LH534R00B

CMOS 4M (1M × 4) MROM

FEATURES

- 524,288 × 8 bit organization
- Access time: 120 ns (MAX.)
- Supply current:
  - Operating: 65 mA (MAX.)
  - Standby: 100 µA (MAX.)
- Three-state output
- Single +5 V Power supply
- Static operation
- Input/Output TTL compatible
- Packages:
  - 32-pin, 600-mil SOP
  - 32-pin, 600-mil DIP
- Mask-programmable control pin
  - Pin 1 = $OE_1/\overline{OE}_1/DC$
  - Pin 24 = $OE/\overline{OE}$
- Others:
  - Non programmable
  - Not designed or rated as radiation hardened
  - CMOS process (P type silicon substrate)

DESCRIPTION

The LH534R00B is a 4M-bit CMOS mask ROM (mask-programmable read-only memory) organized as 524,288 × 8 bits. It is fabricated using silicon-gate CMOS process technology.

PIN CONNECTIONS

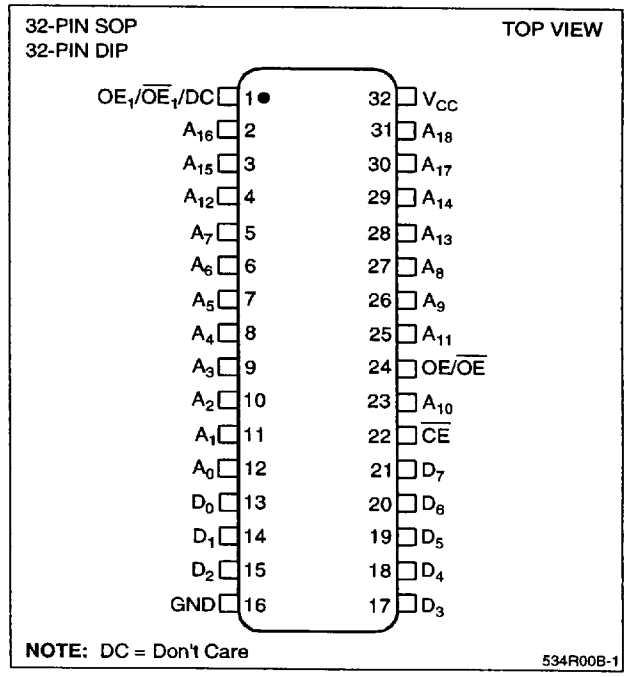


Figure 1. Pin Connections

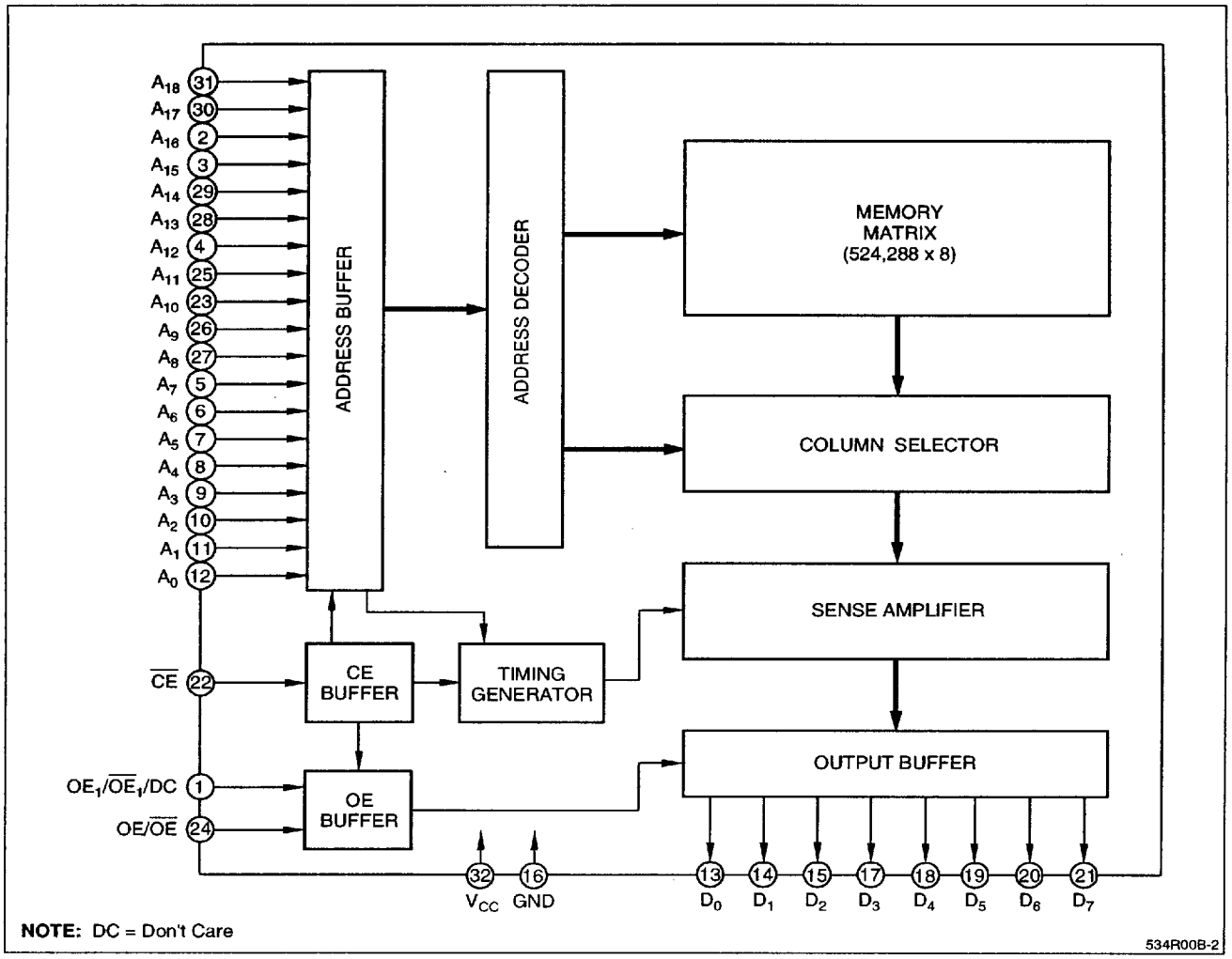


Figure 2. LH534R00B Block Diagram

PIN DESCRIPTION

SIGNAL	PIN NAME
A_0 - A_{18}	Address input
D_0 - D_7	Data output
$\overline{CE}$	Chip enable input
OE/$\overline{OE}$	Output enable input

SIGNAL	PIN NAME
$OE_1/\overline{OE_1}$/DC	Output enable input
V_{CC}	Power pin (+5 V)
GND	Ground

NOTES:

1. Active levels of OE/$\overline{OE}$ and $OE_1/\overline{OE_1}$/DC are programmable by mask. When the D.C. is selected out of $OE_1/\overline{OE_1}$/DC, it is fixed to an active level. (Then it is recommended to apply either "HIGH" or "LOW" to the DC pin.)

TRUTH TABLE

$\overline{CE}$	$OE_1/\overline{OE_1}$	$OE/\overline{OE}$	DATA OUTPUT	SUPPLY CURRENT
H	X	X	High impedance	Standby
L	L/H	X	High impedance	Operating
L	X	L/H	High impedance	Operating
L	H/L	H/L	Output	Operating

NOTE:
X = Don't care

ABSOLUTE MAXIMUM RATINGS

PARAMETER	SYMBOL	RATING	UNIT
Supply voltage	V_{CC}	-0.3 to +7.0	V
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	T_{OPR}	0 to +70	°C
Storage temperature	T_{STG}	-65 to +150	°C

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

PARAMETER	SYMBOL	CONDITIONS	MIN.	MAX.	UNIT	NOTE
Input 'High' voltage	V_{IH}	—	2.2	V_{CC} + 0.3	V	—
Input 'Low' voltage	V_{IL}	—	-0.3	0.8	V	—
Output 'High' voltage	V_{OH}	I_{OH} = -400 µA	2.4	—	V	—
Output 'Low' voltage	V_{OL}	I_{OL} = 2.0 mA	—	0.4	V	—
Input leakage current	$\lvert I_{LI} \rvert$	V_{IN} = 0 V to V_{CC}	—	10	µA	—
Output leakage current	$\lvert I_{LO} \rvert$	V_{OUT} = 0 V to V_{CC}	—	10	µA	1
Operating current	I_{CC1}	t_{RC} = 120 ns	—	65	mA	2
	I_{CC2}	t_{RC} = 1 µs	—	50	mA	2
	I_{CC3}	t_{RC} = 120 ns	—	60	mA	3
	I_{CC4}	t_{RC} = 1 µs	—	45	mA	3
Standby current	I_{SB1}	$\overline{CE}$ = V_{IH}	—	3	mA	—
	I_{SB2}	$\overline{CE}$ = V_{CC} - 0.2 V	—	100	µA	—
Input capacitance	C_{IN}	f = 1 MHz, t_A = 25°C	—	10	pF	—
Output capacitance	C_{OUT}		—	10	pF	—

NOTES:
1. $\overline{CE}$ = V_{IH}, $\overline{OE}$ = V_{IH} or OE = V_{IL}, $\overline{OE_1}$ = V_{IH} or OE_1 = V_{IL}
2. V_{IN} = V_{IH} or V_{IL}, $\overline{CE}$ = V_{IL}, output is open
3. V_{IN} = (V_{CC} - 0.2 V) or 0.2 V, $\overline{CE}$ = 0.2 V, output is open

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

PARAMETER	SYMBOL	MIN.	MAX.	UNIT	NOTE
Read cycle time	t_{RC}	120	—	ns	—
Address access time	t_{AA}	—	120	ns	—
Chip enable access time	t_{ACE}	—	120	ns	—
Output enable delay time	t_{OE}	—	60	ns	—
Output hold time	t_{OH}	0	—	ns	—
Output floating time	t_{CHZ}	—	60	ns	1
	t_{OHZ}	—	60	ns	

NOTE:
1. Determined by the time for the output to be opened. (Irrespective of output voltage)

AC TEST CONDITIONS

PARAMETER	RATING
Input voltage amplitude	0.4 V - 2.6 V
Input signal rise time	10 ns
Input signal fall time	10 ns
Input reference level	1.5 V
Output reference level	1.5 V
Output load condition	1TTL + 100 pF

NOTE:
It is recommended that a decoupling capacitor be connected beween V_{CC} and GND pin.

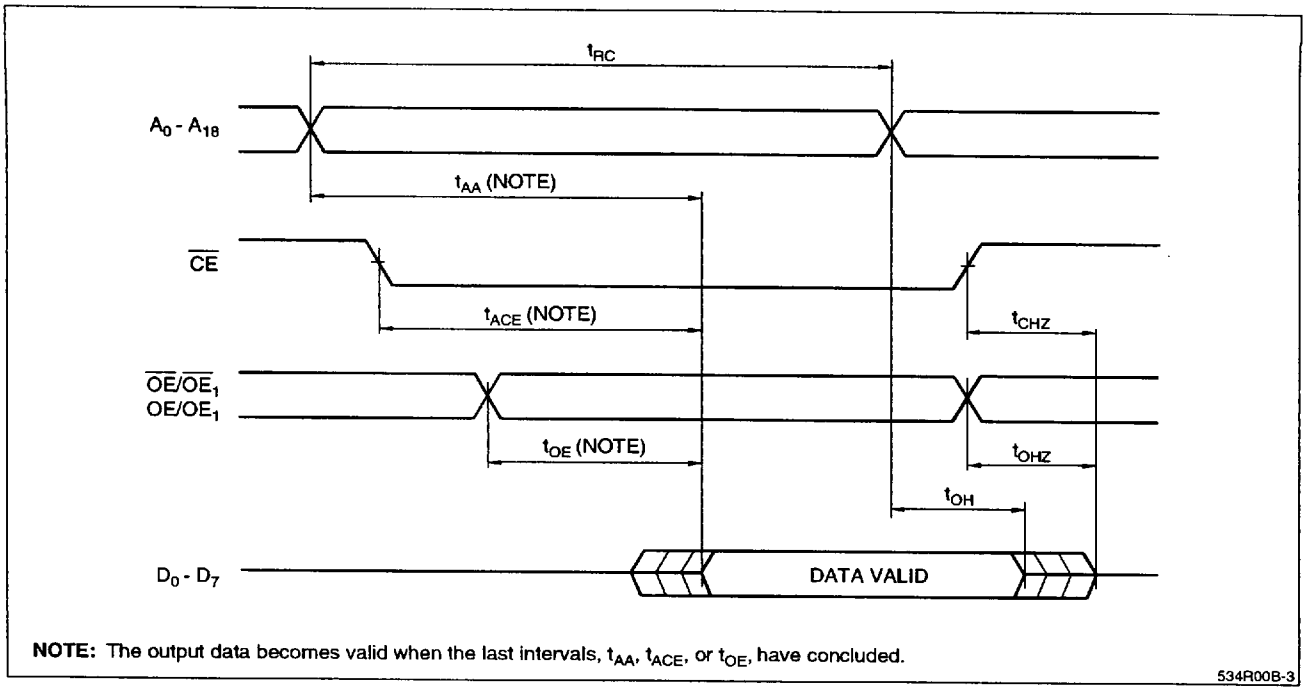
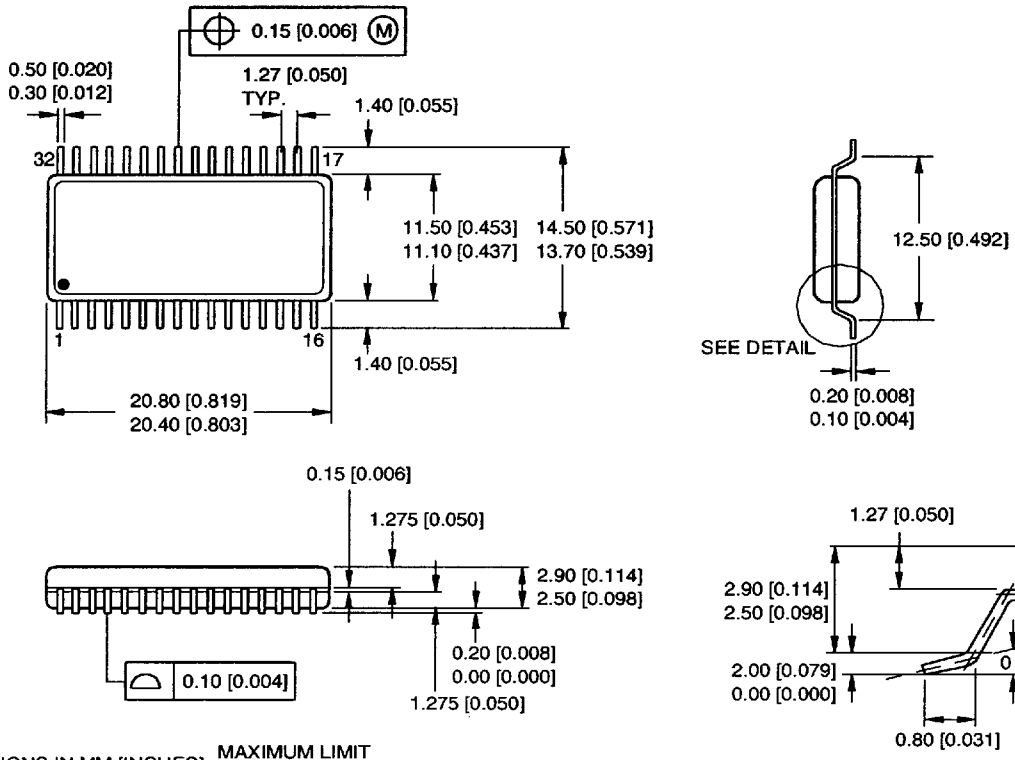


Figure 3. Timing Chart

PACKAGE DIAGRAM

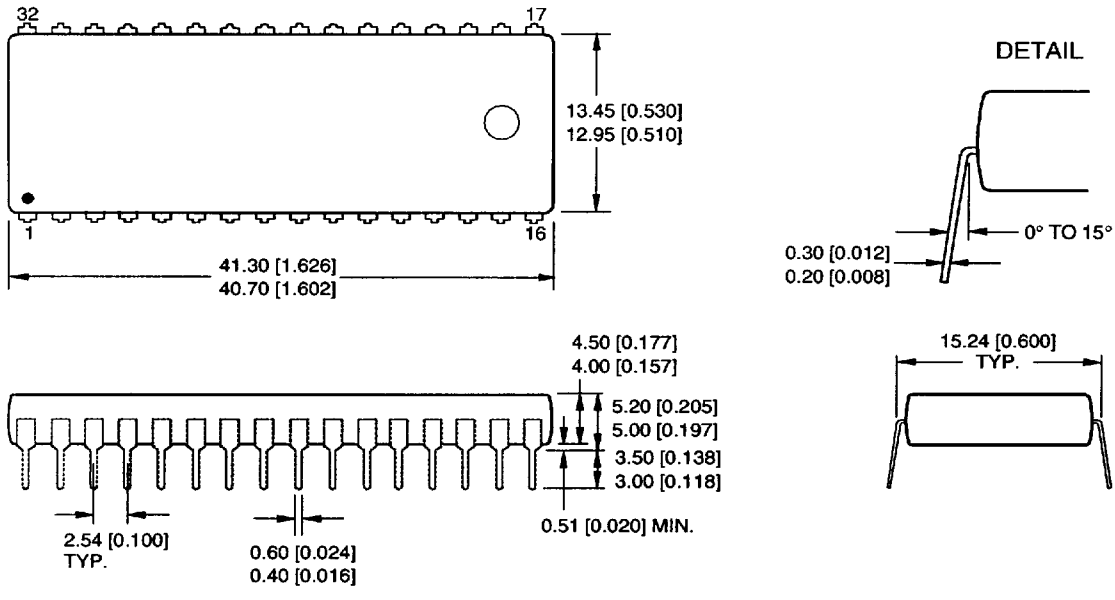
32SOP (SOP32-P-525)



DIMENSIONS IN MM [INCHES] MAXIMUM LIMIT / MINIMUM LIMIT

32SOP-2

32DIP (DIP032-P-0600)



DIMENSIONS IN MM [INCHES] MAXIMUM LIMIT / MINIMUM LIMIT

32DIP

ORDERING INFORMATION