# SRAM-compatible Non-Volatile Memory, Parallel interface 4Mbit FRAM "MB85R4M2T"

Fujitsu Releases a New 4Mbit FRAM of Non-Volatile Memory that Can Substitute for SRAM
- Represents a battery-free solution for industrial machinery and office equipment -

As an update to its lineup of FRAM products, Fujitsu Semiconductor has developed a new product of the MB85R4M2T, a 4Mbit FRAM chip with an SRAM-compatible parallel interface.
This product is a type of memory that features non-volatility, which allows data to be retained even when the power is switched off.
It uses a 44-pin TSOP package compatible with standard low-power SRAM, so it can substitute for SRAM in industrial machinery, office equipment, medical devices, and other equipment that currently uses SRAM. Because it stores data persistently with no need of a battery, it contributes to hardware that is more compact, less power-hungry, and lower in total cost.
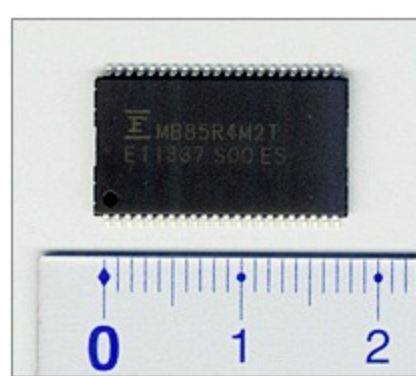
FRAM is a type of memory that features both non-volatility, which allows data to be retained even when the power is switched off, and random access, which enables fast data writing. Because FRAM can safely store data that is being written even at sudden power source failures and power outages, it is possible to ensure the protection of parameter information and log data in equipment recorded immediately preceding a power source outage. Since started mass production of FRAM in 1999, FRAM products have been adopted many applications such as factory automation, measurement equipment, ATM, and medical devices.

Fujitsu Semiconductor has added the 4Mbit MB85R4M2T, which has an SRAM-compatible parallel interface, to its line of FRAM products. Because it uses a 44-pin TSOP package that is compatible with standard SRAM memory, without any big PCB design changes it can substitute as is for SRAM in any application using SRAM that requires fast access to memory writes, such as industrial machinery, office equipment, and medical devices. In addition, because it stores data with no need for battery power, it contributes to hardware that is more compact, less power-hungry, and lower in total cost.

1. Reduced mounting area

Because it removes the need for a battery to store data, the mounting area for memory and related components on PCB board in machinery can be reduced by 50% or more. (Fig.1)
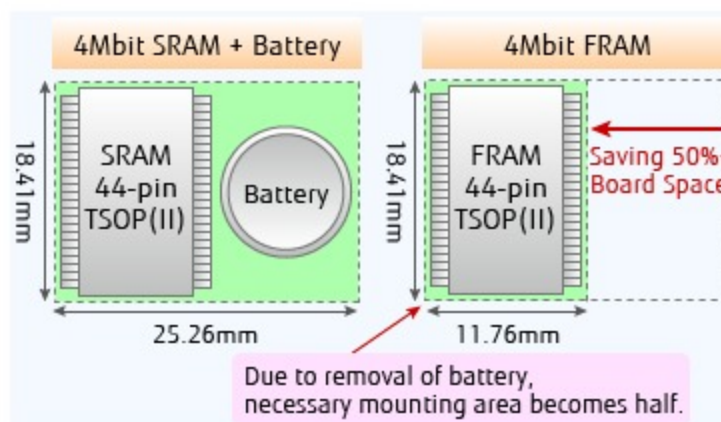

Fig.1: Mounted Area Comparison

2. Reduced power consumption

SRAM requires data retention current in order to retain data in memory when main power is shut off, consuming roughly 15 μW per second. Because FRAM is non-volatile, it consumes zero electricity when off. (Fig.2)
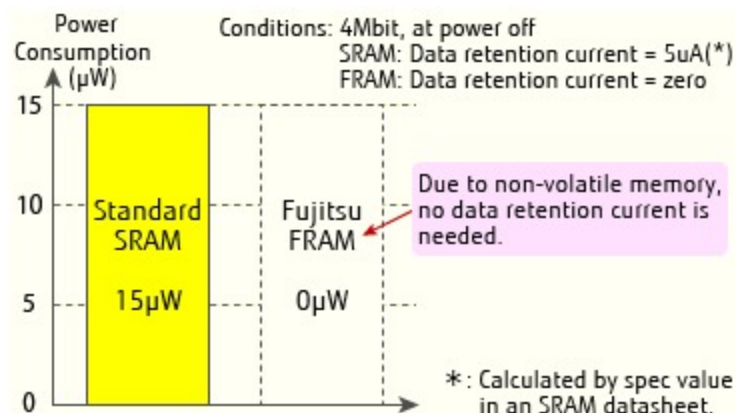

Fig.2: Power Consumption for Data Retention

3. Reduced total cost

Eliminating the battery not only reduces the cost of a component, it also eliminates the periodical costs associated with replacement batteries and maintenance, reducing total costs in terms of both development and running.(Fig.3) Fujitsu Semiconductor continues to provide our customers with memory products and solutions that contribute to increased performance and reduced total costs in their end-products.
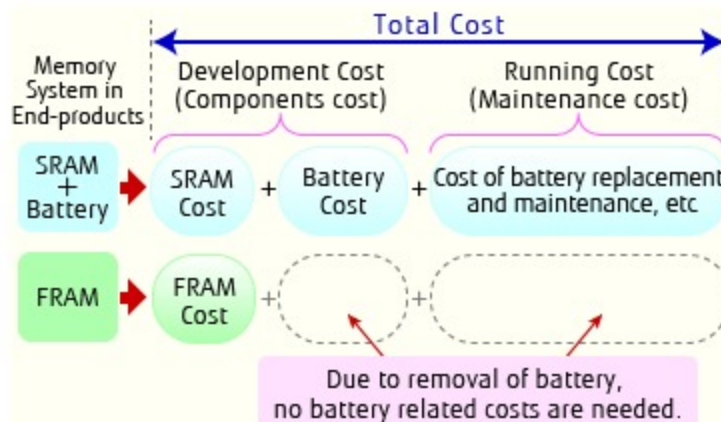

Fig.3: Total Costs Comparison

Main Specifications

- Density (Configuration): 4Mbit (256K x16bit)
- Power Supply Voltage: 1.8V to 3.6V
- Operation Ambient Temperature Range: -40℃ to +85℃
- Read/Write Endurance: 10 trillion times (10^{13} times)
- Data Retention: 10 years (+85℃)
- Access Time
  Address Access Time: 150ns (Min)
  /CE Access Time: 75ns (Max)
- Low Power Current
  Operating Current: 20mA (Max)
  Standby Current: 150uA (Max)
  Sleep Current: 20uA (Max)
- Package: 44pin TSOP

Related Links

- FRAM Top page
- FRAM Product Lineup
- 📄 MB85R4M2T Datasheet (1.09 MB)