NCx3321

NFC Forum-compliant frontend with outstanding RF performance for car access applications

The NCx3321 is a high performance NFC frontend IC combining outstanding RF capabilities with ultra-low power operation and advanced diagnostics features making it the ideal solution for door handle, bi-pillar and center console applications.

KEY BENEFITS

- Superior operating volume even with small form factor antennas
- Ultra-low power operation
- Advanced diagnostics features
- Simple certification due to high and controllable RF output power and enhanced receiver sensitivity
- Non-intrusive RF debugging enabling faster time-to-market

KEY APPLICATIONS

DOOR HANDLE/BI-PILLAR

Low battery smartphone car access

Smart card car access

Low power card detection

CENTER CONSOLE/DASHBOARD

Driver authorization for engine start
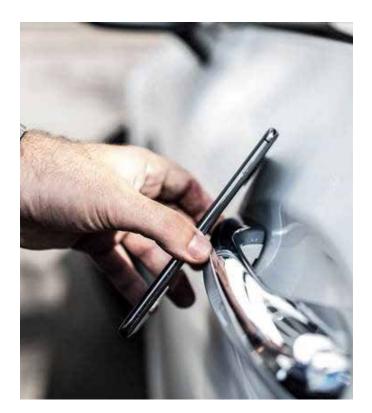
RFID card protection

Bluetooth®/WiFi® pairing

BEYOND CAR ACCESS

Wireless read-out of sensors

NFC charging

KEY FEATURES

- NFC Forum-compliant NFC frontend supporting all relevant 13.56 MHz RF protocols, including reader/writer and card emulation mode
- Transmitter with high RF output power (up to 1.75 W operating power) and dynamic power control
- Receiver with enhanced sensitivity, noise immunity and integrated EMD handling
- Supported RF frame size of up to 1024 bytes without chaining
- Ultra-low power card detection and low power card detection modes
- Overcurrent and overtemperature protection mechanisms
- SPI host interface with speeds up to 15 MHz
- Wide temperature range -40 to 85°C (F type) and -40 to 105°C (J type)

High RF output power and superior receiver sensitivity allow to achieve outstanding communication range even with space-constrained antenna designs.

The low power card detection mode meets the most challenging operating volume requirements put in place by car and phone OEMs.

DYNAMIC POWER CONTROL

The Dynamic Power Control greatly simplifies the process of achieving the NFC Forum compliance. The DPC allows for automatic adjustment of the transmitter current in accordance with the individual antenna de-tuning conditions. The DPC works fully autonomously without the host interaction. Therefore, it does not cause any additional processing load on the host and it does not impact the transaction times.

ENHANCED RECEIVER SENSITIVITY

The NCx3321's analog power supply concept reduces receiver-signal disturbances, yielding a receiver sensitivity of 0.3 mV_{rms}. The Adaptive Receiver Control (ARC) adjusts the receiver sensitivity to guarantee best-in-class reception performance.

LOW POWER CARD DETECTION

The low power card detection provides a functionality, which allows to detect the presence of a phone or a card while being in the power saving mode. An interrupt request from the NCx3321 allows waking up the host MCU when the antenna is detuned by a card or a cell phone. The NCx3321 supports two modes for low power card detection, a software based and a hardware based one.

RF DEBUGGING

The NCx3321 frontend has dedicated memory used by the contactless test station (CTS) to store sample RF debug data based on previously defined trigger conditions. Data captured from trigger conditions can be evaluated offline, making it much easier to debug all communication failures, even remote ones.

AUTOMOTIVE NFC READER LIBRARY

The aNFC Reader Library is a complete, full-featured software library for Automotive NFC frontends like NCx3321 and NCF3320. It is compliant with ISO/IEC 14443, and NFC Forum digital specifications. It can be easily ported to different microcontrollers.

NCx3321 ORDERING INFORMATION

Product Type ID	12NC	Package	Packing	MOQ
NCF3321AHF/00100	9354 400 55518	HWQFN40	Reel 13"	6000
NCJ3321AHF/00100	9354 401 08518	HWQFN40	Reel 13"	6000