
Features

General

- High-performance, Low-power secureAVR™ Enhanced 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 ± 4000V
- Operating Ranges: 1.62 to 5.5V
- Compliant with GSM, 3GPP and EMV 2000 Specifications
- Available in Wafers, Modules, and Industry-standard Packages

Memory

- 136K Bytes of ROM Program Memory
- 68K Bytes of EEPROM, Including 128 OTP Bytes and 384-byte Bit-addressable Bytes
 - 1 to 128-byte Program / Erase
 - 1ms Program / 1ms Erase
 - Typically 500,000 Write/Erase Cycles at a Temperature of 25°C (Please refer to Atmel Smartcard Reliability Manual)
 - 10 Years Data Retention
- 4K Bytes of RAM

Peripherals

- One ISO 7816 Controller
 - Up to 625 kbps at 5 MHz
 - Compliant with T=0 and T=1 Protocols
- One I/O Port
- Programmable Internal Oscillator (Up to 20 MHz for Internal CPU Clock)
- Two 16-bit Timers
- Random Number Generator (RNG)
- 2-level Interrupt Controller
- Checksum Accelerator
- CRC 16 & 32 Engine (Compliant with ISO/IEC 3309)

Security

- Dedicated Hardware for Protection Against SPA/DPA Attacks
- Advanced Protection Against Physical Attack
- Environmental Protection Systems
- Voltage Monitor
- Frequency Monitor
- Secure Memory Management/Access Protection (Supervisor Mode)

Development Tools

- Voyager Emulation Platform (ATV4) to Support Software Development
- IAR Embedded Workbench® V4.20 Debugger or Atmel's AVR Studio® Version 4.07 or Above
- Software Libraries and Application Notes



Secure Microcontroller for Smart Cards

AT90SC 13668RU Summary

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Note: This is a summary document. A complete document will be available under NDA. For more information, please contact your local Atmel sales office.

Description

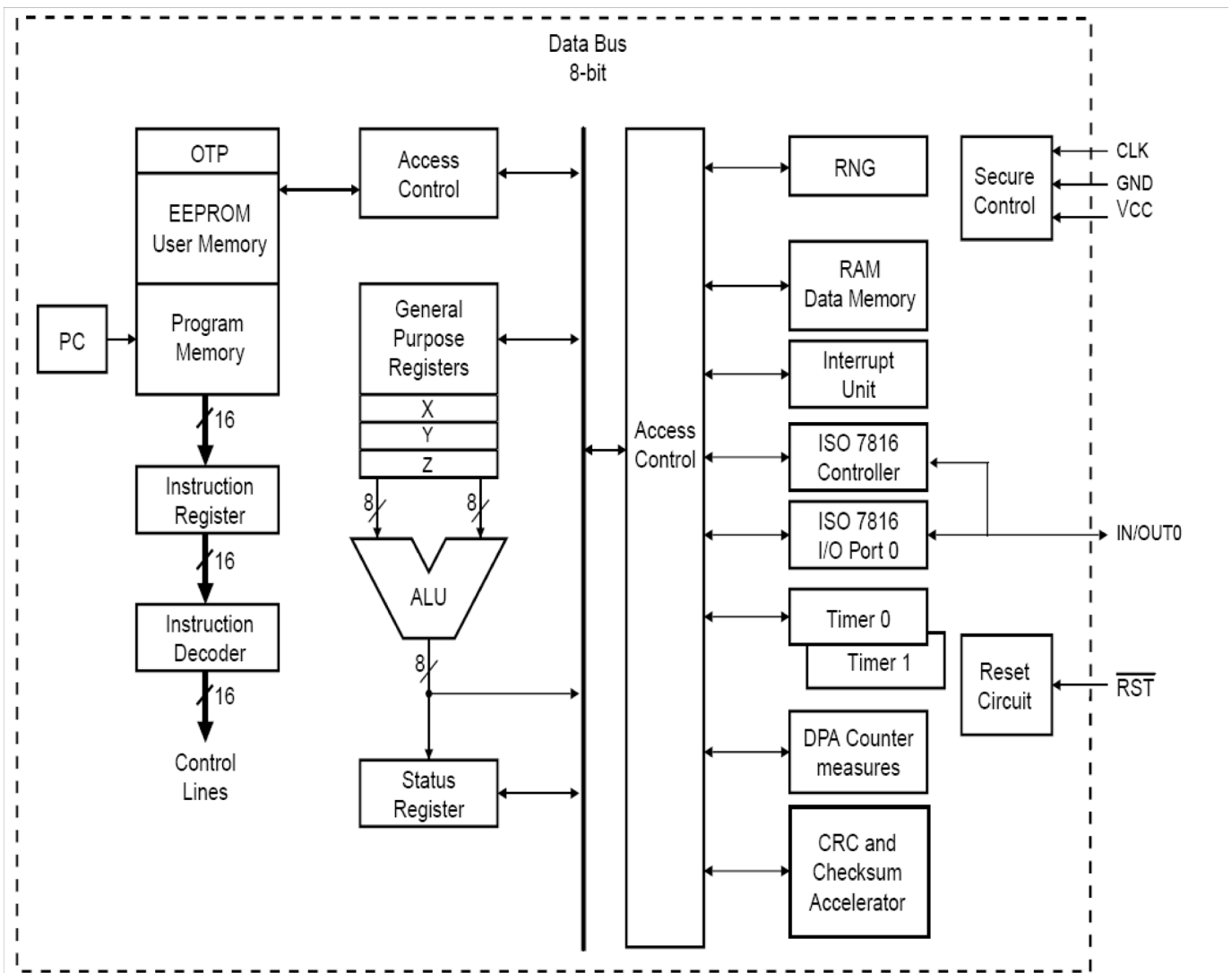
The AT90SC13668RU is a low-power, high-performance, 8/16-bit microcontroller with ROM program memory, EEPROM data memory, based on the secureAVR enhanced RISC architecture and with a contactless interface.

By executing powerful instructions in a single clock cycle, the AT90SC13668RU 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.

The AT90SC13668RU uses the secureAVR architecture that allows the linear addressing of up to 8M bytes of code and up to 16M bytes of data as well as a number of new functional and security features. The AT90SC13668RU features 68K bytes of high-performance EEPROM (fast erase/write time, high endurance). The ability to map the EEPROM in the code space allows parts of the program memory to be reprogrammed in-system.

Additional security features include logical scrambling on program data and addresses, power analysis countermeasures, and memory accesses controlled by a supervisor mode.

Figure 1. shows a block diagram of the AT90SC13668RU





Atmel Corporation

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

Regional Headquarters

Europe

Atmel Sarl
Route des Arsenalux 41
Case Postale 80
CH-1705 Fribourg
Switzerland
Tel: (41) 26-426-5555
Fax: (41) 26-426-5500

Asia

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

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

Atmel Operations

Memory

2325 Orchard Parkway
San Jose, CA 95131, USA
Tel: 1(408) 441-0311
Fax: 1(408) 436-4314

Microcontrollers

2325 Orchard Parkway
San Jose, CA 95131, USA
Tel: 1(408) 441-0311
Fax: 1(408) 436-4314

La Chantrerie
BP 70602
44306 Nantes Cedex 3, France
Tel: (33) 2-40-18-18-18
Fax: (33) 2-40-18-19-60

ASIC/ASSP/Smart Cards

Zone Industrielle
13106 Rousset Cedex, France
Tel: (33) 4-42-53-60-00
Fax: (33) 4-42-53-60-01

1150 East Cheyenne Mtn. Blvd.
Colorado Springs, CO 80906, USA
Tel: 1(719) 576-3300
Fax: 1(719) 540-1759

Scottish Enterprise Technology Park
Maxwell Building
East Kilbride G75 0QR, Scotland
Tel: (44) 1355-803-000
Fax: (44) 1355-242-743

RF/Automotive

Theresienstrasse 2
Postfach 3535
74025 Heilbronn, Germany
Tel: (49) 71-31-67-0
Fax: (49) 71-31-67-2340

1150 East Cheyenne Mtn. Blvd.
Colorado Springs, CO 80906, USA
Tel: 1(719) 576-3300
Fax: 1(719) 540-1759

Biometrics/Imaging/Hi-Rel MPU/ High Speed Converters/RF Datacom

Avenue de Rochepleine
BP 123
38521 Saint-Egreve Cedex, France
Tel: (33) 4-76-58-30-00
Fax: (33) 4-76-58-34-80

Literature Requests

www.atmel.com/literature

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