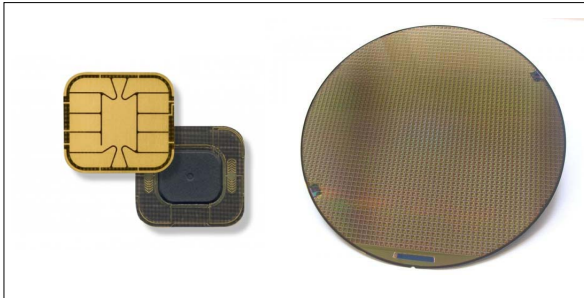

**ST31 - K330A platform secure dual interface MCU
with enhanced security and 16 Kbytes of EEPROM**

Data brief

**Features****Hardware features**

- ARM® SecurCore® SC000™ 32-bit RISC core
- 320 Kbytes of User ROM
- 8 Kbytes of User RAM
- 16 Kbytes of User EEPROM
- CPU clock frequency up to 28 MHz
- Power-saving Standby state
- Contact assignment compatible with ISO/IEC 7816-3 standards
- Asynchronous receiver transmitter (IART) for high speed serial data support (ISO/IEC 7816-3 T=0/T=1 and EMV compliant)
- ESD protection greater than 5 kV (HBM)

Contactless features

- Complies with ISO/IEC 14443 Type A, B and B', and PayPass® standards
- 13.56 MHz carrier frequency
- RFUART (RF universal asynchronous receiver transmitter) up to 848 Kbps
- Very High Bit Rate (VHBR): Tx = 6.8 Mbps and Rx = 1.7 Mbps
- Simultaneous mode (Contact and Contactless)
- 4-Kbyte RF frame buffer in dedicated RFUART RAM

Security features

- Three-key Triple DES accelerator
- AES accelerator
- NESCRYPT coprocessor for public key cryptography algorithm
- Protection against multiple attacks

1 Description

Designed for secure ID and banking applications, the SR31ZD16 is a serial access microcontroller that incorporates the most recent generation of ARM® processors for embedded secure 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.

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

An RF interface including an RF universal asynchronous receiver (RFUART) enables contactless communication up to 848 Kbps compatible with the ISO/IEC 14443 Type A and Type B standards.

Very High Bit Rates (VHBR, Tx = 6.8 Mbps and Rx = 1.7 Mbps) are possible in Type B frames.

A Simultaneous mode where contactless communication can be enabled while the device is in Contact mode is also available.

The SR31ZD16 also offers a serial communication interface fully compatible with the ISO/IEC 7816-3 standard (T=0, T=1).

Two 16-bit general-purpose timers are available; one is configurable as a watchdog.

The SR31ZD16 features 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 NESCRIPT crypto-processor efficiently supports the public key algorithm with native operations up to 4096 bits long.

The SR31Z family operates in the –25 to +85 °C temperature range, at 3 V and 5 V supply voltage ranges in Contact mode and complies with ISO/IEC 14443 specification limits. A comprehensive range of power-saving modes enables the design of efficient low-power and contactless 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 tool and the ST development environment.
- A complete product simulator based on Keil® ISS simulator for the SecurCore® SC000™ CPU.

2 Revision history

Table 1. Document revision history

| Date | Revision | Changes |
|-------------|-----------------|--|
| 28-Mar-2013 | 1 | Initial release. |
| 19-Jun-2014 | 2 | Updated secure MCU platform information. |

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