



THE POSSIBILITIES ARE INFINITE



ISO/IEC15693 Compliant
Ucode Tag Chips Certified by the Ubiquitous ID Center

FerVID family™

MB89R118/MB89R119

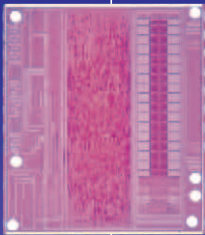
FRAM® embedded Transponder IC



The MB89R118/MB89R119 are RFID LSI products with embedded FRAM (Ferroelectric Random Access Memory) based on Fujitsu's cutting edge technologies. These products are ISO/IEC15693 compliant vicinity-type RFID chips using 13.56MHz band.

2KBytes FRAM/256Bytes FRAM embedded these products enable the chips to write data at high speed and as much as 10 billion times, which are not available with conventional tags. Also supporting anti-collision, the chips deliver performance for distributed data processing while preserving data, such as for SCM, logistics, retailing, recycling, and quality control.

FerVID family™ MB89R118/MB89R119



■ Features

- High speed read/write of data by FRAM
- ISO/IEC15693 compliant (Partly not compliant) *1
- ISO/IEC18000-3 Mode 1 compliant
- Certified for ucode tag (Class-1) by the Ubiquitous ID Center (MB89R118) *2
- Anti-collision
- 64bit UID
- EAS (Electric Article Surveillance) command for anti-theft
- Quick response using the Fast command : 52.97 Kbps
- Data verification on write operation
- FRAM data protection

Item	MB89R118	MB89R119
Memory capacity	2048 bytes	256 bytes
User memory area	2000 bytes	232 bytes
Operating frequency	13.56MHz ± 7kHz	13.56MHz ± 7kHz
Modulation type	10%ASK	10%ASK, 100%ASK
Ambient operating temperature	-20 °C to 85 °C	-20 °C to 85 °C
Ambient storage temperature	-40 °C to 85 °C	-40 °C to 85 °C
Input capacitance	24 pF	24 pF
Power consumption	150 μW	150 μW
Data retention period	10 years at 55 °C	10 years at 55 °C
Data Endurance	10 ¹⁰ cycles	10 ¹⁰ cycles
Examples of data reading *3	1525 ms (2048 bytes)	83 ms (256 bytes)
Examples of data writing *4	1413 ms (2000 bytes)	302 ms (232 bytes)
others	<ul style="list-style-type: none"> • 8 bytes/block configuration • ISO/IEC15693 commands full support • Reading up to 256 blocks using custom commands 	4 bytes/block configuration

*1 : ISO/IEC15693

For reader/writer-to-card transmission, this product supports 1 out of 4 data coding and ASK (amplitude-shift keying) 10% modulation. (MB89R119 supports two types, both ASK 10% modulation and ASK 100% modulation.) For card-to-reader/writer transmission, the product supports one subcarrier.

*2 : Certified for ucode tag by the Ubiquitous ID Center
Planned regarding MB89R119

*3 : Read with the Read Multiple Blocks command (UID contained)

*4 : Write with the Write Multiple Blocks command (UID contained)

FRAM is a registered trademark of Ramtron International Corporation.
FerVID family is a trademark of Fujitsu Limited, Japan.

FUJITSU LIMITED

<http://edevice.fujitsu.com/>

Japan Marketing Division, Electronic Devices

Shinjuku Dai-ichi Seimei Bldg.

7-1, Nishishinjuku 2-chome, Shinjuku-ku, Tokyo 163-0721

Tel : +81-3-5322-3383 Fax : +81-3-5322-3386

North and South America

FUJITSU MICROELECTRONICS
AMERICA, INC.
1250 E. Arques Avenue, M/S 333
Sunnyvale, CA 94088-3470, USA
Tel : +1-408-737-5600
Fax : +1-408-737-5999
<http://www.fma.fujitsu.com/>

Europe

FUJITSU MICROELECTRONICS
EUROPE GmbH
Pittlerstrasse 47,
D-63225 Langen,
Germany
Tel : +49-6103-690-0
Fax : +49-6103-690-122
E-mail: www.fme.fujitsu.com/

Asia Pacific

FUJITSU MICROELECTRONICS
ASIA PTE LTD.
#05-08, 151 Lorong Chuan,
New Tech Park,
Singapore 556741
Tel : +65-6281-0770
Fax : +65-6281-0220
<http://www.fmal.fujitsu.com/>

Korea

FUJITSU MICROELECTRONICS
KOREA LTD.
1702 KOSMO TOWER,
1002 Daechi-Dong,
Kangnam-Gu, Seoul
135-280, Korea
Tel : +82-02-3484-7100
Fax : +82-02-3484-7111
<http://www.fmk.fujitsu.com/>

Specifications are subject to change without notice. For further information please contact each office.

All Rights Reserved.

The contents of this document are subject to change without notice.

Customers are advised to consult with FUJITSU sales representatives before ordering.

The information, such as descriptions of function and application circuit examples, in this document are presented solely for the purpose of reference to show examples of operations and uses of Fujitsu semiconductor device; Fujitsu does not warrant proper operation of the device with respect to use based on such information. When you develop equipment incorporating the device based on such information, you must assume any responsibility arising out of such use of the information. Fujitsu assumes no liability for any damages whatsoever arising out of the use of the information.

Any information in this document, including descriptions of function and schematic diagrams, shall not be construed as license of the use or exercise of any intellectual property right, such as patent right or copyright, or any other right of Fujitsu or any third party or does Fujitsu warrant non-infringement of any third-party's intellectual property right or other right by using such information. Fujitsu assumes no liability for any infringement of the intellectual property rights or other rights of third parties which would result from the use of information contained herein.

The products described in this document are designed, developed and manufactured as contemplated for general use, including without limitation, ordinary industrial use, general office use, personal use, and household use, but are not designed, developed and manufactured as contemplated (1) for use accompanying fatal risks or dangers that, unless extremely high safety is secured, could have a serious effect to the public, and could lead directly to death, personal injury, severe physical damage or other loss (i.e., nuclear reaction control in nuclear facility, aircraft flight control, air traffic control, mass transport control, medical life support system, missile launch control in weapon system), or (2) for use requiring extremely high reliability (i.e., submersible repeater and artificial satellite).

Please note that Fujitsu will not be liable against you and/or any third party for any claims or damages arising in connection with above-mentioned uses of the products.

Any semiconductor devices have an inherent chance of failure. You must protect against injury, damage or loss from such failures by incorporating safety design measures into your facility and equipment such as redundancy, fire protection, and prevention of over-current levels and other abnormal operating conditions.

If any products described in this document represent goods or technologies subject to certain restrictions on export under the Foreign Exchange and Foreign Trade Law of Japan, the prior authorization by Japanese government will be required for export of those products from Japan.