NXP® MIFARE® DESFire® EV1

Highspeed, contactless, multi-application solution for smart cards

The MIFARE DESFire EV1 contactless IC is ideal for combining and supporting multiple applications on one contactless smart card or other form factor. It fully complies with the requirements for fast and secure data transmission, flexible memory organization, and interoperability with existing infrastructure.

KEY FEATURES

- Fully ISO/IEC 14443 A 1-4 compliant
- 256B, 2/4/8 kB EEPROM with fast programming
- NFC Tag Type 4 compliant
- Secure, high-speed command set
- High data rates according to ISO/IEC 14443-4: up to 848 Kbit/s
- Choice of open DES/2K3DES/3KDES/AES
- Crypto algorithm in hardware
- Anti-collision
- Privacy protection
- Unique 7-byte serial number (ISO Cascade Level 2)
- Data integrity: CRC and bit counting on physical layer
- Available in MOA4 modules or 8" sawn bumped wafer
- Common Criteria certification: EAL4+ for IC HW and SW

TARGET APPLICATIONS

- Advanced public transportation
- Access management
- E-Government, including social services
- Closed-loop micropayment
- Loyalty programs

KEY BENEFITS

- Flexible file system
- Multiple crypto support on one single card
- Full NFC compliance

CONTACTLESS CONVENIENCE

The MIFARE DESFire EV1 contactless IC is based on open global standards for both air interfaces and cryptographic methods. It is compliant to all four levels of ISO/IEC 14443 A and uses optional ISO/IEC 7816-4 commands. Featuring an on-chip backup management system and the mutual three-pass authentication, a MIFARE DESFire EV1 product-based card can hold up to 28 different applications and 32 files per application. The size and access conditions of each file are defined at the moment of its creation, making MIFARE DESFire EV1 a truly flexible and convenient product. Additionally, an automatic anti-tear mechanism is available for all file types, which guarantees transaction-oriented data integrity. With MIFARE DESFire EV1, data transfer rates up to 848 Kbit/s can be achieved, making fast data processing possible. The MIFARE DESFire EV1 IC uses a DES, 2K3DES, 3K3DES and AES hardware cryptographic engine for securing transmission data.

MIFARE DESFire EV1 brings many benefits to end users. Cardholders experience convenient, contactless ticketing while having the ability to use the same device for applications such as closed-loop payment at vending machines, access management, loyalty or social services. In other words, the MIFARE DESFire EV1 silicon solution offers enhanced, consumer-friendly system design, in combination with security and reliability. The 70 pF option enables read range optimizations of small antenna form factors.

MIFARE DESFire EV1 delivers the perfect balance of speed, performance, and cost efficiency. Its open concept allows future seamless integration of other media such as smart paper tickets, key fobs, and mobile ticketing based on Near Field Communication (NFC) technology.

FEATURES

Memory		Special Features	
EEPROM size	2/4/8 kB	Multi-application	28 applications, MAD3
Write endurance [cycles]	500,000	Purse functionality	Value file
Data retention [yrs]	10	Transaction logging capability	Record file
Organization	Flexible file system	Secure transport transaction example	512-byte read, 128-byte write
		Related transaction time [ms]	89
Security		Proximity check	Yes
Unique serial number [byte]	7, cascaded	**RF-Interface**	
Random number generator	Yes	Acc. to ISO 14443A	Yes-up to layer 4
Access keys	14 keys per application	Frequency [MHz]	13.56
Access conditions	Per file	Baud rate [kbit/s]	106 … 848
AES, 3DES & DES Security	MACing/Encipherment	Anti-collision	Bit-wise
Anti-tear supported by chip	Yes	Operating distance [mm]	Up to 100

ORDERING INFORMATION

Packaging	MIFARE DESFire EV1 2 kB	MIFARE DESFire EV1 4 kB	MIFARE DESFire EV1 8 kB
17 pF	**Part Type**		
Sawn wafer	MF3ICD2101DUD/05	MF3ICD4101DUD/05	MF3ICD8101DUD/05
MOA4 Module	MF3MOD2101DA4/05	MF3MOD4101DA4/05	MF3MOD8101DA4/05
MOA8 Module	MF3MOD2101DA8/05	MF3MOD4101DA8/05	MF3MOD8101DA8/05
70 pF	**Part Type**		
Sawn wafer	MF3ICDH2101DUD/05	MF3ICDH4101DUD/05	MF3ICDH8101DUD/05
MOA4 Module	MF3MODH2101DA4/05	MF3MODH4101DA4/05	MF3MODH8101DA4/05
MOA8 Module	MF3MODH2101DA8/05	MF3MODH4101DA8/05	MF3MODH8101DA8/05

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