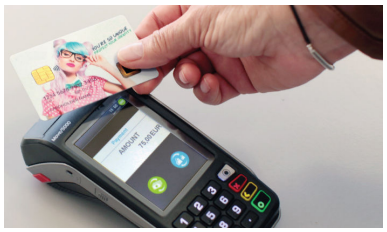
STPay-Topaz-Bio

Data brief

Biometric-enabled ST Payment Secure Solution – Java® Card platform for VISA® and MasterCard® payment applications



Product status link
STPay-Topaz-Bio

Features

Key hardware features

- Banking solution that supports biometric card holder authentication
- Based on the STMicroelectronics ST31N600 secure element (*SE*), which provides:
  - secure banking transactions, secure card matching and the storage of biometric templates
  - energy harvesting with no battery or supercapacitor
- Up to 60 Kbytes of user *NVM*
- Certified payment applications: VISA® and MasterCard®

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

- STPay-Topaz-Bio *OS* with specific biometric manager application
- MasterCard® applet based on the M/Chip® Advance 1.2.3 specification targeting MasterCard® biometric system-on-chip compliance
- VISA® *VIS* 1.6.3, *VCPS* 2.2.4, and *VBSS* 1.0.2 compliant applets
- Proprietary enrollment applet
- 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
- Up to 60 Kbytes of user nonvolatile memory

Cryptography

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

Personalization

- EMV® *CPS* v1.1 compliant
- VISA® smart debit/credit (*VSDC*) personalization specification v2.0
- M/Chip® Advance 1.2.3 common personalization specification

Key benefits

- Matching in the secure element
- High-performance solution when used for both contact and contactless modes including matching
- 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
- VISA® (ongoing)
- MasterCard® (ongoing)

Application

- MasterCard® M/Chip® Advance 1.2.3
  - Data sharing single account configuration 2
  - *PIN* sharing
- VISA® *VSDC* 2.9.2cfs

1 Description

The STPay-Topaz-Bio is a GlobalPlatform® 2.3.1 Java® Card platform for payment applications, based on the 40 nm flash memory technology with up to 60 Kbytes of user non-volatile memory.

The STPay-Topaz-Bio can be configured to support VISA® VSDC 2.9.2cfs and/or MasterCard® M/Chip® Advance 1.2.3 EMV® payment applications.

The STPay system-on-chip solution is a family of products that come ready for embedding in smartcards and loaded with payment applications that run on certified Java® Card platforms. They meet all required security and payment-scheme certifications.

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

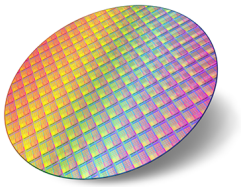
Note: Arm is a registered trademark of Arm Limited (or its subsidiaries) in the US and/or elsewhere.

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

2 Certifications

3 Delivery forms

The STPay-Topaz-Bio 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
19-Nov-2021	1	Initial release.
16-Mar-2022	2	Product scope redefined: • Updated title of document. • Updated Features and Section 1: Description. Added Application, Section 2: Certifications, Section 3: Delivery forms, and Section 4: Development tools and support. Updated *Glossary*.
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