



# MX23C2000

## 2M-BIT(256K x 8) CMOS MASK ROM

### FEATURES

- 256K x 8 organization
- Single +5V power supply
- Fast access time: 120/150/200ns (max)
- Totally static operation
- Completely TTL compatible
- Operating current: 40mA
- Standby current: 100µA
- Package type:
  - 32 pin plastic DIP
  - 32 pin plastic SOP
  - 32 Pin plastic PLCC
  - 32 Pin plastic TSOP

### GENERAL DESCRIPTION

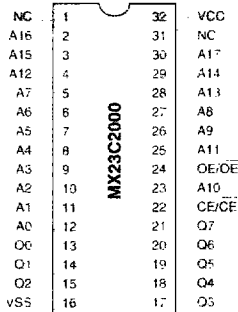
The MX23C2000 is a 5V only, 2M-bit, Read Only Memory. It is organized as 256K words by 8 bit, operates from a single +5 volt supply, has a static standby mode, and has an access time of 120/150/200ns. It is designed to be compatible with all microprocessors and similar applications in which high performance, large bit storage and simple interfacing are important design considerations.

The MX23C2000 offers automatic power-down, with power-down controlled by the chip enable(CE) input. When CE goes high, the device automatically powers down and remains in a low-power standby mode as long as CE remains high.

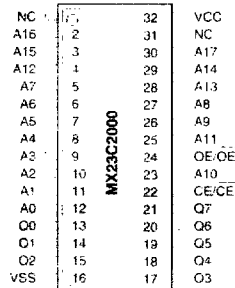
MX23C2000 pin 24 may also be programmed either active HIGH or LOW in order to eliminate bus contention in multiple-bus microprocessor systems.

### PIN CONFIGURATIONS

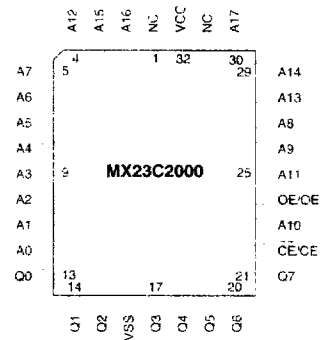
#### 32 PDIP



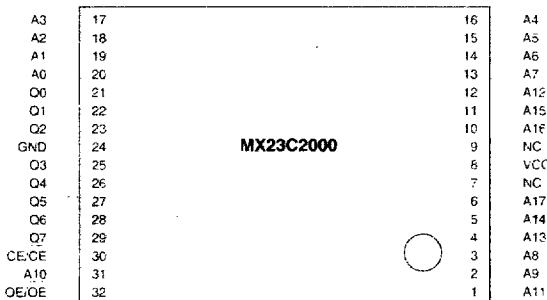
#### 32 SOP



#### 32 PLCC

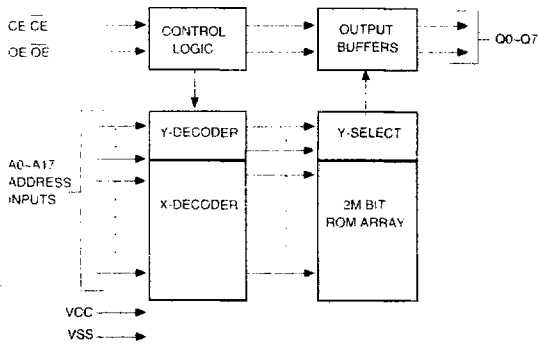


#### 32 TSOP



### PIN DESCRIPTION:

SYMBOL	PIN NAME
A0-A17	Address Input
Q0-Q7	Data Output
CE/CE	Chip Enable Input
OE/OE	Output Enable Input
VCC	Power Supply Pin (+5V)
VSS	Ground Pin

**BLOCK DIAGRAM**

**ABSOLUTE MAXIMUM RATINGS\***

RATING	VALUE
Ambient Operating Temperature	0°C to 70°C
Storage Temperature	-65°C to 125°C
Applied Input Voltage	-0.5V to VCC + 0.5V
Applied Output Voltage	-0.5V to VCC + 0.5V
VCC to Ground Potential	-0.5V to 7.0V
Power Dissipation	1.0W

**\*NOTICE:**

Stresses greater than those listed under ABSOLUTE MAXIMUM RATINGS may cause permanent damage to the device. This is a stress rating only and functional operation of the device at these or any other conditions above those indicated in the operational sections of this specification is not implied. Exposure to absolute maximum rating conditions for extended period may affect reliability.

**DC CHARACTERISTICS** TA = 0°C TO 70°C, VCC = 5V ±10%

SYMBOL	PARAMETER	MIN.	MAX.	UNIT	CONDITIONS
VOH	Output High Voltage	2.4		V	IOH = -1.0mA
VOL	Output Low Voltage		0.4	V	IOL = 2.1mA
VIH	Input High Voltage	2.2	VCC + 0.3	V	
VIL	Input Low Voltage	-0.3	0.8	V	
ILI	Input Leakage Current		10	µA	VIN = 0 to 5.5V
ILO	Output Leakage Current		10	µA	VOUT = 0 to 5.5V
ICC3	Power-Down Supply Current		100	µA	CE > VCC - 0.2V
ICC2	Standby Supply Current		1.0	mA	CE = VIH
ICC1	Operating Supply Current		40	mA	Note 1

**CAPACITANCE** TA = 25°C, f = 1.0 MHz (Note 2)

SYMBOL	PARAMETER	MIN.	MAX.	UNIT	CONDITIONS
CIN	Input Capacitance		10	pF	VIN = 0V
COUT	Output Capacitance		10	pF	VOUT = 0V

**AC CHARACTERISTICS** TA = 0°C to 70°C, VCC = 5V ± 10%

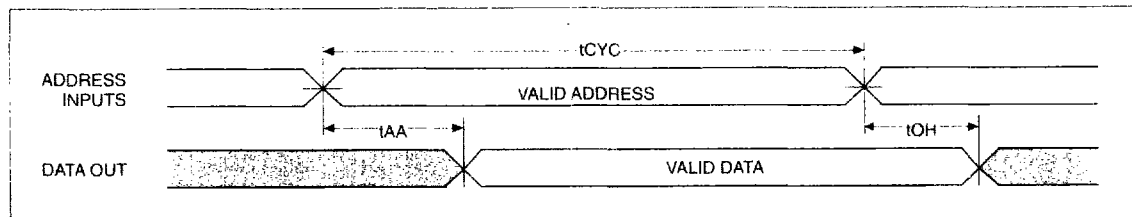
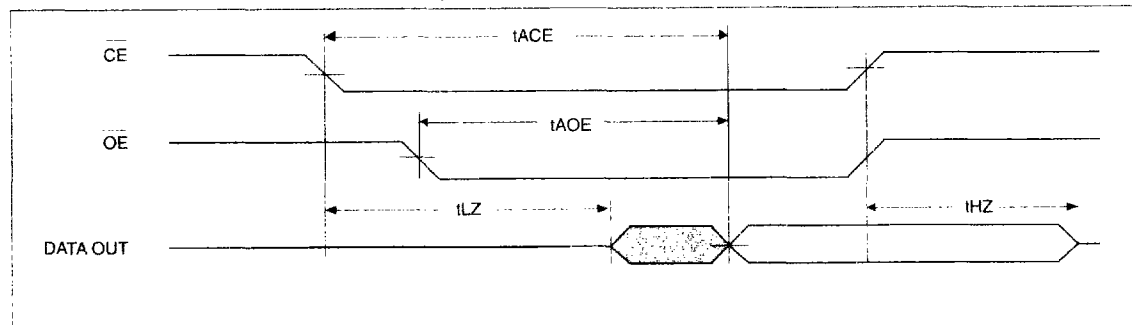
SYMBOL	PARAMETER	23C2000-12		23C2000-15		23C2000-20		UNIT	CONDITIONS
		MIN.	MAX.	MIN.	MAX.	MIN.	MAX.		
tCYC	Cycle Time	120		150		200		ns	
tAA	Address Access Time		120		150		200	ns	
tOH	Output Hold Time After Address Change	10		10		10		ns	
tACE	Chip Enable Access Time		120		150		200	ns	
tAOE	Output Enable/Chip Select Access Time		80		80		100	ns	
tLZ	Output Low Z Delay	0		0		0		ns	Note 3
tHZ	Output High Z Delay		70		70		70	ns	Note 4

**NOTE:**

1. Measured with device selected at f = 5 MHz and output unloaded.
2. This parameter is periodically sampled and is not 100% tested.
3. Output low-impedance delay (tLZ) is measured from  $\overline{CE}$  going low.
4. Output high-impedance delay (tHZ) is measured from  $\overline{CE}$  going high.

**AC TEST CONDITIONS**

Input Pulse Levels	0.4V to 2.4V
Input Rise and Fall Times	10ns
Input Timing Level	1.5V
Output Timing Level	0.8V and 2.0V
Output Load	1TTL + 100pF

**WAVEFORMS**
**PROPAGATION DELAY FROM ADDRESS ( $\overline{CE}/\overline{OE}$  = ACTIVE)**

**PROPAGATION DELAY FROM CHIP ENABLE (ADDRESS VALID)**


**ORDERING INFORMATION**

PART NO.	ACCESS TIME(ns)	OPERATING CURRENT MAX.(mA)	STANDBY CURRENT MAX.( $\mu$ A)	PACKAGE
MX23C2000PC-12	120	40	100	32 Pin PDIP
MX23C2000MC-12	120	40	100	32 Pin SOP
MX23C2000QC-12	120	40	100	32 Pin PLCC
MX23C2000TC-12	120	40	100	32 Pin TSOP
MX23C2000PC-15	150	40	100	32 Pin DIP
MX23C2000MC-15	150	40	100	32 Pin SOP
MX23C2000QC-15	150	40	100	32 Pin PLCC
MX23C2000TC-15	150	40	100	32 Pin TSOP
MX23C2000PC-20	200	40	100	32 Pin DIP
MX23C2000MC-20	200	40	100	32 Pin SOP
MX23C2000QC-20	200	40	100	32 Pin PLCC
MX23C2000TC-20	200	40	100	32 Pin TSOP

**Note. Revision History****Revision # Description**

3.4 Add 32 pin TSOP package