



## Atmel ATSHA204

### CryptoAuthentication family of hardware security solutions



The Atmel® ATSHA204 is the first member of the CryptoAuthentication™ family of secure authentication ICs to integrate the SHA-256 hash algorithm with a 4.5-Kbit EEPROM, providing robust hardware authentication and secure key/data storage at a very cost-effective price. With the ATSHA204, developers can easily implement secure authentication and validation of physical or logical elements in virtually all microprocessor-based systems using the straightforward, 256-bit challenge/response protocol. It is ideal for handheld electronic systems or any embedded system where space is at a premium with features such as small outline plastic packages and a single-wire interface. Implementing host-side security to provide a full system solution is now easier than ever. The Atmel ATSHA204 includes client and host security capability, offloading key storage and the execution algorithms from the MCU, significantly reducing both system cost and complexity. When using the Atmel ATSHA204 on the host, systems designers no longer need to worry about writing crypto algorithms or developing crypto protocols for their systems.

#### Key Features and Benefits

- Multilevel hardware security
- Secure authentication and key exchange
- Superior SHA-256 hash algorithm
- Best-in-class, 256-bit key length
- High-quality hardware random number generator
- Guaranteed unique serial number
- 4.5-Kbit EEPROM for key and data storage
- High-speed I<sup>2</sup>C and single-wire interface options
- 1.8 – 5.5V communications
- < 150nA sleep current
- Secure personalization
- Green-compliant plastic packages

#### Advantages

- High-security authentication at the lowest total system cost
  - Single-wire interface reduces connector cost and requires fewer GPIO pins
  - I<sup>2</sup>C interface standard in many microcontroller systems
  - Sophisticated hardware security features
- Fits in smallest systems
  - Available small package outlines ideal for hand-held systems
- Time-to-market
  - ATSHA204 includes both client and host device capability, eliminating the need to write, debug, or test system crypto code
  - Can be used with any microprocessor

#### Product Availability and Ordering Information

Atmel Ordering Code	Voltage Range	Interface	Package	Samples Availability
ATSHA204-TSU-T	2.0 – 5.5V	single-wire	SOT23 3	Now
ATSHA204-SH-CZ-T	2.0 – 5.5V	single-wire	SOIC 8	Now
ATSHA204-TH-CZ-T	2.0 – 5.5V	single-wire	TSSOP 8	Now
ATSHA204-MAH-CZ-T	2.0 – 5.5V	single-wire	UDFN 8	Q3 2011
ATSHA204-SH-DA-T	2.0 – 5.5V	I <sup>2</sup> C	SOIC 8	Now
ATSHA204-TH-DA-T	2.0 – 5.5V	I <sup>2</sup> C	TSSOP 8	Now
ATSHA204-MAH-DA-T	2.0 – 5.5V	I <sup>2</sup> C	UDFN 8	Q3 2011

#### Application Examples

- Portable devices and accessories
- Li-ion batteries
- Smart meters
- In-home displays
- Medical devices
- Set-top boxes
- White goods



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Integrating hardware security into embedded systems has never been easier than with the Atmel® CryptoAuthentication™ family of hardware security solutions. Multiple evaluation and development support tools are available for the Atmel ATSHA204, giving designers the necessary flexibility to meet the most aggressive development timelines. To gain a basic understanding of the Atmel ATSHA204 device architecture and capabilities, the very low-cost AT88CK454BLACK demonstration kit is a great choice. For more comprehensive evaluation and development capabilities, designers can choose from client or host kit configurations that include USB connectivity as well as a modular hardware design approach that enables rapid and easy development in most development environments. Additionally, the Atmel ATAVRSECURITYX Security Xplained add-on board for the Atmel AVR® Xplained development platform provides a seamless avenue to integrate security into your embedded application. All Atmel ATSHA204 tools are based on Atmel AVR devices, with software and libraries available at [www.atmel.com](http://www.atmel.com).



AT88CK454BLACK



AT88CK101STK8



ATAVRSECURITYX



AT88CK109STK8

### Tool Availability and Ordering Information

Atmel Ordering Code	Description	Interface	Package	Samples	Availability
AT88CK454BLACK	USB dongle secure authentication demonstration kit for Atmel ATSHA204	single-wire	3-lead SOT23	Yes	Now
AT88CK101STK8	Single-socket secure authentication development kit for Atmel ATSHA204	I <sup>2</sup> C	8-lead SOIC	Yes	Now
AT88CK109STK8	Dual-socket secure authentication development kit for Atmel ATSHA204	I <sup>2</sup> C	8-lead SOIC	Yes	Now
ATAVRSECURITYX	Atmel ATSHA204 security add-on board for Atmel AVR Xplained series	I <sup>2</sup> C	8-lead SOIC	Yes	Now

#### Atmel Corporation

2325 Orchard Parkway  
San Jose, CA 95131  
USA

**Tel:** (+1)(408) 441-0311

**Fax:** (+1)(408) 487-2600

[www.atmel.com](http://www.atmel.com)

#### Atmel Asia Limited

Unit 01-5 & 16, 19F  
BEA Tower, Millennium City 5  
418 Kwun Tong Road  
Kwun Tong, Kowloon  
HONG KONG

**Tel:** (+852) 2245-6100

**Fax:** (+852) 2722-1369

#### Atmel Munich GmbH

Business Campus  
Parkring 4  
D-85748 Garching b. Munich  
GERMANY

**Tel:** (+49) 89-31970-0

**Fax:** (+49) 89-3194621

#### Atmel Japan

9F, Tonetsu Shinkawa Bldg.  
1-24-8 Shinkawa  
Chuo-ku, Tokyo 104-0033  
JAPAN

**Tel:** (+81)(3) 3523-3551

**Fax:** (+81)(3) 3523-7581

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