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Touchpad 4 Click





PID: MIKROE-4752

Touchpad 4 Click is a compact add-on board that easily integrates projected capacitive touch into user's applications. This board features the IQS7211A, a tiny capacitive touch controller from Azoteq. A low-power dedicated wake-up touch controller launches a full trackpad/touchscreen (up to 32 channel) sensing solution with best-in-class sensitivity and power consumption. It is characterized by embedded gesture engine recognition for simple gestures (tap, swipes, hold) and built-in noise detection and filtering. This Click board™ is suitable for human-machine interfaces, keypad or scrolling functions, single-finger gesture-based interfaces, and more.

Touchpad 4 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?

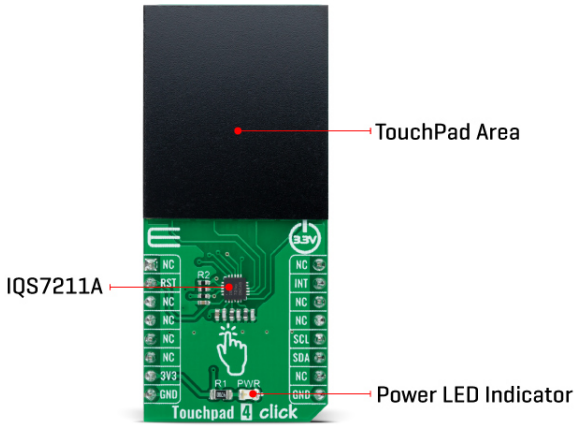
Touchpad 4 Click as its foundation uses the IQS7211A, a tiny trackpad controller designed for multitouch applications using a projected capacitance touch panel from Azoteq. The IQS7211A is part of Azoteq’s latest range of ProxFusion combination sensors, a multi-sensor technology that offers combinations of capacitive sensing, Hall-effect, inductive, and temperature sensing on a single integrated circuit. It allows users to control a trackpad of up to 32-channels and offers high resolution and fast response, low power consumption, and long-term activation supported by environmental tracking. It is also characterized by embedded gesture engine recognition for simple gestures (tap, swipes, hold) and built-in noise detection and filtering.

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On the Touchpad 4 Click front side, there is a clearly defined field that represents a touchpad area. This area is a matrix of conductive electrodes on the PCB, electrically isolated from each other, arranged as rows and columns of X and Y. An electrode consists of multiple diamond-shaped elements, each connected to the next with a conductive neck.

The controller uses the principle of projected capacitance charge transfer on the touchpad area. When a conductive object such as a human finger approaches the sense plate, it will decrease the detected capacitance. Observing the measured results at various sensing points on the touchpad area enables the controller to determine proximity/hover detection and contact (touch) detection on all channels and accurately determine the coordinates on the touch area.

Touchpad 4 Click communicates with MCU using a standard I2C 2-Wire interface, with a clock frequency up to 1MHz in the Fast Mode. An additional ready signal, routed on the INT pin of the mikroBUS™ socket, is added, which indicates when the communication window is available. Thus, it is optimal for the response rate to use the INT pin as a communication trigger. Alongside this pin, this Click board™ has a Reset feature routed to the RST pin on the mikroBUS™ socket, which with a low logic level puts the module into a Reset state, and with a high level operates module normally.

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	Capacitive
Applications	Can be used for human-machine interfaces, keypad or scrolling functions, single-finger gesture-based interfaces, and more
On-board modules	IQS7211A - tiny trackpad controller designed for multitouch applications using a projected capacitance touch panel from Azoteq
Key Features	Low power consumption, high resolution, fast response, long-term activation supported by

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	environmental tracking, embedded gesture engine recognition for simple gestures (tap, swipes, hold), and more
Interface	I2C
ClickID	No
Compatibility	mikroBUS™
Click board size	L (57.15 x 25.4 mm)
Input Voltage	3.3V

Pinout diagram

This table shows how the pinout on Touchpad 4 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
	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

Touchpad 4 Click electrical specifications

Description	Min	Typ	Max	Unit
Supply Voltage	-	3.3	-	V
Active Mode Current Consumption	-	1.4	-	mA
Operating Temperature Range	-40	+25	+85	°C

Software Support

We provide a library for the Touchpad 4 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 Touchpad 4 Click driver.

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Key functions:

- touchpad4_cfg_setup - Config Object Initialization function.
- touchpad4_init - Initialization function.
- touchpad4_default_cfg - Click Default Configuration function.

Examples description

This example showcases ability of the device to read touch coordinates, active/inactive channels, and gesture informations.

The application is composed of three 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.Touchpad4

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

Touchpad 4 click schematic

IQS7211A datasheet

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Touchpad 4 click 2D and 3D files

Touchpad 4 click example on Libstock

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