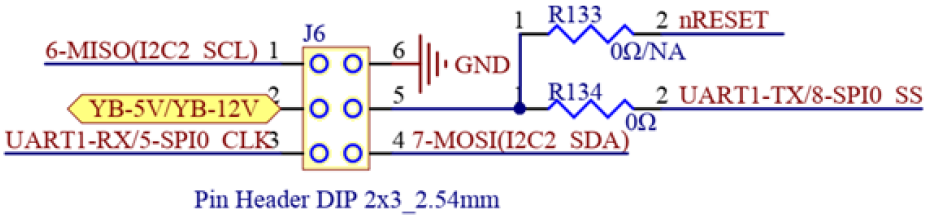

Figure 5-4 SPI Connector

5.5 High-speed USB (Type C)

Figure 5-5 shows the high-speed USB circuit.

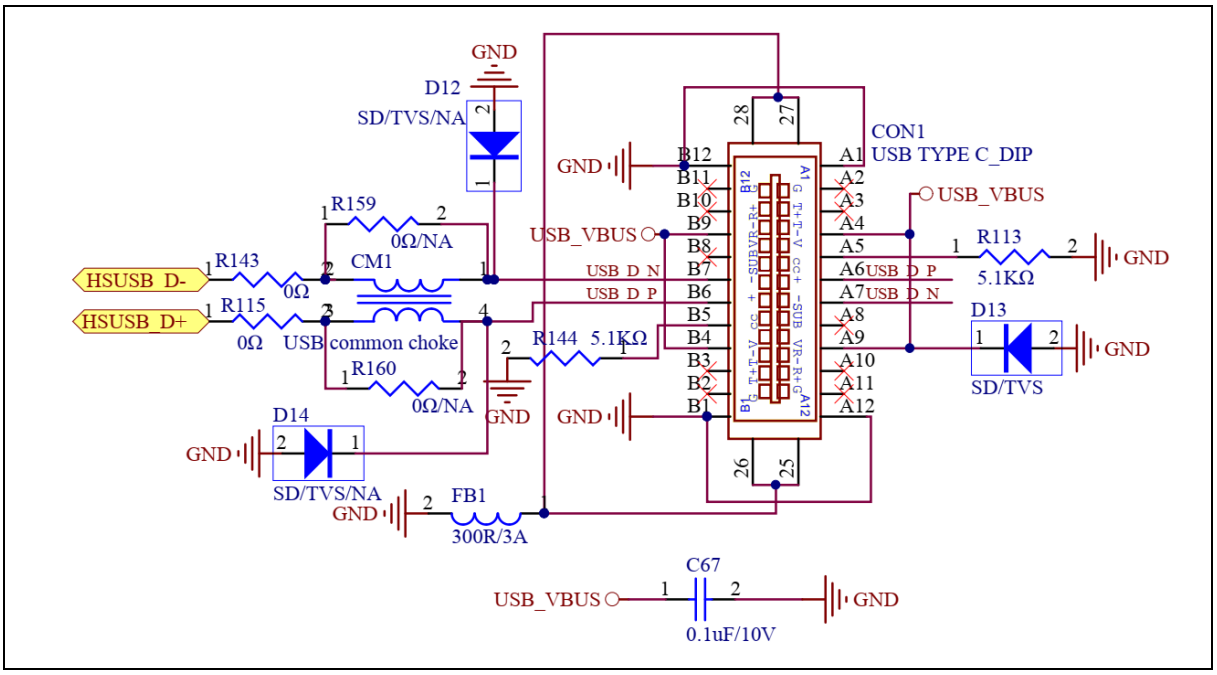

Figure 5-5 High-speed USB Circuit

5.6 Micro-SD

Figure 5-6 shows the Micro-SD card circuit.

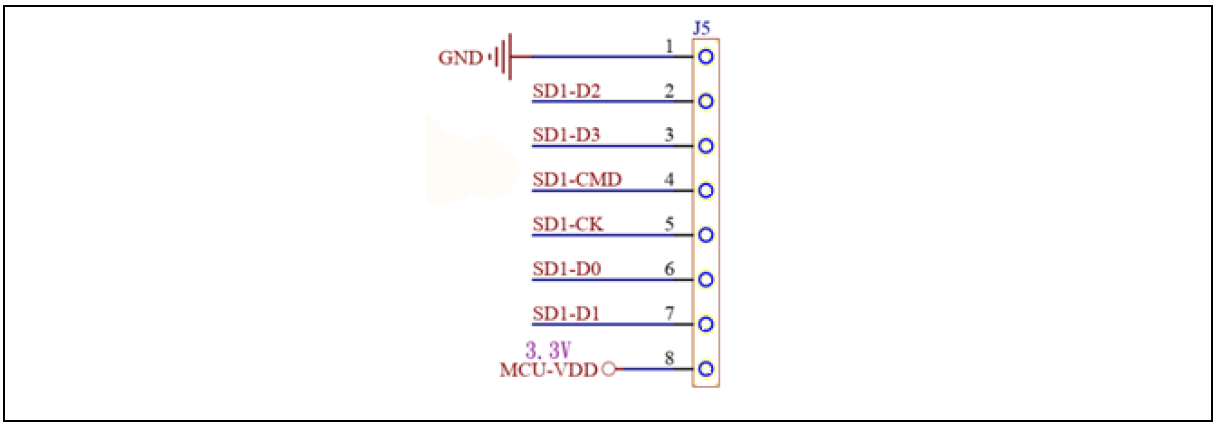

Figure 5-6 Micro-SD Card Circuit

5.7 CAN FD

Figure 5-7 shows the CAN FD circuit.

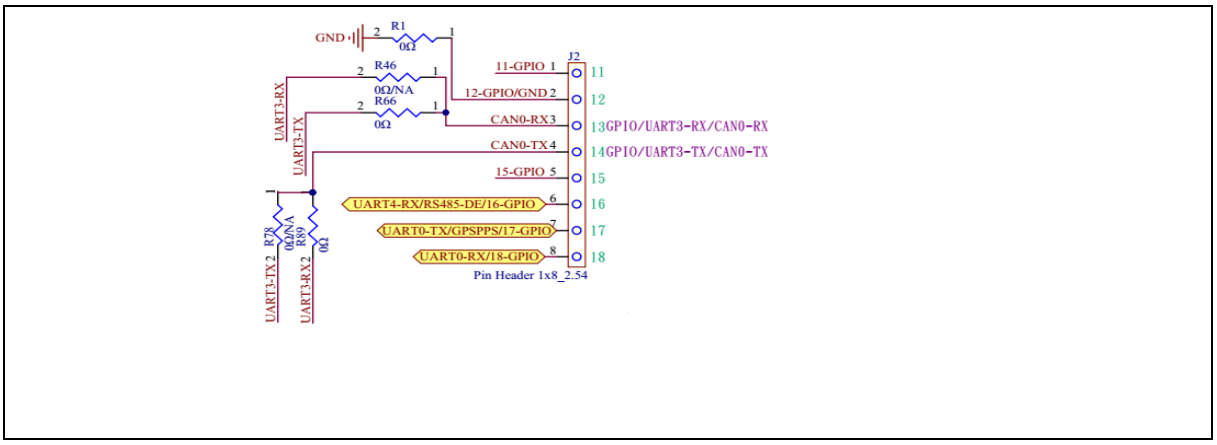

Figure 5-7 CAN FD Circuit

5.8 Ethernet PHY

Figure 5-8 shows the Ethernet PHY circuit.

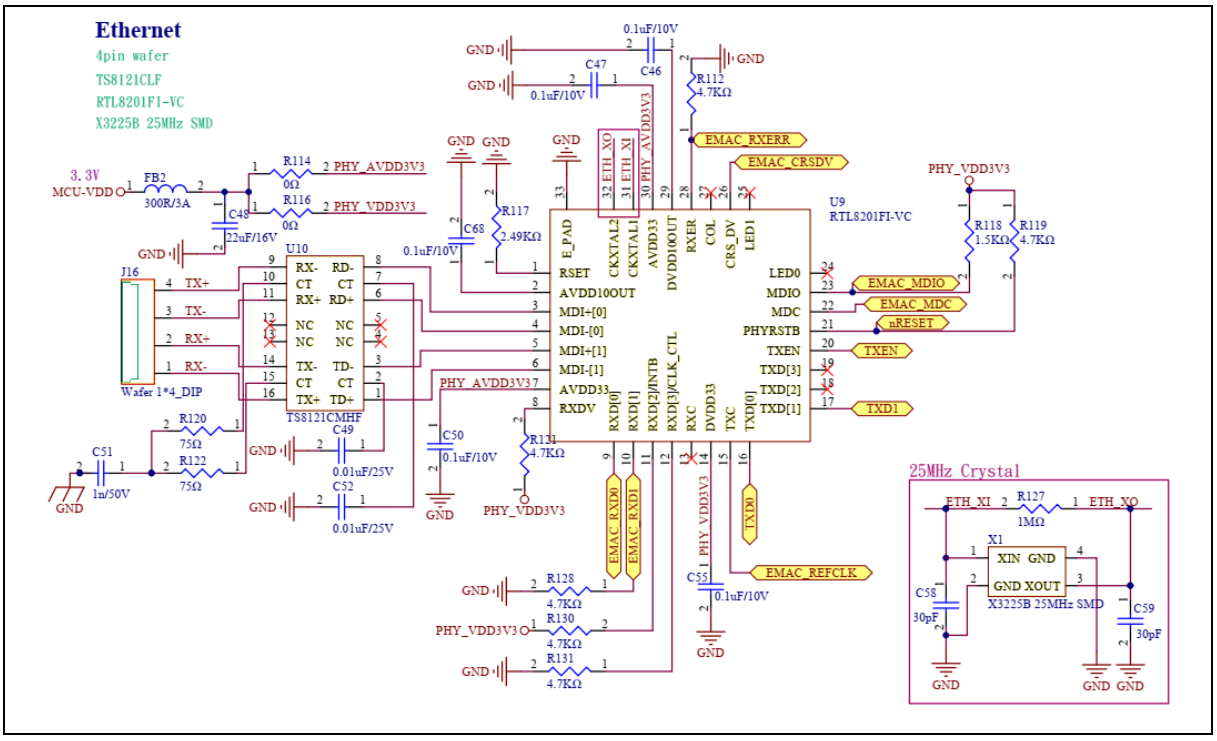

Figure 5-8 Ethernet PHY Circuit

5.9 LEDs and Buttons

Figure 5-9 shows the LEDs and buttons circuit.

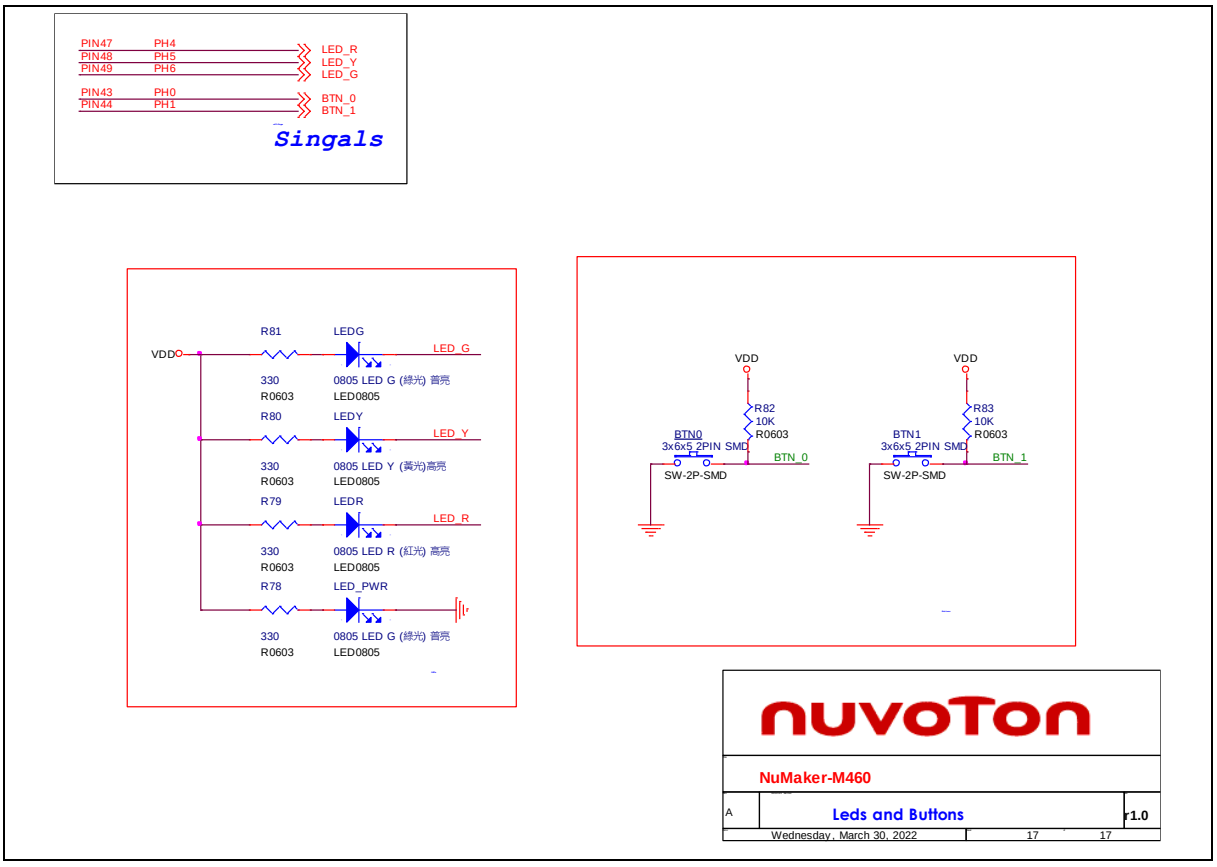

Figure 5-9 LEDs and Buttons Circuit

5.10 PCB Placement

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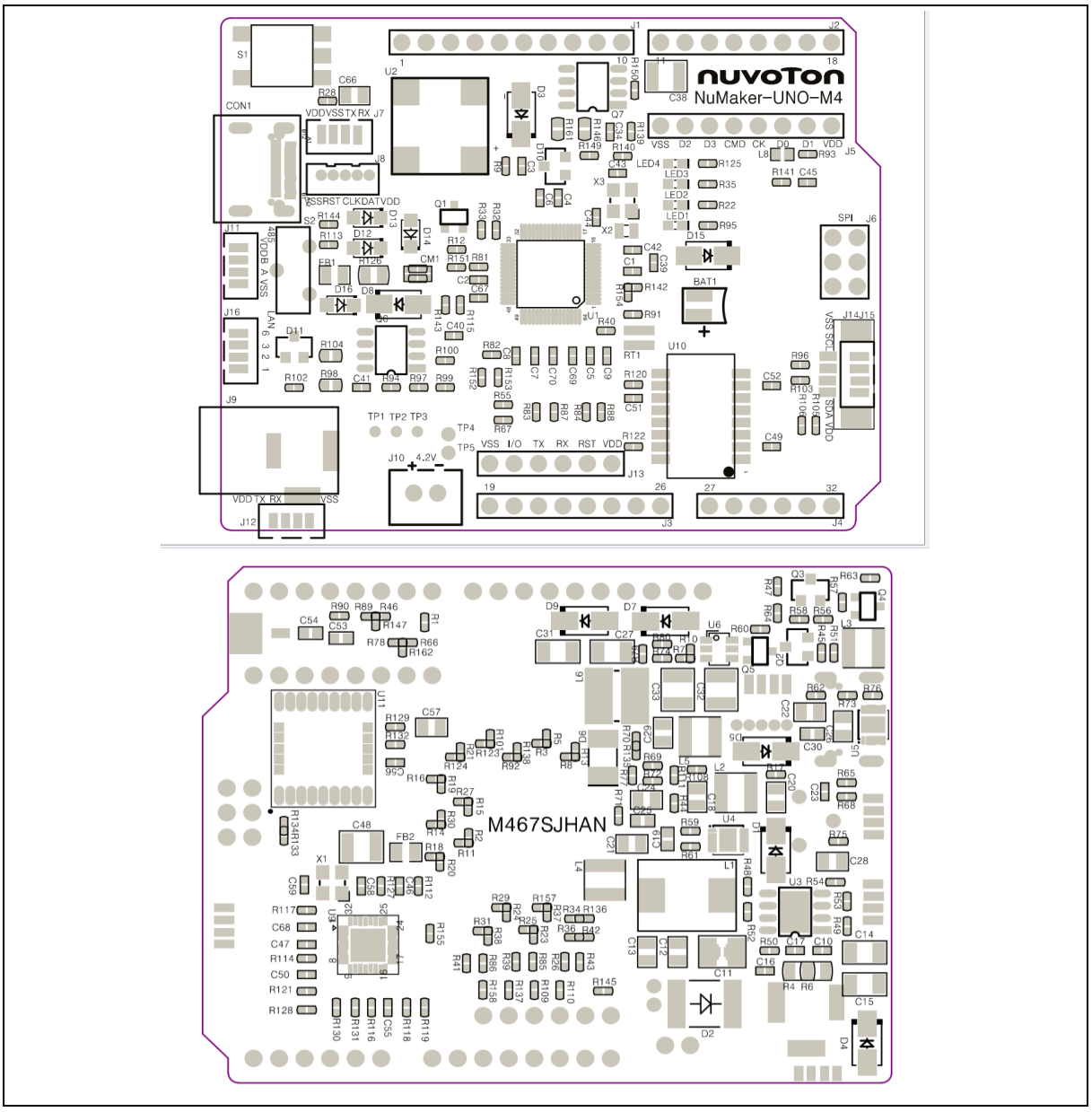

Figure 5-10 PCB Placement

6 REVISION HISTORY

Date	Revision	Description
2025.05.28	1.00	● Initial version

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