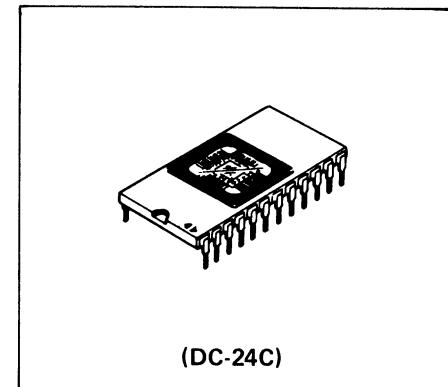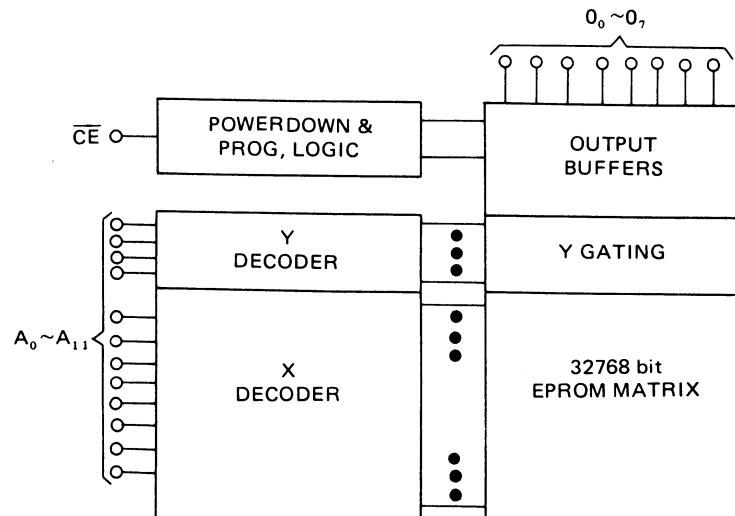# HN462532

4096-word × 8-bit UV Erasable and Programmable Read Only Memory

The HN462532 is a 4096 word by 8 bit erasable and electrically programmable ROM. This device is packaged in a 24-pin, dual-in-line package with transparent lid. The transparent lid allows the user to expose the chip to ultraviolet light to erase the bit pattern, whereby a new pattern can then be written into the device.
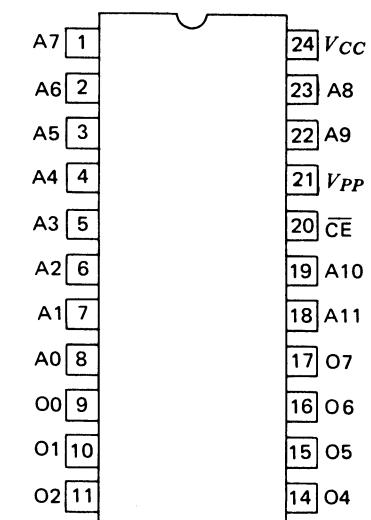
(DC-24C)

■ FEATURES

- Single Power Supply . . . . +5V ±5%
- Simple Programming . . . . Program Voltage: +25V D.C.
  Program with One 50ms Pulse
- Static . . . . No Clocks Required
- Inputs and Outputs TTL Compatible During Both Read and Program Modes
- Fully Decoded On-Chip Address Decode
- Access Time . . . . 450ns (Max.)
- Low Power Dissipation . . . . . 858mW (Max.) Active Power
  201mW (Max.) Standby Power
- Three State Output . . . . OR-Tie Capability
- Compatible with TMS2532

■ BLOCK DIAGRAM

■ PIN ARRANGEMENT

A7	1	24	V_{CC}
A6	2	23	A8
A5	3	22	A9
A4	4	21	V_{PP}
A3	5	20	$\overline{CE}$
A2	6	19	A10
A1	7	18	A11
A0	8	17	O7
O0	9	16	O6
O1	10	15	O5
O2	11	14	O4
GND	12	13	O3

(Top View)

◎ HITACHI

■ MODE SELECTION

Mode \ Pins	$\overline{CE}$ (20)	V_{PP} (21)	V_{CC} (24)	Outputs (9 to 11, 13 to 17)
Read	V_{IL}	+5	+5	Dout
Stand by	V_{IH}	+5	+5	High Z
Program	Pulsed V_{IH} to V_{IL}	+25	+5	Din
Program Inhibit	V_{IH}	+25	+5	High Z

■ ABSOLUTE MAXIMUM RATINGS

Item	Symbol	Value	Unit
All Input and Output Voltages*	V_{IN}, V_{out}	−0.3 to +7	V
V_{PP} Voltage*	V_{PP}	−0.3 to +28	V
Operating Temperature Range	T_{opr}	0 to +70	°C
Storage Temperature Range	T_{stg}	−65 to +125	°C

*with respect to GND.

■ READ OPERATION

● D.C. AND OPERATING CHARACTERISTICS (T_a = 0 to +70°C, V_{CC} = 5V ±5%, V_{PP} = V_{CC} ±0.6V)

Parameter	Symbol	Test Conditions	min.	typ.	max.	Unit
Input Leakage Current	I_{LI}	V_{in} = 5.25 V	—	—	10	μA
Output Leakage Current	I_{LO}	V_{out} = 5.25 V / 0.4 V	—	—	10	μA
V_{PP} Current	I_{PP1}	V_{PP} = 5.85 V	—	—	12	mA
V_{CC} Current (Standby)	I_{CC1}	$\overline{CE}$ = V_{IH}	—	—	25	mA
V_{CC} Current (Active)	I_{CC2}	$\overline{CE}$ = V_{IL}	—	—	150	mA
Input Low Voltage	V_{IL}		−0.1	—	0.8	V
Input High Voltage	V_{IH}		2.0	—	V_{CC}+1	V
Output Low Voltage	V_{OL}	I_{OL} = 2.1 mA	—	—	0.4	V
Output High Voltage	V_{OH}	I_{OH} = −400μA	2.4	—	—	V

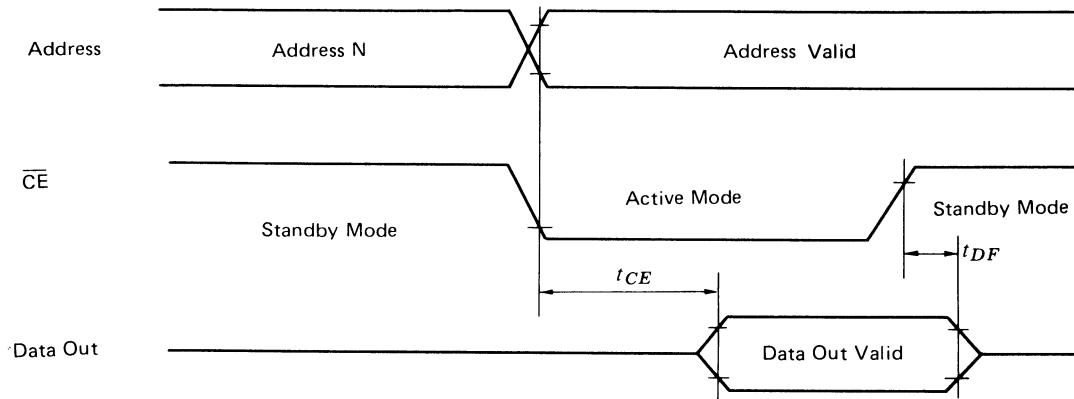Notes: Vcc must be applied simultaneously or before Vpp and removed simultaneously or after Vpp.

● AC CHARACTERISTICS (T_a = 0 to +70°C, V_{CC} = 5V ±5%, V_{PP} = V_{CC} ±0.6 V)

Parameter	Symbol	Test Conditions	min.	typ.	max.	Unit
Address to Output Delay	t_{ACC}	$\overline{CE}$ = V_{IL}	—	—	450	ns
$\overline{CE}$ to Output Delay	t_{CE}		—	—	450	ns
$\overline{CE}$ High to Output Float	t_{DF}		0	—	100	ns
Address to Output Hold	t_{OH}	$\overline{CE}$ = V_{IL}	0	—	—	ns

● **SWITCHING CHARACTERISTICS**

Test Conditions

Input Pulse Levels:	0.8V to 2.2V
Input Rise and Fall Times:	≤20ns
Output Load:	1TTL Gate + 100pF
Reference Level for Measuring Timing:	Inputs; 1V and 2V,
	Outputs; 0.8V and 2V

● **CAPACITANCE** ($T_a = 25°C, f = 1$ MHz)

Parameter	Symbol	Test Conditions	min.	typ.	max.	Unit
Input Capacitance	C_{in}	$V_{in} = 0V$	—	—	6	pF
Output Capacitance	C_{out}	$V_{out} = 0V$	—	—	12	pF

■ **PROGRAMMING OPERATION**

● **DC PROGRAMMING CHARACTERISTICS** ($T_a = 25°C \pm 5°C$, $V_{CC} = 5V \pm 5\%$, $V_{PP} = 25V \pm 1V$)

Parameter	Symbol	Test Conditions	min.	typ.	max.	Unit
Input Leakage Current	I_{LI}	$V_{in} = 5.25V / 0.4V$	—	—	10	μA
V_{PP} Supply Current During Programming	I_{PP2}	$\overline{CE} = V_{IL}$	—	—	30	mA
V_{CC} Supply Current	I_{CC}		—	—	150	mA
Input Low Level	V_{IL}		−0.1	—	0.8	V
Input High Level	V_{IH}		2.0	—	$V_{CC}+1$	V

⊚ HITACHI

● AC PROGRAMMING CHARACTERISTICS ($T_a = 25°C \pm 5°C$, $V_{CC} = 5V \pm 5\%$, $V_{PP} = 25V \pm 1V$)
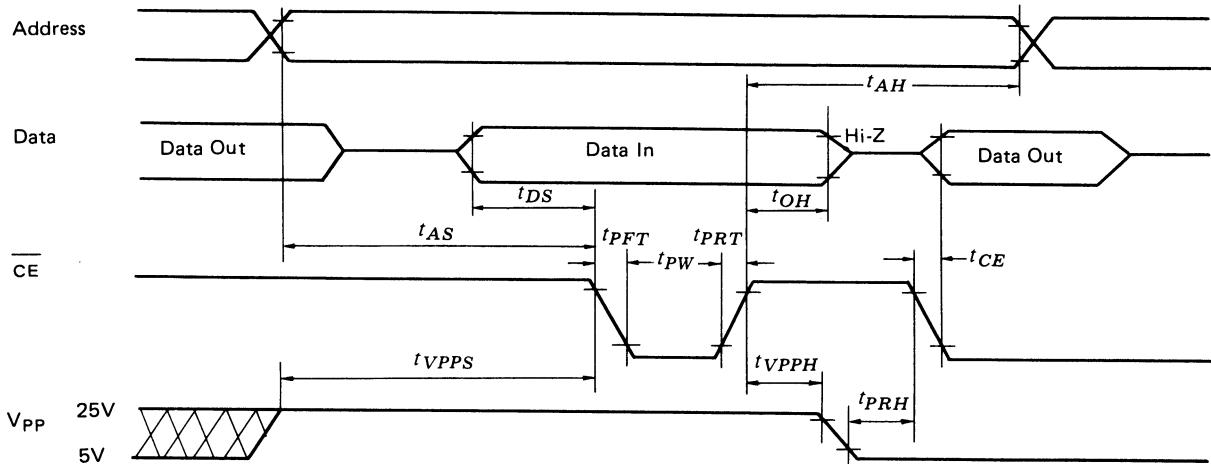
Parameter	Symbol	Test Conditions	min.	typ.	max.	Unit
Address Setup Time	t_{AS}		2	–	–	μs
Data Setup Time	t_{DS}		2	–	–	μs
Address Hold Time	t_{AH}		2	–	–	μs
Data Hold Time	t_{DH}		2	–	–	μs
Setup Time from Vpp	t_{VPPS}		0	–	–	ns
Program Pulse Hold Time	t_{PRH}		0	–	–	ns
V_{PP} Hold Time	t_{VPPH}		0	–	–	ns
Program Pulse Width	t_{PW}		45	50	55	ms
Program Pulse Time	t_{PRT}		5	–	–	ns
Program Pulse Time	t_{PFT}		5	–	–	ns

Note: V_{CC} must be applied simultaneously or before V_{PP} and removed simultaneously or after V_{PP}.

● SWITCHING CHARACTERISTICS

Test Conditions

Input Pulse Level:	0.8V to 2.2V
Input Rise and Fall Times:	≤20ns
Output Load:	1TTL Gate + 100pF
Reference Level for Measuring Timing:	Inputs; 1V and 2V,
	Outputs; 0.8V and 2V

●ERASE

Erasure of HN462532 is performed by exposure to ultraviolet light with a wavelength of 2537Å, and all the output data are changed to "1" after this erasure procedure.

The minimum integrated close (i.e.,UV intensity x exposure time) for erasure is 15W· sec/cm^2.