

HYUNDAI SEMICONDUCTOR

HY234000

512K×8-Bit CMOS MASK ROM

M611200A-MAY92

DESCRIPTION

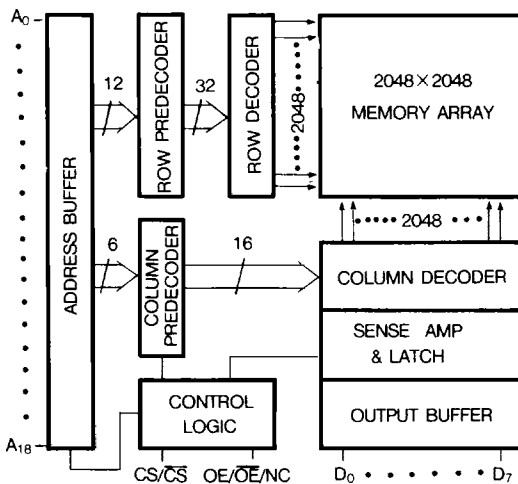
The HY234000 is mask-programmable ROM organized as 524,288 words by 8 bits. It is fabricated using HYUNDAI's CMOS process technology. The HY234000 operates with a 5V power supply and all inputs and outputs are TTL compatible. It satisfies user option modes with the polarity-programmable CS and OE.

FEATURES

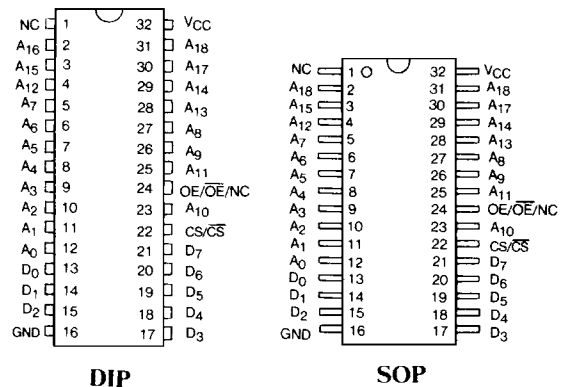
- Speed-150/200/250 ns (max.)
- Power consumption (max.)
– 220mW (operating)
- Polarity-programmable pins
– CS/ $\overline{\text{CS}}$, OE/ $\overline{\text{OE}}$ /NC
- All inputs and outputs TTL compatible
- Tri-state output
- 32-pin 600 mil P-DIP and 440 mil SOP

	HY234000-15	HY234000-20	HY234000-25
Maximum Access Time (ns)	150	200	250
Maximum Operating Current (mA)	40	40	40
Maximum Standby Current (μA)	100	100	100

BLOCK DIAGRAM



PIN CONNECTIONS



PIN NAMES

A ₀ -A ₁₈	ADDRESS INPUT
D ₀ -D ₇	DATA OUTPUT
CS/ $\overline{\text{CS}}$	CHIP SELECT
OE/ $\overline{\text{OE}}$	OUTPUT ENABLE
V _{CC}	POWER
GND	GROUND
N/C	NO CONNECTION

ABSOLUTE MAXIMUM RATINGS⁽¹⁾

SYMBOL	PARAMETER	RATING	UNIT
V _{DD} , V _{IN} , V _{I/O}	Power Supply, Input, Input/Output Voltage	−0.5 to 7.0	V
T _{BIAS}	Temperature Under Bias	−10 to 85	°C
T _{STG}	Storage Temperature	−65 to 150	°C

NOTES :

1. 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 periods may affect reliability.

RECOMMENDED OPERATING CONDITIONS

SYMBOL	PARAMETER	MIN.	TYP.	MAX.	UNIT
V _{CC}	Supply Voltage	4.5	5.0	5.5	V
V _{IH}	Input High Voltage	2.2	—	6.0	V
V _{IL}	Input Low Voltage	−0.5	—	0.8	V
T _A	Ambient Temperature	0	—	70	°C

TRUTH TABLE

MODE	CS/ $\overline{\text{CS}}$	OE/ $\overline{\text{OE}}$	D ₀ -D ₇	OPERATION
Not Selected	L/H	X ⁽¹⁾	High-Z	Standby
Output Disabled	H/L	L/H	High-Z	Active
Read	H/L	H/L	D _{OUT}	Active

NOTE :

1. X=L or H

DC CHARACTERISTICS(V_{CC}=5V±10%, T_A=0°C to 70°C)

SYMBOL	PARAMETER	TEST CONDITIONS	HY234000		UNIT
			MIN.	MAX.	
I _{LI}	Input Leakage Current	V _{IN} =0 to V _{CC}	—	10	μA
I _{LO}	Output Leakage Current	V _{OUT} =0 to V _{CC}	—	10	μA
I _{CC}	Operating Current	f=6.7MHz, $\overline{\text{CS}}=\overline{\text{OE}}=V_{\text{IL}}$ All D _{OUT} =open	—	40	mA
		f=1MHz, $\overline{\text{CS}}=\overline{\text{OE}}=V_{\text{IL}}$ All D _{OUT} =open	—	15	mA
I _{SB1}	Standby Current(TTL)	$\overline{\text{CS}}=V_{\text{IH}}$, All D _{OUT} =open	—	2	mA
I _{SB2}	Standby Current(CMOS)	$\overline{\text{CS}}=V_{\text{CC}}$, All D _{OUT} =open	—	100	μA
V _{OH}	Output High Voltage	I _{OH} =-1mA	2.4	—	V
V _{OL}	Output Low Voltage	I _{OL} =2.1mA	—	0.4	V

HY234000 524,288×8-Bit MASK ROM

AC CHARACTERISTICS

($V_{CC}=5V \pm 10\%$, $T_A=0^{\circ}C$ to $70^{\circ}C$)

SYMBOL	PARAMETER	HY234000-15		HY234000-20		HY234000-25		UNIT
		MIN.	MAX.	MIN.	MAX.	MIN.	MAX.	
t_{RC}	Read Cycle Time	150	—	200	—	250	—	ns
t_{AA}	Address Access Time	—	150	—	200	—	250	ns
t_{ACS}	Chip Select Access Time	—	150	—	200	—	250	ns
t_{OE}	Output Enable Time	—	70	—	80	—	100	ns
t_{DH}	Data Hold Time	10	—	10	—	10	—	ns
t_{DF}	Data Floating Time	—	60	—	80	—	100	ns

CAPACITANCE

($V_{CC}=5V \pm 10\%$, $T_A=0^{\circ}C$ to $70^{\circ}C$, $f=1MHz$)

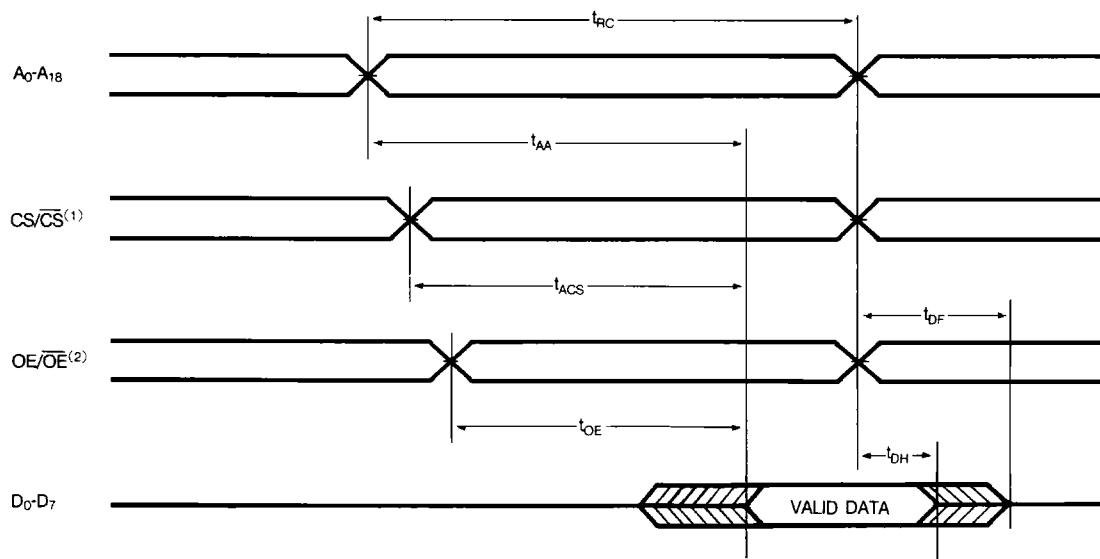
SYMBOL	PARAMETER	TEST CONDITION	TYPE	MAX	UNIT
C_{IN}	Input Capacitance	$V_{IN}=0V$	—	10	pF
C_{OUT}	Output Capacitance	$V_{OUT}=0V$	—	10	pF

AC TEST CONDITIONS

Input pulse level	0.6V to 2.4V
Input rise/fall time	10ns
Input reference level	1.5V
Output reference level	0.8V and 2.0V
Output load	1 TTL Gate and $C_L = 100\text{pF}$

TIMING DIAGRAMS

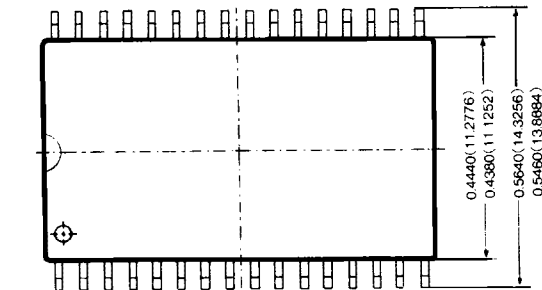
READ CYCLE



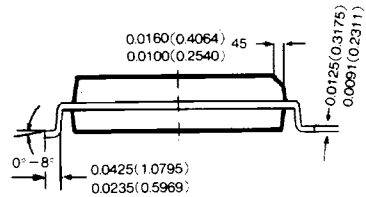
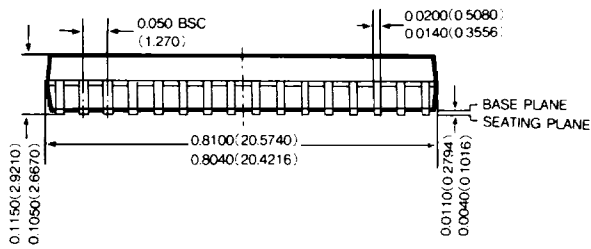
NOTES :

1. $\overline{CS}$ is low active. CS is high active.
2. $\overline{OE}$ is low active. OE is high active.

• 32 PIN SMALL OUTLINE PACKAGE—440 MIL



UNIT : INCH (mm) MAX
MIN



MEMO