

User's guidance

N32A052KBQX_STB Development Board Hardware Usage Guide

Introduction

The purpose of this document is to allow users to quickly familiarize themselves with the N32A052KBQX_STB development board, understand the functions, instructions and precautions of the development board, so as to conduct MCU debugging and development based on the development board.

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1 Hardware Development Instructions

1.1 Briefly

The N32A052KBQX_STB development board is used for sample development of the 32-bit N32A052KBQ7/8 chip of Nsing Technology Co., Ltd. This document describes in detail the functions, usage instructions and precautions of the N32A052KBQX_STB development board.

1.2 Development board function

The main MCU chip model of the development board is N32A052KBQ8, QFN32 pin package. The development board connects all functional interfaces to facilitate customer development.

1.3 Development board layout

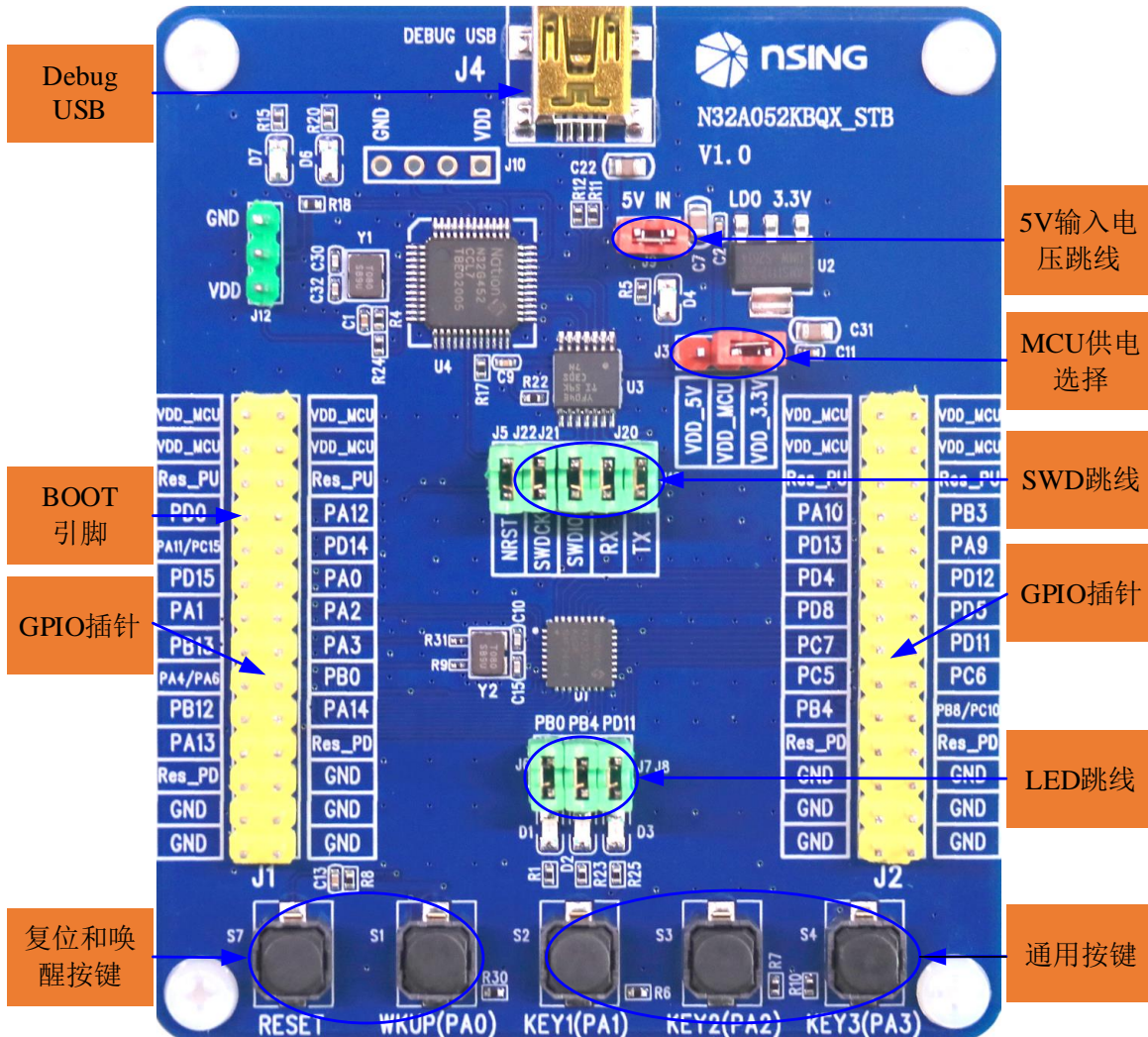


Figure 1-1 Development board layout

1) Power supply for the development board

The development board can be powered by DEBUG USB (J4) and connected to the 3.3V LDO input port through the J9 jumper .

2) USB interface (J4)

Through the DEBUG USB interface of the NS-LINK chip (U4), the main MCU program download and debugging

function can be provided, and the serial port of the MCU can also be connected to provide the USB to serial port function..

3) SWD interface and Serial port (J19,J20,J21,J22)

Through the DEBUG USB interface of the NS-LINK chip (U4), it can provide the function of downloading and debugging the main MCU program, and it can also connect to the MCU's serial port to provide the function of converting USB to serial port.

4) Reset Buttons (S7)

S7 is connected to the NRST pin of the chip as a reset button, used for chip resetting.

5) LED lights

D1, D2, and D3 are LED lights, respectively connected to pins PB0, PB4, and PD11 of the chip.

6) Universal keys (S1, S2, S3,S4)

S1, S2, S3 and S4 are general buttons, which are connected to the pins PA0, PA1,PA3 and PA4 of the chip respectively.

7) BOOT (J1 PIN7)

J1 PIN7 PD0 pin is the BOOT0 pin, which can be shorted to power and ground through a jumper as needed.

8) GPIO□ (J1, J2)

All chip GPIO interfaces are lead out, and 3.3V voltage and GND pins are also reserved on the pins to facilitate testing.

For the specific definition of the interface, please refer to the " DS-N32A052 Series Data Sheet ".

1.4 Development Board Jumper Instructions

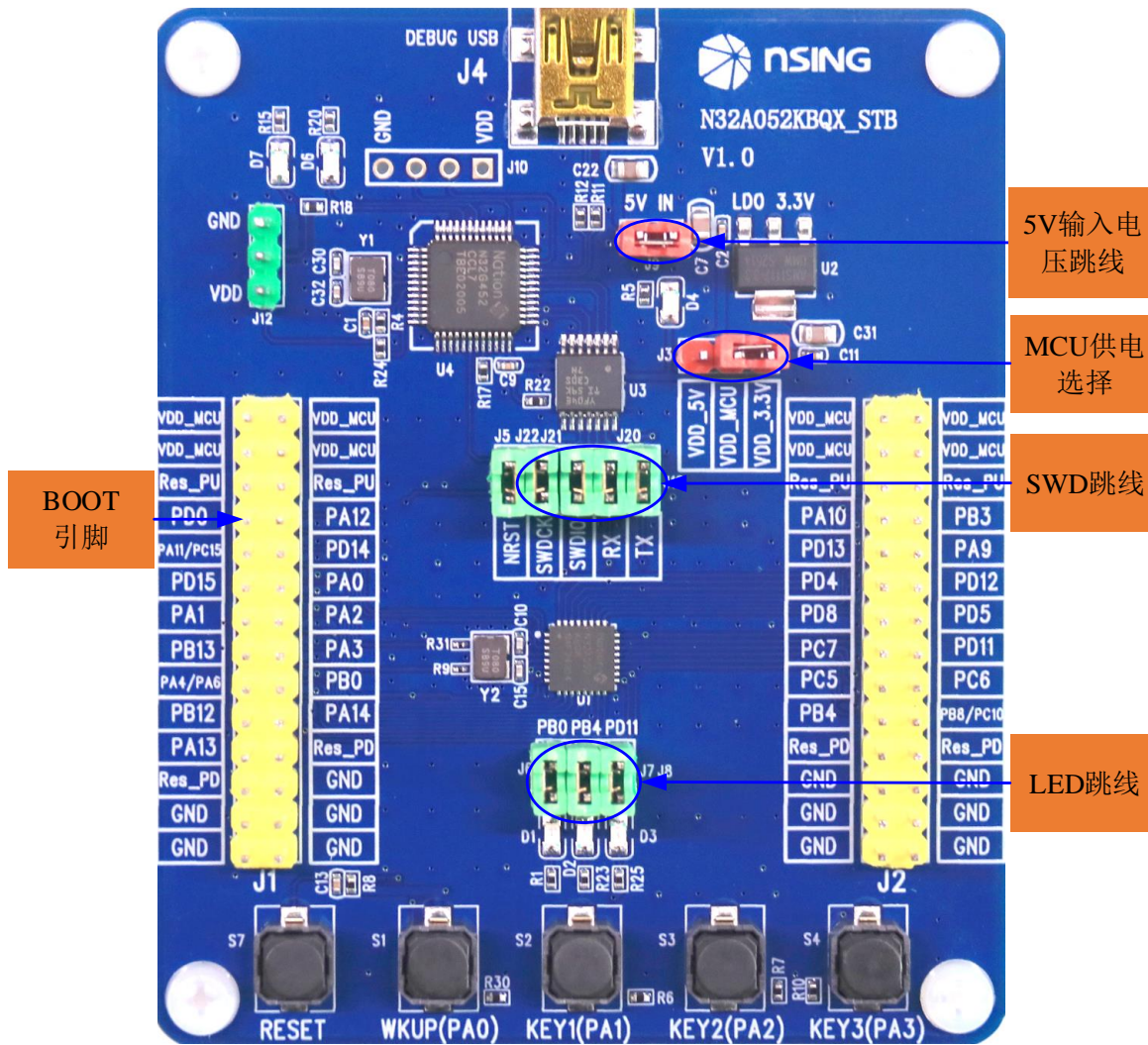


Figure 1-2 Development Board Jumper Description

Table 1-1 Development Board Jumper Description List

| No. | Jumper bit number | Jumper function | Instructions for use |
|-----|-------------------|-----------------------------------|--|
| 1 | J9 | 5V input voltage jumper | J9 jumper is used to connect the J4 USB interface to supply power to the LDO3.3V input port. |
| 2 | J3 | 3.3V Power supply jumper | Select VDD_5V and supply 5V power to the MCU chip. Choose VDD_3.3V and supply 3.3V power to the MCU chip. |
| 3 | J19、J20、J21、J22 | 1. SWD jumper 2. Serial jumper | It can provide the function of downloading and debugging the main MCU program, and can also connect to the MCU's serial port to provide USB to serial port conversion. |
| 4 | J1 PIN7 | BOOT jumper | J1 PIN7: BOOT0. |
| 5 | J6、J7、J8 | LED light jumper | This jumper can disconnect and connect the GPIO and LED on and off. J6: LED1(PB0) J7: LED2(PB4) J8: LED3(PD11) |

1.5 Development board schematic

The schematic diagram of the N32A052KBQX_STB development board is explained as follows (see "N32A052KBQX_STB_V1.0" for details).

1) MCU connection

Refer to Figure 1-3 for the MCU connection schematic diagram. The MCU VDD pin is connected to a decoupling capacitor. All GPIOs are connected to the J1 and J2 pins for easy debugging..

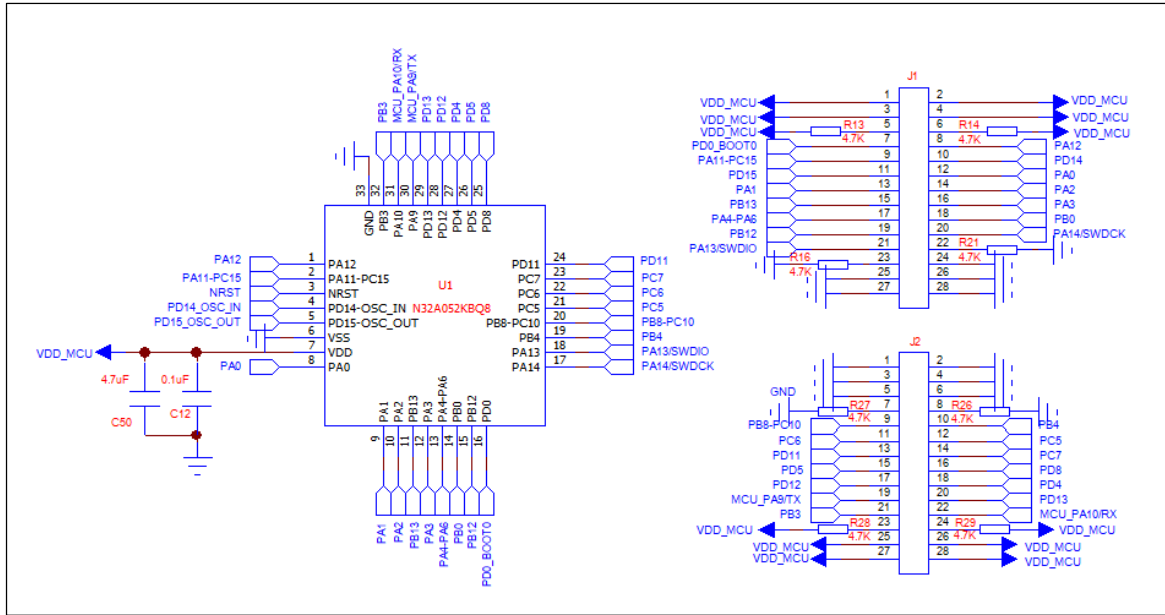


Figure 1-3 MCU connection diagram

● Description of peripheral devices:

When designing PCB LAYOUT, place two capacitors near the VDD pin (PIN7), which are 4.7uF and 0.1uF capacitors, respectively.

2) Power Design

Refer to Figure 1-4 for the power supply design schematic. The PCB is powered by 5V through USB (J4), and then outputs 3.3V voltage to the entire PCB board through LDO (U2). The MCU can choose to supply 5V or 3.3V voltage.

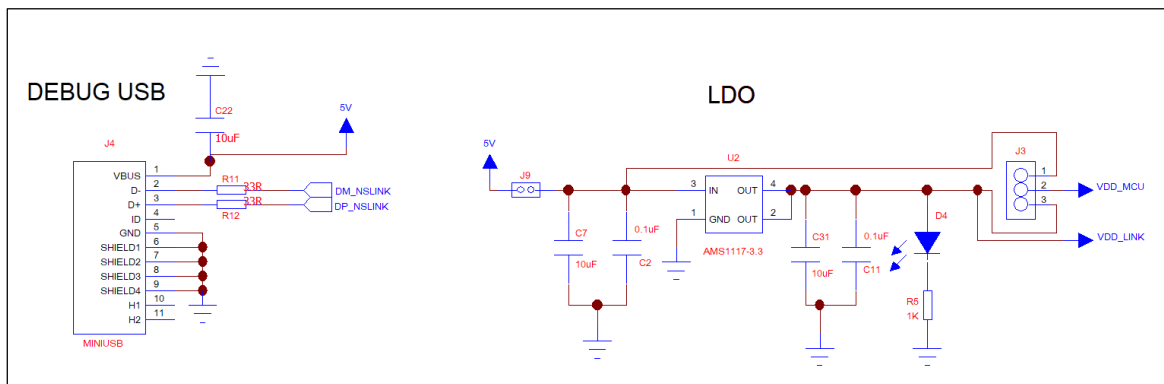


Figure 1-4 Power Design

3) Button design

Refer to Figure 1-5 for the schematic diagram of button design. There are 5 buttons in total, including 3 general buttons, MCU wake-up button and reset button.

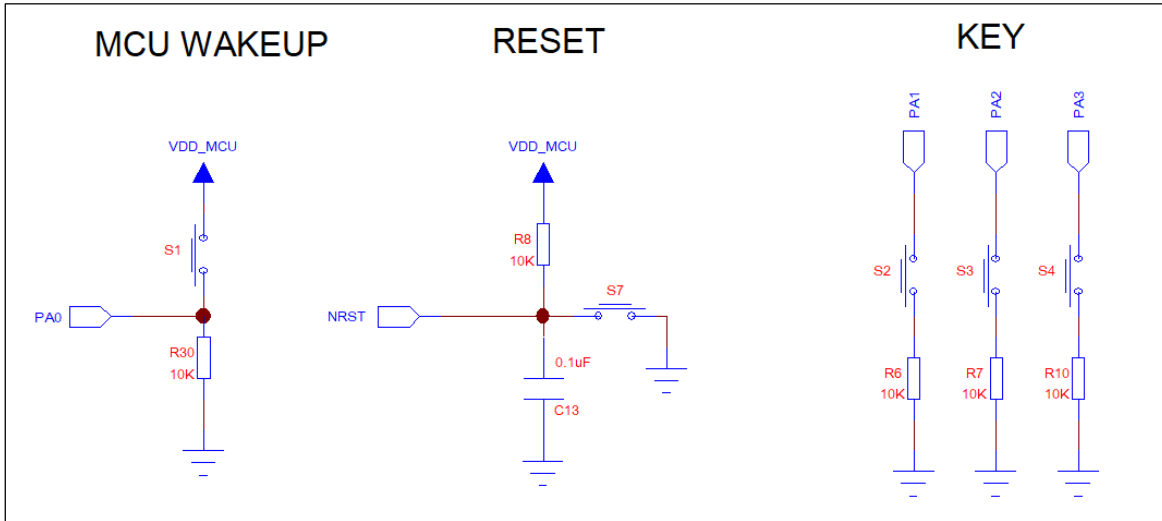


Figure 1-5 Button Design

4) LED light design

Refer to Figure 1-6 for the LED lamp design schematic. There are 5 LED lamps in total. D1, D2, and D3 are connected to PB0, PB4, and PD11 of the main MCU respectively, which can be used for debugging. D6 and D7 are used for NS-LINK MCU control and monitoring of NS-LINK operating status.

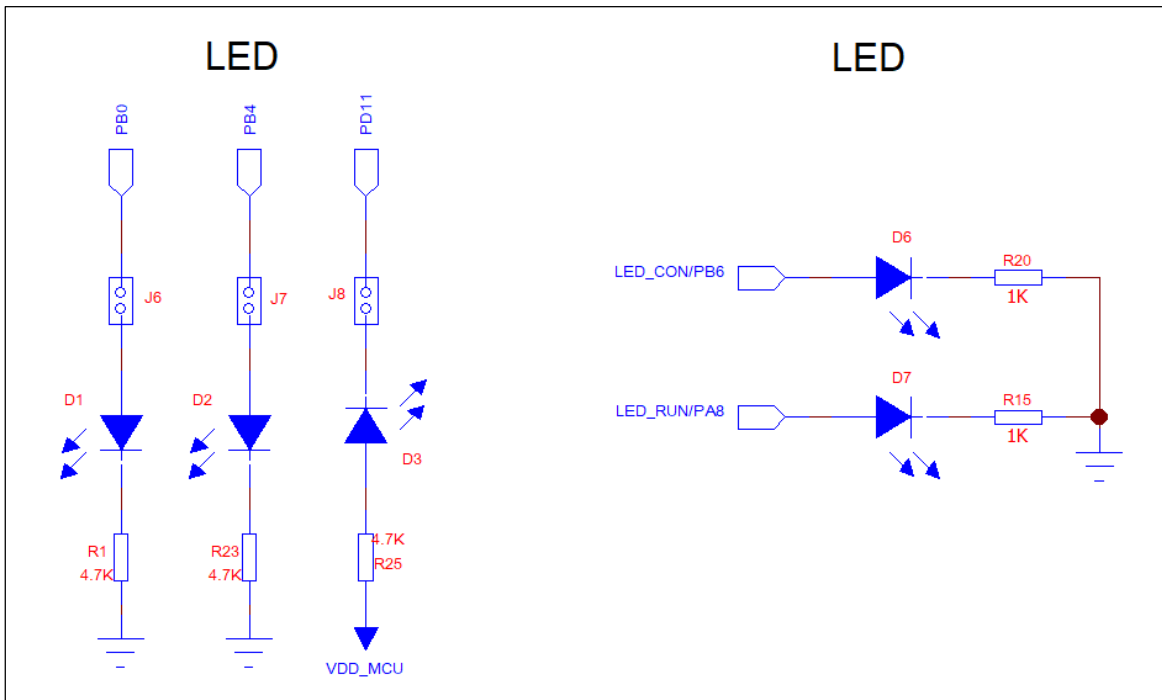


Figure 1-6 LED Light Design

5) BOOT

Refer to Figure 1-7 for the external schematic diagram of BOOT. BOOT0 is connected to PIN7 of J1 and can be connected to GND or power VDD through jumper wires.

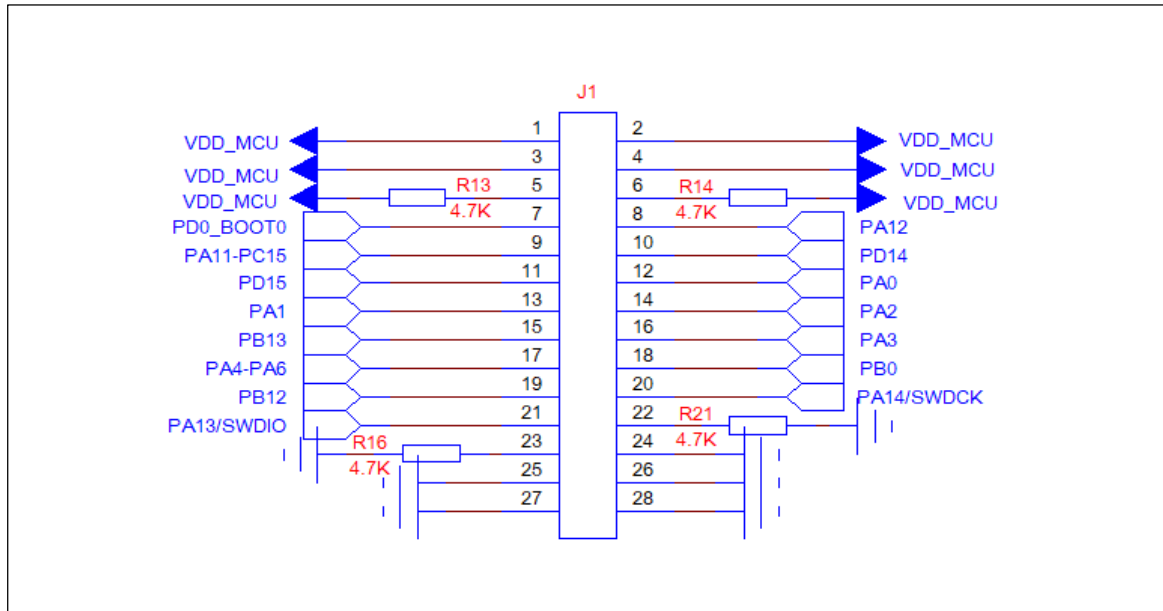


Figure 1-7 BOOT

6) NS-LINK

Refer to Figure 1-8 for the NS-LINK schematic diagram. Users can directly connect the USB cable through the DEBUG USB port to download the program, eliminating the need for a ULINK or JLINK programmer. You can also debug through the DEBUG USB analog serial port.

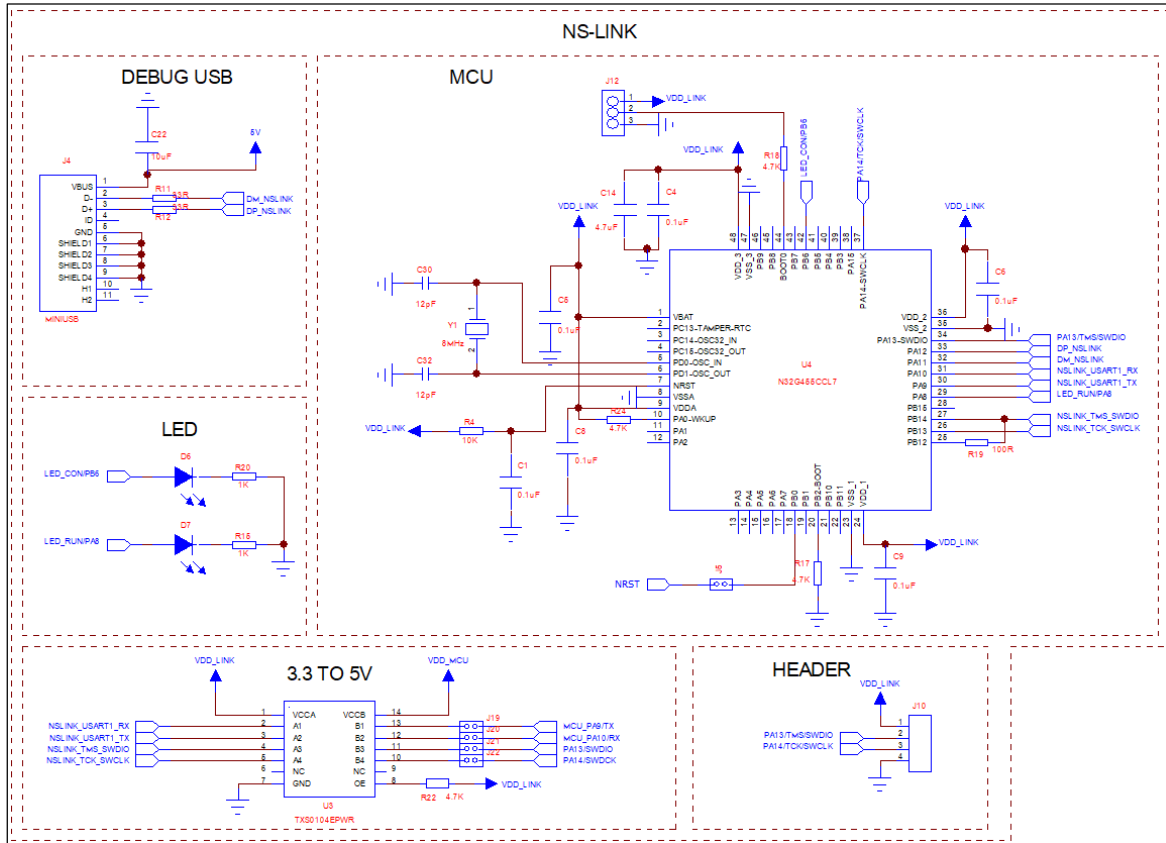


Figure 1-8 NS-LINK

2 Version history

| Version | Date | Modify |
|---------|------------|-----------------|
| V1.0.0 | 2025-12-26 | Initial version |
| | | |
| | | |

3 Notice

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