

**NEC**  
NEC Electronics Inc.

**μPD2364A**  
**8,192 x 8-BIT**  
**MASK-PROGRAMMABLE**  
**NMOS ROM**

Revision 1

**Description**

The μPD2364A is a 65,536-bit Read-only Memory utilizing NMOS silicon gate technology. The device is static in operation, organized as 8,192 words by 8 bits and operates from a single +5V ± 10% power supply. The μPD2364A has three-state outputs. All inputs and outputs are fully TTL-compatible. The Output Enable/Chip Enable pin is mask-programmable and can be specified by selecting 1, 0 or don't-care data and standby mode. The μPD2364A is available in a plastic (μPD2364AC) 24-pin DIP. Pinout is compatible with Mostek MK36000®

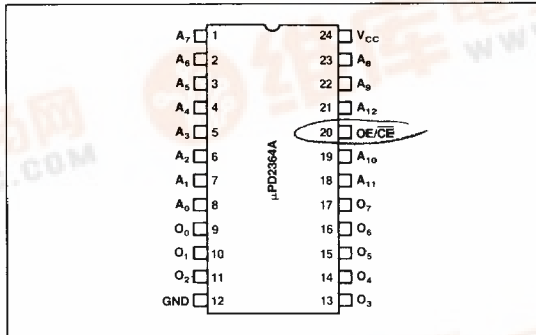
® = Registered trademark.

**Features**

- 8,192-word by 8-bit organization
- I/O TTL-compatible
- Three-state outputs
- Single +5V ± 10% power supply
- Mask-programmable OE/CE
- 24-pin plastic DIP
- 2 performance ranges:

Device	Access Time	Power Supply	
		Active	Standby
μPD2364A	200ns	70mA	15mA
μPD2364A-1	150ns	70mA	15mA

**Pin Configuration**

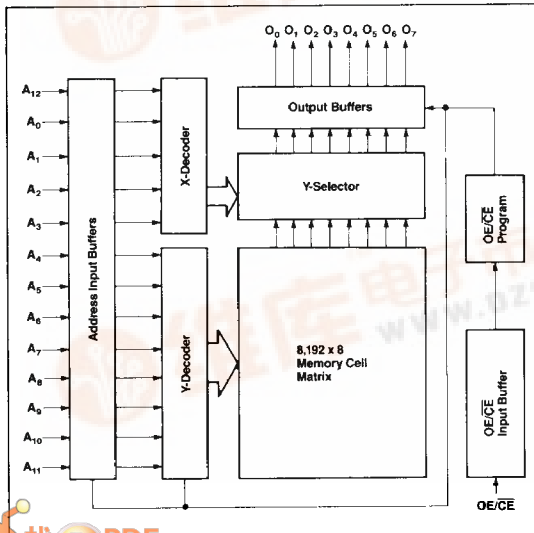


**Pin Identification**

No.	Pin Symbol	Description
1-8, 18-19, 21-23	A <sub>0</sub> -A <sub>12</sub>	Address Inputs
9-11, 13-17	O <sub>0</sub> -O <sub>7</sub>	Three-state Data Outputs
12	GND	Ground
20	OE/CE	Mask-programmable Output Enable/Chip Enable ①
24	V <sub>CC</sub>	+5V ± 10% Power Supply

**Note:** ① Pin 20 may be mask-programmed as an OE or a CE function. If it is defined as OE, it may be specified as active high (1), active low (0), or don't-care (X). If it is defined as CE, it will be active low (0) and a high (1) for standby mode.

**Block Diagram**



**Absolute Maximum Ratings\***

Supply Voltage, $V_{CC}$	- 0.5V to + 7V
Input Voltage, $V_i$	- 0.5V to + 7V
Output Voltage, $V_o$	- 0.5V to + 7V
Operating Temperature, $T_{OPR}$	- 10°C to + 70°C
Storage Temperature, $T_{STG}$	- 65°C to + 150°C

\*COMMENT: Exposing the device to stresses above those listed in Absolute Maximum Ratings could cause permanent damage. The device is not meant to be operated under conditions outside the limits described in the operational sections of this specification. Exposure to absolute maximum rating conditions for extended periods may affect device reliability.

**Capacitance**

$T_A = -10^\circ\text{C to } +70^\circ\text{C}; V_{CC} = +5\text{V} \pm 10\%$

Parameter	Symbol	Limits			Unit	Test Conditions
		Min	Typ	Max		
Input Capacitance	$C_i$		10		pF	$f = 1\text{MHz}$
Output Capacitance	$C_o$		15		pF	$f = 1\text{MHz}$

**DC Characteristics**

$T_A = -10^\circ\text{C to } +70^\circ\text{C}; V_{CC} = +5\text{V} \pm 10\%$

Parameter	Symbol	Limits			Unit	Test Conditions
		Min	Typ	Max		
Input High Voltage	$V_{IH}$	+ 2.0		$V_{CC} + 1.0$	V	
Input Low Voltage	$V_{IL}$	- 0.5		+ 0.8	V	
Output High Voltage	$V_{OH}$	+ 2.4		V	V	$I_{OH} = -400\mu\text{A}$
Output Low Voltage	$V_{OL}$			+ 0.4	V	$I_{OL} = +2.1\text{mA}$
Input Leakage Current High	$I_{LH}$			+ 10	$\mu\text{A}$	$V_i = V_{CC}$
Input Leakage Current Low	$I_{LIL}$			- 10	$\mu\text{A}$	$V_i = 0\text{V}$
Output Leakage Current High	$I_{LOH}$			+ 10	$\mu\text{A}$	$V_o = V_{CC}$ (chip deselected)
Output Leakage Current Low	$I_{LOL}$			- 10	$\mu\text{A}$	$V_o = 0\text{V}$ (chip deselected)
Power Supply Current	$I_{CC2}$		40	70	mA	$CE = V_{IL}$
	$I_{CC1}$ ①		8	15	mA	$CE = V_{IH}$ (standby mode)

Note: ① OE/CE = CE.

**AC Characteristics**

$T_A = -10^\circ\text{C to } +70^\circ\text{C}; V_{CC} = +5\text{V} \pm 10\%$

Parameter	Symbol	Limits				Unit	Test Conditions
		μPD2364A		μPD2364A-1			
Access Time	$t_{ACC}$		200		150	ns	
Chip Enable Access Time	$t_{CE}$ ①		200		150	ns	Input Voltage: $t_R, t_F = 20\text{ns}$
OE Output On Time	$t_{OE}$ ②	10	100	10	100	ns	Timing Reference Levels: Input and Output = 0.8V and 2.0V
Output Hold Time	$t_{OH}$	0		0		ns	Load = 1TTL + 100pF
Output Disable Time	$t_{DF}$	0	90	0	90	ns	

Notes: ① OE/CE = CE.  
② OE/CE = OE.

**Timing Waveform**

