

# MN63112S

## 2K-Bit EEPROM

### ■ Overview

The MN63112S is a 2K-bit EEPROM supporting serial I/O and operating on a single power supply with a voltage between 1.8 and 5.5 V. It provides the following pins for easy interfacing to microprocessors or microcontrollers: chip select (CS), serial clock (SK), data input (DI), and data output (DO). It includes a built-in timer for use in automatically erasing and writing data during data update operations.

The ORG pin provides a choice of two memory organizations: 256 × 8 bits when ORG is connected to ground and 128 × 16 bits when ORG is connected to  $V_{CC}$ . An internal pull-up resistor makes the latter the default configuration.

Conversion of peripheral circuits to CMOS realizes great reductions in power consumption. Use of floating gate memory cells and a built-in error correction circuit ensures reliable operation for  $10^5$  write cycles.

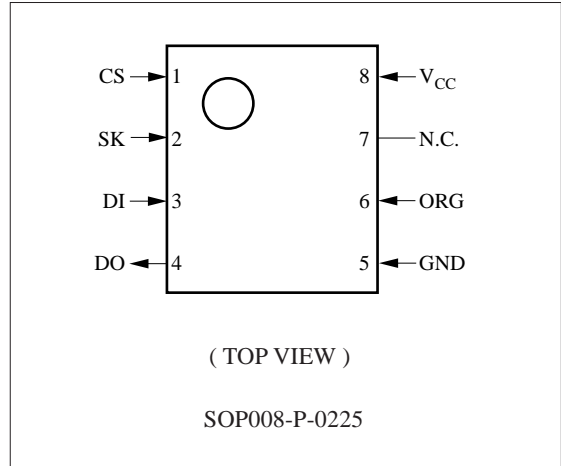
### ■ Features

- Choice of memory organizations: 256 × 8 bits and 128 × 16 bits
- Floating gate memory cells
- Function blocking erroneous writes
- Low power consumption
  - Reads: max. 6.6 mW for  $V_{CC} = 3.3$  V
  - Standby: max. 66  $\mu$ W for  $V_{CC} = 3.3$  V
- Built-in self-timer for use in automatically erasing and writing
- Built-in error correction circuit that guarantees  $10^5$  write cycles
- 10-year data preservation period

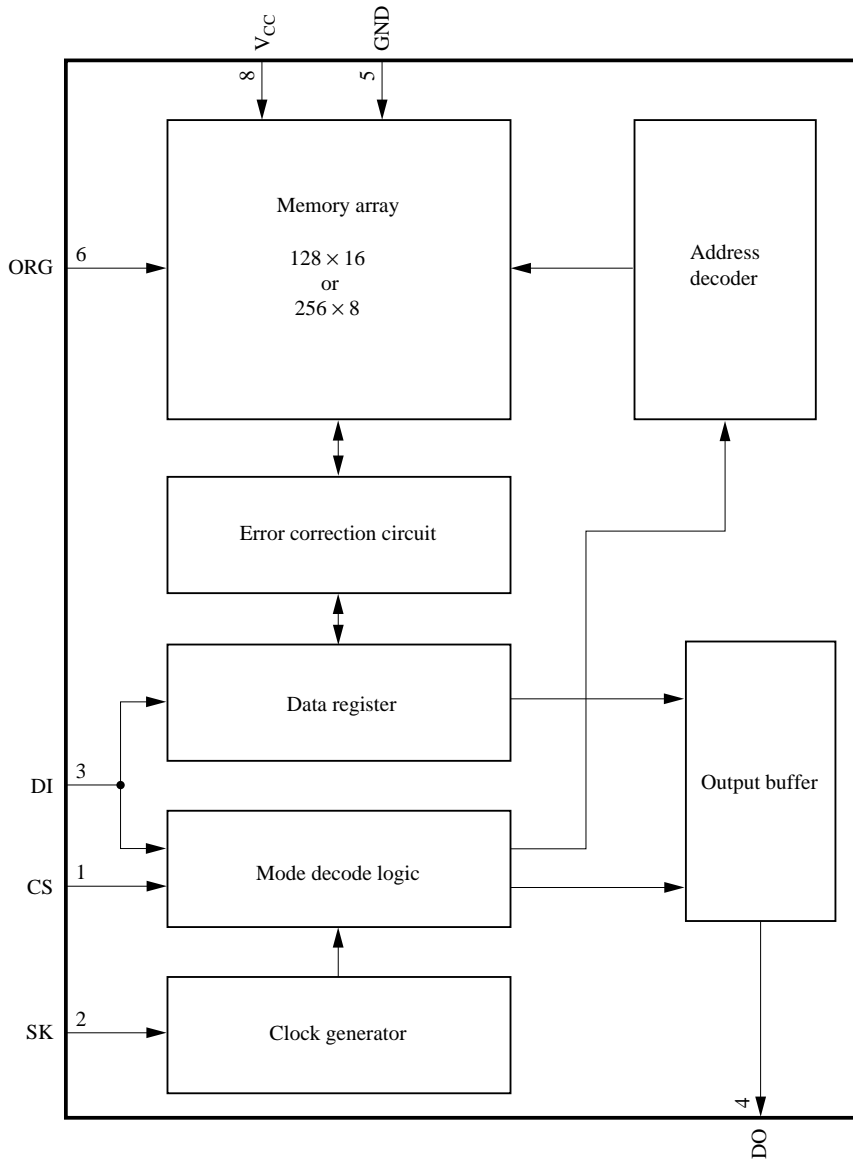
### ■ Applications

- Keyless entry systems, cordless telephones, storage for recognition and adjustment data for terminals, etc.

### ■ Pin Assignment



■ Block Diagram



### ■ Pin Descriptions

Pin No.	Symbol	Pin Name
1	CS	Chip select
2	SK	Serial clock
3	DI	Data input
4	DO	Data output
5	GND	Ground
6	ORG	Memory configuration selection
7	N.C.	No connection
8	V <sub>CC</sub>	Power supply voltage

### ■ Electrical Characteristics

V<sub>CC</sub>=1.8V to 5.5V, T<sub>a</sub>=-10°C to +70°C

Parameter	Symbol	Test Conditions	2 to 3 V Operation		5 V Operation		Unit
			min	max	min	max	
Power supply voltage	V <sub>CC</sub>		1.8	3.3	4.5	5.5	V
Input leakage current at "L" level	I <sub>LIL</sub>	ORG pin	-100	10	-150	10	μA
		Other pins	-10	10	-10	10	
Input leakage current at "H" level	I <sub>LIH</sub>		-10	10	-10	10	μA
Output leakage current	I <sub>LO</sub>		—	10	—	10	μA
Input voltage at "L" level	V <sub>IL</sub>		-0.1	0.2 × V <sub>CC</sub>	-0.1	0.7	V
Input voltage at "H" level	V <sub>IH</sub>		0.8 × V <sub>CC</sub>	V <sub>CC</sub> +0.3	3.0	V <sub>CC</sub> +0.3	V
V <sub>CC</sub> power supply current (during operation)	I <sub>CC</sub>	SK=250kHz	—	2.0	—	—	mA
		SK=1MHz	—	—	—	3.0	
V <sub>CC</sub> power supply current (during standby)	I <sub>SB</sub>	CS, SK, DI="L" DO = open	—	20	—	30	μA
Output voltage for "L" level (during reads)	V <sub>OL</sub>	I <sub>OL</sub> =400 μA	—	0.3	—	—	V
		I <sub>OL</sub> =2.1mA	—	—	—	0.45	
Output voltage for "H" level (during reads)	V <sub>OH</sub>	I <sub>OH</sub> =-10 μA	V <sub>CC</sub> -0.3	—	—	—	V
		I <sub>OH</sub> =-100 μA	—	—	V <sub>CC</sub> -0.7	—	

### ■ Function Descriptions

Orders	Start Bit	Operation Code	Address		Data		Contents
			256 × 8	128 × 16	256 × 8	128 × 16	
READ	1	10	A7-A0	A6-A0			Read
WRITE	1	01	A7-A0	A6-A0	D7-D0	D15-D0	Write
EWEN	1	00	11xxxxxxx	11xxxxxxx			Enable erase/write
EWDS	1	00	00xxxxxxx	00xxxxxxx			Disable erase/write

Note: x means "don't care".

■ Package Dimensions (Unit:mm)

SOP008-P-0225

