



复旦微电子

FM13HF02N ***HF RFID IC based on*** ***ISO/IEC 15693***

Datasheet

Apr.2014



INFORMATION IN THIS DOCUMENT IS INTENDED AS A REFERENCE TO ASSIST OUR CUSTOMERS IN THE SELECTION OF SHANGHAI FUDAN MICROELECTRONICS GROUP CO., LTD PRODUCT BEST SUITED TO THE CUSTOMER'S APPLICATION; THEY DO NOT CONVEY ANY LICENSE UNDER ANY INTELLECTUAL PROPERTY RIGHTS, OR ANY OTHER RIGHTS, BELONGING TO SHANGHAI FUDAN MICROELECTRONICS GROUP CO., LTD OR A THIRD PARTY.

WHEN USING THE INFORMATION CONTAINED IN THIS DOCUMENTS, PLEASE BE SURE TO EVALUATE ALL INFORMATION AS A TOTAL SYSTEM BEFORE MAKING A FINAL DECISION ON THE APPLICABILITY OF THE INFORMATION AND PRODUCTS.

PURCHASERS ARE SOLELY RESPONSIBLE FOR THE CHOICE, SELECTION AND USE OF THE SHANGHAI FUDAN MICROELECTRONICS GROUP CO., LTD PRODUCTS AND SERVICES DESCRIBED HEREIN, AND SHANGHAI FUDAN MICROELECTRONICS GROUP CO., LTD ASSUMES NO LIABILITY WHATSOEVER RELATING TO THE CHOICE, SELECTION OR USE OF THE SHANGHAI FUDAN MICROELECTRONICS GROUP CO., LTD PRODUCTS AND SERVICES DESCRIBED HEREIN. UNLESS EXPRESSLY APPROVED IN WRITING BY AN AUTHORIZED SHANGHAI FUDAN MICROELECTRONICS GROUP CO., LTD REPRESENTATIVE, SHANGHAI FUDAN MICROELECTRONICS GROUP CO., LTD PRODUCTS ARE NOT RECOMMENDED, AUTHORIZED OR WARRANTED FOR USE IN MILITARY, AIR CRAFT, SPACE, LIFE SAVING, OR LIFE SUSTAINING APPLICATIONS, NOR IN PRODUCTS OR SYSTEMS WHERE FAILURE OR MALFUNCTION MAY RESULT IN PERSONAL INJURY, DEATH, OR SEVERE PROPERTY OR ENVIRONMENTAL DAMAGE.

FUTURE ROUTINE REVISIONS WILL OCCUR WHEN APPROPRIATE, WITHOUT NOTICE. CONTACT SHANGHAI FUDAN MICROELECTRONICS GROUP CO., LTD SALES OFFICE TO OBTAIN THE LATEST SPECIFICATIONS AND BEFORE PLACING YOUR PRODUCT ORDER. PLEASE ALSO PAY ATTENTION TO INFORMATION PUBLISHED BY SHANGHAI FUDAN MICROELECTRONICS GROUP CO., LTD BY VARIOUS MEANS, INCLUDING SHANGHAI FUDAN MICROELECTRONICS GROUP CO., LTD HOME BLOCK ([HTTP://WWW.FMSH.COM/](http://www.fms.com/)).

PLEASE CONTACT SHANGHAI FUDAN MICROELECTRONICS GROUP CO., LTD LOCAL SALES OFFICE FOR THE SPECIFICATION REGARDING THE INFORMATION IN THIS DOCUMENT OR SHANGHAI FUDAN MICROELECTRONICS GROUP CO., LTD PRODUCTS.

Trademarks

Shanghai Fudan Microelectronics Group Co., Ltd name and logo, the “复旦” logo are trademarks or registered trademarks of Shanghai Fudan Microelectronics Group Co., Ltd or its subsidiaries in China.

Shanghai Fudan Microelectronics Group Co., Ltd, Printed in the China, All Rights Reserved.



Contents

CONTENTS	3
1 PRODUCT OVERVIEW	4
1.1 INTRODUCTION	4
1.2 FEATURES	4
1.2.1 <i>RF Interface</i>	4
1.2.2 <i>EEPROM</i>	4
1.2.3 <i>Security</i>	4
1.2.4 <i>Applications</i>	5
1.3 BLOCK DIAGRAM	5
2 ORDERING INFORMATION	6
REVISION HISTORY	7
SALES AND SERVICE	8

1 Product Overview

1.1 Introduction

FM13HF02N is primarily designed for intelligent label applications such as libraries, product authentication in different industries such as pharmaceutical, medical devices and alcohol, as well as production management in different areas of the industry. This IC is the Second generation of a product family of smart label ICs based on the ISO standards ISO/IEC 15693 and ISO/IEC 18000-3 which has enhanced RF performance and reliability of EEPROM. Please consult Fudan Micro Electronics Company for more documents.

1.2 Features

1.2.1 RF Interface

- ISO/IEC 15693
- Contactless transmission of data and supply energy (no battery needed)
- Operating distance: up to 1.5 m (depending on various parameters as e.g. field strength and antenna geometry)
- Operating frequency: 13.56 MHz
- Fast data transfer: up to 53 Kbit/s
- High data integrity: 16-bit CRC, framing
- True anticollision
- Password protected Electronic Article Surveillance (EAS)
- Password protected Application Family Identifier (AFI)
- Data Storage Format Identifier (DSFID)
- Additional fast anticollision read
- Write 2 Block is supported

1.2.2 EEPROM

- 2k bits of total memory, divided in 64 blocks (4 bytes each)
- Data retention of 50 years
- Write endurance 100000 cycles

1.2.3 Security

- Unique identifier for each device, UID is unchangeable.
- Lock mechanism for each user memory block (write protection)
- Lock mechanism for DSFID, AFI, EAS
- Password (32-bit) protected EAS and AFI functionality
- Password (32-bit) protected Label Destroy

1.2.4 Applications

- Libraries
- Item level tagging in pharmaceutical supply chains
- Counterfeit protection for consumer goods
- Industrial applications
- Asset and document tracking

1.3 Block diagram

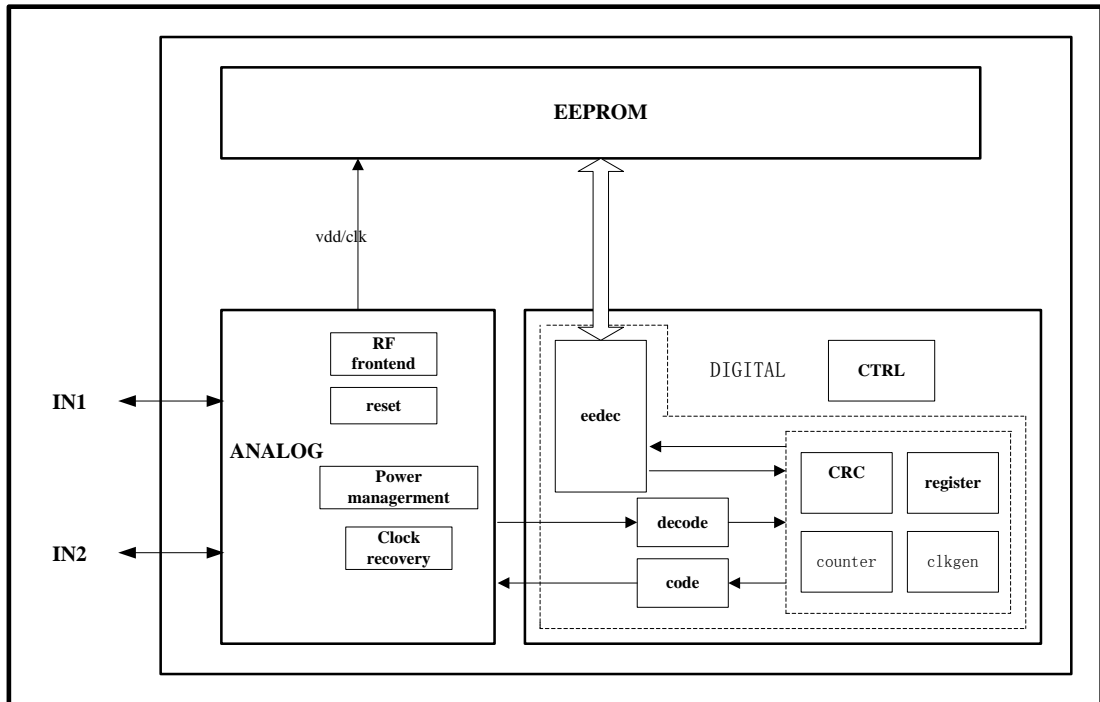
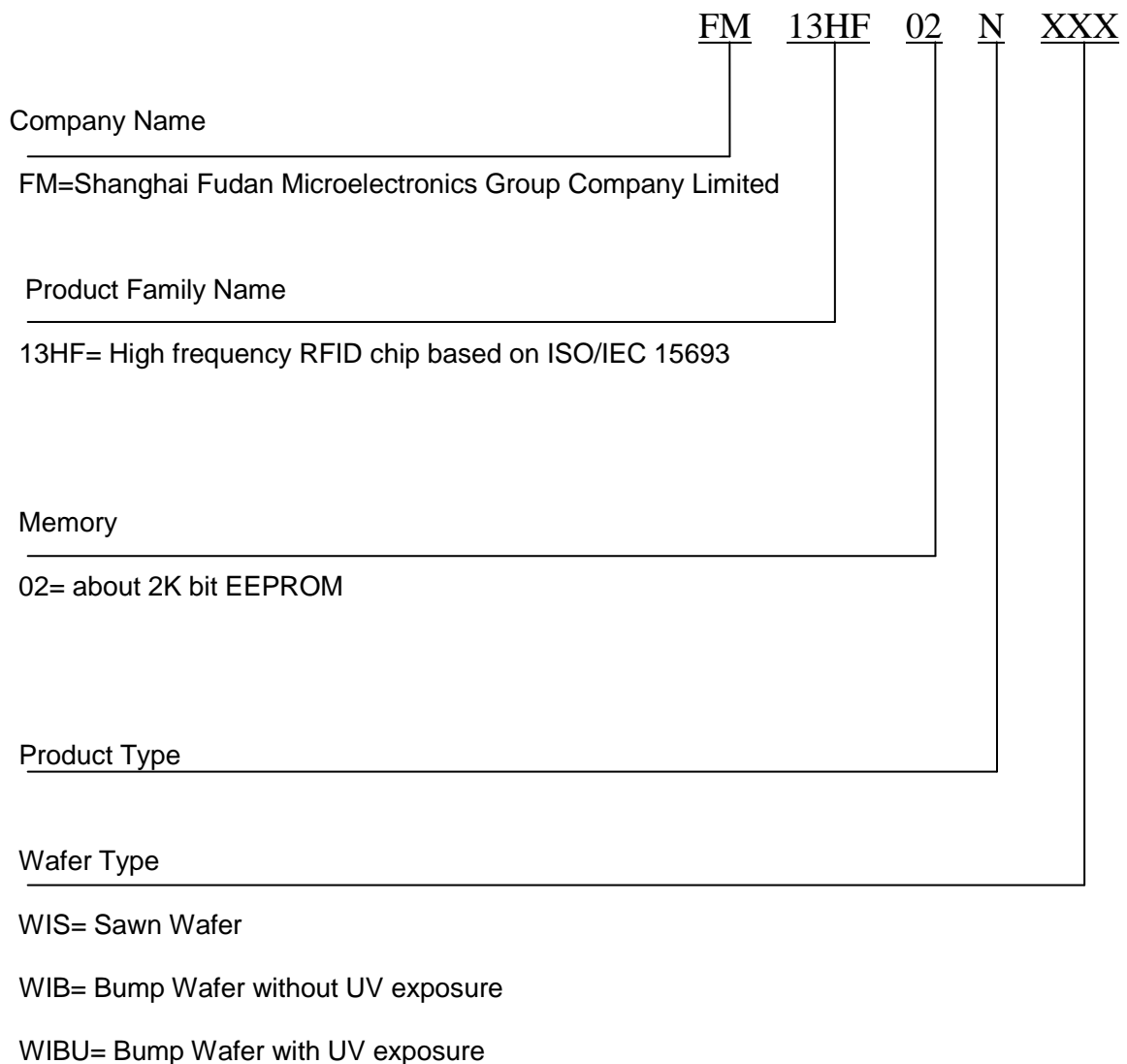


Figure 1-1FM13HF02N Block diagram



2 Ordering information

Type Number	Wafer Type	Description
FM13HF02N-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)
FM13HF02N-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)
FM13HF02N-WIS	Sawn Wafer	8 inch wafer (sawn, laser diced; 150 um thickness, on film frame carrier; electronic fail die marking according to SECSII format)





Revision history

Version	Publication date	Pages	Paragraph or Illustration	Revise Description
1.0	Apr.2014	8		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/>