

## User Guide

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### N32G033K8Q7-1\_STB Development Board Hardware User Guide

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#### Introduction

The purpose of this document is to enable users to quickly familiarize themselves with the N32G033K8Q7-1\_STB development board, understand its functions, usage instructions, and precautions, so as to carry out MCU debugging and development based on the development board.

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# **1 Hardware Development Notes**

## **1.1 Brief**

The N32G033K8Q7-1\_STB development board is used for sample development of the high-performance 32-bit N32G033K8Q7-1 series chips from NSING TECHNOLOGIES INC. This document details the functions, usage instructions, and precautions of the N32G033K8Q7-1\_STB development board.

## **1.2 Development board functions**

The main MCU chip on the development board is model N32G033K8Q7-1, in a QFN32 pin package. The development board connects all the functional interfaces for easy customer development.

### 1.3 Development board layout

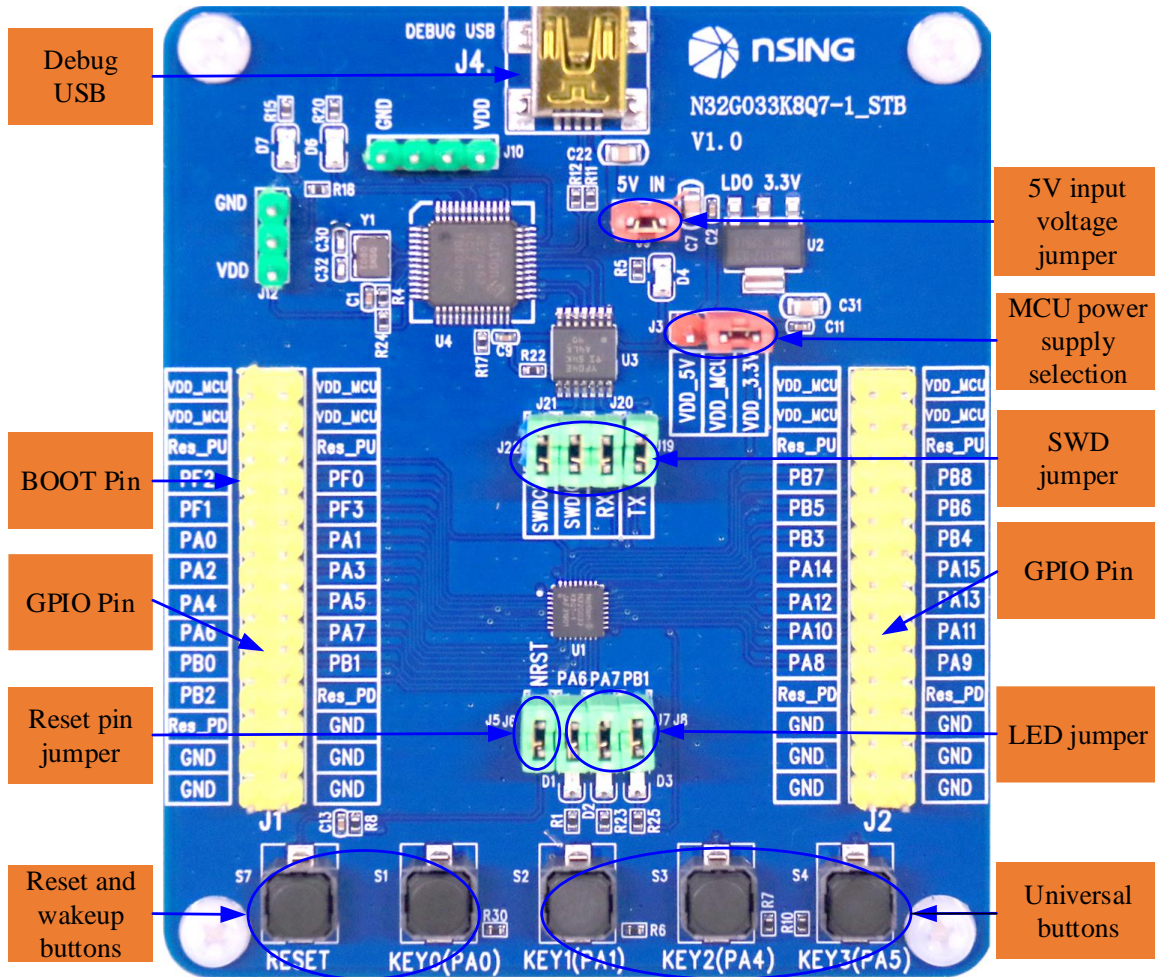


Figure 1-1 Development board layout

#### 1) Power supply for the development board

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

#### 2) Debug USB (J4)

The MCU can be connected to the onboard NSLINK via Debug USB, or it can be used as a serial port

(NSLINK is used as a serial-to-USB adapter).

### **3) SWD and serial ports (J19 , J20 , J21 , J22 )**

The NS-LINK chip (U4) provides a DEBUG USB interface for downloading and debugging the main MCU program, and can also be connected to the MCU's serial port to provide a USB-to-serial function.

### **4) Reset button (S7)**

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

### **5) General buttons (S1, S2, S3 , S4 )**

S1, S2, S3, and S4 are connected to pins PA0, PA1, PA4, and PA5 of the chip, respectively, serving as general-purpose buttons.

### **6) GPIO port (J1, J2)**

All GPIO interfaces of the chip are brought out, and 3.3V and GND pins are provided for easy testing. For detailed interface definitions, please refer to the "DS\_N32G033 Series Datasheet".

## 1.4 Development Board Jumper Usage Instructions

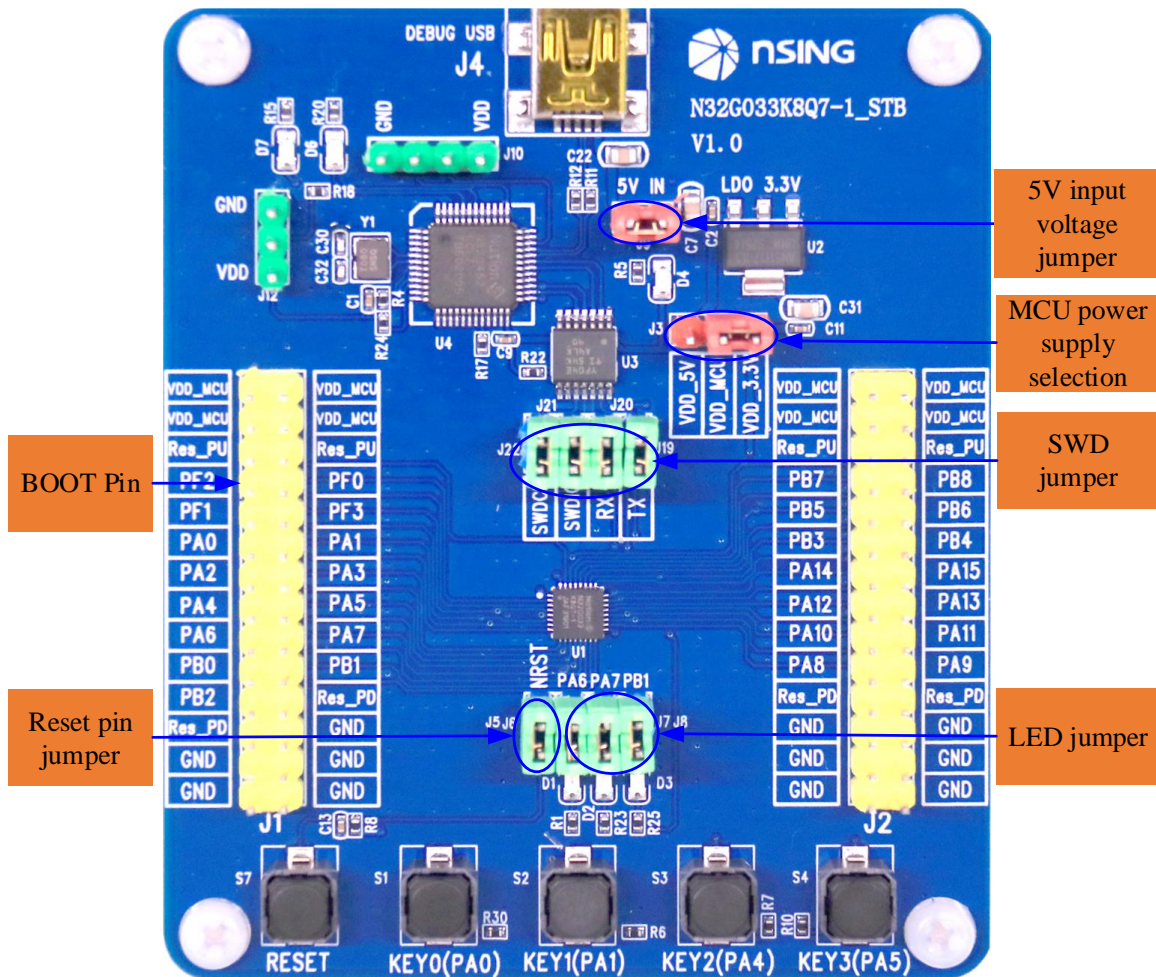


Figure 1-2 Development Board Jumper Instructions

No.	jumper position	Jumper function	Instructions for use
1	J9	5V voltage jumper	The J9 jumper is used to connect the USB interface (J4) to power the LDO 3.3V input port.

2	J3	MCU power supply jumper	Select VDD_5V to supply 5V power to the MCU chip. Select VDD_3.3V to supply 3.3V power to the MCU chip.
3	J19 , J20 , J21 , J22	1. SWD jumper 2. Serial port jumper	It can provide main MCU program download and debugging functions, and can also connect to the MCU's serial port to provide USB to serial port function .
4	J1 (Boot pin )	BOOT jumper	The BOOT pin can be connected to GND or 3V3 via a jumper.
5	J6, J7, J8	LED jumper	The LED jumper can disconnect or connect the GPIO and the LED. J6: LED1 (PA6) J7: LED2 (PA7) J8: LED3(PB1)
6	J5	NRST jumper	The NRST jumper can disconnect or connect the GPIO and NRST pins .

Table 1-1 Development Board Jumper Specifications

## 1.5 Development board schematic

The schematic diagram of the N32G033K8Q7-1\_STB development board is described below (see "N32G033K8Q7-1\_STB\_V1.0" for details).

### 1) MCU connection

Referring to Figure 1-3, which shows the MCU connection schematic, capacitors are connected to both VDD and VDDA of the MCU. All GPIO pins are led out and connected to the J1 and J2 pins for easy debugging.



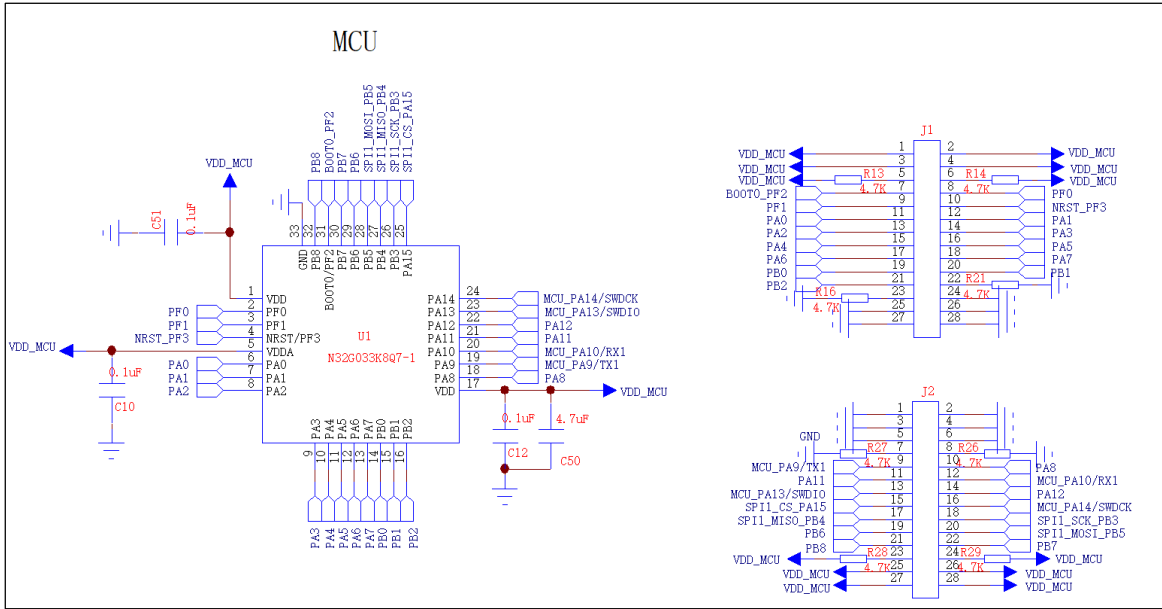


Figure 1-3 MCU connection diagram

### ● Peripheral component description:

When designing the PCB layout, place two capacitors, 4.7uF and 0.1uF, near the VDD pin (PIN17), and place a 0.1uF capacitor near the other VDD (PIN1) and VDDA pins (PIN5).

### 2) Power supply design

Referring to Figure 1-4, which shows the power supply design schematic, the PCB is powered by 5V via USB (J4), and then 3.3V is output through LDO (U2) to power the entire PCB.

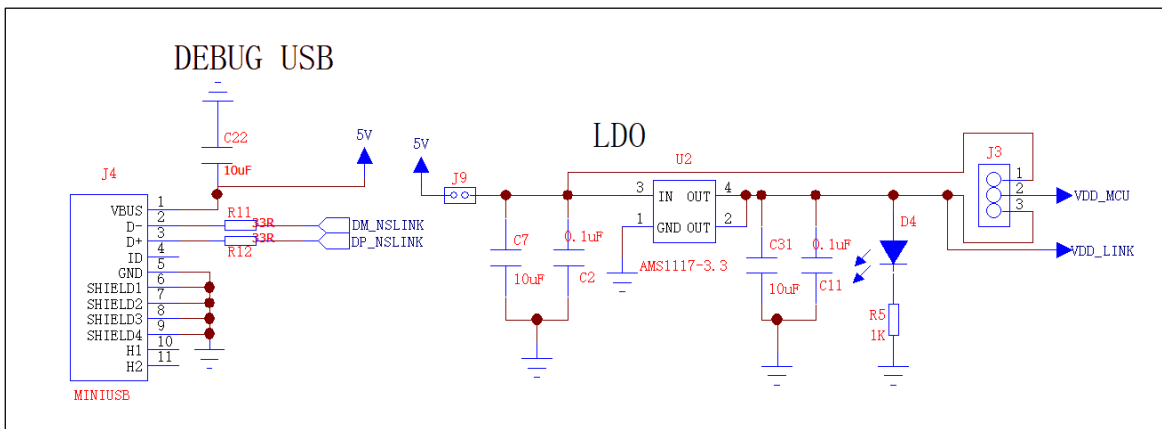


Figure 1-4 Power supply design

### 3) Button Design

Referring to Figure 1-5, which shows the button design schematic, there are a total of 5 buttons: an MCU reset



button and 4 general-purpose buttons.

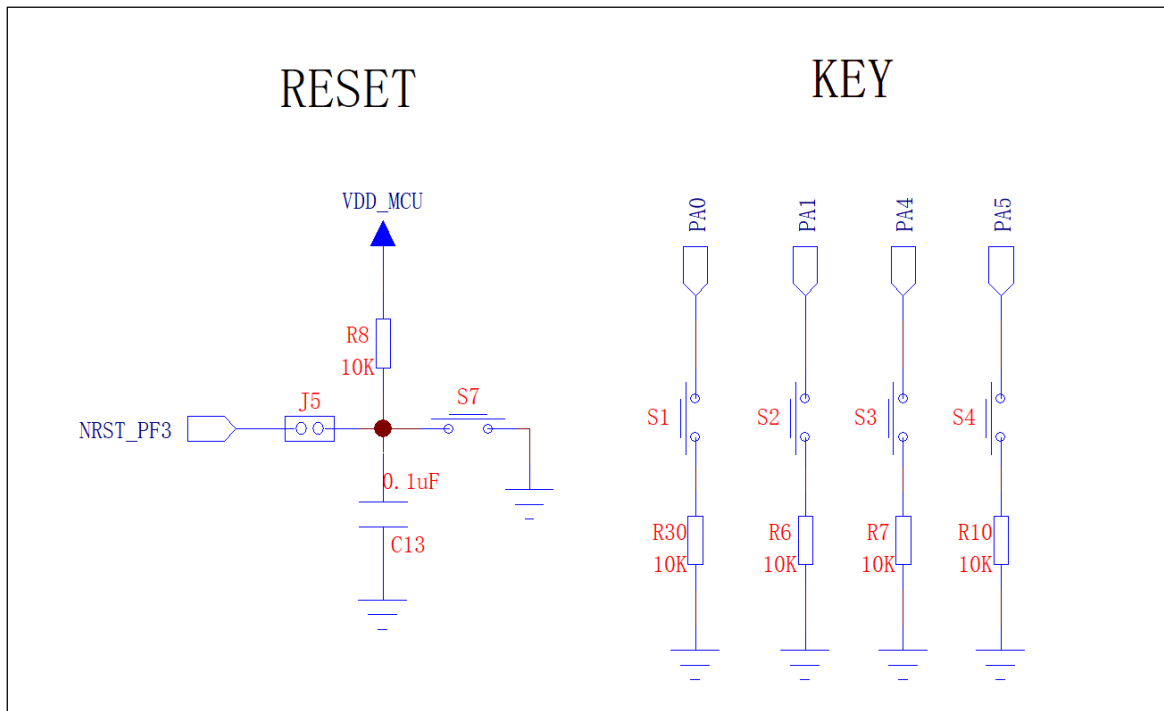


Figure 1-5 Button Design

#### 4) LED lighting design

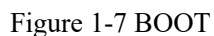
Referring to Figure 1-6, which shows the schematic diagram of the LED light design, there are a total of 5 LEDs.

D1, D2, and D3 are connected to PA6, PA7, and PB1 of the main MCU, respectively, and can be used for debugging.

D6 and D7 are used for NS-LINK MCU control to monitor the NS-LINK's operating status.



Referring to Figure 1-7, which shows the external BOOT schematic, BOOT0 is connected to pin 7 of J1, and can be connected to GND or power supply VDD via a jumper.



Referring to Figure 1-8, which shows the NS-LINK schematic, users can directly connect a USB cable via the DEBUG USB port to download programs, eliminating the need for a ULINK or JLINK programmer. Debugging

can also be performed via the DEBUG USB port, which simulates a serial port.

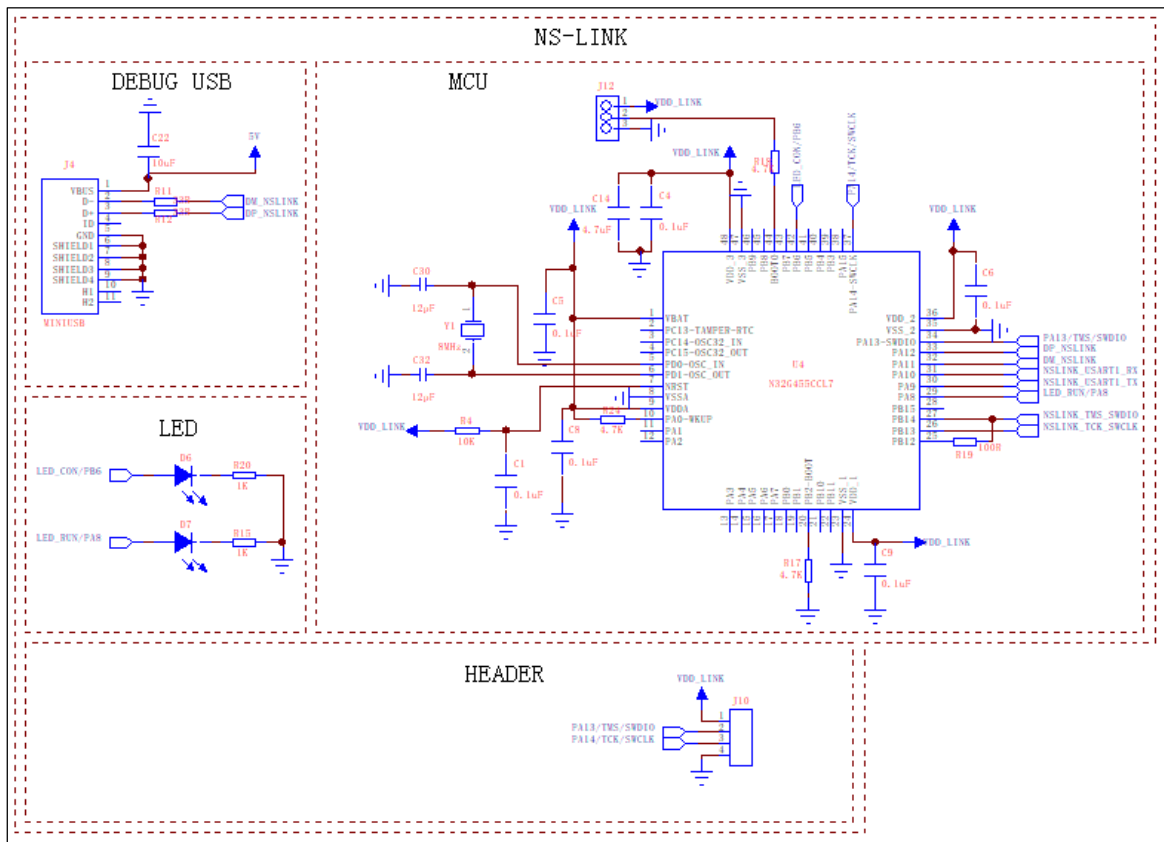


Figure 1-8 NS-LINK

## 2 Historical versions

Version	date	Remark
V1.0.0	2025-08-26	Create document
V1.1.0	2025-12-24	1. Delete section 1.6 Nslink usage instructions

### **3 statement**

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