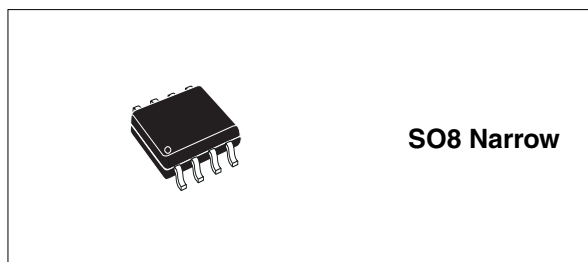


**Secure MCU
with USB and 34 Kbytes EEPROM**

Data brief

**Features****Hardware features**

- Enhanced 8/16-bit ST23 CPU core with 16 Mbytes linear addressable memory
- 110 Kbytes of User ROM
- 5 Kbytes of User RAM
- 2 Kbytes of NESCRYPT RAM
- 34 Kbytes of User EEPROM including 128 bytes of User OTP area:
 - Highly reliable CMOS EEPROM submicron technology
 - 30-year data retention
 - 30-year data retention at 25° C
 - 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
- 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/IEC 7816-3 and EMV™ compliant)

- Full-speed USB 2.0 interface
 - 5 Endpoints
 - 2 x 16 bytes bidirectional EP0
 - 2 x 16 bytes for INT transfer
 - 2x64 bytes for In/Out Bulk for CCID compliance
 - 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
- Hardware security enhanced DES accelerator
- 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
 - 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.

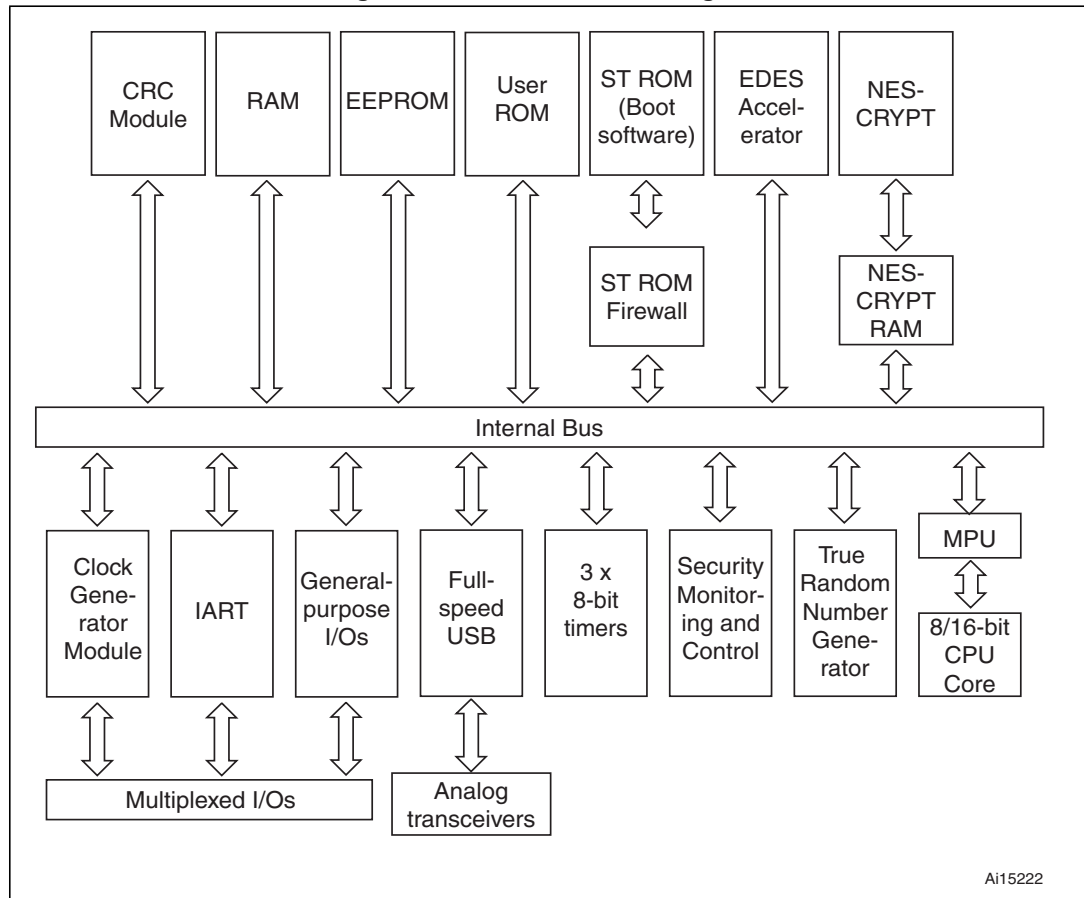
The ST23YT34 features a USB full-speed interface for communication with computers as well as various I/Os.

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.



Figure 1. ST23YT34 block diagram



1.1 Development environment

Development tools for secure MCU 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 secure MCU 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 and 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 |
|-------------|-----------------|------------------------------------|
| 24-Oct-2008 | 1 | First release |
| 07-Nov-2013 | 2 | Updated logo information on page 2 |

Please Read Carefully:

Information in this document is provided solely in connection with ST products. STMicroelectronics NV and its subsidiaries ("ST") reserve the right to make changes, corrections, modifications or improvements, to this document, and the products and services described herein at any time, without notice.

All ST products are sold pursuant to ST's terms and conditions of sale.

Purchasers are solely responsible for the choice, selection and use of the ST products and services described herein, and ST assumes no liability whatsoever relating to the choice, selection or use of the ST products and services described herein.

No license, express or implied, by estoppel or otherwise, to any intellectual property rights is granted under this document. If any part of this document refers to any third party products or services it shall not be deemed a license grant by ST for the use of such third party products or services, or any intellectual property contained therein or considered as a warranty covering the use in any manner whatsoever of such third party products or services or any intellectual property contained therein.

UNLESS OTHERWISE SET FORTH IN ST'S TERMS AND CONDITIONS OF SALE ST DISCLAIMS ANY EXPRESS OR IMPLIED WARRANTY WITH RESPECT TO THE USE AND/OR SALE OF ST PRODUCTS INCLUDING WITHOUT LIMITATION IMPLIED WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE (AND THEIR EQUIVALENTS UNDER THE LAWS OF ANY JURISDICTION), OR INFRINGEMENT OF ANY PATENT, COPYRIGHT OR OTHER INTELLECTUAL PROPERTY RIGHT.

ST PRODUCTS ARE NOT DESIGNED OR AUTHORIZED FOR USE IN: (A) SAFETY CRITICAL APPLICATIONS SUCH AS LIFE SUPPORTING, ACTIVE IMPLANTED DEVICES OR SYSTEMS WITH PRODUCT FUNCTIONAL SAFETY REQUIREMENTS; (B) AERONAUTIC APPLICATIONS; (C) AUTOMOTIVE APPLICATIONS OR ENVIRONMENTS, AND/OR (D) AEROSPACE APPLICATIONS OR ENVIRONMENTS. WHERE ST PRODUCTS ARE NOT DESIGNED FOR SUCH USE, THE PURCHASER SHALL USE PRODUCTS AT PURCHASER'S SOLE RISK, EVEN IF ST HAS BEEN INFORMED IN WRITING OF SUCH USAGE, UNLESS A PRODUCT IS EXPRESSLY DESIGNATED BY ST AS BEING INTENDED FOR "AUTOMOTIVE, AUTOMOTIVE SAFETY OR MEDICAL" INDUSTRY DOMAINS ACCORDING TO ST PRODUCT DESIGN SPECIFICATIONS. PRODUCTS FORMALLY ESCC, QML OR JAN QUALIFIED ARE DEEMED SUITABLE FOR USE IN AEROSPACE BY THE CORRESPONDING GOVERNMENTAL AGENCY.

Resale of ST products with provisions different from the statements and/or technical features set forth in this document shall immediately void any warranty granted by ST for the ST product or service described herein and shall not create or extend in any manner whatsoever, any liability of ST.

ST and the ST logo are trademarks or registered trademarks of ST in various countries.

Information in this document supersedes and replaces all information previously supplied.

The ST logo is a registered trademark of STMicroelectronics. All other names are the property of their respective owners.

© 2013 STMicroelectronics - All rights reserved

STMicroelectronics group of companies

Australia - Belgium - Brazil - Canada - China - Czech Republic - Finland - France - Germany - Hong Kong - India - Israel - Italy - Japan - Malaysia - Malta - Morocco - Philippines - Singapore - Spain - Sweden - Switzerland - United Kingdom - United States of America

www.st.com

