



## NXP NFC tag IC NTAG I<sup>2</sup>C

# Complete passive solution for NFC interaction with electronic devices

By combining an NFC interface with a contact I<sup>2</sup>C interface, the NXP NTAG I<sup>2</sup>C solution enables new kinds of NFC tags interactions, including advanced device pairing, personalization of electronic devices, and device maintenance.

### KEY FEATURES

- ▶ Fully compliant with ISO/IEC 14443A 2-3
- ▶ Fully compliant with NFC Forum Tag Type 2
- ▶ I<sup>2</sup>C interface supports standard (100 kHz) and fast (400 kHz) modes
- ▶ Input capacitance of 50 pF
- ▶ 888 or 1,904 bytes of user memory for NDEF message (based on EEPROM)
- ▶ Unique 7-byte serial number
- ▶ Read-only locking function
- ▶ 64-byte SRAM memory buffer
- ▶ Configurable Field Detection output signal for data transfer synchronization and device wake-up during low-power mode
- ▶ Energy harvesting
- ▶ Clear arbitration between RF and I<sup>2</sup>C
- ▶ Fast Read command for shorter test times and increased throughput
- ▶ Get Version command for easy ID of chip type and supported features

### KEY BENEFITS

- ▶ Interoperability with every NFC-enabled device on the market
- ▶ Fast data exchange between NFC and I<sup>2</sup>C using Pass Through mode (SRAM memory buffer, no cycling limitations)

- ▶ Offline access to large amounts of data using a large, non-volatile memory
- ▶ No battery needed to power external components (e.g. microcontroller)
- ▶ High sensitivity with small antennas, due to high input capacitance
- ▶ Low bill of materials and small footprint in embedded electronics

### TARGET APPLICATIONS

- ▶ NFC accessories (headsets, speakers, etc.)
- ▶ Wearable infotainment
- ▶ Fitness equipment
- ▶ Home automation
- ▶ Consumer electronics
- ▶ Healthcare
- ▶ Smart printers
- ▶ Meters
- ▶ Home appliances
- ▶ Electronic shelf labels



The NXP NTAG I<sup>2</sup>C is a passive NFC tag fully compliant with the NFC forum specifications with a built-in I<sup>2</sup>C interface and a large EEPROM. This highly integrated solution lets any NFC-enabled device exchange data with an electronic device, using a fast data-transfer mode based on SRAM memory, and using an output signal for data synchronization. The NTAG I<sup>2</sup>C solution is also capable of energy harvesting and uses a field-detection function to support operation in low-power mode.

## DESIGN SUPPORT

NXP's design support for the NTAG I<sup>2</sup>C solution works at every level, from the NFC tag to the end application. Our support includes antenna designs and customization, application development on most popular smartphone platforms (Android, Window8, WP8, Symbian), as well as software and hardware development tools.

Our experts in the Customer and Application Support (CAS) group can evaluate and optimize an existing design or assist with new development. They also offer training, front-line design support, and consulting services. Plus, designers can access our technical expertise on their own, through white papers and application notes publicly available on the general NXP website ([www.nxp.com](http://www.nxp.com)) and the dedicated NXP NTAG website ([www.nxp-rfid.com](http://www.nxp-rfid.com)).

## WHY NTAG I<sup>2</sup>C?

The most complete solution for passive NFC interactions:

- ▶ Fully NFC Forum-compliant for best coverage of NFC-enabled devices
- ▶ Large read range and fast data exchange for smooth interactions
- ▶ Nonvolatile storage of data for zero-power operation
- ▶ Field-detection signal and energy harvesting for optimized power management
- ▶ Small antenna footprint for best integration

## WHY NXP?

A pioneer in mass-market contactless solutions:

- ▶ Complete offering for NFC interfacing solution (from passive NFC tag to active NFC reader)
- ▶ Invented MIFARE technology in 1994
- ▶ Co-invented NFC in 2002
- ▶ Co-founded NFC Forum in 2004

## Selection guide

Product feature	NTAG I <sup>2</sup> C 1k	NTAG I <sup>2</sup> C 2k
<b>Memory</b>		
User memory size [bytes]	888 (1 sector)	1,904 (2 sectors)
Write endurance [cycles]	200,000	
Data retention [years]	20	
Memory organization	Pages a 4 bytes	
<b>RF interface</b>		
ISO compliance	ISO 14443 A Part 2-3	
NFC Forum compliance	Tag Type 2	
Baudrate [kbits/s]	106	
Resonance capacitance [pF]	50	
<b>Security</b>		
Unique serial number [bytes]	7	
Access conditions	Lock bits	

<b>Special features</b>	
64-byte SRAM buffer	Yes
Configurable field detection	Yes
Wake-up signal for data transfer synchronization	Yes
Energy harvesting	Yes

<b>Ordering information</b>		
Item	Description	Product type
NTAG I <sup>2</sup> C 1k	Plastic, extremely thin quad flat package; no leads; 8 terminals; body 1.6 x 1.6 x 0.6 mm; 888 bytes user memory, 50 pF input capacitance	NT3H1101FHK
NTAG I <sup>2</sup> C 2k	Plastic, extremely thin quad flat package; no leads; 8 terminals; body 1.6 x 1.6 x 0.6 mm; 1,904 bytes user memory, 50 pF input capacitance	NT3H1201FHK

[www.nxp-rfid.com](http://www.nxp-rfid.com) 

[www.nxp.com](http://www.nxp.com)

© 2013 NXP Semiconductors N.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: September 2013

Document order number: 9397 750 17479

Printed in the Netherlands