

## Secure 4 click

PID: MIKROE-2829

**Secure 4 click** includes the [ATECC608A](#), a secure CryptoAuthentication™ device from [Microchip](#), which is equipped with an EEPROM array which can be used for storing of up to 16 keys, certificates, consumption logging, security configurations and other types of secure data. Access to the various sections of memory can be restricted in several different ways and then the configuration can be locked permanently, to prevent changes.

The ATECC608A equipped on this click board™, supports the I2C interface with a flexible command set, that allows use in various security applications, including Network/IoT Node Endpoint Security, Secure Boot, Small Message Encryption, Key Generation for Software Download, Ecosystem control, Anti-Counterfeiting and similar.

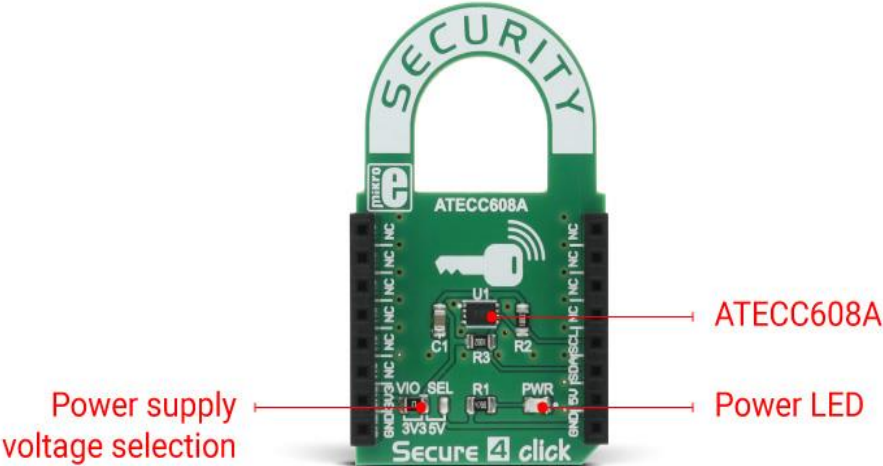
**NOTE:** The click board™ comes with stacking headers which allow you to combine it with other click boards™ more easily by using just one mikroBUS™ socket.

## How does the click work?

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The ATECC608A implements a complete asymmetric key cryptographic signature solution, based on the Elliptic Curve Cryptography and the ECDSA signature protocol. It also implements AES-128, SHA256 and multiple SHA derivatives, such as HMSC (SHA), PRF (the key derivation function in TLS) and HKDF in hardware. It can also generate random private keys and random numbers, which can be used as a part of the crypto protocol. Those asymmetric cryptographic operations are accelerated by

the ATECC608A hardware and are calculated up from ten to thousand times faster than with the software running on standard microprocessors. This prevents the risk of key exposure, which is usually found in standard microprocessors.



The device is consuming very low current, especially while it is in the sleep mode. The chip itself uses less than 150nA, in that case. The voltage range which can be used to power up the Security 4 click, allows for it to work with both 3.3V and 5V capable MCUs.

The chip itself uses a minimal number of pins; only the I2C lines are routed to the mikroBUS™ along with the 3.3V and 5V rails. The device can work with any of these voltages. It can be selected by soldering a small SMD jumper to the correct position.

The I2C lines are pulled high by the two 4.7KΩ resistors, so no additional pull-up resistors are needed.


## Specifications

<b>Type</b>	EEPROM
<b>Applications</b>	Used for storage of up to 16 keys, certificates, miscellaneous read/write, read-only or secret data, consumption logging, and security configurations
<b>On-board modules</b>	Microchip ATECC608A IC which includes an EEPROM array
<b>Key Features</b>	Cryptographic Co-processor with secure hardware-based key storage for up to 16 keys, certificates or data. Hardware support for the asymmetric sign, verify, key agreement, unique 72-bit serial number, fast communication protocol (I2C/GPIO).
<b>Interface</b>	I2C
<b>Input Voltage</b>	3.3V or 5V

<b>Click board size</b>	M (42.9 x 25.4 mm)
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## Pinout diagram

This table shows how the pinout on **Secure 4 click** corresponds to the pinout on the mikroBUS™ socket (the latter shown in the two middle columns).

Notes	Pin					Pin	Notes
	NC	1	AN	PWM	16	NC	
	NC	2	RST	INT	15	NC	
	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	+5V	Power supply
Ground	GND	8	GND	GND	9	GND	Ground

## Secure 4 click maximum ratings

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Description	Min	Typ	Max	Unit
Serial clock frequency			1	MHz
Operating temperature	-40	350	+85	°C

## Onboard settings and indicators

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Label	Name	Default	Description
LD1	PWR LED	-	Power indication LED
JP1	VIO SEL.	LEFT	Power supply voltage selection, left position 3V3, right position 5V