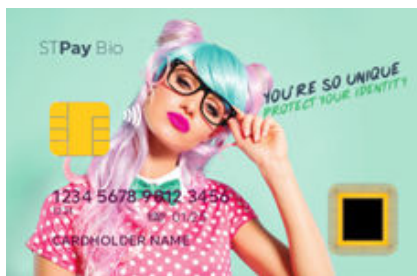


STPayBio biometric system on card proof of concept for secure fingerprint-authenticated payment transactions



Features

Hardware key features

- Card holder identification through dual-interface card biometric system
- Based on STMicroelectronics secure element (SE) and STMicroelectronics low-power silicon microcontroller
- 40 nm ST31 secure element:
 - To perform secure banking transactions, store biometric templates and carry out secure card matching
 - To perform energy harvesting provided by the SE with no battery, nor super cap
- STM32L443 microcontroller:
 - To perform fast Low-power mode biometric extractions for enrollment and at each transaction
- Latest generation FPC 1323 Sensor 6 contacts module on 35 mm tape
- System in package (SIP) 8-pin ISO module on 35 mm tape via LINXENS
- Prelam® in custom sheet formats, including RF ID1 antenna and connectivity via LINXENS

Software content

- SE OS compliant with Java® Card 3.0.5 and GlobalPlatform® GPC 2.3.1 coupled with Financial configuration v1.0.2
- MasterCard® applet based on M/Chip® advance 1.2.3 specification targeting MasterCard® Biometric system on chip compliancy
- Proprietary enrollment applet
- Extraction and matching algorithms based on fingerprint cards (FPC) libraries

Key benefits

- Complete biometric system on card solution (through partners)
- Reduced BOM
- Matching with the secure element
- High performance solution when used for both contact and contactless modes including matching.
- Compatible with different enrollment processes
- Easy integration with standard card manufacturers:
 - Hot lamination of the card body
 - ISO module and sensor on 35 mm tape
 - Yield loss reduction with module embedding at the final stage of card manufacturing
- Secure solution with "False Acceptation Rate" (FAR) <1/10000 and "False Rejection Rate" (FRR) <3%

Support for validation and development

- Application companion board

Product status link

[STPayBio](#)

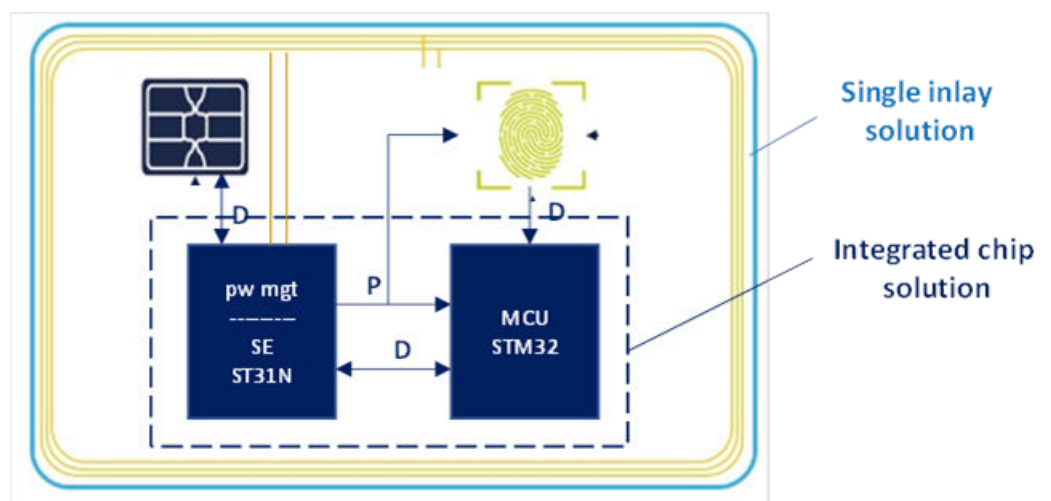
1 Description

The STPayBio proof of concept (POC) demonstrates high performance biometric authenticated transactions based on either contact or contactless modes. A full transaction is performed in less than 1.2 s including a complete match and payment.

The solution is based on the most advanced products form both STMicroelectronics, and partner to demonstrate a competitive solution with reduced bill of material (BOM). The efficient energy harvesting of the secure element is used to power all of the card companion chips including the microcontroller and the sensor.

The solution is compatible with current enrollment devices such as basic sleeve, enhanced sleeve or mobile phone applications.

Figure 1. STPayBio block diagram



The STPayBio secure microcontrollers are based on Arm® cores.

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



Revision history

Table 1. Document revision history

Date	Version	Changes
24-Mar-2021	1	Initial release.

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