



soberton inc.

# ELECTRO MAGNETIC BUZZER

Acoustic Product Specification

Product Number: ST-0502T



Release | Revision: A/2022

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## Specifications

| Item                                | Unit         | Specification                  | Condition                |
|-------------------------------------|--------------|--------------------------------|--------------------------|
| Oscillation Frequency               | Hz           | 4000                           |                          |
| Operating Voltage                   | Vo-p         | 2 ~ 5                          |                          |
| Rated Voltage                       | Vo-p         | 3                              |                          |
| Current Consumption                 | mA           | Max. 100                       | at Rated Voltage         |
| Sound Pressure Level                | dB           | Min. 75                        | at 10cm at Rated Voltage |
| Coil Resistance                     | $\Omega$     | 12 $\pm$ 3                     |                          |
| Operating Temperature               | $^{\circ}$ C | -40 ~ +85                      |                          |
| Storage Temperature                 | $^{\circ}$ C | -40 ~ +85                      |                          |
| Dimensions                          | mm           | 5.2 $\times$ 5.2 $\times$ H2.0 |                          |
| Weight                              | gram         | 0.1                            |                          |
| Housing Material                    |              | Black LCP                      |                          |
| Leading Pin                         |              | Tin Plated Brass (Sn)          |                          |
| Terminal                            |              | SMD                            |                          |
| Environmental Protection Regulation |              | RoHS 2.0                       |                          |

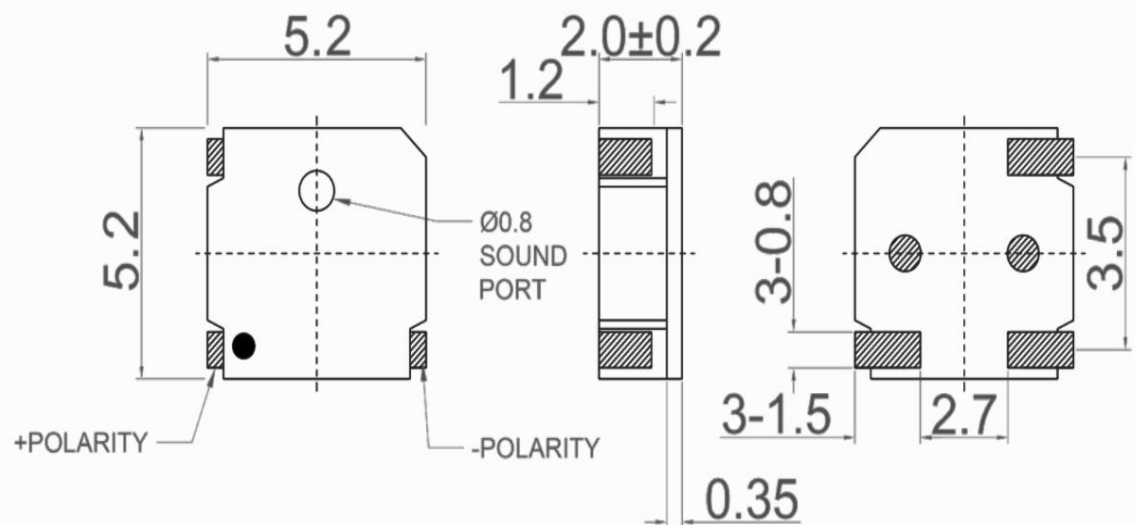
### Measuring Condition:

Temperature: 5~35 $^{\circ}$ C Humidity: 45%~85%R.H Atmospheric Pressure: 860 ~1060hPa

## Dimensions

Unit: mm

Tolerance:  $\pm$ 0.5mm, except where specified



Housing Material: Black LCP

Terminal Plate: 3 soldering pads, Tin Plating Brass



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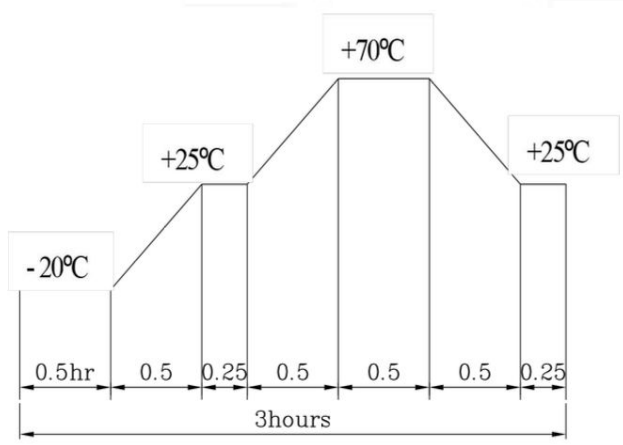
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## Reliability Test

| Item                            | Test condition  |
|---------------------------------|---|
| High Temperature Test (Storage) | After being placed in a chamber with $85\pm 2^{\circ}\text{C}$ for 96 hours and then being placed in normal condition for 2 hours.<br>Allowable variation of SPL after test: $\pm 10\text{dB}$ .                          |
| Low Temperature Test (Storage)  | After being placed in a chamber with $-40\pm 2^{\circ}\text{C}$ for 96 hours and then being placed in normal condition for 2 hours.<br>Allowable variation of SPL after test: $\pm 10\text{dB}$ .                         |
| Humidity Test                   | After being placed in a chamber with 90-95% R.H. at $40\pm 2^{\circ}\text{C}$ for 96 hours and then being placed in normal condition for 2 hours.<br>Allowable variation of SPL after test: $\pm 10\text{dB}$ .           |
| Temperature Cycle Test          | The part shall be subjected to 5 cycles.<br>One cycle shall consist of:<br>  |
| Drop Test                       | Drop on a hardwood board of 4cm thick, 6 times, at a height of 75cm.<br>Allowable variation of SPL after test: $\pm 10\text{dB}$ .  |
| Vibration Test                  | Apply a vibration at an amplitude of 1.5mm with 10 to 55 Hz frequency to each of 3 perpendicular directions for 2 hours.<br>Allowable variation of SPL after test: $\pm 10\text{dB}$ .                                    |
| Solderability Test              | Lead terminals are immersed in rosin for 5 seconds and then immersed in solder bath of $+300\pm 5^{\circ}\text{C}$ for $3\pm 1$ seconds. 90% min. lead terminals shall be wet with solder (Except the edge of terminals). |
| Terminal Strength Pulling Test  | The force of 9.8N(1.0kg) is applied to each terminal in axial direction for 10 seconds.<br>No visible damage.   |
| Standard Test Condition         | a) Temperature : $+5 \sim +35^{\circ}\text{C}$<br>b) Humidity : 45-85%<br>c) Pressure : 860-1060 mbar   |



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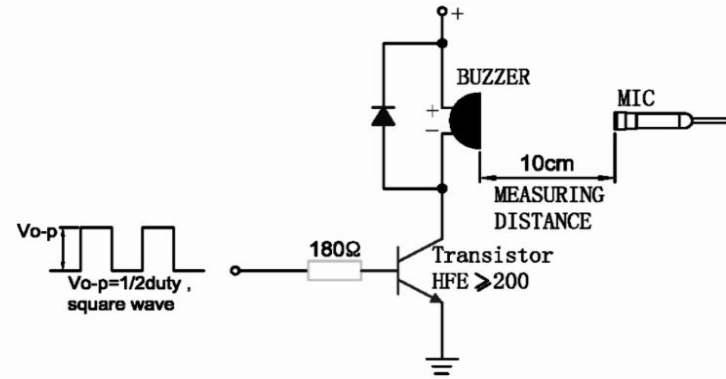
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## Testing Method

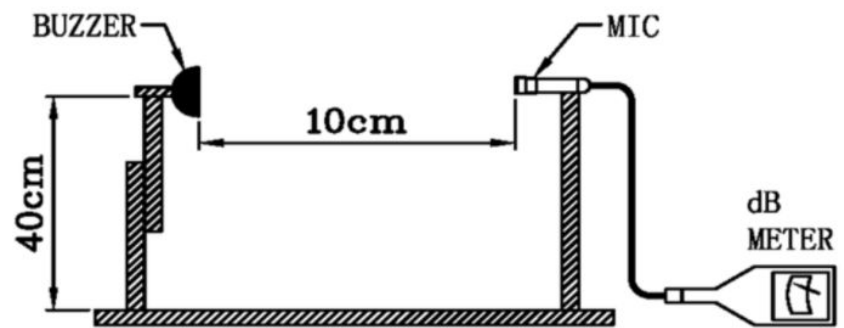
### Acoustic Characteristics:

The oscillation frequency, current consumption and sound pressure are measured by the measuring instruments shown below;

### Recommended Driving Circuit



In the measuring test, buzzer is placed as follows:

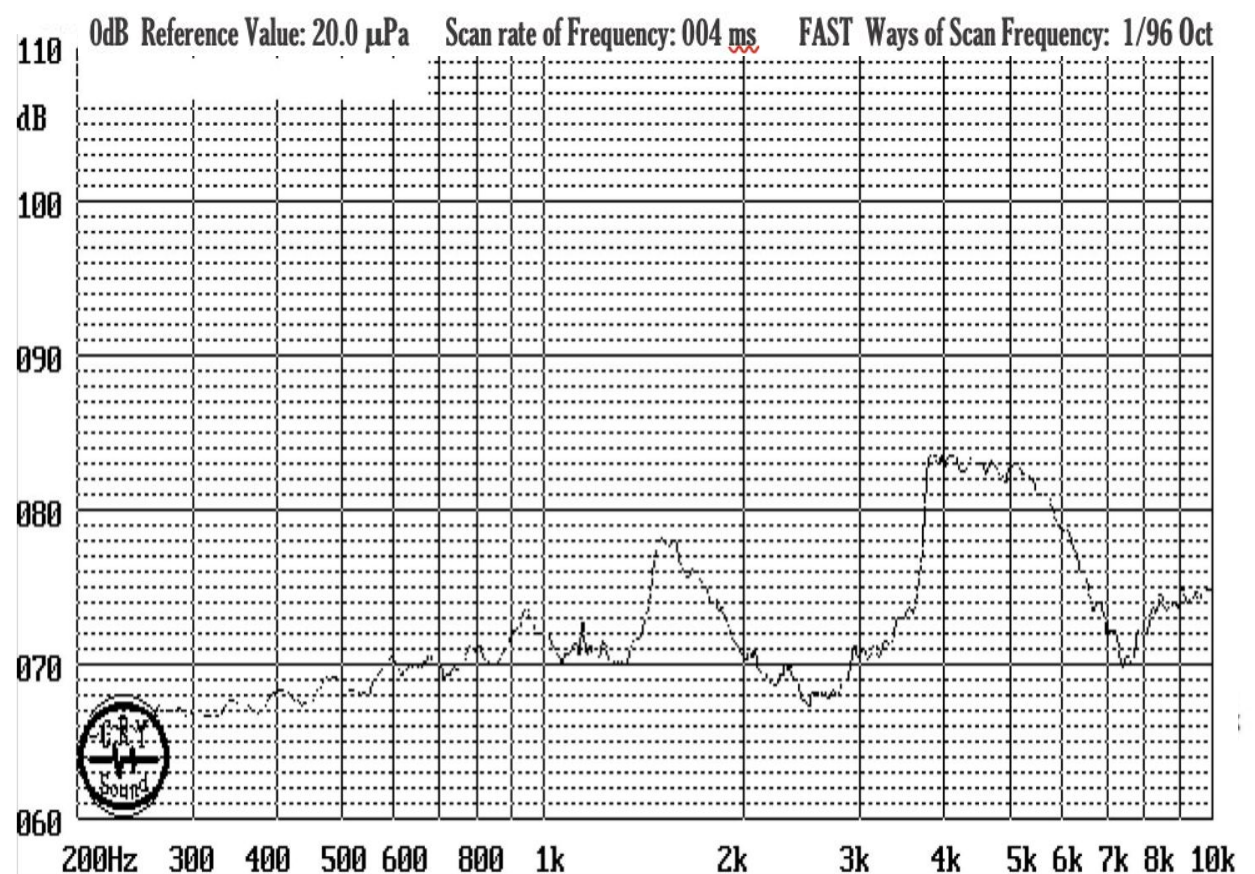


### Standard Measurement Conditions:

Temperature: 25±2°C      Humidity: 45 ~ 65%

## Typical Frequency Response Curve

3 Vo-p, 50% duty cycle, square wave, 10cm





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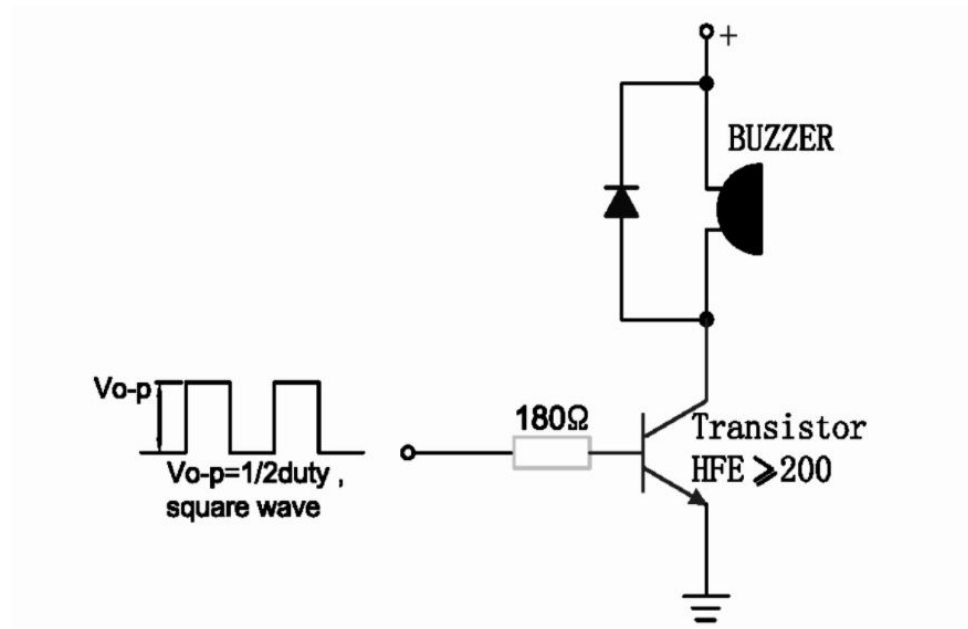
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## Recommended Driving Circuit

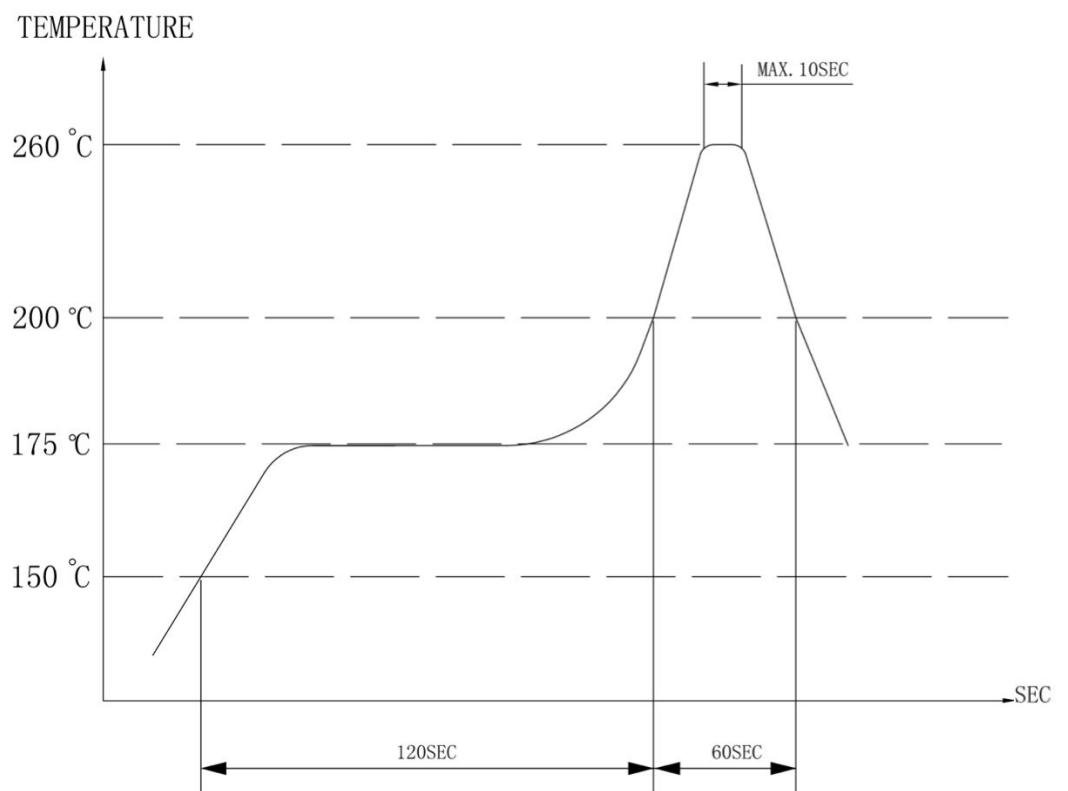
The base current  $I_b$  should high enough so that it saturates the collector current of the transistor with the CB load.



## Soldering Condition

Recommended reflow soldering condition is as follows;

1. Reflow soldering is 2-step.  
It is requested that reflow soldering should be executed after heat of product goes down to normal.
2. Manual soldering: Manual soldering temperature at 350°C within 5 sec.



Heat resistant line (Used when heat resistant reliability test is performed)



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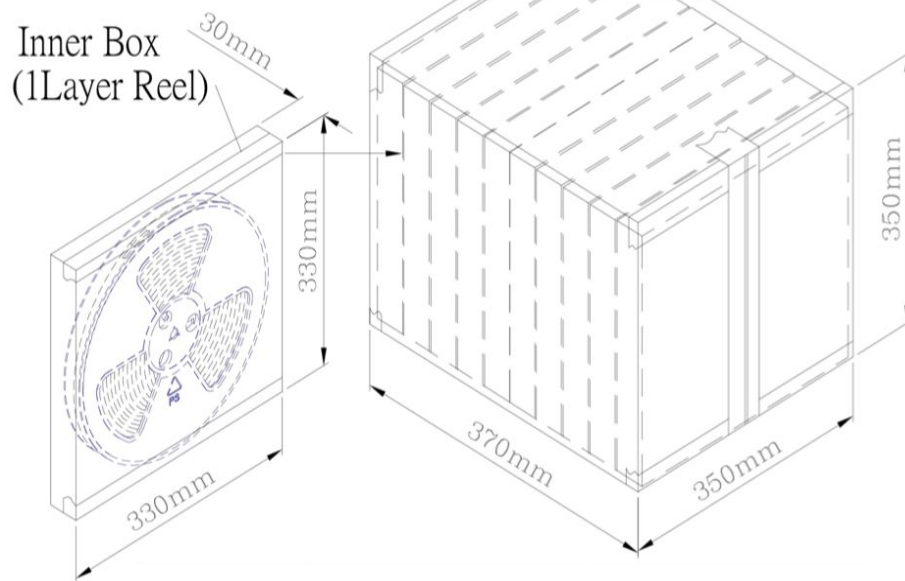
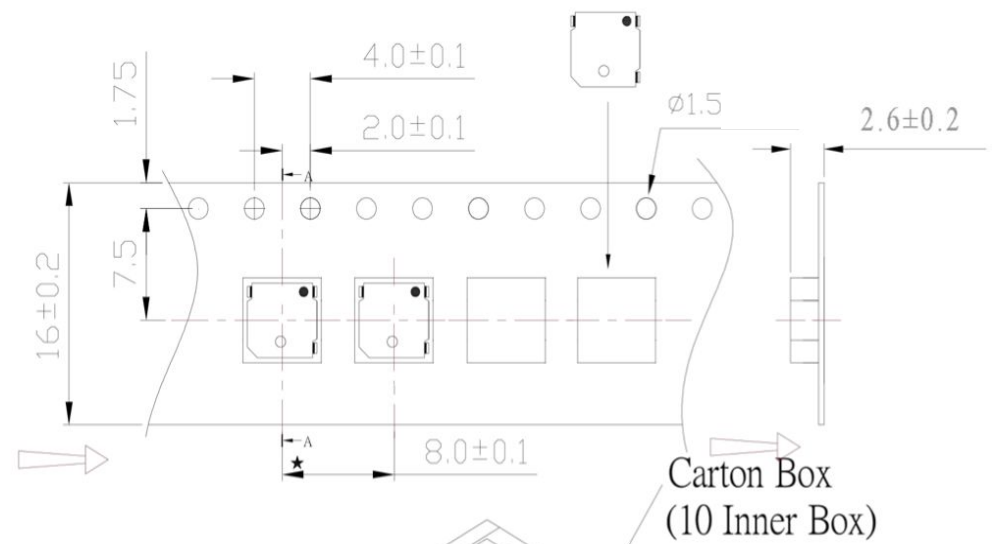
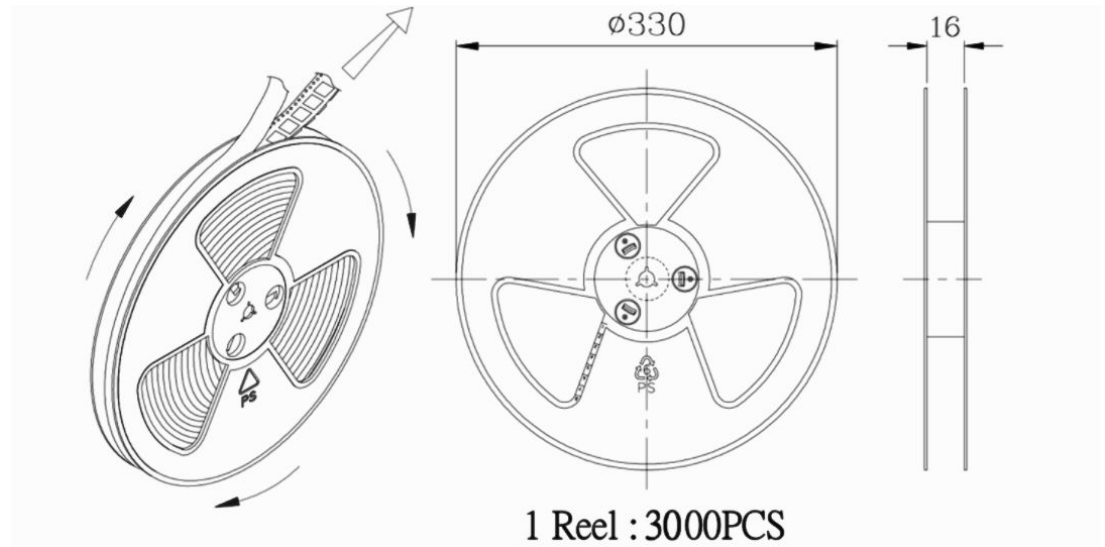
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### Packing Order:

|                   |                   |                       |
|-------------------|-------------------|-----------------------|
| <b>Inner Box</b>  | 330 x 330 x 30mm  | 1 x 3000 = 3,000pcs   |
| <b>Carton Box</b> | 370 x 350 x 350mm | 10 x 3000 = 30,000pcs |