

# SPECIFICATION FOR APPROVAL

## 承 認 書

Description : Piezo Audio Transducer

Kingstate Part No. : KPEG132

Customer's Model No. : \_\_\_\_\_

Specification No. : PKD-7179

Number Of The Edition : 1.3

### CUSTOMER'S APPROVED SIGNATURE

|  |  |  |
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志豐電子股份有限公司 KINGSTATE ELECTRONICS CORP.

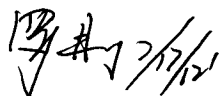
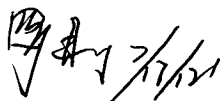


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| Approved by                                                                                 | Checked by                                                                                  | Issued by       |
|---------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------|-----------------|
|  3/17/12 |  3/17/12 | Fei<br>7/17/12' |

## A. SCOPE 範疇

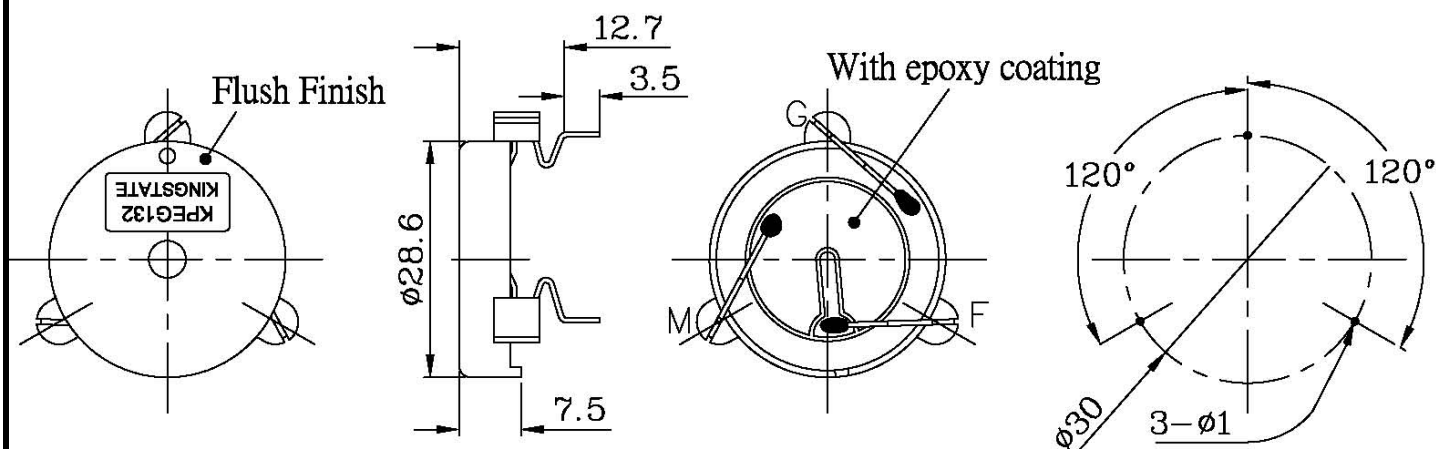
This specification applies piezo audio Transducer, **KPEG132**

此規格書適用於壓電式蜂鳴器, **KPEG132**

## B. SPECIFICATION 規格

| No. | Item                                           | Unit | Specification                           | Condition                          |
|-----|------------------------------------------------|------|-----------------------------------------|------------------------------------|
| 1   | Operating Frequency<br>操作頻率                    | KHz  | $3.0 \pm 0.5$                           |                                    |
| 2   | Operating Volt. range<br>操作電壓範圍                | VDC  | 3 ~ 28                                  |                                    |
| 3   | Operating Current<br>操作電流                      | mA   | MAX 8                                   | at 12VDC                           |
| 4   | Sound pressure level<br>輸出音壓                   | dB   | MIN 83                                  | at 30 cm/12VDC                     |
| 5   | Rated Voltage<br>額定電壓                          | VDC  | 12                                      |                                    |
| 6   | Tone<br>聲音                                     |      | Continuous<br>直音                        |                                    |
| 7   | Operating temp.<br>操作溫度                        | °C   | -30 ~ +85                               |                                    |
| 8   | Storage temp.<br>儲存溫度                          | °C   | -40 ~ +95                               |                                    |
| 9   | Dimension<br>尺寸                                | mm   | $\phi 28.6 \times H7.5$                 | See appearance drawing<br>請參照外觀尺寸圖 |
| 10  | Weight (MAX)<br>重量                             | gram | 3.8                                     |                                    |
| 11  | Material<br>材質                                 |      | ABS UL-94 1/16" HB HIGH HEAT<br>(BLACK) |                                    |
| 12  | Terminal<br>端子                                 |      | Pin type<br>(鍍化金/Plating Au)            | See appearance drawing<br>請參照外觀尺寸圖 |
| 13  | Environmental<br>Protection Regulation<br>環保法規 |      | RoHS                                    |                                    |

## C. APPEARANCE DRAWING 外觀尺寸圖

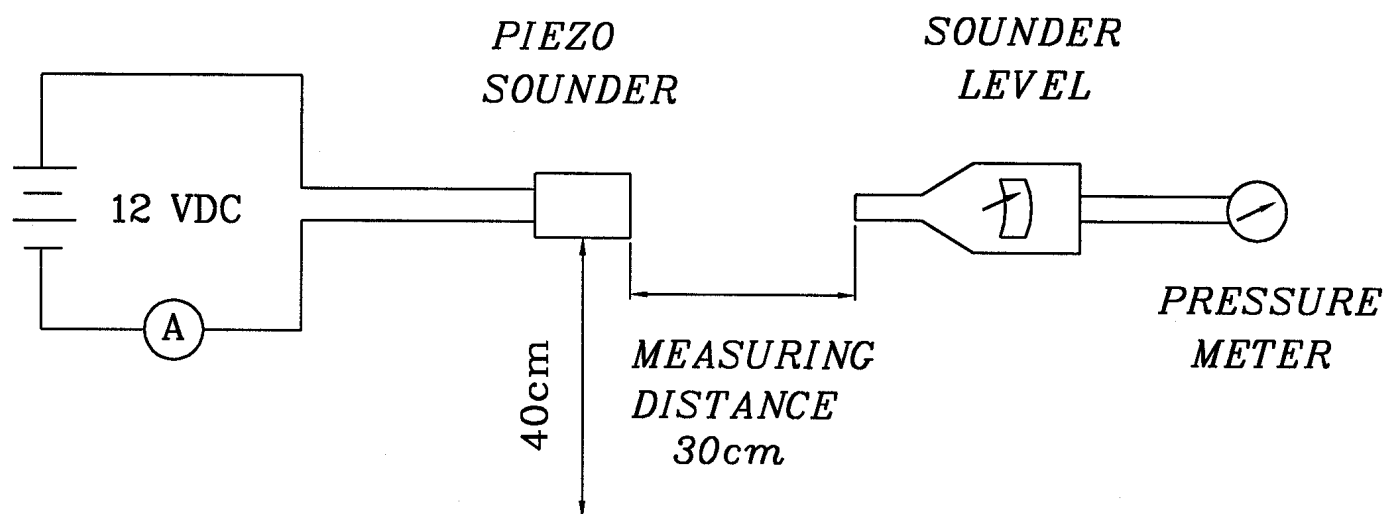


Tol :  $\pm 0.5$

Unit : mm

## D. MEASURING METHOD 測量方法

### 1. S.P.L. Measuring Circuit 音壓測試接線圖

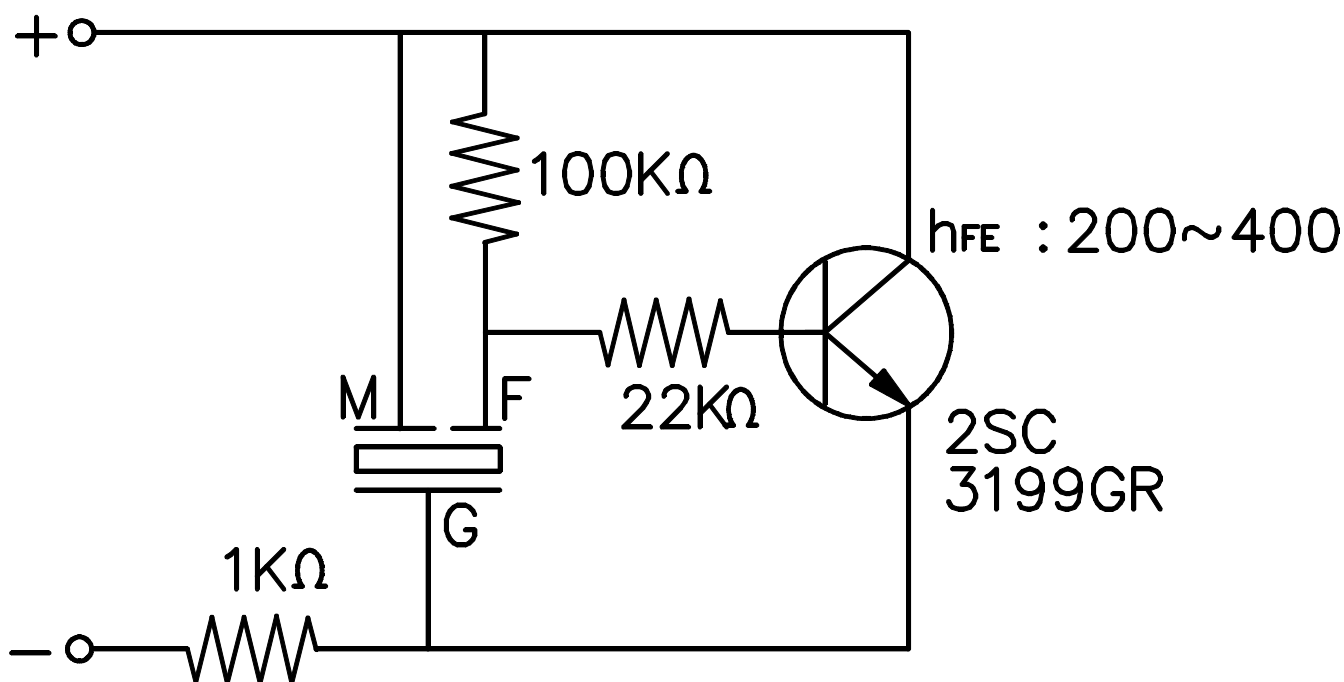


Mic : RION S.P.L. meter UC30 or equivalent

Mic : RION 噪音計 UC30 或同等品

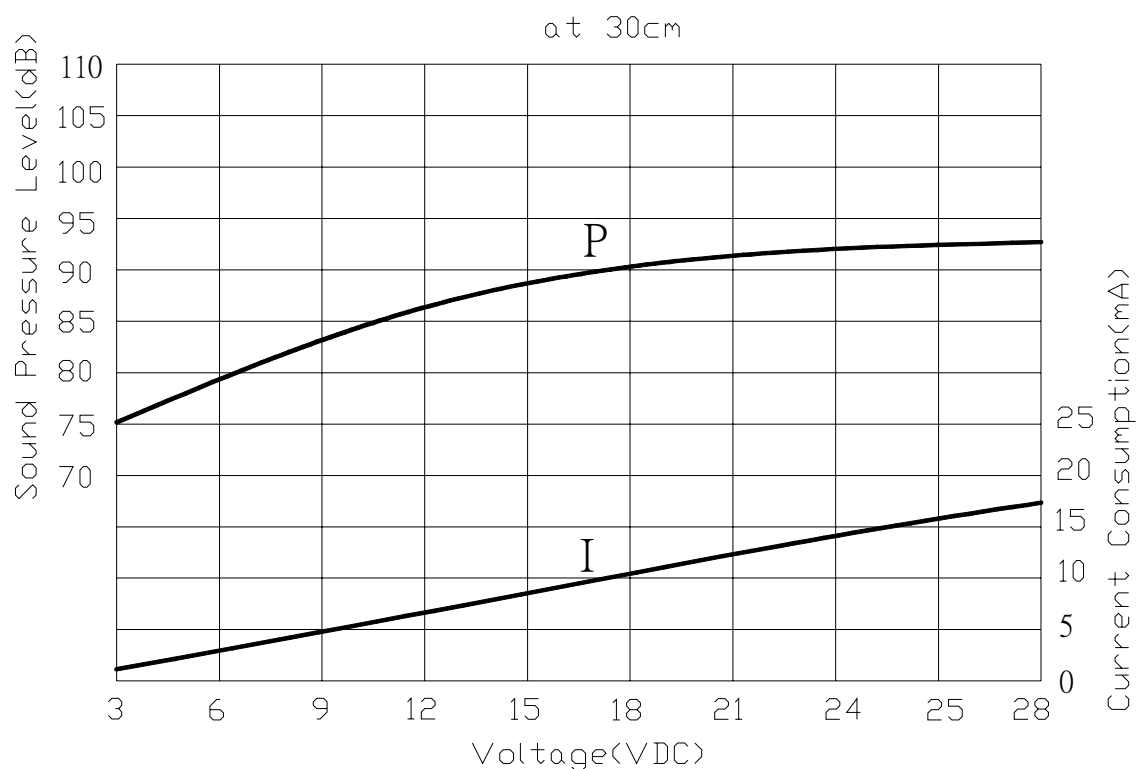
### 2. The current consumption and the sound pressure level are measured by using the recommend driving circuit shown as below (one example)

當前的測試數據是依靠此電氣迴路所量測



## E. VOLTAGE: SOUND PRESSURE LEVEL / VOLTAGE: CURRENT CONSUMPTION

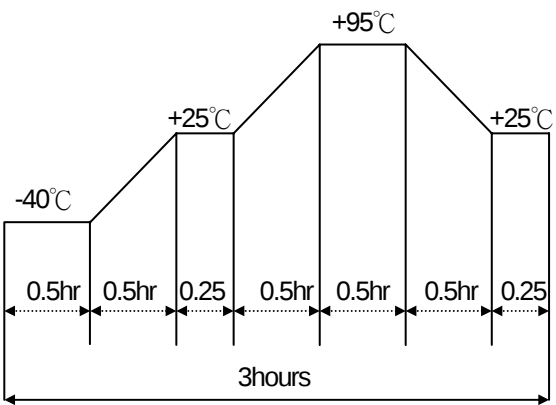
### CHARACTERISTICS 電壓與音壓/電壓與耗電流之特性



## F. MECHANICAL CHARACTERISTICS 機械特性

| No. | Item                                 | Test Condition                                                                                                                                                                                                                                                                                     | Evaluation standard                                                                                                                                                                                                                   |
|-----|--------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1   | Solderability<br>焊錫附著性               | Lead terminals are immersed in rosin for 5 seconds and then immersed in solder bath of $+270\pm5^{\circ}\text{C}$ for $3\pm1$ seconds.<br>端子部份浸入松香溶液 5 秒後,再浸入 $+270\pm5^{\circ}\text{C}$ 溶融焊錫槽中 $3\pm1$ 秒.                                                                                         | 90% min. lead terminals shall be wet with solder. (Except the edge of terminal)<br>浸入端子部份附著焊錫 90%以上.(末端斷面不算)                                                                                                                          |
| 2   | Soldering Heat Resistance<br>焊錫耐熱性   | Lead terminal are immersed up to 1.5mm from sounder's body in solder bath of $+300\pm5^{\circ}\text{C}$ for $3\pm0.5$ seconds or $+260\pm5^{\circ}\text{C}$ for $10\pm1$ seconds.<br>距離端子根部 1.5mm 的位置,浸入 $+300\pm5^{\circ}\text{C}$ 的焊錫槽 $3\pm0.5$ 秒,或 $+260\pm5^{\circ}\text{C}$ 的焊錫槽 $10\pm1$ 秒. | No interference in operation<br>操作上無任何不良.                                                                                                                                                                                             |
| 3   | Terminal Mechanical Strength<br>端子強度 | The force 10 seconds of 9.8N (1.0kg) is applied to each terminal in axial direction.<br>各端子的軸方向施以 9.8N (1.0kg)的力量 10 秒.                                                                                                                                                                            | No damage and cutting off<br>端子不鬆動, 不脫落.                                                                                                                                                                                              |
| 4   | Vibration<br>振動試驗                    | Buzzer shall be measured after being applied vibration of amplitude of 1.5mm with 10 to 55hz band of vibration frequency to each of 3 per-pendicular directions for 2 hours.<br>振動週波數 10~55HZ、全振幅 1.5mm 於 X.Y.Z 3 個方向,各 2 小時.                                                                      | The value of oscillation frequency/ current consumption should be in 10% compared with initial ones. The SPL should be in $\pm 10\text{dB}$ compared with initial one.<br>諧振頻率與消耗電流變化量須在 $\pm 10\%$ 內. 輸出音壓變化量須在 $\pm 10\text{dB}$ 內. |
| 5   | Drop test<br>落下測試                    | The part only shall be dropped from a height of 75cm onto a 40mm thick wooden board 3 times in 3 axes (X.Y.Z). (a total of 9 times).<br>單體從 75 公分高處, X.Y.Z.3 個方向,各 3 回,落於 40mm 厚木板上.                                                                                                               |                                                                                                                                                                                                                                       |

## G. ENVIRONMENT TEST 環境測試

| No. | Item                       | Test Condition                                                                                                                                                                            | Evaluation standard                                                                                                                                                                                                                                                                                                                 |
|-----|----------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1   | High temp. test<br>高溫測試    | After being placed in a chamber at +95°C for 240 hours<br>置於+95°C環境中 240 小時                                                                                                               | Being placed for 4 hours at +25°C, buzzer shall be measured. The value of oscillation frequency/ current consumption should be in $\pm 10\%$ compared with initial ones. The SPL should be in $\pm 10\text{dB}$ compared with initial one.<br>經測試後，靜置於+25°C（室溫）環境中 4 小時後，諧振頻率與消耗電流變化量須在 $\pm 10\%$ 內。輸出音壓變化量須在 $\pm 10\text{dB}$ 內。 |
| 2   | Low temp. test<br>低溫測試     | After being placed in a chamber at -40°C for 240 hours<br>置於-40°C環境中 240 小時                                                                                                               |                                                                                                                                                                                                                                                                                                                                     |
| 3   | Humidity test<br>相對濕度測試    | After being placed in a chamber at +40°C and 90 $\pm$ 5% relative humidity for 240 hours<br>置於+40°C，相對濕度 90 $\pm$ 5% 環境中 240 小時                                                           |                                                                                                                                                                                                                                                                                                                                     |
| 4   | Temp. cycle test<br>溫度循環試驗 | The part shall be subjected to 5 cycles. One cycle shall be consist of:<br>單體承受溫度循環測試 5 次，其循環內容如圖示：<br> |                                                                                                                                                                                                                                                                                                                                     |

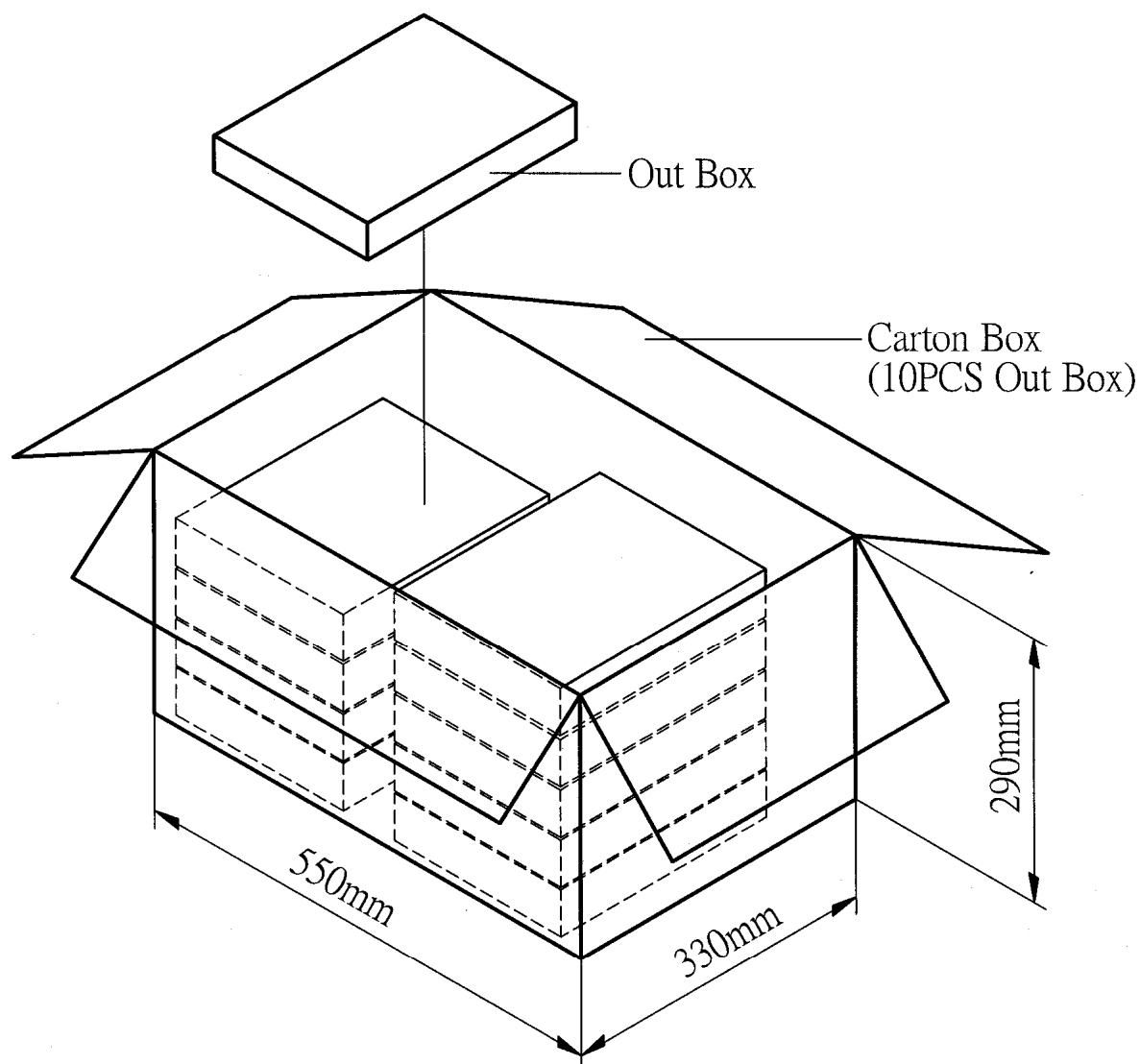
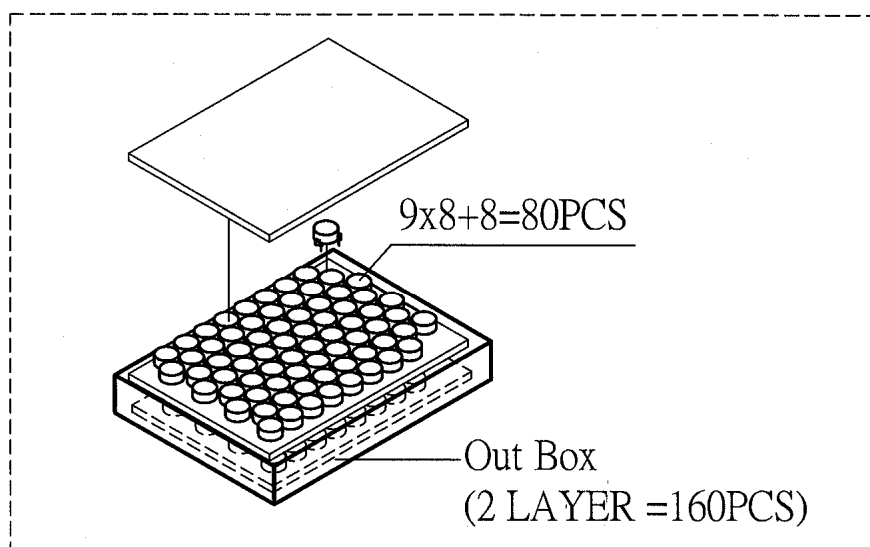
## H. RELIABILITY TEST 信賴性測試

| No. | Item                        | Test condition                                                                                                                                                                                                                                                                                                                                                           | Evaluation standard                                                                                                                                                                                                                                                                                                                 |
|-----|-----------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1   | Operating life test<br>壽命測試 | 1. Continuous life test 高溫壽命測試(連續)<br>48 hours continuous operation at +70°C with rated voltage applied.<br>在+70°C環境下，以額定電壓連續操作 48 小時<br>2. Intermittent life test 室溫壽命測試(間歇)<br>A duty cycle of 1 minute on, 1 minutes off, a minimum of 5000 times at room temp. (+25 $\pm$ 2°C) and rated voltage applied<br>在室溫下(+25 $\pm$ 2°C)，以額定電壓操作，通電 1 分鐘/斷電 1 分鐘，測試 5000 次循環。 | Being placed for 4 hours at +25°C, buzzer shall be measured. The value of oscillation frequency/ current consumption should be in $\pm 10\%$ compared with initial ones. The SPL should be in $\pm 10\text{dB}$ compared with initial one.<br>經測試後，靜置於+25°C（室溫）環境中 4 小時後，諧振頻率與消耗電流變化量須在 $\pm 10\%$ 內。輸出音壓變化量須在 $\pm 10\text{dB}$ 內。 |

### TEST CONDITION.

|                          |   |                                |                      |                            |
|--------------------------|---|--------------------------------|----------------------|----------------------------|
| Standard Test Condition  | : | a) Temperature : +5 ~ +35°C    | b) Humidity : 45-85% | c) Pressure : 860-1060mbar |
| 一般測試條件                   | : | a) 溫度 : +5 ~ +35°C             | b) 濕度 : 45-85%       | c) 氣壓 : 860-1060mbar       |
| Judgement Test Condition | : | a) Temperature : +25 $\pm$ 2°C | b) Humidity : 60-70% | c) Pressure : 860-1060mbar |
| 爭議時測試條件                  | : | a) 溫度 : +25 $\pm$ 2°C          | b) 濕度 : 60-70%       | c) 氣壓 : 860-1060mbar       |

# I. PACKING STANDARD 包裝規格



|            |                   |                    |
|------------|-------------------|--------------------|
| Out Box    | 310mmx248mmx49mm  | 2x80PCS=160PCS     |
| Carton Box | 550mmx330mmx290mm | 160PCSx10=1,600PCS |