

4M-Bit (512K X8) CMOS MASK ROM

FEATURES

- 524,288x 8 bit organization
- Fast access time :100ns(max.)
- Supply voltage : single +5V
- Current consumption
Operating :60 mA(max.)
Standby : 50 μ A (max.)
- Fully static operation
- All inputs and outputs TTL compatible
- Three state outputs
- Polarity programmable chip enable and output enable pin
- Package
- KM23C4000C : 32-DIP-600
- KM23C4000CG : 32-SOP-525

GENERAL DESCRIPTION

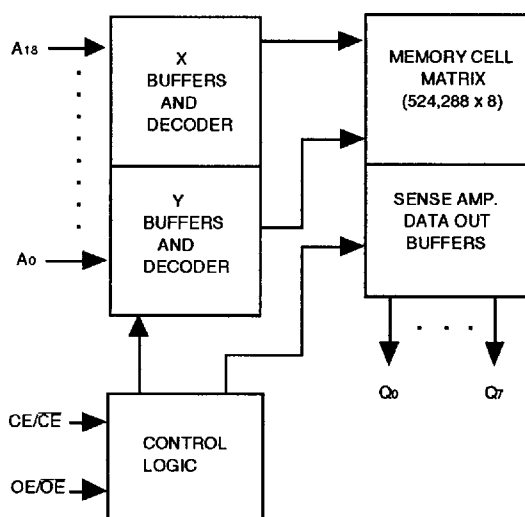
The KM23C4000C is a fully static mask programmable ROM organized 524,288x8bit. It is fabricated using silicon-gate CMOS process technology.

This device operates with a 5V single power supply, and all inputs and outputs are TTL compatible. Because of its asynchronous operation, it requires no external clock assuring extremely easy operation.

It is suitable for use in program memory of micro-processor, and data memory, character generator.

The KM23C4000C is packaged in a 32-DIP, and the KM23C4000CG in a 32-SOP, provide polarity programmable CE and OE buffer as user option mode.

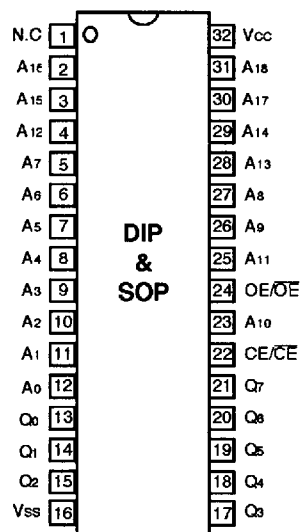
FUNCTIONAL BLOCK DIAGRAM



Pin Name	Pin Function
A0-A18	Address Inputs
Q0-Q7	Data Outputs
CE/CE*	Chip Enable
OE/OE*	Output Enable
Vcc	Power (+5V)
Vss	Ground
N.C	No connection

* User Selectable Polarity

PIN CONFIGURATION



**KM23C4000C
(KM23C4000CG)**

ABSOLUTE MAXIMUM RATINGS

Item	Symbol	Rating	Unit
Voltage on Any Pin Relative to Vss	V _{IN}	-0.3 to +7.0	V
Temperature Under Bias	T _{bias}	-10 to +85	°C
Storage Temperature	T _{stg}	-55 to +150	°C

* Permanent device damage may occur if "ABSOLUTE MAXIMUM RATINGS" are exceeded. Functional operation should be restricted to the conditions as detailed in the operational sections of this data sheet. Exposure to absolute maximum rating conditions for extended periods may affect device reliability.

RECOMMENDED OPERATING CONDITIONS (Voltage reference to Vss, T_A=0 to 70°C)

Item	Symbol	Min	Typ	Max	Unit
Supply Voltage	V _{CC}	4.5	5.0	5.5	V
Supply Voltage	V _{SS}	0	0	0	V

DC CHARACTERISTICS

Parameter	Symbol	Test Conditions	Min	Max	Unit
Operating Current	I _{CC}	CE=OE=V _{IL} , f=6.7MHz all outputs open	-	60	mA
Standby Current (TTL)	I _{SB1}	CE=V _{IH} , all outputs open	-	1	mA
Standby Current (CMOS)	I _{SB2}	CE=V _{CC} , all outputs open	-	50	μA
Input Leakage Current	I _{LI}	V _{IN} =0 to V _{CC}	-	10	μA
Output Leakage Current	I _{LO}	V _{OUT} =0 to V _{CC}	-	10	μA
Input High Voltage, All Inputs	V _{IH}		2.2	V _{CC} +0.3	V
Input Low Voltage, All Inputs	V _{IL}		-0.3	0.8	V
Output High Voltage Level	V _{OH}	I _{OH} = - 400 μA	2.4	-	V
Output Low Voltage Level	V _{OL}	I _{OL} = 2.1 mA	-	0.4	V

CAPACITANCE (T_A=25°C, f=1.0MHz)

Item	Symbol	Test Conditions	Min	Max	Unit
Output Capacitance	C _{OUT}	V _{OUT} = 0V	-	10	pF
Input Capacitance	C _{IN}	V _{IN} = 0V	-	10	pF

Note : Capacitance is periodically sampled and not 100% tested.

MODE SELECTION

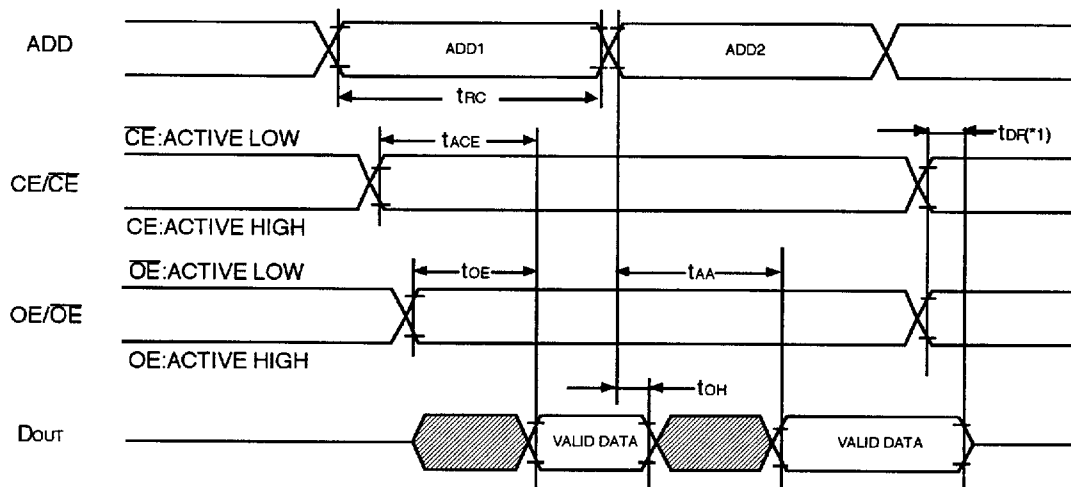
CE/CE	OE/OE	Mode	Data	Power
L/H	X	Standby	High-Z	Standby
H/L	L/H	Operating	High-Z	Active
	H/L	Operating	Dout	Active

AC CHARACTERISTICS ($T_A=0^{\circ}\text{C}$ to $+70^{\circ}\text{C}$, $V_{CC}=5\text{V} \pm 10\%$, unless otherwise noted.)**TEST CONDITIONS**

Item	Value
Input Pulse Levels	0.6V to 2.4V
Input Rise and Fall Times	10ns
Input and Output timing Levels	0.8V and 2.0V
Output Loads	1 TTL Gate and $C_L=100\text{pF}$

READ CYCLE

Parameter	Symbol	KM23C4000C-10		KM23C4000C-12		KM23C4000C-15		Unit
		Min	Max	Min	Max	Min	Max	
Read Cycle Time	t _{RC}	100		120		150		ns
Chip Enable Access Time	t _{ACE}		100		120		150	ns
Address Access Time	t _{AA}		100		120		150	ns
Output Enable Access Time	t _{OE}		50		60		70	ns
Output or Chip Disable to Output High-Z	t _{DF}		20		20		30	ns
Output Hold from Address Change	t _{OH}	0		0		0		ns

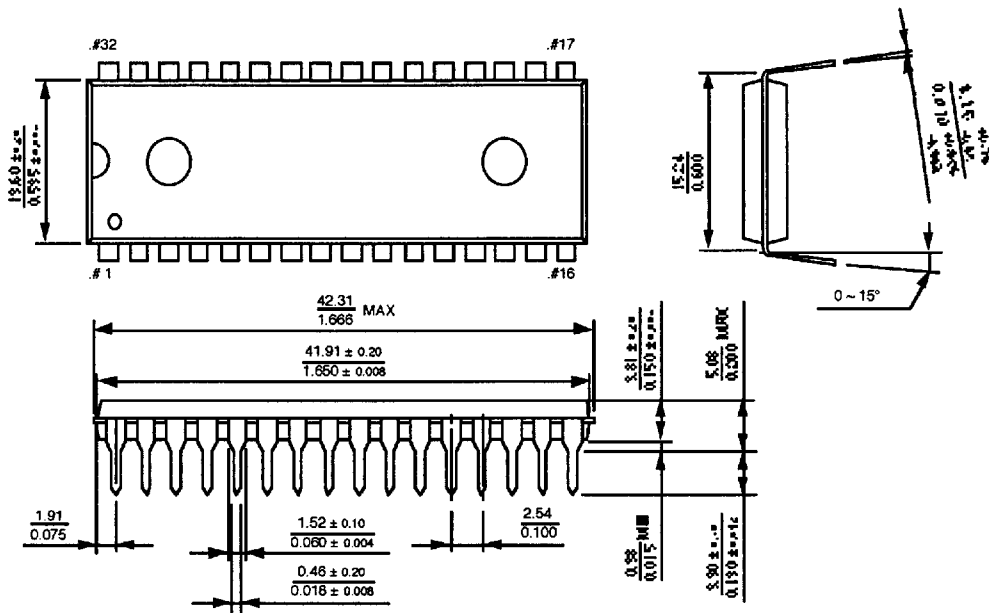
TIMING DIAGRAM**READ**

(*1) t_{DF} is defined as the time at which the outputs achieve the open circuit condition and is not referenced to V_{OH} or V_{OL} level.

PACKAGE DIMENSIONS

32 LEAD PLASTIC DUAL IN LINE PACKAGE (KM23C4000C)

Unit : mm/Inch



32 LEAD SMALL OUTLINE PACKAGE (KM23C4000CG)

