LH53H1000

PRELIMINARY

CMOS 1M (64K × 16) Mask-Programmable ROM

FEATURES

- 65,536 × 16 bit organization
- Access time: 55 ns (MAX.)
- Power consumption:
  Operating: 660 mW (MAX.)
  Standby: 440 mW (MAX.)
- Fully static operation
- TTL compatible I/O
- Three-state outputs
- Single +5 V power supply
- Packages:
  40-pin, 600-mil DIP
  40-pin, 525-mil SOP
- JEDEC standard EPROM pinout (DIP)

DESCRIPTION

The LH53H1000 is a high speed mask-programmable ROM organized as 65,536 × 16 bits (1,048,576 bits). It is fabricated using silicon-gate CMOS process technology.

PIN CONNECTIONS

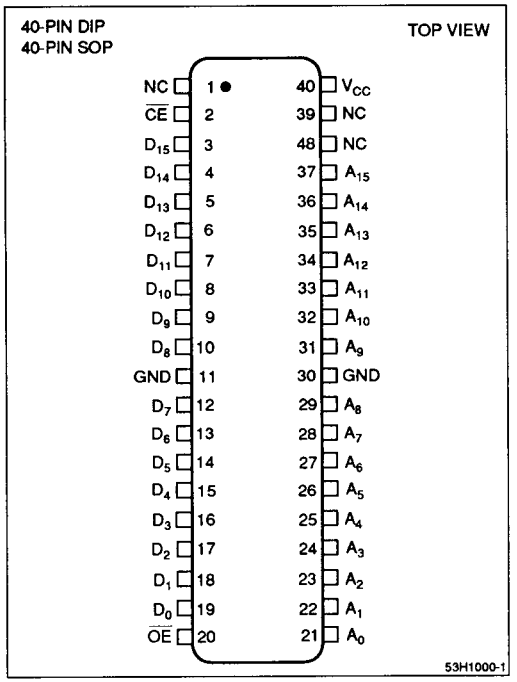


Figure 1. Pin Connections for DIP and SOP Packages

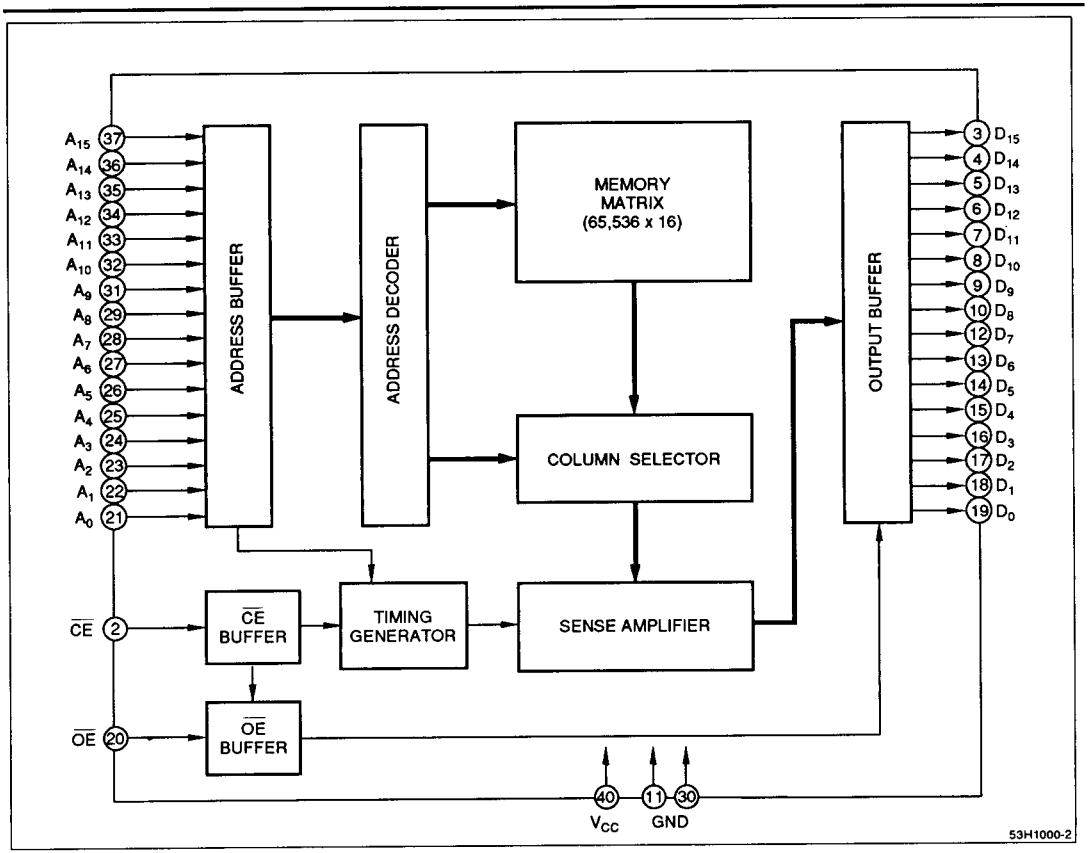


Figure 2. LH53H1000 Block Diagram

PIN DESCRIPTION

SIGNAL	PIN NAME
A_0 - A_{15}	Address input
D_0 - D_{15}	Data output
$\overline{CE}$	Chip Enable input

SIGNAL	PIN NAME
$\overline{OE}$	Output Enable input
Vcc	Power supply (+5 V)
GND	Ground

TRUTH TABLE

$\overline{CE}$	$\overline{OE}$	MODE	D_0 - D_{15}	SUPPLY CURRENT	NOTE
H	X	Non selected	High-Z	Standby (I_{SB})	1
L	H	Non selected	High-Z	Operating (I_{CC})	
L	L	Selected	D_{OUT}	Operating (I_{CC})	

NOTE:
1. X = H or L

ABSOLUTE MAXIMUM RATINGS

PARAMETER	SYMBOL	RATING	UNIT	NOTE
Supply voltage	V_{CC}	-0.3 to +7.0	V	1
Input voltage	V_{IN}	-0.3 to V_{CC} +0.3	V	
Output voltage	V_{OUT}	-0.3 to V_{CC} +0.3	V	
Operating temperature	Topr	0 to +70	°C	
Storage temperature	Tstg	-55 to +150	°C	

NOTE:
1. The maximum applicable voltage on any pin with respect to GND.

RECOMMENDED OPERATING CONDITIONS (T_A = 0 to +70°C)

PARAMETER	SYMBOL	MIN.	TYP.	MAX.	UNIT
Supply voltage	V_{CC}	4.5	5.0	5.5	V

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

PARAMETER	SYMBOL	CONDITIONS	MIN.	TYP.	MAX.	UNIT	NOTE
Input "Low" voltage	V_{IL}		-0.3		0.8	V	
Input "High" voltage	V_{IH}		2.2		V_{CC} +0.3	V	
Output "Low" voltage	V_{OL}	I_{OL} = 3.2 mA			0.4	V	
Output "High" voltage	V_{OH}	I_{OH} = -1.0 mA	2.4			V	
Input leakage current	$\lvert I_{LI} \rvert$	V_{IN} = 0 V or V_{CC}			10	µA	
Output leakage current	$\lvert I_{LO} \rvert$	V_{OUT} = 0 V or V_{CC}			10	µA	1
Operating current	I_{CC1}	t_{RC} = 55 ns			120	mA	2
	I_{CC2}	t_{RC} = 55 ns			110		3
Standby current	I_{SB}	$\overline{CE}$ = V_{IH}			2	mA	

NOTES:
1. $\overline{CE}$ or $\overline{OE}$ = V_{IH}
2. V_{IN} = V_{IH}/V_{IL}, $\overline{CE}$ = V_{IL}, outputs open
3. V_{IN} = (V_{CC} - 0.2V) or 0.2 V, $\overline{CE}$ = 0.2 V, outputs open

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

PARAMETER	SYMBOL	MIN.	TYP.	MAX.	UNIT	NOTE
Read cycle time	t_{RC}	55			ns	
Address access time	t_{AA}			55	ns	
Chip enable time	t_{ACE}			55	ns	
Output enable delay time	t_{OE}			25	ns	
Output hold time	t_{OH}	0			ns	
CE to output in High-Z	t_{CHZ}			25	ns	1
OE to output in High-Z	t_{OHZ}			25	ns	

NOTE:
1. This is the time required for the outputs to become high-impedance.

AC TEST CONDITIONS

PARAMETER	RATING
Input voltage amplitude	0 V to 3.0 V
Input rise/fall time	5 ns
Input reference level	1.5 V
Output load condition	1TTL + 30 pF

CAPACITANCE (V_{CC} = 5 V ± 10%, f = 1 MHz, T_A = 25°C)

PARAMETER	SYMBOL	MIN.	TYP.	MAX.	UNIT
Input capacitance	C_{IN}			10	pF
Output capacitance	C_{OUT}			10	pF

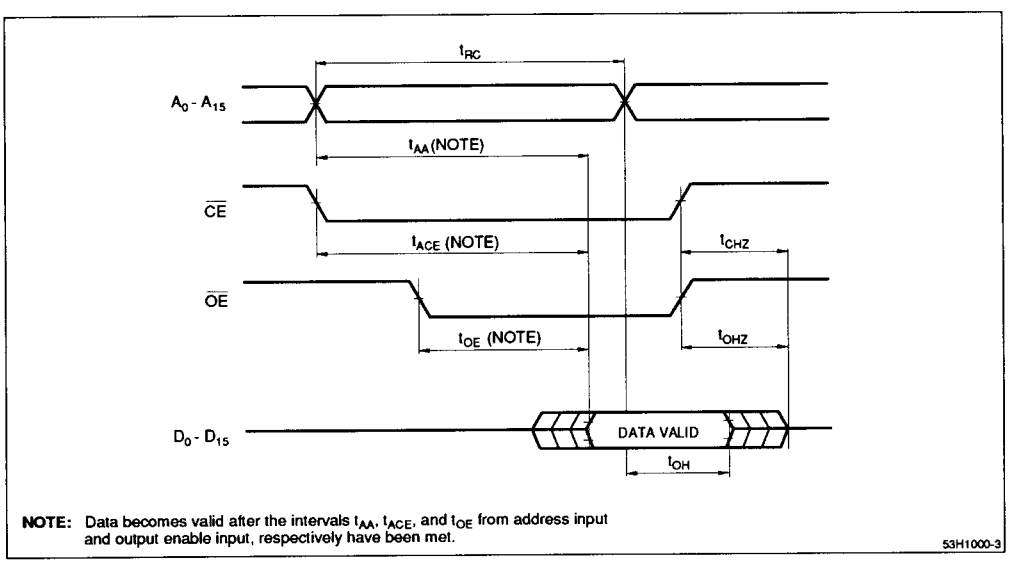
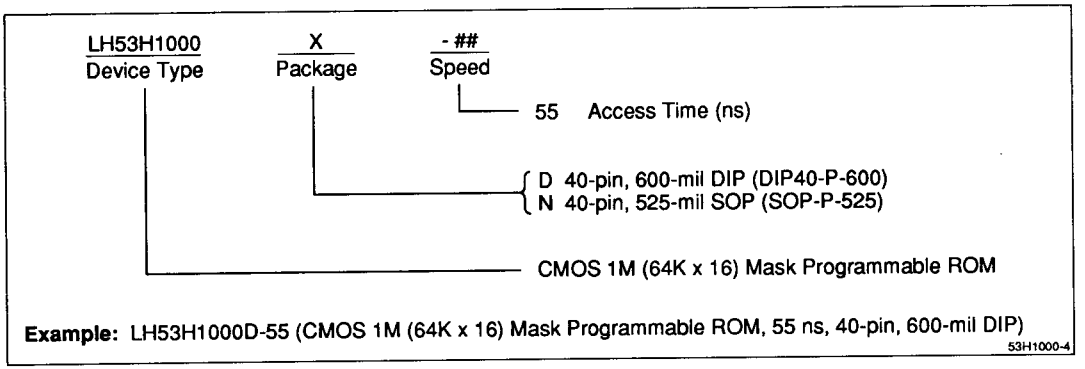


Figure 3. Timing Diagram

CAUTION

To stabilize the power supply, it is recommended that a high-frequency bypass capacitor be connected between the V_{CC} pin and GND.

ORDERING INFORMATION



Example: LH53H1000D-55 (CMOS 1M (64K x 16) Mask Programmable ROM, 55 ns, 40-pin, 600-mil DIP)