ST23YT66

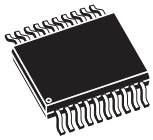
Smartcard MCU with USB and SPI interfaces and 66 KBytes EEPROM

Data brief

Features

Hardware features

- Enhanced 8/16-bit ST23 CPU core with 16 Mbytes linear addressable memory
- 210 Kbytes of User ROM
- 6.2 Kbytes of User RAM
- 2 Kbytes of NESCRYPT RAM
- 66 Kbytes of User EEPROM including 128 bytes of User OTP area:
  - Highly reliable CMOS EEPROM submicron technology
  - 30-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 NESCRYPT crypto-processor for public key cryptography
- Hardware security enhanced DES accelerator
- Three 8-bit timers with watchdog and interrupt capability
- 3V to 5.5V supply voltage range
- 0 to 70 °C operating range
- High performance provided by:
  - CPU clock frequency up to 29 MHz
- Power-saving Standby state
- 10-MHz Master Serial Peripheral Interface (SPI) bus
- USB hardware accelerator for AutoPlay
- 12 GPIO pins
  - 7 bidirectional input/output pins
  - 5 unidirectional input pins



TSSOP20
(6.4 x 6.2 mm)

- Full-speed USB 2.0 interface
  - 8 Endpoints
  - 2 x 16 bytes (EP0)
  - 2 x 16 bytes for INT transfer (EP1)
  - 2x64 bytes for In/Out Bulk and INT transfer (EP2)
  - 2x64 bytes for In/Out Bulk and INT transfer (with hardware accelerator) (EP3)
  - Clock recovery
- ESD protection greater than 5 kV (HBM) for all pads and 2 kV for XIN and XOUT pads

Security features

- Active shield
- Monitoring of environmental parameters
- Protection mechanisms against faults
- 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 and emulator

Applications

ST23YT66 major applications include:

- Pay TV applications
- Secure Internet/computer applications

1 Description

The ST23YT66 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 ST23YT66 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 ST23YT66 features a USB full-speed interface for communication with computers as well as various I/Os and an SPI bus for user interfaces (keyboards, displays, etc.).

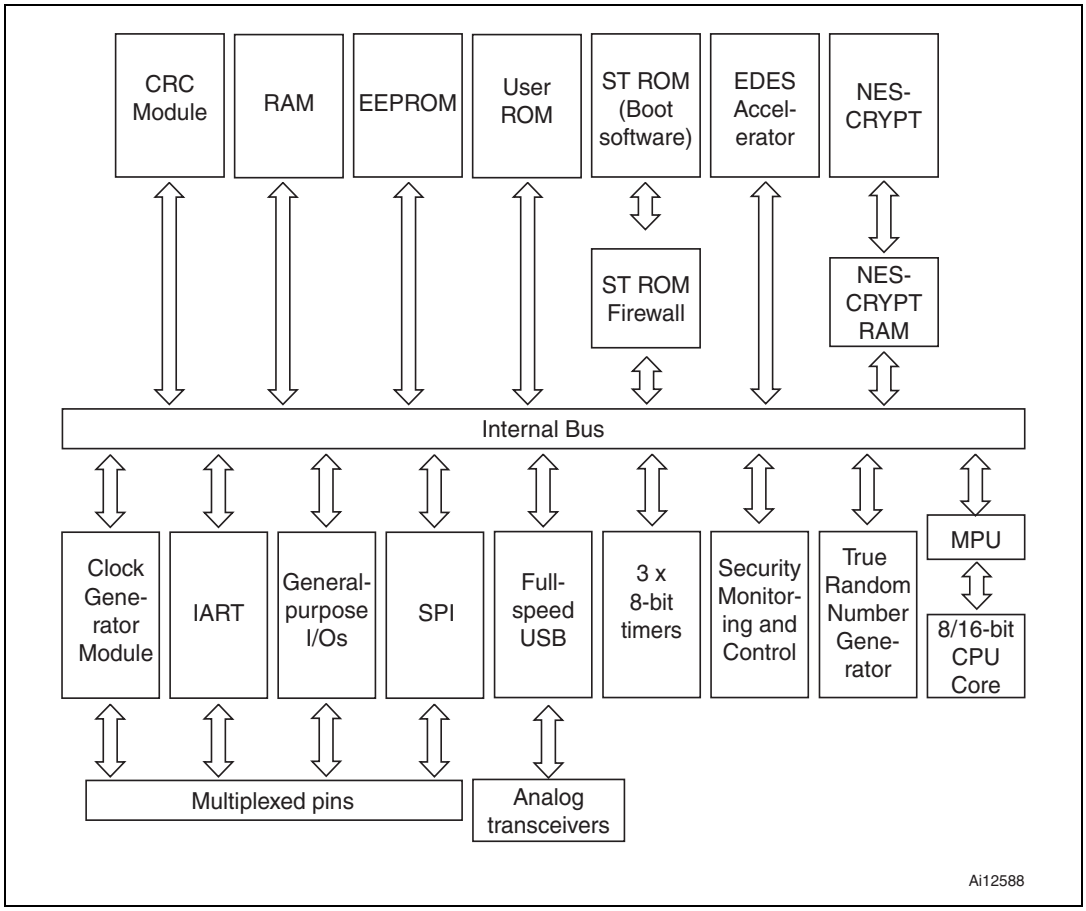
The ST23YT66 USB hardware accelerator provides a very efficient AutoPlay mode implementation. This enables the content of a companion serial Flash memory to be uploaded to a computer at a speed close to USB bandwidth.

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.

LICENSED DPA™ COUNTERMEASURES

Figure 1. ST23YT66 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 ST Visual Develop (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.
17-Dec-2010	2	Removed “Obsolete” watermark.

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