GoldStar
GOLDSTAR ELECTRON CO., LTD.

GM23C32001

4M×8BIT
CMOS MASK ROM

Description

The GM23C32001 high performance read only memory is organised as 4,194,304×8 bits and has an access time of 120ns. It needs no external control clock to assure simple operation, because of its asynchronous operation. It is designed to be suitable for use in program memory of game machine, data memory and entertainments. The GM23C32001 is packaged in a 36-DIP, provides polarity programmable OE buffer as user option mode.

Features

- 4,194,304×8 bit organisation
- Single +5V Supply
- Access Time: 120ns (Max)
- Operating current: 100mA (Max)
- TTL-compatible inputs and outputs
- Programmable Chip Enable and Out Enable
- 3-state outputs for wired-OR expansion
- Fully static operation
- Package:
  GM23C32001: 36 Pin Plastic DIP (600 mil)

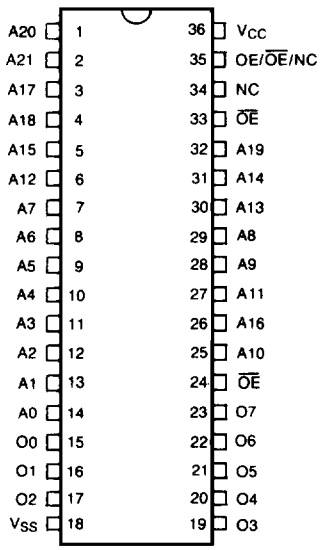
Pin Description

Pin	Function
A0~A21	Address Input
O0~O7	Data Output
OE/OE/ NC*	Output Enable
V_{CC}	Power (+5V)
V_{SS}	GND
NC	No Connection

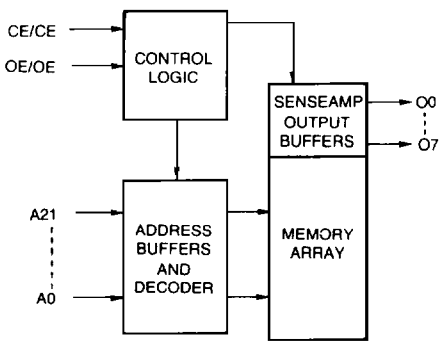
*User Selectable Polarity.

Pin Configuration

36 DIP (Top View)



Block Diagram



Absolute Maximum Ratings*

Symbol	Parameter	Rating	Unit
T_A	Ambient Operating Temperature	−10 ~ 85	°C
T_{STG}	Storage Temperature	−55 ~ 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	Conditions	Min	Typ	Max	Unit
V_{OH}	Output High Voltage	I_{OH} = −400μA	2.4			V
V_{OL}	Output Low Voltage	I_{OL} = 2.1mA			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				100	mA

Capacitance (T_A = 25°C, f = 1.0 MHz)

Symbol	Parameter	Conditions	Min	Max	Unit
C_I	Input Capacitance	V_{IN} = 0V		8	pF
C_O	Output Capacitance	V_{OUT} = 0V		8	pF

Note: Capacitance is periodically sampled and not 100% tested.

Mode Selection

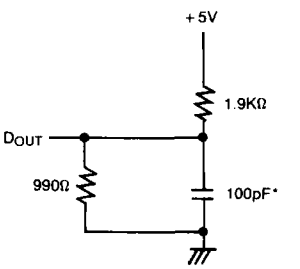
OE/OE	Mode	Data	Power
L/H	Operating	High Z	Active
H/L	Operation	Data Out	Active

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

Symbol	Parameter	GM23C32001-12		Unit
		Min	Max	
t_{RC}	Read Cycle Time	120		ns
t_{AA}	Address Access Time		120	ns
t_{AOE}	Output Enable Access Time		60	ns
t_{OH}	Output Hold After Address Change	10		ns
t_{OHZ}	Output High-Z Delay		50	ns
t_{OLZ}	Output Low-Z	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

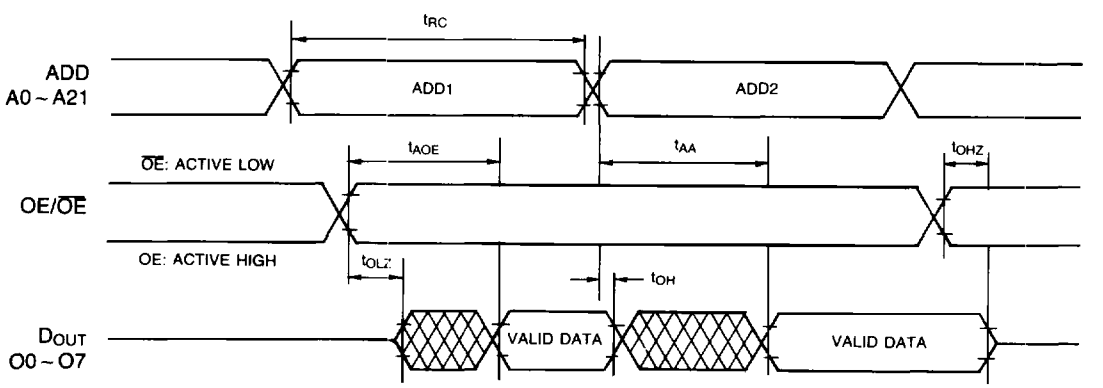


* Including scope and jig.

Fig. 1 Output Load Circuit

TIMING WAVEFORMS

READ



Package Dimensions

36 DIP

Unit: inches (mm)