NXP IC solution for contactless limited-use applications with enhanced security

MIFARE Ultralight™ C

MIFARE Ultralight C is the first smart card IC for limited-use applications that offers solution developers and providers the benefits of an open cryptography. With 3DES, MIFARE Ultralight C uses a widely adopted standard, enabling easy integration in existing infrastructures. The integrated authentication command set provides an effective cloning protection that helps to prevent counterfeit of tickets.

Key applications
▸ Public transportation
▸ Event ticketing
▸ Loyalty

Key features
▸ Fully ISO / IEC 14443 A 1-3 compliant
▸ 106 kbit/s communication speed
▸ Anti-collision support
▸ 1536 bits (192 bytes) EEPROM memory
▸ Protected data access via 3DES authentication
▸ Cloning protection
▸ Command set compatible to MIFARE Ultralight
▸ Memory structure as in MIFARE Ultralight (pages)
▸ 16 bit counter
▸ Unique 7 bytes serial number
▸ Number of single write operations: 10.000

Benefits for ticket manufacturers
▸ Easy integration in existing production processes
▸ Delivery formats: 120 μm and 75μm Au-bumped thin wafer, MOA4 or MOA8 module

Benefits for solution developers
▸ Compliance to ISO / IEC 14443 A 1-3
▸ Backwards compatibility to MIFARE Ultralight
▸ Limited integration effort in MIFARE DESFire™ based solutions
▸ Enhanced security for limited-use applications
▸ Ease of use and proven toolkits
▸ Fast time-to-market

Benefits for service providers
▸ Ability to detect cloned tickets
▸ Availability of statistical data to optimize the system
▸ Efficient fleet management
▸ Higher customer throughput
▸ Reduction of maintenance costs
▸ Reduction of cash handling
▸ Fraud prevention
▸ Easy system enhancement in limited-use applications

Contactless smart paper ticketing

NXP MIFARE Ultralight C represents a new security concept to the contactless limited-use market.

With its 3DES authentication, MIFARE Ultralight C reflects the trend for enhanced security in contactless applications. Nowadays many solution providers eliminate double infrastructure where MIFARE Ultralight C provides the perfect solution for a complete contactless system. It can easily be integrated in existing MIFARE DESFire installations, re-using similar authentication commands.

MIFARE Pedigree

NXP MIFARE™ is the leading open architecture technology platform for contactless ticket, card and reader solutions.

With more than 50 million reader core components and 5 billion smart card ICs sold, MIFARE is a proven and reliable technology and represents the largest installed base worldwide.

Compliant with the ISO / IEC 14443 A international standard, MIFARE ensures that today's infrastructure can easily be upgraded. It enables service providers to expand their transportation networks and to integrate additional services such as payment systems for taxi fares, cinema and theatre tickets, loyalty programs, access management and parking. All while reducing the total costs of operations.

In addition, MIFARE4Mobile™ guides the successful extension of the MIFARE technology platform into NFC enabled devices.

Product Features	MIFARE Ultralight C
Memory	
EEPROM size [bits]	1536
OTP area [bit]	32
Write Endurance [cycles]	10.000
Data Retention [yrs]	5
Organization	48 pages a 4 byte
RF-Interface	
Acc. to ISO/IEC 14443 A	ISO/IEC 14443 A 1-3
Baudrate [kbit/s]	106
Anti-collision	bit-wise
Security	
Unique Serial Number [byte]	7
Random Number Generator	yes
Cryptography	3DES authentication
Purse Functionality	16-bit one-way counter
Packaging	
Sawn Wafer 120μm on FFC (Au-Bumped) 17 pF	MF01CU2001DUD
Sawn Wafer 120μm on FFC (Au-Bumped) 50 pF	MF01CU2101DUD
Sawn Wafer 75μm on FFC (Au-Bumped) 17 pF	MF01CU2001DUF
Sawn Wafer 75μm on FFC (Au-Bumped) 50 pF	MF01CU2101DUF
MOA4 Module 17 pF	MF0MOU2001DA4
MOA4 Module 50 pF	MF0MOU2101DA4
MOA8 Module 17 pF	MF0MOU2001DA8
MOA8 Module 50 pF	MF0MOU2101DA8

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