In addition, outstanding radiation hardness of FRAM compared with EEPROM realizes to apply writing and High read/write endurance feature of FRAM. RFID, and widely introduced as Data carrier RFID with Large memory because of the Fast cutting edge technology FRAM (Ferroelectric Random access memory) is embedded. Fer VID family is RFID LSI product series developed by Fujitsu Semiconductor, in which the serial interface feature provides huge potential to apply RFID for embedded RF solutions.

### Application of Fer VID 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.

**Traceability management in food/drug distribution**
- 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.

**Parts information and main maintenance**
- 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.

**FA, Fabrication management**
- The location identification and management.

**Asset management**
- IoT equipment (flow rate, pressure, etc.) are recorded to improve inspection efficiency. Deterioration of the building (corrosion) is monitored for proper maintenance and management.

**Data retention**
- 10 years (+55°C)

**Read/write endurance**
- 10 years (+70°C)

**Serial interface**
- ±13.56MHz

**Modulation**
- FM0, Miller Subcarrier (M=2,4,8)

**Data coding**
- ASK10/100%

**Operating frequency**
- 860 ~ 960MHz

**Operating temperature**
- -6 dBm

**Command (RF)**
- EPC C1G2, W2,3 commands

**Packaging**
- 10 years (+55°C)

**Package**
- 1010 times

**Read, Write**
- 10 years (+32°C)

**Humidity sensor**
- 1 out of 4

**Accelerometer**
- 1 out of 16

**Temperature**
- 1 out of 4

**Illuminance sensor**
- 1 out of 16

**Evolution board**
- We can provide the evaluation board equipped with FSL’s MCU, FM3 family.