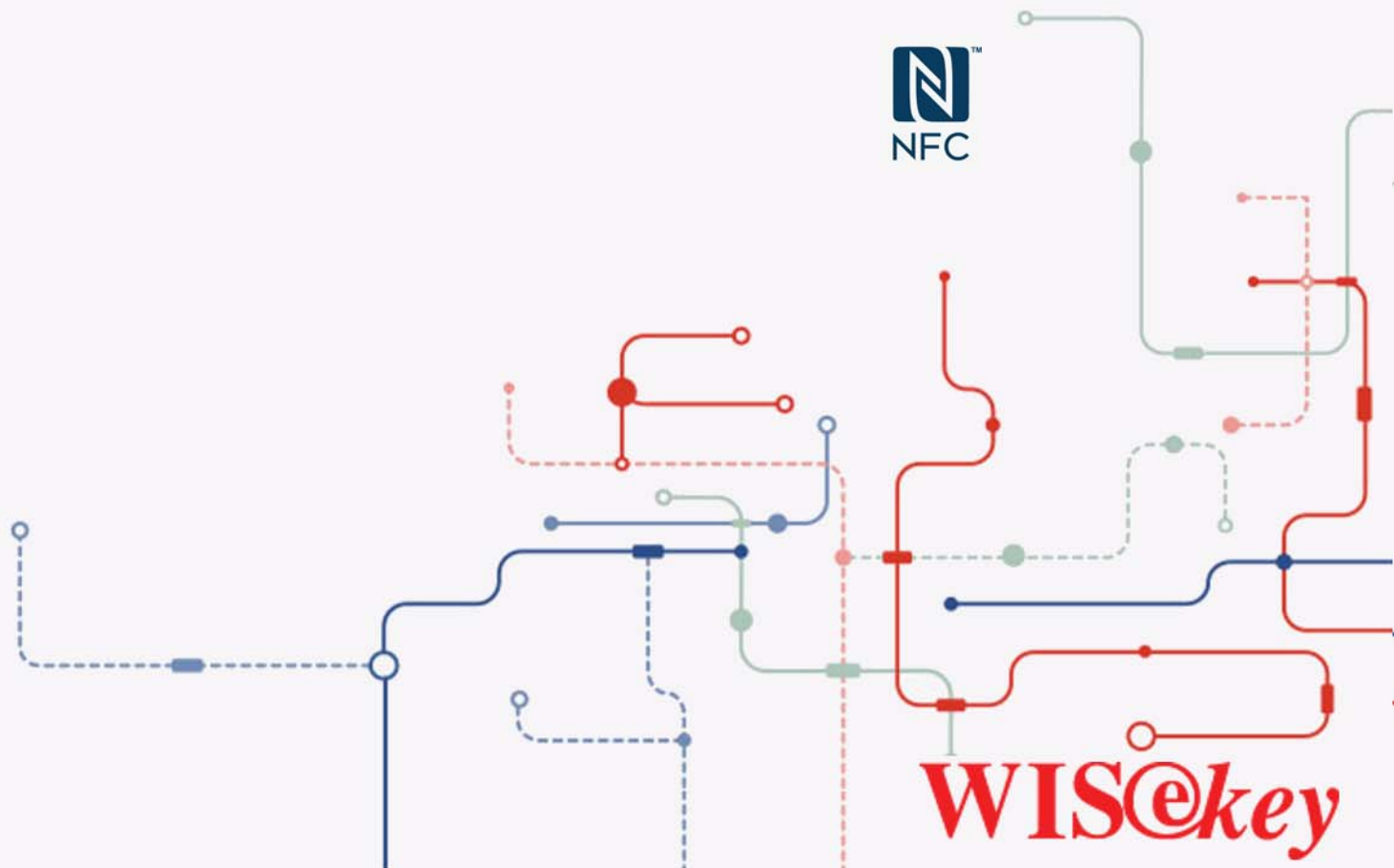# SUMMARY DATASHEET
NANOSEALRT™

nanoSeal™

NFC

WISekey

Description

NanoSealRT™ is an ISO-15693 compliant contactless memory chip offering data security with an extended communication range.

NanoSealRT follows the NFC Forum Type 5 Tag specifications. It can interact with any NFC-enabled Android and iOS based smartphone. Its patent pending dynamic cryptographic digital signature over NDEF ("DYNA-S mode") provides the same security in both smartphone environments (iOS and Android).

Thanks to its high-performance radio interface, NanoSealRT supports long distance RF communications with gate antennas (up to 1.5 meter), regular antennas (up to 70 centimeters) and NFC smartphones (up to 10 centimeters).

NanoSealRT features fast anti-collision functions to discriminate several tags in the same area, allowing applications where multiple objects have to be identified. NanoSealRT contains 2 kbits of non-volatile read/write memory including personalization area protected by a fuse. NanoSealRT provides a cryptographic engine for data protection and chip authentication. Two unique secret keys are used to protect two different applications or to manage securely credit and debit an electronic purse. As a personalization option, the cryptographic functions can be activated or deactivated.

When placed on a container (bottle, box...), the Opening Detection function of the NanoSealRT checks whether this container is intact and enhances the interaction between a consumer and a brand.

Additional features dedicated such as Kill mode, extension of URL or hidden UID are dedicated to Customer Engagement.

Figure 1. NanoSealRT architecture
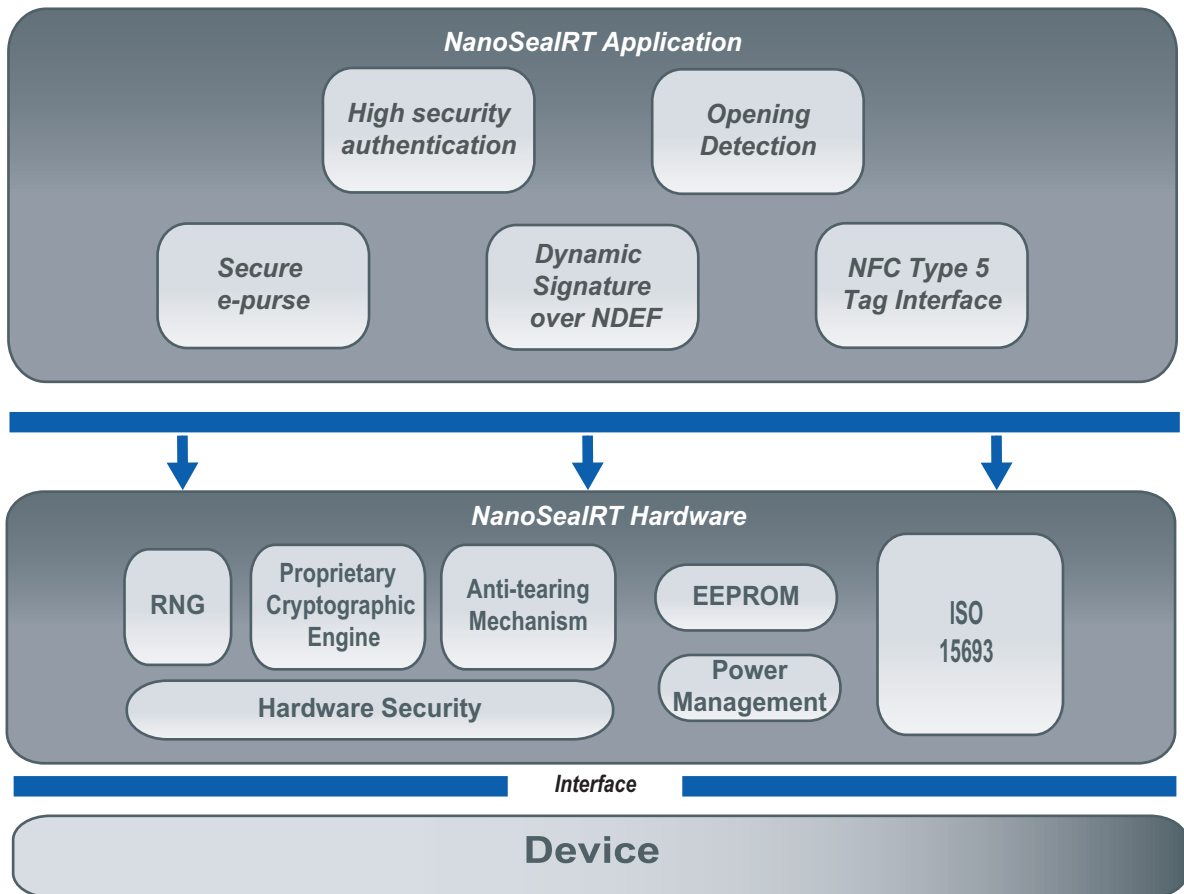
Features

Memory

- 2 Kbits of EEPROM. This memory can be split into 2 areas protected by different keys
- EEPROM memory organized in 4-byte blocks
- Up to 7 independent blocks lockable by user fuses
- Hidden area for storing a cutomer UID
- Specific area to store a static signature on the memory content
- Anti-tearing system for secure EEPROM writing
- Typically more than 100,000 Write/Erase cycles at a temperature of 25°C
- Data Retention 60 Years @ 85°C
- 8-byte block Write/Erase time : 5ms

Communication

- Carrier frequency : 13,56MHz +/-7 KHz
- Data Rate : 26 kbps (ISO 15693)
- Data coding : ISO 15693-3 compliant with protocol auto-detection
- Communication distance: up to 1.5m
- Fast anti-collision :
  - up to 16 chips simultaneously
  - several chips can operate independently in the same area
- NFC Forum Type 5 Tag compliant

Security

- Unilateral and Mutual Authentication with WISeCrypt proprietary symmetric cryptographic algorithm
- Dynamic Signature over NDEF (DYNA-S mode)
- 64-bit secret key, 32-bit challenge, 32-bit response
- Unique 64-bit chip serial number
- One Debit Key (Kd) and one Credit Key (Kc):
  - Option 1 : 2 memory areas protected by one key for each operation
  - Option 2 : Read protected by Kd, and Read/Write protected by Kc
  - Write protection by authentication and cryptographic signature
- Secure e-purse
- Hidden UID
- Kill mode
- Opening Detection
- Secure provisioning service

Packages

- CapSeal family (Top, Disk)
- Coil-on-chip (antenna on silicon)
- Other form factors are available upon request

Ordering information

TBD

Demo Kit (coming soon)

TBD

6652ES – 02Oct20

WIS@key