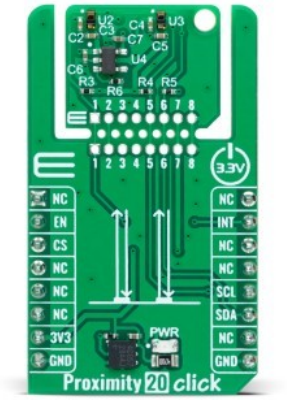
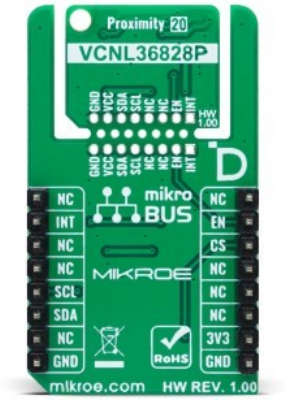
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Proximity 20 Click





PID: MIKROE-6243

Proximity 20 Click is a compact add-on board for short-range proximity sensing applications up to 200mm. This board features two VCNL36828P proximity sensors from Vishay Semiconductor. Key features include a 940nm VCSEL for immunity to a red glow, intelligent cancellation technology to minimize crosstalk, and a smart persistence scheme for reduced measurement response time. The board supports I2C communication, operates with a 3.3V logic voltage level, and includes the Click Snap feature for flexible implementation. It is ideal for applications such as gesture recognition, object detection, and proximity sensing in consumer electronics.

How does it work?

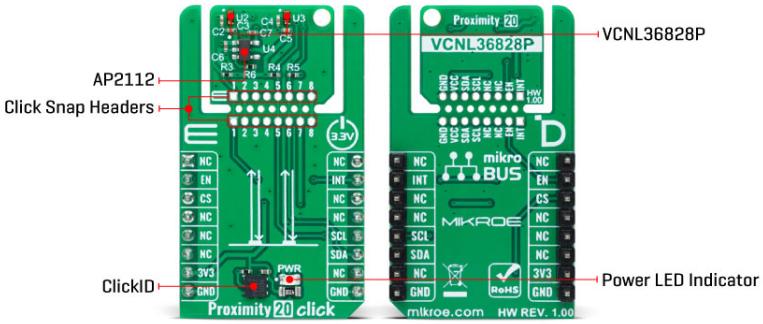
Proximity 20 Click is based on two VCNL36828Ps, fully integrated proximity sensors from Vishay Semiconductor, designed for low power consumption and short-range operation up to 200mm. Each VCNL36828P integrates a vertical-cavity surface-emitting laser (VCSEL), photodiode, and application-specific integrated circuit (ASIC) within a single package. Notable features include immunity to red glow thanks to the 940nm VCSEL, intelligent cancellation technology that minimizes cross talk, and a smart persistence scheme designed to reduce measurement response time. The VCNL36828P also features a smart dual slave address capability, enabling users to switch addresses by simply swapping the SCL and SDA pins. This flexibility is the reason why this Click board™ incorporates two identical sensors.

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Proximity 20 Click 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 IC area to become movable by breaking the PCB, opening up many new possibilities for implementation. Thanks to the Snap feature, the VCNL36828Ps can operate autonomously by accessing its 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.

This Click board™ uses a standard 2-wire I2C interface to communicate with the host MCU, supporting Standard mode with up to 400kHz of frequency clock. The I2C interface and registers allow for controlling various sensor functions, such as operating mode control, interrupt system management for interrupt signals available on INT pin, and adjusting offset and threshold values for proximity sensor data. This flexibility ensures precise and customizable operations tailored to specific application needs.

The VCNL36828Ps do not require a specific Power-Up sequence but require a voltage of 1.8V for its interface and logic part to work correctly. Therefore, a small regulating LDO, the AP2112, provides a 1.8V out of 3.3V mikroBUS™ power rail. This regulator can be activated via the EN pin of the mikroBUS™ socket, providing an enable function simultaneously.

This Click board™ can be operated only with a 3.3V logic voltage level. The board must perform appropriate logic voltage level conversion before using MCUs with different logic levels. Also, it comes equipped with a library containing 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 to this feature.

Specifications

Type	Proximity

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Applications	Ideal for applications such as gesture recognition, object detection, and proximity sensing in consumer electronics
On-board modules	VCNL36828P - fully integrated proximity sensor from Vishay Semiconductor
Key Features	Smart dual slave address capability (two VCNL36828P sensors), each equipped with a 940nm VCSEL for immunity to red glow, intelligent cancellation technology to minimize crosstalk, smart persistence for faster measurement response times, supports I2C communication, operates at a 3.3V logic level, Click Snap feature for autonomous operation of the sensors, and more
Interface	I2C
Feature	Click Snap,ClickID
Compatibility	mikroBUS™
Click board size	M (42.9 x 25.4 mm)
Input Voltage	3.3V

Pinout diagram

This table shows how the pinout on Proximity 20 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	
Device Enable	**EN**	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	NC	
Ground	**GND**	8	GND	GND	9	**GND**	Ground

Onboard settings and indicators

Label	Name	Default	Description
LD1	PWR	-	Power LED Indicator

Proximity 20 Click electrical specifications

Description	Min	Typ	Max	Unit
Supply Voltage	-	3.3	-	V
Measurement Range	0	-	200	mm

Software Support

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We provide a library for the Proximity 20 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 Proximity 20 Click driver.

Key functions

- proximity20_read_proximity This function reads the proximity data from U2 and U3 sensors.
- proximity20_set_device_address This function sets the device slave address.
- proximity20_enable_device This function enables the device by setting the EN pin to high logic state.

Example Description

This example demonstrates the use of Proximity 20 Click board™ by reading and displaying the proximity data on the USB UART.

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.Proximity20

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

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

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mikroBUS™

mikroSDK

Click board™ Catalog

Click boards™

ClickID

Downloads

AP2112 datasheet

Proximity 20 click example on Libstock

Proximity 20 click 2D and 3D files v100

VCNL36828P datasheet

Proximity 20 click schematic v100

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