

Description

The AC23V32200 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 AC23V32200 is packaged in a 44SOP, 44TSOP-II or 48TSOP-I provides polarity programmable CE and OE buffer as user option mode.

Key features

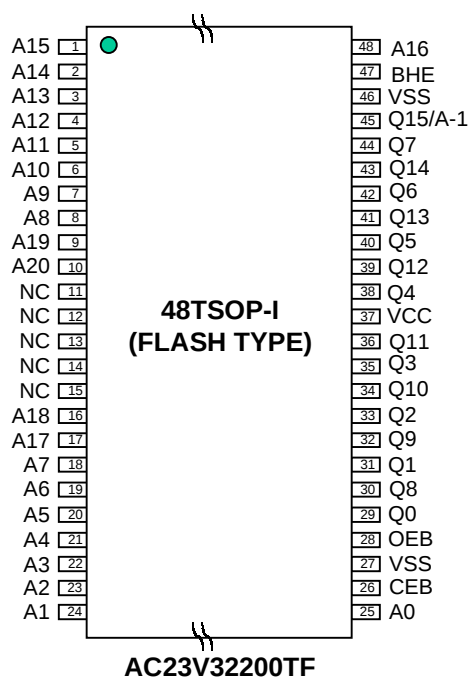
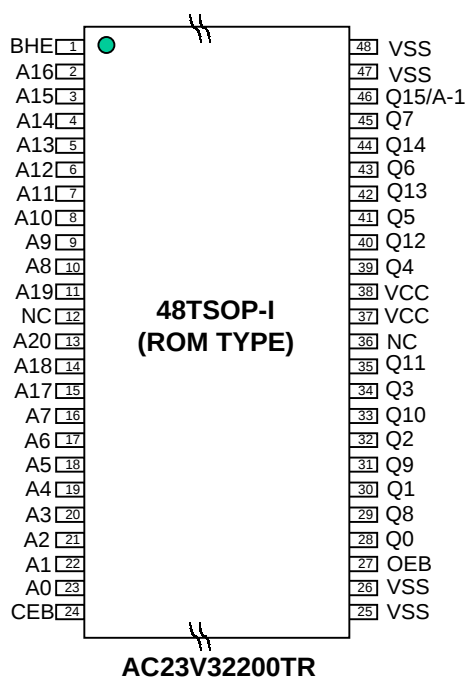
- Switchable Organization
Byte Mode : 4,194,304 X 8 bit
Word Mode : 2,097,152 X 16 bit
- Single 3.3V power supply operation
- Access Time : 70/100/120ns (Max)
- Standby Current : 50uA(Max)
- Operating Current : 35mA(Max)
- TTL compatible inputs and outputs
- 3-State outputs for wired-OR expansion
- Programmable CE or OE pin
- Word or Byte switchable by BHE pin
- Fully static operation
- High reliability
- Package
AC23V32200TR : 48pin Plastic TSOP-I(12x20mm)
AC23V32200TF : 48pin Plastic TSOP-I(12x20mm)
AC23V32200TT : 44pin Plastic TSOP-II(400mil)
AC23V32200FW : 44pin Plastic SOP(500mil)

Pin Description

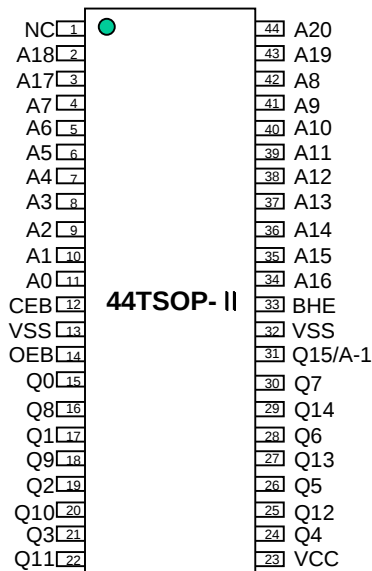
Pin	Function
A0~A20	Address Inputs
Q0~Q14	Data Outputs
Q15/A-1	Output Q15(Word Mode) LSB Address(Byte Mode)
BHE	Word/Byte Selection
CE/ $\overline{\text{CE}}$	Chip Enable Input
OE/ $\overline{\text{OE}}$	Output Enable Input
VCC	Power Supply(+3.3V)
VSS	Ground
NC	No Connection

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

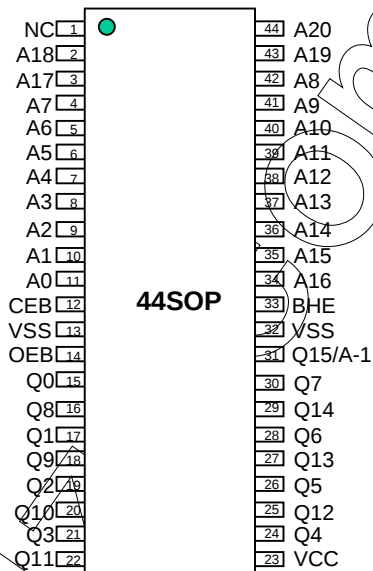
Pin Configuration



Pin Configuration

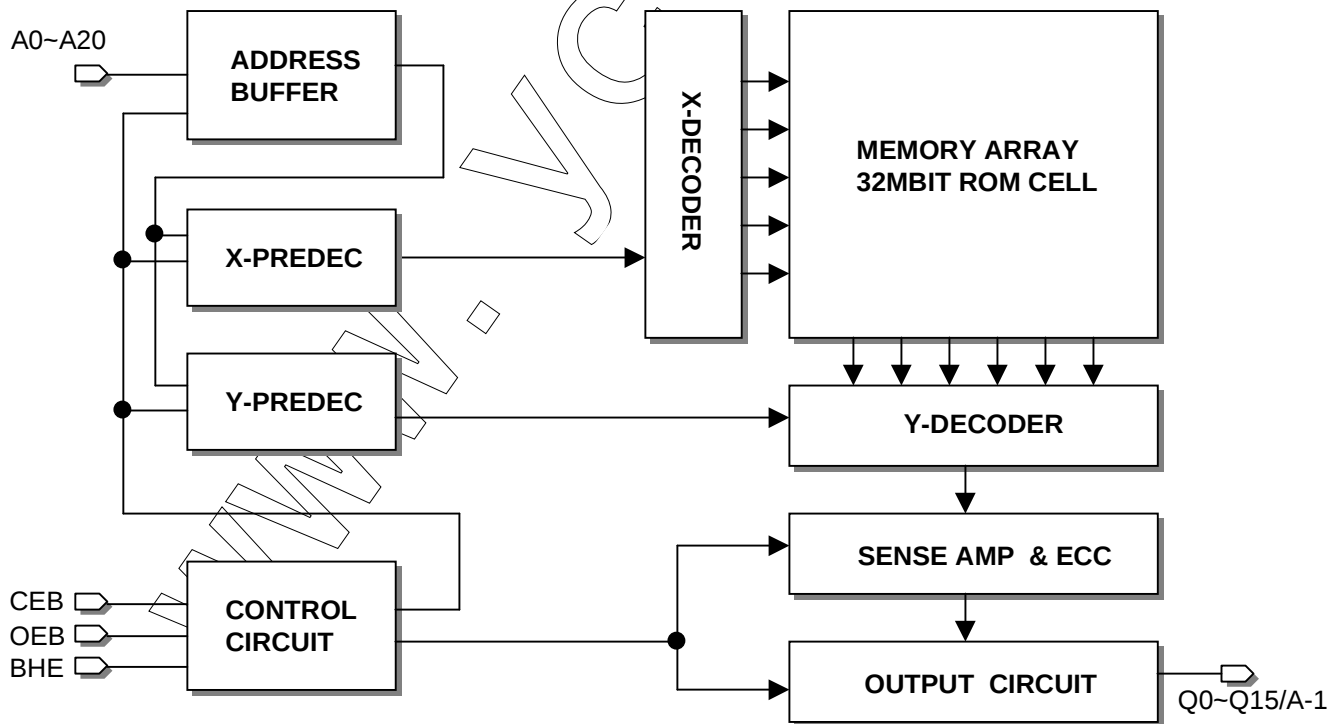


AC23V32200TT



AC23V32200FW

Block Diagram



□ Absolute Maximum Ratings

Symbol	Parameter	Rating	Unit
T _A	Ambient Operating Temperature	-10 ~ 80	°C
T _{STG}	Storage Temperature	-55 ~ 150	°C
V _{CC}	Supply Voltage to Ground Potential	-0.3 ~ 4.5	V
V _{OUT}	Output Voltage	-0.3~V _{CC} +0.3	V
V _{IN}	Input Voltage	-0.3~V _{CC} +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(V_{CC}=3.3±0.3V, T_A=0~70°C)

Symbol	Parameter	Min	Typ	Max	Unit
V _{CC}	Supply Voltage	3.0	3.3	3.6	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	-0.3		0.8	V

□ DC Electrical Characteristics(V_{CC}=3.3±0.3V, T_A=0~70 °C)

Symbol	Parameter	Condition	Min	Typ	Max	Unit
V _{OH}	Output High Voltage	I _{OH} =-0.4mA	2.4			V
V _{OL}	Output Low Voltage	I _{OL} =2.1mA			0.4	V
I _{IL}	Input Leakage Current	V _{IN} =0V to V _{CC}			±10	μA
I _{OL}	Output Leakage Current	V _{OUT} =0V to V _{CC}			±10	μA
I _{CC}	Operating Supply Current (t _{RC} =100ns)	CEB=OEB=V _{IL} All Output Open			35	mA
ISB1	Standby Current(TTL)	CEB=V _{IH} , all Output Open			500	μA
ISB2	Standby Current(CMOS)	CEB=V _{CC} , all Output Open			50	μA

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±0.3V, T_A=0~70°C)

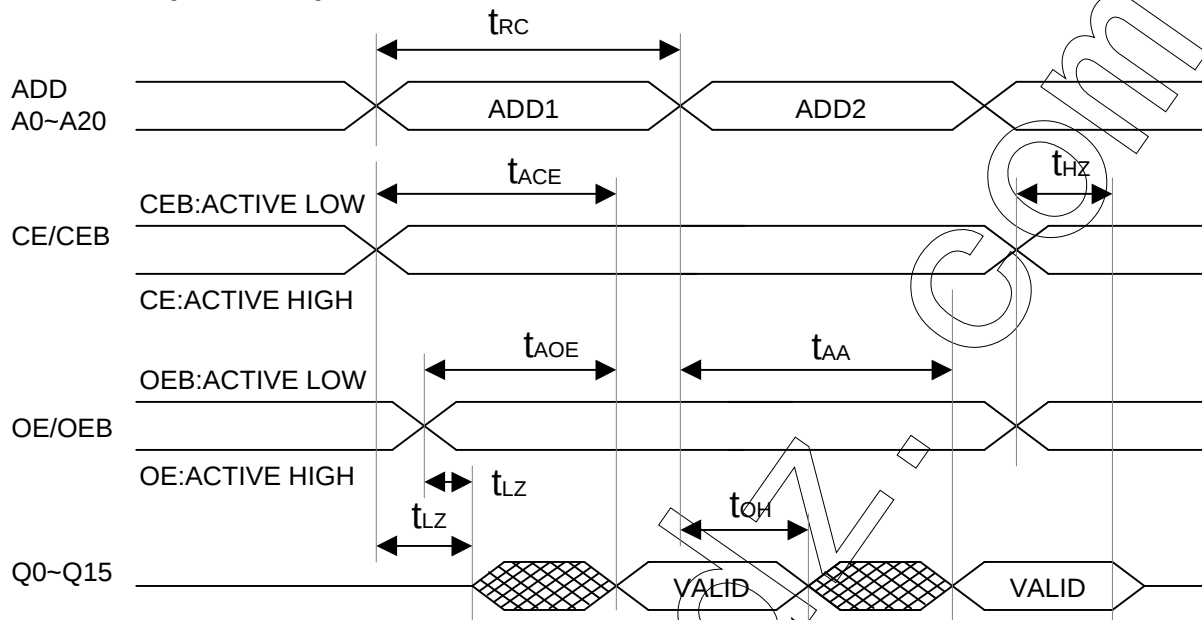
Symbol	Parameter	70ns		100ns		120ns		Unit
		Min	Max	Min	Max	Min	Max	
t _{RC}	Read cycle time	70		100		120		ns
t _{ACE}	Chip enable access time		70		100		120	ns
t _{AA}	Address access time		70		100		120	ns
t _{AOE}	Output enable access time		35		50		60	ns
t _{OH}	Output hold time from address change	0		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

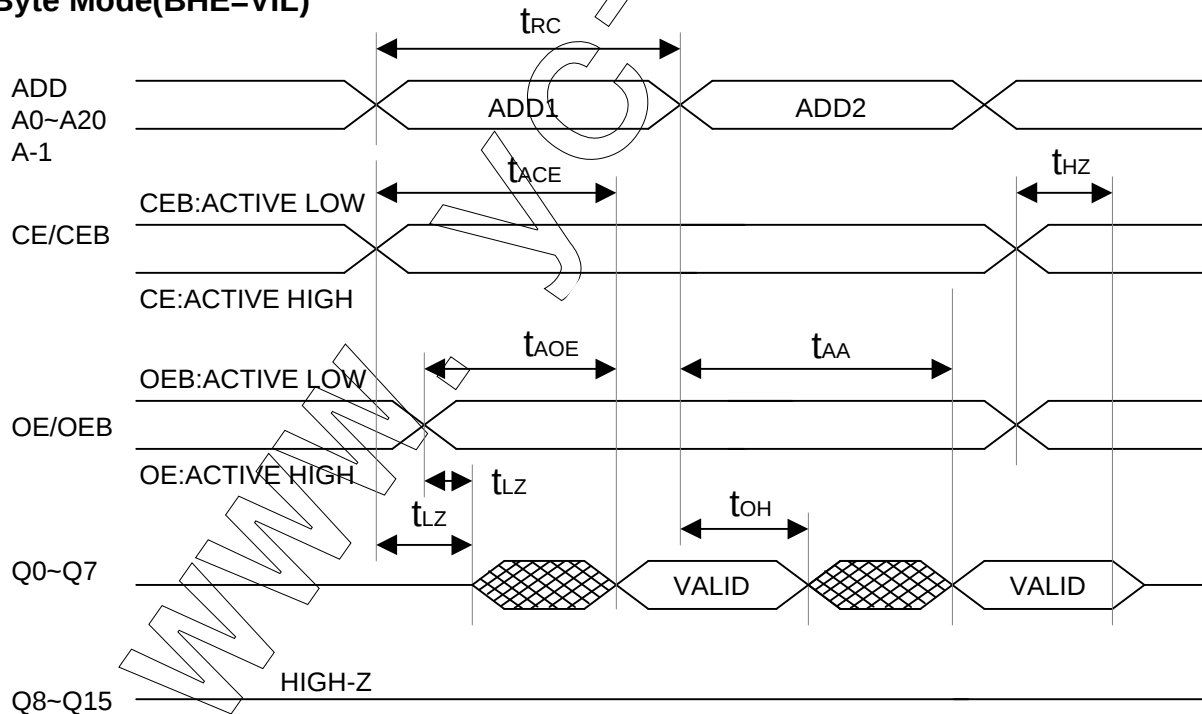
- Input pulse level 0.4V to 2.4V
- Input rise and fall time 10ns
- Input and output timing level 1.5V
- Output load 1 TTL gate and CL=100pF(70ns product CL=30pF)

Timing Waveforms

Word Mode(BHE=VIH)



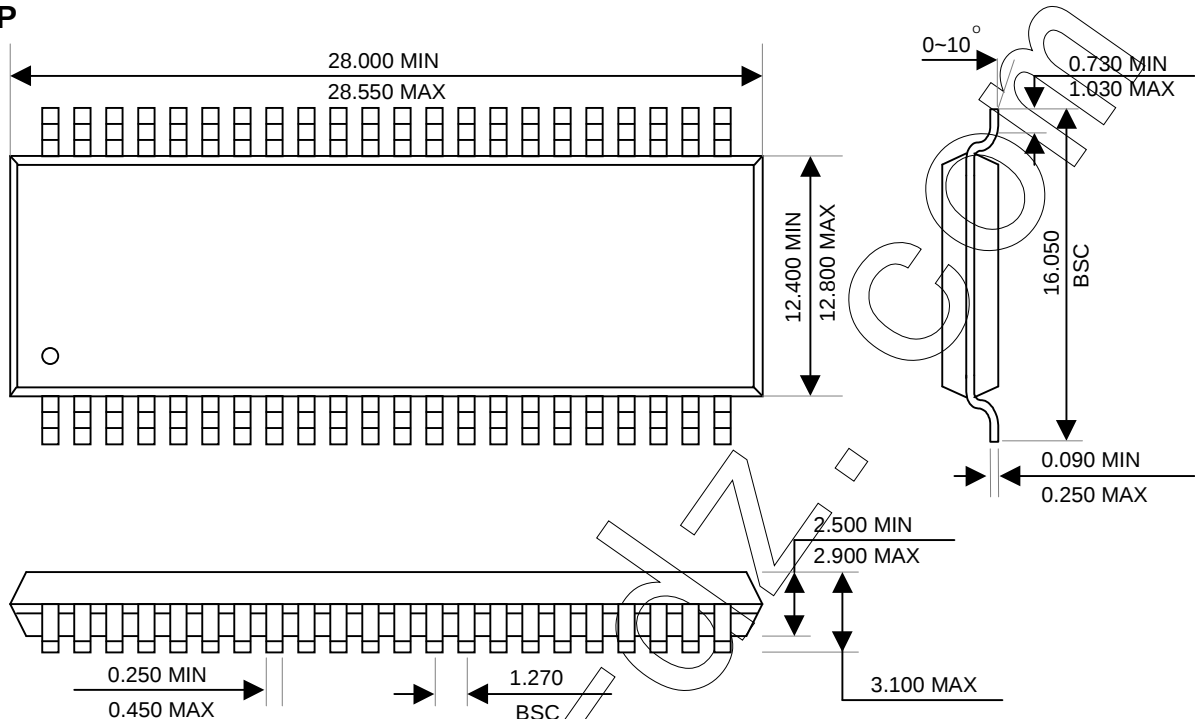
Byte Mode(BHE=VIL)



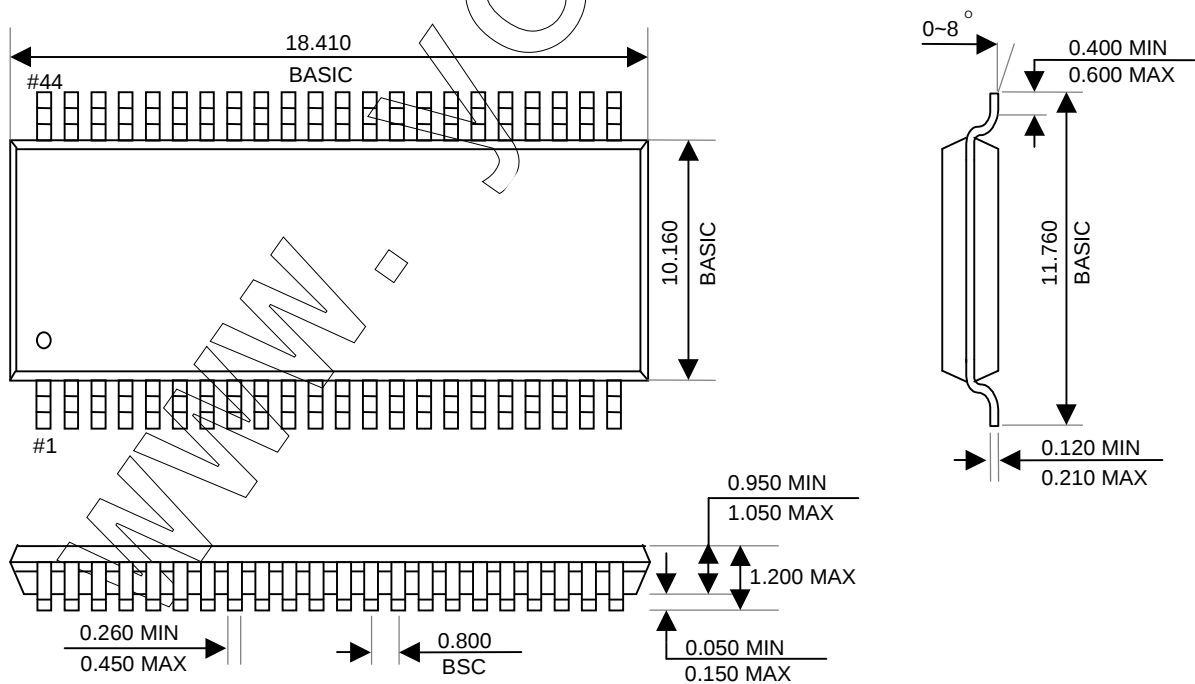
Package Dimension

Unit : mm

44SOP

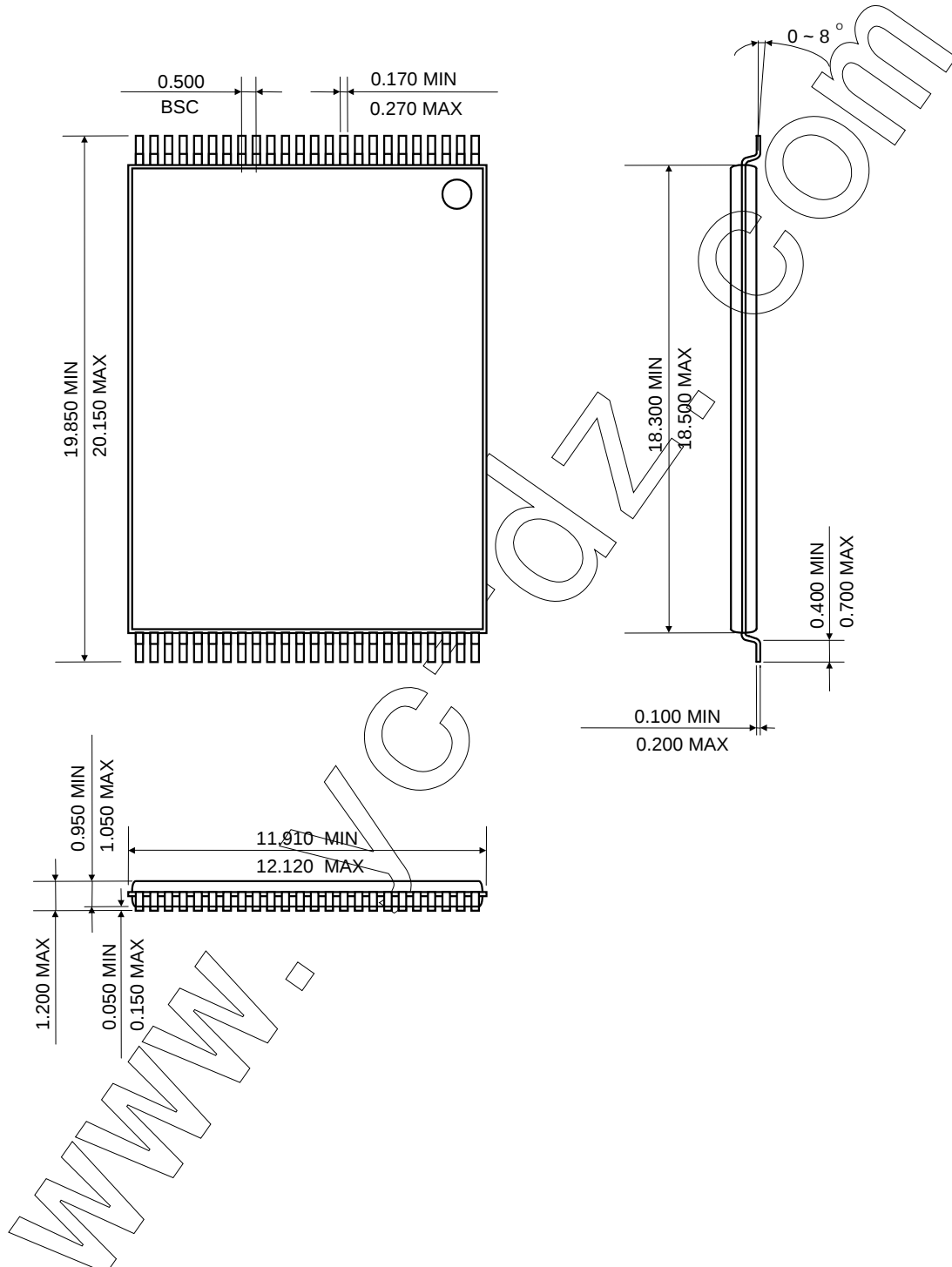


44TSOP-II



48TSOP-I

Unit : mm



 Revision History

Rev No.	Date	Contents
rev0	10-Mar-2001	Added 70ns product, Added AC23V32200TF(48 TSOP-I, Flash type) Package dimension modified
rev1	25-May-2001	
rev2	09-Jan-2002	