



# SIC43NT

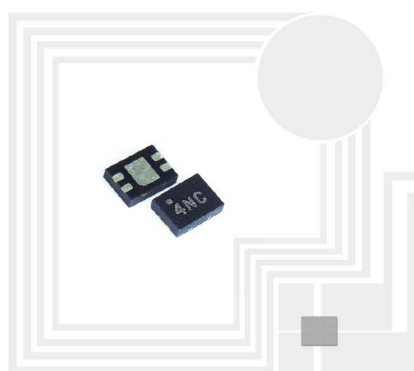
**A PASSIVE NFC-FORUM TYPE 2 TAG WITH  
EVENT-TRIGGERED  
DYNAMIC NDEF**

**AND ROLLING CODE FOR  
SMART VOUCHER  
AND COUPON APPLICATION.**



# SIC NFC tag Family Comparison Table

Model	SIC			
	SIC43NT	SIC43S1	SIC4310	SIC4311
NFC Forum tag type	Type2	Type2	Type2	Type2
Memory Size	144 Bytes	848 Bytes	228	228
Password Protection	•	•		
RF field Detection Mode	•	•	•	•
Programmable GPIO			8	7
Power Harvesting			Up to 10mA	Up to 10mA
Battery Idle Current			80uA	0.1uA*
Tampering Protection Mode	•	•		
Product Authentication Mechanism	•	•		
UID on NDEF	•	•		
Tampering status on NDEF	•	•		
Rolling code in NDEF message	8 Bytes	45 Bytes		
Rolling code Generator Engine	Stream Cipher	OCB-AES		
Mutual Authenticate		•		
Secret Key	80 bits	128 bits		
Applications	<ul style="list-style-type: none"><li>• Product Authentication</li><li>• Tampering Detection</li><li>• Electronics Product Label</li><li>• OTP card</li><li>• PromotionCoupon/ Ticket</li></ul>	<ul style="list-style-type: none"><li>• Product Authentication</li><li>• Tampering Detection</li><li>• Secure NFC Tag</li><li>• Small Payment</li></ul>	<ul style="list-style-type: none"><li>• Wireless Firmware upgrading</li><li>• Interactive Poster</li><li>• Industrial Machine Interface</li><li>• Smart Toys</li></ul>	<ul style="list-style-type: none"><li>• Wireless Firmware upgrading</li><li>• Industrial Machine Interface</li><li>• Wireless Printer Setup</li><li>• Metering /Vending Machine</li><li>• Smart Toys</li></ul>
Package Available	<ul style="list-style-type: none"><li>• DOW with bumped</li><li>• DFN</li></ul>	<ul style="list-style-type: none"><li>• DOW with bumped</li><li>• DFN</li></ul>	QFN3x3	QFN3x3
* Measure at VBAT3V3 Pin				



# SIC43NT

SIC43NT is a passive NFC-Forum Type 2 Tag, which is fully compliance with ISO14443A. The chip is equipped with 144 bytes user memory, which can be configured to be compatible with NDEF

format. The response NDEF message can be automatically updated by a triggered event based on NFC field or tag tamper evident. A rolling code can be configured to be attached to the response NDEF message when there is NFC field or when the wire or trace of the tamper detection circuit has been disconnected.

## Highlight Features

- NFC-Forum Type 2 Tag with 7-byte UID
- Conformed to ISO14443A @ 106kbps
- On-chip capacitance : 50pF

## Memory

- 144-byte user memory area
- Anti-tearing protection for Lock Byte

## Field Detection/ Tampering Detection Pin

- Configurable Field Detection/Tampering Detection pin
- RF field detection
- Tamper evidence detection
- Sleep mode

## Basic Circuit

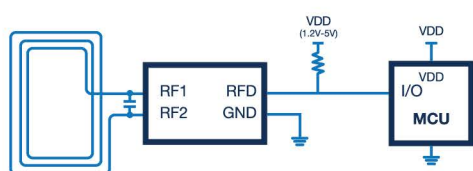


Figure 1-2: SIC43NT with RF detect pin operating in an open-drain mode

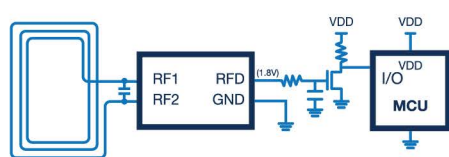
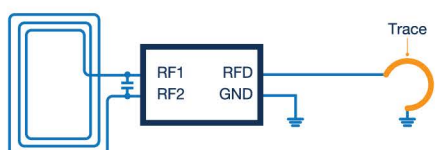
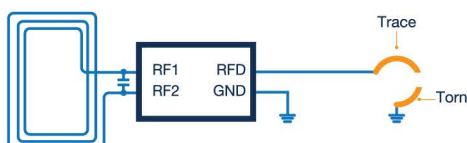


Figure 1-3: SIC43NT with RF detect pin operating in a 1.8V output mode

## Tamper Detect Mode



\*A Tampering response is "0x00 0x00"



\*A Tampering response is "0xFF 0xFF"

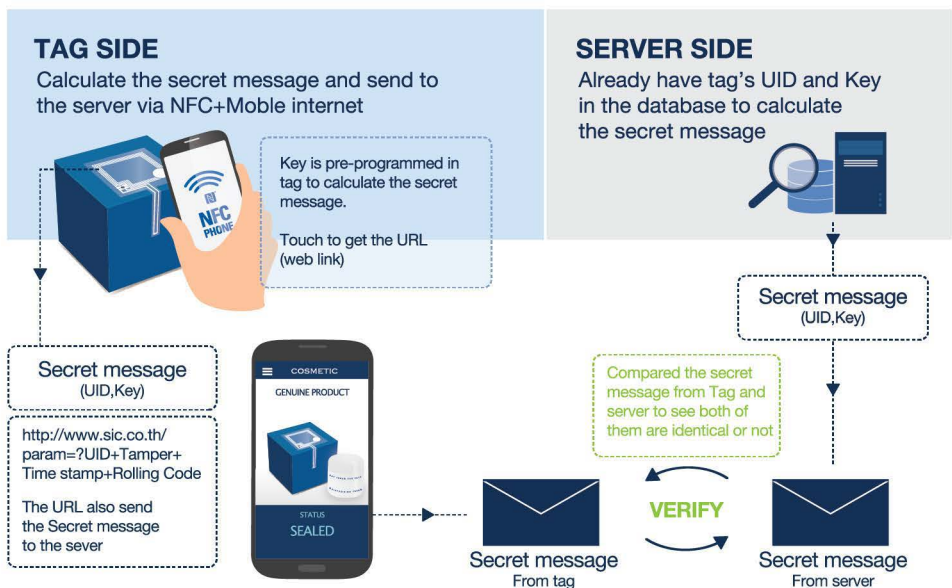
Figure 1-4: SIC43NT operates im tamper evident detection mode

# Tampering detection

- Tampering Detection pin
  - Coupon Mode (Cypher stream starts changing after tampering event)
  - Package Mode (Cypher stream stops changing after tampering event)
  - Universal Mode (Cypher stream keeps changing)
- Event-triggered Dynamic NDEF
  - Tampering Status on NDEF
  - 32-bit Streamed cypher data for data integrity and security
  - Timestamp data for authorization

# APPLICATIONS

## Anti Counterfeiting Concept



# Proof-of-purchase Concept

## PRICE TAG /COUPON MODE

Secret messages start changing after tampering detected



### AT SHOP

Read Price tag to get the information of the goods e.g. promotions or Webfilm Ads. This information link is fixed so customer can send to their friends.



### WHEN PURCHASE

Shopkeeper will tear the price tag off as a proof-of-purchase to activate and the secret message. Customer can read the tag to get limited-time use promotion for using next time.

The promotion can be more than one i.e. five times then this coupon will be expired

# Proof of Delivery Concept

## PARCEL MODE

Secret messages stop changing after tampering detected



### SENDING

Place the tag and read data "A"



### AT CHECKING POINTS

Read data "B", "C", "D",... to define each checking point



### RECEIVING

Open the box and read the final data without proof-of-delivery to check the proof-of-delivery. In this case, the secret doesn't change anymore



# E-card For Online gaming

## USE AS A LOGIN CARD



First touch  
for **register**



Next touch  
for **Login**



Each touch,  
the secret key will  
be changed to  
provide instant  
login (one time  
password : OTP)

## USE AS ITEM GIFT CARD



First touch  
for **register**



Tear off  
the "seal"  
and tap to **get**  
a **special item**



Once the seal has  
been torn off, this  
card would **not**  
**give an item**  
**anymore**, but it  
can be used as a  
login OTP card.

# SIC43NT DEVELOPMENT KITS



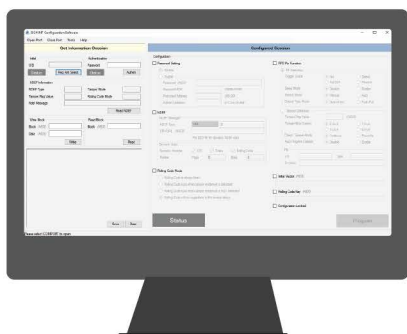
SIC43NT with  
Tamper wire 1 pcs.



SIC43NT PCB with  
LED 1 pcs.



SIC Reader Model:  
Pi931-X34CC with  
USB port 1 pcs.



PC Software



Android Application

## Development kit included :

- SIC Reader Model: Pi931-X34CC with USB port 1 pcs.
- SIC43NT PCB with LED 1 pcs.
- SIC43NT with Tamper wire 1 pcs.
- PC Software
- Android Application
- Sample source code



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