



# ST23YT34

## Smartcard MCU with USB and 34 KBytes EEPROM

Data Brief

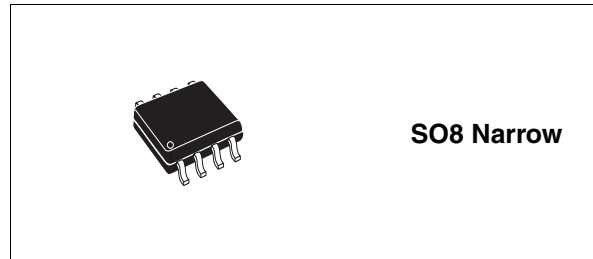
### Features

ST23YT34 major applications include:

- Secure Internet/computer applications

### Hardware features

- Enhanced 8/16-bit ST23 CPU core with 16 Mbytes linear addressable memory
- 110 Kbytes User ROM
- 5 Kbytes User RAM
- 2 Kbytes NESCRIPT RAM
- 34 Kbytes User EEPROM including 128 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 64 Bytes Erase or Program in 1.5 ms
- Enhanced NESCRIPT crypto-processor for public key cryptography
- Three 8-bit timers with watchdog and interrupt capability
- 3V to 5.25V supply voltage range
- 0 to 70 °C operating range in USB mode
- High performance provided by:
  - CPU clock frequency up to 29 MHz
- Power-saving Standby state
- Asynchronous Receiver Transmitter (IART) for high speed serial data support (ISO 7816-3 and EMV™ compliant)



- Full-speed USB 2.0 interface
  - 5 Endpoints
  - 16 bytes bidirectional EP0
  - 2x64 bytes In/Out Bulk for CCID compliance
  - 2x16 bytes for INT transfer
  - Clock Recovery
- 3 GPIO pins
  - 2 bidirectional input/output pins
  - 1 unidirectional input pin
- ESD protection greater than 5 kV (HBM)

### Security features

- Active shield
- Monitoring of environmental parameters
- Protection mechanisms against faults
- Hardware Security Enhanced DES accelerator
- AIS-31 class P2 compliant True Random Number Generator (TRNG)
- ISO 3309 CRC calculation block
- Memory Protection Unit (MPU)
- 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:

- C Compiler
- Emulator

# 1 Description

The ST23YT34 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 ST23YT34 is a secure USB microcontroller based on the ST23 core architecture. Its high security level and versatile communication interfaces address user identification functions for computer or network access or for computer-based local or remote applications.

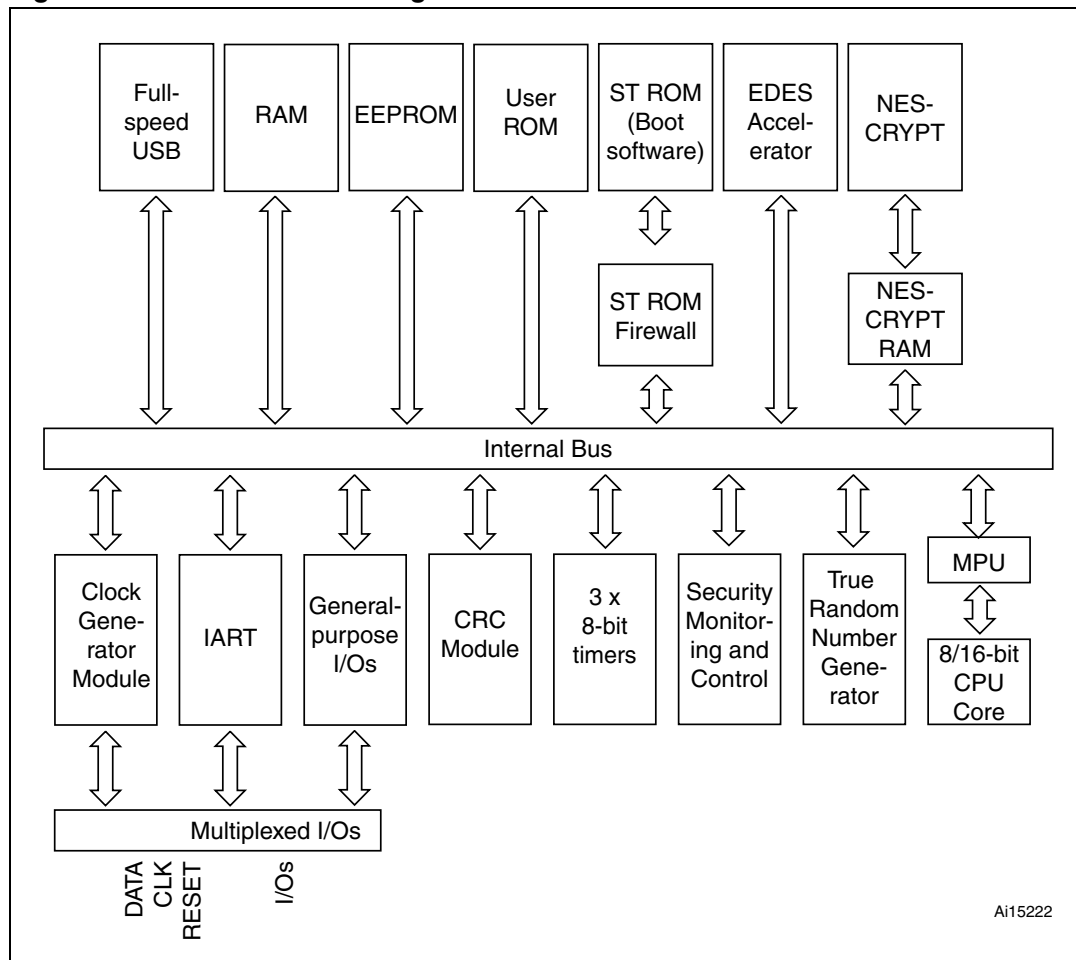
The ST23YT34 features a USB full-speed interface for communication with computers as well as various I/Os.

Moreover, an ISO 7816-3 EMV-compliant Asynchronous Receiver Transmitter (IART) communication peripheral is available.

In order to meet environmental requirements, ST (also) offers these devices in ECOPACK® packages. ECOPACK® packages are lead-free. The category of second Level Interconnect is marked on the package and on the inner box label, in compliance with JEDEC Standard JESD97. The maximum ratings related to soldering conditions are also marked on the inner box label.

ECOPACK is an ST trademark. ECOPACK specifications are available at: [www.st.com](http://www.st.com).

Figure 1. ST23YT34 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.

A Smartcard ICS emulator (SCICS) is 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
24-Oct-2008	1	First release.

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