



Part No: CEP-4411AC

Description: piezo audio indicator

Date: 2/06/2007

Unit: mm

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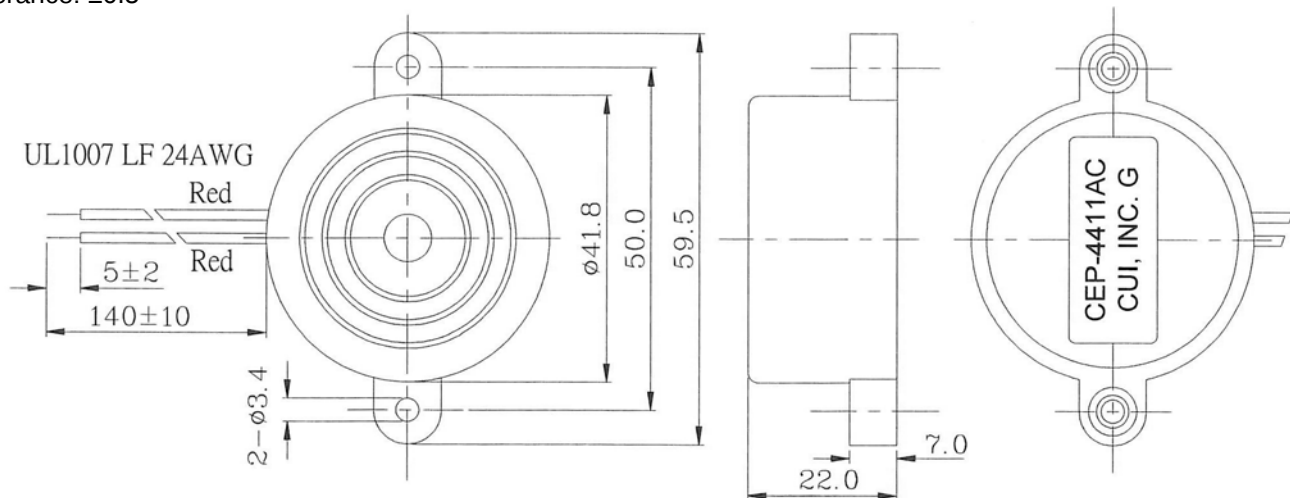


## Specifications

|                       |                                      |                      |
|-----------------------|--------------------------------------|----------------------|
| Resonant frequency    | 2.8 ± 0.5 KHz                        |                      |
| Operating voltage     | 30 ~ 120.0 V ac/V dc                 | non-polarized        |
| Current consumption   | 7 mA max.                            | at 110 V ac          |
| Sound pressure level  | 88 db min.                           | at 30 cm / 110 V ac  |
| Rated Voltage         | 110 V ac                             |                      |
| Tone                  | Continuous                           |                      |
| Operating temperature | -20 ~ +60° C                         |                      |
| Storage temperature   | -30 ~ +70° C                         |                      |
| Dimensions            | ø41.8 x H22.0 mm                     | See attached drawing |
| Weight                | 22.2 g max.                          |                      |
| Material              | ABS UL-94 1/16" HB High Heat (Black) |                      |
| Terminal              | Wire type                            | See attached drawing |
| RoHS                  | yes                                  |                      |

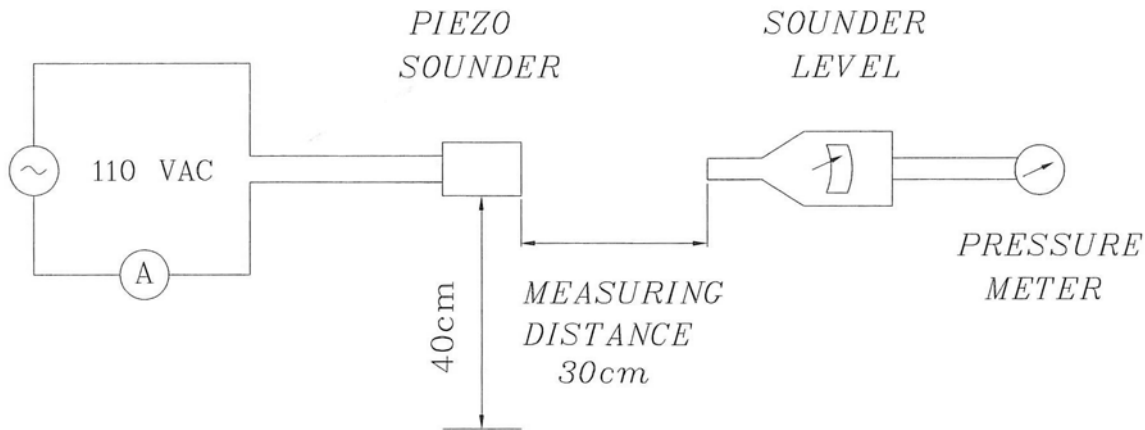
## Appearance Drawing

Tolerance: ±0.5




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## Measurement Method



S.P.L. Measuring Circuit

Mic: RION S.P.L. meter UC 30 or equivalent

S.G.: Hewlett Packard 33120A Function Generator or equivalent

## Mechanical Characteristics

| Item                         | Test Condition                                                                                                                                                                 | Evaluation Standard                                                                                                                                                                        |
|------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Solderability                | Stripped wires of lead wires are immersed in rosin for 5 seconds and then immersed in a solder bath of $+270 \pm 5^\circ\text{C}$ for $3 \pm 0.5$ seconds.                     | 90% min. of the stripped wires will be wet with solder. (Except the edge of the terminal)                                                                                                  |
| Terminal Mechanical Strength | The pull force should be applied to the double lead wire:<br>Horizontal 3.0N (0.306kg) for 30 seconds<br>Vertical 2.0N (0.204kg) for 30 seconds                                | No damage or cutting off.                                                                                                                                                                  |
| Vibration                    | The buzzer will be measured after applying a vibration amplitude of 1.5 mm with 10 to 55 Hz band of vibration frequency to each of the 3 perpendicular directions for 2 hours. | The value of oscillation frequency/current consumption should be $\pm 10\%$ of the initial measurements. The SPL should be within $\pm 10\text{dB}$ compared with the initial measurement. |
| Drop Test                    | The part will be dropped from a height of 75 cm onto a 40 mm thick wooden board 3 times in 3 axis (X, Y, Z) for a total of 9 drops.                                            |                                                                                                                                                                                            |



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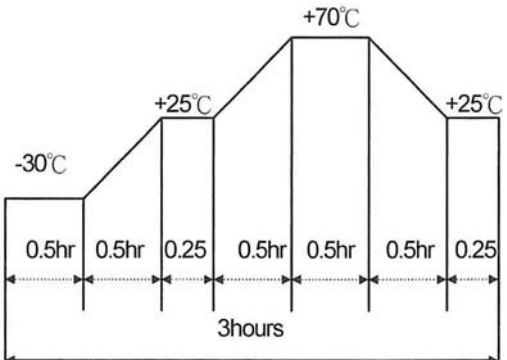
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## Environment Test

| Item             | Test Condition                                                                                                                                                | Evaluation Standard                                                                                                                                                                                                                                                                |
|------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| High temp. test  | After being placed in a chamber at +70°C for 240 hours.                                                                                                       | The buzzer will be measured after being placed at +25°C for 4 hours. The value of the oscillation frequency/current consumption should be within $\pm 10\%$ compared to the initial measurements. The SPL should be within $\pm 10\text{dB}$ compared to the initial measurements. |
| Low temp. test   | After being placed in a chamber at -30°C for 240 hours.                                                                                                       |                                                                                                                                                                                                                                                                                    |
| Humidity test    | After being placed in a chamber at +40°C and 90 $\pm$ 5% relative humidity for 240 hours.                                                                     |                                                                                                                                                                                                                                                                                    |
| Temp. cycle test | The part shall be subjected to 5 cycles. One cycle will consist of:<br><br> |                                                                                                                                                                                                                                                                                    |

## Reliability Test

| Item                  | Test Condition                                                                                                                                                                                                                                                                                                      | Evaluation Standard                                                                                                                                                                                                                                                  |
|-----------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Operating (Life Test) | <p>1. Continuous life test:<br/>The part will be subjected to 48 hours of continuous operation at +45°C with rated voltage applied.</p> <p>2. Intermittent life test:<br/>A duty cycle of 1 minute on, 1 minute off, a minimum of 5,000 times at room temp (+25<math>\pm</math>2°C) with rated voltage applied.</p> | The buzzer will be measured after being placed at +25°C for 4 hours. The value of the oscillation frequency/current consumption should be $\pm 10\%$ compared to the initial measurements. The SPL should be $\pm 10\text{dB}$ compared to the initial measurements. |

## Test Conditions

|                          |                               |                       |                              |
|--------------------------|-------------------------------|-----------------------|------------------------------|
| Standard Test Condition  | a) Temperature: +5 ~ +35°C    | b) Humidity: 45 - 85% | c) Pressure: 860 - 1060 mbar |
| Judgement Test Condition | a) Temperature: +25 $\pm$ 2°C | b) Humidity: 60 - 70% | c) Pressure: 860 - 1060 mbar |



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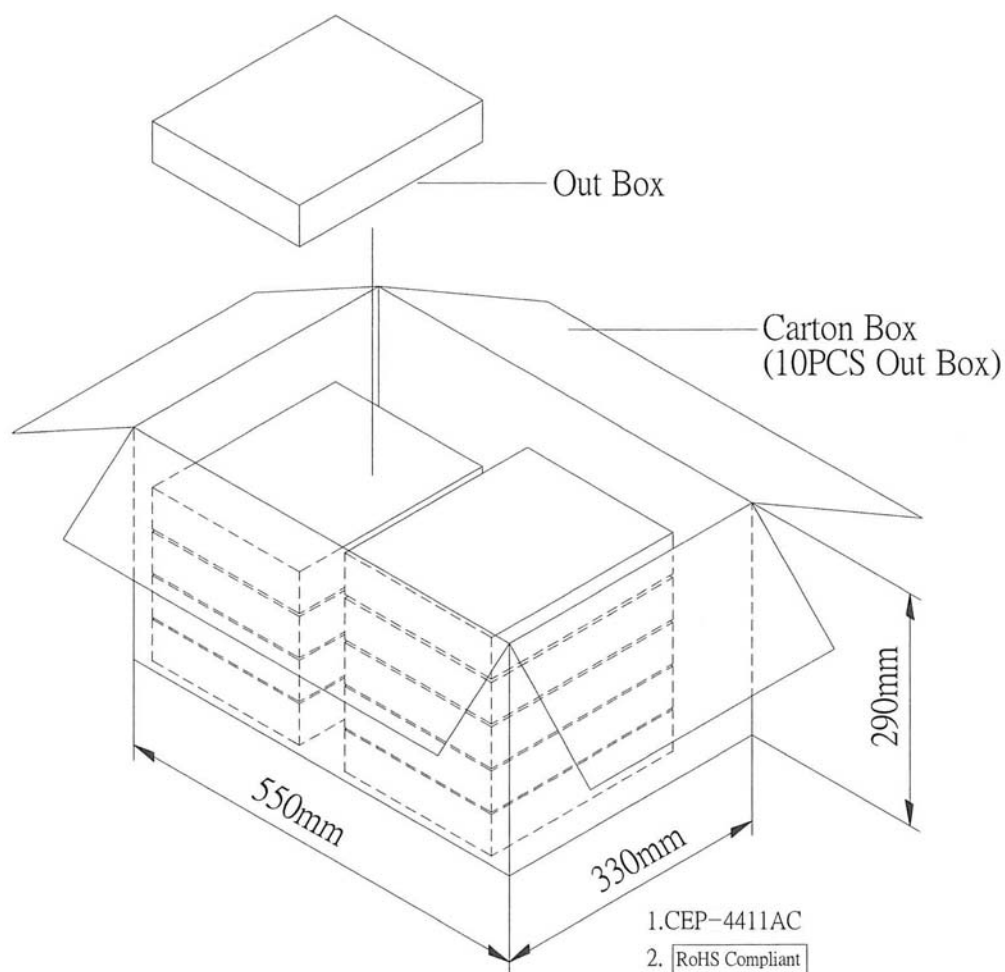
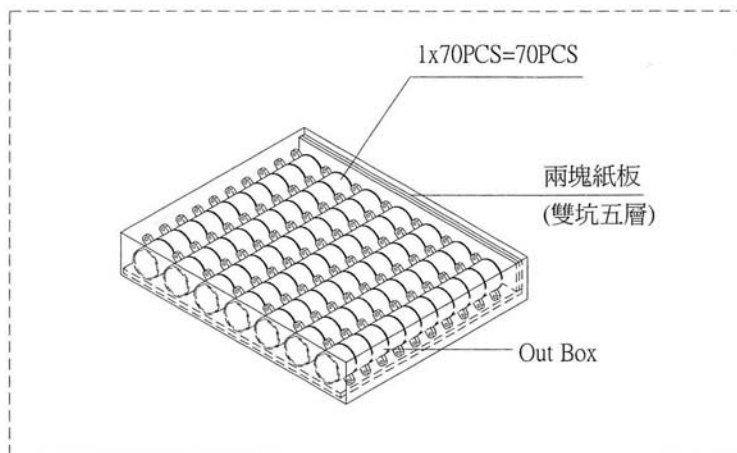
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## Packaging



|            |                   |                 |
|------------|-------------------|-----------------|
| Out Box    | 310mmx248mmx49mm  | 1x70PCS=70PCS   |
| Carton Box | 550mmx330mmx290mm | 70PCSx10=700PCS |