

Features

General

- High-performance, Low-power, Enhanced RISC Architecture
 - 120 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: from 2.7V to 5.5V
- Compliant with GSM, 3GPP and EMV 2000 Specifications; PC Industry Compatible
- Available in Wafers, Modules and Industry-standard Packages

Memory

- 48K Bytes of ROM Program Memory
- 16K Bytes of EEPROM, Including 64-byte OTP Area and 64-byte Bit-addressable Area
 - 1 to 64-byte Program/Erase
 - 1 ms Program, 1 ms Erase
 - Typically More than 500,000 Write/Erase Cycles at a Temperature of 25°C
 - 10 Years Data Retention
- 1.5K Bytes RAM

Peripherals

- I/O Port
 - Configurable to Support Communication Protocols Including ISO 7816-3
- 16-bit Timer
- Random Number Generator (FIPS 140-1)
- 2-level, 4-vector Interrupt Controller

Security

- Advanced Protection Against Physical Attack
- Environmental Protection Systems
- Voltage Monitor
- Frequency Monitor
- Secure Memory Management/Access Protection (Supervisor Mode)

Development Tools

- Voyager Emulation Platform (ATV2 Standard) to Support Software Development
- IAR Systems C-Spy Debugger
- Software Libraries and Application Notes

Description

The AT90SC4816RS is a low-power, high-performance, 8-bit microcontroller with ROM and EEPROM memory, based on enhanced RISC architecture. The AT90SC4816RS is code compatible with other members of the AT90SC family (EEPROM drivers). Alternatively, on request, AT90SC4816RS can also be configured to offer 100% compatibility with the AT90SC4816R.

By executing powerful instructions in a single clock cycle, the AT90SC4816RS 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.



Secure Microcontroller for Smart Cards

AT90SC4816RS

Summary

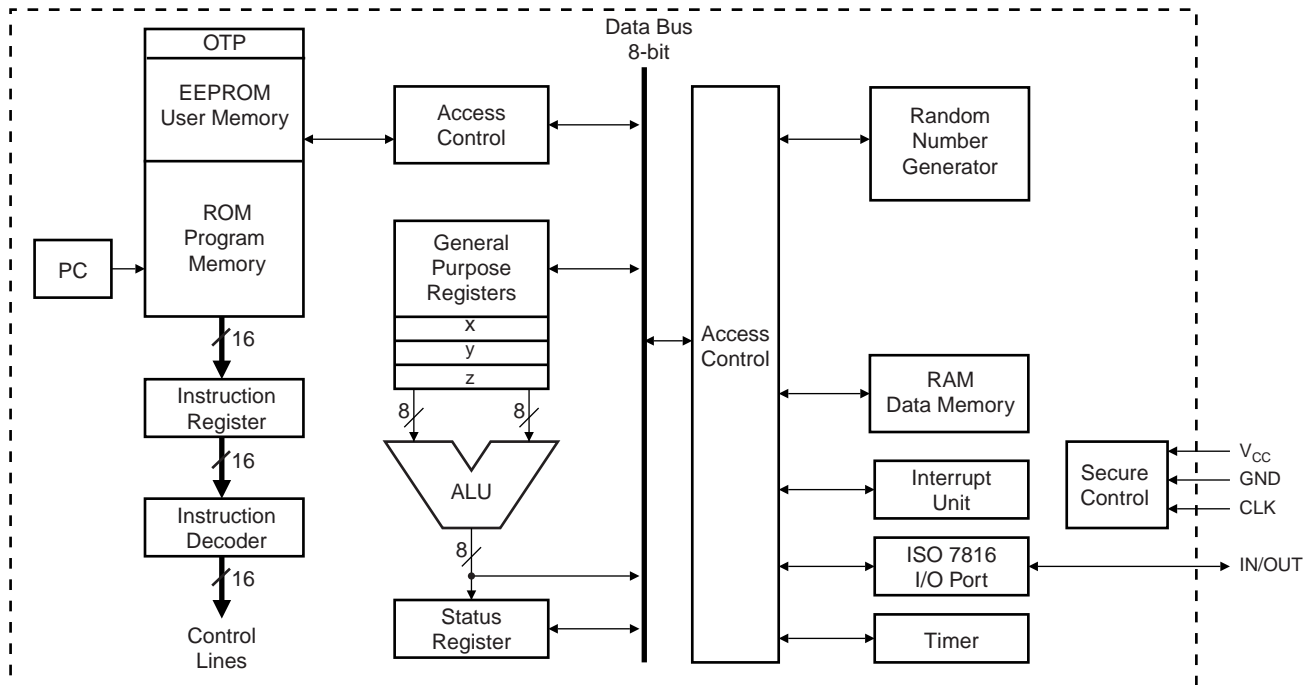
Rev. 1591AS–SMIC-06/03



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

In addition to the 48K bytes of embedded ROM, the AT90SC4816RS includes 16K bytes 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-bit CPU on a monolithic chip provides a highly flexible and cost-effective solution to many smart card applications.

Figure 1. AT90SC4816RS Enhanced RISC Architecture



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