

# SPECIFICATION FOR APPROVAL

## 承 認 書

Description : Piezo Audio Transducer  
Kingstate Part No. : KMTG1603  
Customer's Model No. : \_\_\_\_\_  
Specification No. : PKD-7504  
Number Of The Edition : 1.3

CUSTOMER'S APPROVED SIGNATURE		

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

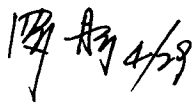
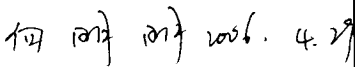


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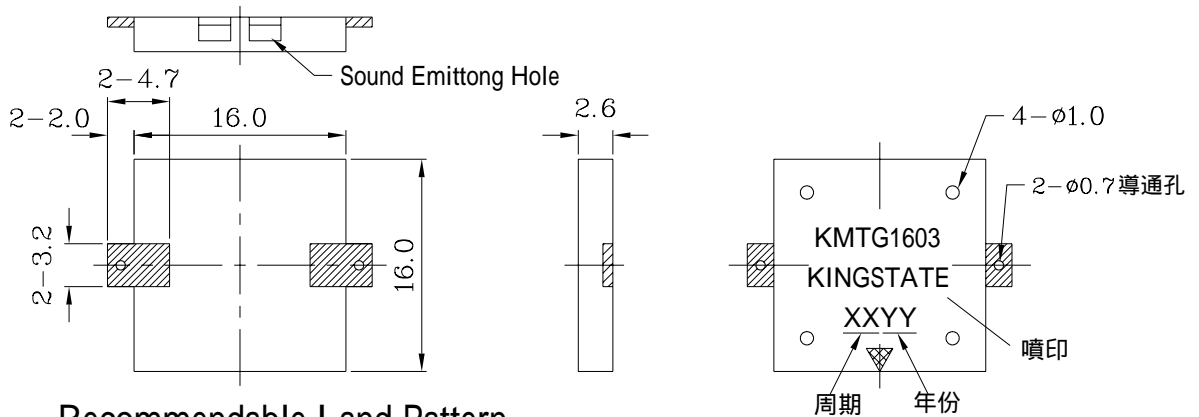
## A. SCOPE 範疇

This specification applies piezo audio transducer, **KMTG1603**  
 此規格書適用於壓電式蜂鳴器, **KMTG1603**

## B. SPECIFICATION 規格

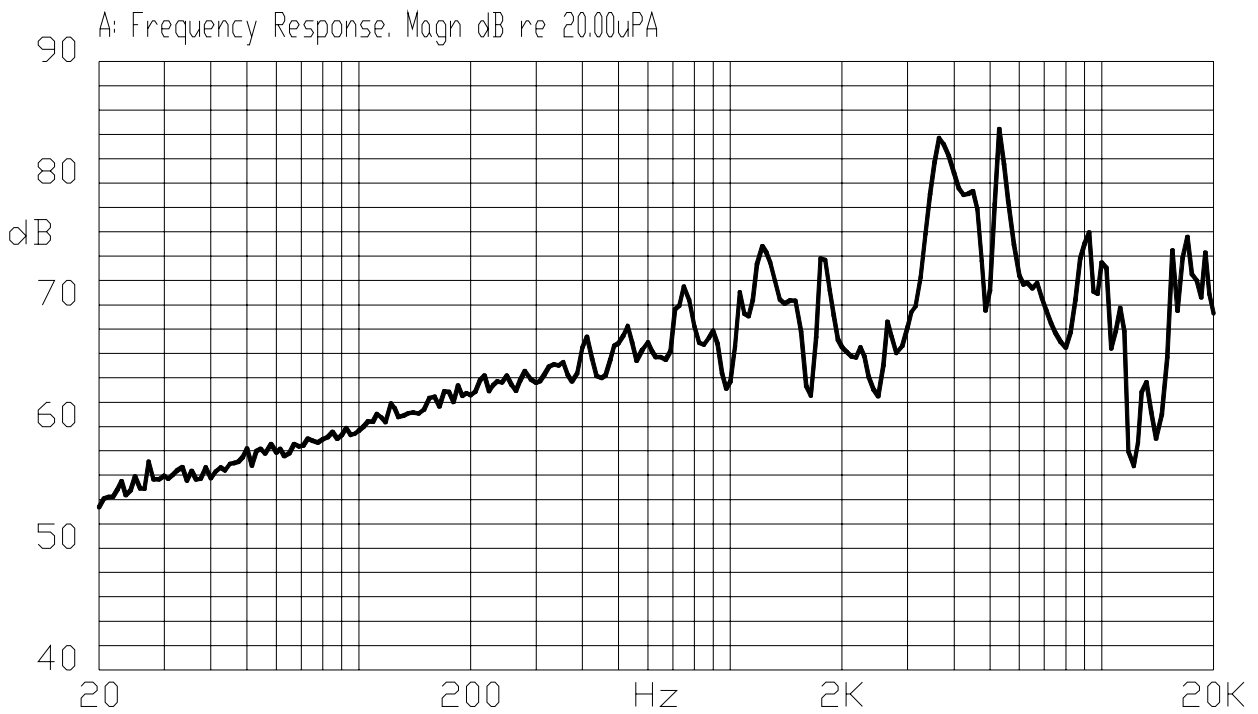
No.	Item	Unit	Specification	Condition
1	Operating Volt. Range 最大操作電壓	Vp-p	MAX 25	
2	Current consumption 消耗電流	mA	MAX 3	at 3Vp-p, square wave, 4.0KHz.
3	Sound pressure level 輸出音壓	dB	MIN 70	at 10cm/3Vp-p, square wave, 4.0KHz
4	Electrostatic capacity 靜電容量	pF	14,000 ± 30%	at 1KHz/1V
5	Operating temp. 操作溫度		-30 ~ +70	
6	Storage temp. 儲存溫度		-40 ~ +85	
7	Dimension 尺寸	mm	L16.0 x W16.0 x H2.6	See appearance drawing 請參照外觀尺寸圖
8	Weight (MAX) 重量	gram	0.96	
9	Material 材質		LCP ( White ) + PCB (FR4)	
10	Terminal 端子		SMD type (鍍全錫/Plating Sn)	See appearance drawing 請參照外觀尺寸圖
11	Environmental Protection Regulation 環保法規		RoHS	
12	Storage life 保存期限	month	6	6 months preservation at room temp. (25±3 ), Humidity 40% 在室溫下 25±3 , 濕度 40% 以下可保存 6 個月.

## C. APPEARANCE DRAWING 外觀尺寸圖



**Tol: ± 0.2**  
**Unit: mm**

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

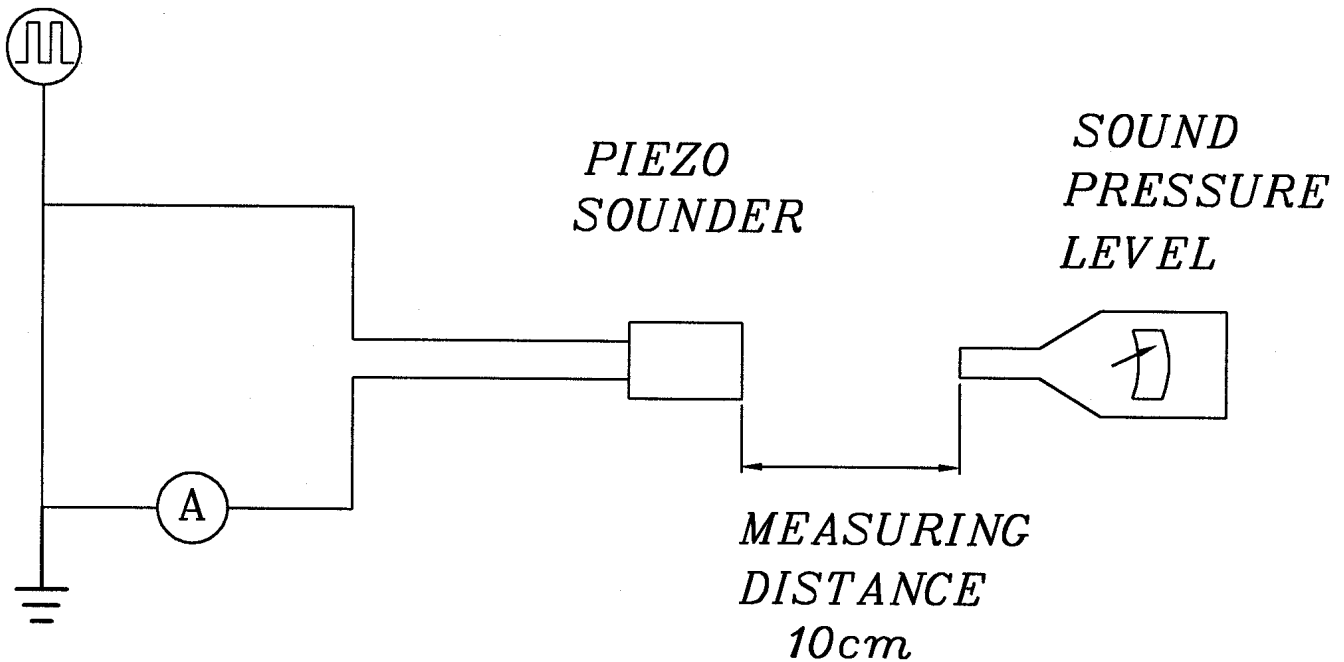


## E. MEASURING METHOD 測量方法

S.P.L. Measuring Circuit 音壓測試接線圖

Input Signal: 3Vp-p, 4.0kHz, Square Wave

輸入信號: 3Vp-p, 4.0kHz, 方波



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

Mic : RION 噪音計 UC30 或同等品

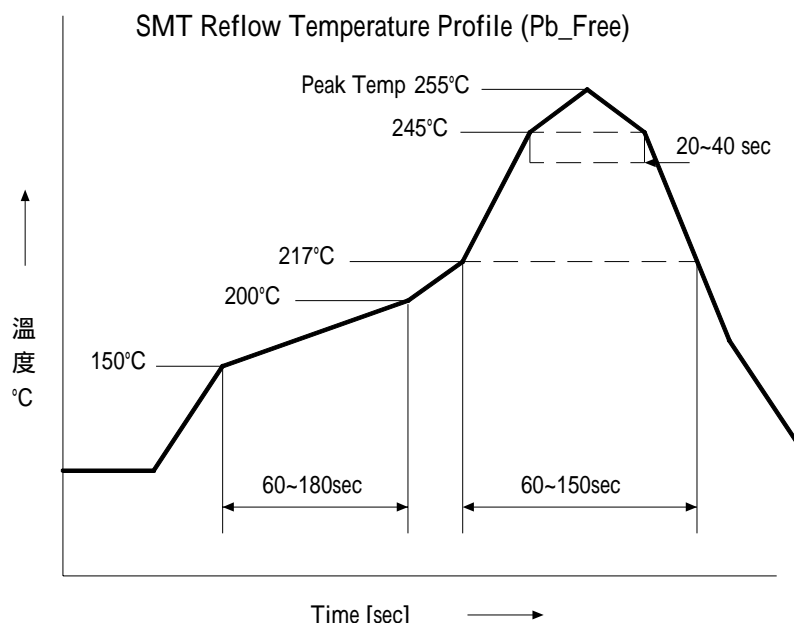
S.G : Hewlett Packard 33120A Function Generator or equivalent

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

## F. MECHANICAL CHARACTERISTICS 機械特性

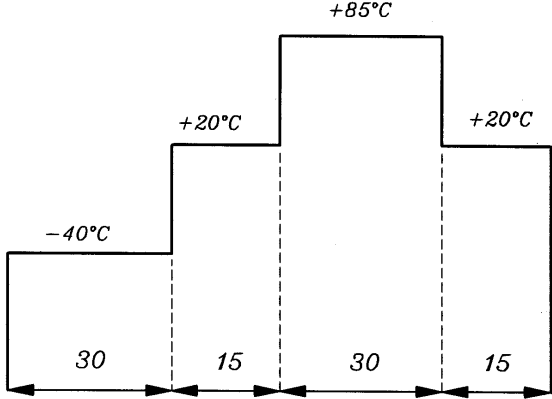
No.	Item	Test condition	Evaluation standard
1	Solderability 焊錫附著性	Lead terminals are immersed in rosin for 5 seconds and then immersed in solder bath of $+270 \pm 5$ for $2 \pm 0.5$ second. 端子浸松香液中 5 秒後置於錫膏內,錫膏溫度: $+270 \pm 5$ . 焊接時間: $2 \pm 0.5$ 秒.	95% surface of lead pads must be covered with fresh solder 錫膏須覆蓋端子上方 95%
2	Soldering Heat Resistance 焊錫耐熱性	1)IR reflow 遠紅外線熱風迴焊爐 Pre-heating conditions shall be $+150$ to $+200$ for 60 to 180 seconds. Ascending time up to $+245$ shall be longer than 55 seconds. Heating conditions shall be within 20~40 seconds at $+245$ min. But peak temperature shall be lower than $+255$ ,then being place in natural condition for 1 hour, sounder shall be measured 預熱條件為加熱到 $+150$ to $+200$ 為 60 到 180 秒. 加熱到 245 時間須長於 55 秒. 焊接條件為 20~40 秒最低 $+245$ , 最高不可超過 $+255$ . 結束後須靜置於室溫中 1 小時後進行檢測 2)Soldering Iron 烙鐵 Soldering iron of $+270 \pm 5$ 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. $+270 \pm 5$ 的烙鐵置於電極上方 0.5mm 處, 以烙鐵將焊錫溶於電極上 $3 \pm 1$ 秒,然後置於室溫中 4 小時後進行檢測.	No interference in operation. 操作上無任何不良.
3	Terminal Mechanical Strength 端子強度	The force 10 seconds of 9.8N(1kg) is applied to each terminal is axial direction. 對每一端子以軸方向, 施 9.8N(1kg)拉力 10 秒.	No damage and cutting off 端子不鬆動, 不脫落
4	Vibration 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. 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 $\pm 10$ dB compared with initial one. 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 $\pm 10$ dB 內.

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



Note: 255 is Less than 20 sec.,but only pass the lead free reflow once.  
備注: 255 不可超過 20 秒,且只能過無鉛迴流焊一次.

## H. 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 for 240 hours 置於+85 環境中 240 小時	
2	Low temp. test 低溫測試	After being placed in a chamber at -40 for 240 hours 置於-40 環境中 240 小時	
3	Humidity test 相對濕度測試	After being placed in a chamber at +40 and 90±5% relative humidity for 240 hours 置於+40 , 相對濕度 90±5% 環境中 240 小時	
3	Temp. Cycle 溫度循環測試	<p>The part shall be subjected to 5 cycles. 單體承受溫度循環測試 5 次.其循環內容如圖示.</p>  <p style="text-align: right;">Unit: Minute</p>	<p>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. 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.</p>

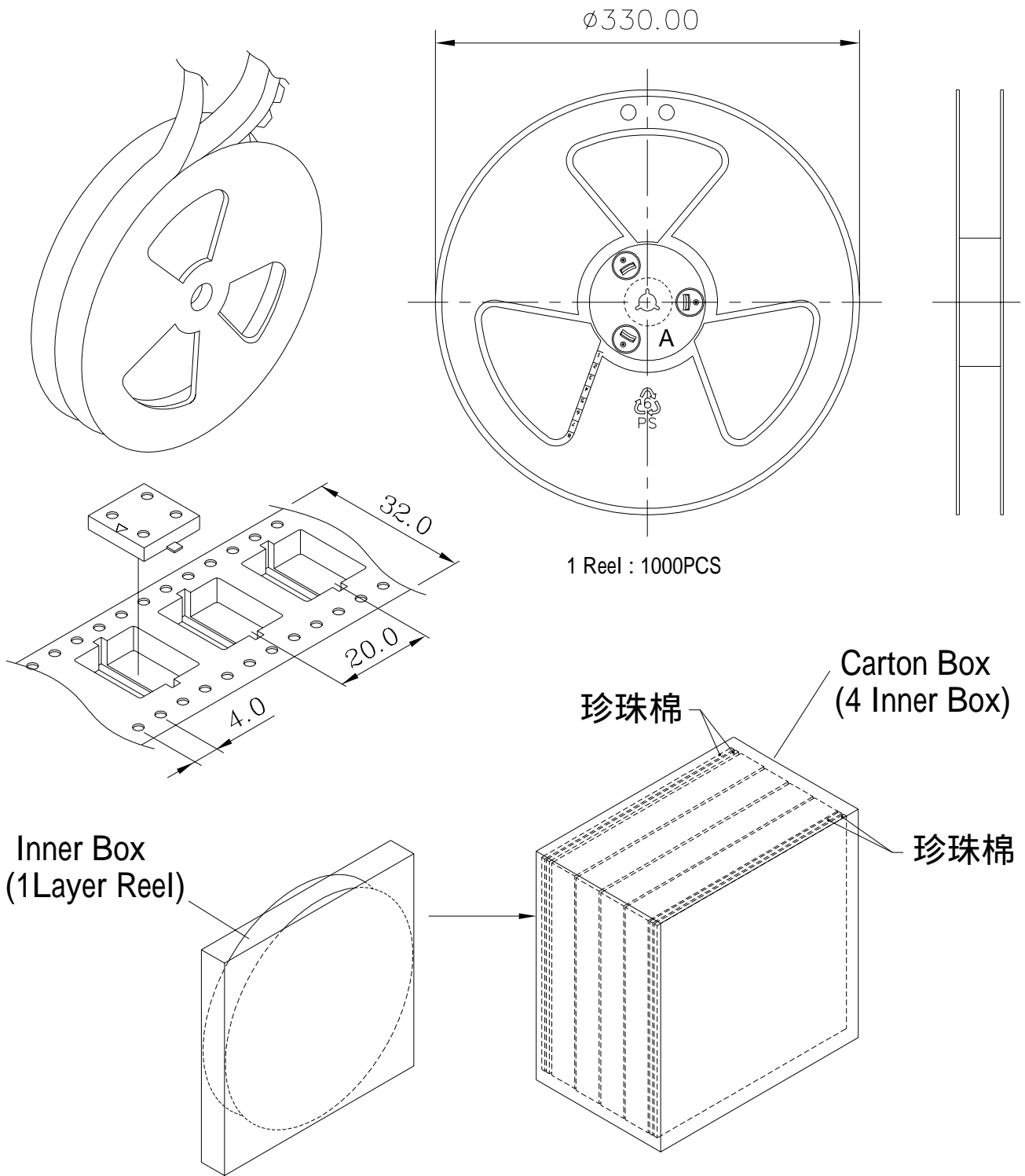
## I. RELIABILITY TEST 信賴性測試

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 with rated voltage applied. 在+55 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 )and rated voltage applied. 在室溫下(+25 ±2 ), 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 , 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 (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 一般測試條件	:	a) Temperature : +5 ~ +35	b) Humidity : 45-85%	c) Pressure : 860-1060mbar
Judgement Test Condition 爭議時測試條件	:	a) Temperature : +25 ±2	b) Humidity : 60-70%	c) Pressure : 860-1060mbar

# J. PACKING STANDARD 包裝規格



Inner Box	340mmx340mmx40mm	1,000PCSx1=1,000PCS
Carton Box	350mmx175mmx355mm	1,000PCSx4=4,000PCS