



ST23YS08

Smartcard MCU

with Enhanced Security and 8 KBytes High-Density EEPROM

Data Brief

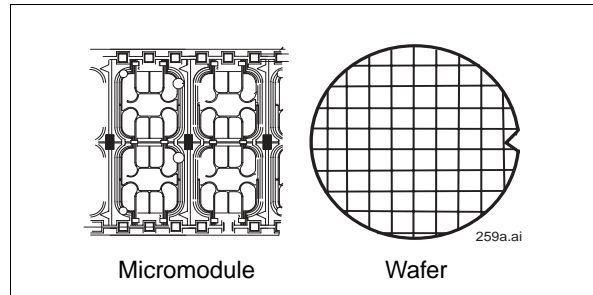
Features

ST23YS08 major applications include:

- Banking targeting VISA® and CAST™ certificates

Hardware features

- Enhanced 8/16-bit CPU core with 16 MBytes linear addressable memory
- 108 Kbytes User ROM
- 2 Kbytes User RAM
- 8 Kbytes User EEPROM including 64 Bytes User OTP area:
 - Highly reliable CMOS EEPROM submicron technology
 - 10-year data retention
 - 500,000 Erase/Write cycles endurance typical at 25° C
 - 1 to 32 Bytes Erase or Program in 1.5 ms
- Two 8-bit timers with watchdog and interrupt capability
- 3V and 5V supply voltage ranges
- External clock frequency from 1 up to 5 MHz
- High performance provided by:
 - CPU clock frequency up to 29 MHz
- Power-saving Standby mode
- Contact assignment compatible ISO 7816-3
- Asynchronous Receiver Transmitter (IART) for high speed serial data support (ISO 7816-3 and EMV™ compliant)
- ISO 3309 CRC calculation block
- ESD protection greater than 5 kV (HBM)



Security features

- Active shield
- Monitoring of environmental parameters
- Protection mechanisms against faults
- Hardware Security Enhanced DES accelerator
- FIPS 140-2 and AIS-31 class P2 compliant True Random Number Generator (TRNG)
- Unique serial number on each die

Development environment

Software development and firmware generation are supported by a comprehensive set of development tools dedicated to software design and validation:

- Emulator
- C Compiler
- Simulator

1 Description

The ST23YS08 product is a serial access microcontroller specially designed for secure smartcard applications.

It is based on an enhanced STMicroelectronics 8/16-bit CPU core offering 16 MBytes linear addressing space.

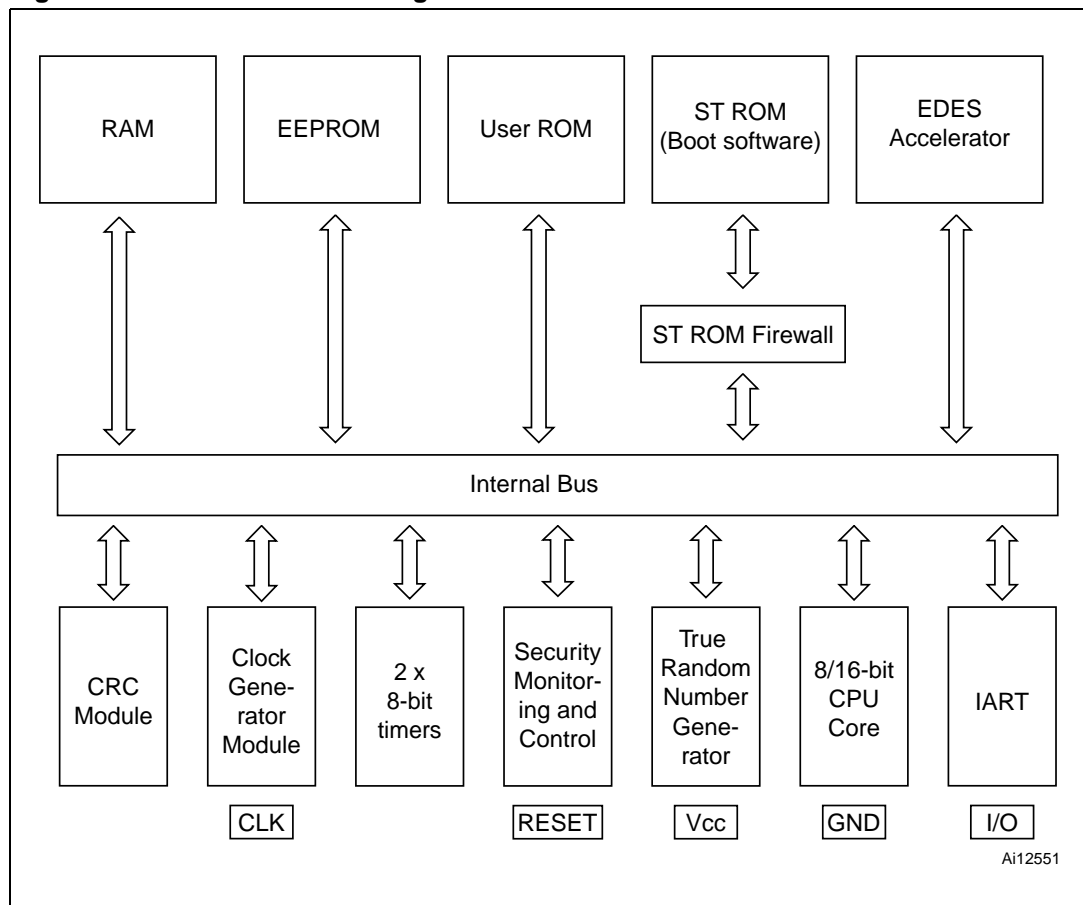
It is manufactured using an advanced highly reliable ST CMOS EEPROM technology.

The device includes an Enhanced DES accelerator (EDES). It enables Cipher Block Chaining (CBC) mode, DES and triple DES computation.

A serial interface fully compatible with the ISO 7816-3 standard (T = 0 and T = 1) for Smartcard applications is available.

A CRC calculation block is also available.

Figure 1. ST23YS08 block diagram



1.1 Development environment

Development tools for smartcard products include a complete range of hardware systems and software tools from STMicroelectronics and third-party tool suppliers. The range of tools includes solutions to help you to develop and debug your application and evaluate smartcard products and their peripherals.

An Integrated Development Environment (IDE), the STMicroelectronics Visual Debug (STVD), provides a set of tools for developing embedded applications. This interface manages the project configuration, code edition, code generation and program debugging.

An emulator (SCICS) and a simulator are available for developing and validating your application code.

All the information needed to generate the application code and personalization will be collected in a delivery file (.DLV extension). This file is created using the Delivery menu of the STMicroelectronics configuration software tool, SCool.

2 Revision history

Table 1. Document revision history

Date	Revision	Changes
23-Jan-2007	0.1	Initial release.
10-Apr-2007	1	Updated Section 1: Description and Figure 1: ST23YS08 block diagram . Added Section 1.1: Development environment .

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