

SPECIFICATION FOR APPROVAL

承 認 書

Description : Piezo Transducer
Kingstate Part No. : KPEG137A30PB1
Customer's Model No. : _____
Specification No. : PKD-9596
Number Of The Edition : 1.1

CUSTOMER'S APPROVED SIGNATURE		

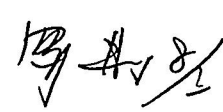

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Approved by	Checked by	Issued by
	 2020.08.03	陽志明 2020. 07. 30

A. SCOPE 範疇

This specification applies piezo audio transducer, **KPEG137A30PB1**

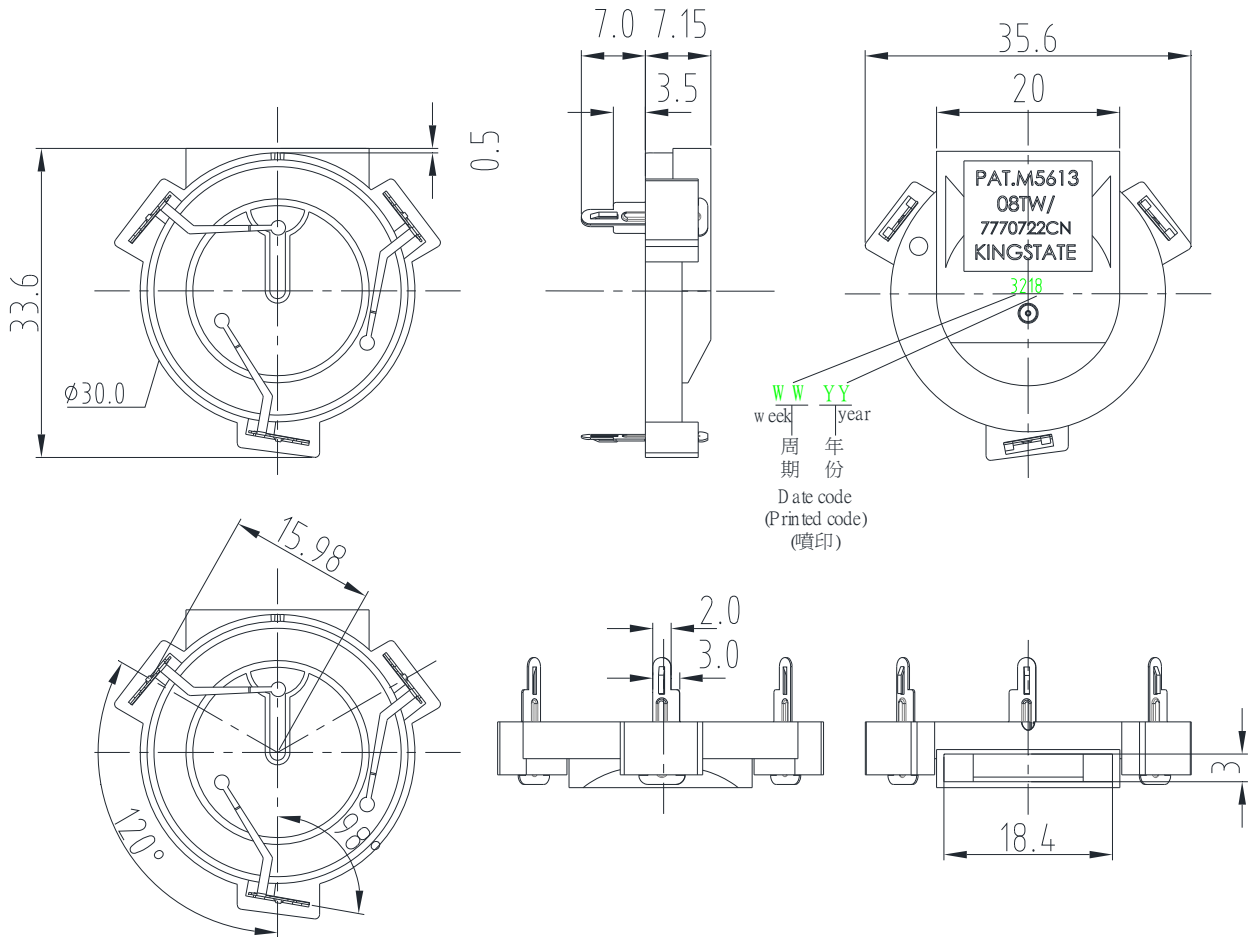
此規格書適用於壓電式蜂鳴器, **KPEG137A30PB1**

B. SPECIFICATION 規格

No.	Item	Unit	Specification	Condition
1	Operating Frequency 操作頻率	KHz	3.2±0.5	
2	Operating Volt. 操作電壓範圍	VDC	6 ~ 16	Base on using RE46C100
3	Current consumption 消耗電流	mA	Max 60 (Typical 50)	Measure by KEYSIGHT 34461A
4	Sound pressure level 輸出音壓	dB	MIN 105	At 30 cm driven by RE46C100 14VDC
5	Rated Voltage 額定電壓	VDC	14	Base on using RE46C100
6	Electrostatic capacity 靜電容量	pF	55,000±30%	At 1KHz 1Vrms
7	Tone 聲音		Continuous 直音	
8	Operating temp. 操作溫度	°C	-20 ~ +70	
9	Storage temp./Humidity 儲存溫度/濕度	°C/RH%	-30 ~ +80 / 20-75RH%	
10	Dimension 尺寸	mm	φ 35.6 x H7.15	See appearance drawing 請參照外觀尺寸圖
11	Weight (MAX) 重量	gram	5.0	
12	Material 材質		PBT+30%Glass UL-94V0 (BLACK)	
13	Terminal 端子		Pin Type (Pin 鍍全錫)	
14	Environmental Protection Regulation 環保法規		RoHS 2.0	

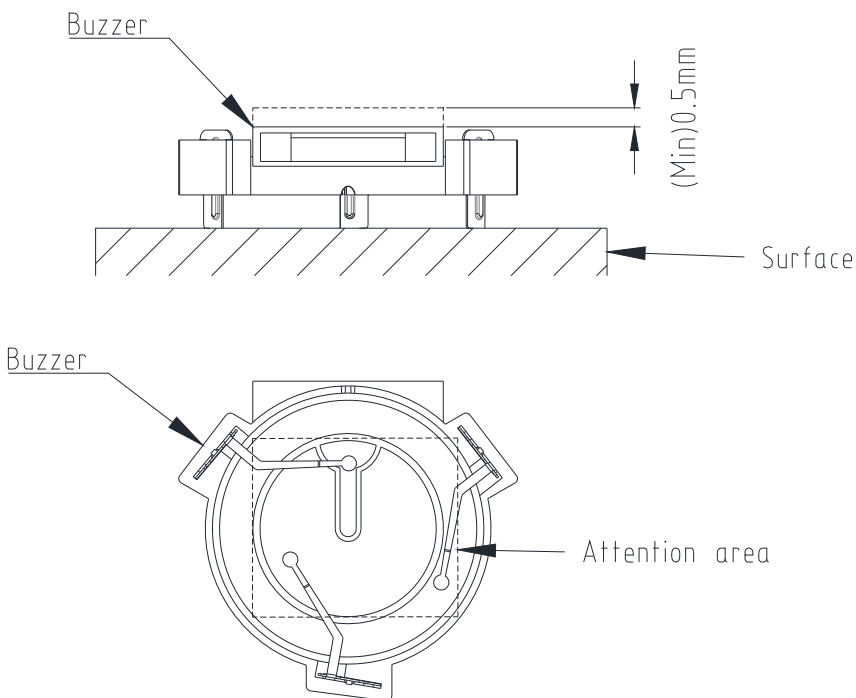
Number of the patent : M561308 (TW), 7770722 (CN)

C. APPEARANCE DRAWING 外觀尺寸圖



Tol : ± 0.5
Unit : mm

D. THE NOTICE DURING INSTALLATION 安裝注意事項



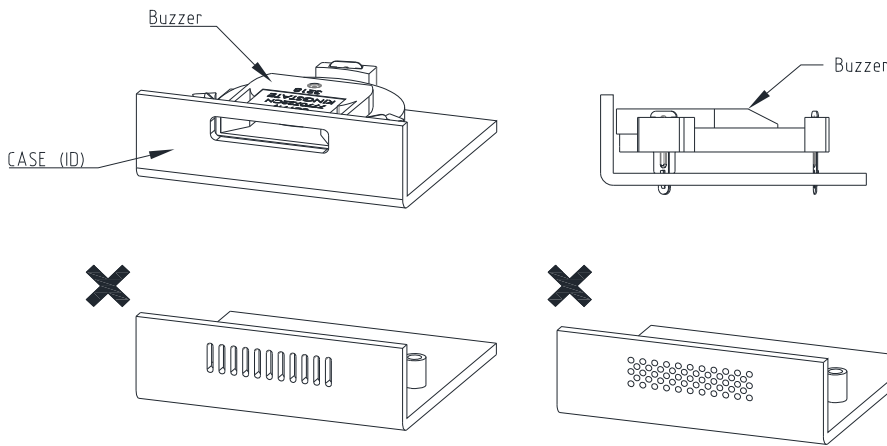
產品本身與接觸面建議須預留至少0.5mm以上，且檯面中間不能有任何突起物(或結構)

It's recommended reserve at least 0.5mm between the product and the surface. And the surface must not have any protrusions.

產品錫點正上方若與任何可能導電平面接近，高度建議產品機構面貼上絕緣膠帶(非貼錫點)以防短路狀況發生。

If buzzer's piezo side close to any potentially conductive surface, it is recommended that the product body surface (not piezo side) should add insulating tape to prevent short circuit conditions.

E.THE NOTICE OF THE CASE ID DESIGN 產品出音口設計注意事項



產品出音口與前殼出音口需越接近越理想，若距離過遠可能會影響音壓表現。且建議出音口造型越簡單越好，不要有任何阻礙物為佳。

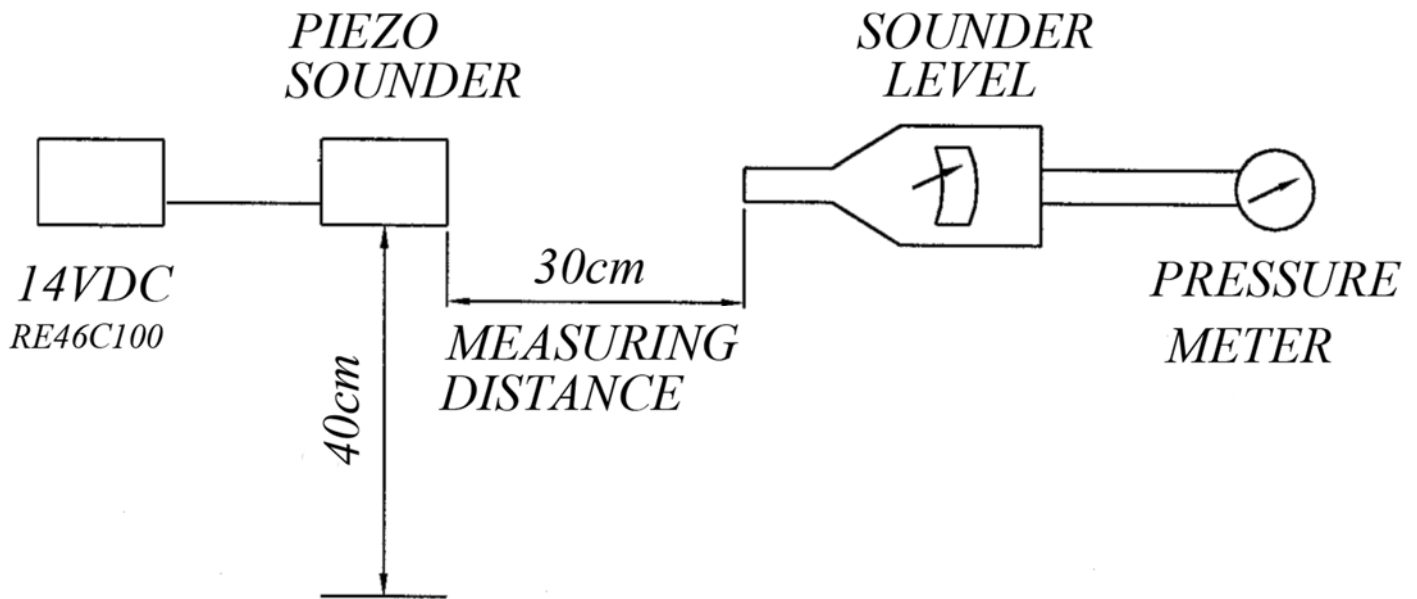
The buzzer should be as close as possible to the front case or the SPL will decrease. And we suggest the design of the sound hole should be simple.

這兩種開孔方式皆可能導致音壓下降6~12dB 強烈建議開孔盡量避免緊密的設計。

Both types of ID design may decrease the SPL 6 to 12dB, it's highly recommended to avoid these designs.

F. MEASURING METHOD 測量方法

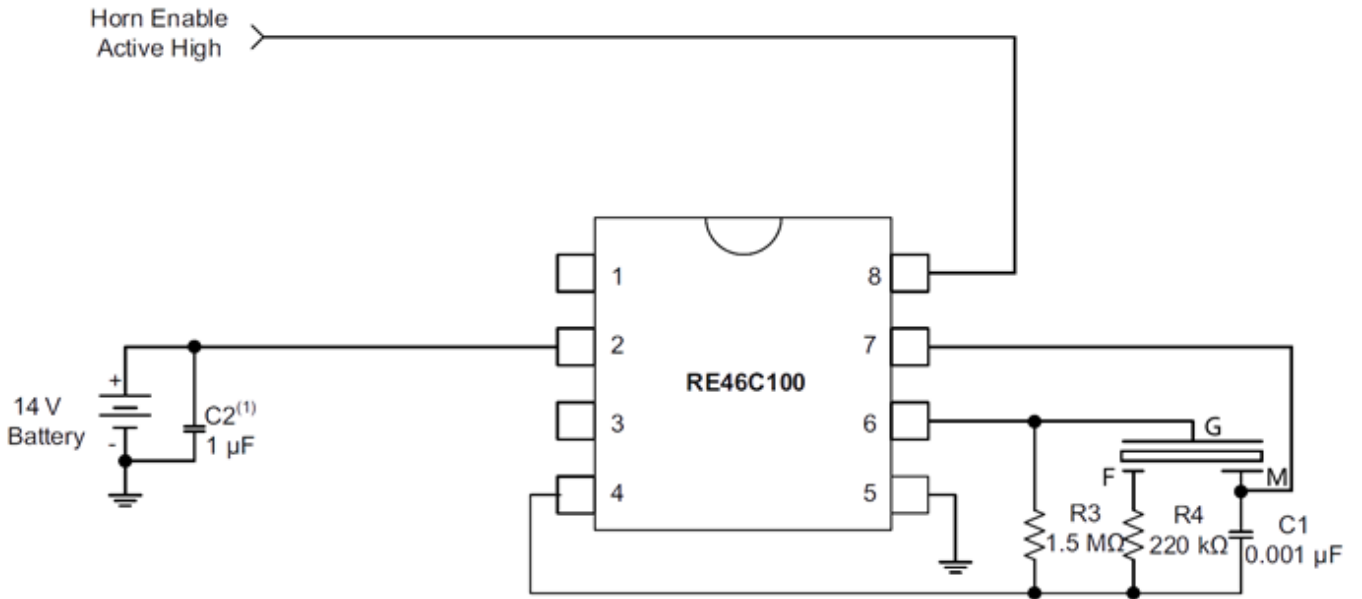
1. S.P.L. Measuring Circuit 音壓測試接線圖



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

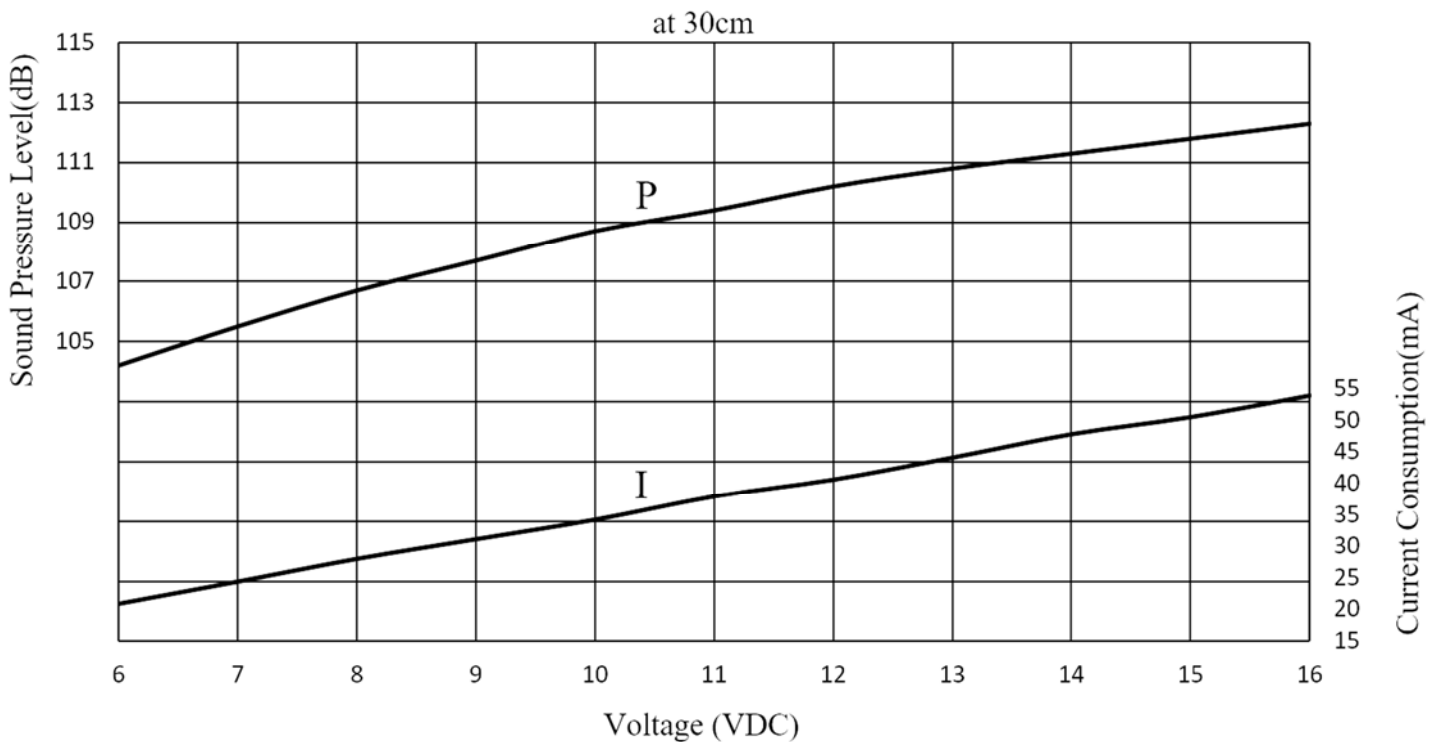
Mic : RION 噪音計 UC30 或同等品

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器迴路所量測



Note 1: Place C2 close to the device power pins to minimize horn switching noise.

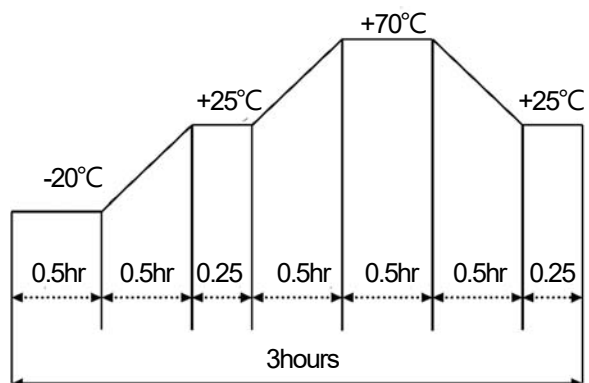
G. VOLTAGE: SOUND PRESSURE LEVEL / VOLTAGE: CURRENT CONSUMPTION CHARACTERISTICS 電壓與音壓/電壓與耗電流之特性



H. MECHANICAL CHARACTERISTICS 機械特性

No.	Item	Test Condition	Evaluation standard
1	Solderability 焊錫附著性	Lead terminals are immersed in rosin for 5 seconds and then immersed in solder bath of $+270\pm 5^{\circ}\text{C}$ for 3 ± 1 seconds. 端子部份浸入松香溶液 5 秒後,再浸入 $+270\pm 5^{\circ}\text{C}$ 熔融焊錫槽中 3 ± 1 秒。	90% min. lead terminals shall be wet with solder. (Except the edge of terminal) 浸入端子部份附著焊錫 90%以上。(末端斷面不算)
2	Soldering Heat Resistance 焊錫耐熱性	Lead terminal are immersed up to 1.5mm from solder's body 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. 距離端子根部 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 操作無任何不良。
3	Terminal Mechanical Strength 端子強度	The force 10 seconds of 9.8N (1.0kg) is applied to each terminal in axial direction. 各端子的軸方向施以 9.8N (1.0kg) 的力量 10 秒。	No damage and cutting off 端子不鬆動, 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 perpendicular 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 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。

I. 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 $+70^{\circ}\text{C}$ for 240 hours 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. 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 低溫測試	After being placed in a chamber at -20°C for 240 hours 置於 -20°C 環境中 240 小時	
3	Humidity test 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 置於 $+40^{\circ}\text{C}$, 相對濕度 $90\pm 5\%$ 環境中 240 小時	
4	Temp. cycle test 溫度循環試驗	The part shall be subjected to 5 cycles. One cycle shall be consist of: 單體承受溫度循環測試 5 次,其循環內容如圖示: 	

J. RELIABILITY TEST 信賴性測試

No.	Item	Test condition	Evaluation standard
1	Operating life test 壽命測試	<p>1. Continuous life test 高溫壽命測試(連續) 48 hours continuous operation at +55°C with rated voltage applied. 在+55°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) 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 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>

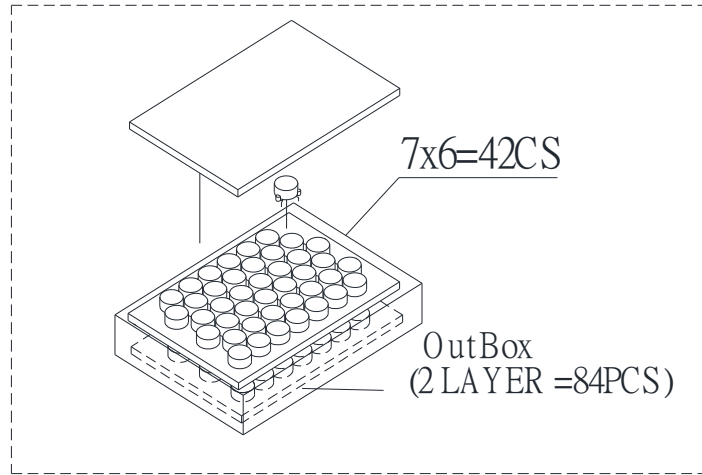
TEST CONDITION.



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
Judgement 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

K.PACKING STANDARD 包裝規格

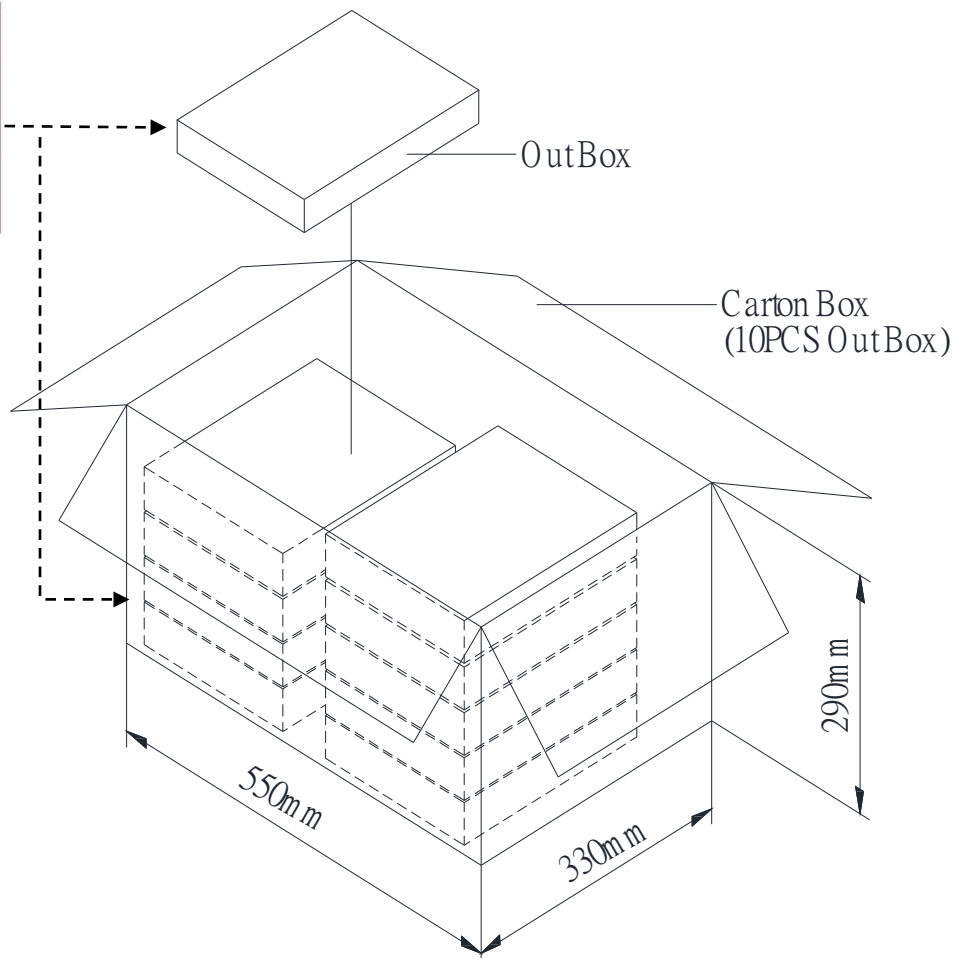
Each minimum package unit of products shall be in a carton box and it shall be clearly marked with Part Number, quantity and outgoing inspection number. There shall be no mechanical damage on products during transportation and/or in storage.

外箱須標示最小包裝單位，並註明產品型號、數量及檢驗批號，必須是物品儲藏或運輸過程中可防止造成損傷的包裝。



Lot No.	XXXXXXXXXX
Part No.	XXXXXXXXXX
Quantity	XXXX PCS
Date:	DD MM YY
	
	

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



OutBox	310m m x248m m x49m m	2x42PCS=84PCS
Carton Box	550m m x330m m x290m m	84PCSx10=840PCS