



NXP NFC controller PN544 for mobile phones and portable equipment

Industry-leading, 2nd-generation NFC controller

This high-quality, high-performance NFC controller enables a new range of contactless applications for improved on-the-go experiences. It complies with all released NFC and ETSI/SCP SWP and HCI standards, guarantees interoperability with the existing infrastructure, and provides a flexible, full-featured platform for meeting GSMA requirements in next-generation NFC-enabled devices and services. It offers fully host-controllable power states, delivers a small footprint, and supports multiple secure elements.

Key features

- ▶ Smallest package TFBGA64 (4.5 x 4.5 x 0.8 mm)
- ▶ High level of integration for greater flexibility
- ▶ Support for variety of RF protocols
- ▶ Integrated power management unit
- ▶ Battery Low mode and Power by the Field enabled to comply with deployed infrastructure when handset is off
- ▶ Integrated Frac-N PLL to save XTAL quartz
- ▶ Simultaneous multi cards management (ISO14443-A,B,B', MIFARE)
- ▶ Compliancy with Paypass and EMVCo polling loop
- ▶ Integrated self test to verify antenna matching circuit during production
- ▶ Up to 10 cm operating distance⁽¹⁾
- ▶ Optimized 80C51 core processor with embedded firmware
- ▶ RoHS-2006 compliant

Key Benefits

- ▶ Support for all released NFC standards
- ▶ Guaranteed interoperability with existing infrastructure

- ▶ PN544 Single Wire Protocol (SWP) interface interoperability with major UICC/SIM suppliers
- ▶ Small footprint
- ▶ Shorter integration time due to qualified design-in support for antenna design & software
- ▶ Easy access to NFC technology
- ▶ Leverages NXP expertise and experience with major device manufacturers

Target markets

- ▶ Mobile phones (smart, feature, and low-cost phones)
- ▶ Portable equipment (PDAs, mobile Internet devices)
- ▶ Consumer devices

Key applications

- ▶ Mobile payment
- ▶ Transport and event ticketing
- ▶ Service discovery
- ▶ Easy pairing of Bluetooth, Wi-Fi, or WUSB devices
- ▶ Object exchange (vCards, digital rights)

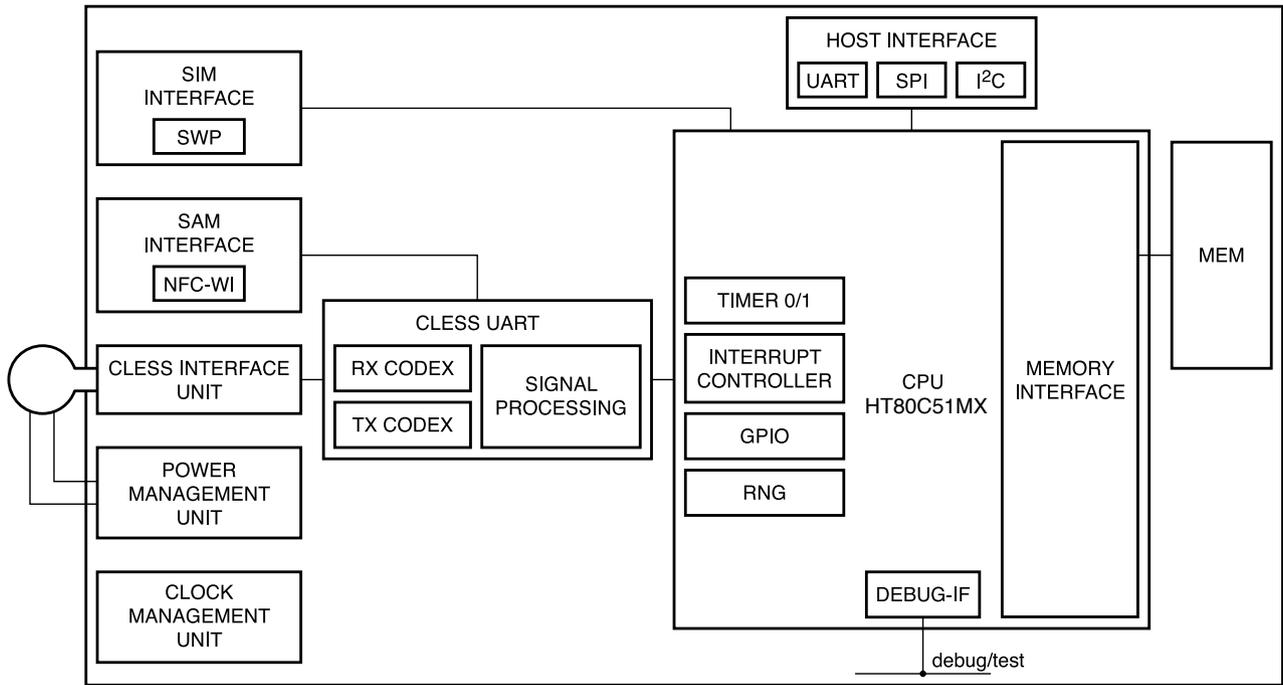
¹ Depending on antenna design and device integration



Key technical data

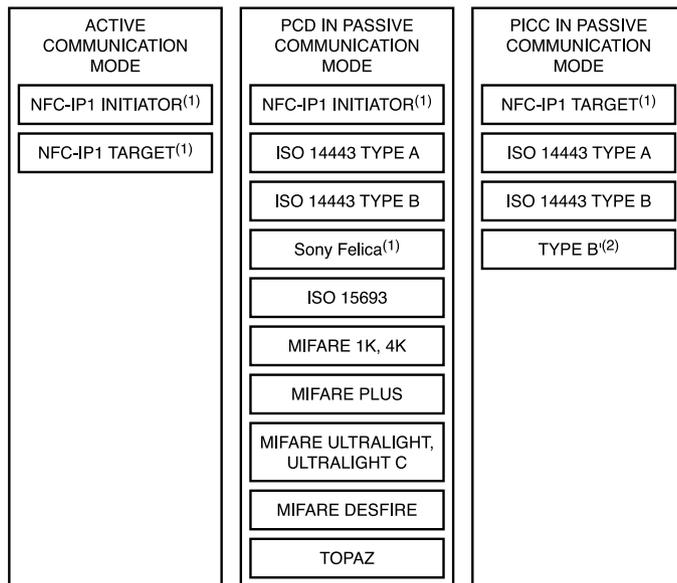
		PN544
Contactless protocols	Peer-to-peer	Full ISO 18092 (up to 424 Kbits/s)
	Reader/writer	ISO 14443 –A-B, MIFARE, FeliCa®, NFC Forum tags, ISO 15693
	Card emulation	ISO 14443 –A-B-B', MIFARE, FeliCa RF
Host interfaces	Serial UART	460800 bits/s
	I ² C	400 Kbits/s or 3.4 M
	SPI	8 Mbits/s
	SWP	Yes
	Secure element interface	NFC-WI
	RAM/ROM/EEPROM	5 K / 128 K / 52 K
Power characteristics	Supply voltage	2.3 to 5.5 V
	Host interface voltage (min)	1.65 to 1.95 V
	Power down mode (typ)	3 μA
	RF active current (typ)	60 mA
	Battery-off mode	Yes
Temperature range		-25 to +85 °C
Package		TFBGA64 (4.5 x 4.5 x 0.8 mm)

PN544 block diagram



001aak781

PN544 transmission modes



brb357

⁽¹⁾ According to ISO/IEC 18092 (ECMA 340) standard

⁽²⁾ Type B['] via SWP only

Design-in kit

To support your product development and enable easy access to NFC technology, NXP has prepared a design-in kit with all the necessary hardware, software and documentation. It includes a reference board OM5596 (12NC 9352 900 17699), a data sheet, a user manual, and an application note, along with drivers, source code and examples in Windows and Linux. We also offer a reference implementation for the NFC Forum's protocol stack.

Ordering information

▶ PN544 ICs

Part number		PN5441A2ET/C20501	
Sales description	Package	TFBGA64	
Ordering information	12NC	9352 913 91157	MOQ = 2450 (5 trays)
		9352 913 91118	MOQ = 4000 (tape and reel)
		9352 913 91151	MOQ = 490 (1 tray)

▶ Technical documentation

- List of available documents: <http://www.nxp.com/nfc>
- To place an order: http://www.nxp.com/acrobat_download/other/identification/NFC_request_final.pdf

▶ Samples & design kits

- List of NXP distributors: <http://www.nxp.com>
- Portals for NXP distributor: <https://extranet.nxp.com>

Useful links

- ▶ NFC Forum specifications: <http://www.nfc-forum.org/specs/>
- ▶ MIFARE: <http://www.mifare.net>

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