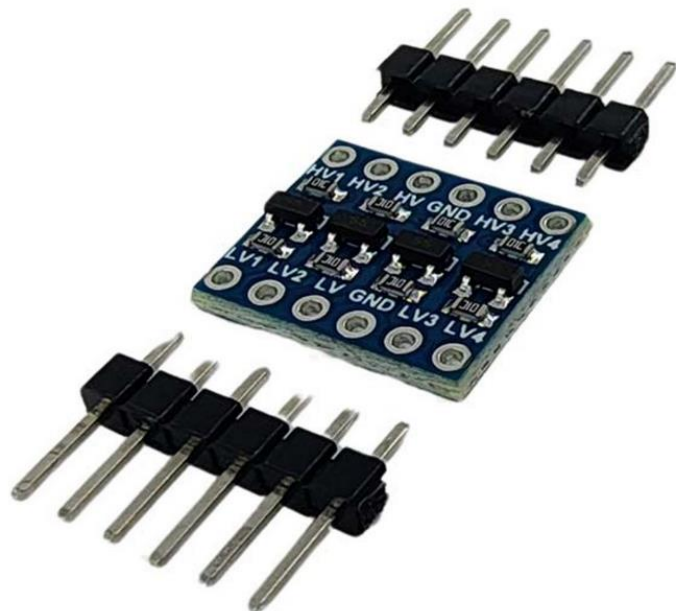
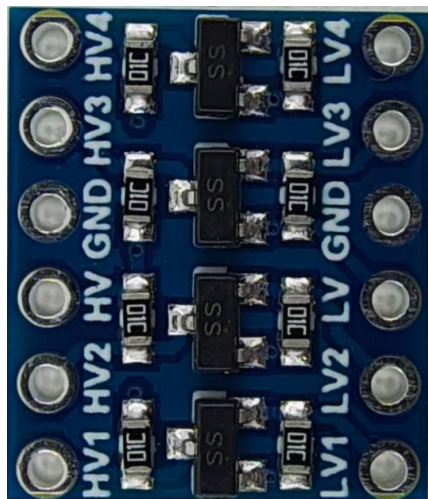


# 7SEMI

## BSS138 Breakout board Manual

Version 1.0



## Table of Contents

1.Features .....	2
Description.....	3
Pinouts .....	4
Connection example with Arduino .....	5
3.Contact Information .....	6

# 1.Features

## Features:

- Supports bidirectional level shifting between different logic voltage levels (e.g., 1.8V, 3.3V, 5V).
- Based on BSS138 N-channel MOSFET for reliable signal switching.
- Compact design, easy to integrate into any project.
- Suitable for **I2C**, **UART**, **SPI**, and other digital communication protocols.
- High-speed operation with minimal signal delay.

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# Description

## 7Semi BSS138 Logic Level Shifter

The BSS138 Logic Level Shifter is a compact and reliable solution designed for interfacing devices that operate at different logic levels. It is based on the BSS138 N-channel MOSFET and is ideal for bidirectional communication between 3.3V and 5V systems or other voltage levels. The module ensures safe voltage translation for signals without data loss or corruption, making it suitable for applications in microcontroller-based projects, sensors, displays, and communication peripherals.

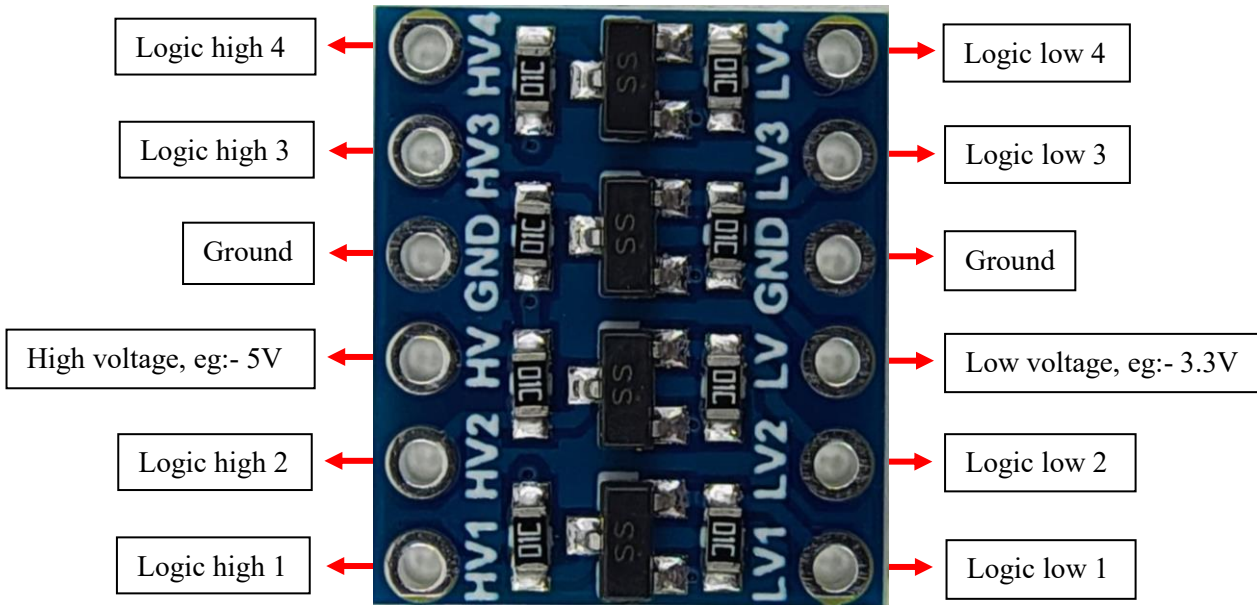
### Applications:

- Microcontroller interfacing
- Sensor communication
- Display modules
- Communication between 3.3V and 5V systems

### Basic example:

Some of the LORA (868Mhz SX1276 RFM96W) chips used for wireless communication uses 3.3V as its logic level. So, in this case we need some kind of logic level shifter if we are using this chip with Arduino or any other microcontroller which uses 5V as its logic level.

## Pinouts



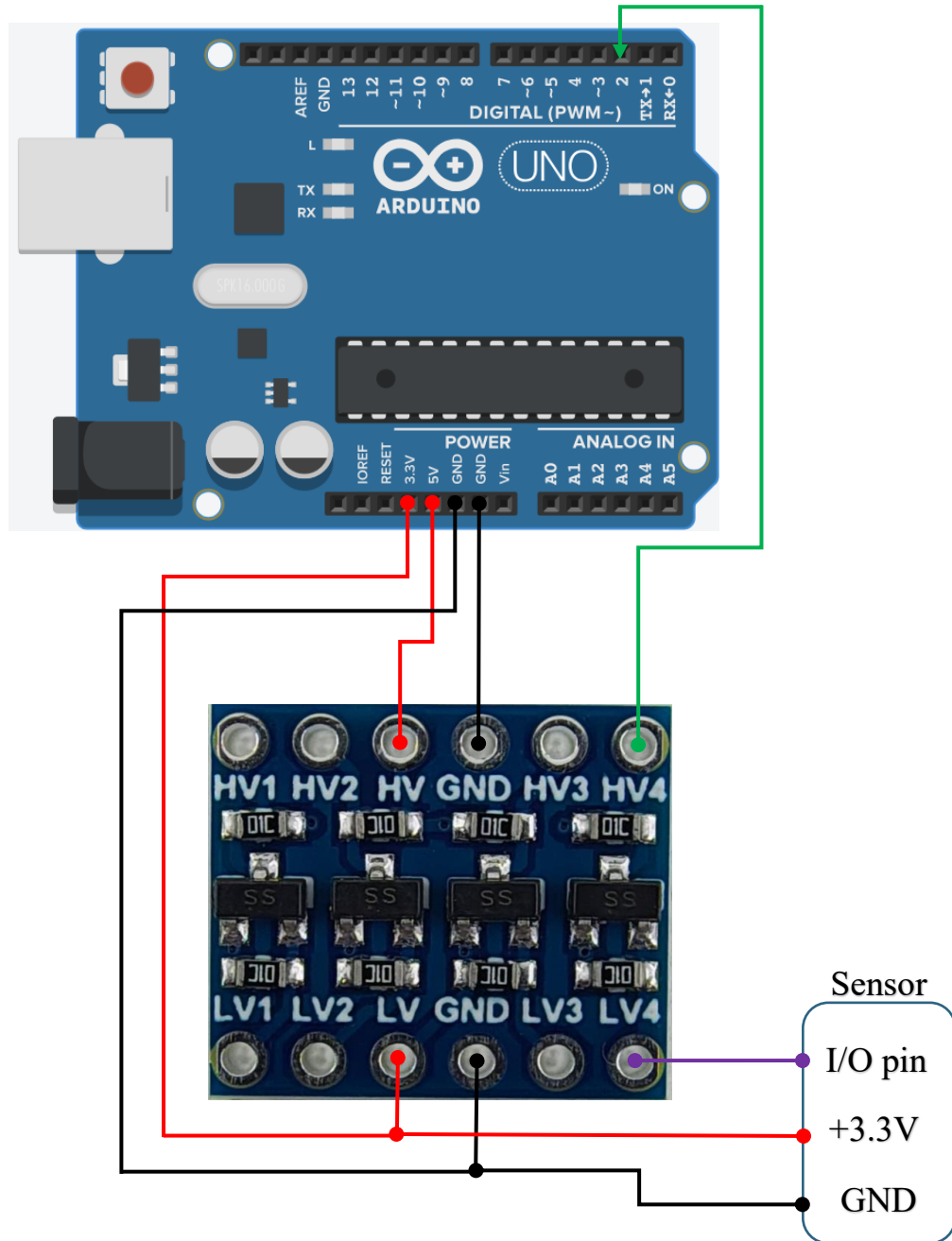
- LV = Main input voltage for logic low.
- HV = Main input voltage for logic high.
- LV1 to LV4 = You can connect sensor's input/ output pin to these pins.
- HV1 to HV4 = You can connect sensor's input/ output pin to these pins.

**Note:-** If your sensor/ device uses only 3.3V logic uni-directional communication (Sensor → Arduino), then in this you don't need to use logic level shifter because Arduino can handle 3.3V logic levels without any problem.

But let's say Arduino is sending some data back to the sensor (Sensor ↔ Arduino) then in this case you will need to use logic level shifter because Arduino's logic level is 5V which may damage the sensor.

**Sometimes it is mentioned that the sensor/ device is 5V tolerant. So, in that case also you don't need to use logic level shifter.**

# Connection example with Arduino



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## 3.Contact Information



*7Semi is a leading provider of wide range of efficient and accessible hardware products and related technical solutions to an extensive range of industries like IoT, Automation, Education and Learning, Robotics and more*

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***We're happy to answer questions.***

If you need assistance – [Click here to more](#)