

LH538700A

PRELIMINARY
CMOS 8M (1M × 8) MROM

FEATURES

- 1,048,576 words × 8 bit organization
- Access time: 100 ns (MAX.)
- Power consumption:
 - Operating: 550 mW (MAX.)
 - Standby: 550 μW (MAX.)
- Static operation
- TTL compatible I/O
- Three-state outputs
- Single +5 V power supply
- Packages:
 - 32-pin, 600-mil DIP
 - 32-pin, 525-mil SOP
 - 32-pin, 400-mil TSOP (Type II)

DESCRIPTION

The LH538700A is an 8M-bit mask-programmable ROM organized as 1,048,576 × 8 bits. It is fabricated using silicon-gate CMOS process technology.

PIN CONNECTIONS

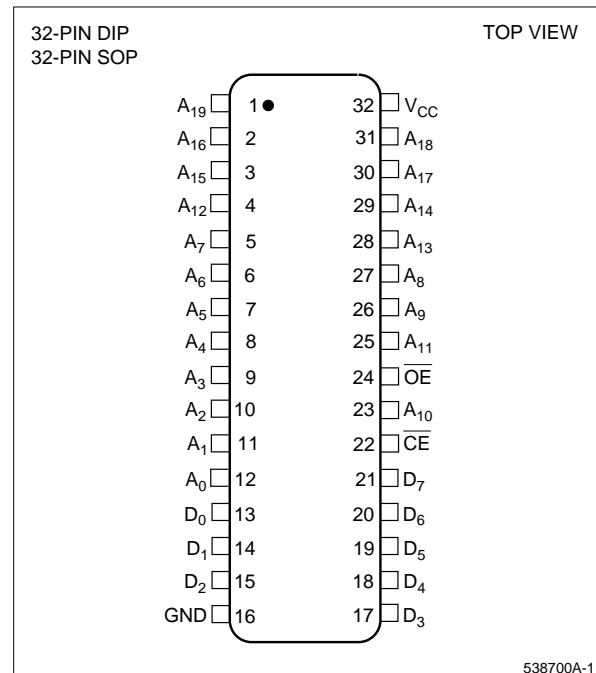


Figure 1. Pin Connections for DIP and SOP Packages

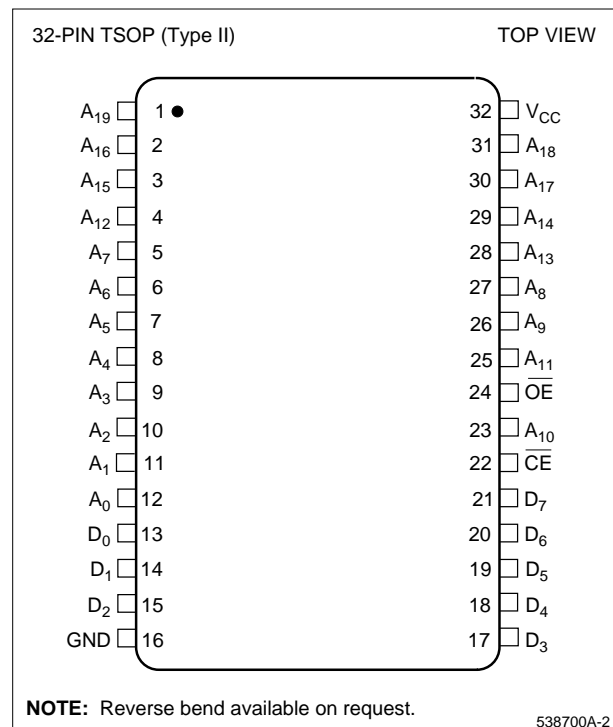
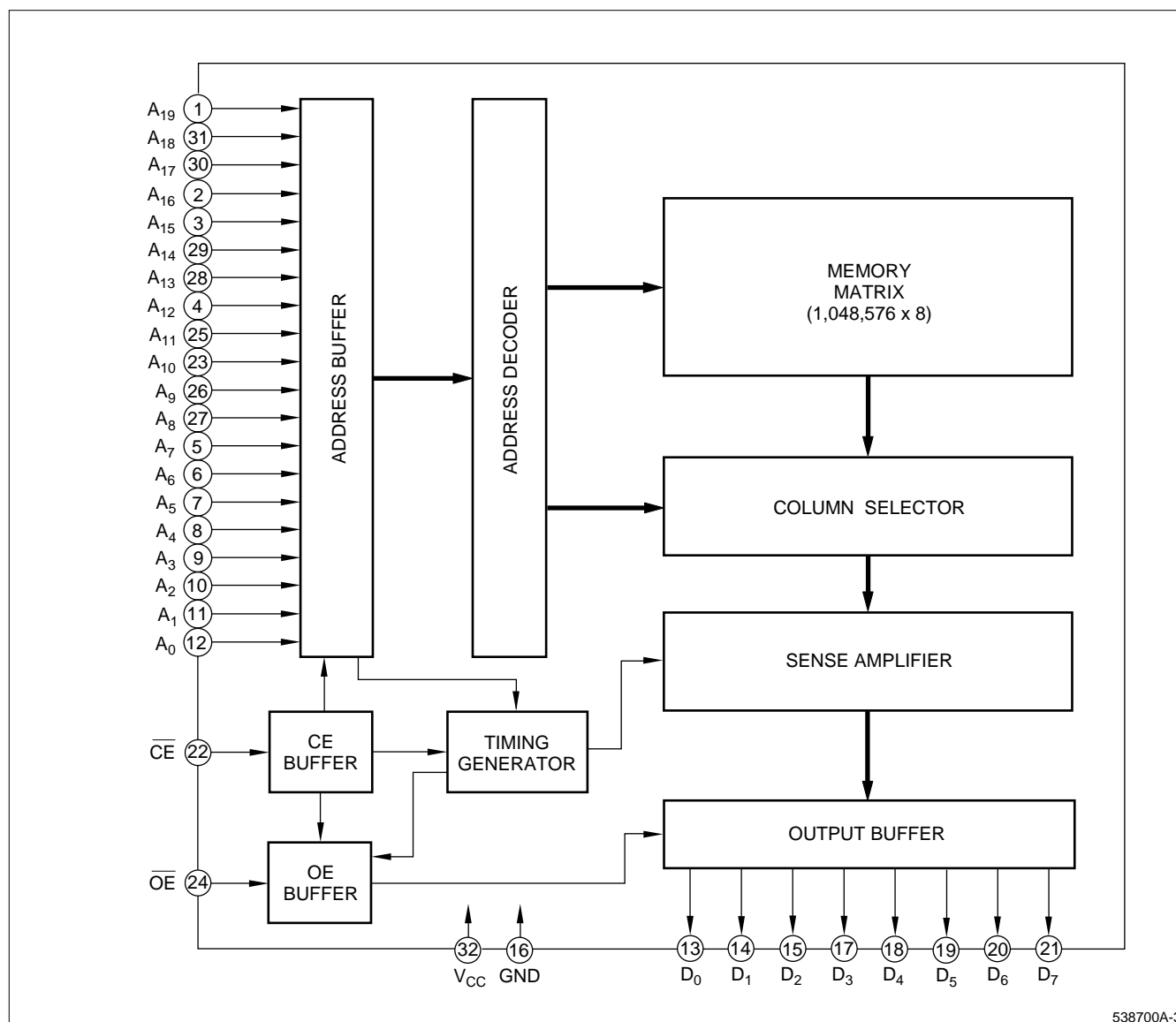


Figure 2. Pin Connections for TSOP Package



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Figure 3. LH538700A Block Diagram

PIN DESCRIPTION

SIGNAL	PIN NAME
A ₀ – A ₁₉	Address input
D ₀ – D ₇	Data output
CE	Chip enable input

SIGNAL	PIN NAME
OE	Output enable input
V _{CC}	Power supply (+5 V)
GND	Ground

TRUTH TABLE

\overline{CE}	\overline{OE}	DATA OUTPUT	SUPPLY CURRENT
H	X	High-Z	Standby
L	H	High-Z	Operating
L	L	Output	Operating

NOTE:

X = H or L.

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 ($T_A = 0^\circ\text{C}$ to $+70^\circ\text{C}$)

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

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

PARAMETER	SYMBOL	CONDITIONS	MIN.	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}	$I_{OL} = 2.0\text{ mA}$		0.4	V	
Output 'High' voltage	V_{OH}	$I_{OH} = -400\text{ }\mu\text{A}$	2.4		V	
Input leakage current	$ I_{LI} $	$V_{IN} = 0\text{ V to } V_{CC}$		10	μA	
Output leakage current	$ I_{LO} $	$V_{OUT} = 0\text{ V to } V_{CC}$		10	μA	1
Operating current	I_{CC1}	$t_{RC} = 100\text{ ns}$		100	mA	2
	I_{CC2}	$t_{RC} = 1\text{ }\mu\text{s}$		90	mA	2
Standby current	I_{SB1}	$\overline{CE} = V_{IH}$		3	mA	
	I_{SB2}	$\overline{CE} = V_{CC} - 0.2\text{ V}$		100	μA	
Input capacitance	C_{IN}	$f = 1\text{ MHz}$		10	pF	
Output capacitance	C_{OUT}	$T_A = 25^\circ\text{C}$		10	pF	

NOTES:

1. $\overline{CE}/\overline{OE} = V_{IH}$
2. $V_{IN} = V_{IH}$ or V_{IL} , $\overline{CE} = V_{IL}$, outputs open

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

PARAMETER	SYMBOL	MIN.	MAX.	UNIT	NOTE
Read cycle time	t_{RC}	100		ns	
Address access time	t_{AA}		100	ns	
Chip enable access time	t_{ACE}		100	ns	
Output enable delay time	t_{OE}		50	ns	
Output hold time	t_{OH}	5		ns	
CE to output in High-Z	t_{CHZ}		40	ns	1
OE to output in High-Z	t_{OHZ}		40	ns	1

NOTE:

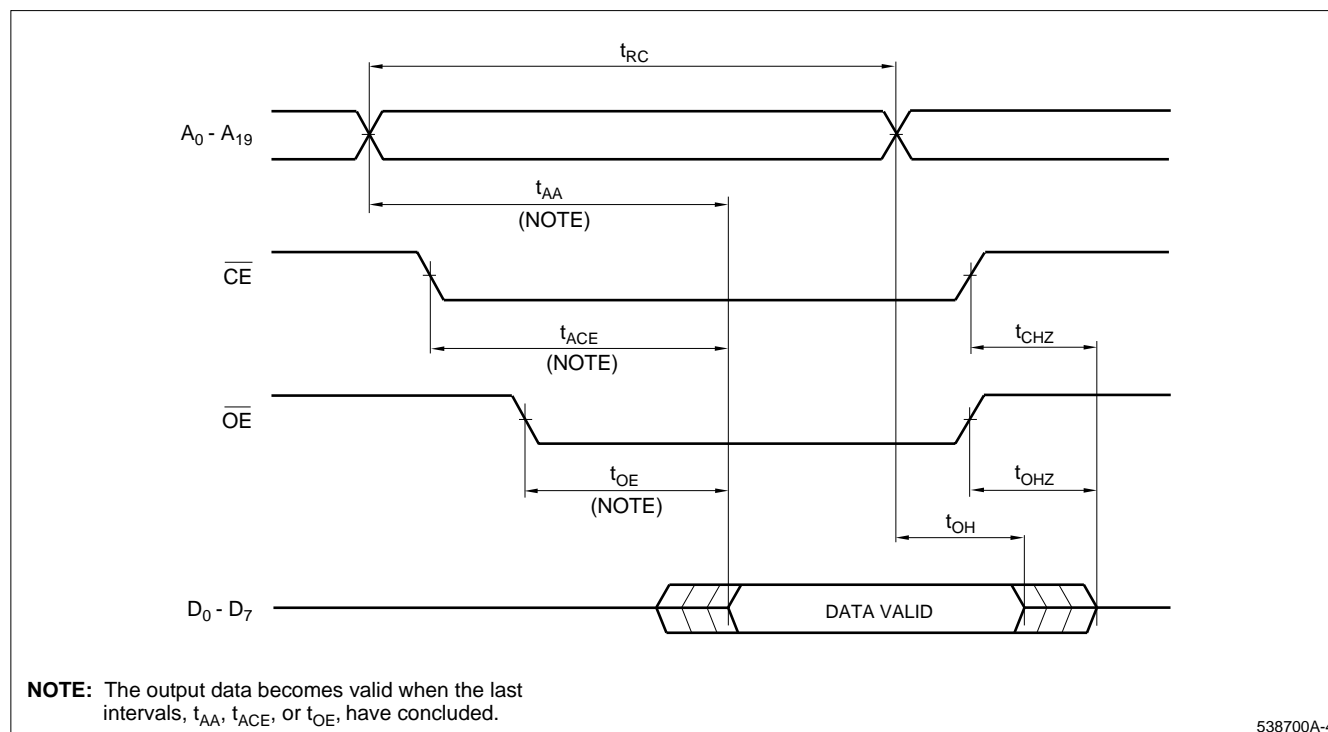
1. This is the time required for the output to become high-impedance.

AC TEST CONDITIONS

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

CAUTION

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

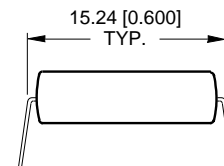
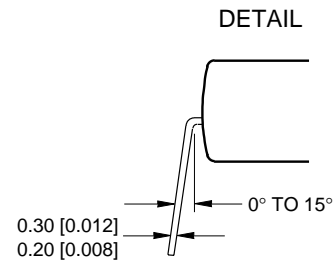
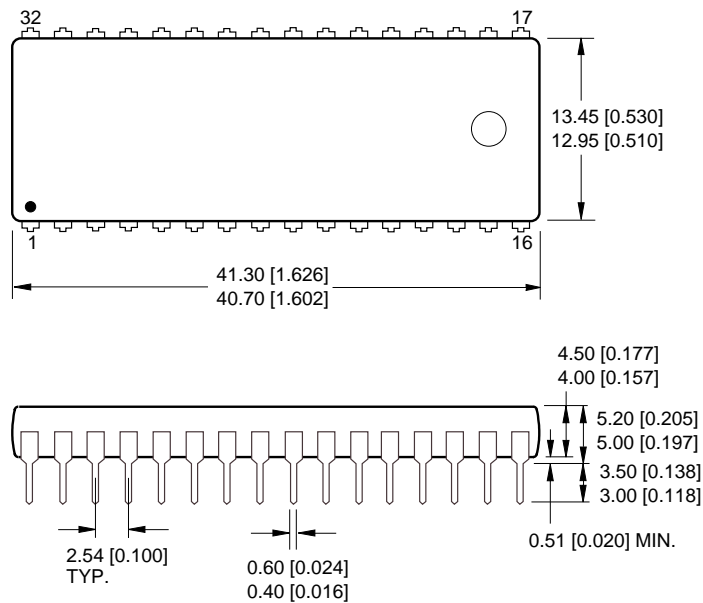


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Figure 4. Timing Diagram

PACKAGE DIAGRAMS

32DIP (DIP032-P-0600)

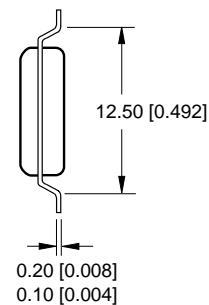
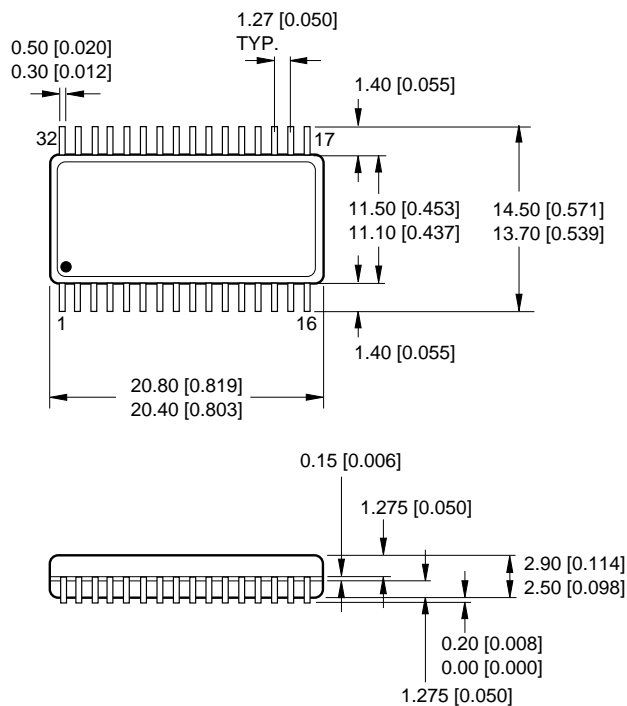


DIMENSIONS IN MM [INCHES] MAXIMUM LIMIT
MINIMUM LIMIT

32DIP

32-pin, 600-mil DIP

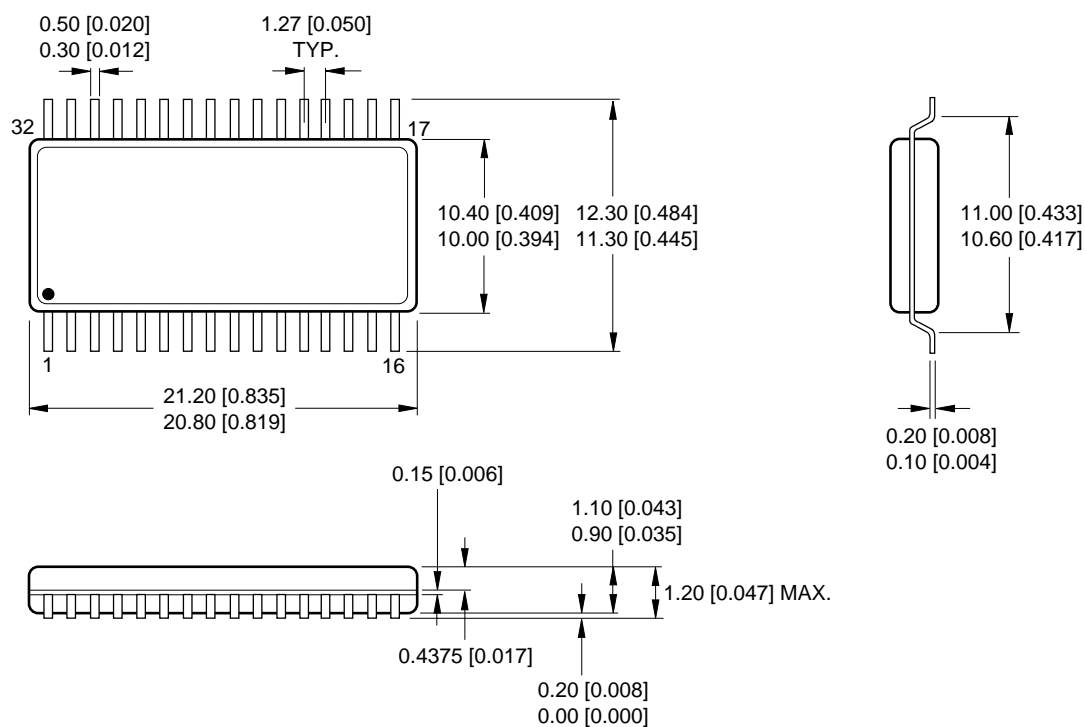
32SOP (SOP032-P-0525)



DIMENSIONS IN MM [INCHES] MAXIMUM LIMIT
MINIMUM LIMIT

32SOP

32-pin, 525-mil SOP

32TSOP (Type II) (TSOP032-P-0400)

DIMENSIONS IN MM [INCHES] MAXIMUM LIMIT
MINIMUM LIMIT

32TSOP400

32-pin, 400-mil TSOP (Type II)**ORDERING INFORMATION**

LH538700A
 Device Type

X
 Package

- { D 32-pin, 600-mil DIP (DIP032-P-0600)
- { N 32-pin, 525-mil SOP (SOP032-P-0525)
- { S 32-pin, 400-mil TSOP (Type II) (TSOP032-P-0400)
- { SR 32-pin, 400-mil TSOP (Type II) Reverse bend (TSOP032-P-0400)

CMOS 8M (1M x 8) Mask-Programmable ROM

Example: LH538700AD (CMOS 8M (1M x 8) Mask-Programmable ROM, 32-pin, 600-mil DIP)

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