



NXP® MIFARE Ultralight® C

Enhanced security for limited-use contactless applications

The MIFARE Ultralight C is the leading contactless IC supporting 3DES cryptography in limited-use applications. It offers cryptographic authentication and increases the customer convenience while simplifying the integration into existing infrastructures.

KEY FEATURES

- ▶ Fully ISO/IEC 14443 A 3 compliant
- ▶ NFC Forum Type 2 Tag compliant
- ▶ 144 byte EEPROM user memory
- ▶ 32-bit user defined one-time programmable (OTP) area
- ▶ Protected data access via 3DES authentication
- ▶ Unique 7-byte serial number
- ▶ 16-bit counter
- ▶ Anti-collision support
- ▶ Support of small form factors with a 50 pF input capacitance option
- ▶ Command set compatible with MIFARE Ultralight
- ▶ Memory structure as in MIFARE Ultralight
- ▶ Authentication compatible with MIFARE® DESFire®
- ▶ Cloning protection
- ▶ 106 kbit/s communication speed
- ▶ Number of single write operations: 10,000

TARGET APPLICATIONS

Limited-use paper tickets and cards with higher security needs:

- ▶ Paper ticketing in public transport
- ▶ Event ticketing (stadiums, exhibitions, festivals, leisure parks, etc.)
- ▶ Loyalty programs
- ▶ Hospitality

KEY BENEFITS

- ▶ Higher customer throughput and reduced waiting times
- ▶ Lower maintenance costs for the infrastructure
- ▶ Reduced cash handling
- ▶ Greater fraud prevention
- ▶ Ability to prevent cloned tickets
- ▶ Easy system enhancement in limited-use applications
- ▶ Increased convenience and reliability for end users compared to magnetic stripe, barcode, and QR code-based tickets



CONTACTLESS SMART PAPER TICKETING WITH ENHANCED SECURITY

As the leading limited-use ticketing solution to support 3DES authentication, MIFARE Ultralight C delivers a new level of trust. MIFARE Ultralight C serves markets with higher needs for security and is the ideal contactless replacement for traditional paper tickets, mag stripe, barcode and QR code-based systems.

With tickets, vouchers, and key cards based on MIFARE Ultralight C, solution providers have a more convenient, more secure way to issue single-trip and multi-use transit tickets, event tickets, access passes, loyalty cards, and more.

FASTER DEVELOPMENT

Proven toolkits, compliance with ISO/IEC 14443 A 3, and backward compatibility with MIFARE Ultralight give developers a faster way to deliver enhanced security

in limited-use ticketing applications. By adding MIFARE Ultralight C to their installations, transport operators can avoid having to duplicate the infrastructure while implementing support for limited-use ticketing. Further, MIFARE Ultralight C benefits from the same authentication commands as used in MIFARE DESFire.

SIMPLER MANUFACTURING

Flexible delivery formats, in sawn wafers or modules, simplify manufacturing and ease integration into existing production processes.

OPTIMIZED OPERATIONS

Service providers gain the benefits of reduced maintenance costs and greater fraud prevention, and can use the statistical data generated by the system to optimize operations.

SELECTION GUIDE: MIFARE Ultralight product family

Features	MIFARE Ultralight C	MIFARE Ultralight EV1	MIFARE Ultralight Nano
Memory	144 bytes	48/128 bytes	40 bytes
OTP Area	32 bit	32 bit	32 bit
Counter	1 x 16 bit	3 x 24 bit	
Access protection	3DES	32-bit password + password acknowledge	
Fast read		✓	
Originality		✓	✓ REPROGRAMMABLE

ORDERING INFORMATION

Packaging/ Input Capacitance	MIFARE Ultralight C
17 pF	Part Type
Sawn wafer 120 µm on FFC (AU-bumped)	MF01CU2001DUD
Sawn wafer 75 µm on FFC (AU-bumped)	MF01CU2001DUF
MOA4 Module	MF0MOU2001DA4
MOA8 Module	MF0MOU2001DA8
50 pF	
Sawn wafer 120 µm on FFC (AU-bumped)	MF01CU2101DUD
Sawn wafer 75 µm on FFC (AU-bumped)	MF01CU2101DUF
MOA4 Module	MF0MOU2101DA4
MOA8 Module	MF0MOU2101DA8

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