FULLY DECODED 8,192 BIT MASK PROGRAMMABLE READ ONLY MEMORY

DESCRIPTION

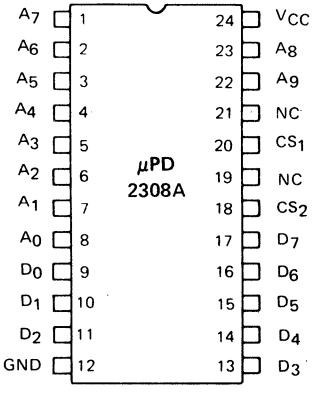
The NEC μPD2308A is a high-speed 8,192-bit mask-programmable Read Only Memory organized as 1024 words by 8 bits. The μPD2308A is fabricated with N-channel MOS technology.

The inputs and outputs are fully TTL-compatible. The device operates with a single +5V power supply. The three chip select inputs are programmable. Any combination of active high or low level chip select inputs can be defined and desired chip select code is fixed during the masking process.

FEATURES

- Access Time 450 ns Max
- 1024 Words x 8 Bits Organization
- Single +5V ±10% Power Supply Voltage
- Directly TTL-Compatible – All Inputs and Outputs
- Two Programmable Chip Select Inputs for Easy Memory Expansion
- Three-State Output – OR-Tie Capability
- On-Chip Address Fully Decoded
- All Inputs Protected Against Static Charge
- Direct Replacement for 2308A
- Available in 24-pin plastic or ceramic packages

PIN CONFIGURATION

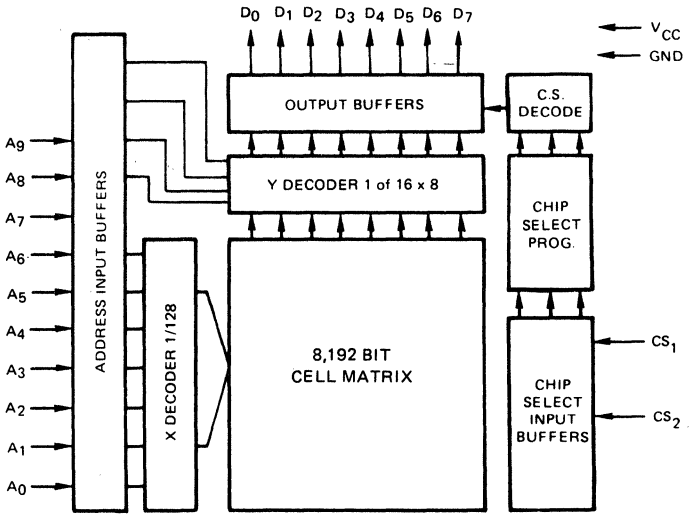


PIN NAMES

$A_0 - A_9$	Address Inputs
$D_0 - D_7$	Data Outputs
$CS_1 - CS_2$	Programmable Chip Select Inputs

Rev/1

BLOCK DIAGRAM



ABSOLUTE MAXIMUM RATINGS*

Operating Temperature . . . . . −10°C to +70°C
Storage Temperature . . . . . −65°C to +125°C
Voltage on Any Pin . . . . . −0.5 to +7.0 Volts (1)

Note: (1) With Respect to Ground.

COMMENT: Stress above those listed under "Absolute Maximum Ratings" may cause permanent damage to the device. This is a stress rating only and functional operation of the device at these or any other conditions above those indicated in the operational sections of this specification is not implied. Exposure to absolute maximum rating conditions for extended periods may affect device reliability.

*T_a = 25°C

DC CHARACTERISTICS

T_a = −10°C to +70°C; V_{CC} = +5 ± 5% unless otherwise noted.

PARAMETER	SYMBOL	LIMITS MIN	LIMITS TYP (1)	LIMITS MAX	UNIT	TEST CONDITIONS
Input Load Current (All Input Pins)	I_{LI}			+10	μA	V_{IN} = V_{CC}
				−10	μA	V_{IN} = 0V
Output Leakage Current	I_{LOH}			+10	μA	Chip Deselected, V_O = V_{CC}
Power Supply Current	I_{CC}		60	85	mA	
Input "Low" Voltage	V_{IL}	−0.5		0.8	V	
Input "High" Voltage	V_{IH}	2.0		V_{CC}	V	
Output "Low" Voltage	V_{OL}			0.4	V	I_{OL} = 3.2 mA
Output "High" Voltage	V_{OH}	+2.4			V	I_{OH} = −200 μA

Note: (1) Typical values for T_a = 25°C and nominal supply voltage.

CAPACITANCE

$T_a = 25°C$; f = 1 MHz

PARAMETER	SYMBOL	LIMITS MIN	LIMITS TYP	LIMITS MAX	UNIT	TEST CONDITIONS
Input Capacitance	C_{IN}		5	7	pf	All Pins Except Pin Under Test Tied to AC Ground
Output Capacitance	C_{OUT}		7	10	pf	All Pins Except Pin Under Test Tied to AC Ground

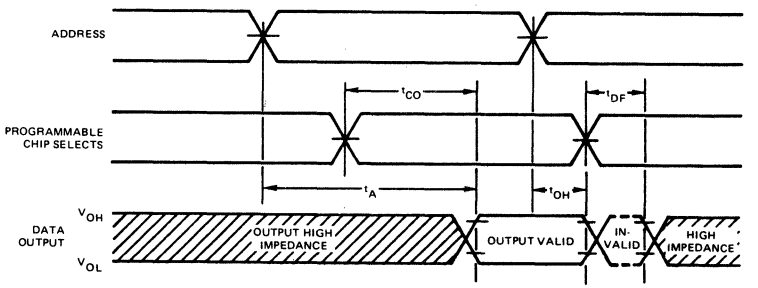
AC CHARACTERISTICS

$T_a = -10°C$ to $+70°C$; $V_{CC} = +5V \pm 5\%$ unless otherwise specified.

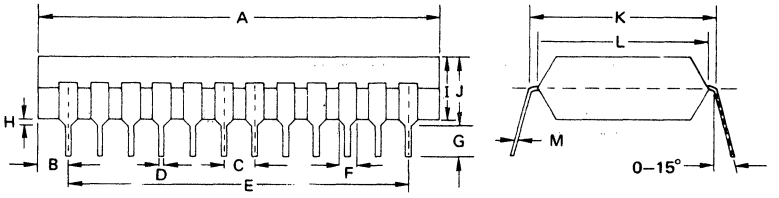
PARAMETER	SYMBOL	LIMITS MIN	LIMITS TYP①	LIMITS MAX	UNIT	TEST CONDITIONS
Address to Output Delay Time	t_A		350	450	ns	$t_T = t_r = t_f = 20$ ns $V_{ref\ in} = 1V, 2.2V$ $V_{ref\ out} = 0.8V, 2V$ Output LOAD = 1 TTL GATE $C_L = 100$ pf
Chip Select to Output Enable Delay Time	t_{CO}			120	ns	
Chip Deselect to Output Data Float Delay Time	t_{DF}	10		100	ns	
Previous Data Valid After Address Change	t_{OH}	20			ns	

Note: ① $T_a = 25°C$; $V_{CC} = +5V$

TIMING WAVEFORMS



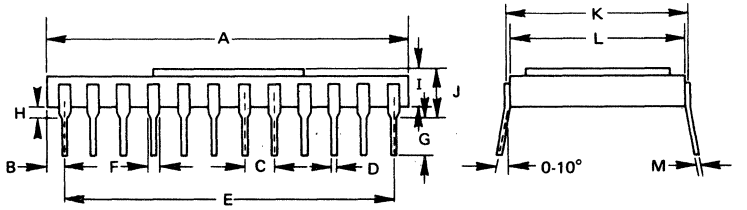
PACKAGE OUTLINES
μPD2308AC



Plastic

ITEM	MILLIMETERS	INCHES
A	33 MAX	1.3 MAX
B	2.53	0.1
C	2.54	0.1
D	0.5 ± 0.1	0.02 ± 0.004
E	27.94	1.1
F	1.5	0.059
G	2.54 MIN	0.1 MIN
H	0.5 MIN	0.02 MIN
I	5.22 MAX	0.205 MAX
J	5.72 MAX	0.225 MAX
K	15.24	0.6
L	13.2	0.55 MAX
M	$0.25^{+0.10}_{-0.05}$	$0.01^{+0.004}_{-0.0019}$

μPD2308AD



Ceramic

ITEM	MILLIMETERS	INCHES
A	30.78 MAX.	1.23 MAX.
B	1.53 MAX.	0.07 MAX.
C	2.54 ± 0.1	0.10 ± 0.004
D	0.46 ± 0.8	0.018 ± 0.03
E	27.94 ± 0.1	1.10 ± 0.004
F	1.02 MIN.	0.04 MIN.
G	3.2 MIN.	0.125 MIN.
H	1.02 MIN.	0.04 MIN.
I	3.23 MAX.	0.13 MAX.
J	4.25 MAX.	0.17 MAX.
K	15.24 TYP.	0.60 TYP.
L	14.93 TYP.	0.59 TYP.
M	0.25 ± 0.05	0.010 ± 0.002