HID®

SIO Processor™

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CRYPTOGRAPHIC MODULE FOR SECURE IDENTITY OBJECT™ (SIO) 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.

- **Provides Trusted Identity Platform™ (TIP) Enablement** – The SIO processor enables devices to become TIP nodes and integrate easily and securely to HID'sTrusted Identity Platform.

- **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.

- **Extended Support** – Includes support for existing card technologies such as standard iCLASS® and MIFARE™ Classic. Firmware is field upgradeable to address evolving market requirements.

- **Flexible Design** – Choice of form factors provides the ability to fully embed the SIO 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.

HID Global's next generation platform goes beyond the traditional smart card model to offer a secure, standards-based, technology-independent and flexible identity data structure based on Secure Identity Object™ (SIO), a new open credential standard. HID's SIO Processor sits on top of all existing card technology and supports the interpretation and authentication of the SIO data structure to increase overall system security; it also supports key emerging technologies, delivering superior performance and enhanced usability.

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 SIO 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 SIO 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 SIO Processor supports new SIO-enabled credentials based on a variety of technologies, such as iCLASS® SE™, iCLASS Elite® and MIFARE Classic. It can also be configured to support standard iCLASS®, providing compatibility with existing installations or card deployments. Depending on the ecosystem requirements, the SIO Processor allows developers to easily embed it into a new reader design utilizing the surface mount technology chip, or integrate it into an existing reader design /infrastructure using the convenient pre-packaged ID-1/ID-000 card.

MORE SECURE, TRUST-BASED SECURITY

- Tamper Proof – EAL5+ certified hardware provides 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.

## SIO PROCESSOR DEVELOPER TOOLKIT (DTK)

- Provides a complete set of resources allowing immediate start of development.
- Includes a test reader, product samples of SIO Processor in different form factors, 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 using HID's TIP.
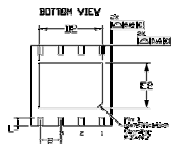
EXPANDED ECOSYSTEM OF HID SOLUTIONS

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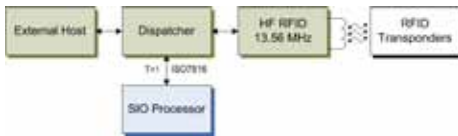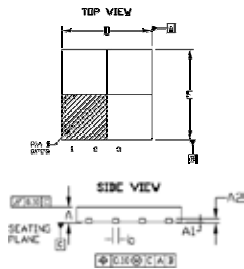
A basic implementation using the SIO Processor

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

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SPECIFICATIONS

Base Part Numbers	SE3100A00	SE3110A00
Form Factor	Surface Mount Device Processor, 5mm x 5mm, 8 Pin DFN	ID-1/000 Card - ID-1 Card with ID-000 break out
Interface Lines	Clock, Data I/O, Controlled Power*, GND, RST	
Interface Standards	ISO 7816-3 (T=1)	
Certifications	CC EAL 5+ high (Hardware Only)	
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. MIFARE CLASSIC with SIO object.	
Security Scheme	Card independent and card agnostic security scheme, allowing the usage of SIOs on industry standard, open technology cards.	