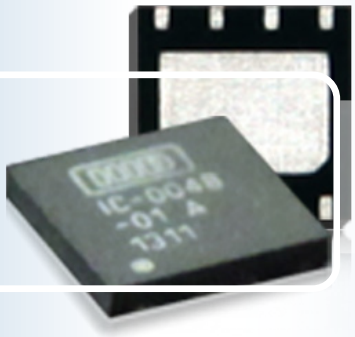
EMBEDDED TECHNOLOGY SOLUTIONS

iCLASS SE® Processor™



CRYTOGRAPHIC MODULE FOR SEOS & ICLASS SE PLATFORM ENABLEMENT

- **Secure Identity Object (SIO) –** HID Global's next generation platform provides a secure, standards-based, technology-independent and flexible identity data structure based on a new open credential standard.
- **Supports iCLASS SE Platform** – Provides multi-layer security that extends beyond the card technology for additional protection to identity data. Enables the use of NFC smartphones and other devices for mobile access utilizing iCLASS Seos™ .
- **Fast to Integrate** – The Developers Tool Kit (DTK) provides resources that facilitate fast and easy integration and extends access to HID's broad developers community.
- **Field-Updatable Firmware** – Includes support for existing card technologies such as standard iCLASS® and iCLASS Seos. Firmware is field upgradeable to address evolving market requirements.
- **Flexible Design** – Choice of form factors provides the ability to fully embed the iCLASS SE Processor into virtually any new design or add to an existing reader.

HID's Secure Identity Object delivers three key benefits: portability, security and extensibility.

- **Chip Independence** – SIOs can reside on any card technology, microprocessor-based cards, NFC smartphones, USB tokens, computer drives, and other formats.
- **Device Independence** – Providing an additional layer of security with additional key diversification, authentication and encryption.
- **Open** – SIOs are defined using open standards that can support any piece of data, including data for access control, biometrics, vending, time-and-attendance, and many other applications.

The iCLASS SE Processor is part of HID Global's open iCLASS SE platform that enables customers to future-proof their Secure identity infrastructures while simplifying how identities are created, used and managed across a range of applications using smart cards and microprocessor cards as well as NFC-enabled smartphones (utilizing iCLASS® Seos™).

The platform offers a secure, standards based technology-independent and flexible solution based on Secure Identity Object (SIO), a new portable and open credential methodology, and the Trusted Identity Platform® (TIP™).

HID's Trusted Identity Platform (TIP) turns authentication devices such as access control readers, laptops, NFC-equipped mobile phones and other products into trusted identity nodes that can be securely provisioned regardless of where they are or how they are connected. Multiple types of cryptographic algorithms ensure data security/privacy so all nodes execute trustworthy transactions.

As part of HID's SIO-enabled ecosystem, the iCLASS SE Processor is a technology-independent virtualized interpreter that enables reader manufacturers, developers and system integrators to quickly and easily integrate SIO and allows them to make their devices TIP nodes.

The iCLASS SE Processor enhances security with a device and technology-independent layer of additional security -- on top of device-specific security -- acting as a digital data wrapper for additional key diversification, authentication and encryption.

The iCLASS SE Processor supports new SIO-enabled credentials based on a variety of technologies, such as iCLASS® SE™, iCLASS Elite®, iCLASS Seos and MIFARE® DESFire®. It can also be configured to support standard iCLASS®, providing compatibility with existing installations or card deployments. The iCLASS SE Processor allows developers to easily embed it into a new reader design utilizing the surface mount technology chip.

MORE SECURE, TRUST-BASED SECURITY

- Tamper Proof – protection of keys and cryptographic operations to guard against cloning and other breaches.
- Multi layered security model with secure key management system, breach resistant technology, and enhanced privacy protection.
- Operates under HID's TIP framework, which creates a secure and trusted boundary within which all cryptographic keys governing system security can be delivered with end-to-end privacy and integrity.

ENHANCED LIFECYCLE MANAGEMENT

- Field programmable and features open and configurable SIO's as well as a smart card technology migration path.

iCLASS SE PROCESSOR DEVELOPER TOOLKIT (DTK)

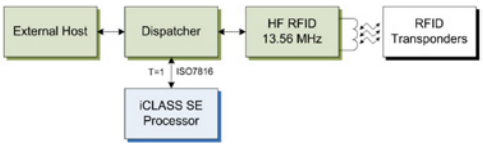
- Provides a complete set of resources allowing immediate start of development.
- Includes a test reader, product samples of iCLASS SE Processor and test cards to speed the development process.
- A secure, online developer portal provides access to development documents, tools and utilities to accelerate the time to market.

SUPPORTS NEXT-GENERATION CREDENTIALS

- Enables a new class of portable identity credentials that can be securely provisioned and safely embedded into both fixed and mobile devices.

EXPANDED ECOSYSTEM OF HID SOLUTIONS

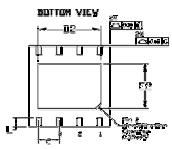
- Enables developers to easily bring to market SIO Enabled (SE) solutions and become part of the Genuine HID technology ecosystem.

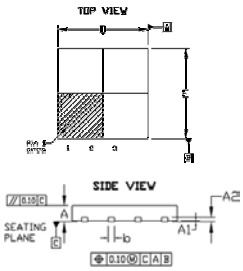


A basic implementation
using the iCLASS SE Processor

SPECIFICATIONS

Pin#	Description
1	GND
2	No Connect (RFU)
3	SC_IO
4	No Connect
5	No Connect
6	CLK
7	RST
8	Vcc





Base Part Numbers	**SE3100A00**
Form Factor	Surface Mount Device Processor, 5mm x 5mm, 8 Pin DFN
Interface Lines	Clock, Data I/O, Controlled Power*, GND, RST
Interface Standards	ISO 7816-3 (T=1)
Symmetrical Cryptography	3DES, AES (128, 192, 256)
Asymmetrical Cryptography	RSA up to 2048 bit, ECC up to 512 bit
Memory	32 bit RISC Processor, 400kBytes Flash
Timers	Three 16 Bit Timers
Clock Rate	1 - 10 MHz External Clock (Recommended Operating Speed: 3.57 - 6.0 MHz)
Supply Voltage	Voltage classes A, B & C (5V, 3V & 1.8V respectively) supported
Current Consumption	< 10mA at 10 MHz internal clock frequency at 5.5V supply Typical 25mA at 66MHz internal clock (Standard processing - not Cryptographic)
Standby Consumption	100uA (typical - without power control)
Operating Temperature	-25º C to +85º C
Card Compatibilities	iCLASS SIO Enabled (SE) credentials authentication and command set. Standard iCLASS credentials authentication and command set. iCLASS Seos credentials (includes NFC devices utilising Seos
Security Scheme	Card independent and card agnostic security scheme, allowing the usage of SIOs on industry standard, open technology cards.

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2021-02-12-eat-iclass-se-processor-ds-en PLT-00528

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