LoRa Development Board

User Manual

V1.0.0

This manual is applicable to the following products:
F8L10-EVB

Xiamen Four-Faith Communication Technology Co., Ltd.
https://www.fourfaith.co

Document Revision History

Date	Version	Note	Author
2023-08-16	V1.0.0	Initial Version	Jonas

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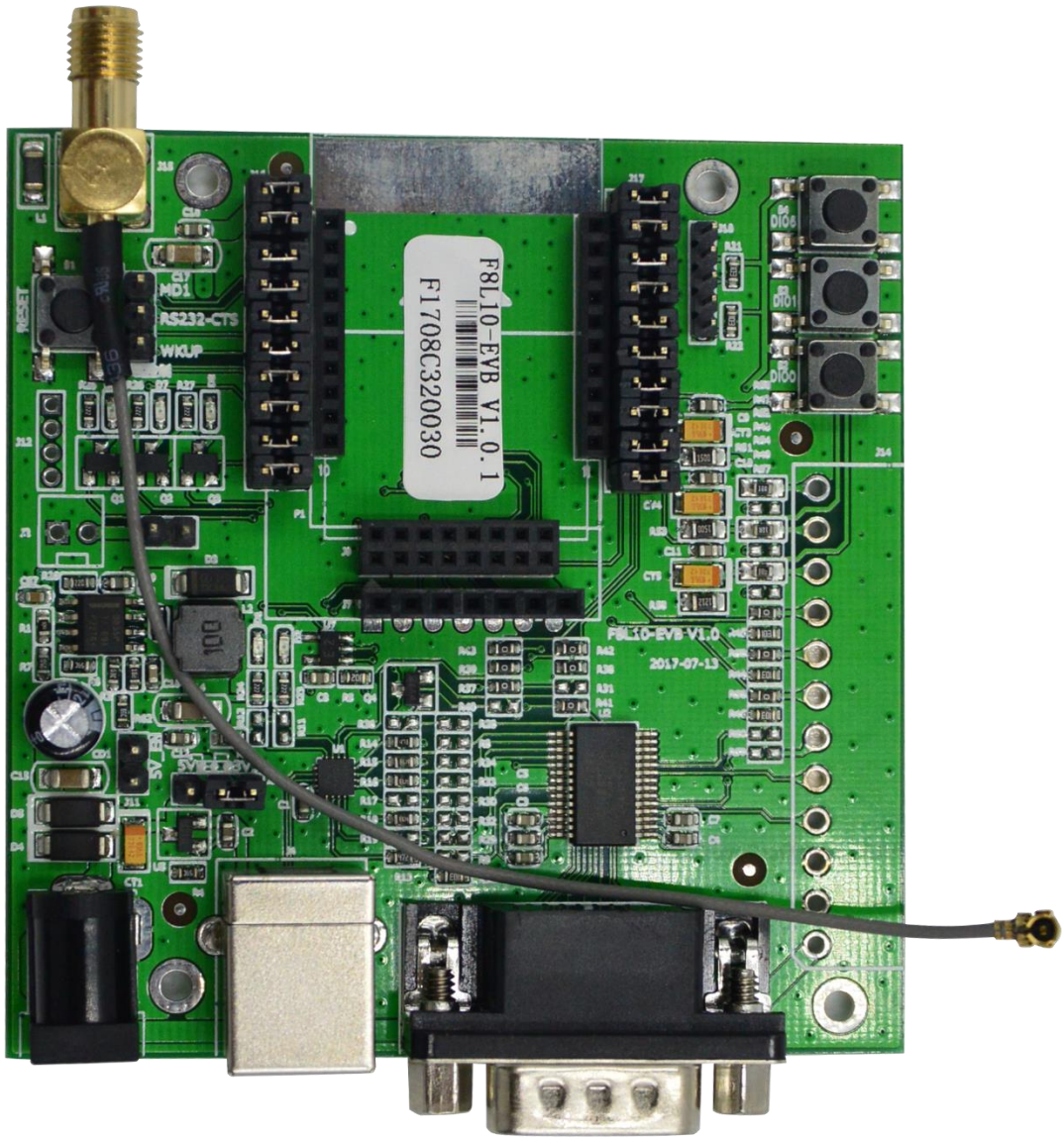
F8L10-EVB V1.0.1
F1708C320030
RESET
RS232-CTS
WKUP
F8L10-EVB-V1.0
2017-07-13

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Chapter 1 Product Introduction

1.1 General

The F8L10-EVB is a test and development board for LoRa modules. It features various interfaces including an antenna interface, JTAG interface, module SMT interface, module pin header interface, F8L10S-N interface, terminal interface, serial DB9 interface, USB interface, jumper interface, module antenna connector, etc. The board is equipped with power indicator lights, serial communication indicator lights, three-channel I/O interface indicator lights, three-channel ADC pin buttons, and a reset button, as shown in Figure 1.

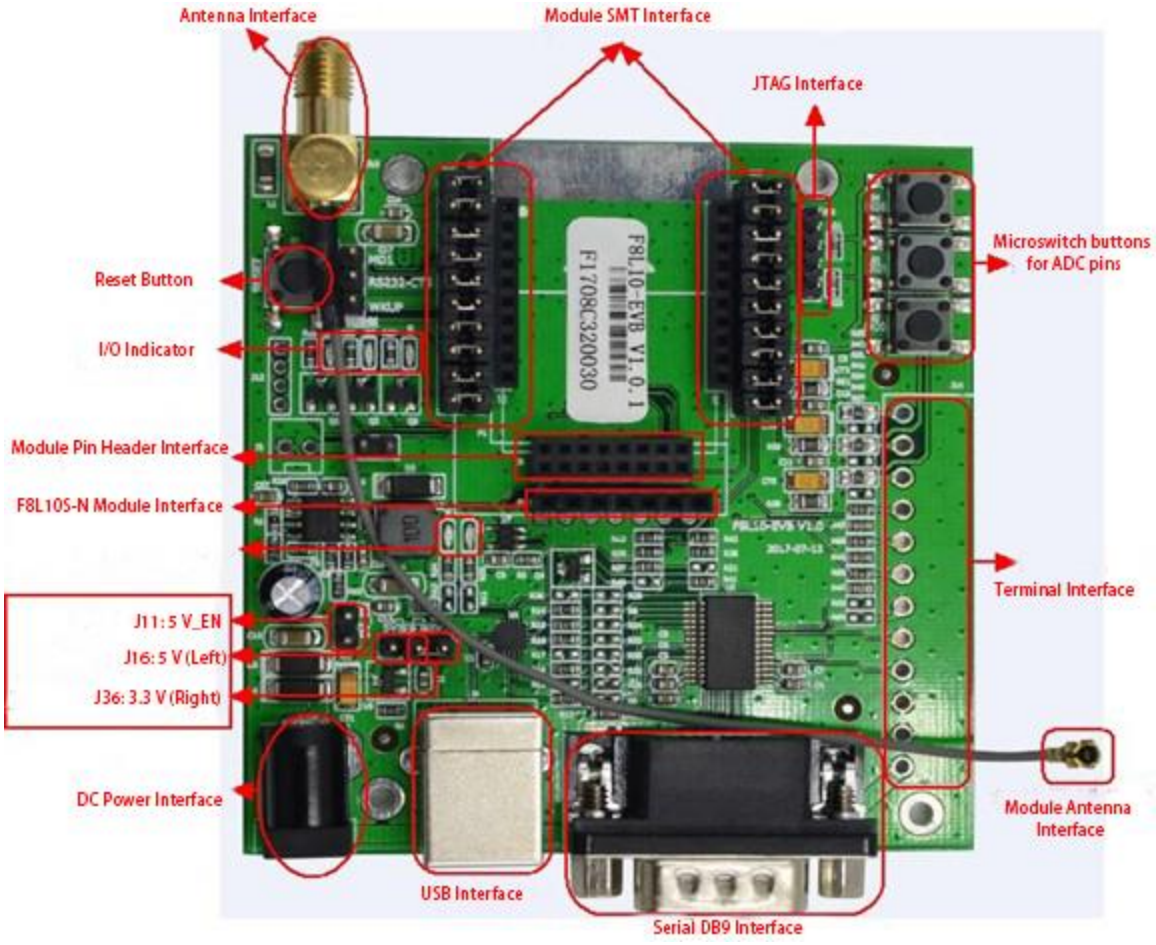

Figure 1: Interface Configuration

Note: The configuration board is set to default upon factory release. The jumper cap (J36) on the right side is set to 3.3V by default. If testing the F8L10D-E module for optimal testing distance (maximum transmit power):

1. **When powered by USB, short the jumper cap (J36) on the left side for module supply voltage of 5V and disconnect J11.**

Recommendation: This configuration board is designed for LoRa module development and testing purposes.

Chapter 2 Interfaces

2.1 Antenna Interfaces

The antenna interface features a standard SMA female connector.

2.2 JTAG Interfaces

The JTAG interface is used for downloading chip programs, and it has two interfaces. One is a 5-pin single-row 2.0 interface (J10), as shown in Figure 2.

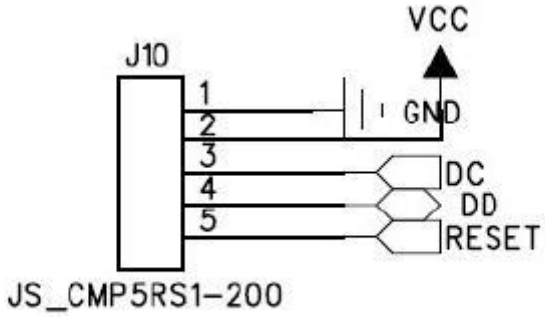

Figure 2: JTAG Interface Pin Definitions

2.3 Module SMT Interfaces

Module SMT interface consists of dual-row pins as shown in Figure 3.

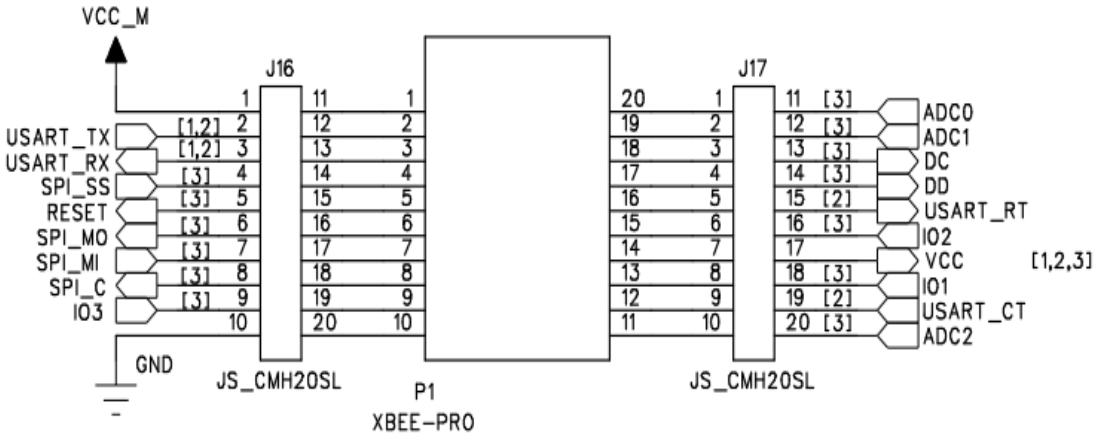

Figure 3: Module SMT Interface Pinout

Note: Interface definitions can be referred to the F8L10D Module User Manual.

2.4 Module Pin Interface

The module pin header interface is a 2x8 dual-row pin header, as shown in Figure 4. Due to pin limitations, only a subset of the module's interfaces is exposed through this interface. The SMT interface includes all interfaces extended from the module.

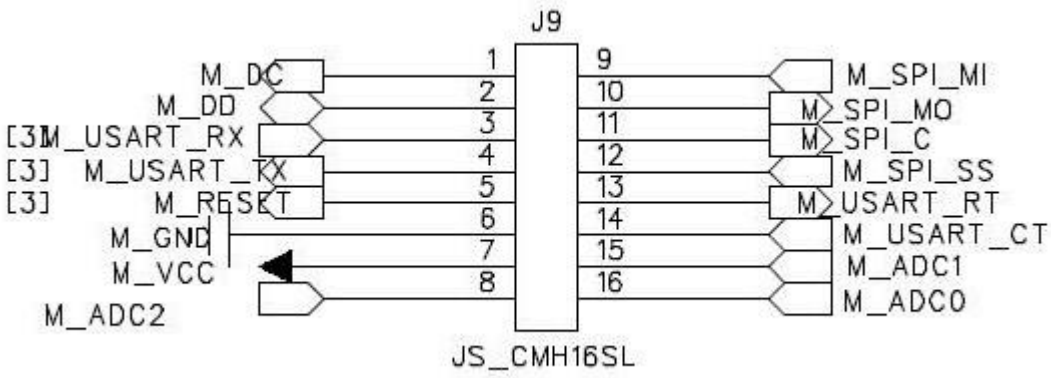

Figure 4: Module Pin Header Interface

Note: Interface definitions can be referenced in the F8L10D Module User Manual.

2.5 F8L10S-N Module Pin Interface

Module Pin Header Interface is a single-row pin header with a center-to-center spacing of 2.54mm, as shown in Figure 5.

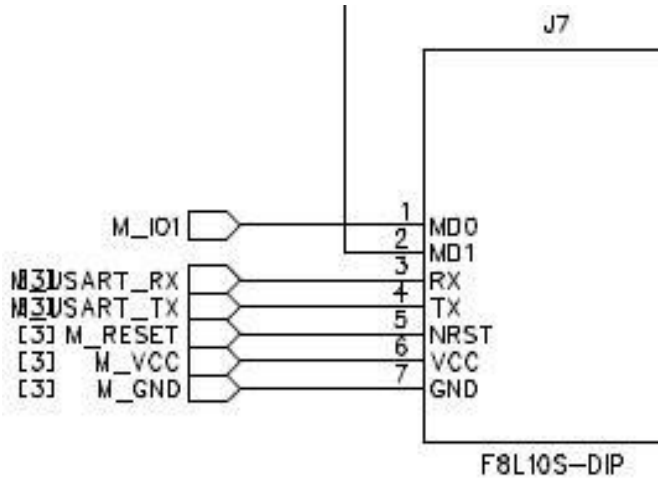

Figure 5: Module Pin Header Interface

Note: Interface definitions can be referred to the F8L10S-N User Manual.2.6 Terminal Interface

2.6 Terminal Interface

Terminal Interface is a combination of power, serial, I/O pins, and ADC. As shown in Figure 6, VDD5 voltage range is 520mA; NU_ADC2 is voltage collection, with a voltage range of 0~5V; NU_IO1, NU_IO2, and NU_IO3 correspond to SMT interface IO1, IO2, and IO3 respectively.

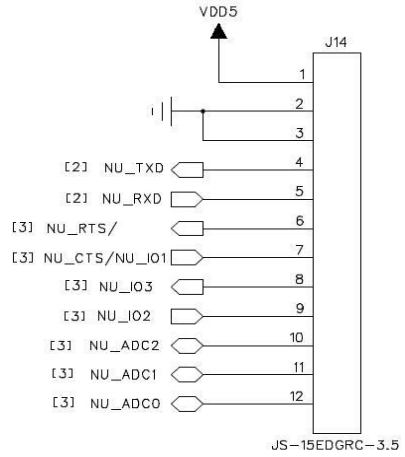

Figure 6: Terminal Interface

Table 2-1: Terminal Interface Definitions

Number	Interface Name	SMT Interface
J14-1	VDD5	N/A
J14-2	GND	GND
J14-3	GND	GND
J14-4	NU_TXD	USART_TX
J14-5	NU_RXD	USART_RX
J14-6	NU_RTS	USART_RT
J14-7	NU_CTS	USART_CT/IO1
J14-8	NU_ IO2	IO3
J14-9	NU_ IO1	IO2
J14-10	NU_ADC2	ADC2
J14-11	NU_ADC1	ADC1
J14-12	NU_ADC0	ADC0

2.7 Serial DB9 Interface

Serial DB9 Interface serves as the connection between the device and external peripherals. When connecting this interface to a computer, a crossover cable is required. In other words, the serial cable connections should be as follows: Pin 2 connects to Pin 3, Pin 3 connects to Pin 2, and Pin 5 connects to Pin 5.

Table 2-2: Definition of DB9 Interface

DB9 Pin	Pin Header Interface	Pin Name
2	USART_RX	RX
3	USART_TX	TX
5	GND	GND
7	USART_RT	RTS
8	USART_CT	CTS

2.8 Module Antenna Connector

The module antenna connector is used to connect the LoRa antenna socket (MM9329-2700/Murata), as shown in Figure 7: Antenna Socket.

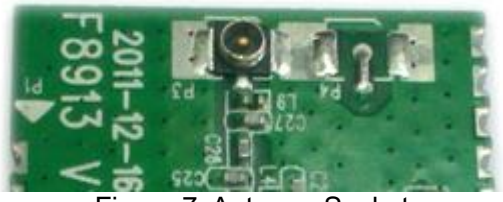

Figure 7: Antenna Socket

The structural dimensions of MM9329-2700/Murata are shown in Figure 8:

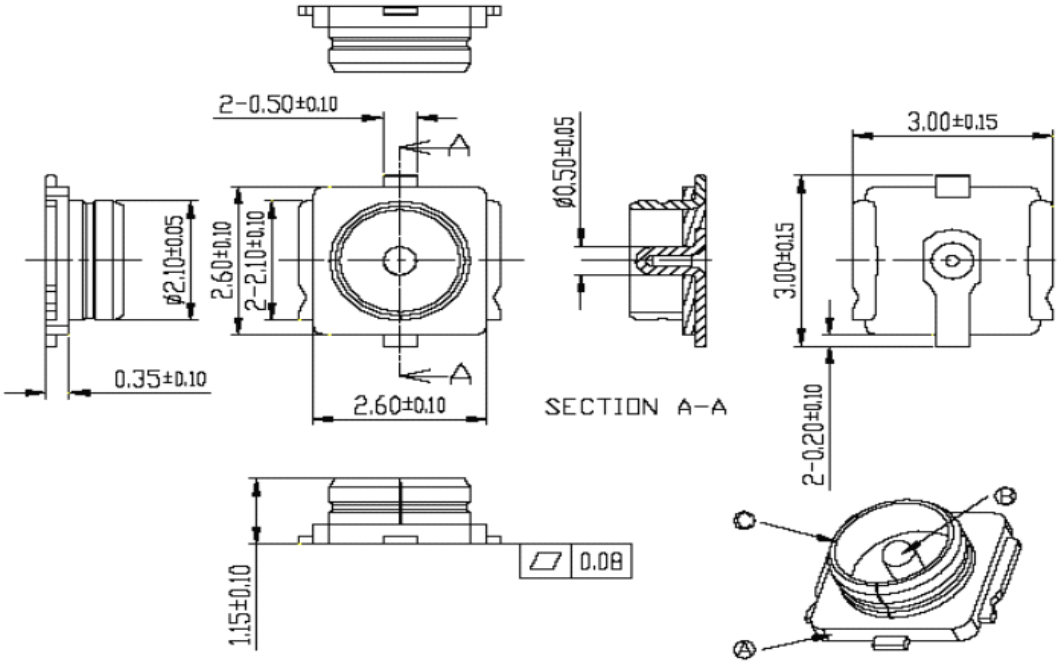

Figure 8: Structural Dimensions of MM9329-2700/Murata

Chapter 3 Indicator Lights/Buttons

3.1 Serial Communication Indicator Light

The serial communication indicator will flash when the device's serial port is in communication. The indicator remains off when there is no communication. The circuit diagram is shown in Figure 9.

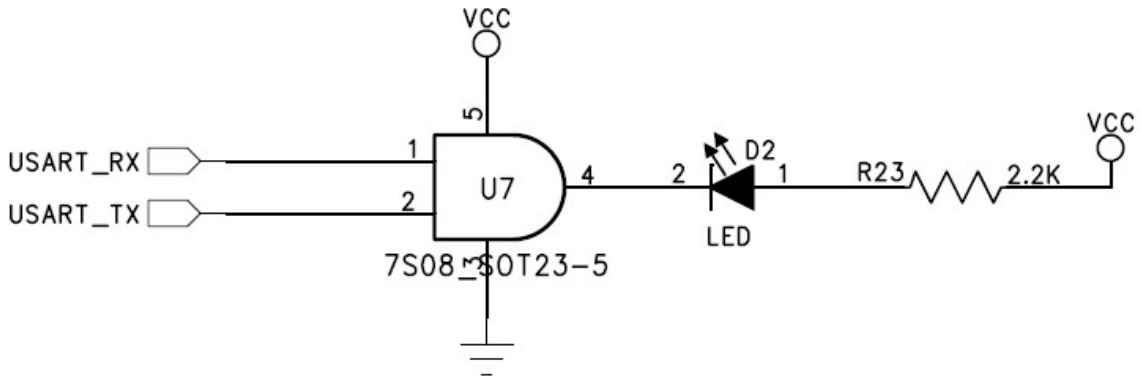

Figure 9 Serial Communication Indicator

3.2 Three-channel I/O Interface Indicator Lights

The indicator lights for the three I/O interfaces are controlled by transistors Q1, Q2, and Q3, respectively, through the SMT interfaces IO1, IO2, and IO3. Refer to Figure 10 for details.

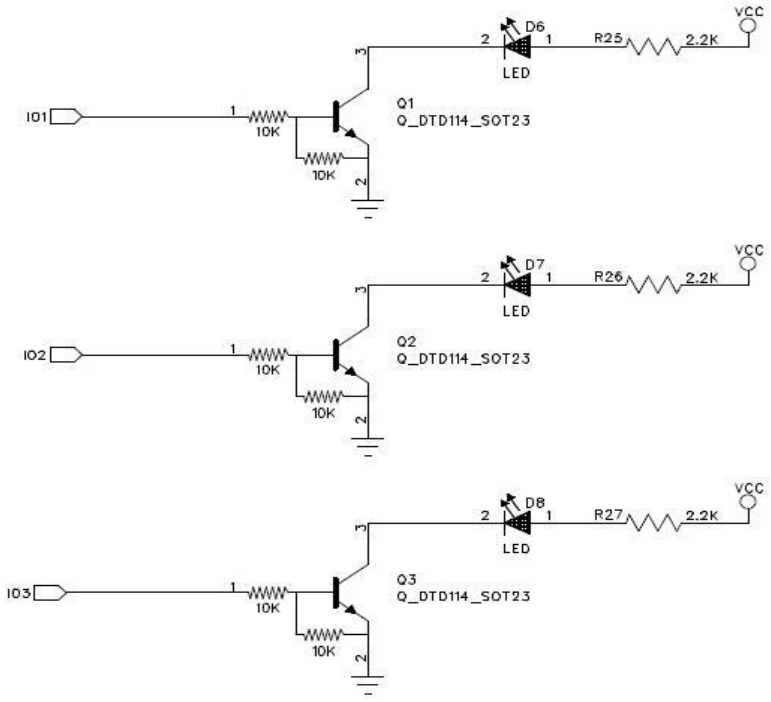

Figure 10: Indicator Lights Controlled by Three I/O Interfaces

3.3 Three-channel ADC Pin Buttons

The three ADC pin buttons are used for calibration. Press the corresponding button and use the software to calibrate the ADC value to its maximum when held down. Release the button and use the software to calibrate the ADC value to 0; this is a two-point calibration for ADC. As shown in Figure 11, ADC0 and ADC1 are used for current collection (05V).

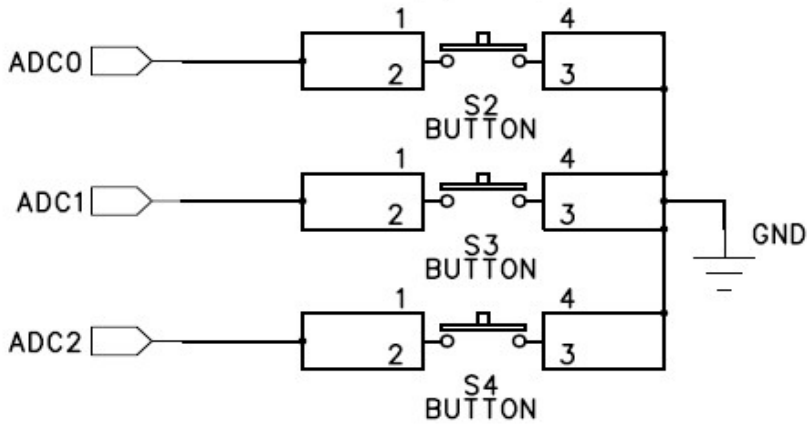

Figure 11: Three ADC Pin Buttons

3.4 Reset Button

Reset Button is used to reset the LoRa module. When this button is pressed, the RESET pin is set to low, causing the LoRa module to stop running. When the button is released, the RESET pin is set to 3.3V, allowing the LoRa module to start and run its program. The circuit is shown in Figure 12. VCC represents a 3.3V voltage.

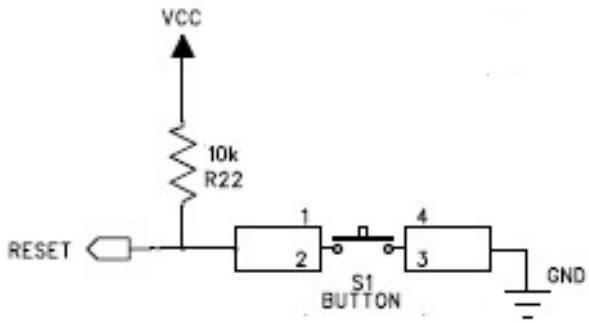

Figure 12 Reset Circuit