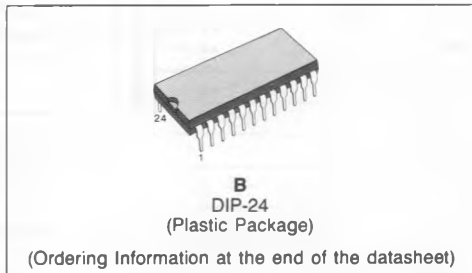


## 32K-BIT READ ONLY MEMORY

- M2332-2532 EPROM PIN COMPATIBLE
- M2333-2732 EPROM PIN COMPATIBLE
- SINGLE +5V ± 10% POWER SUPPLY
- ACCESS TIME 250ns (MAX)
- COMPLETELY STATIC OPERATION
- INPUTS AND OUTPUTS TTL COMPATIBLE
- TWO PROGRAMMABLE CHIP SELECTS FOR SIMPLE MEMORY EXPANSION AND SYSTEM INTERFACE
- 2716/2532/2732 EPROMs ACCEPTED AS PROGRAM DATA INPUTS.
- THREE-STATE OUTPUTS FOR DIRECT BUS INTERFACE



### DESCRIPTION

The M2332 and M2333 are 32,768-bit static Read Only Memories organized as 4,096 by 8 bits. They are manufactured using our high density N-channel Si-Gate MOS process and are ideal for large, non-volatile data storage applications such as program storage.

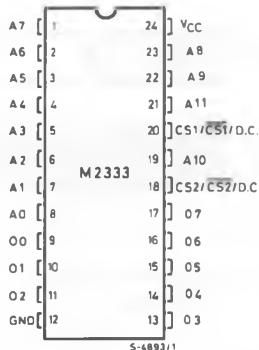
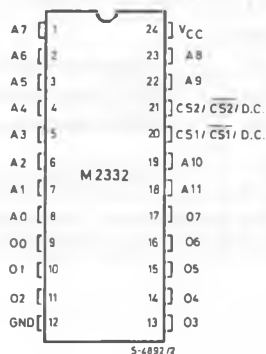
The three-state outputs and TTL input/output levels allow for direct interface with common system bus structures.

The M2332 and M2333 are available in 24-lead dual-in-line plastic or ceramic packages.

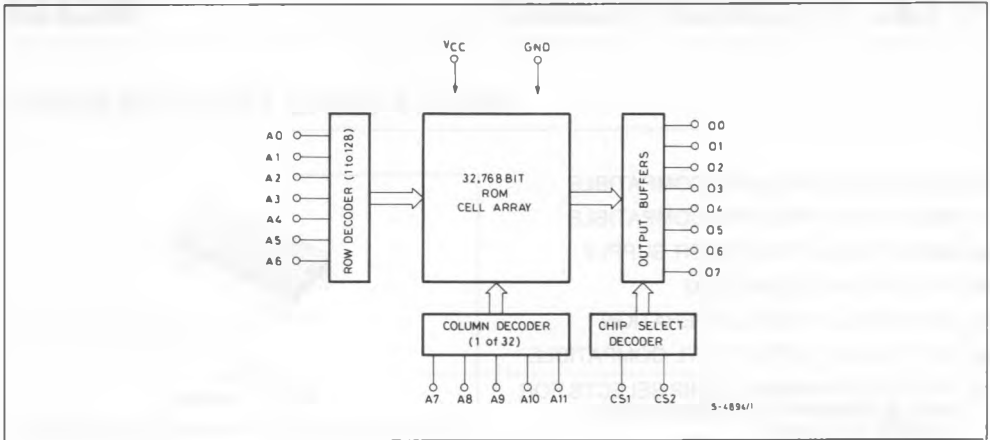
### PIN NAMES

A0-A11	ADDRESS INPUT
O0-O7	DATA OUTPUT
CS1-CS2	CHIP SELECT INPUTS
V <sub>CC</sub>	POWER SUPPLY
GND	GROUND

### PIN CONNECTIONS



**BLOCK DIAGRAM**

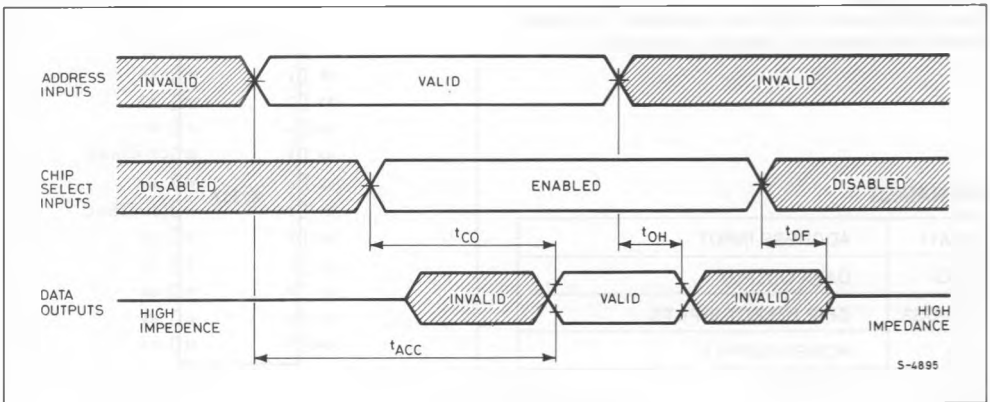


**ABSOLUTE MAXIMUM RATINGS**

Symbol	Parameter	Value	Unit
$V_I$	Voltages on any pin with respect to ground	- 0.5 to + 7	V
$P_{tot}$	Total power dissipation	1	W
$T_{stg}$	Storage temperature: for ceramic package for plastic package	- 65 to + 150 - 55 to + 125	°C
$T_{op}$	Operating temperature	0 to + 70	°C

Stresses 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.

**WAVEFORMS**



DC AND OPERATING CHARACTERISTICS ( $T_{amb} = 0^{\circ}\text{C}$  to  $+70^{\circ}\text{C}$ ,  $V_{CC} = 5\text{V} \pm 10\%$  unless otherwise specified)

Symbol	Parameter	Test Conditions	Values			Unit
			Min.	Typ.	Max.	
$I_{LI}$	Input Load Current	$V_{CC} = 5.5\text{V}$ , $0\text{V} \leq V_{IN} \leq 5.5\text{V}$			10	$\mu\text{A}$
$I_{LO}$	Output Leakage Current	Chip deselected $V_{OUT} = +0.4\text{V}$ to $V_{CC}$			10	$\mu\text{A}$
$I_{CC}$	Power Supply Current	Output unloaded, Chip enabled $V_{CC} = 5.5\text{V}$ , $V_{IN} = V_{CC}$			70	$\text{mA}$
$V_{IL}$	Input Low Voltage	See Note 1	-0.5		0.8	V
$V_{IH}$	Input High Voltage		2.0		$V_{CC}$	V
$V_{OL}$	Output Low Voltage	$V_{CC} = 4.5\text{V}$ $I_{OL} = 2.1\text{ mA}$			0.4	V
$V_{OH}$	Output High Voltage	$V_{CC} = 4.5\text{V}$ $I_{OH} = -400\ \mu\text{A}$	2.4		$V_{CC}$	V

Note 1: Input levels that swing more negative than  $-0.5\text{V}$  will be clamped and may cause damage to the device.

#### AC CHARACTERISTICS

Symbol	Parameter	Test Conditions	M2332-33/D1		Unit
			Min	Max	
$t_{ACC}$	Address Access Time	Output load: 1 TTL Load and 100 pF		250	ns
$t_{CO}$	Chip Selected Delay			100	ns
$t_{DF}$	Chip Deselected Delay	Input transition time: 20 ns		100	ns
$t_{OH}$	Previous Data Valid After Address Change Delay	Timing reference levels: Input: 1.5V Output: 0.8V and 2.0V	20		ns

CAPACITANCE ( $T_{amb} = 25^{\circ}\text{C}$ ,  $f = 1\text{ MHz}$ , see Note 2)

Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Unit
$C_{IN}$	Input Capacitance	All pins except pin under test tied to AC ground			7	$\text{pF}$
$C_{OUT}$	Output Capacitance				10	$\text{pF}$

Note 2: This parameter is sampled periodically and is not 100% tested.

ORDERING INFORMATION

Part Number	Access Time	Supply Voltage	Temp. Range	Package
M2332B1	250	5V ± 10%	0° to +70°C	DIP-24
M2333B1	250	5V ± 10%	0° to +70°C	DIP-24

PACKAGE MECHANICAL DATA

24-PIN PLASTIC DIP

