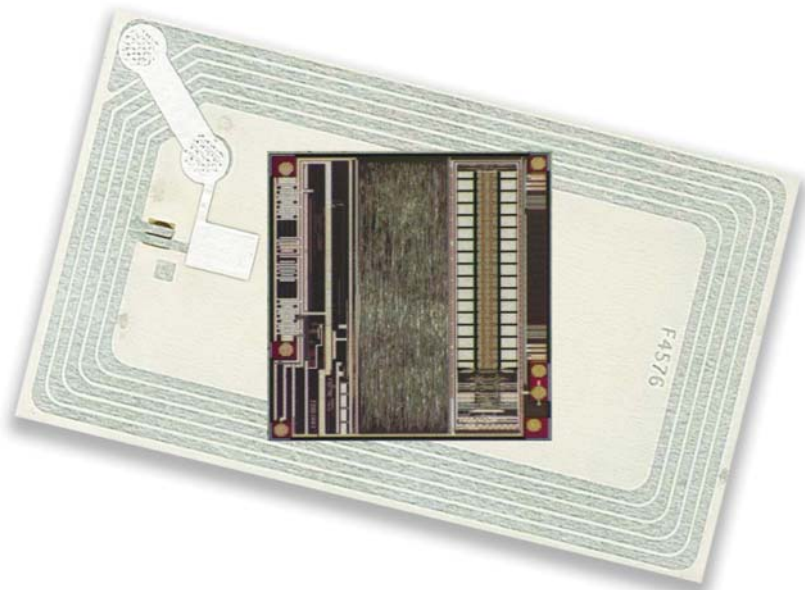


# FRAM RFID ICs FerVID FAMILY

## MB89R118B, MB89R119



The MB89R118B and MB89R119 are RFID devices with 2kBytes and 256Bytes embedded FRAM (Ferroelectric Random Access Memory) respectively based on Fujitsu's cutting-edge technologies.

Compared to conventional E<sup>2</sup>PROM/Flash based RFID chips, the FerVID Family enables the same high speed data transfer rate for both

reading and writing over long distances. The write endurance, specified to 10 billion cycles, is far higher than that of conventional RFID tags, thus saving cost and time in applications.

These products are ISO/IEC15693 compliant vicinity-type RFID chips using the 13.56MHz band.

### FRAM

'FRAM' (Ferroelectric Random Access Memory) is a non-volatile memory technology with the unique features of high-speed, low-power writing operations, high re-write endurance and strong tamper resistance. It is ideally suited to RFID, smart cards and contactless applications, as well as many applications where SRAM (Static RAM) are used with expensive batteries. Due to its resistance against radioactive radiation, FRAM fits into medical applications and applications in the food industry where sterilization is performed by irradiation.



The 2kBytes/256Bytes embedded FRAM enables high-speed data writing, with up to 10<sup>10</sup> write cycles.

Fujitsu is a pioneer in this innovative technology. With more than 10 years of experience in developing and manufacturing FRAM products, it has now shipped more than 300 million FRAM devices. The industry is embracing it as a mature technology.

### Applications

Fujitsu's RFID products with 2kBytes or 256Bytes of FRAM, are ideally suited to many applications and markets including:

- Logistics, supply chain management
- Luggage tags and library books
- Passenger tickets, subscription cards
- ID tags, factory automation
- Access control
- Medical and applications in the food industry

In most of the applications mentioned above, FRAM has a differentiating advantage compared to E<sup>2</sup>PROM/Flash - fast transaction time, low power, high endurance in write mode, etc.



The chips support anti-collision, and deliver performance for distributed data processing while preserving data, such as for SCM, logistics, retailing, re-cycling and quality control.

# FACTSHEET

## FRAM RFID ICs - FerVID FAMILY

THE POSSIBILITIES ARE INFINITE

### Key Features

- 13.56MHz, ISO15693, ISO18000-3
- Ubiquitous ID ucode certified
- 64 bits UID
- Communication range: 50cm and more\*
- FRAM size: 2kBytes/256Bytes
- Anti-collision algorithm
- I/O: 26.48kbps/52.96kbps (Fast command)
- Fast programming: 75.52µs/8Bytes block
- Writes full 2000Bytes array in 1.4s
- EAS command (Electronic Article Surveillance)
- Security: write protect
- Gold bump connectors

\* depending on reader power and antenna size

Item	MB89R118B	MB89R119
Memory capacity	2048Bytes	256Bytes
User memory area	2000Bytes	232Bytes
Operating frequency	13.56MHz ± 7kHz	13.56MHz ± 7kHz
Modulation type	ASK 10%, ASK 100%	ASK 10%, ASK 100%
Ambient operating temperature	-20 to +85°C	-20 to +85°C
Ambient storage temperature	-40 to +85°C	-40 to +85°C
Input capacitance	24pF	24pF
Power consumption	150µW	150µW
Data retention period	10 years at 55°C	10 years at 55°C
Data endurance	10 <sup>10</sup> cycles	10 <sup>10</sup> cycles
Data integrity	16-bit CRC per block parity bit for each Byte	16-bit CRC per block parity bit for each Byte
Anti-collision	30 tags per second 40 tags per second (using ASK 100%)	30 tags per second 40 tags per second (using ASK 100%)
Data Tx/Rx rate	26.48kbits/sec 52.96kbits/sec with Fast commands	26.48kbits/sec 52.96kbits/sec with Fast commands
Examples of data reading *1	1525ms (2048Bytes)	83ms (256Bytes)
Examples of data writing *2	1413ms (2000Bytes)	302ms (232Bytes)
Others	8Bytes/block configuration Reading up to 256 blocks using custom lump commands EAS command (Electronic Article Surveillance)	4Bytes/block configuration Reading up to 64 blocks using custom lump commands EAS command (Electronic Article Surveillance)

\*1: Read with the Read Multiple Blocks command (UID contained)  
\*2: Write with the Write Multiple Blocks command (UID contained)

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