

TXB0104 Level Shifter Hookup Guide a learn.sparkfun.com tutorial

Available online at: <http://sfe.io/t128>

Contents

- [Introduction](#)
- [TXB0104 BOB Overview](#)
- [Example: Connecting ADXL345 to Arduino](#)
- [Resources and Going Further](#)

Introduction

The [TXB0104](#) is a bi-directional signal level shifter made by Texas Instruments. It features four channels of input/output signals and an output enable line that allows the signal lines to be placed in a high impedance mode when they are unneeded.



[SparkFun Voltage-Level Translator Breakout - TXB0104](#)

BOB-11771

\$4.95

8

[Favorited Favorite](#) 28

[Wish List](#)

Depending on the high and low side voltages, the bandwidth on the individual signal channels can range from 20Mbps up to 100Mbps, making the TXB0104 suitable for higher speed signals such as SPI.

SparkFun's [TXB0104 breakout board](#) makes it easy to use this powerful chip in your projects.

Suggested Reading

Before going further with this guide, you should be familiar with the topics covered in these tutorials:

[Serial Peripheral Interface \(SPI\)](#)

SPI is commonly used to connect microcontrollers to peripherals such as sensors, shift registers, and SD cards.

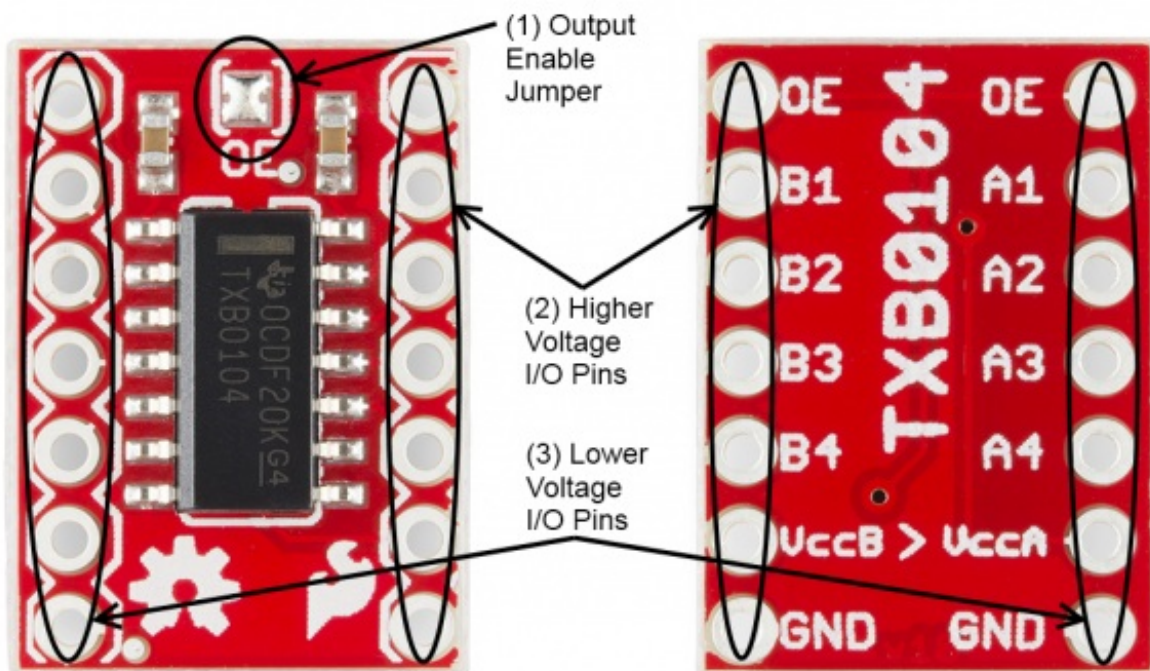
[Favorited Favorite](#) 95

[Logic Levels](#)

Learn the difference between 3.3V and 5V devices and logic levels.

[Favorited Favorite](#) 90

TXB0104 BOB Overview



The TXB0104 breakout board is pretty simple. There are two rows of pin headers, one down each side of the board; one side for the high voltage signals and one for the low voltage signals.

- The **output enable jumper** (1) is closed by default, causing the signals on both sides to be driven at all times. It's up to the user to ensure (as is usually the case) that the system avoid bus contention states where the high side and low side of the same signal are being driven to opposite levels.
- **B-side signals** (2) are the high voltage signals. V_{ccB} *must* be at a higher voltage than V_{ccA} to avoid total protonic reversal (or at least, to avoid possible damage to the chip). The voltage range for V_{ccB} is 1.65 to 5.5V. If driving the OE pin from the high-voltage device, please insert a 1k resistor in series with the drive signal.
- **A-side signals** (3) are the low voltage signals. V_{ccA} *must* be at a lower voltage than V_{ccB} . The voltage range for V_{ccA} is 1.2V to 3.6V.

Example: Connecting ADXL345 to Arduino

