

# SPECIFICATION FOR APPROVAL

## 承 認 書

Description : Piezo Telephone Ringer  
Kingstate Part No. : KPE-146  
Customer's Model No. : \_\_\_\_\_  
Specification No. : PKD-1044  
Number Of The Edition : 1.6

| 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      |
|-------------------|--------------------|----------------|
| Jell<br>07/14/03' | Paddy<br>07/14/03' | RITA 07/14/03' |

## A. SCOPE 範疇

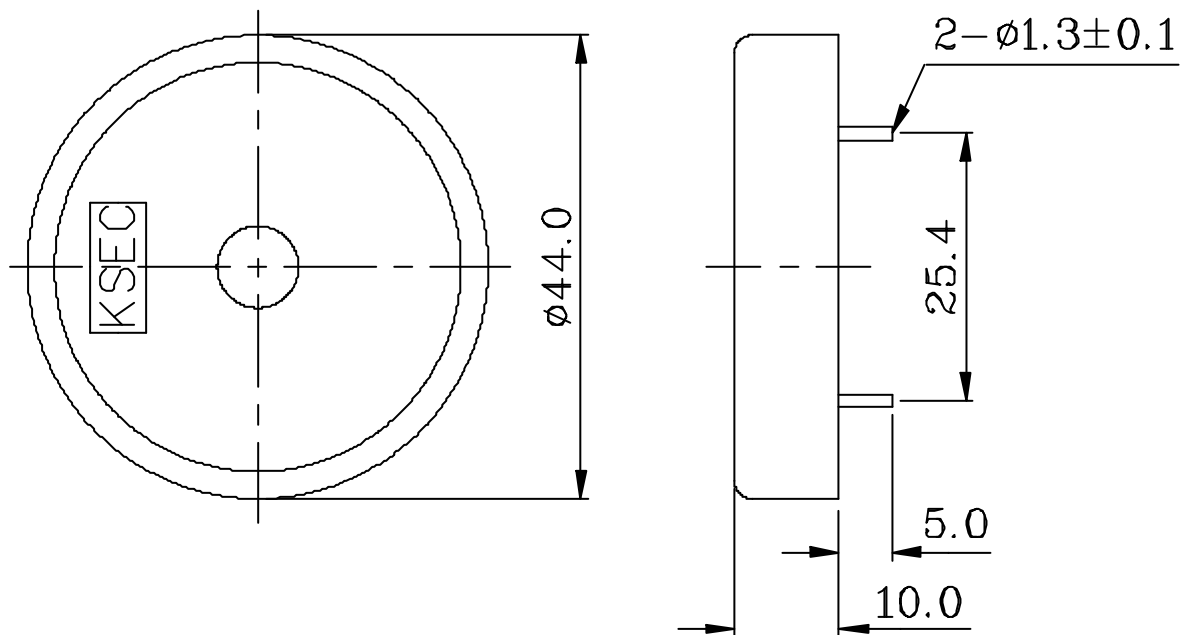
This specification applies piezo audio ringer, **KPE-146**

此規格書適用於壓電式蜂鳴器, **KPE-146**

## B. SPECIFICATION 規格

| No. | Item                           | Unit | Specification                             | Condition                          |
|-----|--------------------------------|------|---|------------------------------------|
| 1   | Operating Volt.<br>操作電壓        | Vp-p | MAX 50                                    |                                    |
| 2   | Current consumption<br>消耗電流    | mA   | MAX 8                                     | at 10Vp-p,square wave,750Hz.       |
| 3   | Sound pressure level<br>輸出音壓   | dB   | MIN 85                                    | at 10cm/10Vp-p,square wave,750Hz.  |
| 4   | Electrostatic capacity<br>靜電容量 | pF   | 70,000 ± 30%                              | at 120Hz/1V                        |
| 5   | Operating temp.<br>操作溫度        |      | -30 ~ +85                                 |                                    |
| 6   | Storage temp.<br>儲存溫度          |      | -40 ~ +95                                 |                                    |
| 7   | Dimension<br>尺寸                | mm   | 44.0x H10.0                               | See appearance drawing<br>請參照外觀尺寸圖 |
| 8   | Weight (MAX)<br>重量             | gram | 8.3                                       |                                    |
| 9   | Material<br>材質                 |      | ABS UL-94 1/16" HB HIGH HEAT<br>( BLACK ) |                                    |
| 10  | Terminal<br>端子                 |      | Pin type                                  | See appearance drawing<br>請參照外觀尺寸圖 |

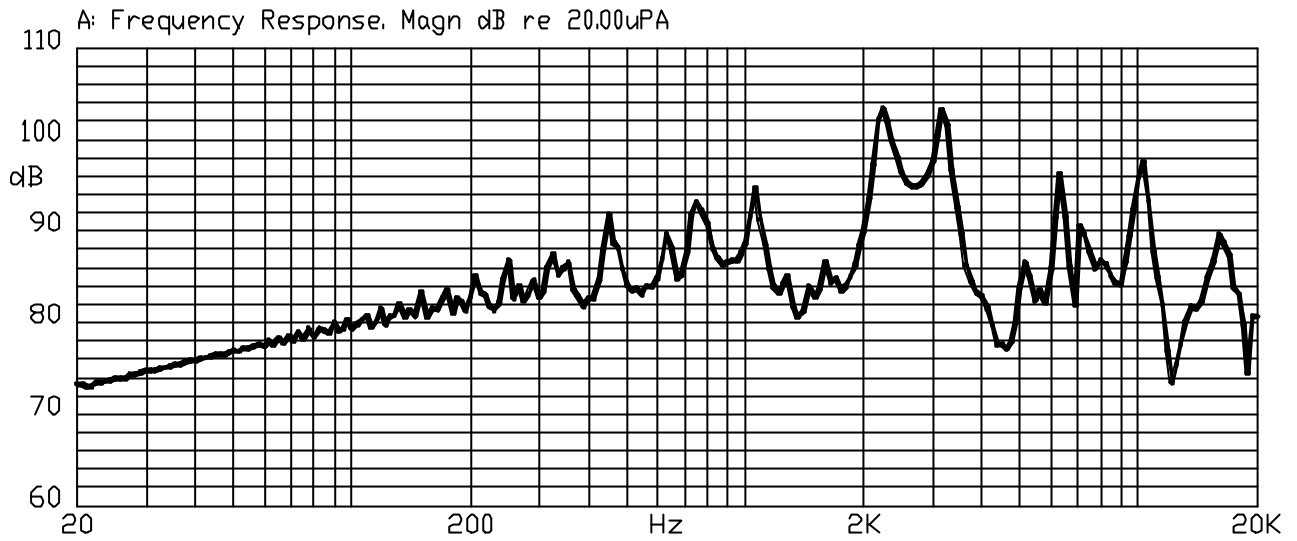
## C. APPEARANCE DRAWING 外觀尺寸圖



**Tol : ±0.5**

**Unit: mm**

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

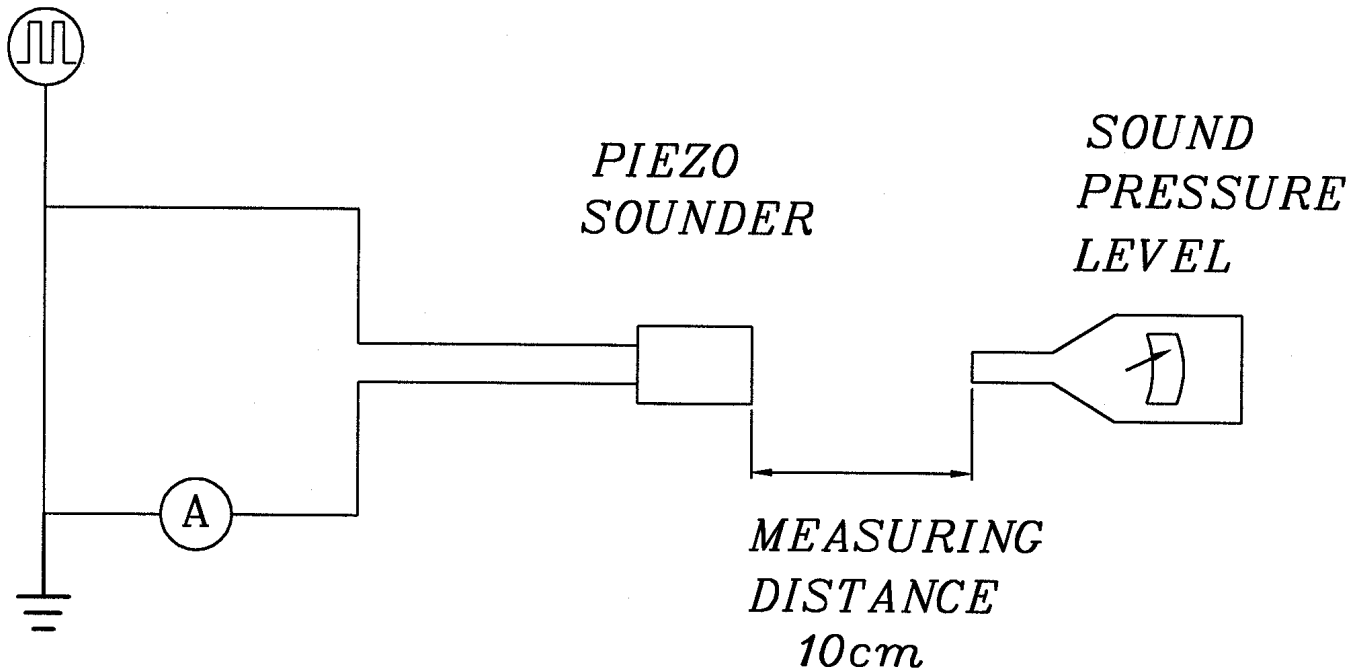


## E. MEASURING METHOD 測量方法

S.P.L. Measuring Circuit 音壓測試接線圖

Input Signal: 10Vp-p, 750Hz, Square Wave

輸入信號: 10Vp-p, 750Hz, 方波



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

Mic : RION 噪音計 UC30 或同等品

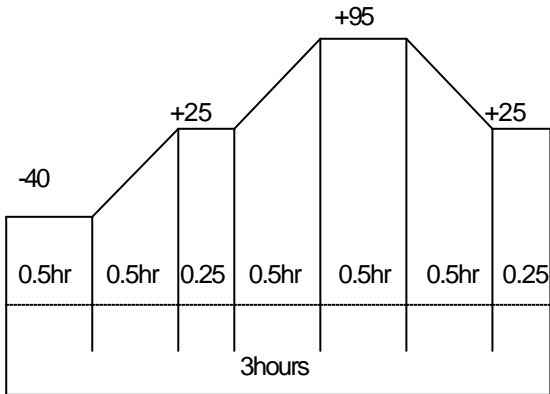
S.G : Hewlett Packard 33120A Function Generator or equivalent

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 $+230\pm 5$ for $3\pm 0.5$ seconds.<br>端子部份浸入松香溶液 5 秒後,再浸入 $+230\pm 5$ 溶融焊錫槽 $3\pm 0.5$ 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 solder's body in solder bath of $+300\pm 5$ for $3\pm 0.5$ seconds or $+260\pm 5$ for $10\pm 1$ seconds.<br>距離端子根部 1.5mm 的位置,浸入 $+300\pm 5$ 的焊錫槽 $3\pm 0.5$ 秒,或 $+260\pm 5$ 的焊錫槽 $10\pm 1$ 秒 | No interference in operation<br>操作上無任何不良  |
| 3   | Terminal Strength Pulling<br>端子強度  | The force 10 seconds of 9.8N is applied to each terminal in axial direction.<br>各端子的軸方向施以 9.8N 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. 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 $\pm 10\%$ compared with initial ones .The SPL should be in $\pm 10$ dB compared with initial one. |
| 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.   | 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 $\pm 10$ dB 內.   |

## 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 $+95$ for 240 hours<br>置於 $+95$ 環境中 240 小時   | Being placed for 4 hours at $+25$ , 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 $\pm 10$ dB compared with initial one.<br>經測試後, 靜置於 $+25$ (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 $\pm 10$ dB 內. |
| 2   | Low temp. test<br>低溫測試     | After being placed in a chamber at $-40$ for 240 hours<br>置於 $-40$ 環境中 240 小時   |   |
| 3   | Humidity test<br>相對濕度測試    | After being placed in a chamber at $+40$ and $90\pm 5\%$ relative humidity for 240 hours<br>置於 $+40$ , 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>250 hours continuous operation at +85 with maximum rated voltage applied.<br>在+85 環境下,以最大額定電壓連續操作 250小時<br>2. Intermittent life test 室溫壽命測試(間歇)<br>A duty cycle of 1 minute on, 5 minutes off, a minimum of 10000 times at room temp. (+25±2 )and maximum rated voltage applied<br>在室溫下(+25±2 ), 以最大額定電壓操作, 通電 1分鐘斷電 5分鐘測試 10000 次循環。 | Being placed for 4 hours at +25 , buzzer shall be measured. The value of oscillation frequency/ current consumption should be in ±10% compared with initial ones .The SPL should be in ±10dB compared with initial one.<br>經測試後, 靜置於+25 (室溫) 環境中 4 小時後諧振頻率與消耗電流變化量須在±10%內。輸出音壓變化量須在±10dB 內。 |

### TEST CONDITION.

|                                    |   |                           |                      |                            |
|------------------------------------|---|---------------------------|----------------------|----------------------------|
| Standard Test Condition<br>一般測試條件  | : | a) Temperature : +5 ~ +35 | b) Humidity : 45-85% | c) Pressure : 860-1060mbar |
| Judgment Test Condition<br>爭議時測試條件 | : | a) 溫度 : +5 ~ +35          | b) 濕度 : 45-85%       | c) 氣壓 : 860-1060mbar       |
|                                    | : | a) Temperature : +25 ± 2  | b) Humidity : 60-70% | c) Pressure : 860-1060mbar |
|                                    | : | a) 溫度 : +25 ± 2           | b) 濕度 : 60-70%       | c) 氣壓 : 860-1060mbar       |

## I. PACKING STANDARD 包裝規格

