Features

General
- **High-performance, Low-power AVR® (AVR2 Core) 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 ± 6000V**
- **Operating Ranges: from 2.7V to 3.3V and 4.5V to 5.5V**
- **Compliant with GSM, 3GPP and EMV 2000 Specifications; PC Industry Compatible**
- **Available in Wafers, Modules and Industry-standard Packages**

Memory
- **32K Bytes of Flash Program Memory**
  - **Endurance: 10,000 minimum Write/Erase Cycles**
- **32K 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**
- **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
- **Hardware Development Support on the Smart Card Development Kit (SDK)**

Description

The AT90SC3232 is a low-power, high-performance, 8-bit microcontroller with Flash Program memory and EEPROM Data memory, based on the AVR enhanced RISC architecture. By executing powerful instructions in a single clock cycle, the AT90SC3232 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 AT90SC3232 includes 64K 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.

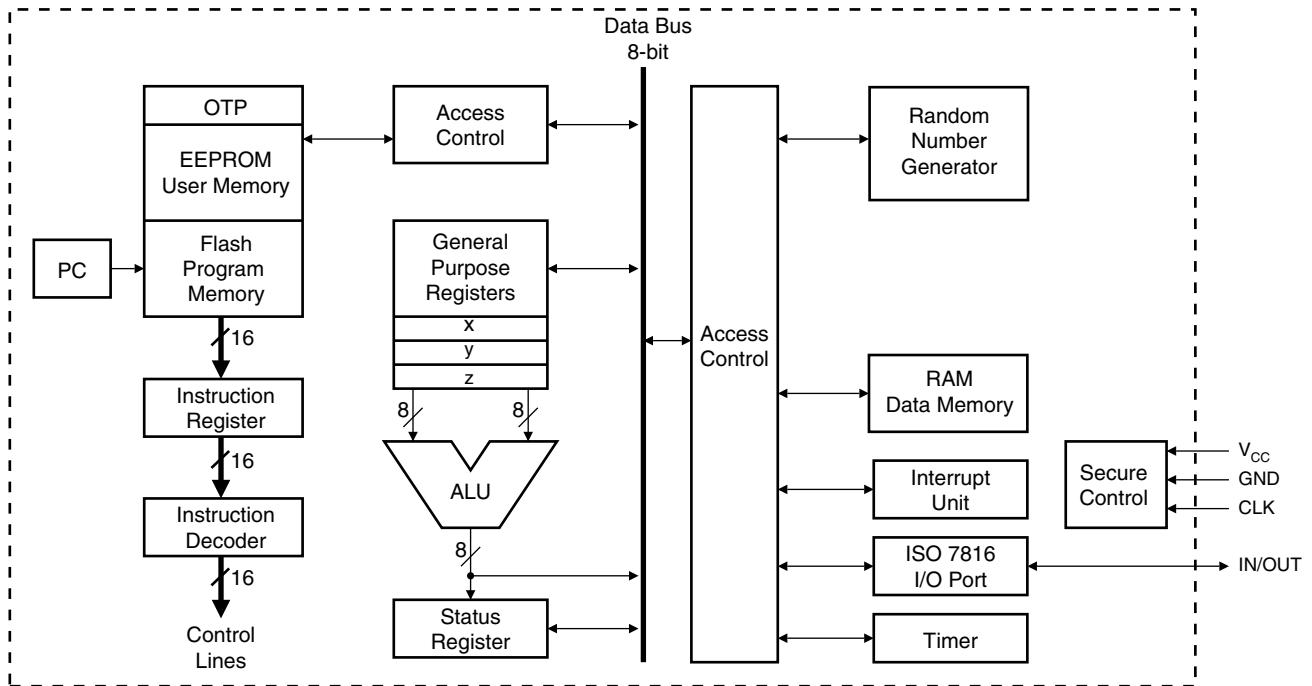**Secure Microcontroller for Smart Cards**

AT90SC3232

Summary

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Figure 1. The AT90SC3232 AVR Enhanced RISC Architecture

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