

## Description

The AC23C16200B high performance read only memory is organized either as 2,097,152 x 8 bit (byte mode) or as 1,048,576 x 16 bit (word mode) followed by BHE mode select. The low power feature allows the battery operation. The large size of 16M bit memory density is ideal for character generator, data or program memory in micro-processor application. The AC23C16200B is packaged 44 SOP, 48TSOP-I and 44TSOP-II.

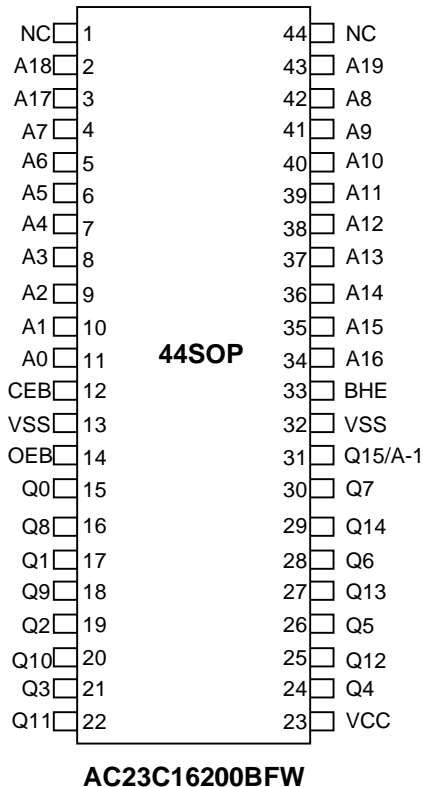
## Key features

- Switchable Organization  
Byte Mode : 2,097,152 X 8 bit  
Word Mode : 1,048,576 X 16 bit
- Single 5V power supply operation
- Access Time : 100/120ns (Max)
- Standby Current : 50 $\mu$ A (Max)
- Operating Current : 60mA (Max)
- TTL compatible inputs and outputs
- 3-State outputs for wired-OR expansion
- Word or Byte switchable by BHE pin
- Programmable CE or OE pin
- Fully static operation
- Package  
AC23C16200BFW : 44pin Plastic SOP(500mil)  
AC23C16200BTR : 48pin Plastic TSOP-1(12x20mm)  
AC23C16200BTF : 48pin Plastic TSOP-1(12x20mm)  
AC23C16200BTT : 44pin Plastic TSOP-II(400mil)

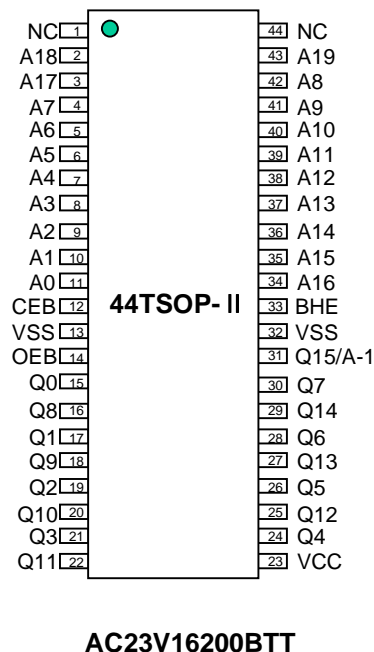
## Pin Description

Pin	Function
A0~A19	Address inputs
Q0~Q14	Data Outputs
Q15/A-1	Output Q15(Word Mode)/ LSB Address(Byte Mode)
BHE	Byte High Enable input (Word/Byte selection)
CEB*	Chip Enable input
OEB*	Output Enable input
VCC	Power supply
VSS	Ground
NC	No Connection

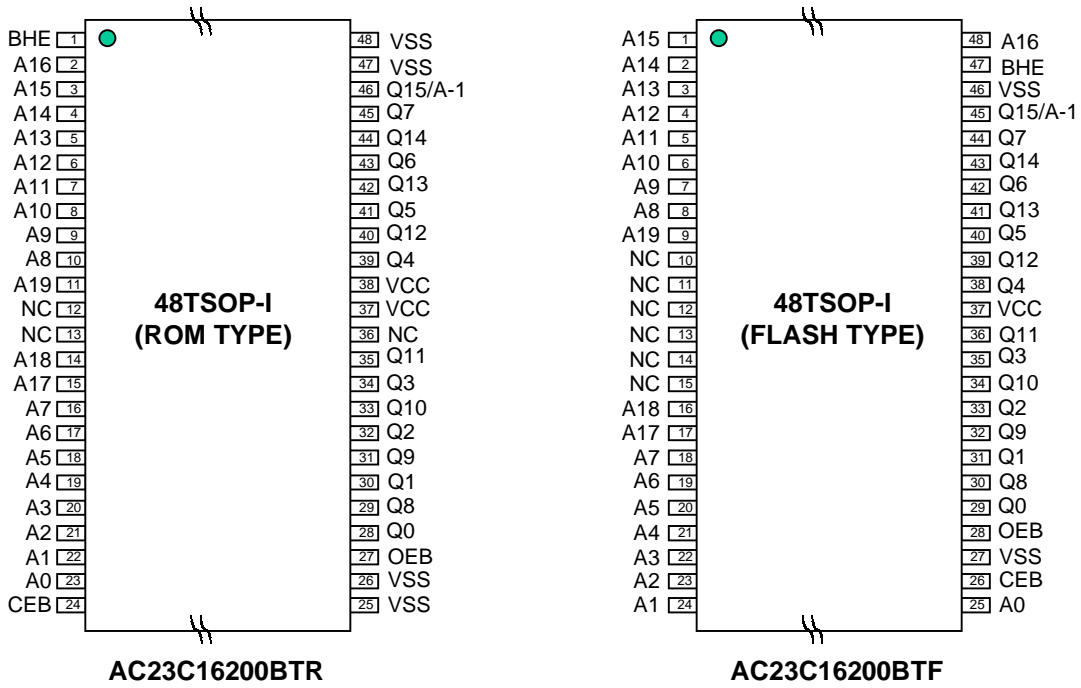
## Pin Configuration



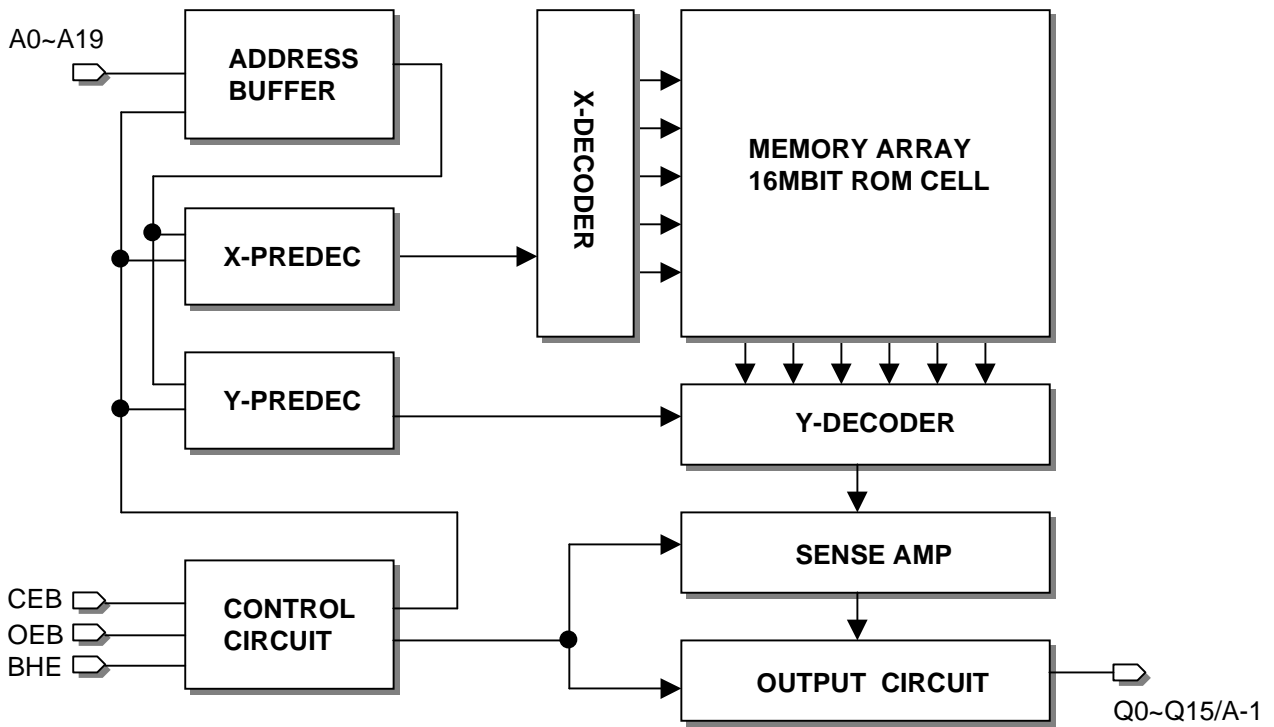
\* User selectable polarity



AC23V16200BTT



**Block Diagram**



### □ Absolute Maximum Ratings

Symbol	Parameter	Rating	Unit
TA	Ambient Operating Temperature	-10 ~ 80	°C
TSTG	Storage Temperature	-65 ~ 150	°C
VCC	Supply Voltage to Ground Potential	-0.5 ~ 7.0	V
VOUT	Output Voltage	-0.5 ~ Vcc+0.5	V
VIN	Input Voltage	-0.5 ~ Vcc+0.5	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=5.0±0.5V, TA = 0 ~70 °C)

Symbol	Parameter	Min	Typ	Max	Unit
Vcc	Supply Voltage	4.5	5.0	5.5	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=5.0±0.5V, TA=0~70 °C)

Symbol	Parameter	Condition	Min	Typ	Max	Unit
VOH	Output High Voltage	IOH=-1mA	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 (F=6.7MHz)	CEB=OEB=VIL All Output Open			60	mA
ISB1	Standby Current(TTL)	CEB=VIH, all Output Open			1.0	mA
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 <sub>I</sub>	Input Capacitance	V <sub>IN</sub> = 0V		10	pF
C <sub>O</sub>	Output Capacitance	V <sub>OUT</sub> = 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( $V_{CC}=5.0\pm 0.5\text{V}$ ,  $T_A=0\sim 70^\circ\text{C}$ )

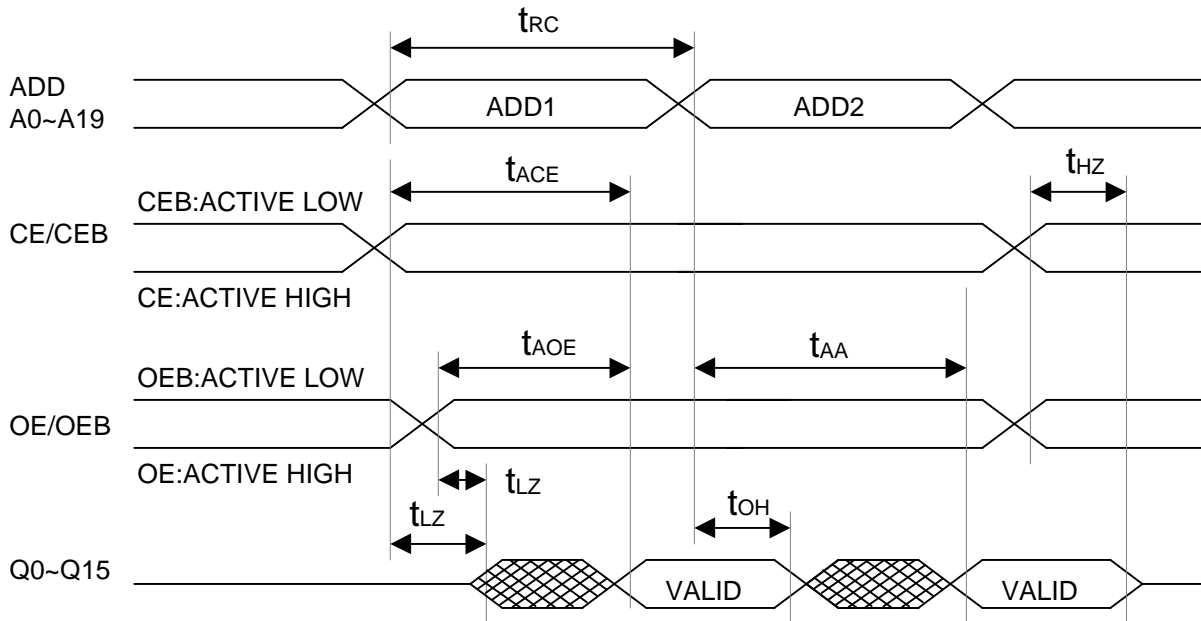
Symbol	Parameter	AC23C16200B-10		AC23C16200B-12		Unit
		Min	Max	Min	Max	
t <sub>RC</sub>	Read cycle time	100		120		ns
t <sub>ACE</sub>	Chip enable access time		100		120	ns
t <sub>AA</sub>	Address access time		100		120	ns
t <sub>AOE</sub>	Output enable access time		50		60	ns
t <sub>OH</sub>	Output hold time from address change	0		0		ns
t <sub>HZ</sub>	Output or chip disable to output High-Z		20		20	ns
t <sub>LZ</sub>	Output or chip Enable to output Low-Z	10		10		ns

 AC Test Condition

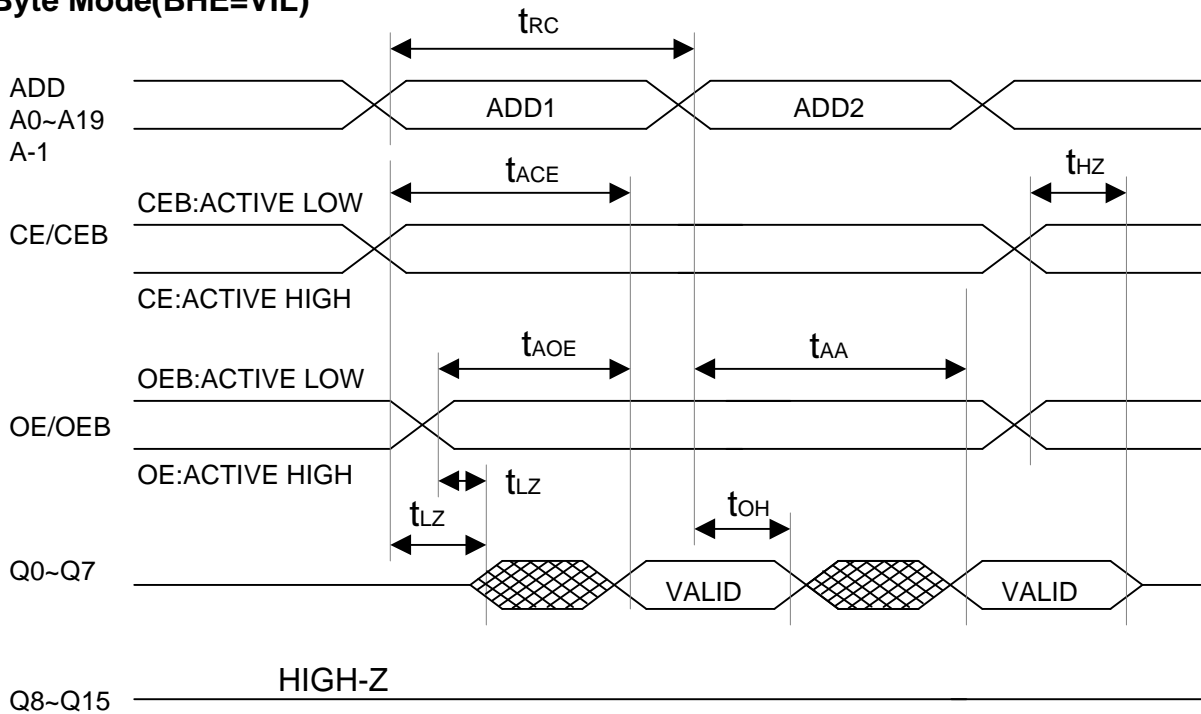
- Input pulse level 0.4V to 2.4V
- Input rise and fall time 10ns
- Input and output timing level
  - AC23C16200-10 1.3V to 1.7V
  - AC23C16200-12 0.8V to 2.0V
- Output load 1 TTL gate and CL=100pF

□ Timing Waveforms

Word Mode(BHE=VIH)



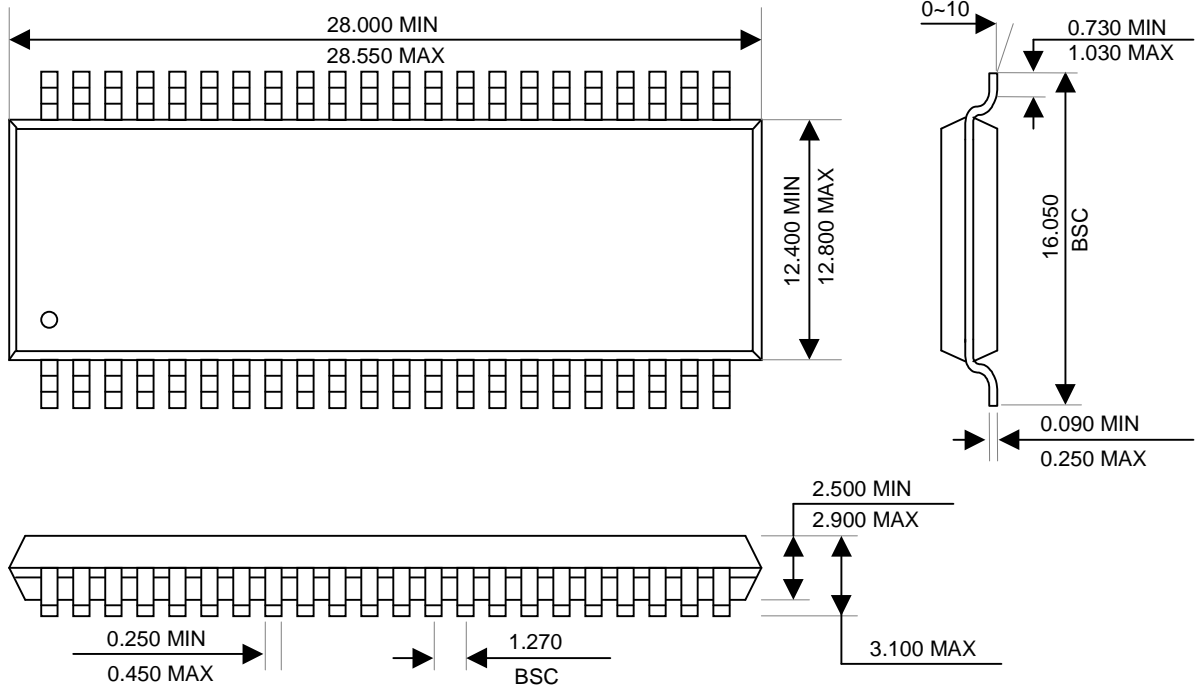
Byte Mode(BHE=VIL)



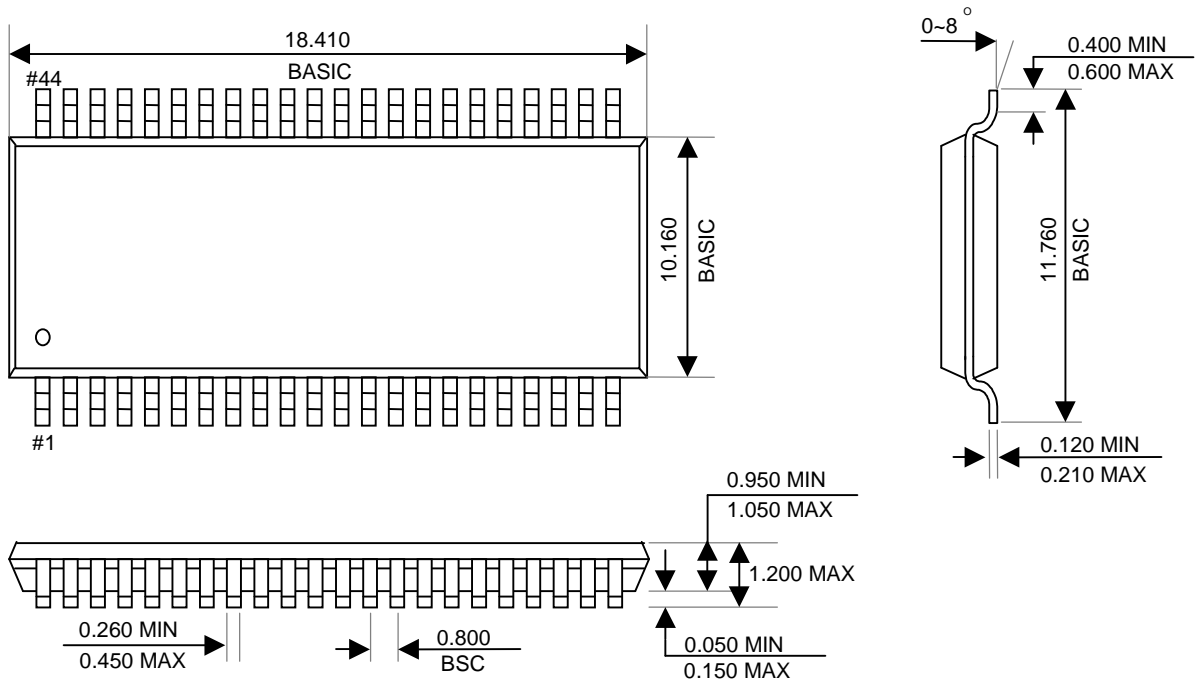
**Package Dimension**

Unit : mm

**44SOP**

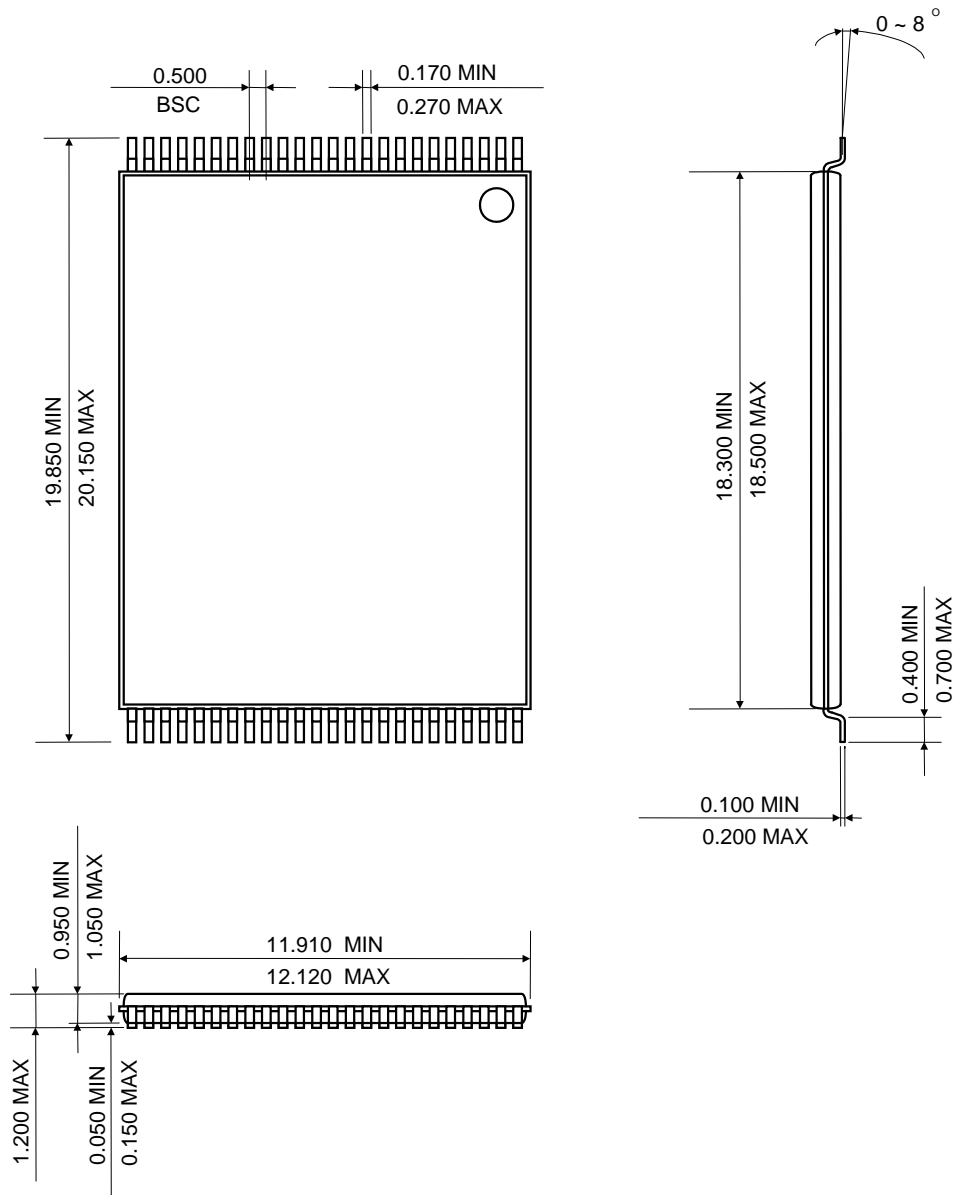


**44TSOP-II**



Unit : mm

48TSOP-I



**Revision History**

Rev No.	Date	Contents
rev0	10-Mar-2001	
rev1	20-Jun-2001	Package added (AC23C16200BTR, AC23C16200BTT)
rev2	15-Sep-2001	Package added (AC23C16200BTF)
rev3	09-Jan-2002	Package dimension modified
rev4	16-June-2003	42 DIP package exempted