GM23C8100A

1M×8/512K×16 BIT
CMOS MASK ROM

Description

The GM23C8100A high performance read only memory is organized either as 1,048,576×8 bit (Byte Mode) or as 524,288 ×16 bit (Word Mode) followed by BHE mode select. The GM23C8100A offers automatic power down controlled by the mask programmec CE or $\overline{CE}$ input. The low power feature allow the battery operation. The large size of 8M bit memory density is ideal for character generator, data or program memory in micro processor application. This ROM is packaged 42 Pin DIP or 44 Pin SOP.

Features

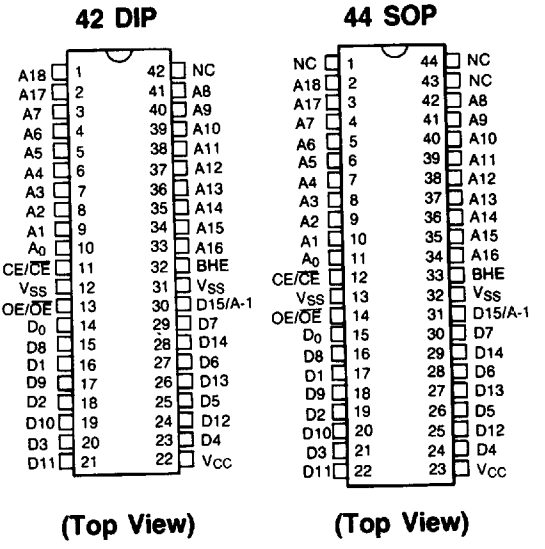
- Switchable organisation
  - Byte mode: 1,048,576 bit
  - Word mode: 524,288 bit
- Single +5V Supply
- Access Time: 120/150ns (Max)
- Operating current: 50mA (Max)
- Standby current: 50μA (Max)
- TTL-compatible inputs and outputs
- Programmable Chip Enable and Out Enable
- 3-state outputs for wired-OR expansion
- Fully static operation
- Package:
  GM23C8100A: 42 pin Plastic DIP (600 mil)
  GM23C8100AFW: 44 pin Plastic-SOP (600 mil)

Pin Description

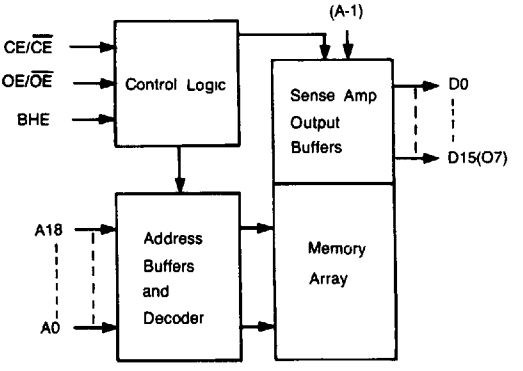
Pin	Function
A0~A18	Address Input
O0~O14	Data Output
O15/A-1	Output Data 15 (Word mode)/ LSB Address (Byte mode)
BHE	Word/Byte Selection
CE/$\overline{CE}$*	Chip Enable
OE/$\overline{OE}$*	Output Enable
V_{CC}	Power (5V)
V_{SS}	GND
NC	No Connection

*User Selectable Polarity

Pin Configuration



Block Diagram



Absolute Maximum Ratings*

Symbol	Parameter	Rating	Unit
T_A	Ambient Operating Temperature	−10 ~ 80	°C
T_{STG}	Storage Temperature	−65 ~ 150	°C
V_{CC}	Supply Voltage to Ground Potential	−0.5 ~ 7.0	V
V_{OUT}	Output Voltage	−0.5 ~ V_{CC} + 0.5	V
V_{IN}	Input Voltage	−0.5 ~ V_{CC} + 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 (V_{CC} = 5.0V ± 10%, T_A = 0 ~ 70°C)

Symbol	Parameter	Min	Typ	Max	Unit
V_{CC}	Supply Voltage	4.5	5.0	5.5	V
V_{SS}	Supply Voltage	0	0	0	V
V_{IH}	Input High Voltage	2.2	—	V_{CC} + 0.3	V
V_{IL}	Input Low Voltage	−0.5	—	0.8	V

DC Electrical Characteristics (V_{CC} = 5.0V ± 10%, T_A = 0 ~ 70°C)

Symbol	Parameter	Condition	Min	Typ	Max	Unit
V_{OH}	Output High Voltage	I_{OH} = −1mA	2.4			V
V_{OL}	Output Low Voltage	I_{OL} = 3.2mA			0.4	V
$I_{I(L)}$	Input Leakage Current	V_{IN} = 0V to V_{CC}			±10	μA
$I_{O(L)}$	Output Leakage Current	V_{OUT} = 0V to V_{CC}			±10	μA
I_{CC}	Operating Supply Current (f = 6.7MHz)	$\overline{CE}$ = V_{IL}, CE = V_{IH}			50	mA
I_{SB1}	Standby Current (TTL)	$\overline{CE}$ = V_{IH}, all Output Open			1	mA
I_{SB2}	Standby Current (CMOS)	$\overline{CE}$ = V_{CC}, all Output Open			50	μA

Capacitance (T_A = 25°C, f = 1.0 MHz)

Symbol	Parameter	Condition	Min	Max	Unit
C_I	Input Capacitance	V_{IN} = 0V		10	pF
C_O	Output Capacitance	V_{OUT} = 0V		10	pF

Mode Selection

Mode	CE/$\overline{CE}$	OE/$\overline{OE}$	BHE	00~07	08~014	015/A-1	Power
Standby	L/H	X	X	High Z		High Z	Standby
16 Bit Operating	H/L	H/L	H	Data Out			Active
8 Bit Operating			L	Data Out (Lower 8 Bit)	High Z	L	
				Data Out (Upper 8 Bit)		H	
Output Disable		L/H	X	High Z		X	

AC Operating Characteristics ($V_{CC}=5.0\pm10\%$, $T_A=0\sim70°C$)

Symbol	Parameter	GM23C8100A-12		GM23C8100A-15		Unit
		Min	Max	Min	Max	
t_{RC}	Read Cycle Time	120		150		ns
t_{ACE}	Chip Enable Access Time		120		150	ns
t_{AA}	Address Access Time		120		150	ns
t_{AOE}	Output Enable Access Time		60		70	ns
t_{OH}	Output Hold From Address Change	10		10		ns
t_{OHZ} t_{CHZ}	Output or Chip Disable to Output High-Z		50		60	ns
t_{OLZ} t_{CLZ}	Output or Chip Enable to Output Low-Z	10		10		ns

AC Test Condition

Input Pulse Level	0.4V to 2.4V
Input Rise and Fall Time	10ns
Input and Output Timming Level	0.8V to 2.0V
Output Load	See Fig. 1

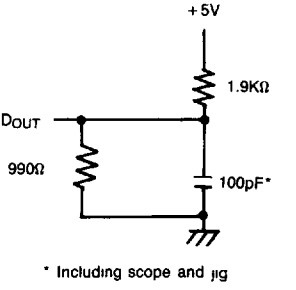
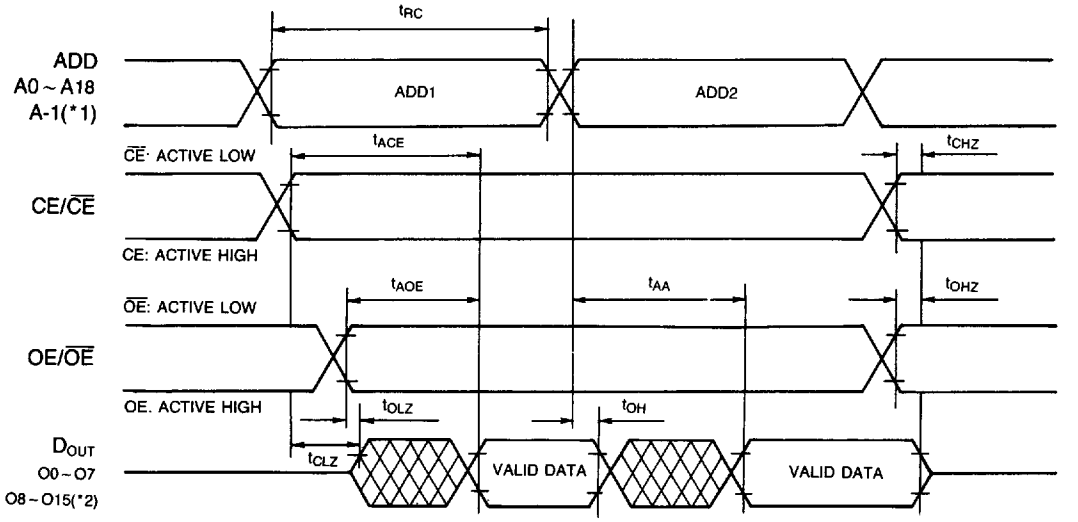


Fig. 1 Output Load Circuit

TIMING WAVEFORMS

Word Mode (BHE = V_{IH})/Byte Mode (BHE = V_{IL})

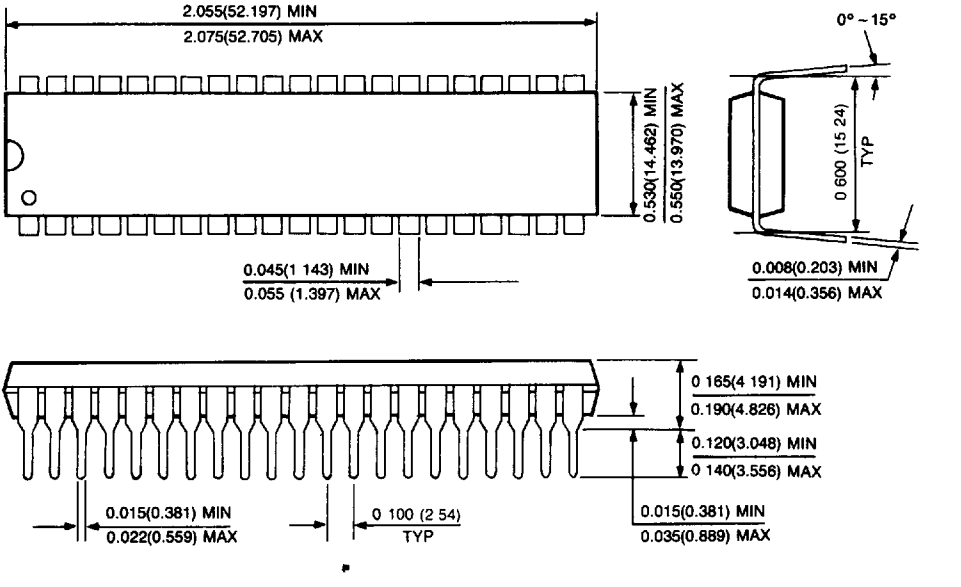


(*1) Byte Mode only. A-1 is Least Significant Bit Address. (BHE = V_{IL})
(*2) Word Mode only. (BHE = V_{IH})

Package Dimension

Unit: Inches (mm)

42 DIP



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