Features

General

- High-performance, Low-power AVR® 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 ± 4000V
- Operating Ranges: 2.7V to 5.50V
- Compliant with GSM, 3GPP and EMV 2000 Specifications, PC Industry Compatible
- Available in Wafers, Modules, and Industry-standard Packages

Memory

- 16K Bytes of FLASH Program Memory
- 50K Bytes of EEPROM, Including 64 OTP Bytes and 64-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
  - 10 Years Data Retention
- 2K bytes RAM Memory

Peripherals

- One I/O Port
- 16-bit Timer
- Random Number Generator (RNG)
- 2-level, 4-vector Interrupt Controller

Security

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

Development Tools

- Voyager Emulation Platform (ATV2 & ATV4) to Support Software Development
- IAR Embedded Workbench® V4.21 Debugger or Above
- Software Libraries and Application Notes

Secure Microcontroller for Smart Cards

AT90SC1650U Summary

6548AS–SPD–30Mar07

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

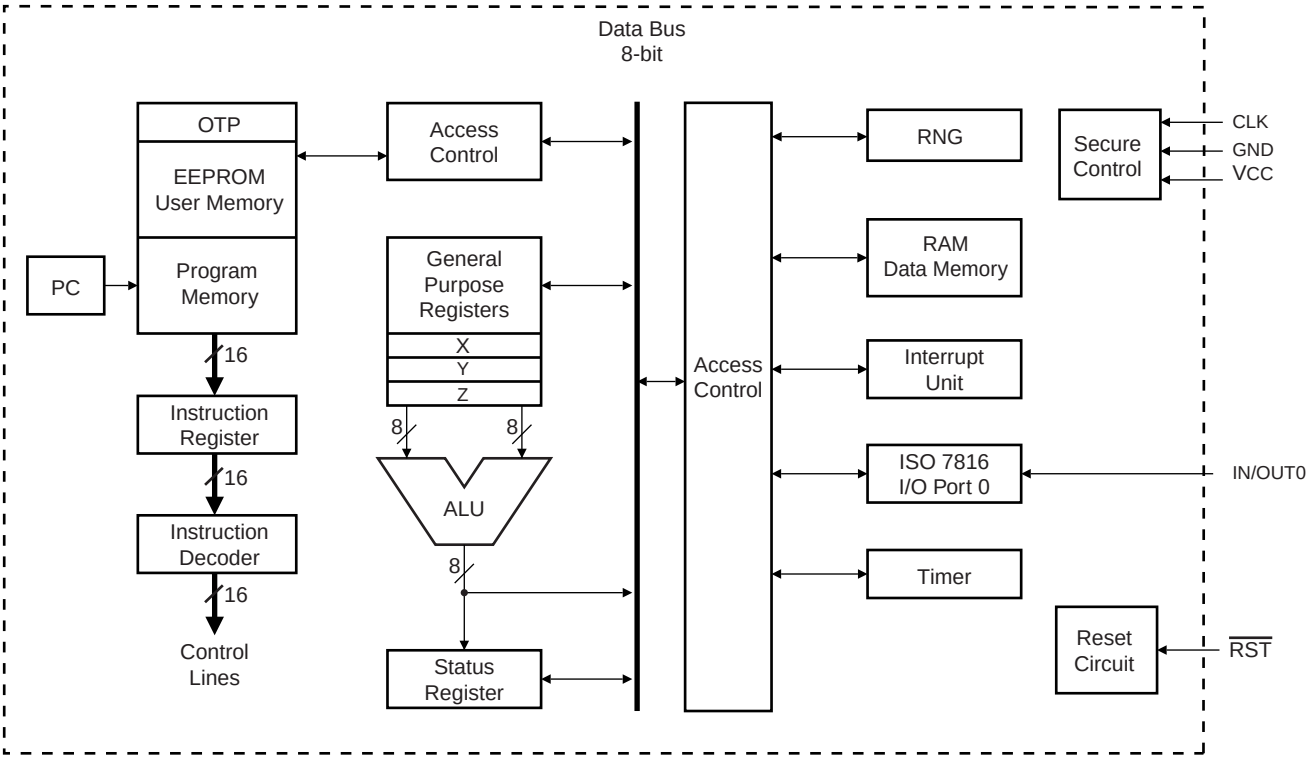
Description

The AT90SC1650U 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 AT90SC1650U 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 AT90SC1650U includes 66K bytes of Atmel's high density memory block, used for both FLASH and EEPROM. The on-chip downloadable FLASH allows 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 AT90SC12036RU

Figure 1. AT90SC1650U AVR Enhanced RISC Architecture



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