Biometric-enabled – Java® Card for payment and access control applets development

Features

Key hardware features

- Enabling payment and access card applications, supporting biometric card holder authentication
- Based on the STMicroelectronics ST31N600 secure element (*SE*), which provides:
    - secure access transactions, secure card matching and the storage of biometric templates
    - energy harvesting with no battery or supercapacitor
- Up to 210 Kbytes of user *NVM*
- Solution exclusively compatible with the FPC1323 fingerprint sensor

Platform

- Java® Card 3.0.5
- GlobalPlatform® card specification v2.3.1 coupled with financial configuration v1.0.2
- *ISO*/IEC 7816 T = 0 or T = 1 contact protocol
- *ISO*/IEC 14443 Type A contactless interface

Software

- STPayTopazBio1J *OS* with specific biometric manager application
- Extraction and matching algorithms based on Fingerprints (*FPC*) libraries

Hardware

- ST31 product based on a 32-bit Arm® SecurCore® SC000™ *RISC* core
- Advanced 40 nm flash memory technology
- Best-in-class *RF* performance

Cryptography

- NESCRYPT cryptographic RSA coprocessor
- Enhanced *DES* accelerator (*EDES*)

Key benefits

- Fingerprint verification performed in the secure element
- Fast-matching verification response platform when used for both contact and contactless modes
- Compatible with different enrollment processes
- Allows the achievement of best user experience with the lowest false acceptation rate (*FAR*) and false rejection rate (*FRR*)

Certification

- EMVCo
- GlobalPlatform®

Product status link
STPayTopazBio1J

DB5215 - Rev 3 - July 2024
For further information contact your local STMicroelectronics sales office.

www.st.com

Application

- Biometric payment, access control and ticketing.

1 Description

The STPayTopazBio1J is a GlobalPlatform® 2.3.1 Java® Card platform suitable for payments and access control applications. It provides biometric verification capability on top of personal identification number (PIN), making user authentication more convenient yet highly secure. The solution is based on the 40 nm flash memory technology with up to 210 Kbytes of user non-volatile memory.

The STPayTopazBio1J is an implementation exclusively compatible with the FPC1323 fingerprint sensor.

The STPay system-on-chip solution is a family of products that come ready for embedding in smartcards.

For detailed configuration data, contact your local ST sales office.

Note: *Arm is a registered trademark of Arm Limited (or its subsidiaries) in the US and/or elsewhere.*

Note: *Java is a registered trademark of Oracle and/or its affiliates.*
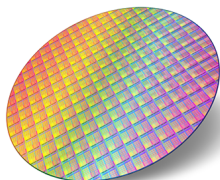
2 Certifications

3   Delivery forms

The STPayTopazBio1J is available as sawn wafers.

Sawn wafer

4 Development tools and support

The STPay ecosystem includes tools, sample scripts and support by local STMicroelectronics engineers who provide assistance in script development, validation and personalization, ensuring optimum flexibility and fast time to market.

Revision history

Table 1. Document revision history

Date	Revision	Changes
06-Mar-2024	1	Initial release.
26-Apr-2024	2	Changed STPay-Topaz-Bio1J into STPayTopazBio1J across all the document. Added corresponding hyperlinks.
22-Jul-2024	3	Updated GlobalPlatform® version from 2.2.1 to 2.3.1 in Section 1: Description

Glossary

CPS EMV$^{®}$ card personalization specification

DES Data encryption standard

EDES Enhanced data encryption standard

FAR False acceptance rate

FPC Fingerprint Cards AB (Fingerprints) – a biometrics company

FRR False rejection rate

IEC International Electrotechnical Commission

ISO Relative to the ISO/IEC 7816 asynchronous receiver transmitter.

NESCRYPT Next-step cryptographic processor

NVM Nonvolatile memory

OS Operating system

PIN Personal identification number

RF Radio frequency

RISC Reduced instruction set computing (CPU design strategy)

RSA Public-key cryptosystem (created by Ron Rivest, Adi Shamir and Leonard Adleman)

SE Secure element

VBSS Visa$^{®}$ Biometric Sensor-on-Card Specification

VCPS Visa$^{®}$ Contactless Payment Specification

VIS Visa$^{®}$ Integrated Circuit Card Specification

VSDC VISA$^{®}$ smart debit/credit

IMPORTANT NOTICE – READ CAREFULLY