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FUJITSU

FerVID family™

LSI for FRAM RFID Tag

2011.6
FUJITSU SEMICONDUCTOR

shaping tomorrow with you

FerVID family™

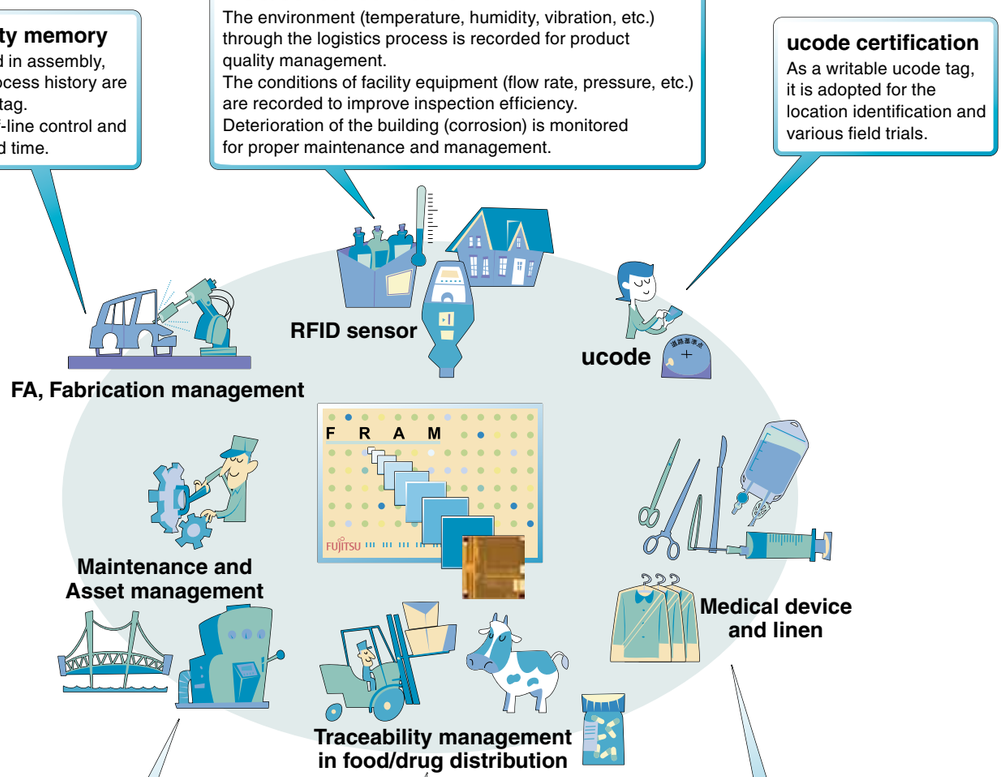
FerVID family is RFID LSI product series developed by Fujitsu Semiconductor, in which the cutting edge technology FRAM (Ferroelectric Random access memory) is embedded.
The FerVID family products are provided for HF (13.56MHz) and UHF (860-960 MHz) passive RFID, and widely introduced as Data carrier RFID with Large memory because of the Fast writing and High read/write endurance feature of FRAM.
In addition, outstanding radiation hardness of FRAM compared with E^2PROM realizes to apply RFID to medical devices which require Gamma-ray sterilization without data loss. And also the serial interface feature provides huge potential to apply RFID for embedded RF solutions.

Application of FerVID family

Large-density memory
Parts to be used in assembly, manual, and process history are recorded in the tag.
This enables off-line control and reduces the lead time.

MCU/Sensor connection
The environment (temperature, humidity, vibration, etc.) through the logistics process is recorded for product quality management.
The conditions of facility equipment (flow rate, pressure, etc.) are recorded to improve inspection efficiency.
Deterioration of the building (corrosion) is monitored for proper maintenance and management.

ucode certification
As a writable ucode tag, it is adopted for the location identification and various field trials.



Parts information and maintenance history are recorded in the tag.
This dramatically improves the on-site workability.
Reuse, replacement, and disposable control are simplified by proper asset management with RFID.

High-speed writing
Inspection data can be recorded simultaneously into multiple tags at several transit points during distribution processes.
Traceability data is accumulated in the tag and improves safety and reliability.

Gamma-ray resistance
FRAM data survives even if it is irradiated by gamma-ray sterilization.
Sterilization of medical packages, surgical instrument, food, linen, and so forth is no problem without removing tags.

FerVID Family for HF Passive RFID

MB89R118C, MB89R119B

Features

- ISO/IEC15693, 18000-3/Mode1 compliant
- Large memory density and Fast Writing performance
- Fast Reading performance with custom commands
- Outstanding Gamma-ray radiation hardness (more than 25kGy sterilization for medical usage)
- Anti-collision feature
- High-input capacitance for antenna downsizing requirement
- Serial interface for embedded RF solution (Plan)
- ucode tag certification by Ubiquitous ID Center


MB89R118C

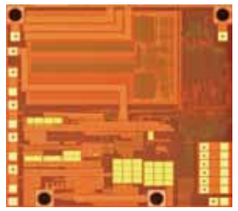
	MB89R118C	MB89R119B	MB89Rxxx (Plan)
Memory size	2,048Bytes (16K bits)	256Bytes (2,048 bits)	8K Bytes (32K bits)
User memory size	2,000Bytes	232Bytes	TBD
Block structure	8Bytes, 256Blocks	4Bytes, 64Blocks	TBD
Operating frequency	13.56MHz ± 7kHz		←
Modulation	ASK10/100%		←
Data coding	1 out of 4 (1out of 256 is not supported)		←
Sub-carrier	One sub-carrier (Two sub-carrier is not supported)		←
Baudrate	26.48, 52.97kbps (Response to Fast command)		←
Commands	ISO15693 commands, Custome commands (Fast Read/Write,EAS)	ISO15693 commands, Custome commands (Kill,Fast Read/Write,EAS)	ISO15693 commands, Custome commands (TBD)
Input capacitance	24pF/96pF		←
Serial Interface	-		SPI
Data retention	10 years (+70℃)		←
Read/Write endurance	10^{10} times		←
Shiping Form	Diced Wafer (Plating bump, Backwrapped up to 150um)		TBD
Fail Die detection	MAP (.xml format), Bad Mark (option)		←

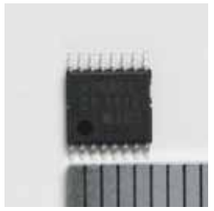
FerVID Family for UHF Passive RFID

MB97R803A/B, MB97R804A/B

Features

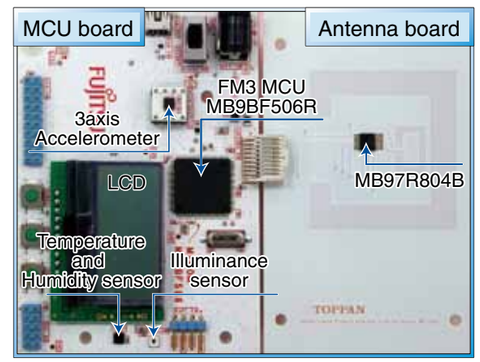
- ISO/IEC18000-6C, EPC C1G2 ver.1.2.0 compliant
- Worldwide UHF frequency (860-960MHz)
- Large memory density and Fast Writing performance
- Stable communication distance between Writing and Reading (the same distance)
- Write Lock and Read Lock feature with password
- Anti-collision feature
- Serial interface for Embedded RF solution (Evaluation board with FM3 family MCU and sensors)


MB97R803A


MB97R804B

	MB97R803A	MB97R803B	MB97R804A	MB97R804B
Memory size	4,000 Bytes (32K bits)			
User memory size	3,434 Bytes			
Operating Frequency	860 ~ 960MHz			
Modulation	DSB-ASK, SSB-ASK, PR-ASK			
Data coding	FM0, Miller Subcarrier (M=2,4,8)			
Baudrate (Reader to RFID)	40kbps ~ 160kbps (0 data transmission)			
Baudrate (RFID to Reader)	40kbps ~ 640kbps			
Read/write Sensitivity	-6 dBm			
Command (RF)	EPC C1G2 Ver1.2.0 commands Block Permalock, Read Lock (custom)			
Serial Interface	-		SPI	
Serial input frequency	-		2MHz (Max)	
Serial input voltage	-		2.3 ~ 3.6V	
Command (Serial)	-		Read, Write	
Data retention	10 years (+55℃)			
Read/Write Endurance	10^{10} times			
Evaluation Kit	-			Yes
Shipping type	wafer	Package TSSOP-16P	wafer	Package TSSOP-16P

Evaluation board



We can provide the evaluation board equipped with FSL's MCU, FM3 family.