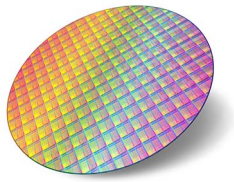
ST32H480

Smartcard microcontroller with a 32-bit ARM® SC000™ CPU and 480 Kbytes of high-density Flash memory

Data brief



Wafer

D18 micromodule

Features

Hardware features

- ARM® SecurCore® SC000™ 32-bit RISC core
- 13 Kbytes of user RAM
- 480 Kbytes of user Flash memory:
  - 10-year data retention
  - 100 000 Erase/Write cycles per page
  - Page erase granularity: 512 bytes
  - Block erase granularity: 2 Kbytes
- Asynchronous Receiver Transmitter supporting the ISO/IEC 7816-3 T=0 and T=1 protocols
- Two 16-bit timers with interrupt capability
- Watchdog timer
- 1.8 V and 3 V supply voltage ranges
- External clock frequency from 1 up to 5 MHz
- High performance provided by the 30 MHz CPU clock frequency
- Current consumption compatible with GSM and ETSI specifications
- Power-saving Standby and Hibernate states
- Contact assignment compatible with ISO 7816-2
- ESD protection:
  - 4 kV (HBM)
  - 1 kV (CDM)
- Delivery forms:
  - D18 micromodules
  - Wafers

Security features

- Monitoring of environmental parameters
- Protection against faults
- ISO 3309 CRC calculation block
- True random number generator
- Unique serial number on each die
- Hardware data encryption standard (DES) accelerator

Software features

- Flash memory loader
- Flash memory drivers

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

Major applications include:

- Mobile communications (GSM, 3G, LTE and CDMA)
- Java Card™ applications
- Internet of things (IoT)

1 Description

The device is a serial access microcontroller designed for secure mobile applications. It incorporates the most recent generation of ARM processors for embedded systems. Its SecurCore® SC000™ 32-bit RISC core is built on the Cortex® M0 core with additional security features to help to protect against advanced forms of attacks. The SC000™ core brings great performance and excellent code density thanks to the Thumb®-2 instruction set. The CPU interfaces with the on-chip RAM, ROM and NVM via a 32-bit internal bus.

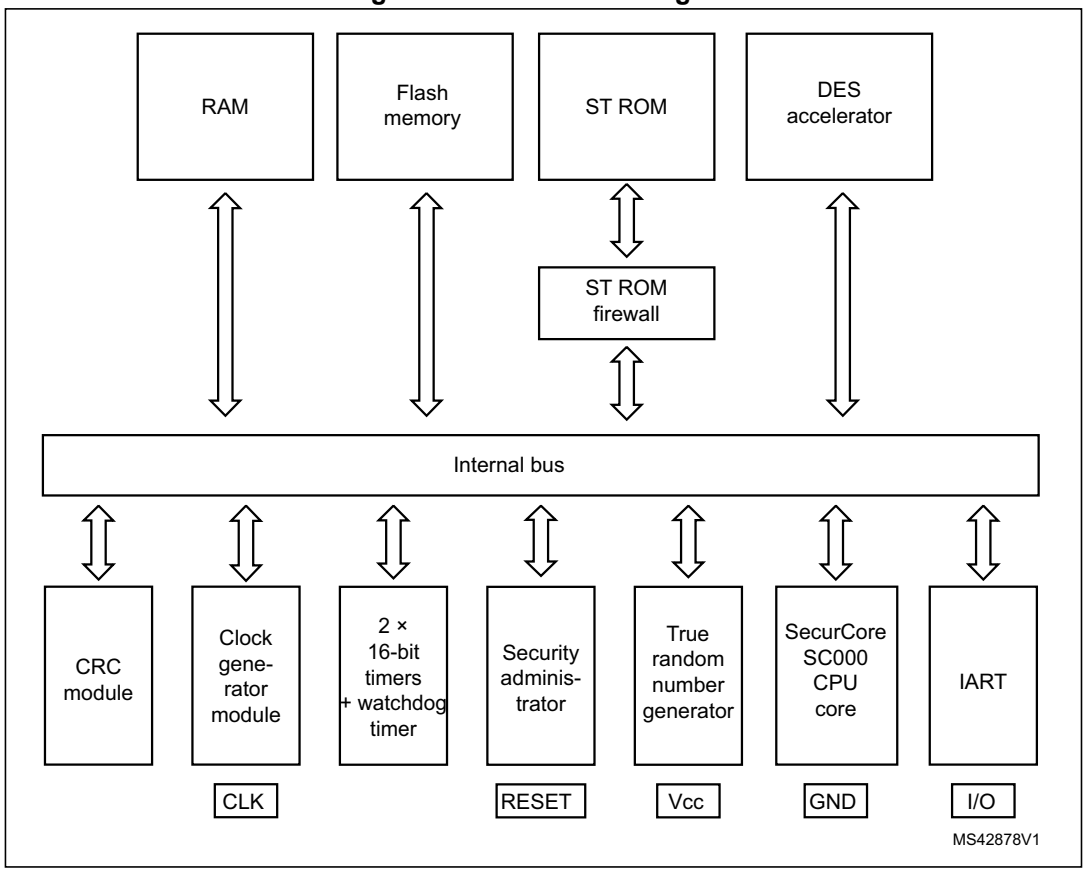
The high-speed, 480-Kbyte, embedded Flash memory introduces more flexibility to the system.

The device also offers a serial communication interface fully compatible with the ISO 7816-3 standard (T=0, T=1) for smartcard applications. In addition, it includes two general-purpose 16-bit timers, an ISO 3309 CRC calculation block and a watchdog timer. Finally, it has a hardware Data Encryption Standard (DES) accelerator that the user can use to optimize the application performance.

The device operates in the –25 to +85 °C temperature range, and the 1.8 V and 3 V supply voltage ranges. A comprehensive range of power-saving modes enables the design of efficient low-power applications.

The device is delivered in D18 micromodules. It is also available in wafers.

Figure 1. Device block diagram



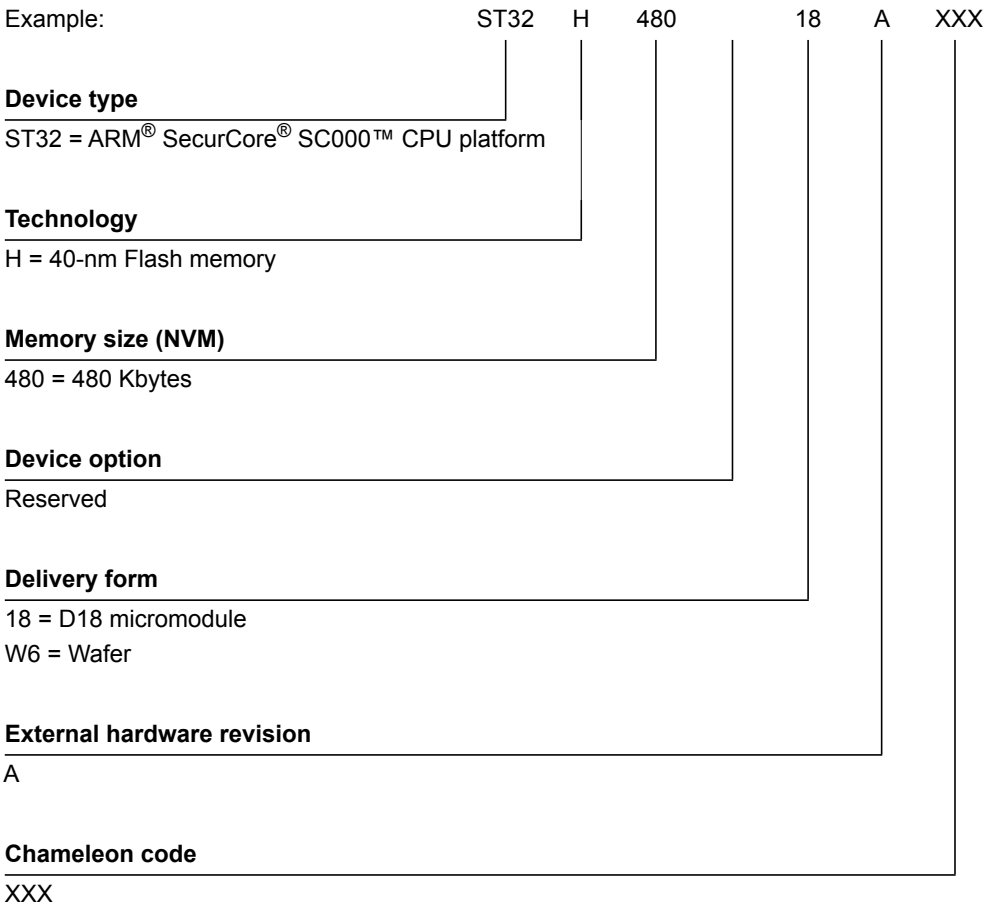
1.1 Software development tool description

Dedicated ARM® SecurCore® SC000™ software development tools are provided by ARM and Keil®. This includes the Instruction Set Simulator (ISS) and C compiler. The documentation is available on the ARM and Keil websites.

Moreover, STMicroelectronics provide:

- A time-accurate hardware emulator controlled by the Keil debugger and the ST development environment.
- A complete product simulator based on Keil's ISS simulator for the ARM SecurCore SC000 CPU.
- A ROMed Flash memory loader with very high-speed software downloading capabilities.

2 Ordering information



Note: Not all combinations are necessarily available. For a list of available options (speed, package, etc.) or for further information on any aspect of this device, please contact your nearest STMicroelectronics sales office.

3 Revision history

Table 1. Document revision history

Date	Revision	Changes
07-Feb-2017	1	Initial release.