LH538R00A CMOS 8M (1M × 8) Mask-Programmable ROM

FEATURES

- 1,048,576 × 8 bit organization
- Access time: 120 ns (MAX.)
- Low-power consumption:
  Operating: 330 mW (MAX.)
  Standby: 550 µW (MAX.)
- Programmable output enable
- Fully-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, 8 × 20 mm^2 TSOP (Type II)

DESCRIPTION

The LH538R00A is a mask-programmable ROM organized as 1,048,576 × 8 bits. It is fabricated using silicon-gate CMOS process technology.

PIN CONNECTIONS

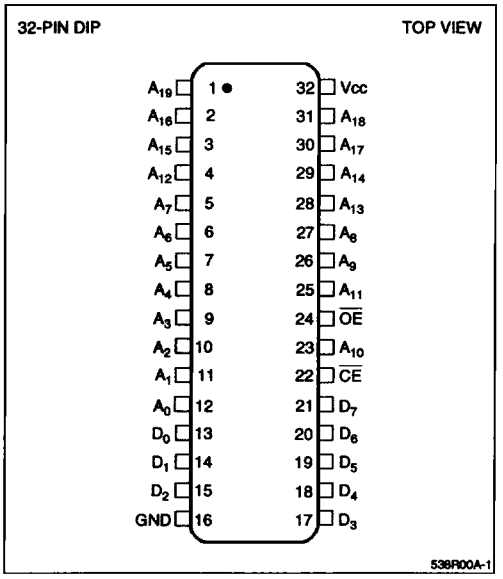

Figure 1. Pin Connections for DIP Package

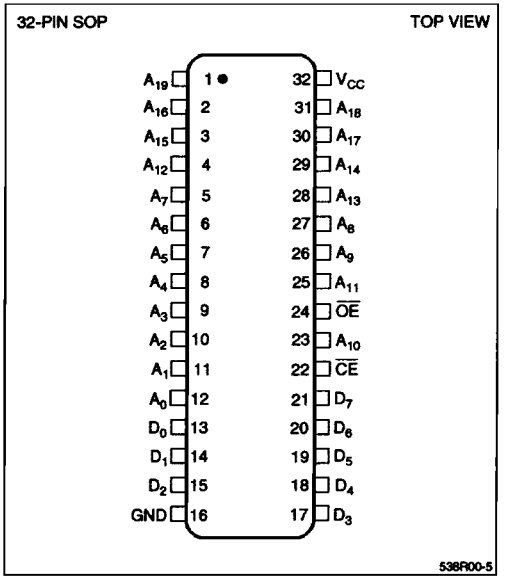

Figure 2. Pin Connections for SOP Package

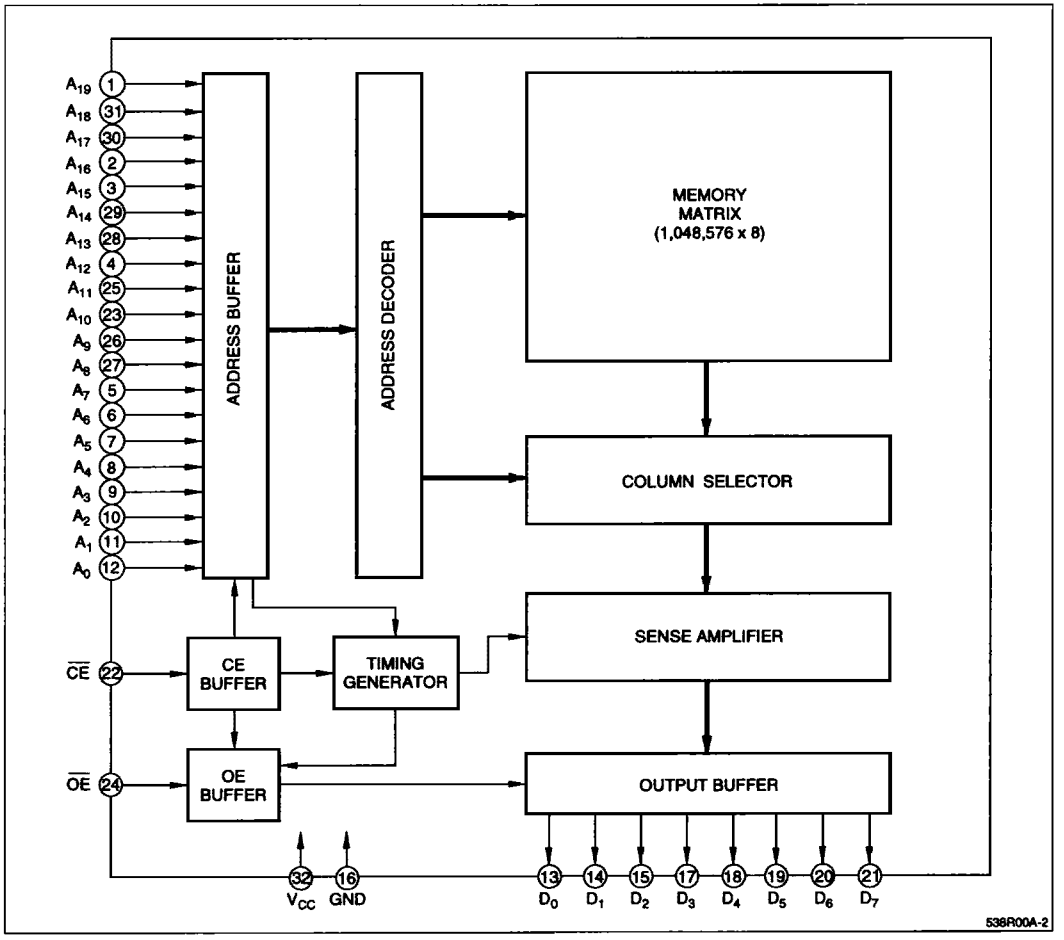

Figure 3. LH538R00A Block Diagram

PIN DESCRIPTION

SIGNAL	PIN NAME
A_0 - A_{19}	Address input
D_0 - D_7	Data output
$\overline{CE}$	Chip Enable input

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

TRUTH TABLE

$\overline{CE}$	$\overline{OE}$	D_0 - D_7	SUPPLY CURRENT
H	X	High-Z	Standby (I_{SB})
L	H	High-Z	Operating (I_{CC})
L	L	D_{OUT}	Operating (I_{CC})

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	Topr	0 to +70	°C
Storage temperature	Tstg	-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 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} = 2.0 mA			0.4	V	
Output 'High' voltage	V_{OH}	I_{OH} = -400 µA	2.4			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			60	mA	2
	I_{CC2}	t_{RC} = 1 µs			45		
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. $\overline{OE}$ = V_{IH}, $\overline{CE}$ = V_{IH}, outputs open
2. V_{IN} = V_{IH}/V_{IL}, $\overline{CE}$ = V_{IL}, 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}	120			ns	
Address access time	t_{AA}			120	ns	
Chip enable time	t_{ACE}			120	ns	
Output enable time	t_{OE}			55	ns	
Output hold time	t_{OH}	5			ns	
CE to output in High-Z	t_{CHZ}			50	ns	1
OE to output in High-Z	t_{OHZ}			50	ns	

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

AC TEST CONDITIONS

PARAMETER	RATING
Input voltage amplitude	0.6 V to 2.4 V
Input rise/fall time	10 ns
Input reference level	1.5 V
Output reference level	1.5 V
Output load condition	1TTL + 100 pF

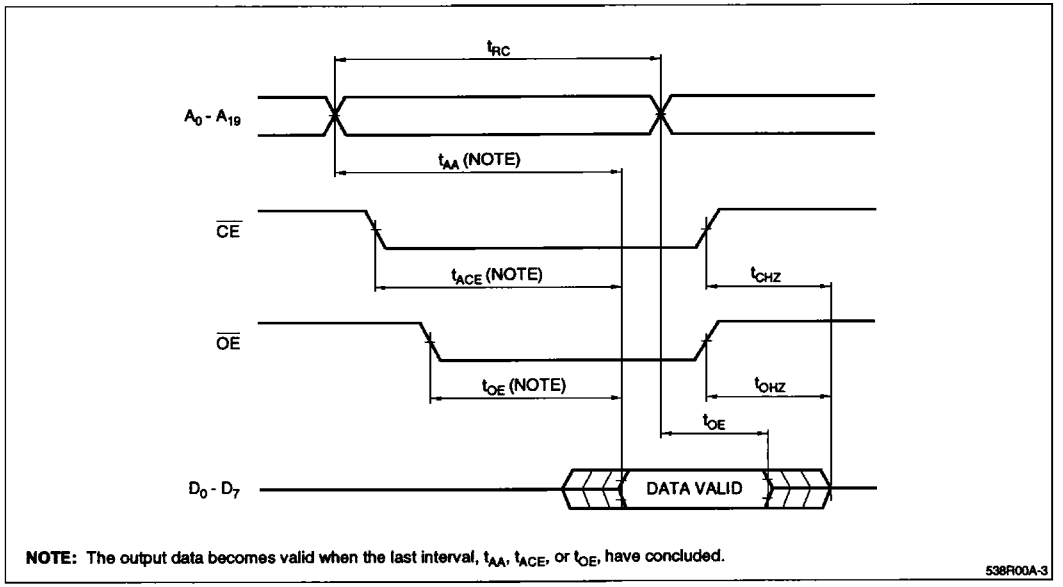

Figure 4. Timing Diagram

CAUTION

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

ORDERING INFORMATION