Features

General

- High-performance, Low-power AVR® (AVR3 Core) Enhanced RISC Architecture
  - 133 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 ± 6000V
- Operating Ranges: from 2.7V to 3.3V and 4.5V to 5.5V
- Compliant with GSM, 3GPP and EMV Specifications
- Available in Wafers, Modules and Industry-standard Packages

Memory

- 64K Bytes of EEPROM, Including 64-byte OTP Area and 64-byte Bit-addressable Area
  - 1 to 128-byte Program/Erase
  - 2 ms Program, 2 ms Erase
  - Typically More than 500,000 Write/Erase Cycles
  - 10 Years Data Retention
- 64K Bytes of Flash Program Memory
  - 128-byte Page Programming
  - Minimum 10,000 Write/Erase Cycles
  - 10 Years Data Retention
- 3K Bytes of RAM

Peripherals

- Two I/O Ports (Configurable to Support Communication Protocols Including ISO 7816-3 and 2-wire Interfaces)
- Two 16-bit Timers
- Random Number Generator (RNG)
- 2-level, 8-vector Interrupt Controller
- Hardware DES and Triple DES DPA Resistant
- Checksum Accelerator
- Crypto-coprocessor
  - Pre-programmed Functions for Cryptography and Authentication Including RSA, DSA, Key Generation, ECC

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

- Hardware Development Support on Voyager Emulation Platform (ATV1)
- Software Simulator Based on IAR Systems' C-Spy® Product
  - Simulator Software (AT90SCSIM)

Description

The AT90SC6464C is a low-power, high-performance, 8-bit microcontroller with Flash program memory, EEPROM data memory and a crypto-coprocessor, based on the AVR enhanced RISC architecture. By executing powerful instructions in a single clock cycle, the AT90SC6464C achieves throughputs close to 1 MIPS per MHz. Its Harvard

Secure Microcontroller for Smart Cards

AT90SC6464C

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

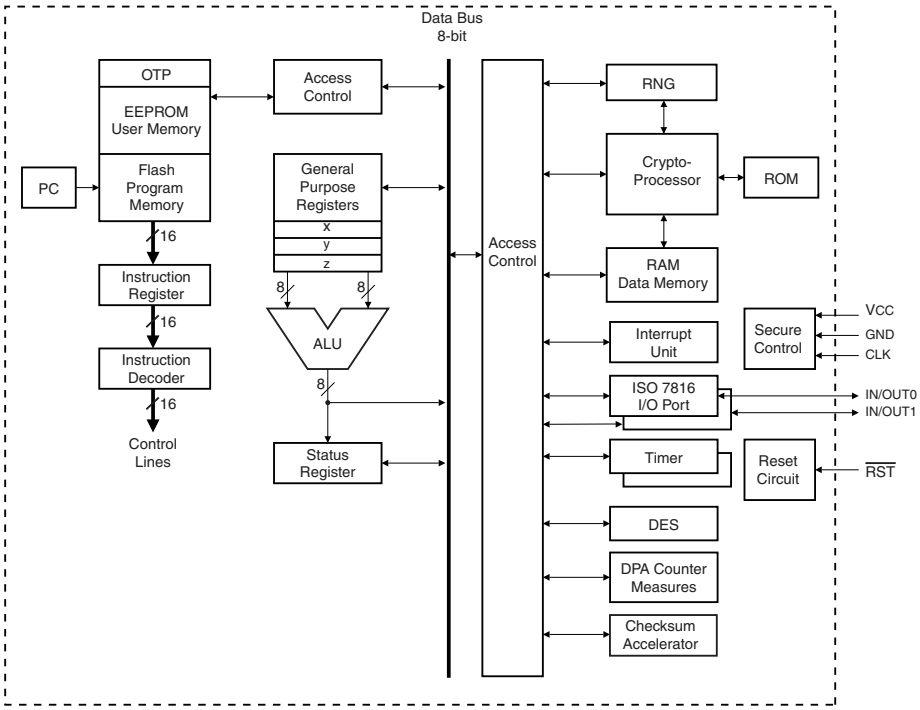
architecture includes 32 general-purpose working registers directly connected to the ALU, allowing two independent registers to be accessed in one single instruction executed in one clock cycle.

The AT90SC6464C uses a new AVR core (core #3) 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.

It includes 128K bytes of Atmel's high density, nonvolatile memory. The on-chip downloadable Flash allows the program memory to be reprogrammed in-system. This technology combined with the versatile 8-bit CPU on a monolithic chip provides a highly flexible and cost-effective solution to many smart card applications.

The crypto engine featured in the AT90SCC series is a 16-bit processor dedicated to perform fast encryption or authentication functions. Additional security features include power and frequency protection logic, logical scrambling on program data and addresses, Power Analysis countermeasures and memory accesses controlled by a supervisor mode.

Figure 1. The AT90SC6464C AVR Enhanced RISC Architecture



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