HY234100 Series

512K x 8-bit / 256K x 16-bit CMOS MASK ROM

PRELIMINARY

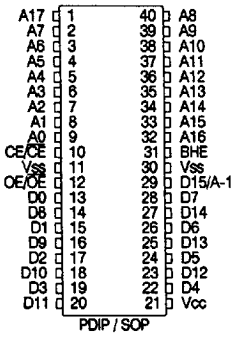
DESCRIPTION

The HY234100 is a 4Mbit mask-programmable ROM organized either as 524,288 x 8bit (Byte mode) or as 262,144 x 16bit (Word mode) depending on BHE level. It is fabricated using HYUNDAI's advanced CMOS process technology. The HY234100 operates with a 5V power supply and all inputs are TTL compatible. It satisfies user option modes with the polarity-programmable $\overline{CE}$ and $\overline{OE}$. It is designed to be compatible with all microprocessors and similar applications where high-performance large-bit storage and simple interfacing are important design considerations.

FEATURES

- **High speed- 120ns**
- **User-Switchable x8 / x16 Organization**
- **Single 5V ± 10% Power Supply**
- **Power Consumption (max.)**
  - **Operating : 40mA**
  - **Standby (CMOS) : 50μA**
- **Fully Static Operation**
- **Polarity-Programmable Pins**
  - **CE/$\overline{CE}$, OE/$\overline{OE}$**
- **TTL compatible inputs and outputs**
- **Tri-state output**
- **Packages :**
  - **40 pin 600 mil PDIP**
  - **40 pin 525 mil SOP**

PIN CONNECTION

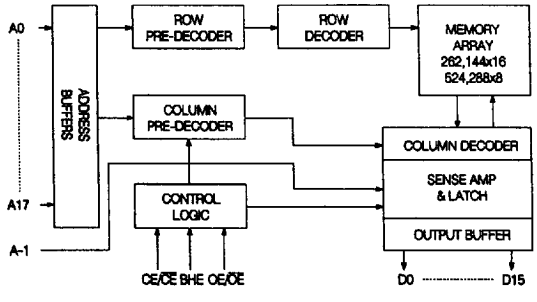


PIN DESCRIPTION

Pin Name	Pin Function
A0-A17	Address Inputs
D0-D15	Data Outputs
BHE	Byte/Word select
D15/A-1	Output D15 (Word mode)/ LSB Address (Byte mode)
CE/$\overline{CE}$*	Chip Enable
OE/$\overline{OE}$*	Output Enable
Vcc	Power
Vss	Ground

* User Selectable Polarity

BLOCK DIAGRAM



ABSOLUTE MAXIMUM RATINGS

SYMBOL	PARAMETER	RATING	UNIT
T_A	Ambient Temperature	0 to 70	°C
T_{BIAS}	Temperature under BIAS	-10 to 85	°C
T_{STG}	Storage Temperature	-55 to 150	°C
V_{IN}	Voltage on Any Pin Relative to V_{SS}	-0.3 to 7.0	V
V_{CC}	Voltage on V_{CC} Relative to V_{SS}	-0.3 to 7.0	V

Note:

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 of this specification is not implied. Exposure to absolute maximum rating conditions for extended period may affect reliability.

RECOMMENDED DC OPERATING CONDITIONS

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

SYMBOL	PARAMETER	MIN.	TYP.	MAX.	UNIT
V_{CC}	Power Supply Voltage	4.5	5.0	5.5	V
V_{IH}	Input High Voltage	2.2	-	V_{CC} + 0.5	V
V_{IL}	Input Low Voltage	-0.5	-	0.8	V

TRUTH TABLE

MODE	CE/$\overline{CE}$	OE/$\overline{OE}$	BHE	D15/A-1	DATA	OPERATION
Non-Selected	L/H	X	X	X	High-Z	Standby
Output Disabled	H/L	L/H	X	X	High-Z	Active
Read	H/L	H/L	H	Output	D0-D15	Active
			L	Input	D8-D15 : High-Z	Active

Note: X=L or H

DC CHARACTERISTICS

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

SYMBOL	PARAMETER	TEST CONDITIONS	MIN.	MAX.	UNIT
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	ALL D_{OUT} = open, f = 8.3MHz, $\overline{CE}$ = $\overline{OE}$ = V_{IL}	-	40	mA
		ALL D_{OUT} = open, f = 1.0MHz, $\overline{CE}$ = $\overline{OE}$ = V_{IL}	-	20	mA
I_{SB1}	Standby Current (TTL)	$\overline{CE}$ = V_{IH}, ALL D_{OUT} = open	-	1	mA
I_{SB2}	Standby Current (CMOS)	$\overline{CE}$ = V_{CC}, ALL D_{OUT} = open	-	50	μA
V_{OL}	Output Low Voltage	I_{OL} = 2.1mA	-	0.4	V
V_{OH}	Output High Voltage	I_{OH} = -1mA	2.4	-	V

Note: All Voltages are referenced to V_{SS}

AC CHARACTERISTICS

(T_A=0°C to 70°C, V_{CC}=5V ±10%, unless otherwise noted.)

#	SYMBOL	PARAMETER	120		150		200		UNIT
			MIN.	MAX.	MIN.	MAX.	MIN.	MAX.	
1	t_{RC}	Read Cycle Time	120	-	150	-	200	-	ns
2	t_{ACC}	Address Access Time	-	120	-	150	-	200	ns
3	t_{OH}	Output Hold from Address Change	0	-	0	-	0	-	ns
4	t_{CE}	Chip Enable Access Time	-	120	-	150	-	200	ns
5	t_{OE}	Output Enable Access Time	-	60	-	70	-	80	ns
6	t_{DF}	Output or Chip Disable to Output High-Z	-	20	-	20	-	20	ns

AC TEST CONDITIONS

(T_A=0°C to 70°C, V_{CC}=5V ±10%)

PARAMETER	VALUE
Input Pulse Level	0.6 to 2.4V
Input Rise and Fall Time	10ns
Input/Output Timing Level	0.8V and 2.0V
Output Load	1TTL Gate and C_L = 100pF

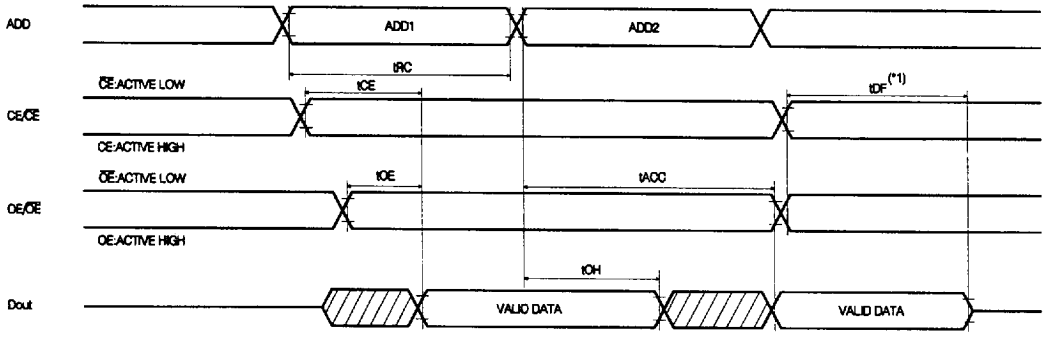
CAPACITANCE

(T_A=25°C, f=1MHz, V_{CC}=5V ±10%)

SYMBOL	PARAMETER	TEST CONDITION	TYPE	MAX.	UNIT
C_{IN}	Input Capacitance	V_{IN} = 0V	-	15	pF
C_{OUT}	Output Capacitance	V_{OUT} = 0V	-	15	pF

TIMING DIAGRAM

READ CYCLE

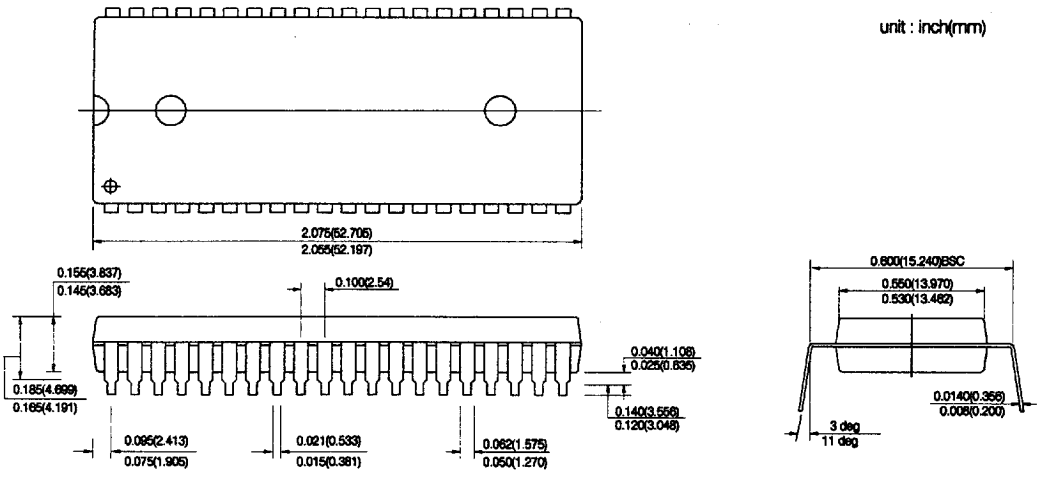


(*1) t_{DF} is defined as the time which the outputs achieve the open circuit condition and is not referenced to V_{OH} or V_{OL} Level.

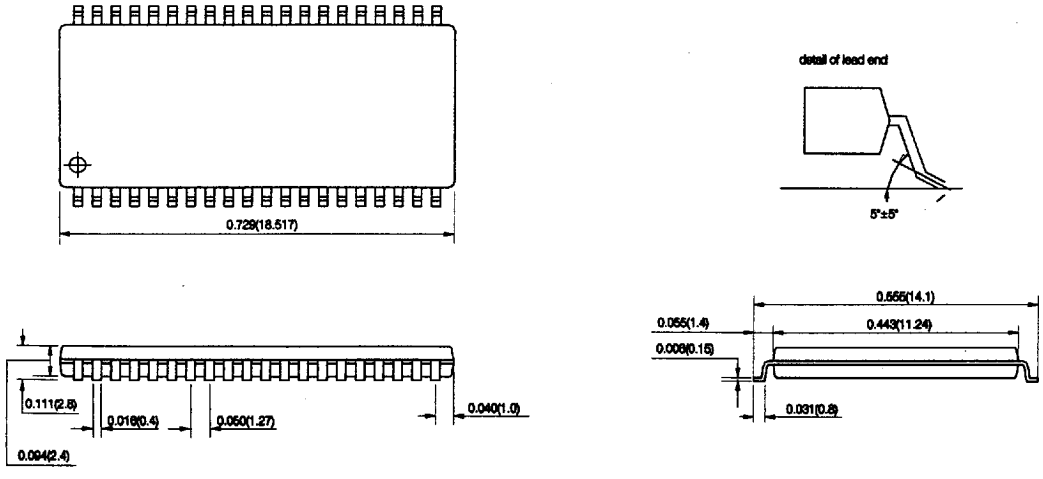
PACKAGE INFORMATION

40 Pin Plastic Dual In-Line Package - 600mil (P)

unit : inch(mm)



40 Pin Plastic Snall Outline Package - 525mil (G)



ORDERING INFORMATIONS

PART NO	SPEED	PACKAGE
HY234100P-XXX	120/150/200 ns	PDIP
HY234100G-XXX	120/150/200 ns	SOP