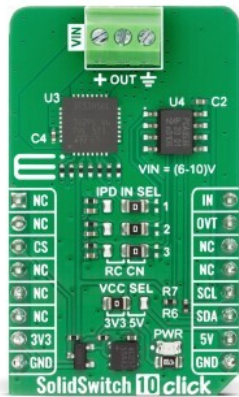


SolidSwitch 10 Click



PID: MIKROE-6864

SolidSwitch 10 Click is a compact add-on board designed for low-side switching of capacitive, resistive, and inductive loads in industrial and automation systems, enabling control of loads connected to a 6V to 10V supply rail with advanced protection features. It is based on the [IPS1050LQ](#), a single-channel low-side smart power switch from [STMicroelectronics](#). The board features an ultra-low RDS-ON of up to 50mΩ for reduced power dissipation, support for high inrush currents suitable for demanding startup conditions, and configurable smart overload protection with adjustable inrush current profiles and steady-state current limiting. Inrush control can be digitally configured via IPD IN SEL jumpers using the onboard [PCA9536D](#) I2C port expander, or hardware-timed through external capacitors, while integrated thermal protection with OVT diagnostic signaling ensures safe operation under fault conditions. SolidSwitch 10 Click is ideal for programmable logic controllers, industrial PC I/O modules, numerical control machines, and a wide range of general-purpose low-side switching applications.

For more information about **SolidSwitch 10 Click** visit the official [product page](#).

How does it work?

SolidSwitch 10 Click is based on the IPS1050LQ, a single-channel low-side smart power switch from STMicroelectronics, designed for low-side switching of capacitive, resistive, and inductive loads in industrial and automation environments. It can control loads connected to a supply rail in the 6V to 10V range while providing configurable and intelligent overload management. With an ultra-low RDS-ON of 50mΩ maximum, the device ensures minimal power dissipation and high efficiency even under demanding operating conditions, while supporting high inrush currents, making it suitable for loads with significant startup requirements such as motors,

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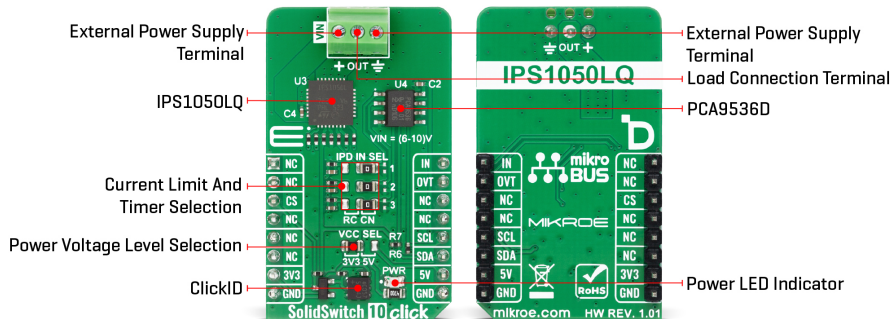


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solenoids, lamps, or large capacitive banks.



The IPS1050LQ integrates a smart overload protection mechanism that allows flexible configuration of the inrush current profile and steady-state current limitation. The inrush current level can be adjusted by setting the IPDX pins (IPD IN SEL jumpers) to HIGH or LOW in the RC configuration, where these control signals are managed through the onboard PCA9536D port expander from NXP via the I2C interface, enabling digital configurability from the host MCU. Alternatively, in the CN configuration, the inrush current can be automatically reduced after a programmable time interval defined by external capacitors connected to the IPDx pins, allowing hardware-based timing control without MCU intervention.

Once the inrush phase is completed, the embedded protection circuitry limits the steady-state output current to a predefined current limit level, ensuring safe operation of both the IC and the connected load under overload or fault conditions.

The output channel is further protected by an integrated junction temperature sensor that continuously monitors the device temperature; in case of an over-temperature event, the OVT diagnostic pin is asserted and remains active for the duration of the thermal fault, providing real-time feedback for system-level monitoring and fault handling.

The IN pin serves as the primary control input for driving the internal power switch and managing the device power stage, enabling precise and responsive load control. Thanks to its combination of low conduction losses, configurable current management, integrated diagnostics, and comprehensive protection features, SolidSwitch 10 Click is an excellent solution for programmable logic controllers, industrial PC peripheral input/output modules, numerical control machines, and a broad spectrum of general low-side switching applications.

This Click board™ can operate with either 3.3V or 5V logic voltage levels selected via the VCC SEL jumper. This way, both 3.3V and 5V capable MCUs can use the communication lines properly. 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	Power Switch
Applications	Ideal for programmable logic controllers, industrial PC I/O modules, numerical control

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	machines, and a wide range of general-purpose low-side switching applications
On-board modules	IPS1050LQ - single channel low side switch with configurable smart overload protection from STMicroelectronics
Key Features	Single-channel low-side smart power switch, ultra-low RDS-ON up to 50mΩ for low power dissipation, support for high inrush current loads, configurable inrush current profile, integrated steady-state current limiting with embedded overload protection, over-temperature protection, and more
Interface	I2C
Feature	ClickID
Compatibility	mikroBUS™
Click board size	M (42.9 x 25.4 mm)
Input Voltage	3.3V or 5V, External

Pinout diagram

This table shows how the pinout on SolidSwitch 10 Click corresponds to the pinout on the mikroBUS™ socket (the latter shown in the two middle columns).

Notes	Pin	mikroBUS				Pin	Notes
	NC	1	AN	PWM	16	IN	Internal Power Drive Input
	NC	2	RST	INT	15	OVT	Overtemperature Diagnostic
ID COMM	CS	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	5V	Power Supply
Ground	GND	8	GND	GND	9	GND	Ground

Onboard settings and indicators

Label	Name	Default	Description
LD1	PWR	-	Power LED Indicator
JP1-JP3	IPD IN SEL	Right	Current limit And Timer Selection RC/CN: Left position RC , Right position CN
JP4	VCC SEL	Left	Power Voltage Level Selection 3V3/5V: Left position 3V3, Right position 5V

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SolidSwitch 10 Click electrical specifications

Description	Min	Typ	Max	Unit
Supply Voltage	3.3	-	5	V
External Power Supply	6	-	10	V

Software Support

[SolidSwitch 10 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 SolidSwitch 10 Click board for controlling a low-side solid-state output channel. The application periodically enables and disables the output, allowing verification of switching behavior through the connected load.

Key Functions

- `solidswitch10_cfg_setup` This function initializes Click configuration structure to initial values.
- `solidswitch10_init` This function initializes all necessary pins and peripherals used for this Click board.
- `solidswitch10_default_cfg` This function executes a default configuration of SolidSwitch 10 Click board.
- `solidswitch10_enable_output` This function sets the IN pin to high logic level, enabling the low-side switch output.
- `solidswitch10_disable_output` This function sets the IN pin to low logic level, disabling the low-side switch output.

Application Init

Initializes the logger and SolidSwitch 10 Click driver and applies the default device configuration.

Application Task

Toggles the output state by enabling and disabling low-side switch output at fixed time intervals and logs the current action to the serial terminal.

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

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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](#)

Downloads

[SolidSwitch 10 click example package](#)

[SolidSwitch 10 click 2D and 3D files v101](#)

[SolidSwitch 10 click schematic v101](#)

[IPS1050LQ datasheet](#)

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