Shanghai Fudan Microelectronics Group Company Limited

上海复旦微电子集团股份有限公司
Shanghai Fudan Microelectronics Group Company Limited

FM11NT0X1

NFC Forum Type2 Tag compliant IC with 144/504/888 bytes user memory

Datasheet

Dec.2014

Trademarks

上海复旦微电子集团股份有限公司
Shanghai Fudan Microelectronics Group Company Limited

Contents

1   Product Overview

1.1   Introduction

FM11NT0X1 is primarily designed for NFC Forum Type 2 Tag applications in mass market applications such as retail, gaming and consumer electronics, in combination with NFC devices or NFC compliant Proximity Coupling Devices. Please consult Fudan Micro Electronics Company for more documents.

1.2   Features

1.2.1   RF Interface

- ISO/IEC 14443A

- Contactless transmission of data and supply energy (no battery needed)

- Operating distance: up to 100 mm (depending on various parameters as e.g. field strength and antenna geometry)

- Operating frequency: 13.56 MHz

- Fast data transfer: 106 Kbit/s

- High data integrity: 16-bit CRC, parity, bit coding, bit counting

- True anticollision

- 7 byte serial number (cascade level 2 according to ISO/IEC 14443-3)

- UID ASCII mirror for automatic serialization of NDEF messages

- Automatic NFC counter triggered at read command

- NFC counter ASCII mirror for automatic adding the NFC counter value to the NDEF message

- ECC based originality signature

- Fast read command

- 50 pF input capacitance

1.2.2   EEPROM

- 180, 540 or 924 bytes organized in 45, 135 or 231 pages with 4 bytes per page

- 144, 504 or 888 bytes freely available user Read/Write area (36, 126 or 222 pages)

- 4 bytes initialized capability container with one time programmable access bits

- Field programmable read-only locking function per page for the first 16 pages

- Field programmable read-only locking function above the first 16 pages per double page for FM11NT021 or per 16 pages for FM11NT041 and FM11NT081

- Configurable password protection with optional limit of unsuccessful attempts

Ø Anti-tearing support for capability container (CC) and lock bits

Ø ECC supported originality check

Ø Data retention of 10 years

Ø Write endurance 100000 cycles

1.2.3 NFC Forum Tag 2 Type compliance

FM11NT0X1 IC provides full compliance to the NFC Forum Tag 2 Type technical specification and enables NDEF data structure configurations .

1.2.4 Security

Ø Manufacturer programmed 7-byte UID for each device

Ø Pre-programmed Capability container with one time programmable bits

Ø Field programmable read-only locking function

Ø ECC based originality signature

Ø 32-bit password protection to prevent unauthorized memory operations. The protected memory's size can be configured.

1.2.5 Cascaded UID

The anticollision function is based on an IC individual serial number called Unique IDentifier. The UID of the FM11NT0X1 is 7 bytes long and supports cascade level 2 according to ISO/IEC 14443-3.

1.2.6 Anticollision

An intelligent anticollision function according to ISO/IEC 14443 allows to operate more than one card in the field simultaneously.   The anticollision algorithm selects each card individually and ensures that the execution of a transaction with a selected card is performed correctly without data corruption resulting from other cards in the field.
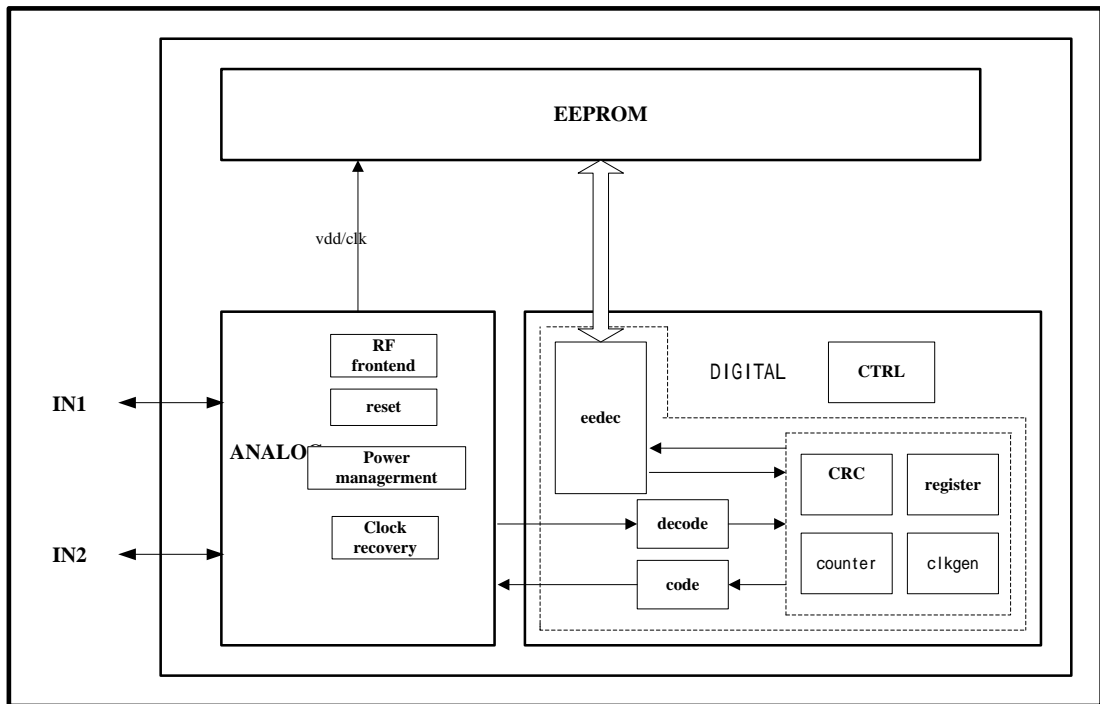
1.3   Block diagram

Figure 1-1 FM11NT0X1 Block diagram

1.4   Wafer layout

Please consult Fudan Micro Electronics Company for the wafer datasheet.

2   Ordering information

Type Number	Wafer Type	Description
FM11NT0X1-WIB	Bump Sawn Wafer	8 inch bump wafer (sawn, laser diced; 150 um thickness, without UV exposure, on film frame carrier; electronic fail die marking according to SECSII format)
FM11NT0X1-WIBU	Bump Sawn Wafer	8 inch bump wafer (sawn, laser diced; 150 um thickness, UV exposure, on film frame carrier; electronic fail die marking according to SECSII format)
FM11NT0X1-WIS	Sawn Wafer	8 inch wafer (sawn, laser diced; 150 um thickness, on film frame carrier; electronic fail die marking according to SECSII format)

<div align="center">FM 11NT 0X 1 -XXX</div>

Company Name

FM=Shanghai Fudan Microelectronics Group Company Limited

Product Family Name

11NT=NFC TAG Product

Memory

02= about 2K bit EEPROM

04= about 4K bit EEPROM

08= about 8K bit EEPROM

Generation number

1=The second generation

Wafer Type

WIS= Sawn Wafer

WIB= Bump Wafer without UV exposure

WIBU= Bump Wafer with UV exposure

Revision history

Version	Publication date	Pages	Paragraph or Illustration	Revise Description
1.0	Dec.2014	9		Initial release

Sales and Service

Shanghai Fudan Microelectronics Group Co., Ltd.
Address: Bldg No. 4, 127 Guotai Rd,
Shanghai City China.
Postcode: 200433
Tel: (86-021) 6565 5050
Fax: (86-021) 6565 9115

Shanghai Fudan Microelectronics (HK) Co., Ltd.
Address: Unit 506, 5/F., East Ocean Centre, 98 Granville Road, Tsimshatsui East, Kowloon, Hong Kong
Tel: (852) 2116 3288   2116 3338
Fax: (852) 2116 0882

Beijing Office
Address: Room 423, Bldg B, Gehua Building,
1 QingLong Hutong, Dongzhimen Alley north Street,
Dongcheng District, Beijing City, China.
Postcode: 100007
Tel: (86-010) 8418 6608
Fax: (86-010) 8418 6211

Shenzhen Office
Address: Room.1301, Century Bldg, No. 4002, Shengtingyuan Hotel, Huaqiang Rd (North),
Shenzhen City, China.
Postcode: 518028
Tel: (86-0755) 8335 0911   8335 1011   8335 2011 8335 0611
Fax: (86-0755) 8335 9011

Shanghai Fudan Microelectronics (HK) Ltd Taiwan Representative Office
Address: Unit 1225, 12F., No 252, Sec.1 Neihu Rd., Neihu Dist., Taipei City 114, Taiwan
Tel : (886-2) 7721 1889
Fax: (886-2) 7722 3888

Shanghai Fudan Microelectronics (HK) Ltd Singapore Representative Office
Address : 237, Alexandra Road, #07-01 The Alexcier, Singapore 159929
Tel : (65) 6472 3688
Fax: (65) 6472 3669

Shanghai Fudan Microelectronics Group Co., Ltd NA Office
Address :2490 W. Ray Road Suite#2
Chandler, AZ 85224 USA
Tel : (480) 857-6500 ext 18

Web Site: http://www.fmsh.com/