



NXP Near Field Communication (NFC) for handheld devices and POS terminals PN532

Making secure connectivity easy

NXP Semiconductors' controller IC PN532 is a highly integrated transmission module including a microcontroller which reduces the processing power from the host controller. The PN532 offers proximity connectivity targeting 13.56MHz reader/writer applications for POS terminals and handheld devices and is also capable of acting as a smart card when combined with a secure element.

Key features

- ▶ Reader/writer functionality compatible to ISO/IEC 14443 A&B, MIFARE, FeliCa and NFC Forum tag types (MIFARE Ultralight, Topaz, FeliCa, MIFARE DESFire)
- ▶ Full peer-to-peer functionality
- ▶ Card emulation functionality compatible to ISO/IEC 14443 A when connected to secure controller (SmartMX P5CN072)
- ▶ Up to 10cm operating distance
- ▶ Possibility to act as POS Terminal and perform PayPass-compliant transactions when connected to NXP-recommended RF amplifier
- ▶ Optimized 80C51 core processor with embedded firmware in ROM
- ▶ Multiple interfaces (UART, SPI I²C)
- ▶ Integrated MIFARE cipher crypto1

Key benefits

- ▶ Relieve the host controller from real time processing tasks
- ▶ Supporting the most widely deployed contactless protocols (ISO 14443 A&B and Felica)
- ▶ Support for battery low mode in card emulation
- ▶ Small footprint (HVQFN40 6mm*6mm*1mm)
- ▶ Application notes to optimize antenna design, software
- ▶ Easy access to NFC technology, benefiting from NXP's expertise and experience with major device manufacturers

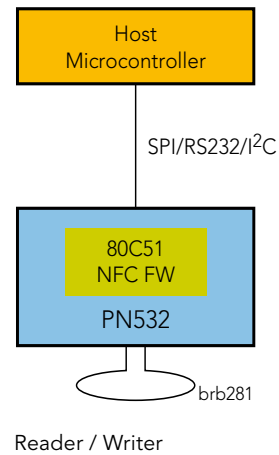
Key applications

Reader/Writer:

- ▶ Easy pairing of Bluetooth-, Wi-Fi- or WUSB-enabled devices
- ▶ Read/ write NFC Forum tags such as MIFARE, MIFARE Ultralight, DESFire, Felica and Topaz

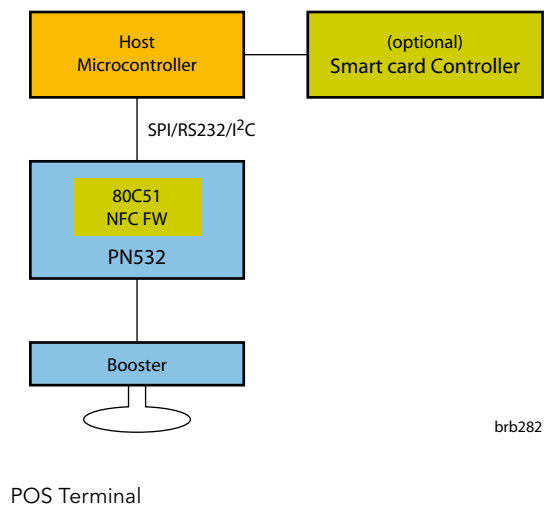
Peer-to-peer:

- ▶ Exchange data (business card, picture, etc.) between two active devices



POS terminal:

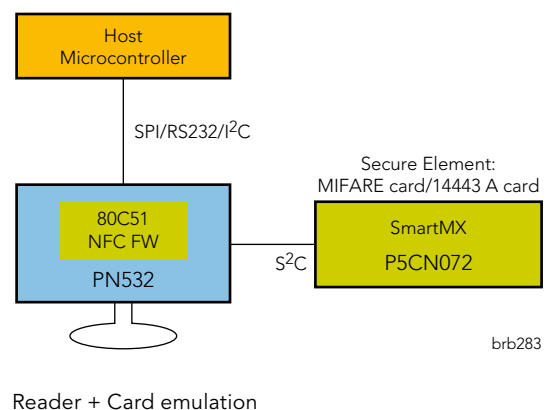
- ▶ Upgrade your reader with the NXP RF amplifier solution (two transistors and few passives) to perform EMV (PayPass and VisaWave) compliant transactions
- ▶ Possibility to connect to the SAM (Secure Access Module) through the smart card controller



Card emulation:

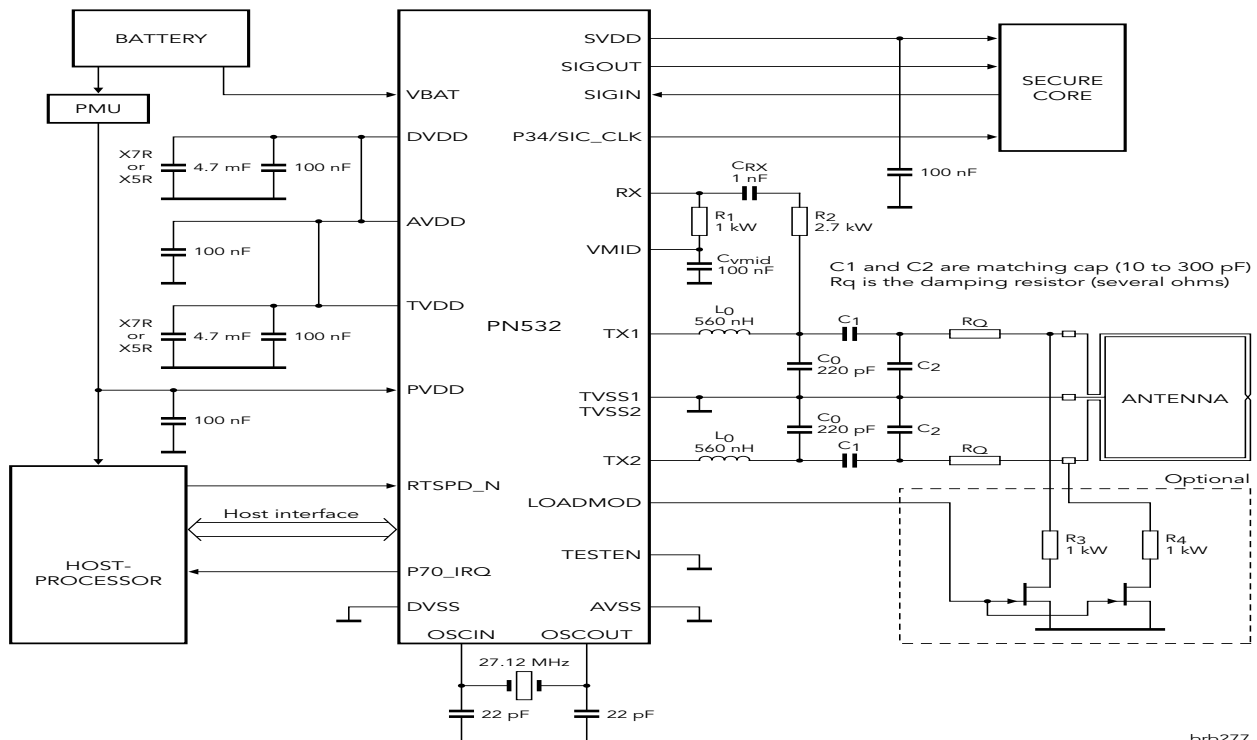
The PN532 makes it possible to emulate:

- ▶ A MIFARE card to access public transport, stadium, building etc.
- ▶ A MIFARE card to store loyalty program or pre-paid wallet
- ▶ An EMV payment card such as PayPass and VisaWave
- ▶ An active tag and change its content over the air (OTA)



| Key technical data | | |
|-----------------------|--|--|
| Contactless protocols | Peer-to-peer | Full ISO 18092 (up to 424 Kbits/s) |
| | Reader/writer | ISO 14443 A&B, MIFARE, FeliCa, NFC Forum |
| | Card emulation | ISO 14443 A, MIFARE, FeliCa |
| Host interfaces | I ² C | 400 kHz |
| | SPI | Up to 5 MHz |
| | Serial UART | Up to 1.228 Mbits/s |
| | Secure element interface (SD card or embedded) | NFC-WI (S2C) |
| Power characteristics | Supply voltage | 2.7V - 5.5V |
| | Supply voltage for external secure element | 3.0V |
| | Power down mode | 12µA |
| | Typ RF active current | 60mA |
| Temperature range | | -25°C/+85°C |
| Package | | HVQFN40 (6mmx6mmx1,0mm) |
| Software | | NFC Forum Reference Implementation |

| Ordering information | | | |
|----------------------|---------|----------------|--------------------------------------|
| Part number | | | PN5321A3HN |
| Sales description | Package | | HVQFN40 |
| | Status | | Available |
| Ordering information | 12NC | 9352 852 23518 | MOQ=4000 (5 trays with dry pack) |
| | | 9352 852 23551 | MOQ=490 (rail with dry pack) |
| | | 9352 852 23557 | MOQ=2450 (simple tray with dry pack) |



Design-in kit PN532 (C106)

- ▶ OM5581/N5322S02 (12NC: 9352 862 06699)
- ▶ Two serial boards
- ▶ Serial cable and power supply
- ▶ Documentation: datasheet, user manual, application note
- ▶ Drivers, source code and examples (Windows, Linux)
- ▶ A daughter board with secure element (SMX) that can be plugged on to the boards of the kit is also available (Export control restrictions apply)

How to order documentation, samples, design-in kit

- ▶ A list with technical NFC documentation is available for each IC: (<http://www.nxp.com/nfc>)
- ▶ NFC documentation can be requested by filling in the request form:
http://www.nxp.com/acrobat_download/other/identification/NFC_request_final.pdf
- ▶ Samples and design-in kits can be ordered:
 - for NXP distributors via our portal: <https://extranet.nxp.com>
 - for customers a list of distributors is available at:
<http://www.nxp.com/nfc>

Useful Links

NFC Forum specifications: <http://www.nfc-forum.org/specs/>

EMVco: <http://www.emvco.com>

MIFARE: <http://www.mifare.net>

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