

# SPECIFICATION FOR APPROVAL

## 承認書

Description : Piezo Audio Transducer

Kingstate Part No. : KMTG1003-F

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

Specification No. : POD-5081

Number Of The Edition : 1.1

| CUSTOMER'S APPROVED SIGNATURE |  |  |
|-------------------------------|--|--|
|                               |  |  |



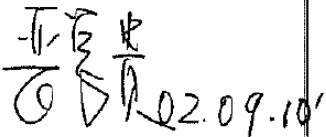
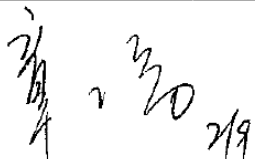
志豐電子股份有限公司 KINGSTATE ELECTRONICS CORP.

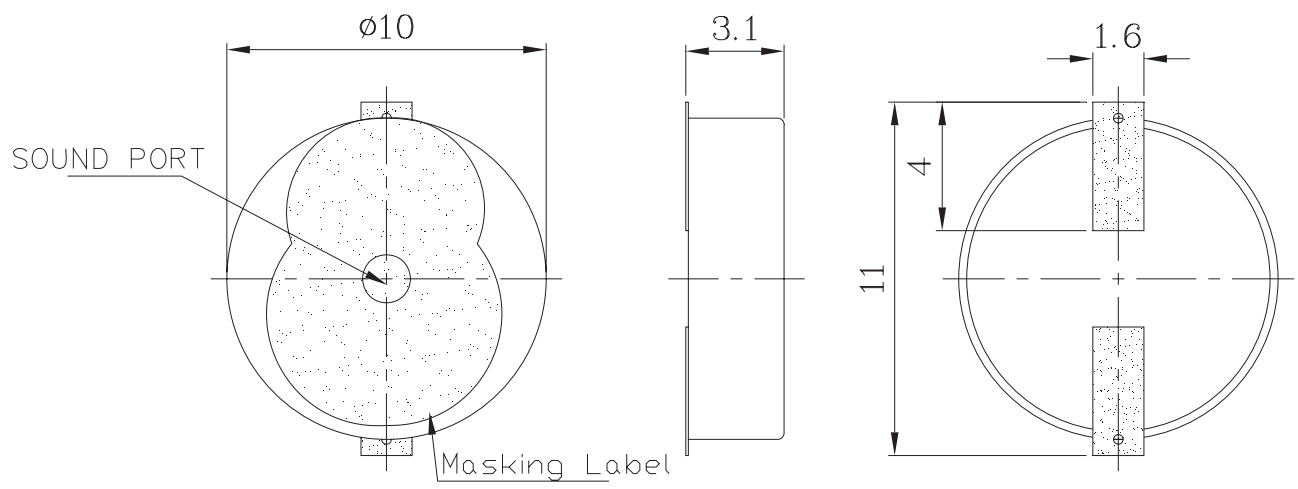
Address: 10F, No. 69-11, Sec. 2, Chung Cheng E. Rd., Tamshui County, Taipei Hsien, Taiwan, R.O.C.

International sales dept.: TEL:886-2-2809-5651 FAX:886-2-2809-7151

Domestic sales dept.: TEL:886-2-2809-0668 FAX:886-2-28096748

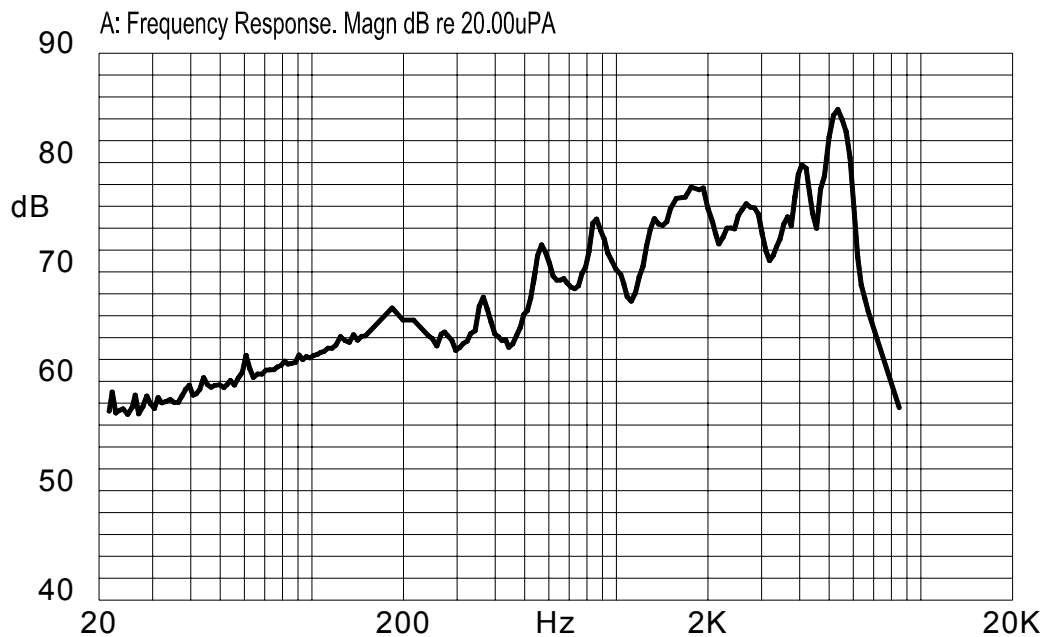
<http://www.kingstate.com.tw>

| Approved by                                                                         | Checked by                                                                          | Issued by          |
|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|--------------------|
|  |  | MERRY<br>02/09/10' |



**Tol :  $\pm 0.5$**   
**Unit: mm**

## D. TYPICAL FREQUENCY RESPONSE CURVE 頻率響應曲線

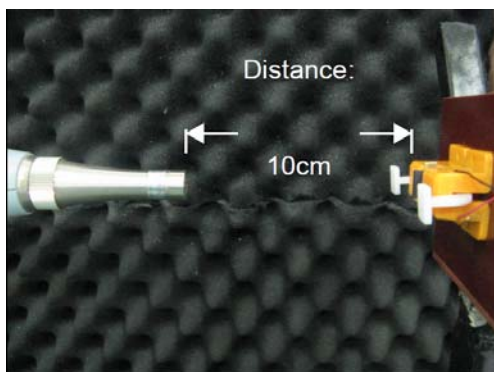
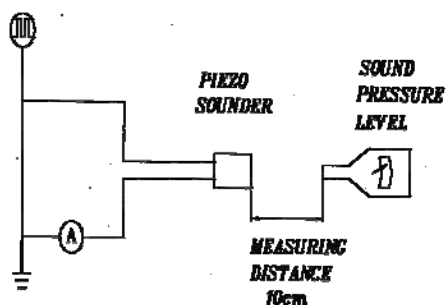


## E. MEASURING METHOD 測量方法

S.P.L. Measuring Circuit 音壓測試接線圖

Input Signal: 5Vp-p, 5.2kHz, Square Wave

輸入信號: 5Vp-p, 5.2kHz, 方波



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

Mic : RION 噪音計 UC30 或同等品

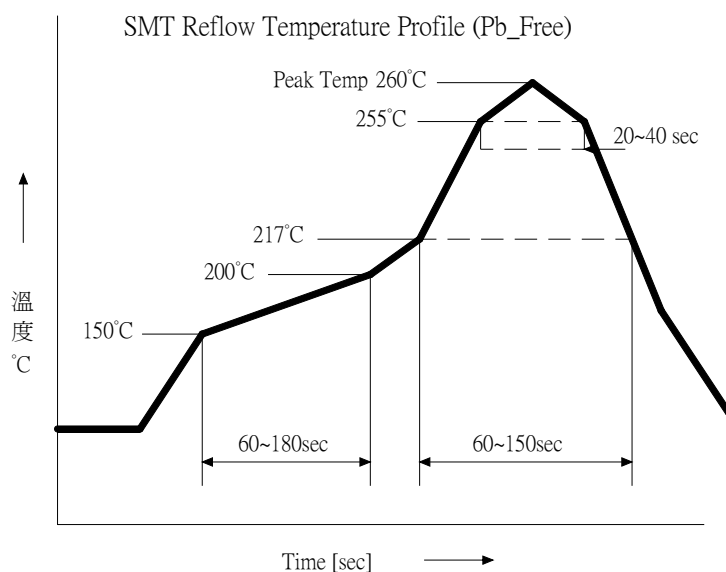
S.G : Hewlett Packard 33120A Function Generator or equivalent

S.G : Hewlett Packard 33120A 函數信號產生器或同等品

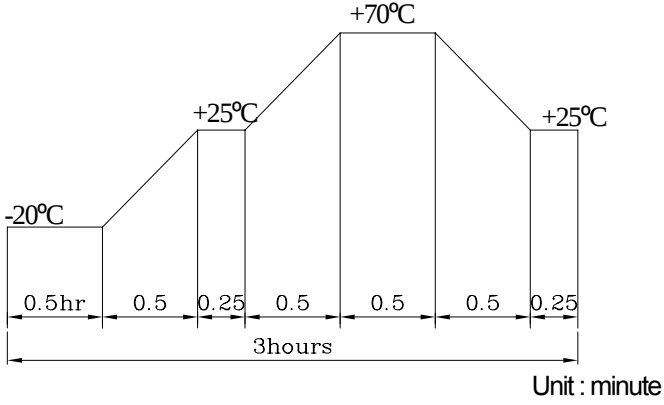
## F. MECHANICAL CHARACTERISTICS 機械特性

| 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 $+230 \pm 5^{\circ}\text{C}$ for $2 \pm 0.5$ second.<br>端子浸松香液中 5 秒後置於錫膏內,錫膏溫度: $+230 \pm 5^{\circ}\text{C}$ . 焊接時間: $2 \pm 0.5$ 秒.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | 95% surface of lead pads must be covered with fresh solder<br>錫膏須覆蓋端子上方 95%                                                                                                                                                                   |
| 2   | Soldering Heat Resistance<br>焊錫耐熱性   | 1)IR reflow 遠紅外線熱風迴焊爐<br>Pre-heating conditions shall be $+140$ to $+160^{\circ}\text{C}$ for 60 to 120 seconds. Ascending time up to $+150^{\circ}\text{C}$ shall be longer than 30 seconds.<br>Heating conditions shall be within 10 seconds at $+230^{\circ}\text{C}$ min. But peak temperature shall be lower than $+235^{\circ}\text{C}$ , then being place in natural condition for 1 hour, sounder shall be measured<br>預熱條件為加熱到 $+140$ to $+160^{\circ}\text{C}$ 為 60 到 120 秒. 加熱到 $150^{\circ}\text{C}$ 時間須長於 30 秒.<br>焊接條件為 10 秒內最低 $+230^{\circ}\text{C}$ , 最高不可超過 $+235^{\circ}\text{C}$ . 結束後須靜置於室溫中 1 小時後進行檢測<br>2)Soldering Iron 烙鐵<br>Soldering iron of $+270 \pm 5^{\circ}\text{C}$ shall be placed 0.5mm above from electrode of sounder. Melting solder through soldering iron shall be applied to electrode for $3 \pm 1$ seconds, then being place in natural condition for 4 hours, sounder shall be measured.<br>$+270 \pm 5^{\circ}\text{C}$ 的烙鐵置於電極上方 0.5mm 處, 以烙鐵將焊錫熔於電極上 $3 \pm 1$ 秒, 然後置於室溫中 4 小時後進行檢測. | 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 is applied to each terminal is axial direction.<br>對每一端子以軸方向, 施 9.8N 拉力 10 秒.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | No damage and cutting off<br>端子不鬆動, 不脫落                                                                                                                                                                                                       |
| 4   | Vibration<br>振動測試                    | The part shall be subjected to a vibration cycle of 10Hz to 55Hz in a period of 1 minute. Total peak amplitude shall be 1.55mm. The vibration test shall consist of 2 hours per axis in each three axes (X, Y, Z), Total 6 hours.<br>振幅 1.55mm, 頻率 10Hz-55Hz, 時間 1 分鐘. X,Y,Z 3 個方向各 2 小時, 共 6 小時.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | After the test the part shall meet specifications without any damage in appearance and performance except SPL. The SPL shall be in $\pm 10\text{dB}$ compared with initial one.<br>經測試後, 單體除音壓外, 外觀及電氣特性須符合規格. 輸出音壓變化量須在 $\pm 10\text{dB}$ 內. |

## G. Recommended Temperature Profile For Reflow Oven 建議迴焊爐溫度曲線



## H. 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 +80°C for 96hours<br>置於+80°C環境中 96 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 -30°C for 96 hours<br>置於-30°C環境中 96 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 2 hours<br>置於+40°C, 相對濕度 90 $\pm$ 5% 環境中 2 小時                                                          |                                                                                                                                                                                                                                                                                                                                          |
| 3   | Temp. Cycle<br>溫度循環測試   | <p>The part shall be subjected to 5 cycles.<br/>單體承受溫度循環測試 5 次, 其循環內容如圖示.</p>  <p>Unit : minute</p> |                                                                                                                                                                                                                                                                                                                                          |

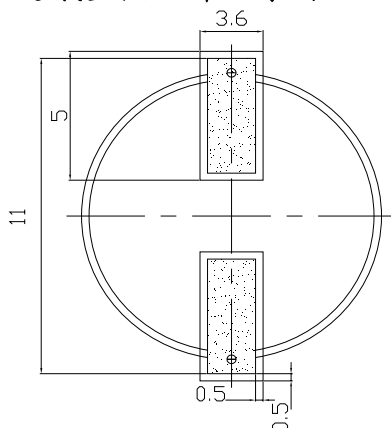
## I. RELIABILITY TEST 信賴性測試

| No. | Item                        | Test condition                                                                                                                                                                                                                                                                                                                                                                                                               | Evaluation standard                                                                                                                                                                                                                                                                                                                                                                          |
|-----|-----------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1   | Operating life test<br>壽命測試 | <p>1.Continuous life test 高溫壽命測試(連續)<br/>250 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.</p> <p>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 <math>\pm</math> 2°C )and maximum rated voltage applied.<br/>在室溫下(+25 <math>\pm</math> 2°C), 以最大額定電壓操作, 通電 1 分鐘/斷電 1 分鐘, 測試 5000 次循環.</p> | <p>Being placed for 4 hours at +25°C, buzzer shall be measured. The value of oscillation frequency/ current consumption should be in <math>\pm 10\%</math> compared with initial ones .The SPL should be in <math>\pm 10\text{dB}</math> compared with initial one.</p> <p>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<math>\pm 10\%</math>內. 輸出音壓變化量須在<math>\pm 10\text{dB}</math> 內.</p> |

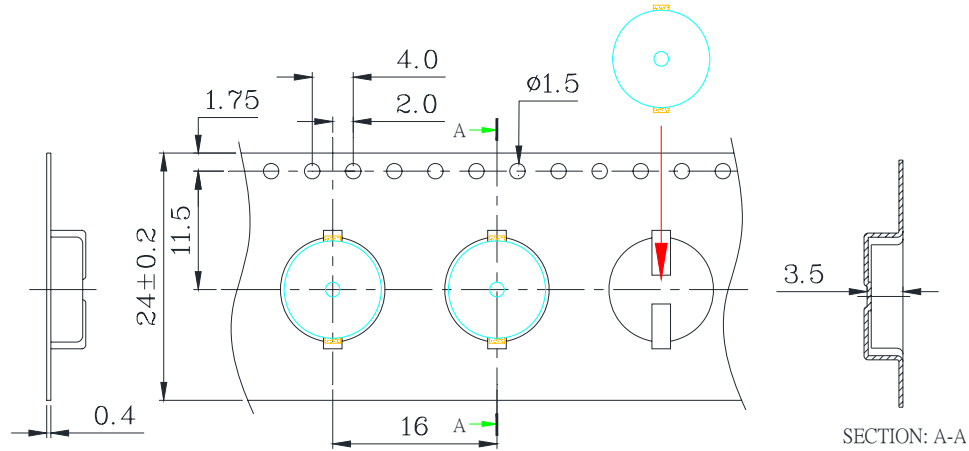
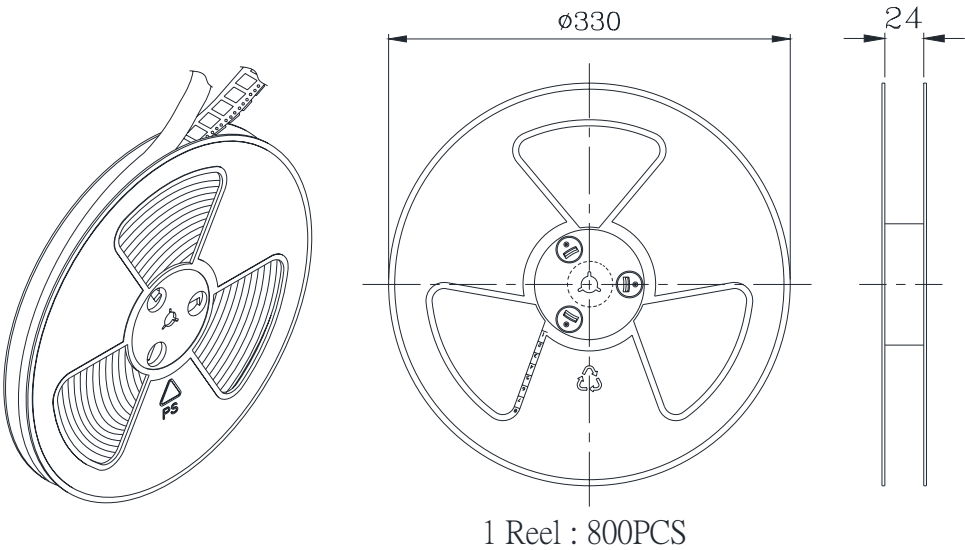
### TEST CONDITION.

|                          |   |                                |                      |                            |
|--------------------------|---|--------------------------------|----------------------|----------------------------|
| 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       |

## J. Recommended land pattern 建議基板設計尺寸圖

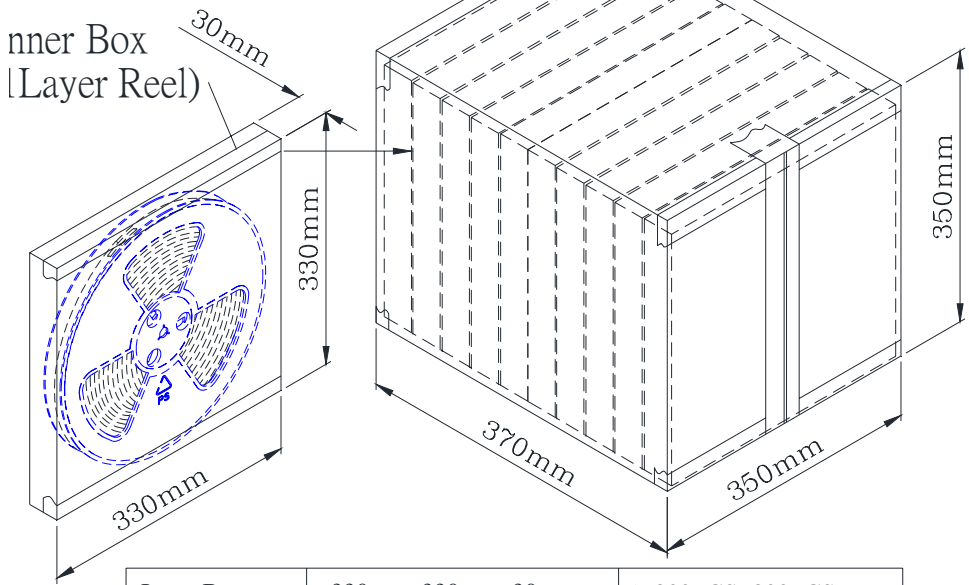


K. PACKING STANDARD 包裝規格



Unit:mm

Carton Box  
(10 Inner Box)



|            |                   |                    |
|------------|-------------------|--------------------|
| Inner Box  | 330mmx330mmx30mm  | 1x800PCS=800PCS    |
| Carton Box | 350mmx350mmx370mm | 10x800PCS=8,000PCS |