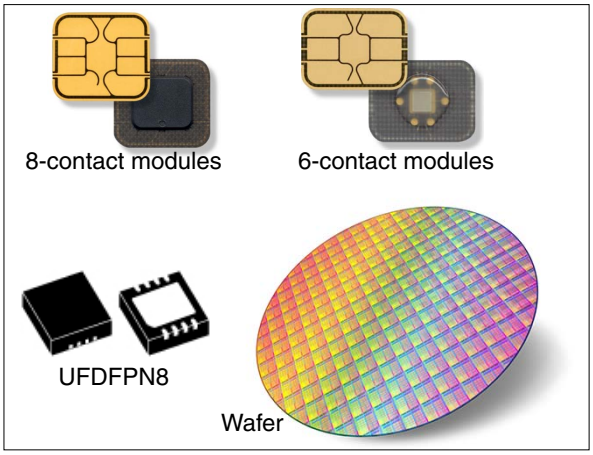
ST31H320 ST31H256 ST31H192 ST31H128

Secure microcontroller with enhanced security and up to 320 Kbytes of Flash memory

Data brief



Features

Hardware features

- ARM® SecurCore® SC000™ 32-bit RISC core
- 10 Kbytes of User RAM
  - Up to 320 Kbytes of secure, high-density User Flash memory
- Operating temperature: –25 °C to +85° C
- Three 16-bit timers with interrupt
- Watchdog timer
- 1.62 V to 5.5 V supply voltages
- External clock frequency up to 10 MHz
- CPU clock frequency up to 28 MHz
- Power-saving Standby state
- Contact assignment compatible with ISO/IEC 7816-3 standards
- Asynchronous receiver transmitter (IART) with RAM buffer for high speed serial data support (ISO/IEC 7816-3 T=0/T=1 and EMV compliant)
- ESD protection greater than 5 kV (HBM)

Security features

- Active shield
- Monitoring of environmental parameters
- Three-key Triple DES accelerator
- AES accelerator
- AIS-31 Class PTG.2 compliant true random number generator (TRNG)
- NESCRYPT coprocessor for public key cryptography algorithm
- ISO/IEC 13239 CRC calculation block
- Unique serial number on each die
- Protection against multiple attacks

The ST31H platform includes the following devices:

Table 1. Device summary

Device	NVM Size (in Kbytes)
ST31H320	320
ST31H256	256
ST31H192	192
ST31H128	128

1 Description

Designed for secure ID and banking applications, the ST31H platform products (ST31H320, ST31H256, ST31H192 and ST31H128) are serial access microcontrollers that incorporate the most recent generation of ARM processors for embedded secure systems. Their 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.

Cadenced at 28 MHz, the SC000™ core brings great performance and excellent code density thanks to the Thumb®-2 instruction set.

The ST31H platform offers a serial communication interface fully compatible with the ISO/IEC 7816-3 standard (T=0, T=1).

Three 16-bit general-purpose timers, as well as a watchdog timer, are available.

The devices feature hardware accelerators for advanced cryptographic functions. The AES accelerator provides a high-performance implementation of AES-128, AES-192, AES-256 algorithms. The 3-key Triple DES accelerator (EDES+) peripheral enables Cipher Block Chaining (CBC) mode, fast DES and triple DES computation based on three key registers and one data register, while the NESCRYPT cryptoprocessor efficiently supports the public key algorithm with native operations up to 4096 bits long.

The ST31H platform operates in the –25 to +85 °C temperature range at 1.8 V, 3 V and 5 V supply voltage ranges. A comprehensive range of power-saving modes enables the design of efficient low-power applications.

Software development tools description

Dedicated 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 web sites.

Moreover, STMicroelectronics provides:

- 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 SecurCore® SC000™ CPU.

2 Revision history

Table 2. Document revision history

Date	Revision	Changes
07-Mar-2014	0.1	Initial release.
13-Nov-2015	1	Modified title and document reference. Updated ESD protection. Small text changes.