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ST25 NFC / RFID solutions for automotive applications

Automotive: car, 4 wheelers, truck...

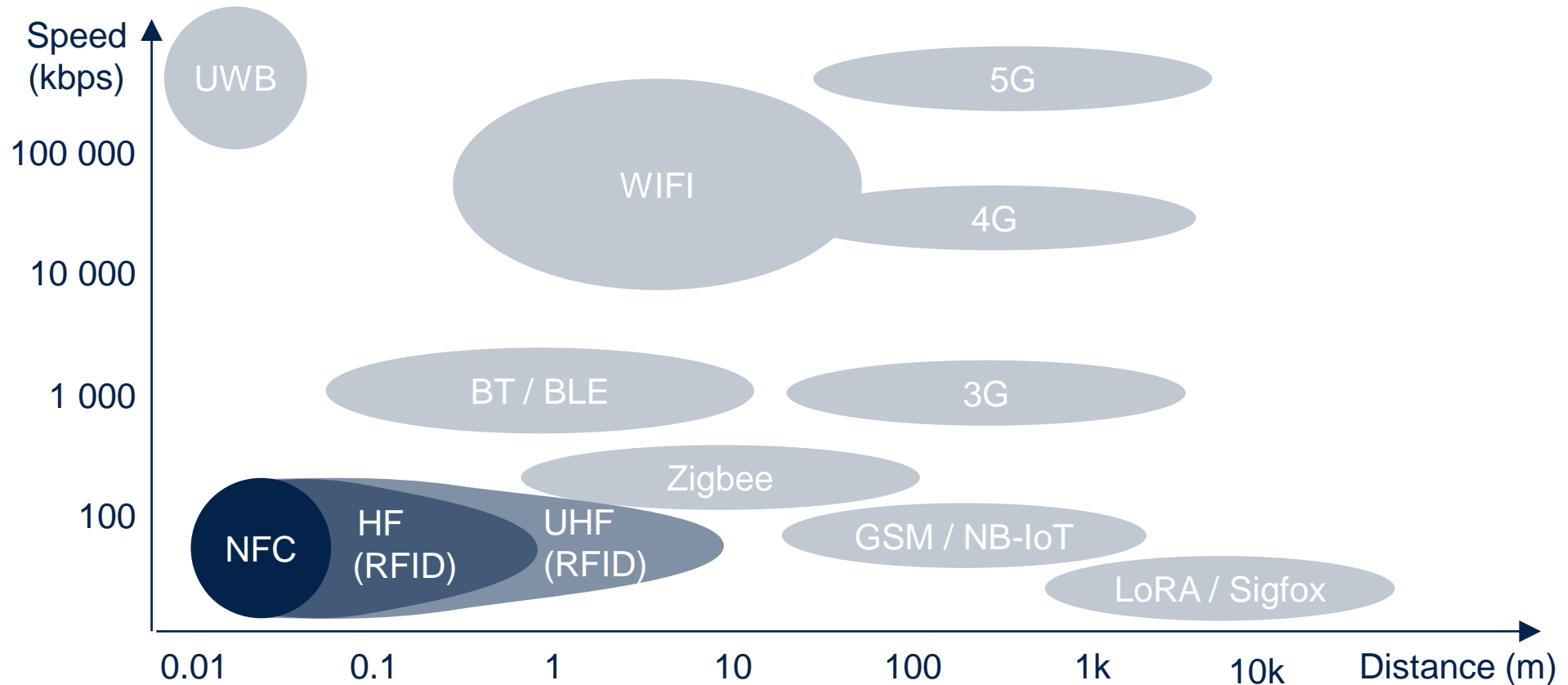
MMY division





NFC, RFID HF & UHF technologies

Complementary solutions to Wireless Technologies



Communication from 1cm (NFC) to up to 10m (RFID UHF)

Automotive applications



NFC technology

Near Field Communication



- Short range contactless communication
- Technology operating at 13.56MHz frequency
- Based on RFID HF ISO14443 & ISO15693 standards

Interactive and zero power



- NFC tags powered by phone or RFID reader
- Enabling convenient connection to the Cloud for IoT
- NFC-enabled mobile phone can engage with items by a simple tap

NFC is developed by NFC Forum



- Interoperability between devices with NFC Forum certified products
- Standardized use cases (URL web link, Bluetooth handover...)

Fast growing employment in Mobile phone



- More than 70% of new phones come with NFC
- NFC is used for Mobile Payment with Android and iOS (ApplePay)
- Apple added in 2019 support of NFC reader / writer mode from iOS13 onward



NFC main use cases & benefits

Access & Start

NFC



- Convenient access to the car (door handle)
- NFC being the RF back-up interface for keyfob in case of battery off
- Secured start
- Cloud-based distribution of keys to an NFC enabled phone

Pairing, Setup & Safety

NFC



- Convenient BT pairing to connect NFC phone to car
- Automatic driver identification & personal settings configuration (seat, temperature...)
- NFC credit cards or badges detection to prevent damaging them during Qi charging
- In car secured payment

Consumable & Diagnostics

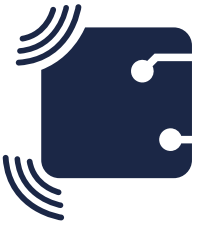
NFC



- NFC also enables consumable authentication (e.g. air filter, oil filter)
- No physical connection (ODB) is required anymore for car diagnostics.

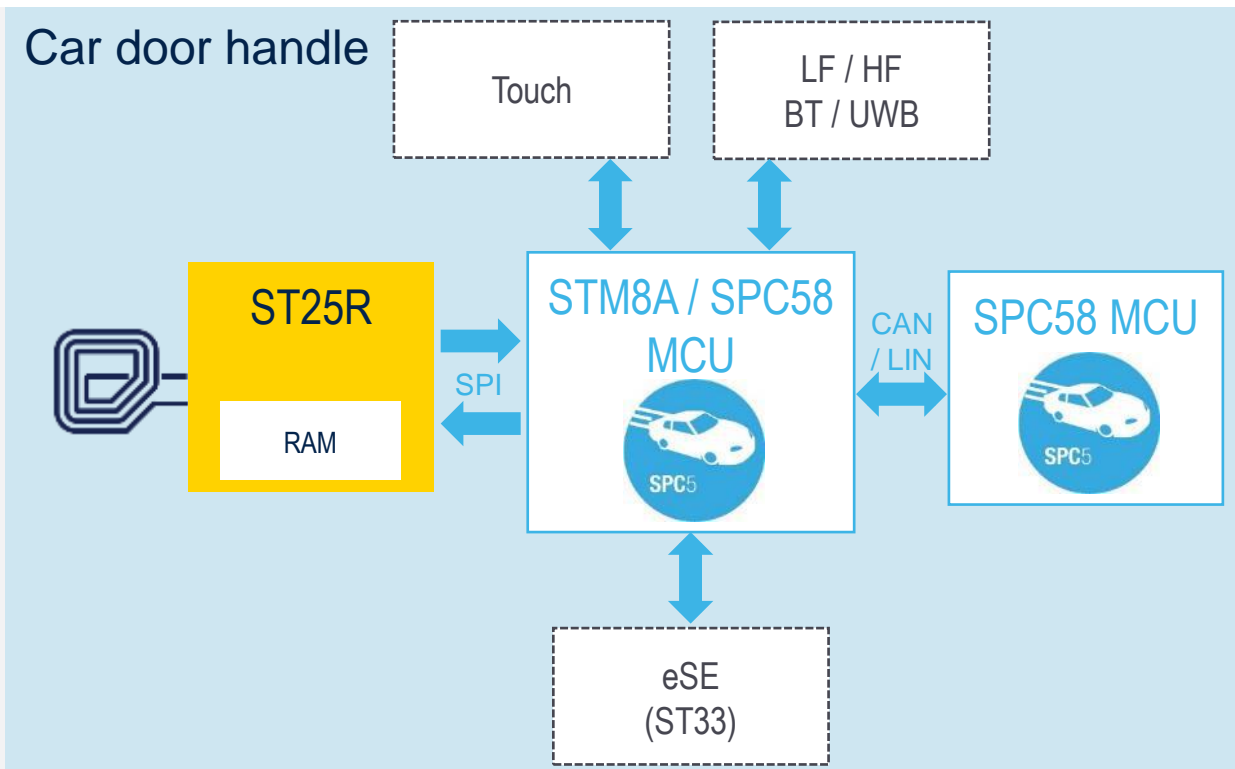
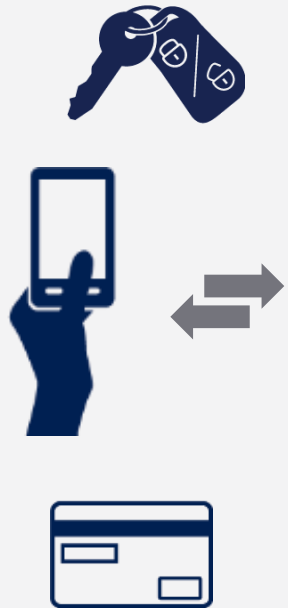


Interactive and zero power technology (Tag powered by Reader)
Trusted communication thanks to short reading distance
Simple and flexible



NFC reader for door handle

Typical NFC Reader Block Diagram & Usage for Car door handle



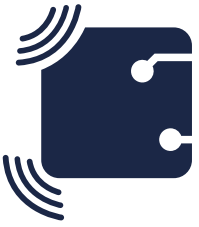
ST25R3914 / 15 - ST25R3920



High output power
Low power consumption
Automatic antenna tuning
Phone compatibility

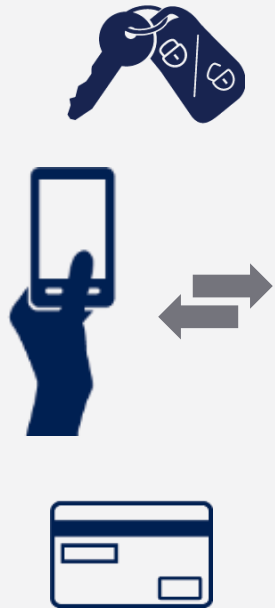
Keyless car access
(CCC specification)



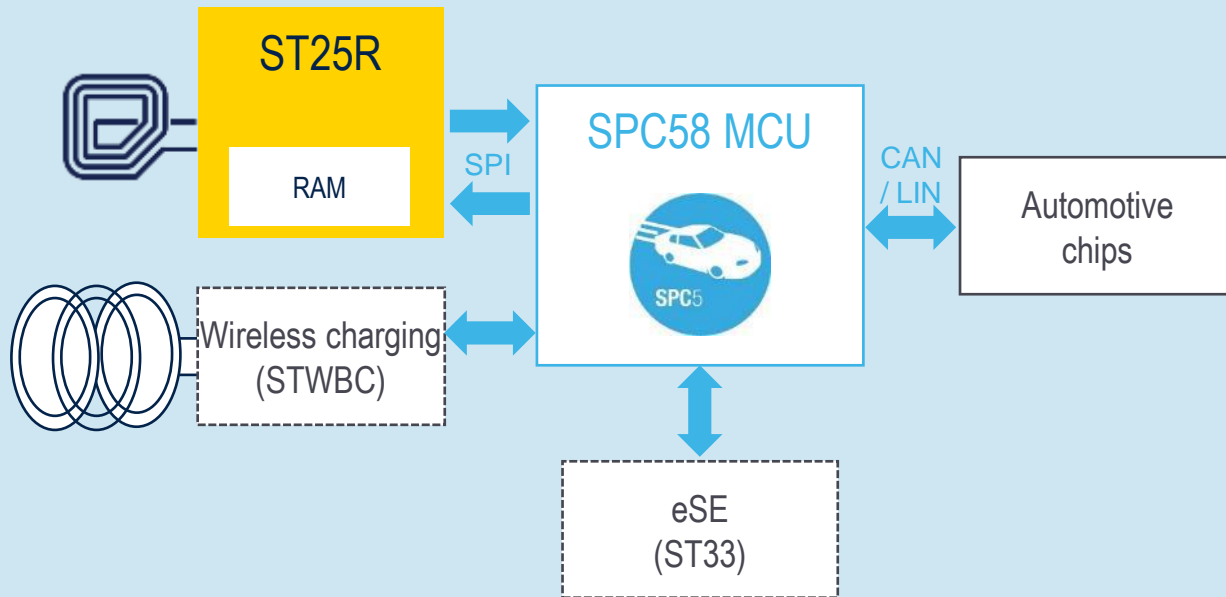


NFC reader for center console

Typical NFC Reader Block Diagram & Usage for Car center console



Car center console



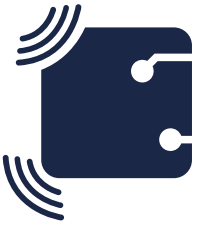
ST25R3914 / 15 - ST25R3920



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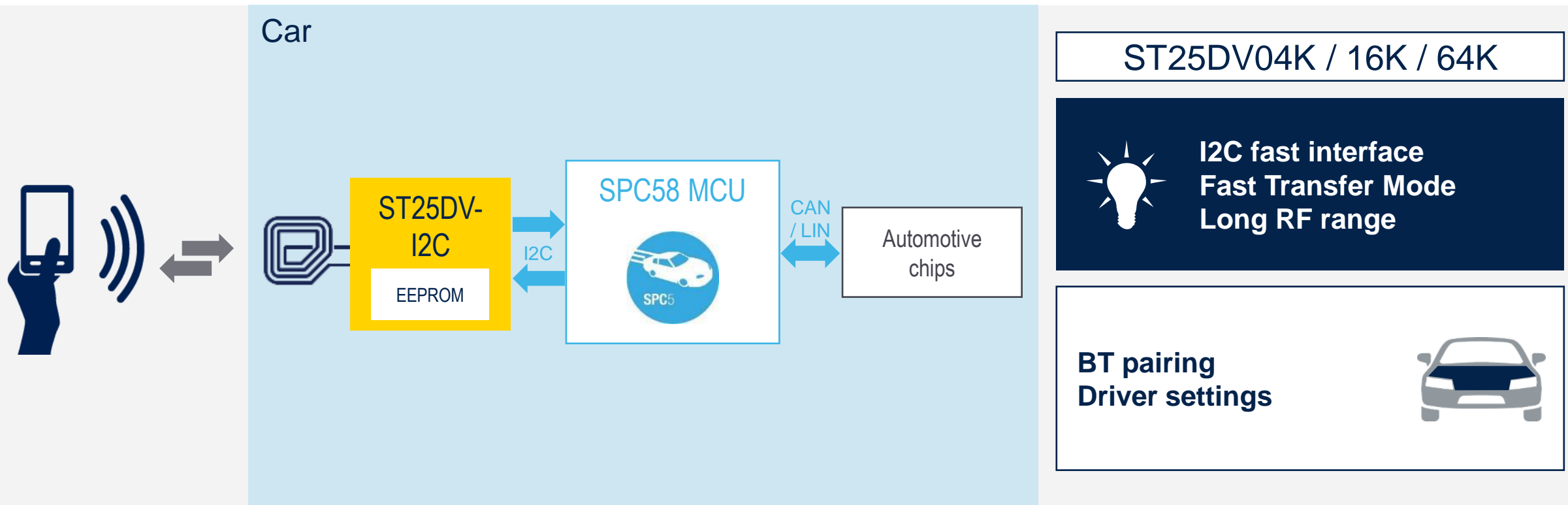
Car easy start
BT pairing
Driver settings
NFC for Wireless charging





Dynamic NFC tag

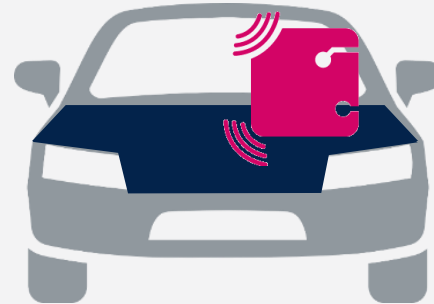
Typical Dynamic NFC Tag Block Diagram and Usage for Automotive





Typical NFC Tag (+ Reader) Block Diagram & Usage in Automotive

Consumable (e.g. filter...)



ST25TV02K / ST25TA02KB



TruST25 digital signature
Passwords
Easy & fast data transfer

Product recognition
End user experience





ST25 rich eco-system



- Discovery Kits based on STM32 MCU
- STM32 Nucleo boards ecosystem
- STM32Cube software ecosystem



- Antenna e-design tool
- Schematic, BOM, Gerber
- IBIS models



- PC software tool ST25 SDK
- Mobile Apps ST25 SDK (Android & iOS)

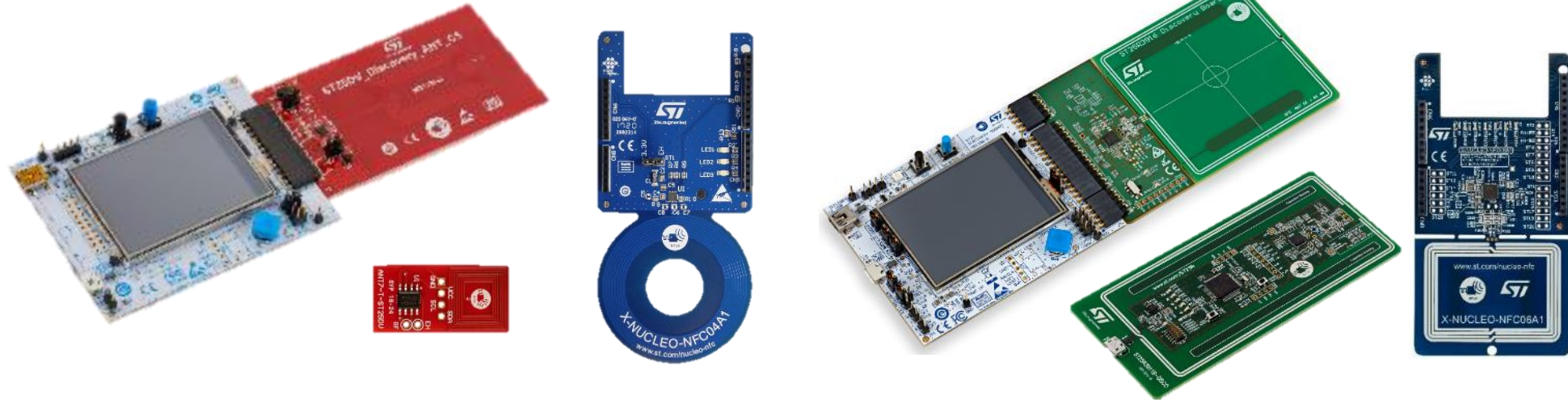


- Documentation
- Training
- Webinar
- MOOC



ST25 hardware solutions

Speed-up Evaluation, Prototyping and Design



NFC TAG KIT

- ST25-TAG-BAG-U

DYNAMIC NFC TAG KITS

- ST25DV-DISCOVERY
- ANT-1-6-ST25DV
- X-NUCLEO-NFC04A1
- ANT7-T-ST25DV04K

HF / NFC READER KITS

- ST25R3911B-DISCO
- X-NUCLEO-NFC05A1
- ST25R3916-DISCO
- X-NUCLEO-NFC06A1



NFC in automotive



Center Console
Protect, Pair & Authenticate

Keyfob
Access & Exchange data

Door
Access & Authenticate





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Solutions for NFC / RFID Tags & Readers



ST25 SIMPLY MORE CONNECTED