

Features

General

- High-performance, Low-power SecureAVR™ RISC Architecture
 - 135 Powerful Instructions (Most Executed in a Single Clock Cycle)
- Low Power Idle and Power-down Modes
- Bond Pad Locations Conforming to ISO 7816-2
- ESD Protection to $\pm 6000V$
- Operating Ranges: 2.7 to 5.5V
- Compliant with EMV 2000 Specifications, PC Industry Compatible
- Available in Wafers, Modules, and Industry-standard Packages

Memory

- 240K Bytes of ROM Program Memory including 32K bytes of ROM with specific access
- 36K Bytes of EEPROM, Including 128 OTP Bytes and 384-byte Bit-addressable Bytes
 - 1 to 128-byte Program / Erase
 - 1.25ms Program / 1.25ms Erase
 - Typically 500,000 Write/Erase Cycles at a Temperature of 25°C
 - 10 Years Data Retention
 - EEPROM Erase only mode
 - Write EEPROM with or without autoerase
- 6K bytes RAM Memory (4K bytes of secureAVR RAM, 2K bytes of AdvX™ RAM, shared with the secureAVR core)

Peripherals

- One I/O Port
- One ISO 7816 Controller
 - Up to 625 Kbps at 5 MHz
 - Compliant with T=0 and T=1 Protocols
- Programmable Internal Oscillator (Up to 30 MHz for AdvX and 30 Mhz for internal CPU Clock)
- Two 16-bit Timers
- Random Number Generator (RNG)
- 2-level Interrupt Controller
- Hardware DES and Triple DES DPA/DEMA Resistant
- Checksum Accelerator
- Code Signature Module
- CRC16 & 32 Engine (Compliant with ISO/IEC 3309)
- 32-Bit Cryptographic Accelerator (AdvX for Public Key Operations)
 - RSA, DSA, ECC, Diffie-Hellman

Security

- Dedicated Hardware for Protection Against SPA/DPA/SEMA/DEMA Attacks
- Advanced Protection Against Physical Attack, Including Active Shield, EPO, CStack Checker, Slope Detector, Parity Errors
- Environmental Protection Systems
- Voltage Monitor
- Frequency Monitor
- Temperature Monitor
- Light Protection
- Secure Memory Management/Access Protection (Supervisor Mode)

Certification targeted

- CC EAL5+ (PPSSVG - BSI 0002)
- ZKA
- EMVCo



Secure Microcontroller AT90SC 24036RCU

Summary

6567AS-SMS-09Apr08



Development Tools

- Voyager Emulation Platform (ATV4) to Support Software Development
- IAR Embedded Workbench® V4.30 Debugger or Atmel's AVR Studio® Version 4.07 or Above
- Software Libraries and Application Notes

Description

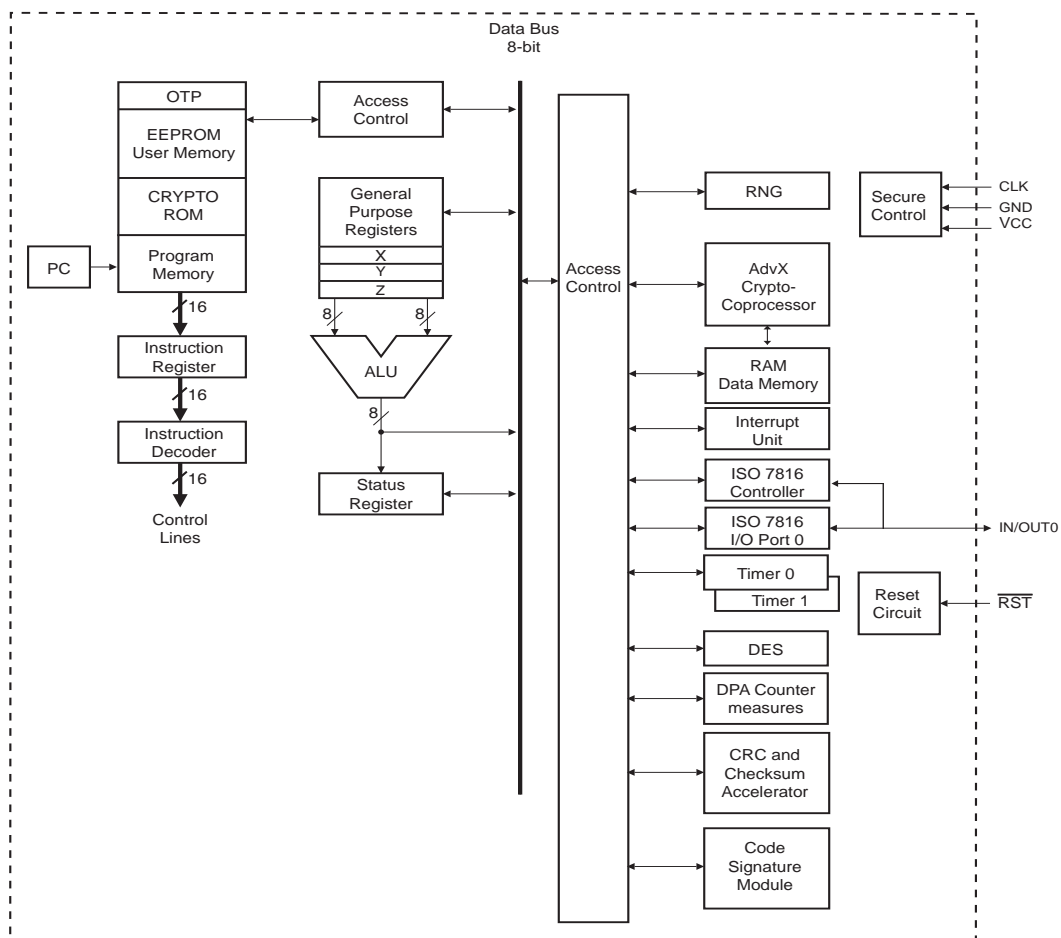
The AT90SC24036RCU is a low-power, high-performance, 8/16-bit microcontroller with ROM program memory, EEPROM memory, based on the SecureAVR enhanced RISC architecture.

By executing powerful instructions in a single clock cycle, the AT90SC24036RCU achieves throughputs close to 1 MIPS per MHz. Its Harvard architecture includes 32 general-purpose working registers directly connected to the ALU, allowing two independent registers to be accessed in one single instruction executed in one clock cycle.

In addition to the 240K bytes of embedded ROM, the AT90SC24036RCU includes 36K of Atmel's high density EEPROM. The ability to map the EEPROM in the code space allows parts of the program memory to be reprogrammed in-system. This technology combined with the versatile 8/16-bit CPU on a monolithic chip provides a highly flexible and cost-effective solution to many smart card applications.

Figure 1 shows a block diagram of the AT90SC24036RCU

Figure 1. AT90SC24036RCU SecureAVR Enhanced RISC Architecture





Headquarters

Atmel Corporation
2325 Orchard Parkway
San Jose, CA 95131
USA
Tel: 1(408) 441-0311
Fax: 1(408) 487-2600

International

Atmel Asia
Room 1219
Chinachem Golden Plaza
77 Mody Road Tsimshatsui
East Kowloon
Hong Kong
Tel: (852) 2721-9778
Fax: (852) 2722-1369

Atmel Europe
Le Krebs
8, Rue Jean-Pierre Timbaud
BP 309
78054 Saint-Quentin-en-
Yvelines Cedex
France
Tel: (33) 1-30-60-70-00
Fax: (33) 1-30-60-71-11

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

Product Contact

Web Site
www.atmel.com

Technical Support
Enter Product Line E-mail

Sales Contact
www.atmel.com/contacts

Literature Requests
www.atmel.com/literature

Disclaimer: The information in this document is provided in connection with Atmel products. No license, express or implied, by estoppel or otherwise, to any intellectual property right is granted by this document or in connection with the sale of Atmel products. **EXCEPT AS SET FORTH IN ATMEL'S TERMS AND CONDITIONS OF SALE LOCATED ON ATMEL'S WEB SITE, ATMEL ASSUMES NO LIABILITY WHATSOEVER AND DISCLAIMS ANY EXPRESS, IMPLIED OR STATUTORY WARRANTY RELATING TO ITS PRODUCTS INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTY OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE, OR NON-INFRINGEMENT. IN NO EVENT SHALL ATMEL BE LIABLE FOR ANY DIRECT, INDIRECT, CONSEQUENTIAL, PUNITIVE, SPECIAL OR INCIDENTAL DAMAGES (INCLUDING, WITHOUT LIMITATION, DAMAGES FOR LOSS OF PROFITS, BUSINESS INTERRUPTION, OR LOSS OF INFORMATION) ARISING OUT OF THE USE OR INABILITY TO USE THIS DOCUMENT, EVEN IF ATMEL HAS BEEN ADVISED OF THE POSSIBILITY OF SUCH DAMAGES.** Atmel makes no representations or warranties with respect to the accuracy or completeness of the contents of this document and reserves the right to make changes to specifications and product descriptions at any time without notice. Atmel does not make any commitment to update the information contained herein. Unless specifically provided otherwise, Atmel products are not suitable for, and shall not be used in, automotive applications. Atmel's products are not intended, authorized, or warranted for use as components in applications intended to support or sustain life.

© Atmel Corporation 2008. All rights reserved. Atmel®, logo and combinations thereof, and others are registered trademarks. Everywhere You AreSM, and others are the trademarks of Atmel Corporation or its subsidiaries. Other terms and product names may be trademarks of others.