

SPECIFICATION FOR APPROVAL

承 認 書

Description : **Piezo Audio Transducer**

Kingstate Part No. : **KPEG153L-2K**

Customer's Model No. :

Specification No. : **DOD-S937**

Number Of The Edition : **1.5**

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
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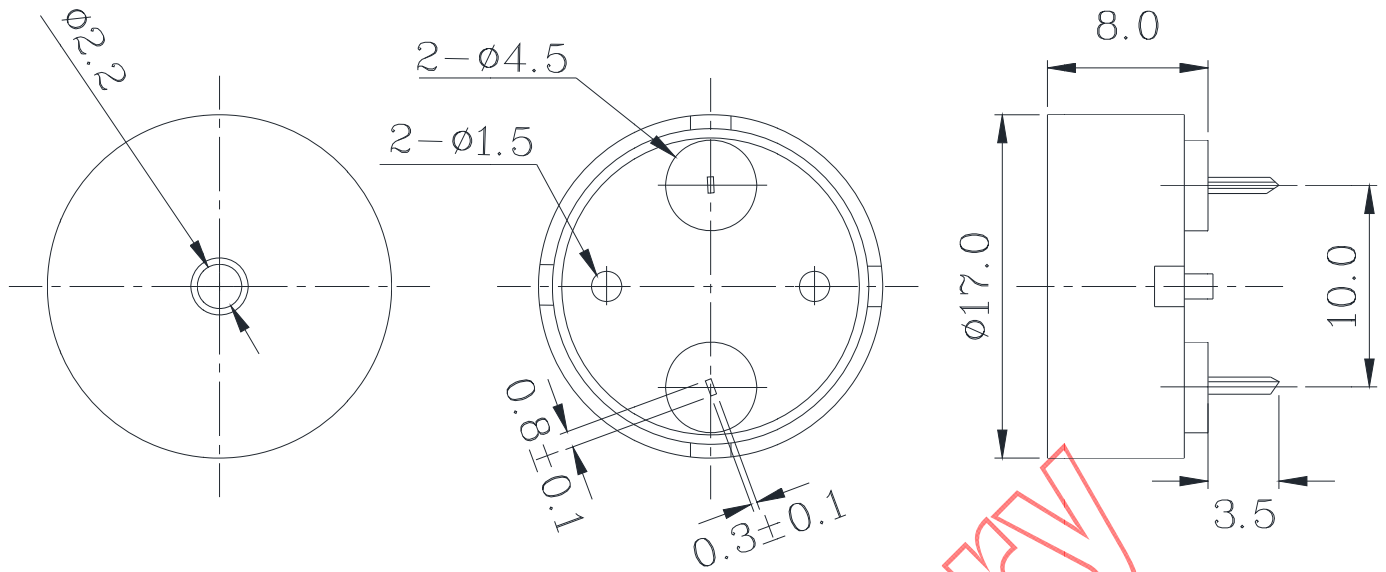
A. SCOPE 範疇

This specification applies piezo audio transducer, **KPEG153L-2K**
此規格書適用於壓電式蜂鳴器, **KPEG153L-2K**

B. SPECIFICATION 規格

No.	Item	Unit	Specification	Condition
1	Operating Volt. 操作電壓	Vp-p	2 ~ 30	
2	Rated Voltage 額定電壓	Vp-p	10	
3	Current consumption 消耗電流	mA	© Max 10	At 10Vp-p, square wave, 2.0KHz
4	Sound pressure level 輸出音壓	dB	© MIN 78	at 10cm/10Vp-p,square wave,2.0KHz
5	Electrostatic 靜電容量	pF	© 25,000 ± 35%	At 120Hz/1V
6	Operating temp. 操作溫度	°C	-35~ +80	
7	Storage temp. 儲存溫度	°C	-40 ~ +85	
8	Dimension 尺寸	mm	φ 17.0x H8.0	See appearance drawing 請參照外觀尺寸圖
9	Weight (MAX) 重量	gram	1.95	
10	Material 材質		PBT (BLACK)	
11	Terminal 端子		Pin type	See appearance drawing 請參照外觀尺寸圖
12	Environmental Protection Regulation 環保法規		RoHS2.0	Piezo electronic device is exempted from RoHS2.0. Lead contain restriction. 壓電陶瓷片產品含鉛是 RoHS2.0 豁免

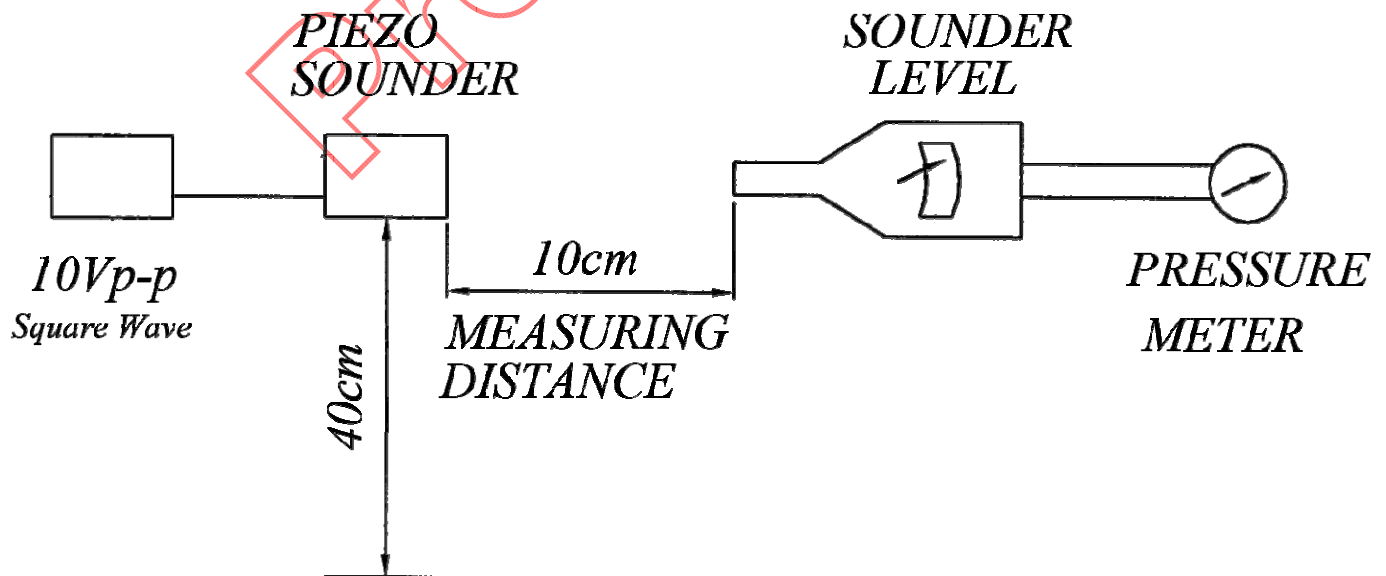
C. APPEARANCE DRAWING 外觀尺寸圖



Tol : ± 0.5
Unit : mm

D. MEASURING METHOD 測量方法

S.P.L. Measuring Circuit 音壓測試接線圖
 Input Signal: 10Vp-p, 2.0kHz, Square Wave
 輸入信號: 10Vp-p, 2.0kHz, 方波



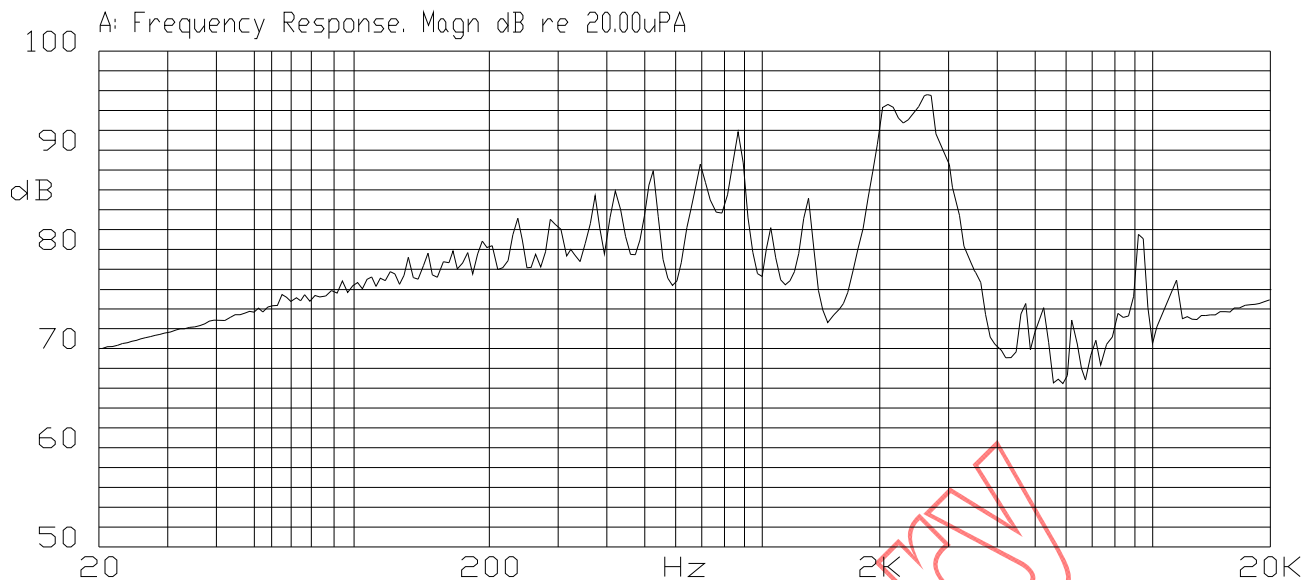
Mic : RION S.P.L meter UC30 or equivalent

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

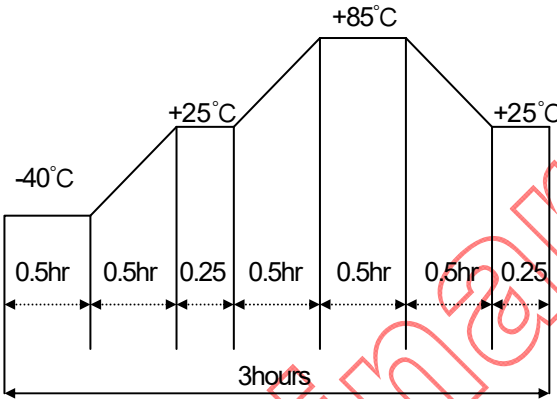
E. TYPICAL FREQUENCY RESPONSE CURVE 頻率響應曲線



F. MECHANICAL CHARACTERISTICS 機械特性

No.	Item	Test Condition	Evaluation standard
1	Solderability 焊錫附著性 (端子類不適用)	Stripped wires of lead wires are immersed in rosin for 5 seconds and then immersed in solder bath of $+270\pm 5^{\circ}\text{C}$ for 3 ± 0.5 seconds. 裸線部份浸入松香溶液 5 秒後,再浸入 $+270\pm 5^{\circ}\text{C}$ 溶融焊錫槽中 3 ± 0.5 秒.	90% min. stripped wires shall be wet with solder.(Except the edge of terminal) 浸入裸線部份附著焊錫 90%以上(末端斷面不算)
2	Soldering Heat Resistance 焊錫耐熱性 (端子類不適用)	Stripped wires are immersed up to 1.5mm from insulation in solder bath of $+300\pm 5^{\circ}\text{C}$ for 3 ± 0.5 seconds or $+260\pm 5^{\circ}\text{C}$ for 10 ± 1 seconds, and then solder shall be measured after being placed in natural condition for 4 hours. 距絕緣體 1.5mm 的位置,浸入 $+300\pm 5^{\circ}\text{C}$ 的焊錫槽 3 ± 0.5 秒,或 $+260\pm 5^{\circ}\text{C}$ 的焊錫槽 10 ± 1 秒.	No interference in operation. 操作上無任何不良.
3	Lead Wire Pull Strength 線材拉力	The pull force shall be applied to double lead wire: Horizontal 3.0N for 30 seconds. Vertical 2.0N for 30 seconds. 雙線材水平方向施以 3.0N 的力量,垂直方向施以 2.0N 的力量,各 30 秒	No damage and cutting off. 線材不鬆動,不脫落.
4	Vibration 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 $\pm 10\text{dB}$ compared with initial one.
5	Drop test 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). 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 高溫測試	After being placed in a chamber at +85°C for 96hours 置於+85°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 ±10% compared with initial ones .The SPL should be in ±10dB compared with initial one. 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.
2	Low temp. test 低溫測試	After being placed in a chamber at -40°C for 96 hours 置於-40°C環境中 96 小時	
4	Temp./ Humidity Cycle 溫度/溼度循環測試	The part shall be subjected to 10 cycles. One cycle shall be 24 hours and consist of; 單體承受溫度/溼度循環測試 10 次.其循環內容如圖示 	

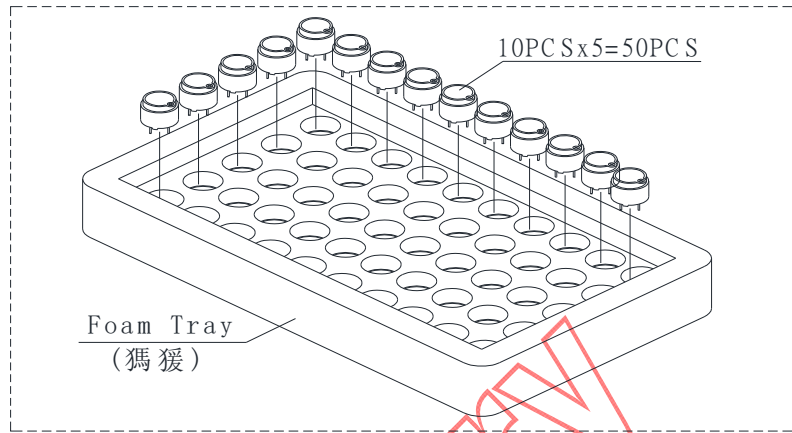
H. RELIABILITY TEST 信賴性測試

No.	Item	Test condition	Evaluation standard
1	Operating life test 壽命測試	1.Continuous life test 高溫壽命測試(連續) 48hours continuous operation at +65°C with rated voltage applied. 在+65°C環境下,以額定電壓連續操作 48 小時 2.Intermittent life test 室溫壽命測試(間歇) A duty cycle of 1 minute on, 1 minutes off, a minimum of 10000 times at room temp.(+25±2°C)and rated voltage applied 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 10000 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 ±10% compared with initial ones .The SPL should be in ±10dB compared with initial one. 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..

TEST CONDITION.

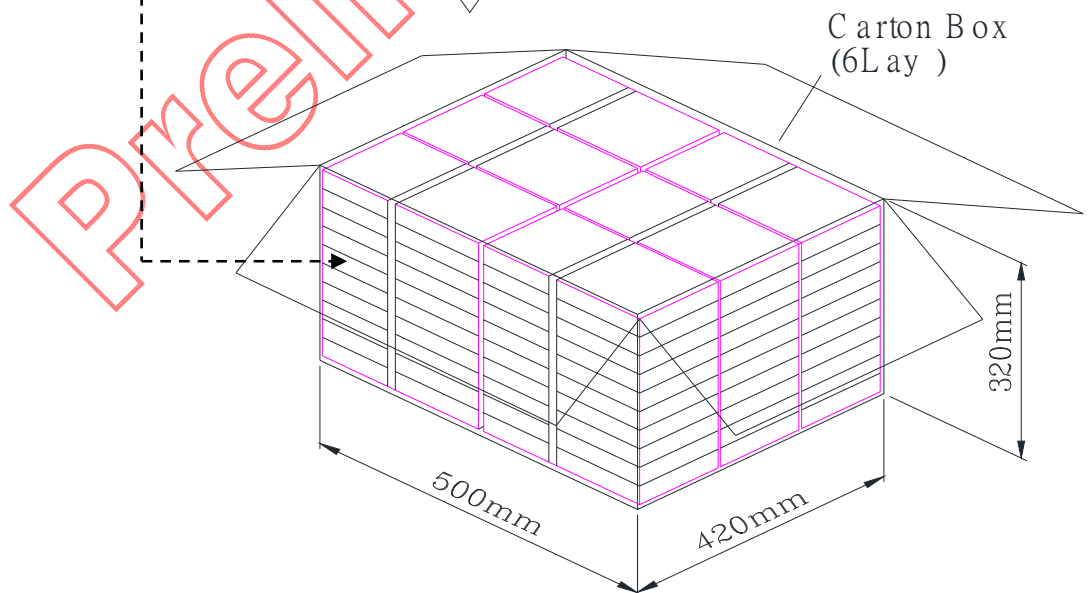
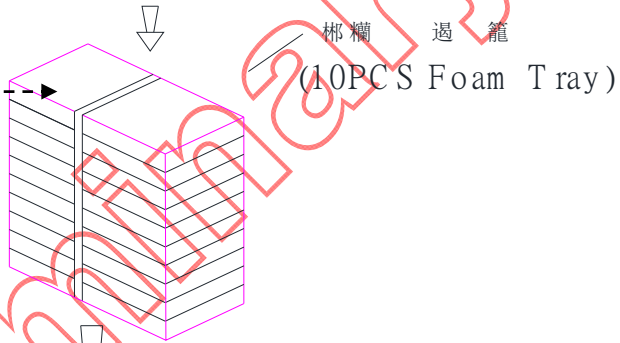
Standard Test Condition 一般測試條件	:	a) Temperature : +5 ~ +35°C	b) Humidity : 45-85%	c) Pressure : 860-1060mbar
Judgement Test Condition 爭議時測試條件	:	a) Temperature : +25 ± 2°C	b) Humidity : 60-70%	c) Pressure : 860-1060mbar

I.PACKING STANDARD 包裝規格



Lot No.	XXXXXXXXXX
Part No.	XXXXXXXXXX
Quantity	XXXX Pcs
Date:	
WWYY	HSF

* The label stuck on inner boxes and the outer of carton.



Foam Tray	230m m x 135m m x 35m m	1x50PCS=50PCS
Lay		10x50PCS=500PCS
C arton B ox	500m m x 420m m x 320m m	6x500PCS=3000PCS