



**Description**

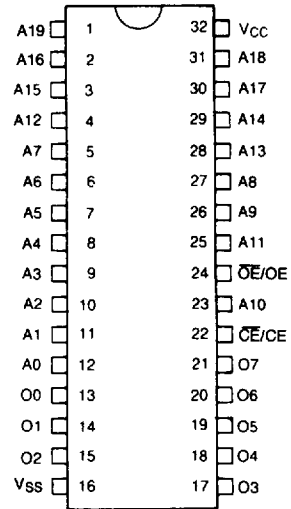
The GM23V8000A high performance read only memory is organized either as 1,048,576×8 bit. This device operates with a 3V or 3.3V single power supply and all input and output are TTL compatible. The large size of 8M bit memory density is ideal for character generator, data or program memory in micro processor application.

**Features**

- 1,048,576×8 bit organisation
- Supply voltage: Single +3V or +3.3V
- Access Time:
  - 3.0V-200ns/250ns/300ns (Max)
  - 3.3V-150ns/200ns/250ns (Max)
- Operating current:
  - 25mA (Max) at  $V_{CC}=3.0V \pm 0.3V$
  - 30mA (Max) at  $V_{CC}=3.3V \pm 0.3$
- Standby current: 50µA (Max)
- TTL-compatible inputs and outputs
- Programmable Chip Enable and Out Enable
- 3-state outputs for wired-OR expansion
- Fully static operation
- Package:
  - GM23V8000A: 32 Pin Plastic DIP (600 mil)
  - GM23V8000AFW: 32 Pin Plastic SOP (525 mil)

**Pin Configuration**

**32 DIP/SOP**



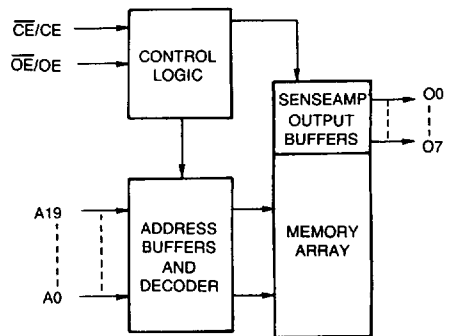
(Top View)

**Pin Description**

Pin	Function
A0 ~ A19	Address Input
O0 ~ O7	Data Output
CE/ $\overline{CE}$ *	Chip Enable Input
OE/ $\overline{OE}$ *	Output Enable Input
V <sub>CC</sub>	Power (+3V or 3.3V)
V <sub>SS</sub>	GND

\*User Selectable Polarity.

**Block Diagram**



**Absolute Maximum Ratings\***

Symbol	Parameter	Rating	Unit
T <sub>A</sub>	Ambient Operating Temperature	-10 ~ 80	°C
T <sub>STG</sub>	Storage Temperature	-65 ~ 150	°C
V <sub>CC</sub>	Supply Voltage to Ground Potential	-0.5 ~ 7.0	V
V <sub>OUT</sub>	Output Voltage	-0.5 ~ V <sub>CC</sub> +0.5	V
V <sub>IN</sub>	Input Voltage	-0.5 ~ V <sub>CC</sub> +0.5	V

**\*Comments**

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

**Recommended DC Operating Condition (Voltage reference to V<sub>SS</sub>, T<sub>A</sub>=0~70°C)**

Symbol	Parameter	Min	Typ	Max	Unit
V <sub>CC</sub>	Supply Voltage	4.5	5.0	5.5	V
V <sub>SS</sub>	Supply Voltage	0	0	0	V
V <sub>IH</sub>	Input High Voltage	2.2	—	V <sub>CC</sub> +0.3	V
V <sub>IL</sub>	Input Low Voltage	-0.3	—	0.8	V

**DC Electrical Characteristics**

Symbol	Parameter		Condition	Min	Typ	Max	Unit
V <sub>OH</sub>	Output High Voltage		I <sub>OH</sub> = -1mA	2.4			V
V <sub>OL</sub>	Output Low Voltage		I <sub>OL</sub> = 2.1mA			0.4	V
I <sub>I(L)</sub>	Input Leakage Current		V <sub>IN</sub> = 0V to V <sub>CC</sub>			±10	μA
I <sub>O(L)</sub>	Output Leakage Current		V <sub>OUT</sub> = 0V to V <sub>CC</sub>			±10	μA
I <sub>CC</sub>	Operating Supply Current	V <sub>CC</sub> = 3.0V ± 0.3	$\overline{CE} = V_{IL}, CE = V_{IH}$			25	mA
		V <sub>CC</sub> = 3.3V ± 0.3				30	mA
I <sub>SB1</sub>	Standby Current (TTL)		$\overline{CE} = V_{IH}$ , all Output Open			1	mA
I <sub>SB2</sub>	Standby Current (CMOS)		$\overline{CE} = V_{CC}$ , all Output Open			50	μA

**Capacitance (T<sub>A</sub> = 25°C, f = 1.0 MHz)**

Symbol	Parameter	Condition	Min	Max	Unit
C <sub>I</sub>	Input Capacitance	V <sub>IN</sub> = 0V		10	pF
C <sub>O</sub>	Output Capacitance	V <sub>OUT</sub> = 0V		10	pF

## Mode Selection

CE/ $\overline{\text{CE}}$	OE/ $\overline{\text{OE}}$	Mode	Data	Power
L/H	X	Standby	High Z	Standby
H/L	L/H	Operating	High Z	Active
	H/L		Data Out	

AC Operating Characteristics ( $V_{CC}=3.0V \pm 0.3$ ,  $T_A=0 \sim 70^\circ\text{C}$ )

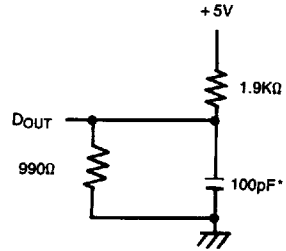
Symbol	Parameter	GM23V8000A-20		GM23V8000A-25		GM23V8000A-30		Unit
		Min	Max	Min	Max	Min	Max	
$t_{RC}$	Read Cycle Time	200		250		300		ns
$t_{ACE}$	Chip Enable Access Time		200		250		300	ns
$t_{AA}$	Address Access Time		200		250		300	ns
$t_{AOE}$	Output Enable Access Time		90		110		130	ns
$t_{OH}$	Output Hold From Address Change	10		10		10		ns
$t_{OHZ}$ $t_{CHZ}$	Output or Chip Disable to Output High-Z		40		50		60	ns
$t_{OLZ}$ $t_{CLZ}$	Output or Chip Enable to Output Low-Z	10		10		10		

AC Operating Characteristics ( $V_{CC}=3.3V \pm 0.3$ ,  $T_A=0 \sim 70^\circ\text{C}$ )

Symbol	Parameter	GM23V8000A-15		GM23V8100A-20		GM23V8100A-25		Unit
		Min	Max	Min	Max	Min	Max	
$t_{RC}$	Read Cycle Time	150		200		250		ns
$t_{ACE}$	Chip Enable Access Time		150		200		250	ns
$t_{AA}$	Address Access Time		150		200		250	ns
$t_{OE}$	Output Enable Access Time		70		90		110	ns
$t_{OH}$	Output Hold From Address Change	10		10		10		ns
$t_{OHZ}$ $t_{CHZ}$	Output or Chip Disable to Output High-Z		30		40		50	ns
$t_{OLZ}$ $t_{CLZ}$	Output or Chip Enable to Output Low-Z	10		10		10		ns

**AC Test Condition**

Input Pulse Level	0.4V to 2.4V
Input Rise and Fall Time	10ns
Input and Output Timing Level	1.5V
Output Load	See Fig. 1

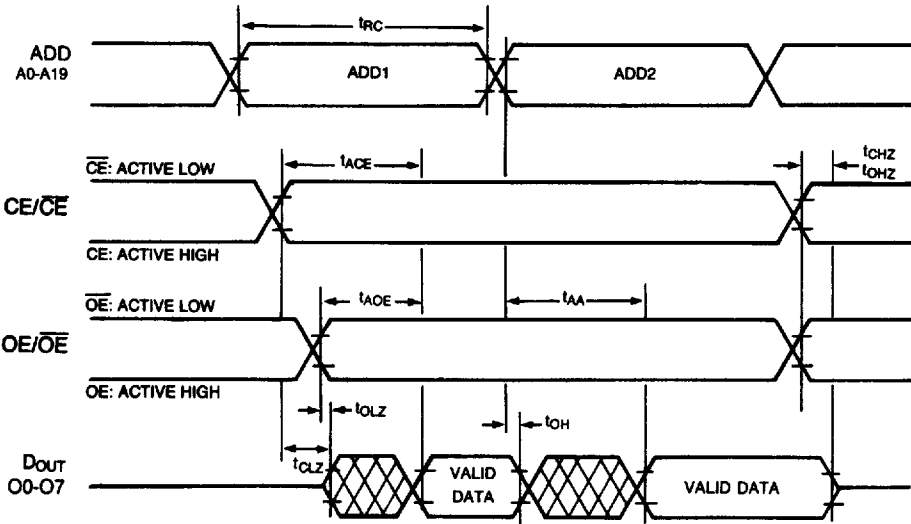


\* Including scope and jig.

**Fig. 1 Output Load Circuit**

**TIMING WAVEFORMS**

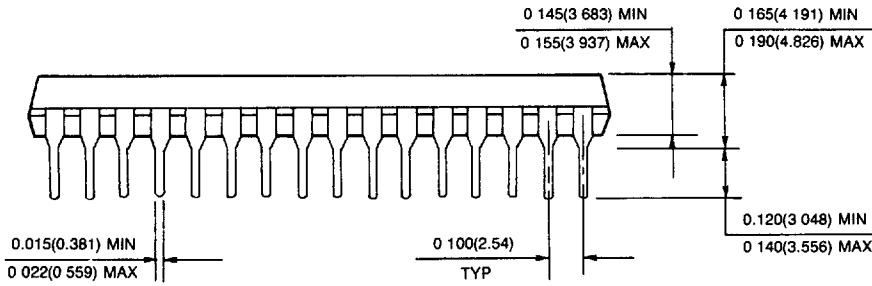
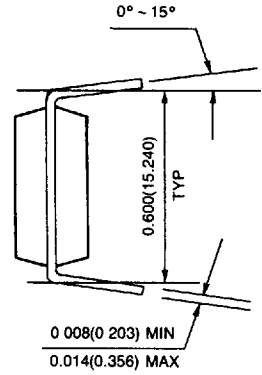
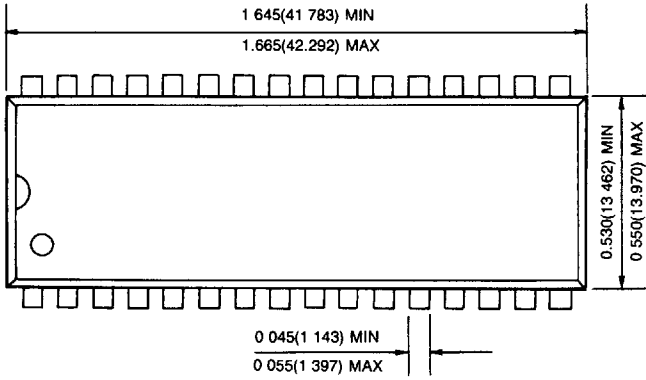
**Read**



**Package Dimensions**

**32 DIP**

Unit: inches (mm)



**32 SOP**

