

# SMM6326C

## CMOS 256K-BIT MASK ROM

- Low Supply Current
- Access Time 250 ns
- 32,768 Words × 8 Bits Asynchronous

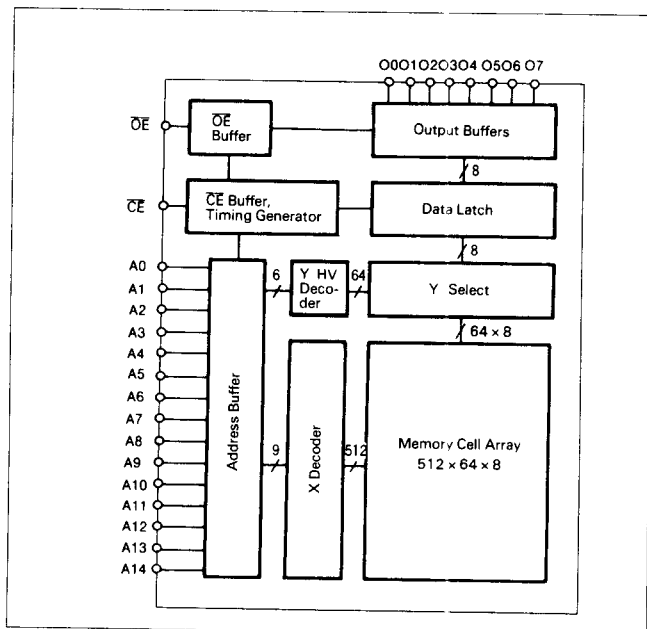
### DESCRIPTION

The SMM6326C is a 32,768 words × 8 bits asynchronous CMOS mask programmable ROM. This device operates on a signal power supply, its input and output levels are TTL compatible and the outputs are 3-state types. The device does not require clock circuit; it has a detection circuit which detects the difference of address and  $\overline{CE}$  input. With the detected signal, the timing signal is generated (internal synchronous type). With such a significant performance, supply current is low, processing speed is high and it can be used for various applications.

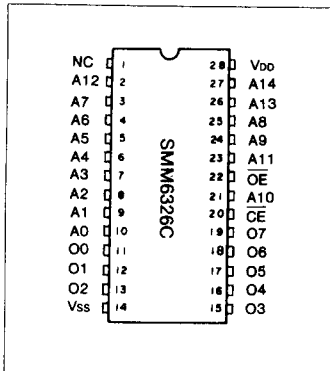
### FEATURES

- Access time ..... 250ns
- Low supply current ..... Standby: 0.1  $\mu$ A (Typ)  
Operation: 16 mA (Typ)
- Internal synchronous type
- Single power supply ..... 5V  $\pm$  10%
- TTL compatible inputs and outputs
- 3-state output with wired – OR Capability
- Package ..... 28-pin DIP (plastic)

### BLOCK DIAGRAM



### PIN CONFIGURATION



### PIN DESCRIPTION

A0 to A14	Address Input
CE	Chip Enable
OE	Output Enable
O0 to O7	Data Output
VDD	Power Supply (+5V)
VSS	Power Supply (0V)
NC	No connection

## ■ ABSOLUTE MAXIMUM RATINGS

(V<sub>SS</sub> = 0V)

Parameter	Symbol	Ratings	Unit
Supply voltage	V <sub>DD</sub>	-0.5 to 7.0	V
Input voltage	V <sub>I</sub>	-0.5 to V <sub>DD</sub> + 0.3	V
Output voltage	V <sub>O</sub>	-0.5 to V <sub>DD</sub> + 0.3	V
Power dissipation	P <sub>D</sub>	1.0	W
DC output current	I <sub>O</sub>	10	mA
Operating temperature	T <sub>opr</sub>	-10 to 70	°C
Storage temperature	T <sub>stg</sub>	-55 to 125	°C
Soldering temperature and time	T <sub>sol</sub>	260°C, 10 s (at lead)	—

## ■ ELECTRICAL CHARACTERISTICS

### ● DC Characteristics

(V<sub>DD</sub> = 5V ± 10%, V<sub>SS</sub> = 0V, T<sub>a</sub> = -10 to +70°C)

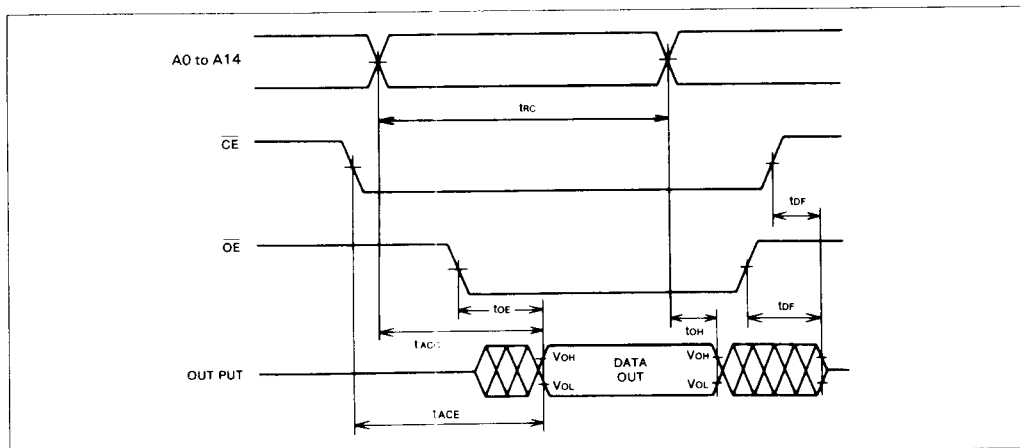
Parameter	Symbol	Conditions	Min	Typ	Max	Unit
High level input voltage	V <sub>IH</sub>		2.2	—	V <sub>DD</sub> + 0.3	V
Low level input voltage	V <sub>IL</sub>		-0.5	—	0.8	V
Input leakage current	I <sub>LI</sub>	0 ≤ V <sub>I</sub> ≤ V <sub>DD</sub>	-2.0	—	2.0	μA
Standby supply current	I <sub>DDS</sub>	CE = V <sub>DD</sub> - 0.2	—	0.1	40	μA
Operating supply current	I <sub>DDO</sub>	with output open	—	16	30	mA
Output leakage current	I <sub>LO</sub>	0 ≤ V <sub>O</sub> ≤ V <sub>DD</sub>	-10.0	—	10.0	μA
High level output voltage	V <sub>OH</sub>	I <sub>OH</sub> = -1.0mA	2.4	—	—	V
Low level output voltage	V <sub>OL</sub>	I <sub>OL</sub> = 3.2mA	—	—	0.4	V
Input capacitance	C <sub>I</sub>	f = 1 MHz	—	—	10	pF
Output capacitance	C <sub>O</sub>	f = 1 MHz	—	—	15	pF

### ● AC Characteristics

(V<sub>DD</sub> = 5V ± 10%, V<sub>SS</sub> = 0V, T<sub>a</sub> = -10 to +70°C)

Parameter	Symbol	Conditions	Min	Max	Unit
Read cycle time	t <sub>RC</sub>	C <sub>L</sub> = 1TTL + 100pF	250	—	ns
Address access time	t <sub>ACC</sub>	V <sub>IH</sub> = 2.2V	—	250	ns
CE access time	t <sub>ACE</sub>	V <sub>IL</sub> = 0.8V	—	250	ns
OE access time	t <sub>OE</sub>	V <sub>OH</sub> = 1.5V	—	80	ns
Output floating	t <sub>DF</sub>	V <sub>OL</sub> = 1.5V	—	80	ns
Output hold time	t <sub>OH</sub>	t <sub>r</sub> = t <sub>f</sub> = 10ns	0	—	ns

### ● Timing Chart



## FUNCTIONS

### Truth Table

$\overline{CE}$	A0 to A14	$\overline{OE}$	O0 to O7	MODE
H	X	X	Hi-Z	Standby
L	Stable	H	Hi-Z	Output disable
L	Stable	L	Output data	Read

X: "H" or "L"

### Read mode

Data can be read by simply setting an address with  $\overline{CE}$  held at "L". At the time of power-on, the initial state cannot be determined because of the operation of the internal clock circuit. If the power is on in the mode of holding  $\overline{CE} = "L"$  and a certain address is fixed, the data related to the address may not appear. Data should be read after the supply voltage becomes stable, and  $\overline{CE}$  is set at "H" or the address input is changed in the mode of  $\overline{CE} = "L"$ .

### Standby mode

Setting  $\overline{CE}$  at "H" initiates the standby mode. In this mode, the output impedance goes high and all address input is disabled. Within the chip, no circuit allows current flow and only the leakage current exists.

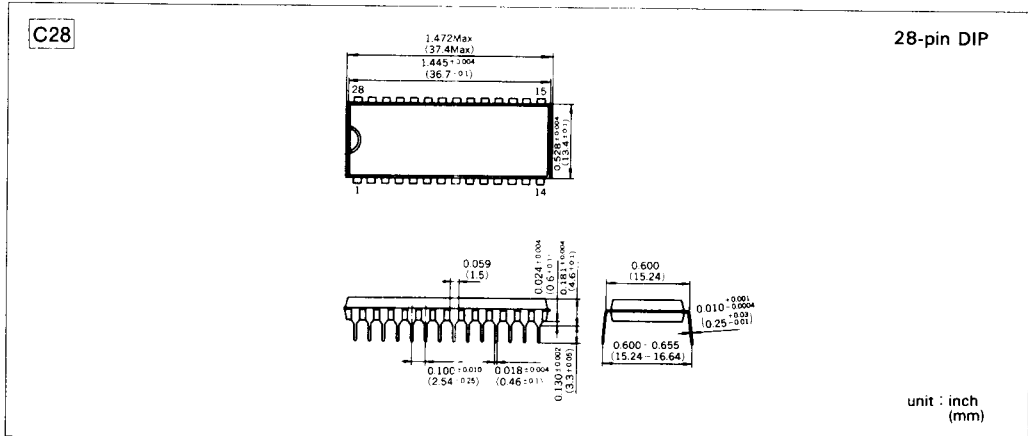
### Output disable

When  $\overline{OE}$  is set at "H", the output impedance goes high.

## [NOTE] RECOMMENDATIONS

- The SMM6326C is a mask programmable ROM on a CMOS chip. In the data read mode, transient current will flow in the chip at the time of transistor transition. For protection of such transients, it is recommended to connect a high-frequency capacitor and an electrolytic capacitor between the power supplies VDD and VSS.
- The input and output of the SMM6326C are TTL compatible. It is recommended that, when the chip is connected to TTL, pull-up resistors be connected to the  $\overline{CE}$ ,  $\overline{OE}$  and address input terminal.

## PACKAGE DIMENSIONS



# CHARACTERISTICS CURVES

