

Description

The HY23V32200 high performance read only memory is organized either as 4,194,304x8bit (byte mode) or as 2,097,152 x16 bit(word mode) and has an access time of 70/100/120ns. 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 HY23V32200 is packaged in a 44SOP, 44TSOP-II or 48TSOP-I provides polarity programmable CE and OE buffer as user option mode.

Key features

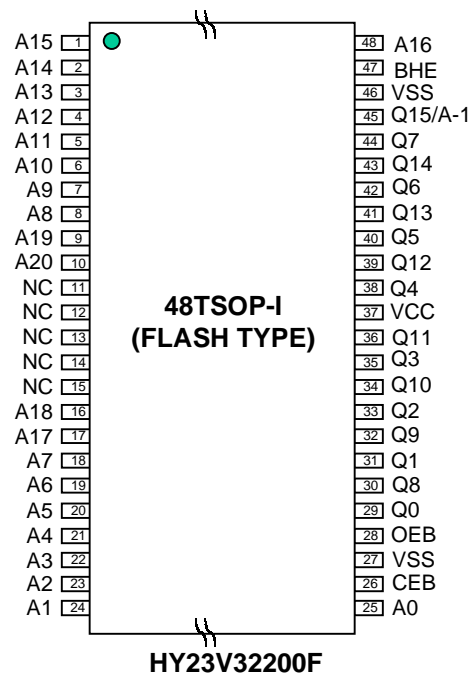
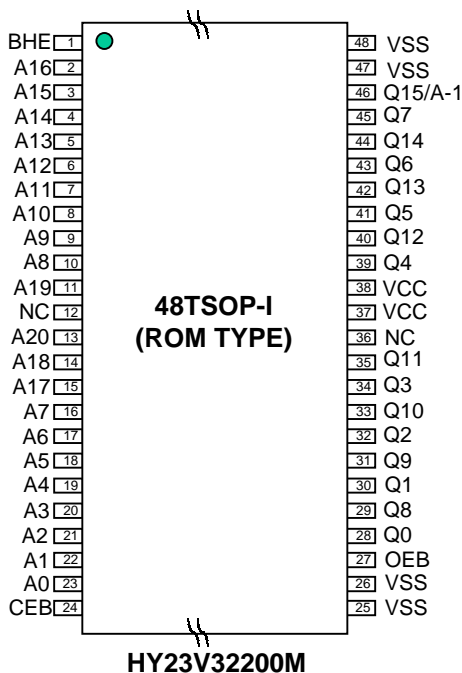
- Switchable Organization
Byte Mode : 4,194,304 X 8 bit
Word Mode : 2,097,152 X 16 bit
- Single 3.3V power supply operation
- Access Time : 70/100/120ns (Max)
- Standby Current : 50uA(Max)
- Operating Current : 35mA(Max)
- TTL compatible inputs and outputs
- 3-State outputs for wired-OR expansion
- Programmable CE or OE pin
- Word or Byte switchable by BHE pin
- Fully static operation
- High reliability
- Package
HY23V32200M : 48pin Plastic TSOP-I(12x20mm)
HY23V32200F : 48pin Plastic TSOP-I(12x20mm)
HY23V32200T : 44pin Plastic TSOP-II(400mil)
HY23V32200S : 44pin Plastic SOP(500mil)

Pin Description

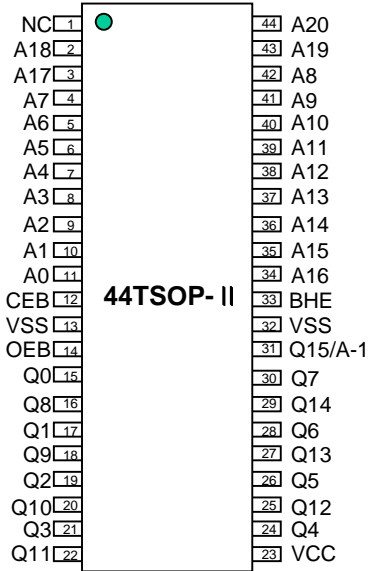
Pin	Function
A0~A20	Address Inputs
Q0~Q14	Data Outputs
Q15/A-1	Output Q15(Word Mode) LSB Address(Byte Mode)
BHE	Word/Byte Selection
CE/ $\overline{\text{CE}}$	Chip Enable Input
OE/ $\overline{\text{OE}}$	Output Enable Input
VCC	Power Supply(+3.3V)
VSS	Ground
NC	No Connection

- * User selectable polarity
• CEB : CE/CEB , OEB : OE/OEB

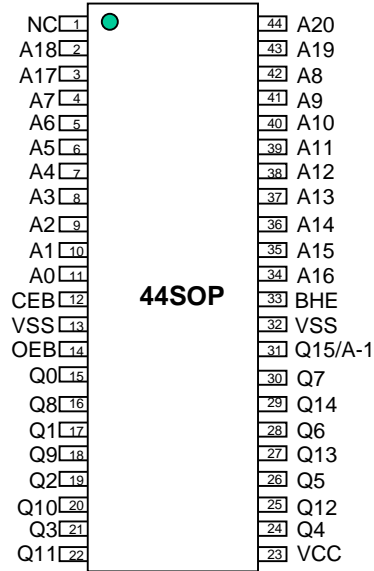
Pin Configuration



Pin Configuration

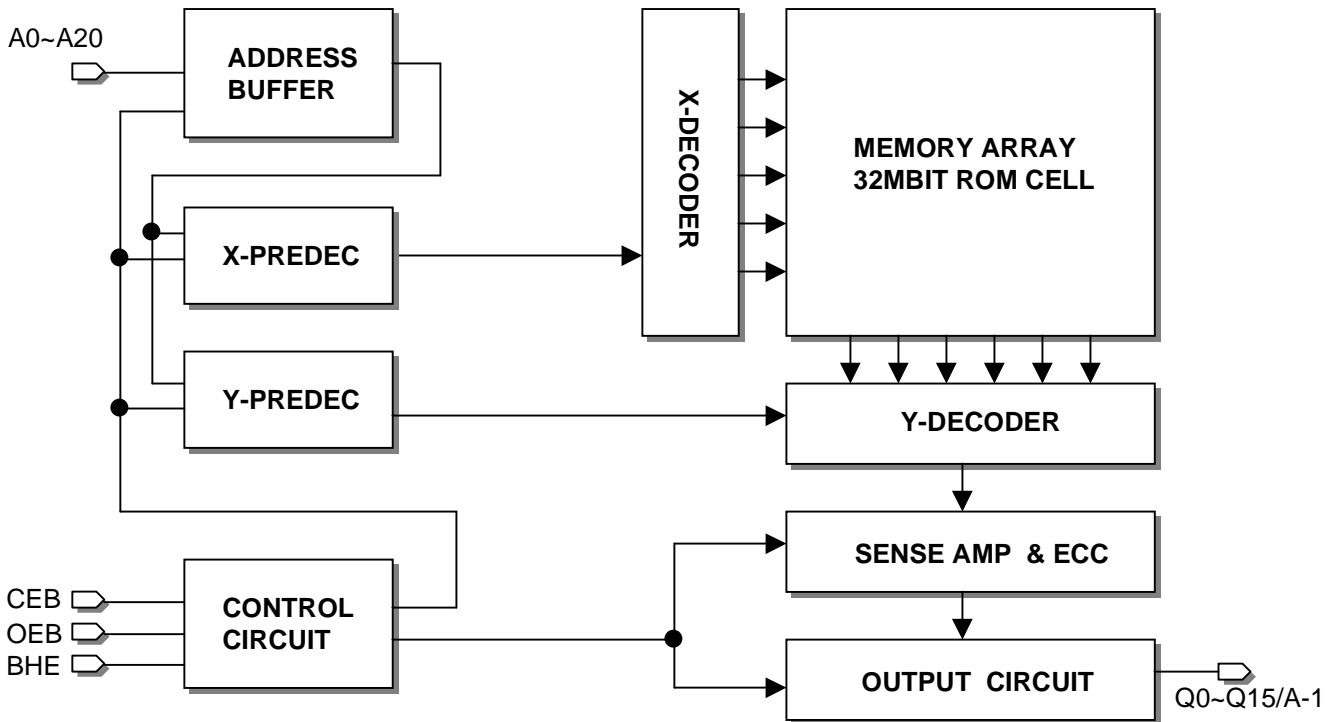


HY23V32200T



HY23V32200S

Block Diagram



□ Absolute Maximum Ratings

Symbol	Parameter	Rating	Unit
TA	Ambient Operating Temperature	-10 ~ 80	°C
TSTG	Storage Temperature	-55 ~ 150	°C
VCC	Supply Voltage to Ground Potential	-0.3 ~ 4.5	V
VOUT	Output Voltage	-0.3~Vcc+0.3	V
VIN	Input Voltage	-0.3~Vcc+0.3	V

Stress 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 extended periods may affect device reliability.

□ Recommended DC Operating Conditions(VCC=3.3±0.3V, TA=0~70°C)

Symbol	Parameter	Min	Typ	Max	Unit
Vcc	Supply Voltage	3.0	3.3	3.6	V
Vss	Supply Voltage	0	0	0	V
VIH	Input High Voltage	2.2		Vcc+0.3	V
VIL	Input Low Voltage	-0.3		0.8	V

□ DC Electrical Characteristics(VCC=3.3±0.3V, TA=0~70 °C)

Symbol	Parameter	Condition	Min	Typ	Max	Unit
VOH	Output High Voltage	IOH=-0.4mA	2.4			V
VOL	Output Low Voltage	IOL=2.1mA			0.4	V
IIL	Input Leakage Current	VIN=0V to VCC			±10	uA
IOL	Output Leakage Current	VOUT=0V to VCC			±10	uA
ICC	Operating Supply Current (tRC=100ns)	CEB=OEB=VIL All Output Open			35	mA
ISB1	Standby Current(TTL)	CEB=VIH, all Output Open			500	uA
ISB2	Standby Current(CMOS)	CEB=VCC, all Output Open			50	uA

Capacitance($T_A=25^{\circ}\text{C}$, $f=1.0\text{MHz}$)

Symbol	Parameter	Condition	Min	Max	Unit
C _I	Input Capacitance	V _{IN} = 0V		10	pF
C _O	Output Capacitance	V _{OUT} = 0V		10	pF

Capacitance is periodically sampled and not 100% tested

Function Table

MODE	CEB/CE	OEB/OE	BHE	Q0 ~ Q7	Q8 ~ Q14	Q15 ~A-1	POWER
Standby	H/L	X	X	High-Z			Standby
16bit Operating	L/H	L/H	H	Data Out			Active
8bit Operating			L	Data output (lower 8bit)	High-Z	L	
				Data output (upper 8bit)		H	
Output Disable			H/L	X	High-Z		

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

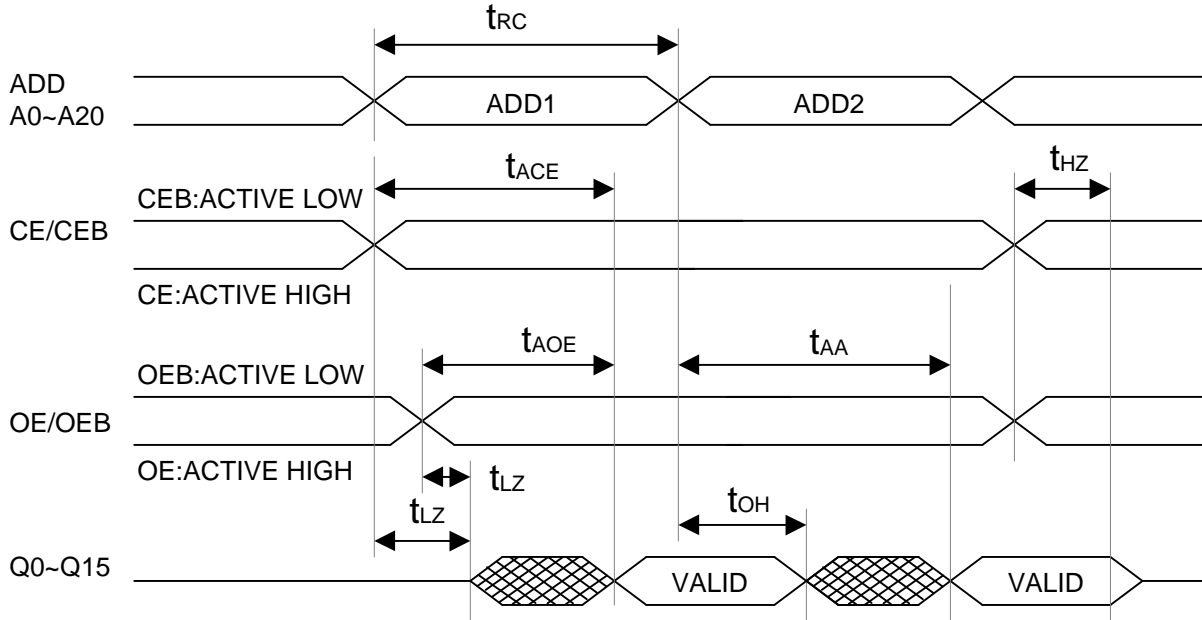
Symbol	Parameter	70ns		100ns		120ns		Unit
		Min	Max	Min	Max	Min	Max	
t _{RC}	Read cycle time	70		100		120		ns
t _{ACE}	Chip enable access time		70		100		120	ns
t _{AA}	Address access time		70		100		120	ns
t _{AOE}	Output enable access time		35		50		60	ns
t _{OH}	Output hold time from address change	0		0		0		ns
t _{HZ}	Output or chip disable to output High-Z		20		20		20	ns
t _{LZ}	Output or chip Enable to output Low-Z	10		10		10		ns

AC Test Condition

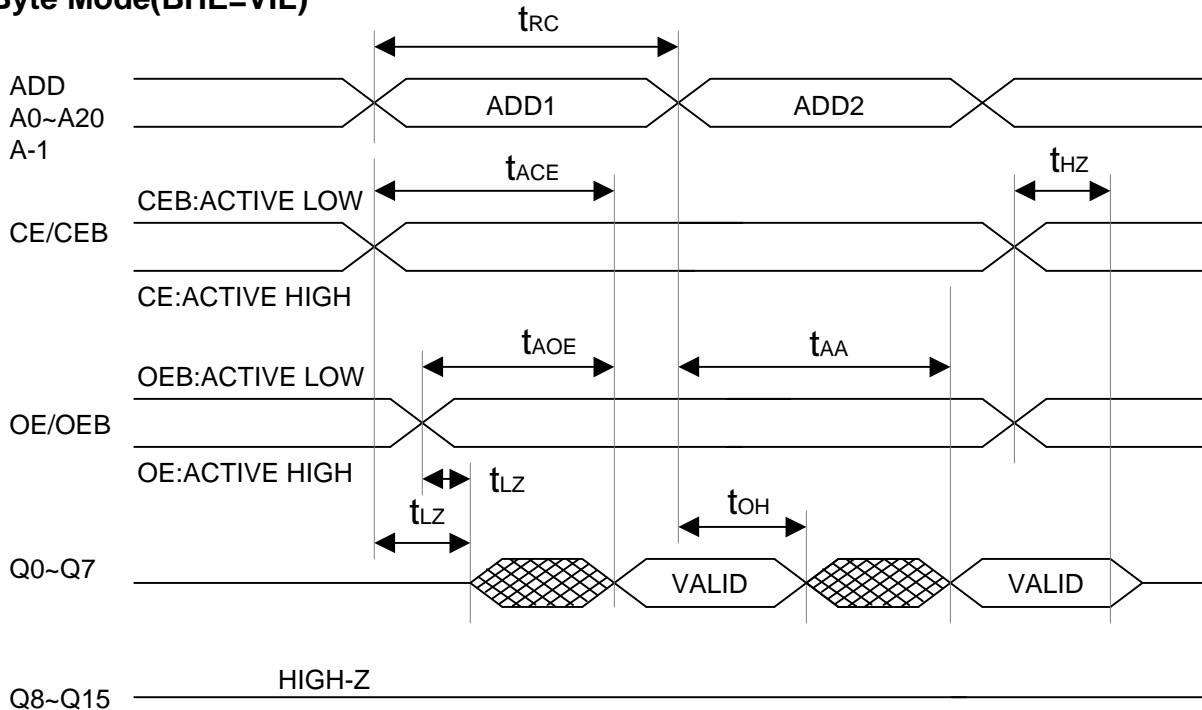
- Input pulse level 0.4V to 2.4V
- Input rise and fall time 10ns
- Input and output timing level 1.5V
- Output load 1 TTL gate and CL=100pF(70ns product CL=30pF)

□ Timing Waveforms

Word Mode(BHE=VIH)



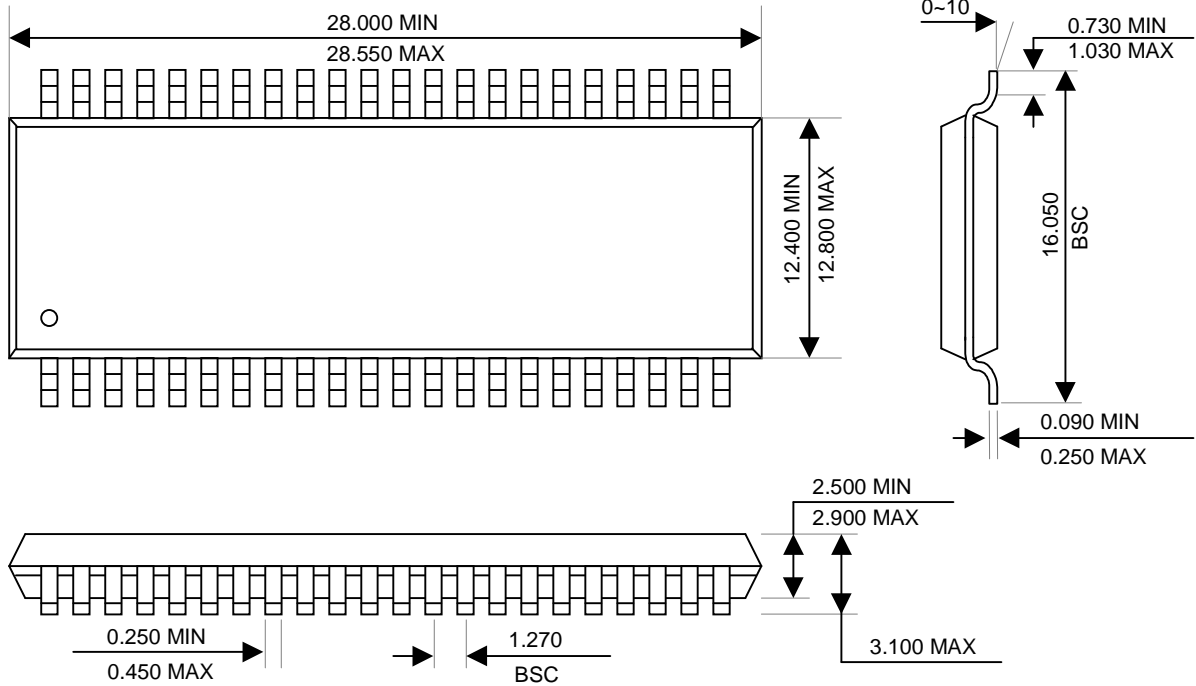
Byte Mode(BHE=VIL)



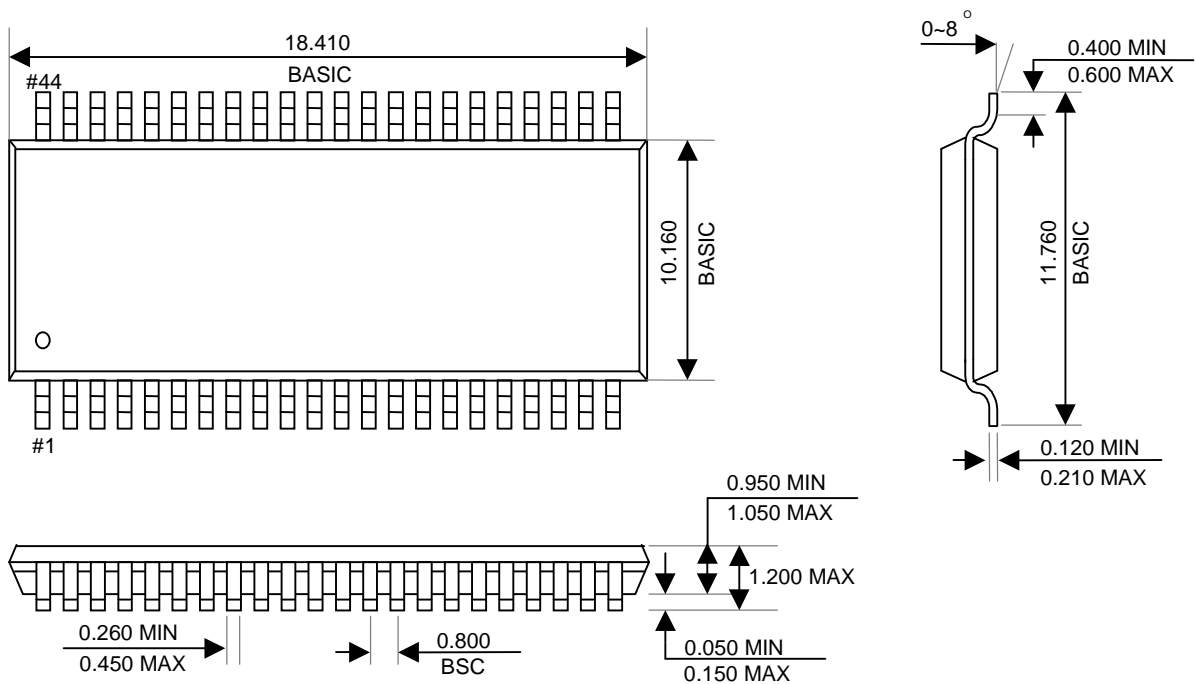
Package Dimension

Unit : mm

44SOP



44TSOP-II



48TSOP-I

Unit : mm

