

## FeRAM Embedded IC MN63Y1005 for Contactless IC card and Tag

### ■ Overview

MN63Y1005 is a nonvolatile ferroelectric random access memory (FeRAM) embedded IC for contactless IC card and tag. The IC is powered by radio waves from a read/write unit and for incorporating nonvolatile ferroelectric RAM, the IC can retain information even when power is lost. And it realizes high reliability with the endurance such as read/write cycles and data retention period.

### ■ Features

- FeRAM embedded
  - Nonvolatile
  - High speed read/write
  - Low power consumption
- Batteryless, wireless, contactless
 

This IC is powered by radio waves at 13.56 MHz sent from a read/write unit, through the externally attached coil antenna to the IC. Embedding of nonvolatile FeRAM does not require batteries.

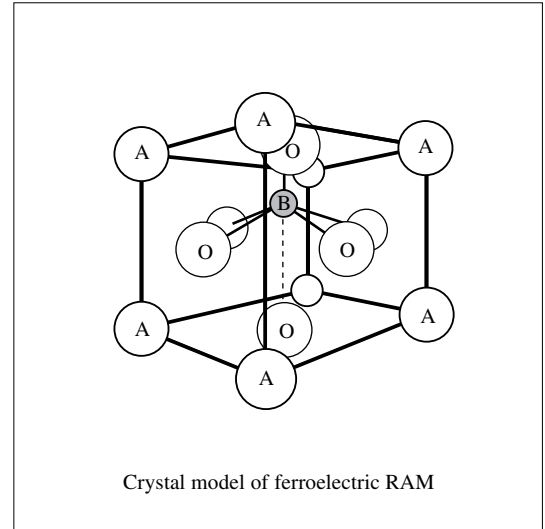
  - Note) 13.56 MHz—international standard for contactless IC cards
- Large memory configuration
 

1 024 bits of user memory area are organized into 13 areas.
- Security
  - User ID
 

32 bits are allocated to the user ID area. The user ID can be set by a user and is unique to each card. The user ID cannot be changed once it is locked by the lock function provided. Once locked, the lock cannot be unlocked.
  - User area
 

User data are protected by a separate lock function provided for each of the 13 areas. Once locked, 10 of 13 locks cannot be unlocked.
  - Password
 

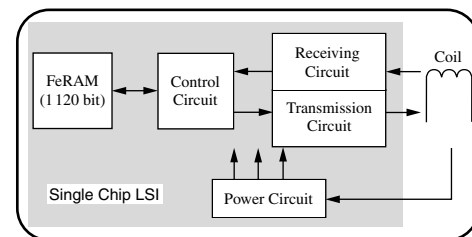
A password is necessary for memory access.
- High reliability
  - Endurance  $\geq 1$  billion read/write cycles
  - Data retention  $\geq 10$  years



### ■ Applications

- Contactless IC card / Tag

### ■ Block diagram (example)



† The products and specifications are subject to change without any notice. Please ask for the latest product standards to guarantee the satisfaction of your product requirements.

## ■ MN63Y1005 Specifications

Item		Specifications
Nonvolatile memory	User area	1 024 bits FeRAM
	System area	96 bits FeRAM
Endurance		≥ 1 billion read/write cycles
Operating frequency		13.56 MHz
Modulation	Card to reader	847.5 kHz BPSK
	Reader to card	10 % ASK
Protocol		Matsushita proprietary protocol
Maximum read/write distance		5 cm *
Data retention period		≥ 10 years
Transfer rate		212 kbps
Bit coding		NRZ-L
Operating temperature		-10°C to 70°C
Security		ID, Password
Error checking		8 bits CRC /17 bits data
Communication method		Half duplex
Operating voltage range		3.5 V to 5.0 V
Resonant capacitor		Not included

Note) \* : Depending on operating environment—power of a reader/writer, antenna size, etc.