

## NFC tag IC family overview – 13,56 MHz (HF)

Product features	NTAG <sup>®</sup> 210µ	NTAG <sup>®</sup> 210/212	NTAG <sup>®</sup> 213/213F	NTAG <sup>®</sup> 215	NTAG <sup>®</sup> 216/216F	NTAG <sup>®</sup> i2C plus 1K/2K	NTAG <sup>®</sup> 213 TagTamper	NTAG <sup>®</sup> 424 DNA	NTAG <sup>®</sup> 424 DNA TagTamper	NTAG <sup>®</sup> 5 switch	NTAG <sup>®</sup> 5 link	NTAG <sup>®</sup> 5 boost
<b>Memory</b>												
NFC Forum type	NFC Type 2 Tag	NFC Type 2 Tag	NFC Type 2 Tag	NFC Type 2 Tag	NFC Type 2 Tag	NFC Type 2 Tag	NFC Forum Type 2 Tag	NFC Forum Type 4 Tag	NFC Forum Type 4 Tag	NFC Forum Type 5 Tag	NFC Forum Type 5 Tag	NFC Forum Type 5 Tag
EEPROM size [byte]	80 (20 pages à 4 byte)	80 (20 pages à 4 byte) 164 (41 pages à 4 byte)	180 (45 pages à 4 byte)	540 (135 pages à 4 byte)	924 (231 pages à 4 byte)	1024/2048	184 (46 pages à 4 byte)	416	416	2048	2048	2048
User memory [byte]	48	48/128	144	504	888	888/1912	144	416	416	2048	2048	2048
Write endurance [cycles]	100.000	100.000	100.000	100.000	100.000	500.000	100.000	200.000	200.000	1.000.000	1.000.000	1.000.000
Data retention [yrs]	10	10	10	10	10	20	10	50	50	50	50	50
<b>RF-Interface</b>												
According to	ISO14443A (up to layer 3) NFC Forum Type 2 Tag	ISO14443A (up to layer 3) NFC Forum Type 2 Tag	ISO14443A (up to layer 3) NFC Forum Type 2 Tag	ISO14443A (up to layer 3) NFC Forum Type 2 Tag	ISO14443A (up to layer 3) NFC Forum Type 2 Tag	ISO14443A 1-3 NFC Forum Type 2 Tag	ISO/IEC14443A (up to layer 3) NFC Forum Type 2 Tag	ISO/IEC14443A (up to layer 4) NFC Forum Type 4 Tag	ISO/IEC14443A (up to layer 4) NFC Forum Type 4 Tag	ISO/IEC 15693 NFC Forum Type 5 Tag	ISO/IEC 15693 NFC Forum Type 5 Tag	ISO/IEC 15693 NFC Forum Type 5 Tag
Frequency [MHz]	13.56	13.56	13.56	13.56	13.56	13.56	13.56	13.56	13.56	13.56	13.56	13.56
Baud-rate [KBit/s]	106	106	106	106	106	106	106	106/212/424/848	106/212/424/848	26/52/106	26/52/106	26/52/106
Anticollision	bit-wise	bit-wise	bit-wise	bit-wise	bit-wise	bit-wise	bit-wise	bit-wise	bit-wise	bit-wise	bit-wise	bit-wise
<b>Security</b>												
Unique serial number [byte]	7, cascaded	7, cascaded	7, cascaded	7, cascaded	7, cascaded	7, cascaded	7, cascaded	7, cascaded	7, cascaded	7, cascaded	7, cascaded	7, cascaded
Access keys	-	32 bit	32 bit	32 bit	32 bit	32 bit	32 bit	32 bit	5 × 128 bit	5 × 128 bit	32/64 bit	32/64 bit
Access conditions	-	write, read and write	write, read and write	write, read and write	write, read and write	write, read and write	write, read and write	write, read and write	read, write, read & write	read, write, read & write	write, read and write	write, read and write
Write protection	-	blockwise	blockwise	blockwise	blockwise	blockwise	blockwise	blockwise	-	-	blockwise	blockwise
Security	-	password	password	password	password	password	password	password	128-bit AES, LRP	128-bit AES, LRP	128-bit AES, password	128-bit AES, password
<b>Special features</b>												
Field detection pin	-	-	✓ <sup>1</sup> (configurable)	-	✓ <sup>1</sup> (configurable)	✓ <sup>1</sup> (configurable)	-	-	-	✓ <sup>1</sup> (configurable)	✓ <sup>1</sup> (configurable)	✓ <sup>1</sup> (configurable)
i2C interface	-	-	-	-	-	✓	-	-	-	no	yes	yes
Others	• Originality check with customizable (reprogrammable) originality signature	• UID ASCII mirror • Originality check • Fast Read	• UID ASCII mirror • NFC counter • NFC counter ASCII mirror • Originality check • Fast Read • Sleep mode via FD pin <sup>1</sup>	• UID ASCII mirror • NFC counter • NFC counter ASCII mirror • Originality check • Fast Read	• UID ASCII mirror • NFC counter • NFC counter ASCII mirror • Originality check • Fast Read • Sleep mode via FD pin <sup>1</sup>	• Passthrough mode 64 bytes SRAM buffer • Energy harvesting • T <sub>amb</sub> = 105° C	• UID ASCII mirror • NFC counter • NFC counter ASCII mirror • Programmable Originality Signature • Fast Read • Tag Tamper detection • Current loop status command	• SUN (Secure Unique NFC) message • NFC counter • Flexible mirroring offset for UID, NFC tap counter, CMAC • File encryption and mirroring • 128-bit Proprietary file • Originality Signature • Anti brute-force attack design	• SUN (Secure Unique NFC) message • NFC counter • Flexible mirroring offset for UID, NFC tap counter, CMAC • File encryption and mirroring • 128-bit Proprietary file • Originality Signature • Tag Tamper detection and mirroring	• 2 configurable GPIOs or 2 configurable PWM outputs • Energy harvesting from RF field up to 30mA • Programmable event detection output • Programmable originality signature • Sleep and power down mode	• i2C target or controller interface • Energy harvesting from RF field up to 30mA • Programmable event detection output • Programmable originality signature • Sleep and power down mode	• i2C target or controller interface • Active Load Modulation: larger comm range at 10 × 10 mm antenna • Programmable event detection output • Programmable originality signature • Sleep and power down mode
Certification	NFC Forum	-	NFC Forum	NFC Forum	NFC Forum	NFC Forum	NFC Forum	NFC Forum, CC EAL4	NFC Forum, CC EAL4	NFC Forum	NFC Forum	NFC Forum
<b>Packages &amp; capacitance types</b>												
Sawn wafer (Au-Bumped)	NT2L1001G0DUD NT2H1001G0DUD	NT2L1011G0DUD	NT2H1311G0DUD	NT2H1511G0DUD	NT2H1611G0DUD	NT3H2111W0FUG NT3H2211W0FUG	-	NT4H2421G0DUD NT4H2421G0DUF	NT4H2421TDDUD NT4H2421TDDUF	NTP52101G0JUA	NTP53101G0JUA NTP53121G0JUA	NTA53321G0FUA
HXSON4 (SOT1192-1)	-	-	NT2H1311F0DTL <sup>1</sup>	-	NT2H1611F0DTL <sup>1</sup>	-	-	-	-	-	-	-
XQFN8	-	-	-	-	-	NT3H2111W0FHK NT3H2211W0FHK	-	-	-	XQFN16: NTP52101G0JHK	XQFN16: NTP53101G0JHK NTP53121G0JHK	XQFN16: NTA53321G0FHK
TSSOP8	-	-	-	-	-	NT3H2111W0FTT NT3H2211W0FTT	-	-	-	TSSOP16: NTP52101G0JTT	TSSOP16: NTP53101G0JTT NTP53121G0JTT	TSSOP16: NTA53321G0FTT
MOA8	-	-	NT2H1311G0DA8	NT2H1511G0DA8	NT2H1611G0DA8	-	-	NT4H2421G0DA8	-	-	-	-
Cres Capacitance [pF]	17/50	17	50	50	50	50	50	50	50	50	50	50

<sup>1</sup> NTAG 21x F version only

## Low frequency IC family overview – 100-150 KHz (LF)

Product features	HITAG <sup>®</sup> 1	HITAG <sup>®</sup> 2	HITAG <sup>®</sup> S 256	HITAG <sup>®</sup> S 2048	HITAG <sup>®</sup> µ	HITAG <sup>®</sup> µ Advanced	HITAG <sup>®</sup> µ Advanced +
<b>Memory</b>							
Size [bit]	2048	256	256	2048	128	512	1760
Write endurance [cycles]	100.000	100.000	100.000	100.000	100.000	100.000	100.000
Data retention [yrs]	10	10	10	10	10	10	10
Organisation	64 blocks à 4 bytes	8 blocks à 4 bytes	8 blocks à 4 bytes	64 blocks à 4 bytes	4 blocks à 4 bytes	16 blocks à 4 bytes	55 blocks à 4 bytes
<b>RF Interface</b>							
According to	HITAG 1	HITAG 2 ISO 11784/85	HITAG 1+ ISO 11784/85	HITAG 1+ ISO 11784/85	ISO 11784/85	ISO 11784/85 ISO 14223	ISO 11784/85 ISO 14223
Frequency	100-150 kHz	100-150 kHz	100-150 kHz	100-150 kHz	100-150 kHz	100-150 kHz	100-150 kHz
Baud-rate [KBit/s]	up to 4	up to 4	up to 8	up to 8	up to 8	up to 8	up to 8
Anti-collision	Collision detection	-	Collision detection	Collision detection	-	Collision detection	Collision detection
<b>Security</b>							
Unique ID [byte]	4	4	4	4	6	6	6
Access keys	32 bit	48 bit	48 bit	48 bit	32 bit	32 bit	32 bit
Access conditions	Encrypted mutual authentication or plain	Encrypted mutual authentication or plain	Authentication or plain	Authentication or plain	Plain, password	Plain, password	Plain, password
Encryption algorithm	✓	✓	for authentication only	for authentication only	-	-	-
<b>Special features</b>							
TTF modes	-	✓	✓	✓	✓	✓	✓
RTF modes	✓	✓	✓	✓	-	✓	✓
Write ISO 11785	-	-	-	-	✓	✓	✓
<b>Delivery types</b>							
Sawn wafer (Au Megabump)	-	-	HTS IC C56 01EW/C7	HTS IC C48 01EW/C7	✓	✓	✓
Sawn wafer (Au bump)	HT1 IC S30 02W/V6F	HT2 IC S2002W/V6F/R	HTS IC H56 01EW/V7	HTS IC H48 01EW/V7	-	-	-
MOA4	HT1 MOA4 S30/E/3	HT2 MOA4 S20/E/3/R	HTS MO H56 02EV	HTS MO H48 02EV	-	-	-
SOT385-1 (Stick)	-	HT2 DC20 S20/F/R	-	-	-	-	-
SOT1122	-	-	-	-	HTMS8001FTB/AF	HTMS8101FTB/AF	HTMS8201FTB/AF
HVSON2	-	-	HTS H56 01 ETK	HTS H48 01 ETK	HTMS8001FTK/AF	HTMS8101FTK/AF	HTMS8201FTK/AF
Capacitance 210pF +/- 10%	✓	✓	-	-	-	-	-
Capacitance 210pF +/- 5%	-	-	✓	✓	-	-	-
Capacitance 280pF +/- 5%	-	-	-	-	HTMS8001FUG/AM	HTMS8101FUG/AM	HTMS8201FUG/AM



## Smart label IC family overview – 13.56 MHz (HF)

Product features	ICODE <sup>®</sup> SLIX-L	ICODE <sup>®</sup> SLIX	ICODE <sup>®</sup> SLIX-S	ICODE <sup>®</sup> SLIX 2	ICODE <sup>®</sup> ILT	ICODE <sup>®</sup> ILT-M	ICODE <sup>®</sup> DNA
Standard	ISO 18000-3M1 ISO 15693	ISO 18000-3M1 ISO 15693	ISO 18000-3M1 ISO 15693	ISO 18000-3M1 ISO 15693	EPC Class-1 HF1 ISO 18000-3M3	EPC Class-1 HF1 ISO 18000-3M3	ISO 18000-3M1 ISO 15693-2, 3
User memory [bit]	256	896	1280	2528	-	512	2016
EPC code size [bit]	-	-	-	-	up to 240	up to 240	-
UID (TID <sup>1</sup> ) size [bit]	64	64	64	64	96 (TID)	96 (TID)	64
Data retention [Years]	50	50	50	50	50	50	50
Write endurance [cycles]	100.000	100.000	100.000	100.000	100.000	100.000	100.000
Anticollision speed	up to 60 units/s	up to 60 units/s	up to 60 units/s	90 units/s <sup>3</sup>	up to 700 units/s	up to 700 units/s	up to 90 units/s <sup>3</sup>
Fast inventory	✓	✓	✓	✓	-	-	✓
<b>Security functions</b>							
EAS protection	✓	✓	✓	✓	✓	✓	✓
EAS password protection	32 bit password	32 bit password	32 bit password	32 bit password	32 bit password	32 bit password	AES - 128 bit
EAS selective	✓	-	✓	✓	-	-	✓
AFI protection	✓	✓	✓	✓	-	-	AES - 128 bit
AFI password protection	32 bit password	32 bit password	32 bit password	32 bit password	-	-	✓
Persistent quiet	-	✓	✓	✓	✓	✓	✓
Memory write lock	✓	✓	✓	✓	✓	✓	✓
Memory access password protection	-	-	32 bit password	32 bit password	-	-	AES - 128 bit
Privacy password protection	32 bit password	-	32 bit password	32 bit password	32 bit password	32 bit password	AES - 128 bit
Destroy password protection	32 bit password	-	32 bit password	32 bit password	-	-	AES - 128 bit
Counter	-	-	-	✓	-	-	✓
Originality signature	-	-	-	✓	-	-	re-programmable
Cres capacitance [pF]	23.5/97	no/23.5/97	23.5/97	23.5	0/23.5/97	0/23.5/97	23.5
<b>Delivery types</b>							
Wafer FCC	SL2S5002FUD	SL2S2002FUD	SL2S5302FUD	SL2S2602FUD/BG	SL2S1502FUD	SL2S1512FUD	SL2S6002FUD/BG
Wafer FCC - HC	SL2S1102FUD	SL2S2102FUD	SL2S5402FUD	-	SL2S1602FUD	SL2S1612FUD	-
Wafer FCC - NC	-	SL2S2202FUD	-	SL2S2602FTB	SL2S1402FUD	SL2S1412FUD	-
SOT1122	SL2S5002FTB	SL2S2002FTB	SL2S5302FTB	-	SL2S1502FTB	SL2S1512FTB	-
SOT1122- HC	-	SL2S2102FTB	-	-	-	SL2S1612FTB	-
SOT1122- NC	-	-	-	SL2S2602FA8	-	SL2S1412FTB	-
MOA8	-	SL2S2002FA8	-	-	-	-	-



For further details  
please refer to:

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

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<sup>1</sup> EPC Global Specification: EPC Class-1 HF RFID Air Interface Protocol

<sup>2</sup> EPC Global/Auto-ID Center Specification: 13.56 MHz ISM Band Class 1 Radio Frequency Identification Tag Interface

<sup>3</sup> With extended fast inventory read