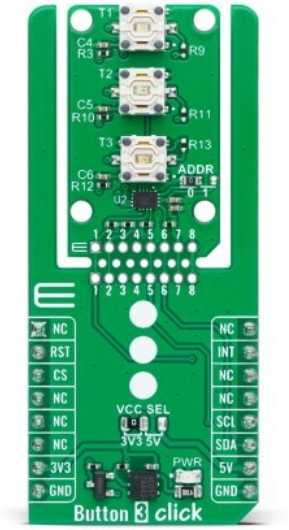
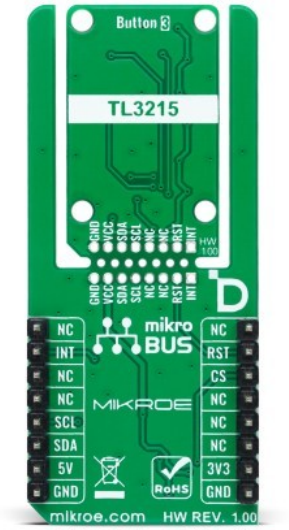
MIKROELEKTRONIKA D.O.O, Batajnički drum 23, 11000 Belgrade, Serbia
VAT: SR105917343 Registration No. 20490918
Phone: + 381 11 78 57 600 Fax: + 381 11 63 09 644 E-mail: office@mikroe.com
www.mikroe.com

Button 3 Click





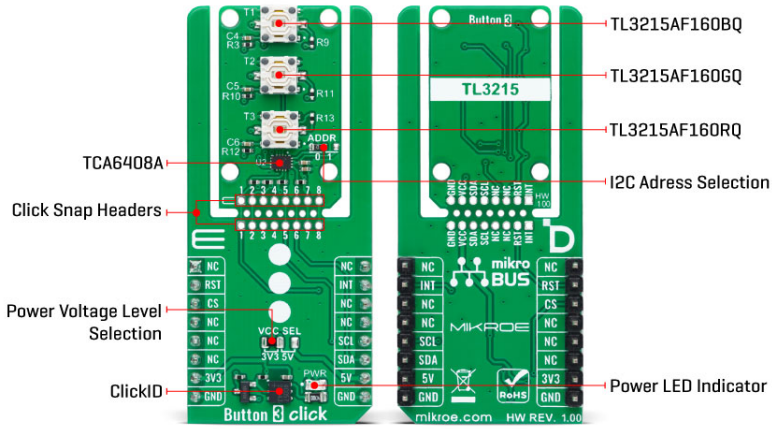
PID: MIKROE-6276

Button 3 Click is a compact add-on board for precise and reliable tactile input detection. This board features three TL3215 series tactile switches from E-Switch, known for their high reliability and consistent performance. Each switch has a 2mm actuator, 160gf actuation force, and a silver contact material for excellent conductivity and durability. The integrated LED provides clear visual feedback, and the board supports the new Click Snap feature, allowing the main sensor area to become movable by breaking the PCB for flexible implementation. Button 3 Click communicates with the host MCU via the TCA6408A port expander using the I2C interface, with additional address selection functionality. It is ideal for various applications, including user interface controls in consumer electronics, industrial equipment, and automotive systems, where precise and responsive tactile feedback is crucial.

How does it work?

Button 3 Click is based on three tactile switches, members of the TL3215 series of tactile switches from E-Switch. Each specific switch features several key characteristics, denoted by its part number TL3215AF160BQ/TL3215AF160RQ/TL3215AF160GQ. The 'TL' in the part number indicates it belongs to the TL series, known for its high reliability and consistent performance. The '3215' model is a testament to its robust construction and design. It includes an actuator option ('A') with a 2mm actuator, ensuring precise and responsive operation. The 'F160' denotes an actuation force of 160gf, providing a balanced tactile feedback that is neither too hard nor too soft, thus preventing accidental presses while remaining user-friendly. The 'B/R/G' indicates the blue/red/green color of the switch, making it easily identifiable, while the 'Q' signifies the use of silver contact material, known for its excellent conductivity and durability.

MIKROELEKTRONIKA D.O.O, Batajnički drum 23, 11000 Belgrade, Serbia
VAT: SR105917343 Registration No. 20490918
Phone: + 381 11 78 57 600 Fax: + 381 11 63 09 644 E-mail: office@mikroe.com
www.mikroe.com



Regarding specifications, these switches have an impressive electrical rating of 50mA at 12VDC, and their electrical and mechanical life is rated at 1,000,000 cycles, ensuring longevity and reliability in various applications. Initially, the contact resistance is a maximum of 100mΩ, while the insulation resistance stands at 100MΩ at 500VDC, highlighting its excellent electrical isolation properties. The switches also have a dielectric strength of 250VAC for 1 minute and operate efficiently from -40°C to 85°C. The contact arrangement is single-pole single-throw (SPST), providing straightforward switching functionality. Additionally, the integrated LED in this version operates at a forward current of 20mA with a typical forward voltage of 3V at 20mA. It delivers a typical luminous intensity of 100mcd, ensuring clear visibility of the switch's status.

This Click board™ is designed in a unique format supporting the newly introduced MIKROE feature called "Click Snap." Unlike the standardized version of Click boards, this feature allows the main sensor area to become movable by breaking the PCB, opening up many new possibilities for implementation. Thanks to the Snap feature, the switches can operate autonomously by accessing their signals directly on the pins marked 1-8. Additionally, the Snap part includes a specified and fixed screw hole position, enabling users to secure the Snap board in their desired location.

Button 3 Click communicates with the host MCU via the TCA6408A port expander using the I2C interface. This port expander allows control of all buttons and their control signals, including a signal dedicated to detecting button presses (providing an interrupt signal to the host MCU (INT) whenever the tactile switch is activated) and the signal that controls the LED on the TL3215. In addition to the I2C interface pins, the port expander also uses a reset (RST) pin and a jumper for I2C address selection, ADDR SEL.

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.

Click Snap

Click Snap is an innovative feature of our standardized Click add-on boards, introducing a new level of flexibility and ease of use. This feature allows for easy detachment of the main sensor area by simply snapping the PCB along designated lines, enabling various implementation possibilities. For detailed information about Click Snap, please visit the official page dedicated

MIKROELEKTRONIKA D.O.O, Batajnički drum 23, 11000 Belgrade, Serbia
VAT: SR105917343 Registration No. 20490918
Phone: + 381 11 78 57 600 Fax: + 381 11 63 09 644 E-mail: office@mikroe.com
www.mikroe.com

to this feature.

Specifications

Type	Pushbutton/Switches
Applications	Ideal for user interface controls in consumer electronics, industrial equipment, automotive systems, and more
On-board modules	TL3215AF160 - TL3215 series of tactile switches from E-Switch
Key Features	Based on three tactile switches, high reliability, precise operation, switch with 2mm actuator, 160gf actuation force, silver contact material, lifespan of 1,000,000 cycles, integrated LED offers clear visual feedback, Click Snap feature, and more
Interface	I2C
Feature	Click Snap,ClickID
Compatibility	mikroBUS™
Click board size	L (57.15 x 25.4 mm)
Input Voltage	3.3V or 5V

Pinout diagram

This table shows how the pinout on Button 3 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	NC	
Reset	**RST**	2	RST	INT	15	**INT**	Interrupt
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	VCC SEL	Left	Power Voltage Level Selection 3V3/5V: Left position 3V3, Right position 5V
JP2	ADDR SEL	Left	I2C Address Selection 0/1: Left position 0, Right position 1

MIKROELEKTRONIKA D.O.O, Batajnički drum 23, 11000 Belgrade, Serbia
VAT: SR105917343 Registration No. 20490918
Phone: + 381 11 78 57 600 Fax: + 381 11 63 09 644 E-mail: office@mikroe.com
www.mikroe.com

Button 3 Click electrical specifications

Description	Min	Typ	Max	Unit
Supply Voltage	3.3	-	5	V

Software Support

We provide a library for the Button 3 Click as well as a demo application (example), developed using MIKROE compilers. The demo can run on all the main MIKROE development boards.

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

Library Description

This library contains API for Button 3 Click driver.

Key functions

- button3_toggle_red_led This function toggles the red button LED by toggling the RK pin logic state.
- button3_toggle_green_led This function toggles the green button LED by toggling the GK pin logic state.
- button3_toggle_blue_led This function toggles the blue button LED by toggling the BK pin logic state.

Example Description

This example demonstrates the use of Button 3 Click board™ by toggling a button LED and its switch state on a button press.

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

Other MIKROE Libraries used in the example:

- MikroSDK.Board
- MikroSDK.Log
- Click.Button3

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. UART terminal is available in all MIKROE compilers.

mikroSDK

MIKROELEKTRONIKA D.O.O, Batajnički drum 23, 11000 Belgrade, Serbia
VAT: SR105917343 Registration No. 20490918
Phone: + 381 11 78 57 600 Fax: + 381 11 63 09 644 E-mail: office@mikroe.com
www.mikroe.com

This Click board™ is supported with mikroSDK - MIKROE 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™

ClickID

Downloads

TL3215 datasheet

Button 3 Click example on Libstock

Button 3 click 2D and 3D files v100

Button 3 click schematic v100

TCA6408A datasheet