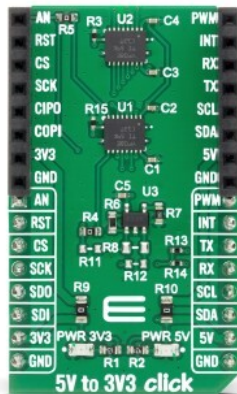


5V to 3V3 Click



PID: MIKROE-6900

5V to 3V3 Click is a compact add-on board designed for safe logic-level adaptation between 5V host systems and 3.3V mikroBUS-compatible peripherals. This board is based on the [TXS0108E](#), an 8-bit bidirectional voltage-level translator for open-drain and push-pull applications from [Texas Instruments](#). Key features include two TXS0108E level translators for adapting the required mikroBUS digital signal lines between 5V and 3.3V domains, an onboard mikroBUS header socket for connecting an additional Click board or mikroBUS-compatible module, and an [MCP6001](#) operational amplifier stage for analog line adaptation from the 5V host side to the 3.3V peripheral side. The board also includes PWR 3V3 and PWR 5V LED indicators for visual rail monitoring. 5V to 3V3 Click is suitable for mixed-voltage embedded systems, prototyping, hardware evaluation, system integration, and interfacing 5V MCU platforms with 3.3V Click boards, low-voltage sensors, and communication modules.

For more information about **5V to 3V3 Click** visit the official [product page](#).

How does it work?

5V to 3V3 Click is based on the TXS0108E, an 8-bit level-shifting voltage translator for open-drain and push-pull applications from Texas Instruments. This Click board features an onboard mikroBUS socket implemented as headers, allowing an additional Click board or mikroBUS-compatible module to be connected and operated with translated logic voltage levels. The voltage translation is performed through two TXS0108E level-shifting voltage translators, enabling communication and signal adaptation between a 5V host MCU side and a 3.3V peripheral side. This makes 5V to 3V3 Click suitable for applications where a 5V host needs to interface safely and reliably with 3.3V Click boards, low-voltage sensor boards, communication interfaces, or mixed-voltage embedded systems. It is especially useful during prototyping,

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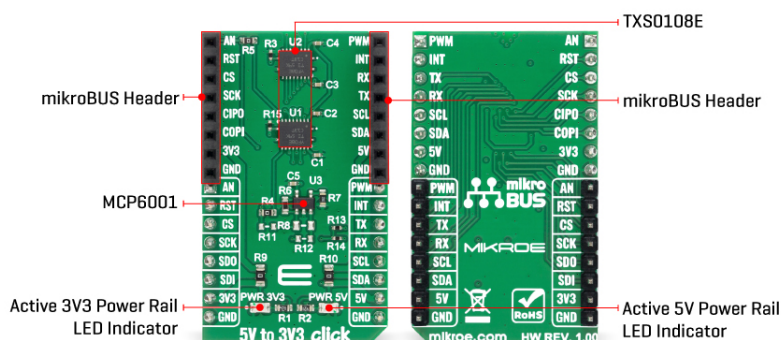


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system integration, hardware evaluation, and development environments where voltage compatibility between the host controller and connected peripherals must be ensured without redesigning the main hardware platform.



The board also includes an onboard MCP6001 operational amplifier used for analog signal adaptation on the AN line. In this configuration, the 5V analog signal from the host mikroBUS socket is routed to the MCP6001 stage, which conditions and scales the signal before forwarding it to the mikroBUS AN pin on the 3.3V device side. This allows analog outputs from a connected 3.3V Click board or mikroBUS-compatible module to be safely interfaced with a 5V MCU ADC input. The MCP6001 stage therefore provides the required analog voltage adaptation between the 3.3V peripheral side and the 5V host side, while the remaining digital mikroBUS lines are translated through the TXS0108E level-shifting translators. In addition, the board features two green LED indicators labeled PWR 3V3 and PWR 5V, providing a clear visual indication of the active power rails during operation.

This Click board™ is designed to bridge 5V host systems with 3.3V mikroBUS-compatible peripherals by translating the required signal lines between the two voltage domains. It allows 5V MCU platforms to communicate properly with connected 3.3V modules while maintaining safe logic-level compatibility. Also, this Click board™ comes equipped with a library containing easy-to-use functions and an example code that can be used as a reference for further development.

Specifications

Type	Adapter,Buck
Applications	It is suitable for mixed-voltage embedded systems, prototyping, hardware evaluation, system integration, and interfacing 5V MCU platforms with 3.3V Click boards, low-voltage sensors, and communication modules
On-board modules	TXS0108E - 8-bit level-shifting voltage translator for open-drain and push-pull applications from Texas Instruments
Key Features	5V-to-3.3V voltage-level translation, support for open-drain and push-pull signal applications, compatibility with additional Click

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	boards and mikroBUS-compatible modules, signal adaptation between 5V host MCU side and 3.3V peripheral side, translated communication and control lines, analog signal routing switch, and more
Interface	Analog,GPIO,I2C,PWM,SPI,UART
Feature	ClickID
Compatibility	mikroBUS™
Click board size	M (42.9 x 25.4 mm)
Input Voltage	3.3V or 5V

Pinout diagram

This table shows how the pinout on 5V to 3V3 Click corresponds to the pinout on the mikroBUS™ socket (the latter shown in the two middle columns).

Notes	Pin					Pin	Notes
Analog Output	AN	1	AN	PWM	16	PWM	PWM Input
Reset	RST	2	RST	INT	15	INT	Interrupt
SPI Chip Select	CS	3	CS	RX	14	TX	UART TX
SPI Clock	SCK	4	SCK	TX	13	RX	UART RX
SPI Data OUT	SDO	5	MISO	SCL	12	SCL	I2C Clock
SPI Data IN	SDI	6	MOSI	SDA	11	SDA	I2C Data
Power Supply	3.3V	7	3.3V	5V	10	5V	Power Supply
Ground	GND	8	GND	GND	9	GND	Ground

Onboard settings and indicators

Label	Name	Default	Description
LD1	PWR 3V3	-	Active 3V3 Power Rail LED Indicator
LD2	PWR 5V	-	Active 5V Power Rail LED Indicator

5V to 3V3 Click electrical specifications

Description	Min	Typ	Max	Unit
Supply Voltage	3.3	-	5	V

Software Support

[5V to 3V3 Click](#) demo application is developed using the [NECTO Studio](#), ensuring compatibility with [mikroSDK](#)'s open-source libraries and tools. Designed for plug-and-play implementation and testing, the demo is fully compatible with all development, starter, and mikromedia boards featuring a [mikroBUS™](#) socket.

Example Description

This example demonstrates the use of the 5V to 3V3 Click board to control and toggle all

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mikroBUS pins. The application alternates between two toggle modes: toggling all pins simultaneously a fixed number of times with a defined delay, and toggling pins sequentially with a separate delay between each pin change.

Key Functions

- `c5vto3v3_cfg_setup` This function initializes Click configuration structure to initial values.
- `c5vto3v3_init` This function initializes all necessary pins and peripherals used for this Click board.
- `c5vto3v3_toggle_all` This function toggles all mikroBUS pins together a desired number of times with the selected delay between each toggle.
- `c5vto3v3_toggle_seq` This function toggles all mikroBUS pins one by one with the selected delay between each toggle.

Application Init

Initializes the logger and the 5V to 3V3 Click driver. After driver setup and mikroBUS mapping, the digital output pins are initialized and the example is ready to run.

Application Task

Executes two toggle demonstrations in a loop:

- Toggles all output pins together 5 times with a 500 ms delay.
- Toggles all output pins sequentially with a 300 ms delay.

Application Output

This Click board can be interfaced and monitored in two ways:

- Application Output - Use the "Application Output" window in Debug mode for real-time data monitoring. Set it up properly by following [this tutorial](#).
- UART Terminal - Monitor data via the UART Terminal using a [USB to UART converter](#). For detailed instructions, check out [this tutorial](#).

Additional Notes and Information

The complete application code and a ready-to-use project are available through the NECTO Studio Package Manager for direct installation in the [NECTO Studio](#). The application code can also be found on the MIKROE [GitHub](#) account.

Resources

[mikroBUS™](#)

[mikroSDK](#)

[Click board™ Catalog](#)

[Click boards™](#)

[ClickID](#)

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Downloads

[5V to 3V3 click example package](#)

[5V to 3V3 click 2D and 3D files v100](#)

[5V to 3V3 click schematic v100](#)

[TXS0108E datasheet](#)

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