



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



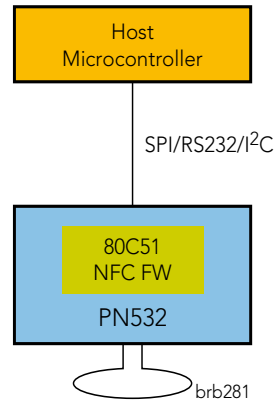
Key applications

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:

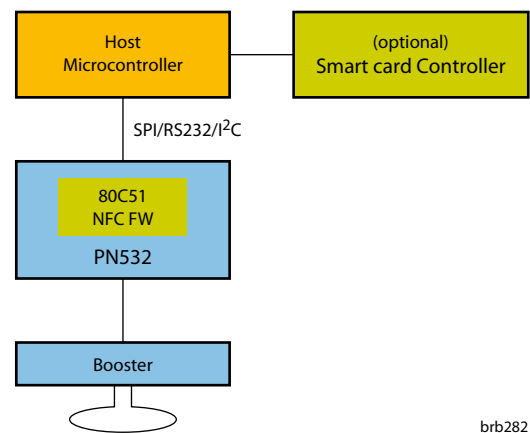
- ▶ Exchange data (business card, picture, etc.) between two active devices



Reader / Writer

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

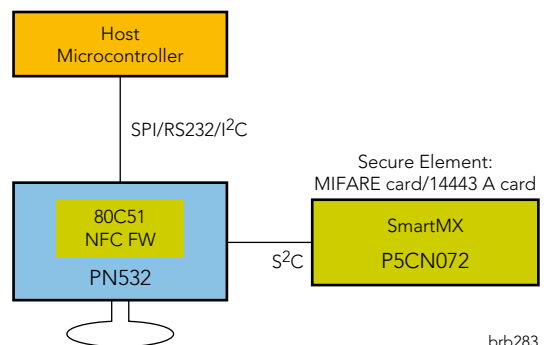


POS Terminal

Card emulation:

The PN532 makes it possible to emulate:

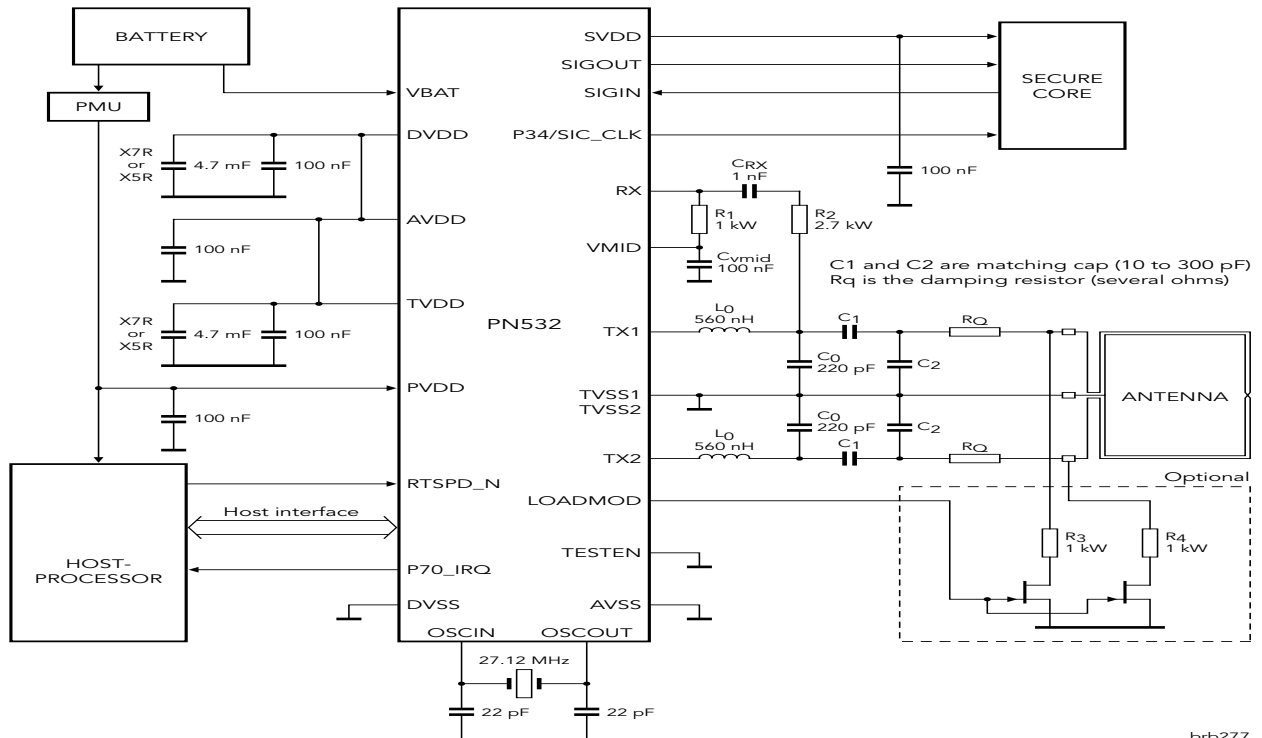
- ▶ A MIFARE card to access public transport, stadium, building etc.
- ▶ A MIFARE card to store loyalty program or pre-paid wallet
- ▶ An EMV payment card such as PayPass and VisaWave
- ▶ An active tag and change its content over the air (OTA)



Reader + Card emulation

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>

MIFARE, FeliCa, Topaz are registered trademarks of NXP, Sony Corporation and Innovision Research and Technology plc. respectively

www.nxp.com



©2008 NXP B.V.

All rights reserved. Reproduction in whole or in part is prohibited without the prior written consent of the copyright owner. The information presented in this document does not form part of any quotation or contract, is believed to be accurate and reliable and may be changed without notice. No liability will be accepted by the publisher for any consequence of its use. Publication thereof does not convey nor imply any license under patent- or other industrial or intellectual property rights.

Date of release: October 2008

Document order number: 9397 750 16623

Printed in the Netherlands