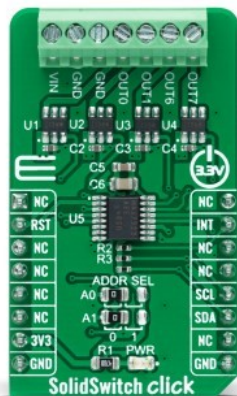


SolidSwitch Click



PID: MIKROE-4569

SolidSwitch Click is a compact add-on board that contains load switch devices. This board features the TPS22918, four single-channel load switches from Texas Instruments. Every switch includes an N-channel MOSFET that operates over an input voltage range up to 5.5V and can support a maximum continuous current of 2 A. The switches are controlled by an ON/OFF input, performed by MAX7323, an I2C configurable port expander capable of interfacing directly with low-voltage control signals. This Click board™ is suitable for industrial systems, set-top boxes, electronic point of scale, and various other applications.

SolidSwitch Click is supported by a [mikroSDK](#) compliant library, which includes functions that simplify software development. This [Click board™](#) comes as a fully tested product, ready to be used on a system equipped with the [mikroBUS™](#) socket.

How does it work?

SolidSwitch Click, as its foundation, uses the TPS22918, a 5.5V 2A load switch from Texas Instruments. To reduce voltage drop for low voltage and high current rails, every TPS22918 implements a low resistance N-channel MOSFET, reducing the drop-out voltage across the device. An ON/OFF input on the ON pin of the TPS22918 controls the switches. The ON pin is compatible with the standard GPIO logic threshold and can be used with any MCU with 1V or higher GPIO voltage. That's why the control of all switches is established via the port expander, the [MAX7323](#).

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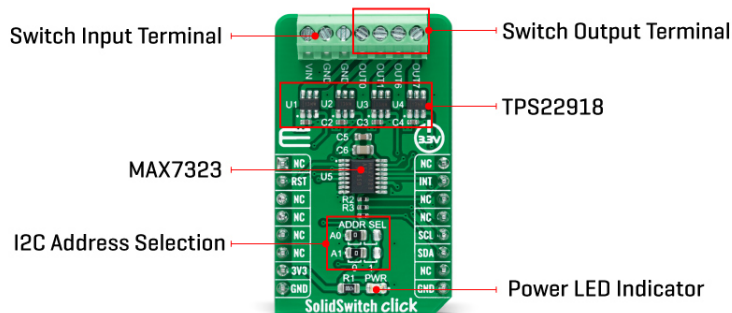
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This Click board™ is designed to operate from an external supply voltage range from 1V to 5.5V. The TPS22918 works regardless of power sequencing order. The order in which voltages are applied to the VIN terminal and ON pin of the load switch will not damage the device as long as the voltages do not exceed the absolute maximum operating conditions.

SolidSwitch Click communicates with MCU through the MAX7323 port expander using the standard I2C 2-Wire interface with a frequency of up to 400kHz. It also has two address pins (A0 and A1) programmed by the user to determine the value of the last two LSBs of the slave address, selected by onboard SMD jumpers labeled as ADDR SEL to an appropriate position marked as 0 and 1, allowing selection of the slave address LSBs. Also, this Click board™ has a Reset pin, routed to the RST pin on the mikroBUS™ socket, which clears the serial interface in case of a bus lockup, terminating any serial transaction to or from the MAX7323.

Also, it uses an additional pin, the INT pin of the mikroBUS™ socket, which automatically flags data changes on any of the I/O ports of the MAX7323 used as inputs. The interrupt output INT and all transition flags are deasserted when the MAX7323 is accessed through the serial interface.

This Click board™ can be operated only with a 3.3V logic voltage level. The board must perform appropriate logic voltage level conversion before use with MCUs with different logic levels. However, the Click board™ comes equipped with a library containing functions and an example code that can be used, as a reference, for further development.

Specifications

Type	Relay
Applications	Can be used for industrial systems, set-top boxes, electronic point of scale, and various other applications.
On-board modules	TPS22918 - 5.5V 2A load switch from Texas Instruments
Key Features	Four integrated single channel load switches, flexible design, 2A maximum switch current, and more.
Interface	I2C

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Feature	No ClickID
Compatibility	mikroBUS™
Click board size	M (42.9 x 25.4 mm)
Input Voltage	3.3V, External

Pinout diagram

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

Notes	Pin					Pin	Notes
	NC	1	AN	PWM	16	NC	
Reset	RST	2	RST	INT	15	INT	Interrupt
	NC	3	CS	RX	14	NC	
	NC	4	SCK	TX	13	NC	
	NC	5	MISO	SCL	12	SCL	I2C Clock
	NC	6	MOSI	SDA	11	SDA	I2C Data
Power Supply	3.3V	7	3.3V	5V	10	NC	
Ground	GND	8	GND	GND	9	GND	Ground

Onboard settings and indicators

Label	Name	Default	Description
LD1	PWR	-	Power LED Indicator
JP1-JP2	ADDR SEL	Left	I2C Address Selection 0/1: Left position 0, Right position 1

SolidSwitch Click electrical specifications

Description	Min	Typ	Max	Unit
Supply Voltage VCC	-	3.3	-	V
Supply Voltage VIN	1	-	5.5	V
Maximum Output Current	-	-	2	A
Maximum On-Resistance	-	-	52	mΩ
Operating Temperature Range	-40	+25	+105	°C

Software Support

We provide a library for the SolidSwitch Click as well as a demo application (example), developed using MikroElektronika [compilers](#). The demo can run on all the main MikroElektronika [development boards](#).

Package can be downloaded/installed directly from NECTO Studio Package Manager (recommended way), downloaded from our [LibStock™](#) or found on [mikroE github account](#).

Library Description

This library contains API for SolidSwitch Click driver.

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Key functions:

- solidswitch_cfg_setup - Config Object Initialization function.
- solidswitch_init - Initialization function.
- solidswitch_default_cfg - Click Default Configuration function.

Examples description

This example demonstrates the use of SolidSwitch Click board™.

The demo application is composed of two sections :

The full application code, and ready to use projects can be installed directly from NECTO Studio Package Manager(recommended way), downloaded from our [LibStock™](#) or found on [mikroE github account](#).

Other mikroE Libraries used in the example:

- MikroSDK.Board
- MikroSDK.Log
- Click.SolidSwitch

Additional notes and informations

Depending on the development board you are using, you may need [USB UART click](#), [USB UART 2 click](#) or [RS232 click](#) to connect to your PC, for development systems with no UART to USB interface available on the board. The terminal available in all MikroElektronika [compilers](#), or any other terminal application of your choice, can be used to read the message.

mikroSDK

This Click board™ is supported with [mikroSDK](#) - MikroElektronika Software Development Kit. To ensure proper operation of mikroSDK compliant Click board™ demo applications, mikroSDK should be downloaded from the [LibStock](#) and installed for the compiler you are using.

For more information about mikroSDK, visit the [official page](#).

Resources

[mikroBUS™](#)

[mikroSDK](#)

[Click board™ Catalog](#)

[Click boards™](#)

Downloads

[SolidSwitch click 2D and 3D files](#)

[TPS22918 datasheet](#)

[MAX7323 datasheet](#)

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[SolidSwitch click schematic](#)

[SolidSwitch click example on Libstock](#)

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