

Digital key system

Secure NFC car access



Turnkey solution for seamless device-to-vehicle connectivity Secure digital key transfer compliant with CCC specifications

With the increasing number of connected cars in the automotive industry, digital key access has become a new challenge to be addressed.

Based on an embedded secure element (eSE), a secure gateway and a contactless NFC reader, ST offers a turnkey solution for secure NFC car access, implementing the Car Connectivity Consortium (CCC) Digital Key Specification.

DEVICE-TO-VEHICLE CONNECTIVITY

The device (mobile phone, digital car-key fob or smart card) and the vehicle gateway are connected after mutual authentication based on asymmetric cryptography.

DIGITAL KEYS

A mobile phone

- ST54 eSE integrating ST33 Secure Element and an NFC Controller
- OS with Java Applet

A digital key fob or a smart card

- ST31 eSE with NFC Card Emulation mode and energy harvesting capability for power supply

VEHICLE GATEWAY

In-vehicle connectivity

- Secure processing based on SPC58 MCU and ST33-A eSE companion chip for secure storage with ST25R3920 NFC Reader embedded in the door handle
- Automotive-grade solution

KEY BENEFITS

- CCC standard specification compliant
- Implementing NFC-A, a robust and widespread technology
- Secure access based on tamper-proof eSE (EAL5+ CC-certified)
- Possible integration in body control or gateway module

Integrated solution for car access

(NFC + Secure Element + Automotive Microcontroller)

ST31/ST33-A Secure Element

- Fail-safe secure storage
- CC EAL5+ certified solution
- Reinforced secure boot and cryptographic services
- Enhanced platform and software integrity

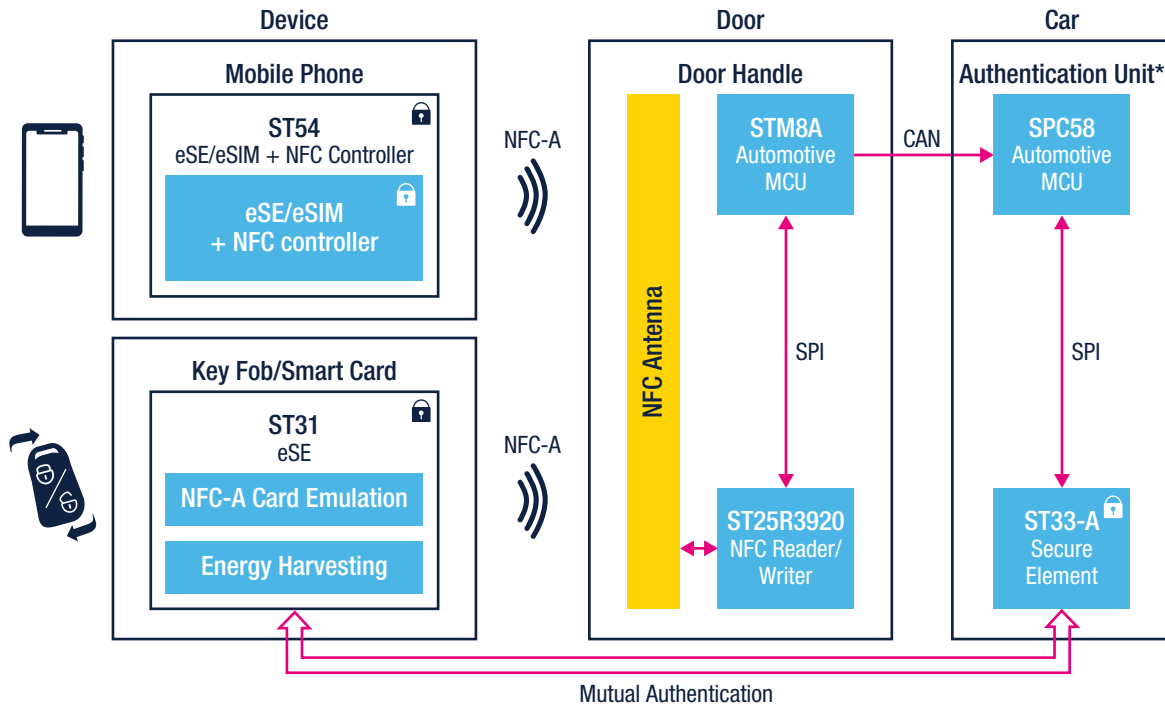
ST25R3920 NFC Reader/Writer

- Long reading range for a better user experience
- Low-power consumption for key or phone detection
- Advanced features to ensure fast and successful design

SPC58 Automotive MCU

- Scalable MCU family with Hardware Security Module, smart low-power and gateway capability
- Ensure platform and software integrity as well as secured in-vehicle communication

Mutual authentication between the device and the car



Note: * This function can be standalone or integrated in the body control or gateway module

Device summary

Product name	Component	Interface	Output power	Advanced features
ST25R3920	NFC Reader / Writer	SPI / I ² C	Up to 1.6 W	Automatic Antenna Tuning Dynamic Power Output
Product name	Component	Processing	Memory	Security
ST31P450	Secure Element	ARM® SecurCore® SC000 28 Mhz	256 K – 480 K Flash 12 K User RAM	EAL5+ CC certified
ST33G1M2A	Automotive Secure Element	ARM® SecurCore® SC300 25 Mhz	384 K – 1.2 M Flash 30 K User RAM	EAL5+ CC certified
ST54H / ST54J	Secure Element & NFC controller	ARM® SecurCore® SC300 / ARM® Cortex®-M3	2 M Flash 64 K User RAM	EAL5+ CC certified
Product name	Component	Processing	Memory	Security
SPC58	Automotive Microcontroller	1x core/80 Mhz 3x core/200 Mhz	512 K – 10 MFlash 64 K – 1.3 MRAM	HSM (EVITA Med./Full) Device Life Cycle

