



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 signature
- ▶ 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 signature, 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.

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 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 |

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