

HN462532

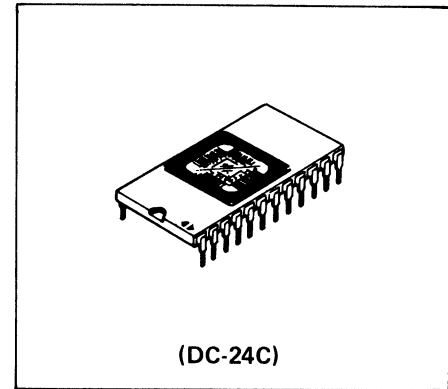
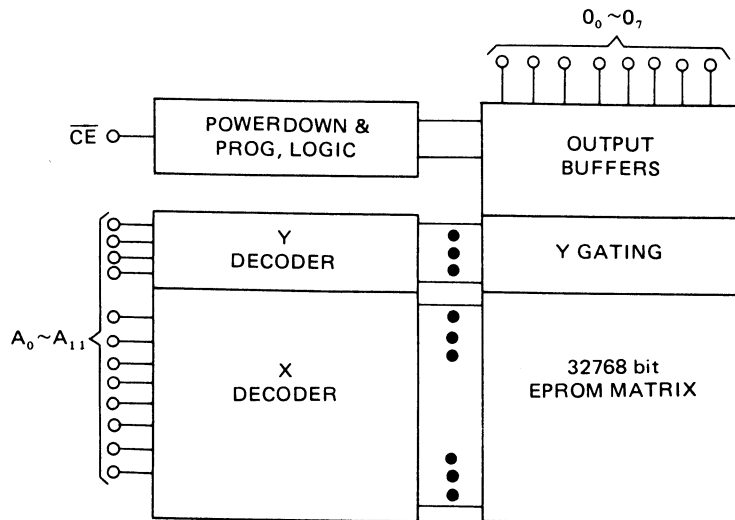
4096-word X 8-bit UV Erasable and Programmable Read Only Memory

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.

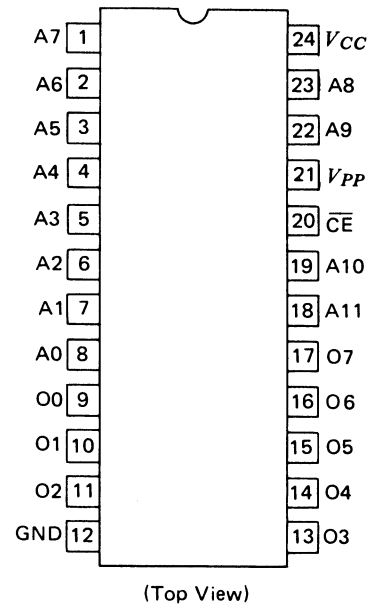
■ FEATURES

- 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



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, $V_{CC} = 5V \pm 5\%$, $V_{PP} = V_{CC} \pm 0.6V$)

| Parameter | Symbol | Test Conditions | min. | typ. | max. | Unit |
|-----------------------------------|-----------|--------------------------|------|------|------------|------|
| Input Leakage Current | I_{LI} | $V_{in} = 5.25V$ | - | - | 10 | μA |
| Output Leakage Current | I_{LO} | $V_{out} = 5.25V / 0.4V$ | - | - | 10 | μA |
| V _{PP} Current | I_{PP1} | $V_{PP} = 5.85V$ | - | - | 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} | $I_{OL} = 2.1mA$ | - | - | 0.4 | V |
| Output High Voltage | V_{OH} | $I_{OH} = -400\mu A$ | 2.4 | - | - | V |

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

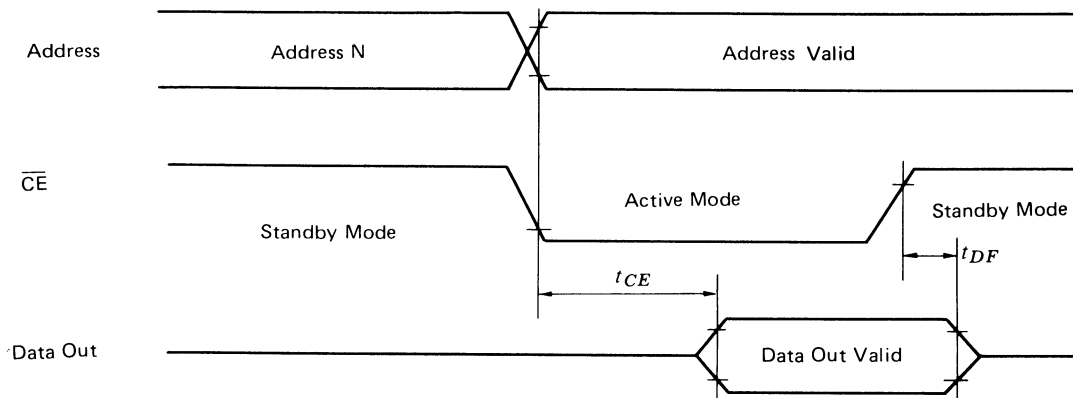
AC CHARACTERISTICS ($T_a = 0$ to +70°C, $V_{CC} = 5V \pm 5\%$, $V_{PP} = V_{CC} \pm 0.6V$)

| 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 ($T_a = 25^\circ\text{C}, f = 1\text{ MHz}$)

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

■ PROGRAMMING OPERATION

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

| Parameter | Symbol | Test Conditions | min. | typ. | max. | Unit |
|--|-----------|---------------------------------------|------|------|--------------|---------------|
| Input Leakage Current | I_{LI} | $V_{in} = 5.25\text{V} / 0.4\text{V}$ | — | — | 10 | μA |
| V_{PP} Supply Current During Programming | I_{PP2} | $\overline{\text{CE}} = V_{IL}$ | — | — | 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 |

● **AC PROGRAMMING CHARACTERISTICS** ($T_a = 25^\circ\text{C} \pm 5^\circ\text{C}$, $V_{CC} = 5\text{V} \pm 5\%$, $V_{PP} = 25\text{V} \pm 1\text{V}$)

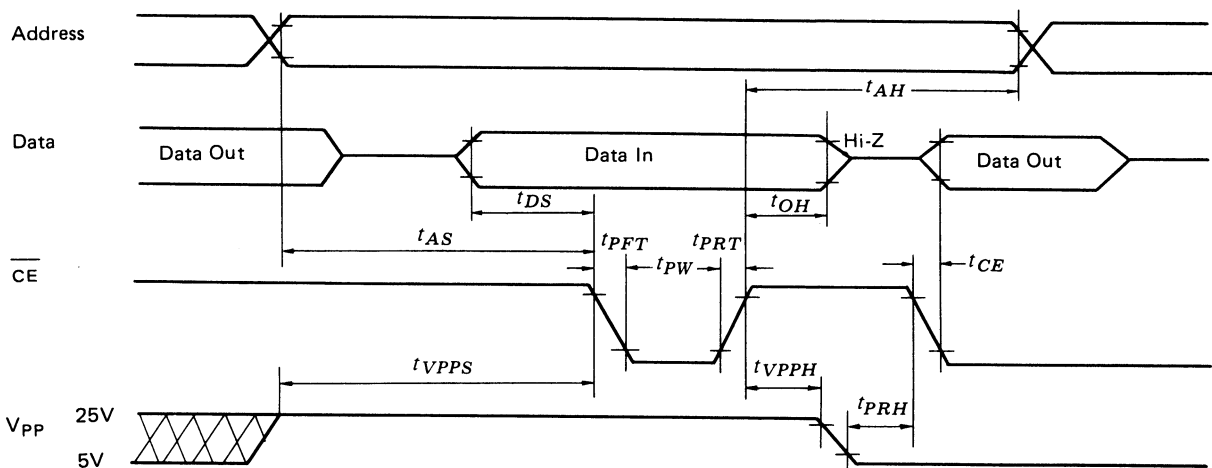
| Parameter | Symbol | Test Conditions | min. | typ. | max. | Unit |
|--------------------------|------------|-----------------|------|------|------|---------------|
| Address Setup Time | t_{AS} | | 2 | — | — | μs |
| Data Setup Time | t_{DS} | | 2 | — | — | μs |
| Address Hold Time | t_{AH} | | 2 | — | — | μs |
| Data Hold Time | t_{DH} | | 2 | — | — | μs |
| Setup Time from V_{PP} | 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: $\leq 20\text{ns}$
 Output Load: 1TTL Gate + 100pF
 Reference Level for Measuring Timing: Inputs; 1V and 2V,
 Outputs; 0.8V and 2V



● **ERASE**

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

The minimum integrated dose (i.e., UV intensity x exposure time) for erasure is $15\text{W} \cdot \text{sec}/\text{cm}^2$.