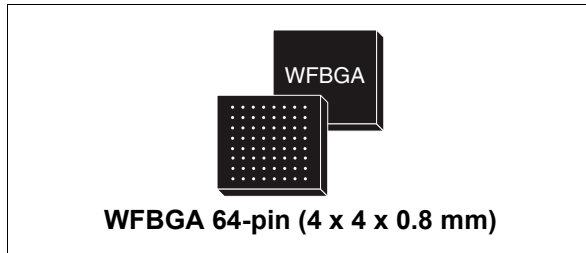


NFC controller and Secure Element system-in-package

Data brief



Features

- SIP (system-in-package) with ST21NFCD controller and ST33J2M0 32-bit secure microcontroller for eUICC / eSE applications

NFC controller

- ARM® Cortex®-M3 microcontroller
- eFlash for full firmware update
- Enhanced Active load modulation technology
- Enhanced TX drive up to 1.3 W
- Compatible with extremely small or metal frame antennas
- Optimized power consumption modes
- Battery voltage monitoring
- System clock
 - FracN PLL input range from 13 to 76.8 MHz
 - 27.12 MHz external crystal oscillator
- Automatic Wake-Up via communication interfaces, internal timers, GPIO, RF field or tag detection
- Support of an external DC/DC converter for TX supply

RF communications

- Active and passive Peer-to-Peer
 - ISO/IEC 18092 - NFCIP-1 Initiator & Target
- Passive mode – Reader/Writer
 - NFC Forum Type 1/2/3/4/5 tags

- ISO/IEC 15693
- MIFARE® Classic^{(a)(b)}
- Thinfilm (ex Kovio) Barcode
- Active mode – Card Emulation
 - ISO/IEC 14443 Type A & B
 - JIS X 6319 – 4
 - MIFARE® Classic^{(a)(b)} through SWP-CLT

External communication interfaces

- Two SWP master interfaces up to 1.695 Mbit/s
- I²C slave interface up to 3.4 MHz
- Slave and master SPI interface up to 13 MHz
- HSUART interface up to 6 Mbit/s

Secure Microcontroller

- ARM® SecurCore® SC300™ 32-bit RISC core
- 2048 Kbyte of Flash memory
- 50 Kbyte of RAM
- ISO/IEC 7816-3 interface
- Single wire protocol (SWP) Interface
- SPI master/slave interface

Secure Operating System

- Supports state of the art Secure Element operating systems:
 - JavaCard™ 3.0.5
 - GlobalPlatform™ 2.3 with Amdts
 - EMVCo™ certification

Electrical characteristics

- Battery voltage support from 2.4 V to 5 V

- MIFARE R/W mode feature availability is pending to license conditions. Please contact your local ST representative for further information.
- MIFARE is a register trademark of NXP B.V. in the U.S and other jurisdictions, and is used under license.

- I/O dedicated voltage level (V_{PS_IO}) from 1.62 V to 3.3 V
- Supports Class B and C operating conditions for UICC
- Ambient operating temperature -25 to + 85 °C

Applications

- Mobile devices
- Wearable devices
- SmartWatch
- Secure Connected Devices

1 Description

The ST54H is an all-in-one solution including ST21NFCD NFC controller and ST33J2M0 Secure Element with the highest security level (EAL6+ and EMVCo certified hardware).

Fully manufactured in a secure environment, the ST33J2M0 provides the highest performance levels thanks to its ARM® SC300® core.

The 64-ball WFBGA (4 x 4 x 0.8 mm) ECOPACK® package provides a reduced footprint and pin-to-pin compatibility with the STMicroelectronics NFC standalone solution. There is no internal direct connection between the two devices inside the package.

A complete range of memory sizes up to 2048 Kbyte (depending on profile) of non-volatile Flash memory is available on the Secure Element.

In order to meet environmental requirements, ST offers these devices in different grades of ECOPACK® packages, depending on their level of environmental compliance. ECOPACK® specifications, grade definitions and product status are available at: www.st.com. ECOPACK® is an ST trademark.

2 Revision history

Table 1. Document revision history

Date	Revision	Changes
07-Feb-2017	1	Initial release.

IMPORTANT NOTICE – PLEASE READ CAREFULLY

STMicroelectronics NV and its subsidiaries ("ST") reserve the right to make changes, corrections, enhancements, modifications, and improvements to ST products and/or to this document at any time without notice. Purchasers should obtain the latest relevant information on ST products before placing orders. ST products are sold pursuant to ST's terms and conditions of sale in place at the time of order acknowledgement.

Purchasers are solely responsible for the choice, selection, and use of ST products and ST assumes no liability for application assistance or the design of Purchasers' products.

No license, express or implied, to any intellectual property right is granted by ST herein.

Resale of ST products with provisions different from the information set forth herein shall void any warranty granted by ST for such product.

ST and the ST logo are trademarks of ST. All other product or service names are the property of their respective owners.

Information in this document supersedes and replaces information previously supplied in any prior versions of this document.

© 2017 STMicroelectronics – All rights reserved