GoldStar
GOLDSTAR ELECTRON CO., LTD.

GM23C16001

2,097,152 WORDS×8 BIT
CMOS MASK ROM

Description

The GM23C16001 high performance Read Only Memory is organized as 2,097,152 words by 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 GM23C16001 is packaged in a 36-DIP, provides polarity programmable OE buffer as user option mode.

Features

- 2,097,152×8 Bit Organization
- Fast Access Time: 120ns (Max)
- Single +5V Supply
- Operating Current: 50mA (Max)
- Totally Static Operation
- Completely TTL Compatible
- 3-State Outputs
- Polarity Programmable Output Pin
- 36-Pin, 600 mil, Plastic DIP
- Package:
  GM23C16001: 36Pin Plastic DIP (600mil)

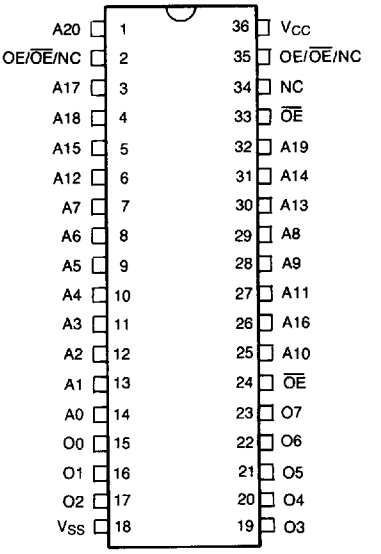
Pin Description

Pin	Function
A0 ~ A20	Address Input
O0 ~ O7	Data Output
OE/$\overline{OE}$*	Output Enable
V_{CC}	Power (+5V)
V_{SS}	Ground
NC	No Connection

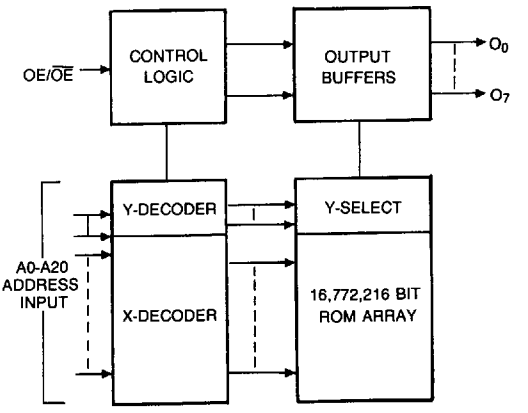
*User Selectable Polarity

Pin Configuration

36 DIP (Top View)



Block Diagram



Absolute Maximum Ratings*

Symbol	Parameter	Rating	Unit
T_A	Operating Temperature	−10 ~ +80	°C
T_{STG}	Storage Temperature	−65 ~ +150	°C
V_{CC}	Supply Voltage to Ground Potential	−0.5V ~ V_{CC} +0.5	V
V_{OUT}	Output Voltage	−0.5 ~ V_{CC} +0.5	V
V_{IN}	Input Voltage	−0.5 ~ V_{CC} +0.5	V

*Stresses above those listed under "Absolute Maximum Ratings" may cause permanent damage to the device. These are stress ratings only. 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 extendes periods may attect device reliability.

Recommended Operating Condition (V_{CC} = 5V ± 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} +0.5	v
V_{IL}	Input Low Voltage	−0.3		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} = −1.0mA	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				50	mA

Capacitance (T_A = 25°C, f = 1.0MHz)

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

*This parameter is periodically sampled and is not 100% tested. All pins except pin under test tied to AC ground.

Mode Selection (GM23C16001)

$\overline{OE}$ (24)	$\overline{OE}$ (33)	OE/$\overline{OE}$ (35)	OE/$\overline{OE}$ (2)	DATA
H	X	X	X	High-Z
X	H	X	X	
X	X	L/H	X	
X	X	X	L/H	
L	L	H/L	H/L	D_{OUT}

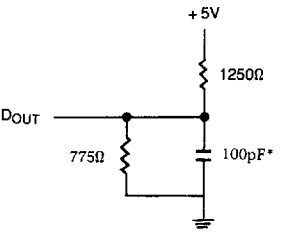
X: Don't care

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

Symbol	Parameter	GM23C16001-12		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 Levels	0.4V to 2.4V
Input Rise and Fall Times	10ns
Timing Measurement	$V_{IL}=0.8V$ $V_{IH}=2.2V$
Reference Level	$V_{OL}=0.8V$ $V_{OH}=2.0V$
Output Loads	See Fig. 1

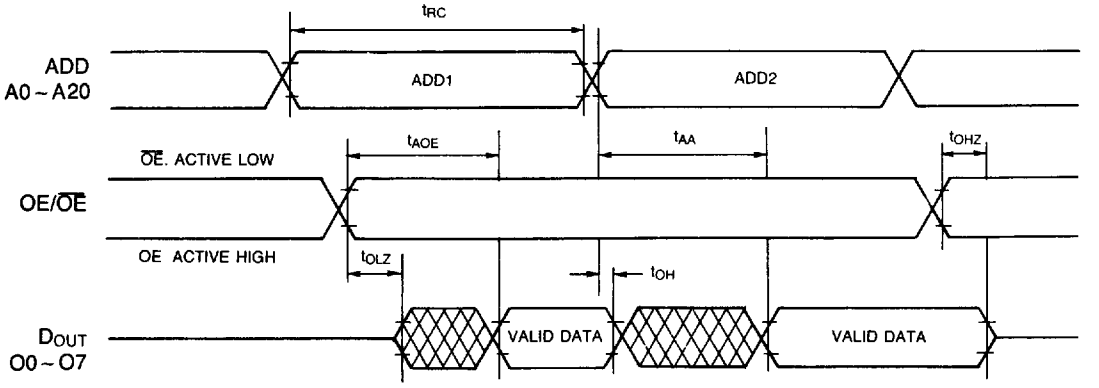


*Including scope and Jig

Fig. 1 Output Load Circuit

TIMING WAVEFORMS

READ



Package Dimensions

36 DIP

Unit inches (mm)