HY23V16202

1MX16/2MX8 BIT
CMOS MASK ROM

Description

The HY23V16202 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 HY23V16202 is packaged 42pin DIP , 44 pin SOP, 44 pin TSOP-II or 48 pin TSOP-I.

Key features

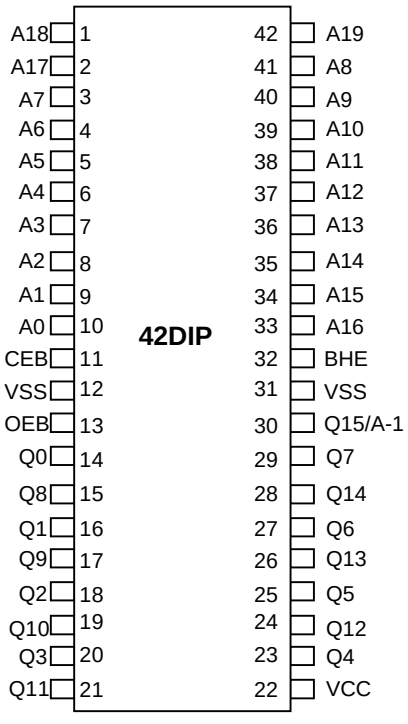
- Switchable Organization
  Byte Mode : 2,097,152 X 8 bit
  Word Mode : 1,048,576 X 16 bit
- Single 3.3V power supply operation
- Access Time : 100/120ns (Max)
- Standby Current : 50㎂(Max)
- Operating Current : 35㎃(Max)
- TTL compatible inputs and outputs
- 3-State outputs for wired-OR expansion
- Word or Byte switchable by BHE pin
- Fully static operation
- Package
  HY23V16202D : 42pin Plastic DIP(600 mil)
  HY23V16202S : 44pin Plastic SOP(500mil)
  HY23V16202T : 44pin Plastic TSOP-II(400mil)
  HY23V16202M : 48pin Plastic TSOP-I(12x20mm)
  HY23V16202F : 48pin Plastic TSOP-I(12x20mm)

Pin Description

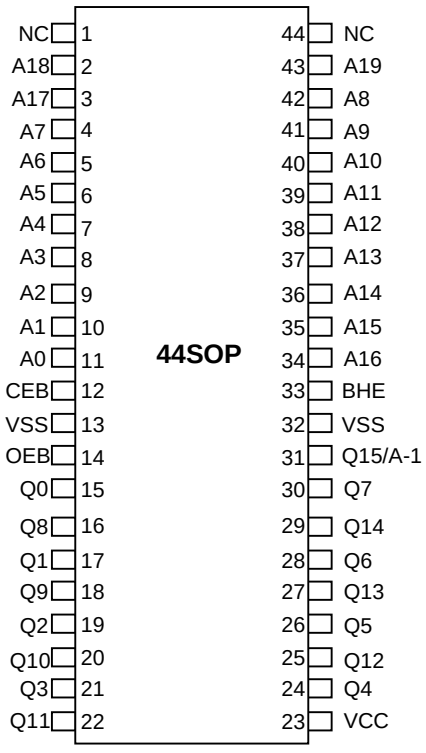
Pin	Function
A0~A19	Address inputs
Q0~Q14	Data Outputs
Q15/A-1	Output Q15(Word Mode)/ LSB Address(Byte Mode)
BHE	Byte High Enable input (Word/Byte selection)
CEB*	Chip Enable input
OEB*	Output Enable input
VCC	Power supply
VSS	Ground
NC	No Connection

* User selectable polarity

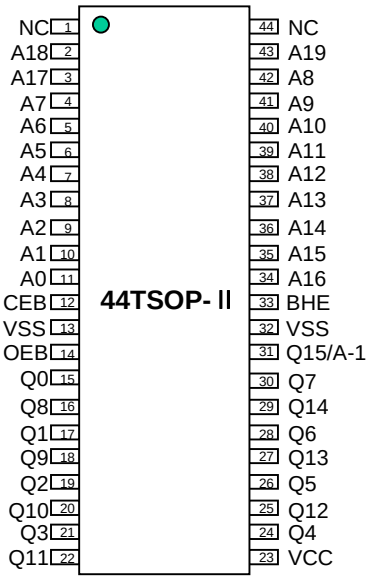
Pin Configuration



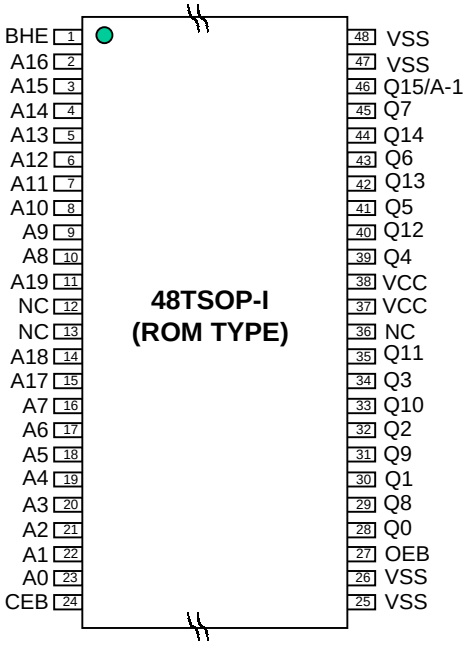
HY23V16202D



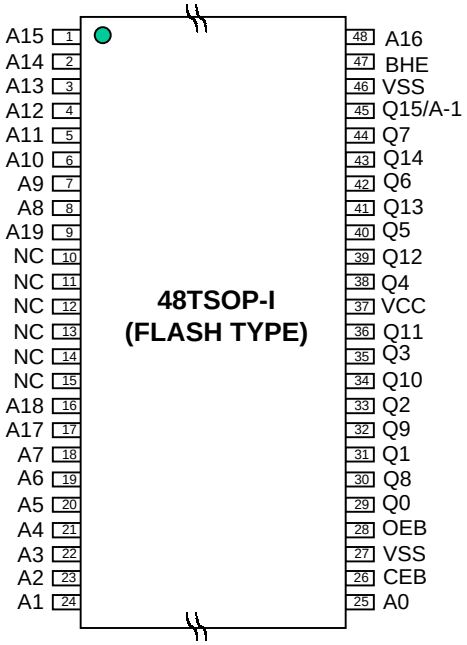
HY23V16202S



HY23V16202T

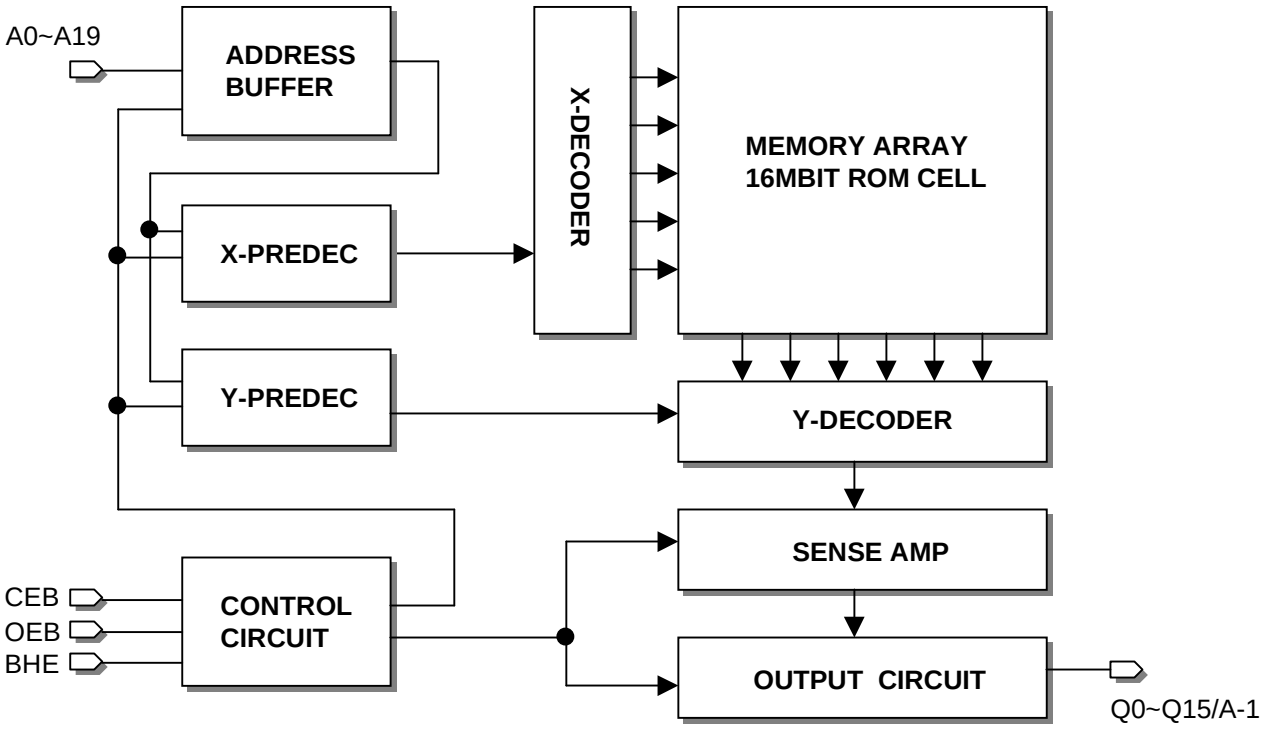


HY23V16202M



HY23V16202F

❑ 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~Vcc+0.3	V
V_{IN}	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, T_A=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
V_{IH}	Input High Voltage	2.2		Vcc+0.3	V
V_{IL}	Input Low Voltage	-0.3		0.8	V

❑ DC Electrical Characteristics(VCC=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	uA
I_{OL}	Output Leakage Current	V_{OUT}=0V to V_{CC}			±10	uA
I_{CC}	Operating Supply Current (tRC=100ns)	CEB=OEB=V_{IL} All Output Open			35	mA
I_{SB1}	Standby Current(TTL)	CEB=V_{IH}, all Output Open			500	uA
I_{SB2}	Standby Current(CMOS)	CEB=V_{CC}, all Output Open			50	uA

❑ Capacitance(T_A=25°C , f=1.0MHz)

Symbol	Parameter	Condition	Min	Max	Unit
C_I	Input Capacitance	VIN = 0V		10	pF
C_O	Output Capacitance	VOUT = 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		X	

❑ AC Characteristics(VCC=3.3±0.3V, T_A=0~70°C)

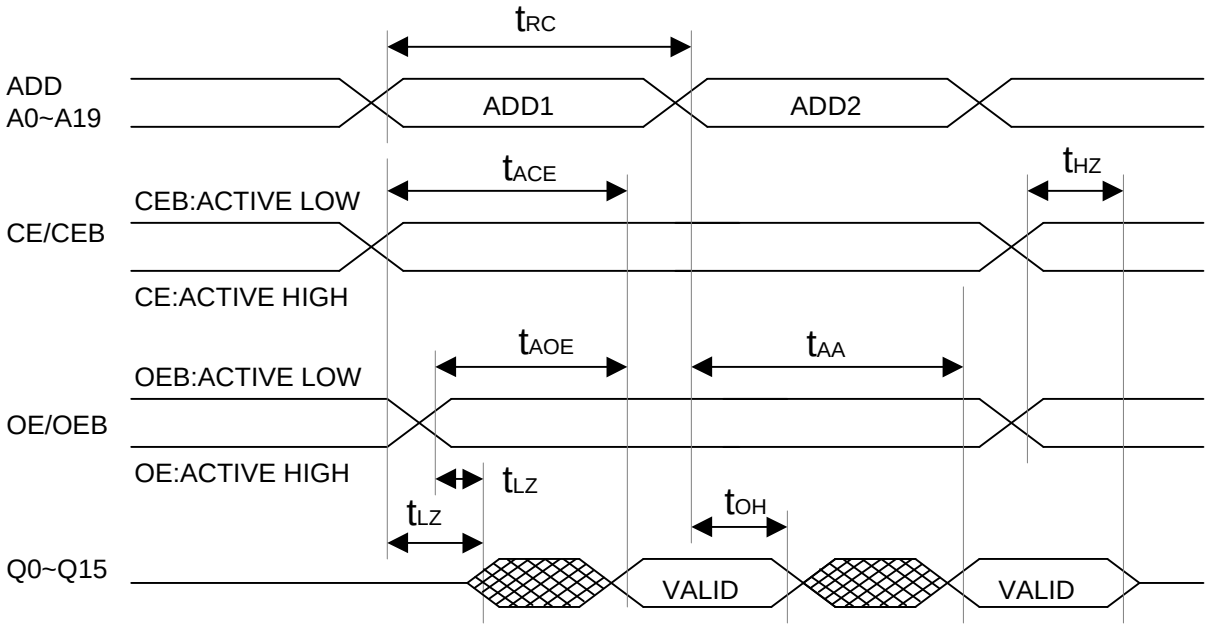
Symbol	Parameter	100ns		120ns		Unit
		Min	Max	Min	Max	
tRC	Read cycle time	100		120		ns
tACE	Chip enable access time		100		120	ns
tAA	Address access time		100		120	ns
tAOE	Output enable access time		50		60	ns
tOH	Output hold time from address change	0		0		ns
tHZ	Output or chip disable to output High-Z		20		20	ns
tLZ	Output or chip Enable to output Low-Z	10		10		ns

❑ AC Test Condition

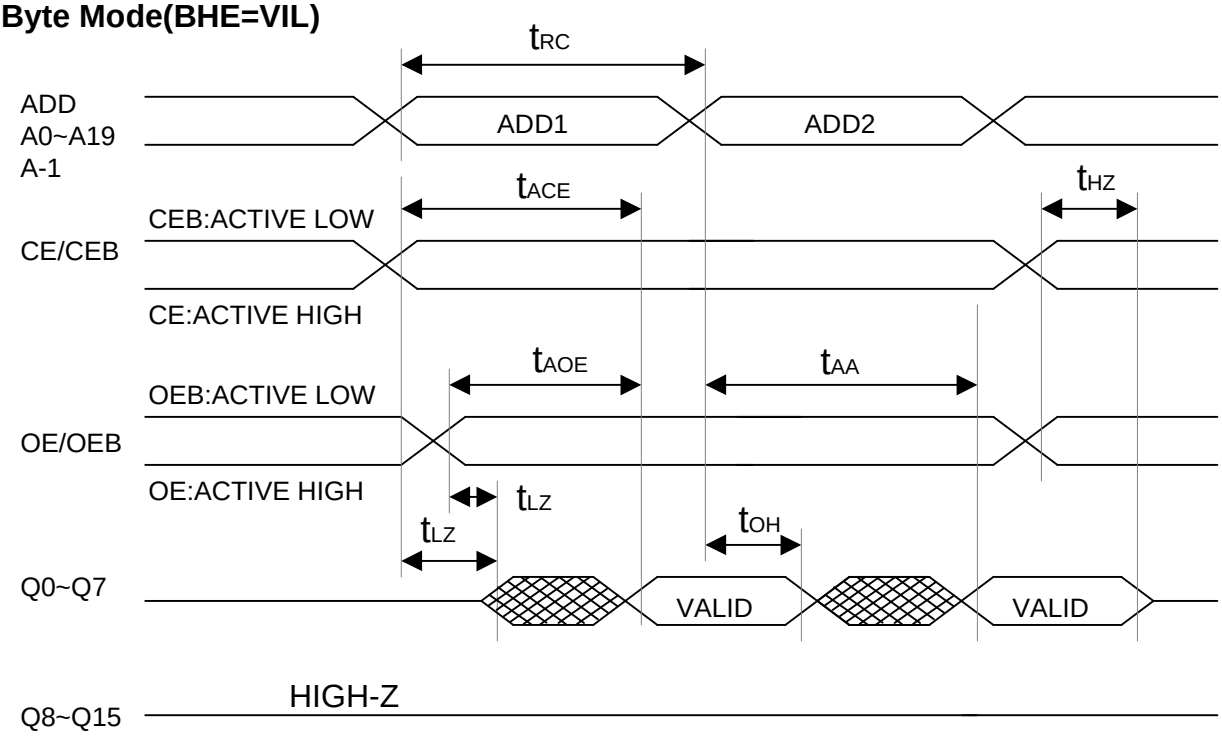
- Input pulse level 0.4V to 2.4V
- Input rise and fall time 10ns
- Input and output timing level 1.5V
- Output load 1 TTL gate and CL=100pF

Timing Waveforms

Word Mode(BHE=VIH)



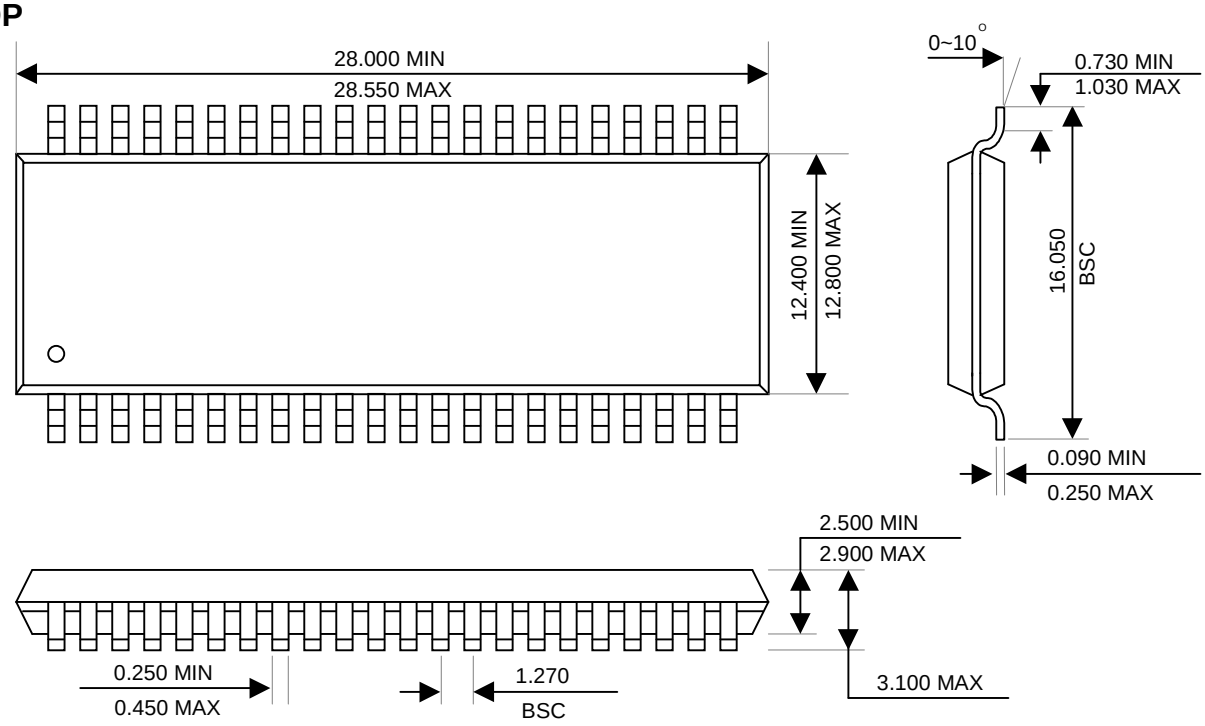
Byte Mode(BHE=VIL)



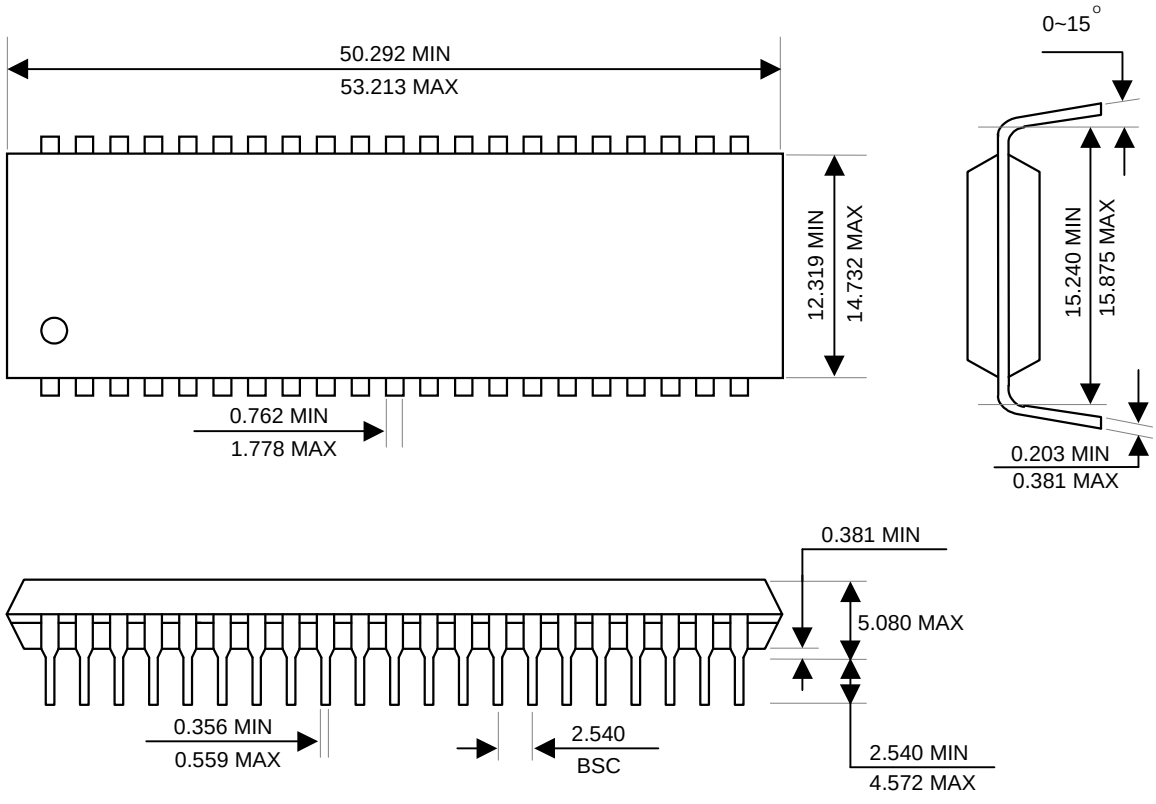
Package Dimension

Unit : mm

44SOP

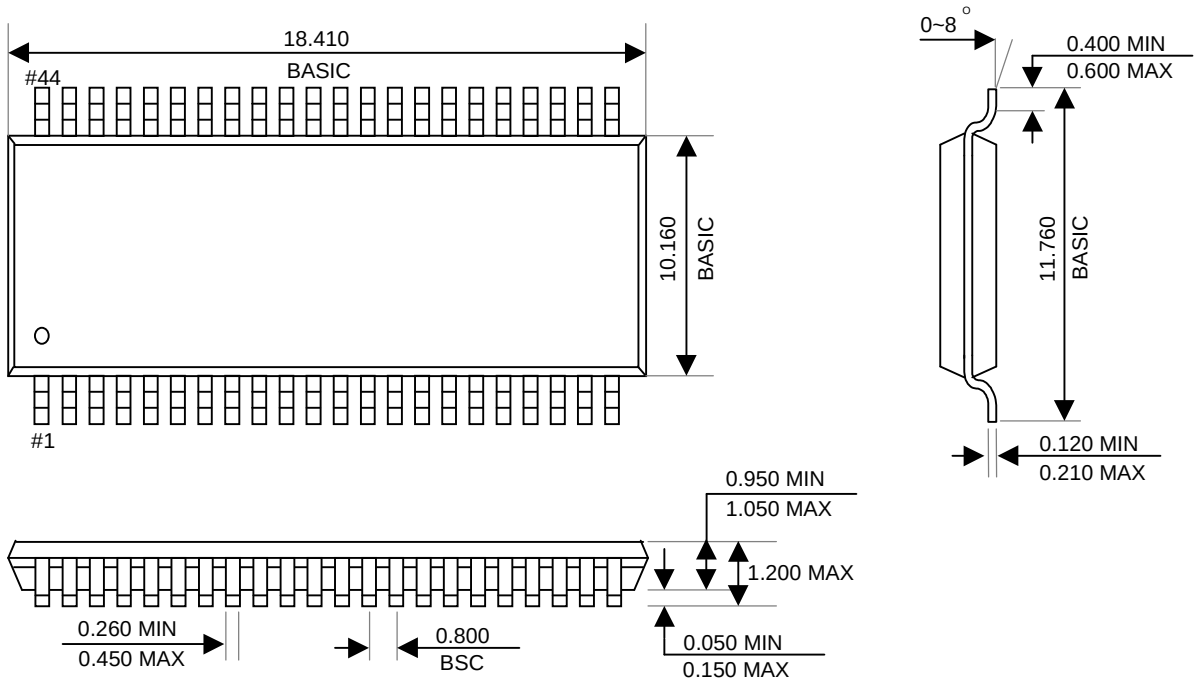


42DIP



Unit : mm

44TSOP-II



Unit : mm

48TSOP-I

