FUjitsu

Fujitsu Semiconductor Memory Solution Profile

FUJITSU ReRAM

Our Technology is There to Support You



Toward Creating New Value

Fujitsu Semiconductor Memory Solution offers memory products and various solutions primarily on Ferroelectric Random Access Memories (FeRAM), a high-quality and highly reliable non-volatile memory, to customers. Fujitsu's semiconductor division began mass production of FeRAM in 1999, and FeRAM has been attaining favorable reputations from customers as memory products that provide non-volatility, which retains stored data even when the power is turned off, as well as random access. Compared to existing types of non-volatile memories, such as EEPROMs and flash memories, FeRAM is characterized by its high write speeds, high read/write endurance, and low power consumption. FeRAM is used in a wide range of applications, such as IC cards, RFID tags, power meters, and industrial machinery and they are also best suited for wearable devices and sensor networks.

In addition, as next-generation memory, we have begun mass production of ReRAM, which requires less power when reading data and is ideal for small wearable devices, and we are also developing non-volatile memory (NRAM) using carbon nanotube as the material.

Fujitsu Semiconductor Memory Solution was established in March 2020 as a spin-off from Fujitsu Semiconductor. We will continue to develop our business under the motto, "Our Technology is There to Support You," to deliver high-quality semiconductor products and services, as well as create and provide new value and optimal services to customers.



Kagemasa Magaribuchi President FUJITSU SEMICONDUCTOR MEMORY SOLUTION LIMITED

Corporate Profile / Activities

Corporate Profile

Corporate name

FUJITSU SEMICONDUCTOR MEMORY SOLUTION LIMITED

Location of head office

Shin-Yokohama TECH Building, 3-9-1 Shin-Yokohama, Kohoku-Ku, Yokohama, Kanagawa, Japan

Capital 100 Million Yen

Date of establishment March 31, 2020

Business description Design, development, and sales of memory products and solutions

Representative Kagemasa Magaribuchi, President and Representative Director

Website https://www.fujitsu.com/jp/group/fsm/en/



Our Activities



Our Business

We are offering high-quality and high-performance LSI memory products, which are essential for enhanced digital applications, through their manufacturing and development over many years. In addition to offering LSI memory products for greater miniaturization and lower power consumption in recent years, we also propose the best solutions combined with memory to meet customers' needs



Our Activity for Global Environmental Protection

We are contributing to the achievement of Sustainable Development Goals (SDGs) through the development and providing low-power devices and solutions that reduce environmental impact. We also strive to develop and manufacture products that comply with environmental protection laws and regulations such as RoHS and REACH.



Our Products

We are providing FeRAM and ReRAM, which are non-volatile memory products that retain written data even when the power is turned off. Since our memories have the same package pinout and interface as conventional memory products ones, FeRAM and ReRAM can be easily replaced with other memories. We are also developing custom LSIs using memory technology for customers own special applications.

Supporting Human Health and Society using Memory

Most people might not have the opportunity to come into direct contact with semiconductors in their daily lives. In addition, there might be many people who feel that applications using semiconductor devices such as large industrial machines and computer systems are far from our daily lives.

As you can see, semiconductors are not so familiar to us, but they are actually used in the electronic products we use every day. The memory products we provide is one of the semiconductors. As part of the products that support people's lives, memory also quietly supports people with its technology.

Memory supporting a Healthy Life

Our memory products help people around the world live healthier lives.

Hearing aids are used for people who are hard of hearing. Also, for people who have trouble sleeping, continuous positive airway pressure (C PAP) devices are working to help them sleep. Our memory products are also used in those products and devices that support such healthy living.



Memory supporting Society

Memory products are used in a wide range of applications from public infrastructure to personal IC cards. Memory IC is one of the electronic components that are indispensable for applications supporting human society



Reliable History

We have been providing FeRAM memory products globally for over 20 years. This reliable history has earned us the trust of our customers.



Products and Solutions

Resolving Customers' Issues using Memory

FeRAM

FeRAM (Ferroelectric RAM) is a non-volatile memory and guarantees a maximum 100 trillion read/write endurance. It does not need a backup battery for data retention and features faster-writing speed operation, higher read/write endurance, and lower power consumption compared to conventional non-volatile memories such as EEPROM and flash memory.

Due to these advantages, FeRAM is used in applications requiring continuous data logging, real-time recording of three-dimensional position information, and data protection from sudden power outages. We also provide many FeRAM products which guarantee to operate up to 125°C for applications requiring reliability in high-temperature environments such as automobiles and industrial robots.

Image: State State

FeRAM guaranteed 100 trillions rewriting

ReRAM

ReRAM(Resistive Random Access Memory) is a non-volatile memory with a structure that memorizes data by changes in resistance. Since It has an outstandingly small read current, ReRAM is ideal for use in battery-operated wearable devices such as hearing aids and smart watches. We developed 12Mbit ReRAM, which has the largest memory density in our memory product family, in a very small package size of approximately 2mm x 3mm.

Battery-less solutions

We provide FeRAM-embedded wireless LSI for battery-less solutions, which is an electronic component to enable battery-less operations in parts of logistics and retail systems.

For example, our wireless LSI is used for electronic paper that operates without a battery. This technology, which operates electronic paper by a wireless power supply that uses radio waves, can be enabled by using FeRAM-embedded LSI. As our FeRAM of memory consumes only extremely low power to operate. It is expected that the use of electronic paper for recording work and display work will increase in the future due to labor shortage, and our FeRAM-embedded LSI will contribute to battery-less applications in various fields.

12Mbit ReRAM



Electronic Paper using FeRAM-embedded LSI

NRAM

The NRAM is a non-volatile memory created by using cutting-edge carbon nanotube technology and materials. Currently, we are working jointly with U.S.-based Nantero, Inc. to develop the memory into new products.

In addition to the same features as FeRAM, fast writing speed, high read/write endurance, and low power consumption, NRAM is expected to demonstrate excellent memory performance of increased memory density and high thermal resistance that makes it relatively easy to guarantee operation at a high temperature.

*: NRAM is a registered trademark of Nantero, Inc.



Illustration of Carbon Nanotubes for NRAM

Environmental Protection Activity

Contributing to the Global Environment

We position "Environment" as an important management issue, and promotes environmental activities based on our Environmental Policy.

Environmental Policy

Philosophy

Operational

Principles

With our customers, we contribute to the protection of a rich global environment, using state-of-the-art technology to provide semiconductor memories and solutions with superior environmental characteristics.

By applying the following principles, we work to prevent pollution of the global environment and reduce the environmental burden of our products throughout their life cycles, including development, procurement, manufacture, sales, usage, and disposal.

- 1. We develop products with outstanding environmental characteristics.
- 2. We promote proper management of chemical substances contained in products, packaging materials, etc.
- 3. We promote measures to counteract climate change and the effective utilization of resources.
- 4. We conform to environmental regulations around the world and keep our promises to customers.
- 5. We promote activities to make environmental and social contributions, and to consider biodiversity.
- 6. We effectively and continually improve our environmental management system, and work hard to improve our environmental performance.

ISO14001 Certificate

Fujitsu Semiconductor Memory Solution acquired the certification of ISO14001 which is the international standard of Environmental Management System (EMS).

ISO14001 Certificate

https://www.fujitsu.com/jp/group/fsm/ en/about/environment/



Regulatory Authority: JACO Registration number: EC22J0022 Certified on: March 29, 2023

Contributing to the achievement of the SDGs

We contribute to 3 goals achievement in SDGs 17 goals by providing semiconductor memories and solutions with superior environmental characteristics.

	Goal	Our activities	Efficiency	Our products
4 QUALITY EDUCATION	Goals4: Quality education	Providing products to universities and public facility by free	Cooperate with science technology learning	Non-volatile memory "FeRAM","RFID"
7 ATOMOLALI ANI CLARINERO	Goals7: Affordable and clean energy	Providing low power devices	Reduction of CO ₂ emission	Non-volatile memory "FeRAM","RFID"
	Goals12: Responsible consumption, production	Providing Battery-less solutions	Reduction of battery wastes	Battery-less solutions

Quality and Reliability

Providing High Quality and High Reliability

Our LSIs are used in a variety of fields and play an important role in our customers' products.

We place the highest priority on product quality and reliability, and we are known for high quality and reliability worldwide. We are working to improve quality and reliability even further in terms of people, processes, and products while strengthening cooperation with manufacturing partner companies.

People – Producing high quality through the education of personnel

Not only are our staff members highly skilled in various aspects, but they are also dedicated to achieving the highest standards of quality and reliability. We realize this through our educational programs which make each employee acknowledge the importance of achieving the quality and reliability of end products.

Processes - High-quality built-in at every stage

Maintaining optimal conditions during the processes of product planning, design and development, delivery and after-sales support is the key point to stably supplying high-yield and high-quality LSIs. We perform thorough checks based on strict quality standards at every stage of the process to attain these targets.

Products - High-quality suitable for all sectors of society

Our extensive expertise based on continuous development and improvement of FeRAM technology for more than 20 years enables us to release advanced nonvolatile memories that meet a variety of customer needs. We seek to contribute to diverse segments of society by providing highly reliable products created from accomplished and optimized memory solution.

ISO9001 Certificate

Fujitsu Semiconductor Memory Solution acquired the certification of ISO9001 which is the international standard of Quality Management System (QMS).

ISO9001 Certificate https://www.fujitsu.com/jp/group/fsm/ en/support/quality/



FUJITSU SEMICONDUCTOR MEMORY SOLUTION LIMITED Headquarters ISO9001 491643QM

Regulatory Authority: DQS Japan Inc. Registration number: 491643QM Certified on: June 19, 2012

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