

# TXS0108E (HW-0108) 8-channel, bidirectional 5V-3.3V logic level converter

The **TXS0108E (HW-0108)** is an 8-channel bidirectional logic-level converter module designed to bridge communication between devices operating at different voltage levels, such as 3.3V and 5V systems. It features automatic direction sensing, meaning it does not require a dedicated direction-control signal to switch between transmitting and receiving data.

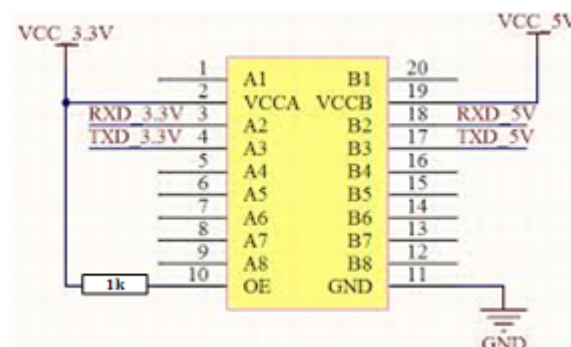


## Technical Specifications

According to manufacturers like Texas Instruments and technical guides from ProtoSupplies, the module operates within the following parameters:

- **Voltage Range (VCCA):** 1.2V to 3.6V (Lower voltage side).
- **Voltage Range (VCCB):** 1.65V to 5.5V (Higher voltage side).
- **Data Rates:** Supports up to 110 Mbps for push-pull applications and 1.2 Mbps for open-drain applications like I2C.
- **Requirement:** VCCA must always be less than or equal to VCCB.
- **Dimensions:** Approximately 26 x 16 x 3mm.

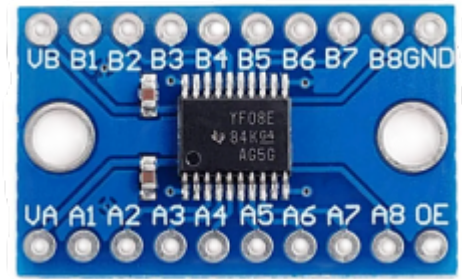
## Key Features



- **Bidirectional Translation:** Allows seamless two-way communication without manual configuration of data direction.
- **Output Enable (OE) Pin:** An active-HIGH pin that enables the device when connected to VCCA. If pulled LOW, it places all I/O pins in a high-impedance state, effectively disabling the module.
- **Protocol Support:** Compatible with various serial interfaces, including **I<sup>2</sup>C**, **SPI**, and **UART**.
- **Auto-Direction Sensing:** Uses internal edge-rate accelerators to detect and automatically switch the signal direction.

## Pinout and Connection Guide

The module typically features two rows of pins corresponding to the low-voltage (A) and high-voltage (B) sides:

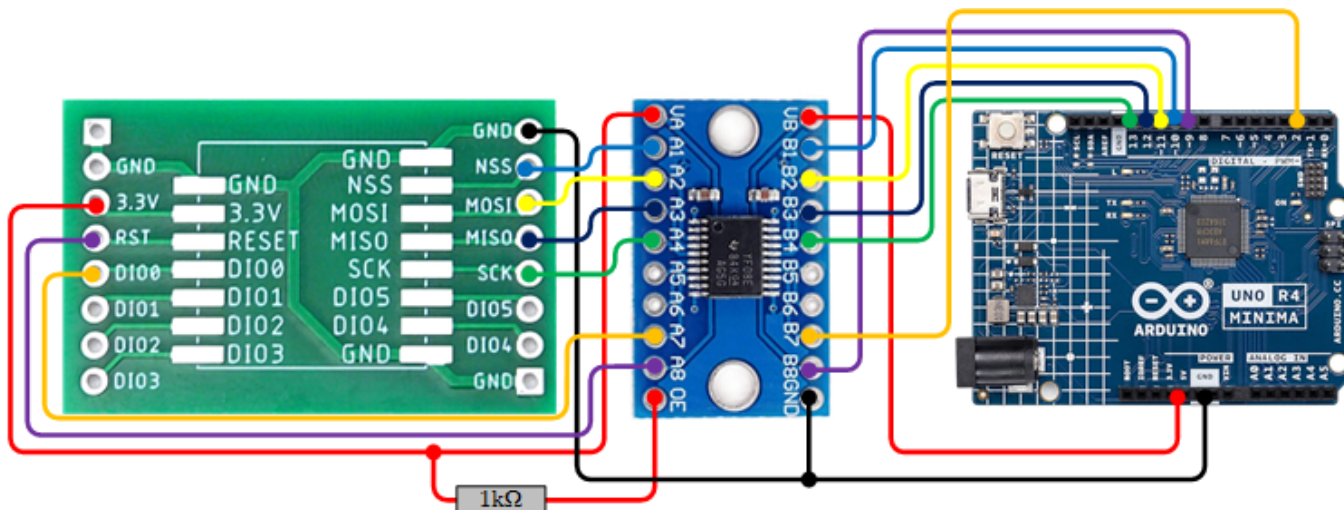


- **VCCA:** Connect to the power supply of the lower voltage device (e.g., 3.3V).
- **VCCB:** Connect to the power supply of the higher voltage device (e.g., 5V).
- **GND:** Common ground for both voltage domains.
- **OE:** Output Enable; must be tied HIGH (to VCCA) to operate. Tie to GND via a pull-down resistor to keep it disabled during power-up.
- **A1-A8:** Data lines for the low-voltage side.
- **B1-B8:** Data lines for the high-voltage side.

### An example of a level converter

Because the Arduino Uno/Nano uses 5V logic and the Ra-01 uses 3.3V, you must use a Logic Level Converter or voltage dividers on the data lines to avoid damaging the module. See more » [AI-Thinker LoRA products](#)

Ra-01 Pin	Logic level converter	Arduino Pin (Uno/Nano)	Wire Color	Notes
<b>VCC</b>	Va - Vb	5V	♦ red	Power
<b>GND</b>	GND	GND	♦ black	Common ground
<b>SCK</b>	A4 - B4	D13	♦ green	SPI Clock
<b>MISO</b>	A3 - B3	D12	♦ darkblue	SPI Master In Slave Out
<b>MOSI</b>	A2 - B2	D11	♦ yellow	SPI Master Out Slave In
<b>NSS</b>	A1 - B1	D10 (or D7)	♦ lightblue	Chip Select (CS)
<b>RESET</b>	A8 - B8	D9 (or D6)	♦ purple	Reset Pin
<b>DIO0</b>	A7 - B7	D2	♦ orange	Interrupt Pin (Required for RX)



AI-Thinker Ra01 / Ra02 modul

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Arduino UNO Controller

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