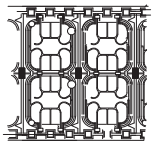
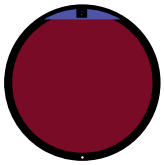
ST23ZL48

Secure MCU with enhanced security, crypto-processor and 48-Kbyte EEPROM

Data brief



Micromodule



Wafer

Features

Hardware features

- Enhanced 8/16-bit ST23 CPU core with 16 Mbytes of linear addressable memory
- 300 Kbytes of User ROM
- 6 Kbytes of User RAM
- 2 Kbytes of NESCRYPT RAM
- 48 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
- Three 8-bit timers with watchdog and interrupt capability
- 3.3 V and 5 V supply voltage ranges
- External clock frequency up to 10 MHz
- High performance provided by:
  - CPU clock frequency up to 27 MHz
- Power-saving Idle state
- Contact assignment compatible with ISO/IEC 7816-3 standards
- Asynchronous receiver transmitter (IART) for high speed serial data support (ISO/IEC 7816-3 and EMV™ compliant)
- ESD protection greater than 5 kV (HBM)

Security features

- Active shield
- Enhanced NESCRYPT crypto-processor for public key cryptography
- Hardware security enhanced DES accelerator
- Monitoring of environmental parameters
- Protection mechanisms against faults
- AIS-31 class P2 compliant true random number generator (TRNG)
- ISO/IEC 13239 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, Simulator and Emulator

Applications

ST23ZL48 major applications include:

- Banking
- ID
- Pay TV

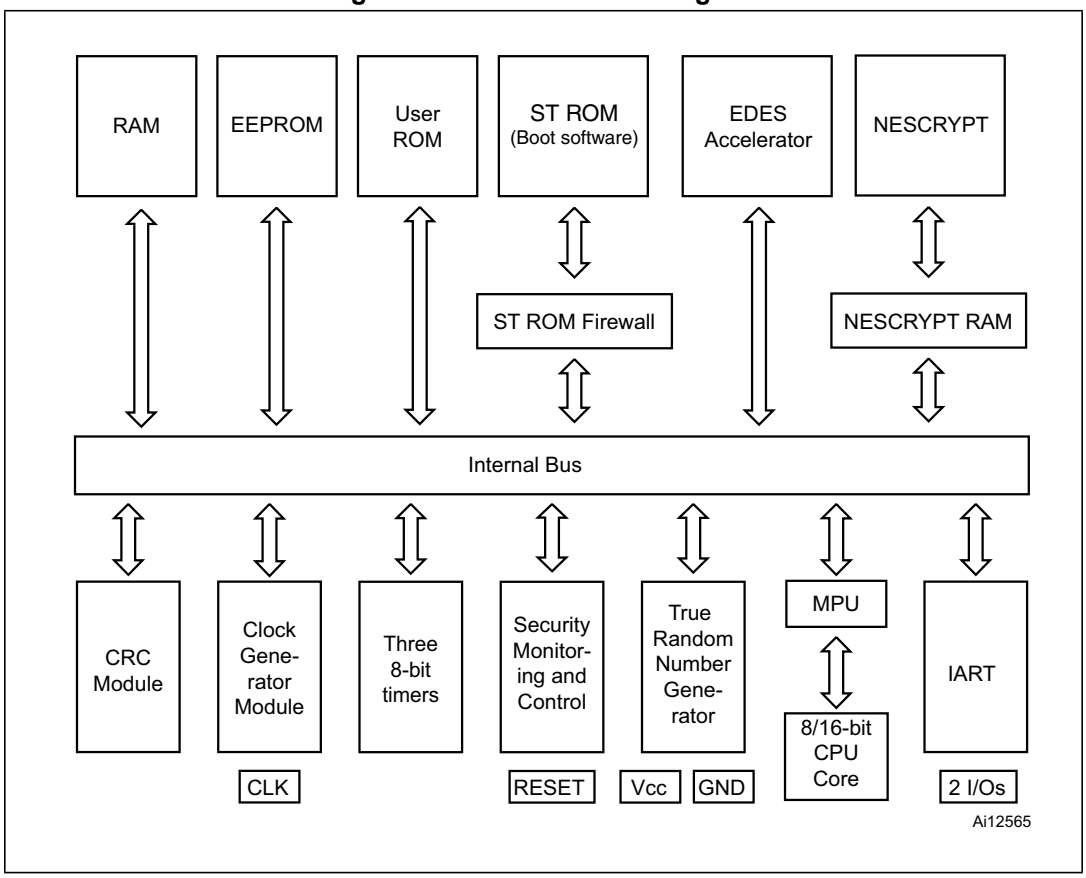
1 Description

The ST23ZL48 is a serial access microcontroller custom-designed for secure smartcard applications.

It is based on an enhanced STMicroelectronics 8/16-bit CPU core offering 16 Mbytes of linear addressing space. ST23ZL48 devices are manufactured using an advanced highly reliable ST CMOS EEPROM technology.

Moreover, an ISO/IEC 7816-3 EMV-compliant asynchronous receiver transmitter (IART) communication peripheral is available.

Figure 1. ST23ZL48 block diagram



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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 (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
12-Oct-2009	1	Initial release.
16-Aug-2013	2	Updated logo information on page 2.

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