

# SPECIFICATION FOR APPROVAL

## 承 認 書

Description : **Piezo Audio Indicator**

Kingstate Part No. : **KPEG460**

Customer's Model No. :

Specification No. : **PKD-7484**

Number Of The Edition : **1.2**

### CUSTOMER'S APPROVED SIGNATURE

|  |  |  |
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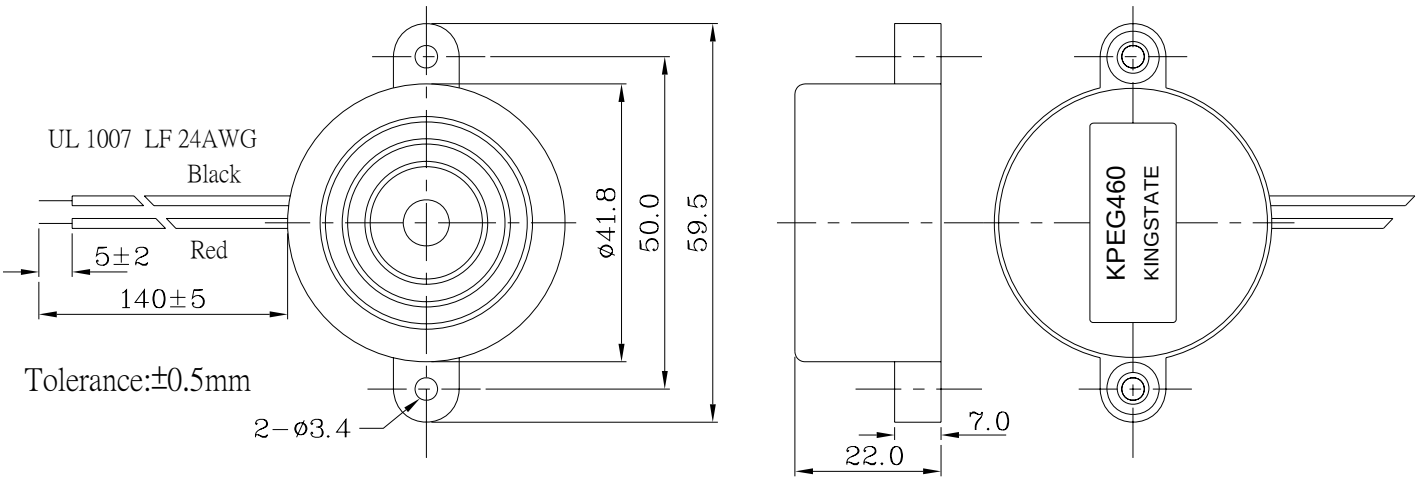
A. SCOPE 範疇

This specification applies piezo audio indicator, **KPEG460**  
此規格書適用於壓電式蜂鳴器, **KPEG460**

B. SPECIFICATION 規格

| No. | Item                                           | Unit | Specification      | Condition                          |
|-----|------------------------------------------------|------|--------------------|------------------------------------|
| 1   | Operating Frequency<br>操作頻率                    | Hz   | 300 ± 50           |                                    |
| 2   | Operating Volt. range<br>操作電壓範圍                | VDC  | 9 ~ 14             |                                    |
| 3   | Current consumption<br>消耗電流                    | mA   | MAX 70             | at 12VDC                           |
| 4   | Sound pressure level<br>輸出音壓                   | dB   | MIN 89             | 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                        | ℃    | -20 ~ + 60         |                                    |
| 8   | Storage temp.<br>儲存溫度                          | ℃    | -30 ~ + 70         |                                    |
| 9   | Dimension<br>尺寸                                | mm   | φ41.8 x H22.0      | See appearance drawing<br>請參照外觀尺寸圖 |
| 10  | Weight (MAX)<br>重量                             | gram | 17.4               |                                    |
| 11  | Material<br>材質                                 |      | ABS UL-94 1/16" HB |                                    |
| 12  | Terminal<br>端子                                 |      | Wire type          | See appearance drawing<br>請參照外觀尺寸圖 |
| 13  | Environmental<br>Protection Regulation<br>環保法規 |      | RoHS               |                                    |

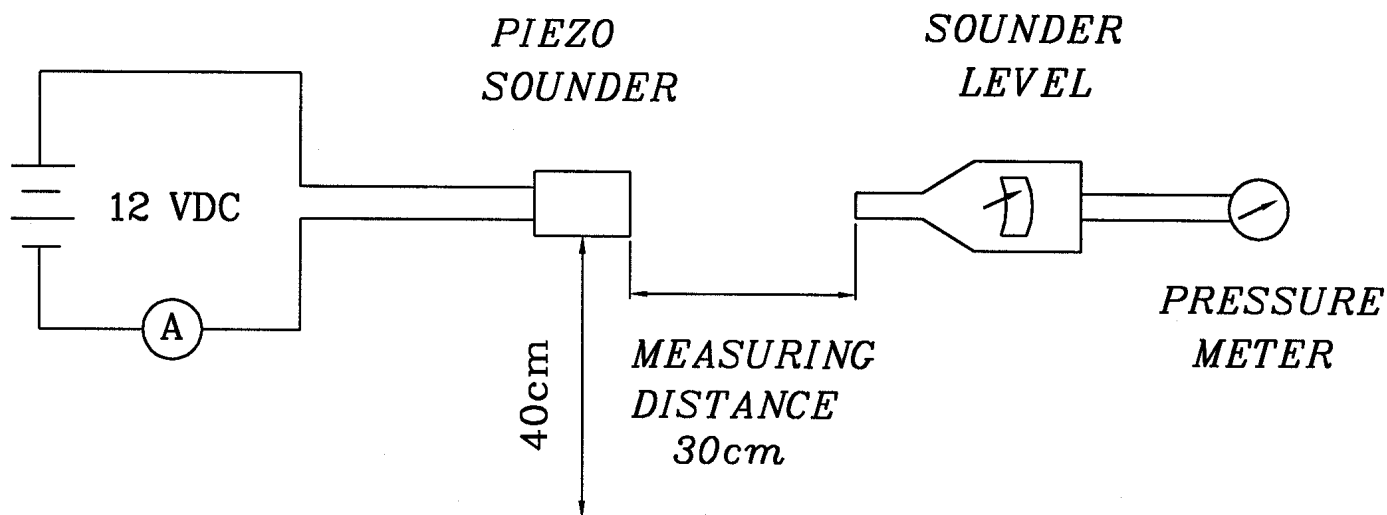
C. APPEARANCE DRAWING 外觀尺寸圖



**Tol: ± 0.5**  
**Unit: mm**

## D. MEASURING METHOD 測量方法

S.P.L. Measuring Circuit 音壓測試接線圖



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

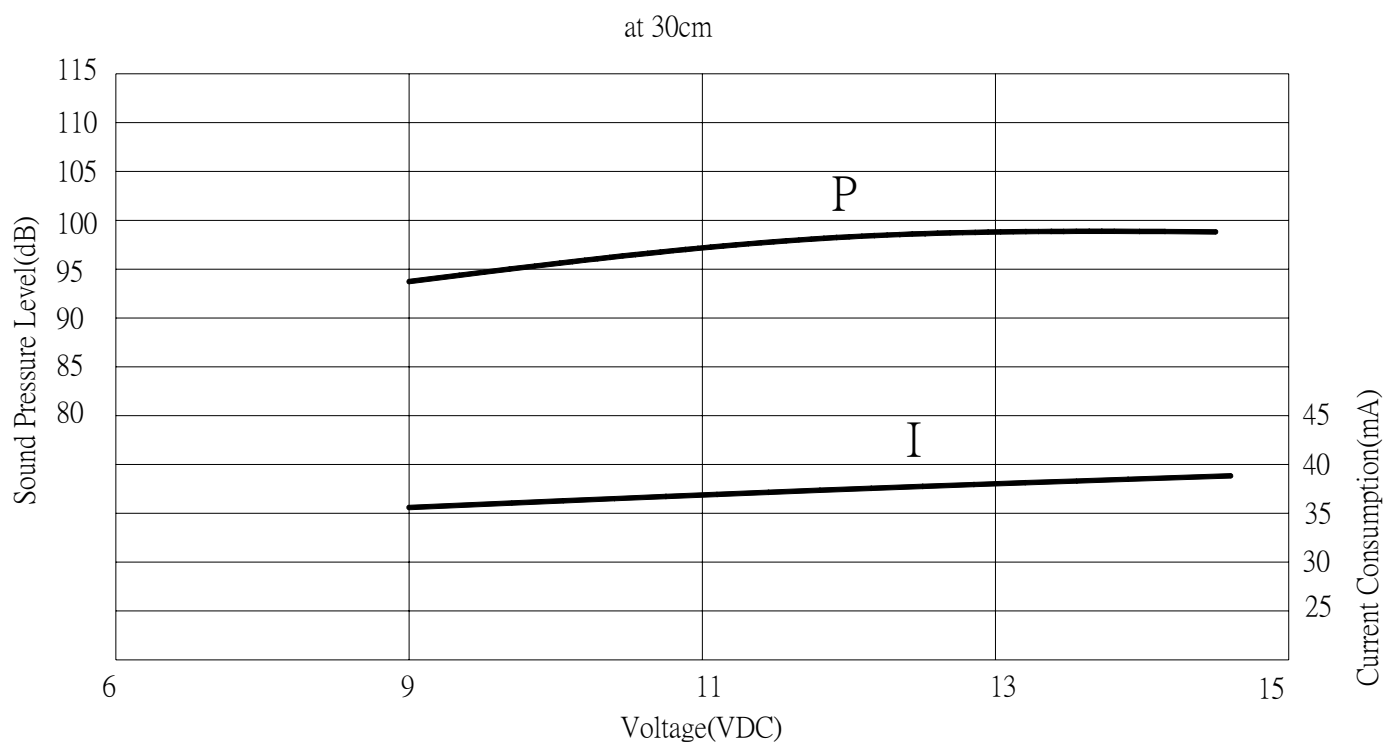
Mic : RION 噪音計 UC30 或同等品

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

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

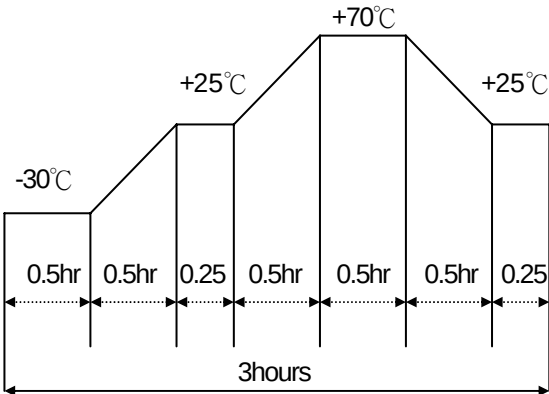
### CHARACTERISTICS 電壓與音壓/電壓與耗電流之特性



## F. MECHANICAL CHARACTERISTICS 機械特性

| No. | Item                                                       | Test Condition                                                                                                                                                                                                               | Evaluation standard                                                                                                                                                           |
|-----|------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1   | Solderability<br>焊錫附著性<br>(Connector excepted)<br>端子類不適用此項 | Stripped wires of lead wires are immersed in rosin for 5 seconds and then immersed in solder bath of $+270\pm5^{\circ}\text{C}$ for $3\pm0.5$ seconds.<br>裸線部份浸入松香溶液5秒後,再浸入 $+270\pm5^{\circ}\text{C}$ 熔融焊錫槽 $3\pm0.5$ 秒.    | 90% min. stripped wires shall be wet with solder.(Except the edge of terminal)<br>浸入裸線部份附著焊錫 90%以上.(末端斷面不算)                                                                   |
| 2   | Lead Wire Pull Strength<br>線材拉力                            | The pull force shall be applied to double lead wire :<br>Horizontal 3.0N(0.306kg) for 30 seconds.<br>Vertical 2.0N(0.204kg) for 30 seconds.<br>雙線材水平方向施以 3.0N(0.306kg)的力量, 垂直方向施以 2.0N(0.204kg)的力量,各 30 秒                    | No damage and cutting off.<br>線材不鬆動,不脫落.                                                                                                                                      |
| 3   | 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 $\pm 10\%$ compared with initial ones .The SPL should be in $\pm 10\text{dB}$ compared with initial one. |
| 4   | 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 $\pm 10\text{dB}$ 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 $+70^{\circ}\text{C}$ for 240 hours<br>置於 $+70^{\circ}\text{C}$ 環境中 240 小時                                                                                      | Being placed for 4 hours at $+25^{\circ}\text{C}$ , 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 $+25^{\circ}\text{C}$ (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 with $-30^{\circ}\text{C}$ for 240 hours<br>置於 $-30^{\circ}\text{C}$ 環境中 240 小時                                                                                    |                                                                                                                                                                                                                                                                                                                                                                           |
| 3   | Humidity test<br>相對濕度測試    | After being placed in a chamber at $+40^{\circ}\text{C}$ and $90\pm 5\%$ relative humidity for 240 hours<br>置於 $+40^{\circ}\text{C}$ , 相對濕度 $90\pm 5\%$ 環境中 240 小時                                 |                                                                                                                                                                                                                                                                                                                                                                           |
| 4   | Temp. cycle test<br>溫度循環試驗 | <p>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 :</p>  |                                                                                                                                                                                                                                                                                                                                                                           |

H. 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/>48 hours continuous operation at +45°C with rated voltage applied.<br/>在+45°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±2°C)and rated voltage applied.<br/>在室溫下(+25±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.</p> | <p>Being placed for 4 hours at +25°C, 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.</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±10%內. 輸出音壓變化量須在±10dB 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       |
| Judgment Test Condition | : | a) Temperature : +25 ± 2°C  | b) Humidity : 60-70% | c) Pressure : 860-1060mbar |
| 爭議時測試條件                 | : | a) 溫度 : +25 ± 2°C           | b) 濕度 : 60-70%       | c) 氣壓 : 860-1060mbar       |

I. PACKING STANDARD 包裝規格

