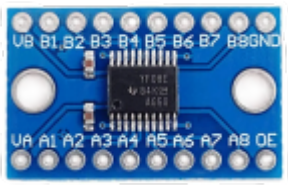
TXS0108E (HW-0108) 8-channel, bidirectional 5V-3.3V logic level converter



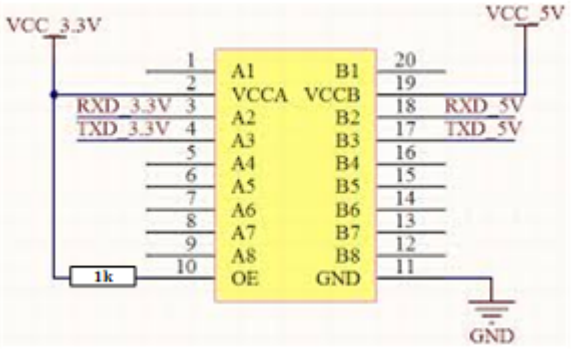
The **TXS0108E (HW-0108)** is an 8-channel, bidirectional logic level converter module designed to bridge communication between devices operating at different voltage levels, such as 3.3V and 5V systems. It features automatic direction sensing, meaning it does not require a dedicated direction-control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

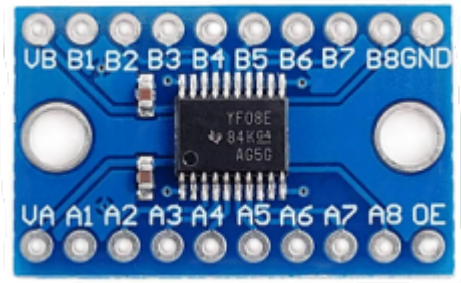
Key Features



- **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 I²C, 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:

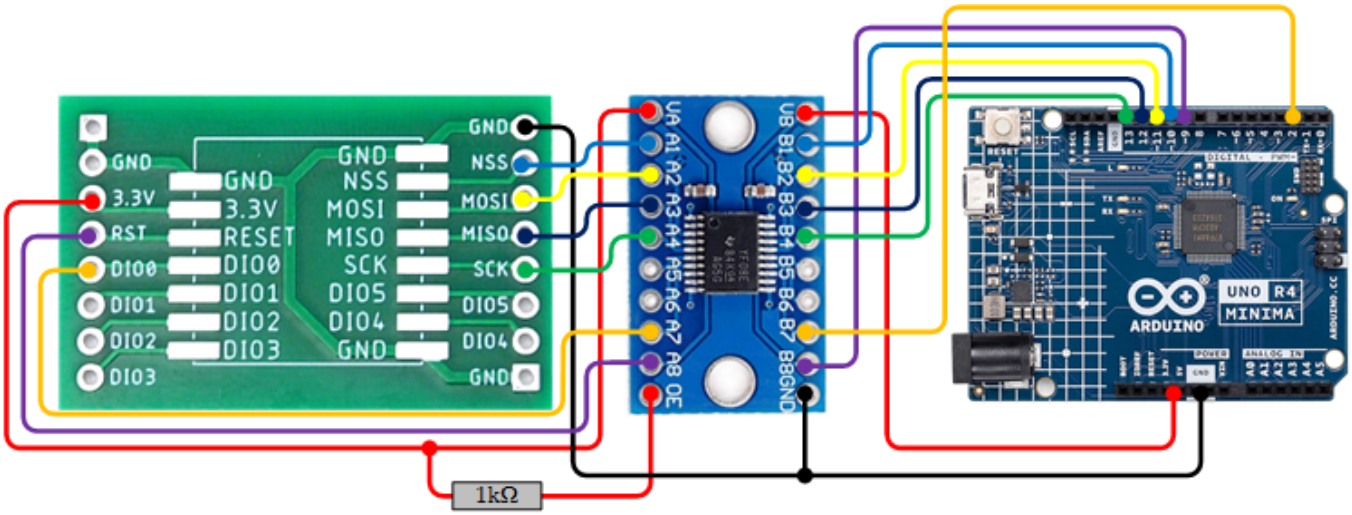


- **VCCA:** Connect to the power supply of the lower voltage device (e.g., 3.3V).
- **VCCB:** Connect to the power supply of the higher voltage device (e.g., 5V).
- **GND:** Common ground for both voltage domains.
- **OE:** Output Enable; must be tied HIGH (to VCCA) to operate. Tie to GND via a pull-down 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
VCC	Va - Vb	5V	♦ red	Power
GND	GND	GND	♦ black	Common ground
SCK	A4 - B4	D13	♦ green	SPI Clock
MISO	A3 - B3	D12	♦ darkblue	SPI Master In Slave Out
MOSI	A2 - B2	D11	♦ yellow	SPI Master Out Slave In
NSS	A1 - B1	D10 (or D7)	♦ lightblue	Chip Select (CS)
RESET	A8 - B8	D9 (or D6)	♦ purple	Reset Pin
DIO0	A7 - B7	D2	♦ orange	Interrupt Pin (Required for RX)



AI-Thinker Ra01 / Ra02 modul | **TXS0108E (HW-0108)** 8-channel, bidirectional 5V-3.3V logic level converter | **Arduino UNO Contoller**

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