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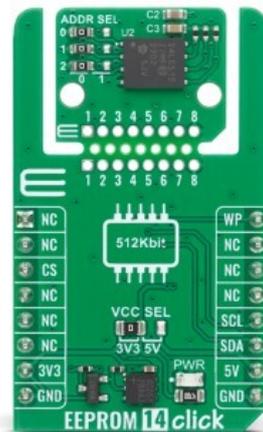www.mikroe.com

EEPROM 14 Click

PID: MIKROE-6782

EEPROM 14 Click is a compact add-on board that provides reliable non-volatile data storage for various embedded applications requiring secure and long-term memory retention. It is based on the 24LC512, a 512Kbit I2C serial EEPROM from Microchip, organized as a single block of 64K x 8-bit memory. Built on low-power CMOS technology, the 24LC512 ensures exceptional endurance with over one million erase/write cycles, more than 200 years of data retention, and ultra-low power consumption, making it ideal for battery-powered systems. The board supports page writes of up to 128 bytes, random and sequential reads across the full memory range, and an AEC-Q100 automotive-qualified design ensuring reliability in demanding environments. EEPROM 14 Click is perfectly suited for use in industrial automation, automotive systems, consumer electronics, and any application requiring consistent and durable data storage.

For more information about **EEPROM 14 Click** visit the official product page.

How does it work?

EEPROM 14 Click is based on the 24LC512, a 512Kbit I2C serial EEPROM from Microchip, organized as a single block of 64K x 8-bit memory that provides reliable non-volatile data storage for a wide range of embedded applications. The device operates using a standard two-wire I2C serial interface, allowing easy integration with various microcontrollers. Built on low-power CMOS technology, the 24LC512 ensures exceptional endurance and efficiency, offering more than one million erase/write cycles and over 200 years of data retention. It supports operation down to 1.7V, with extremely low current consumption (only 1µA in standby and 400µA during active operation) making it ideal for battery-powered systems.

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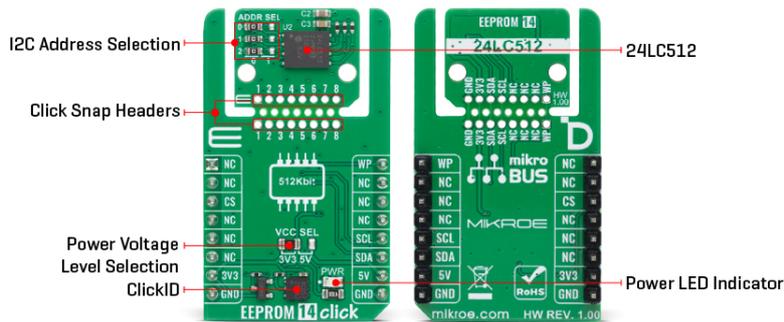
The integrated page write capability allows writing up to 128 bytes at once, while both random and sequential reads are supported across the entire 512Kbit memory range. With AEC-Q100 automotive qualification, the 24LC512 guarantees high reliability and robust performance even in harsh environments. EEPROM 14 Click represents a durable solution for storing calibration parameters, configuration settings, user data logs, and other essential information that must be preserved when power is removed, making it suitable for industrial automation, automotive electronics, consumer devices, and any application requiring secure and long-term data retention.

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/IC/module area to become movable by breaking the PCB, opening many new possibilities for implementation. Thanks to the Snap feature, the 24LC512 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 an I2C interface with clock speeds of up to 400kHz, ensuring fast communication with the host MCU. The I2C address of the M24C04-R can be easily configured via onboard jumpers marked ADDR SEL in the Snap area, allowing multiple devices to coexist on the same bus. These address lines allow up to eight devices on the same bus, for up to 4Mbit address space.

Beyond communication pins, this board is also equipped with a write control signal (WC) for protecting the entire contents of the memory from inadvertent write operations. Write operations are disabled to the entire memory array when write control (WC) is driven HIGH. When write control (WC) is driven HIGH, write operations are inhibited but read operations are not affected.

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, designed to bring

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greater flexibility and optimize your prototypes. By simply snapping the PCB along predefined lines, you can easily detach the main sensor/IC/module area, reducing the overall size, weight, and power consumption - ideal for the final phase of prototyping. For more details about Click Snap, visit the official page dedicated to this feature.

Specifications

Type	EEPROM
Applications	Ideal for use in industrial automation, automotive systems, consumer electronics, and any application requiring consistent and durable data storage
On-board modules	24LC512 - 512Kbit I2C serial EEPROM from Microchip
Key Features	512Kbit I2C serial EEPROM memory organized as 64K x 8-bit, low-power CMOS technology, more than one million erase/write cycles, over 200 years of data retention, page write capability up to 128 bytes, random and sequential read support, AEC-Q100 automotive qualification, I2C communication, configurable I2C address, write-protect functionality, Click Snap, and more
Interface	I2C
Feature	Click Snap,ClickID
Compatibility	mikroBUS™
Click board size	M (42.9 x 25.4 mm)
Input Voltage	3.3V or 5V

Pinout diagram

This table shows how the pinout on EEPROM 14 Click corresponds to the pinout on the mikroBUS™ socket (the latter shown in the two middle columns).

Notes	Pin	mikro™ BUS			Pin	Notes
	NC	1	AN	PWM	16	**WP**	Write Protect
	NC	2	RST	INT	15	NC	
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

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JP1-JP3	ADDR SEL	Left	I2C Address Selection 0/1: Left position 0, Right position 1
JP4	VCC SEL	Left	Power Voltage Level Selection 3V3/5V: Left position 3V3, Right position 5V

EEPROM 14 Click electrical specifications

Description	Min	Typ	Max	Unit
Supply Voltage	3.3	-	5	V
Memory Size	-	512	-	Kbit
Memory Organization	-	64x8	-	bit
Page Write Size	-	128	-	bytes
Write Cycle Endurance	1.000.000	-	-	cycles
Data Retention	200	-	-	years

Software Support

EEPROM 14 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 basic read and write operations on the EEPROM 14 Click. The application writes predefined text messages into memory, then reads them back and logs the results for verification.

Key Functions

- eeprom14_cfg_setup This function initializes Click configuration structure to initial values.
- eeprom14_init This function initializes all necessary pins and peripherals used for this Click board.
- eeprom14_write_memory This function writes a sequence of bytes to the device memory over I2C, starting at the selected 16-bit address.
- eeprom14_read_memory This function reads a sequence of bytes from the device memory over I2C, starting at the selected 16-bit address.

Application Init

Initializes the logger, configures and initializes the EEPROM 14 Click.

Application Task

Writes and reads text messages from EEPROM memory, displaying the stored values via the UART logger.

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

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

EEPROM 14 click example package

EEPROM 14 click 2D and 3D files v100

24LC512 datasheet

EEPROM 14 click schematic v100