



NXP IC solution for next generation contactless limited-use applications

MIFARE Ultralight EV1

MIFARE Ultralight EV1 is the next generation of paper ticketing smart card IC for limited-use applications that offers solution developers and operators the maximum flexibility for their ticketing schemes and additional security options.

Enabling easy integration in existing infrastructures is guaranteed by compatibility with MIFARE based systems. The integrated originality checker is an effective cloning protection that helps to prevent counterfeit of tickets.

Key applications

- ▶ Limited-use tickets in public transport
- ▶ Event ticketing (stadiums, exhibitions, leisure parks, etc.)
- ▶ Loyalty

Key features

- ▶ Fully ISO / IEC 14443 A 1-3 compliant
- ▶ Backwards compatible to MIFARE Ultralight
- ▶ 106 kbit/s communication speed
- ▶ Anti-collision support
- ▶ Fast read command
- ▶ 384 and 1024 Bits user memory product variants
- ▶ OTP, Lock Bits, configurable counters
- ▶ Three independent 24-bit one-way counters
- ▶ Protected data access through 32-bit password
- ▶ NXP Semiconductors originality check
- ▶ Preparation for Virtual Card functionality
- ▶ 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 thin Au-bumped wafer, MOA4 or MOA8 module

Benefits for solution developers

- ▶ Compliance to ISO / IEC 14443 A 1-3
- ▶ Backwards compatibility to MIFARE Ultralight
- ▶ Enhanced security for limited-use applications
- ▶ Ease of use and proven toolkits
- ▶ Fast time-to-market

Benefits for service providers

- ▶ Ability to check originality of tickets
- ▶ Improve transaction time using the Fast Read command
- ▶ Ideal for multi operator transportation systems with three independent counters (e.g.: bus, tram, metro)
- ▶ Availability of statistical data to optimize the system
- ▶ Efficient fleet management
- ▶ Higher customer throughput
- ▶ Reduction of maintenance costs
- ▶ Reduction of cash handling
- ▶ Fraud prevention
- ▶ System enhancement in limited-use applications



Contactless smart paper ticketing

NXP MIFARE Ultralight EV1 represents the next generation product for cost effective and secure paper ticketing for the limited use market. With its password protection and originality checker, MIFARE Ultralight EV1 reflects the trend for enhanced security in contactless applications. Nowadays many solution providers eliminate double infrastructure where MIFARE Ultralight EV1 provides the perfect solution for a complete contactless system. It can easily be integrated in existing MIFARE installations.

About MIFARE

MIFARE is NXP's well-known brand for a wide range of contactless IC products used in more than 40 different applications worldwide. With more than 150 million reader core components and 5 billion smart card ICs sold, MIFARE products are proven and reliable more than any other interface technology in the market.

MIFARE products comply with the international standard ISO/IEC 14443 and are backwards compatible within the product families. This ensures that the existing infrastructure can be smoothly upgraded to higher security and feature levels such as payment systems, ticketing solutions, loyalty programs, access management and parking.

To further extend the reach of MIFARE products, the MIFARE4Mobile Industry Group brings MIFARE applications into NFC enabled mobile devices.

Product Features	MIFARE Ultralight EV1 384 Bit User Memory	MIFARE Ultralight EV1 1024 Bit User Memory
Memory		
EEPROM size [bits]	640	1312
OTP area [bit]		32
Write Endurance [cycles]		100.000
Data Retention [yrs]		10
Organization	20 pages a 4 byte	41 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 B UID	
Memory Overwrite Protection	yes, per page	
Special Features		
Purse Functionality	3 x 24-bit one-way counter	
Special Functionalities	Fast Readout function NXP Originality Check	
Memory Protection	32-bit password protection	
Packaging		
Sawn Wafer 120µm on FFC (Au-Bumped) 17 pF	MF0UL1101DUD	MF0UL2101DUD
Sawn Wafer 75µm on FFC (Au-Bumped) 17 pF	MF0UL1101DUF	MF0UL2101DUF
MOA8 Module 17 pF		MF0UL2101DA8



www.MIFARE.net

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Date of release: September 2013