

SPECIFICATION FOR APPROVAL

承 認 書

Description : **Piezo Audio Transducer**

Kingstate Part No. : **KMTG0902**

Customer's Model No. : _____

Specification No. : **DOD-6149**

Number Of The Edition : **1.1**

CUSTOMER'S APPROVED SIGNATURE		



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Approved by	Checked by	Issued by
		Merry 10/16/14`

A. SCOPE 範疇

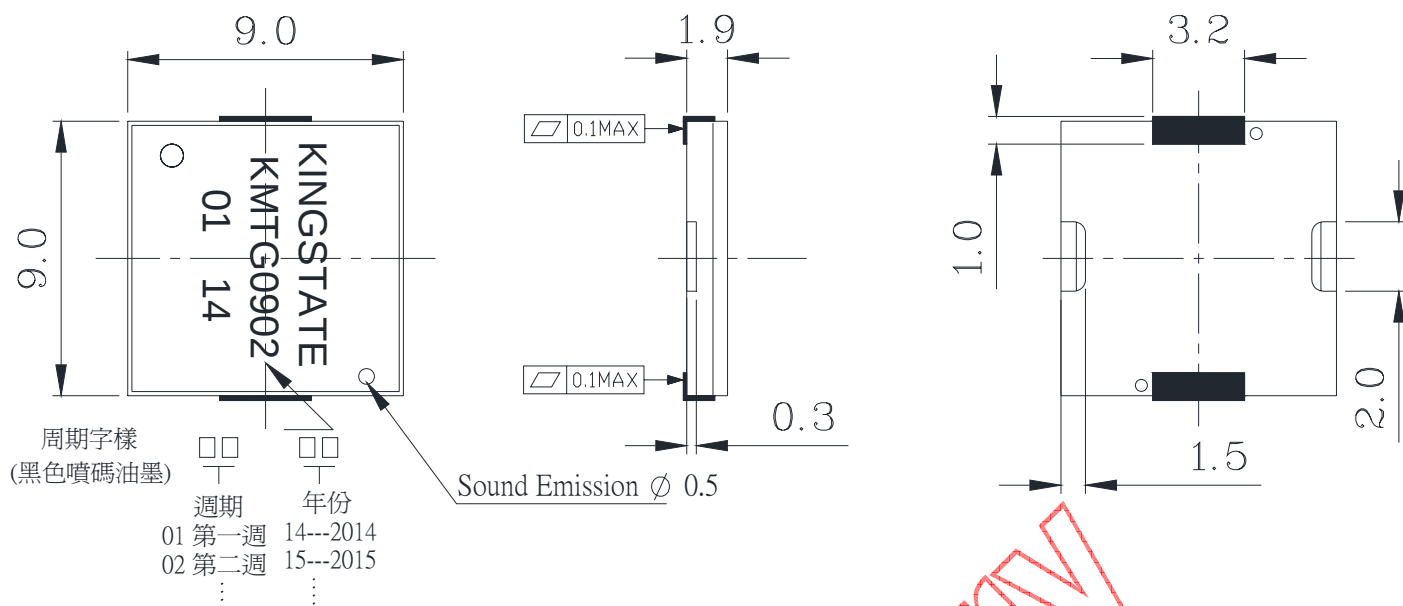
This specification applies piezo audio transducer, **KMTG0902**

此規格書適用於壓電式蜂鳴器, **KMTG0902**

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 5	at 3Vp-p,square wave,4.0KHz.
3	Sound pressure level 輸出音壓	dB	MIN 65	at 10cm/3Vp-p,square wave,4.0KHz
4	Electrostatic capacity 靜電容量	pF	12,000 ± 30%	at 100Hz/1V
5	Operating temp. 操作溫度	℃	-30 ~ +70	
6	Storage temp. 儲存溫度	℃	-40 ~ +85	
7	Dimension 尺寸	mm	L9.0 x W9.0 x H1.9	See appearance drawing 請參照外觀尺寸圖
8	Weight (MAX) 重量	gram	0.2	
9	Material 材質		LCP (Black)	
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		HSF	
12	Storage life 保存期限	month	6	6 months preservation at room temp.(25±3℃), Humidity40% 在室溫下25±3℃,濕度40%以下可保存6個月.

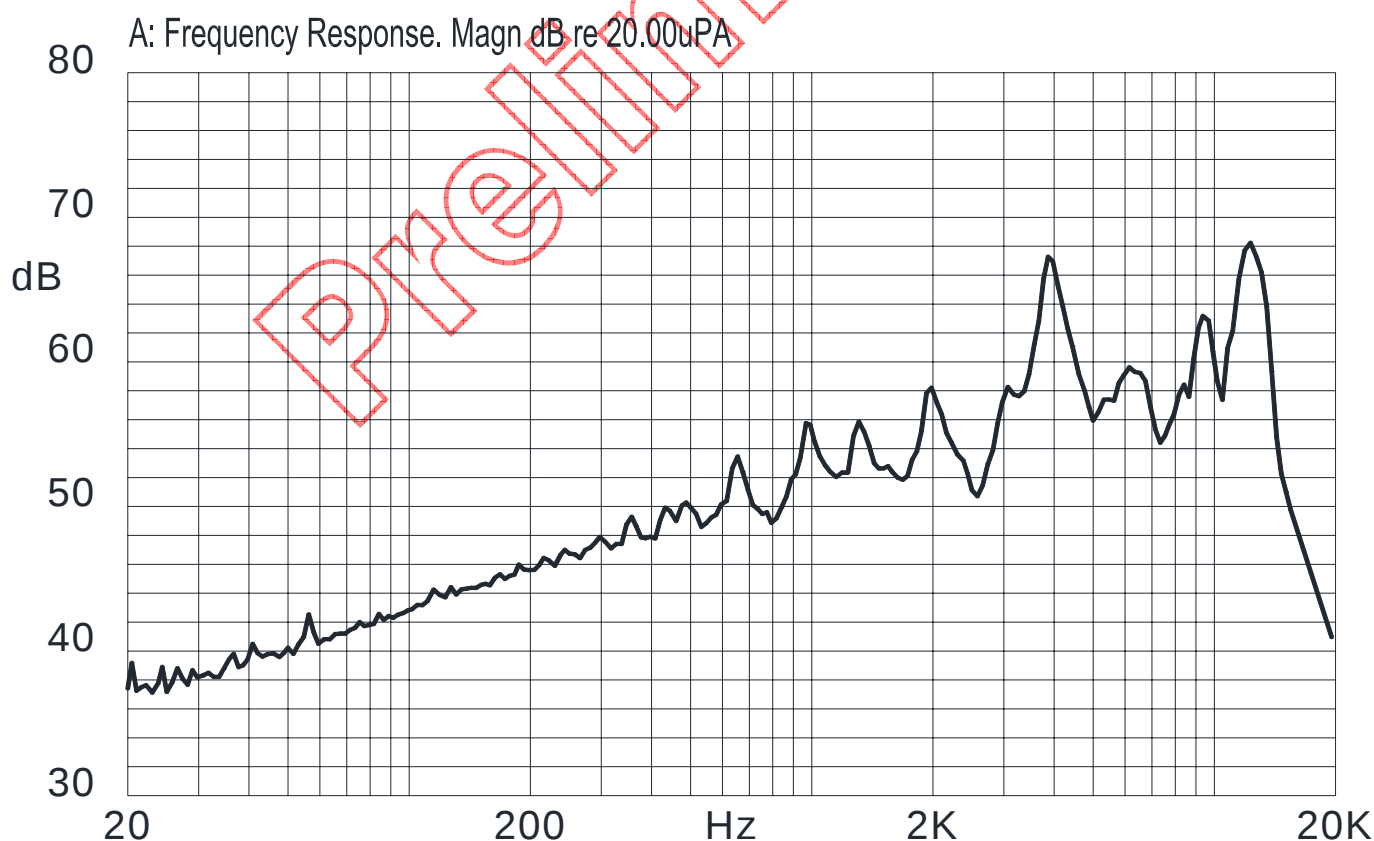
C. APPEARANCE DRAWING 外觀尺寸圖



Tol: ± 0.3

Unit: mm

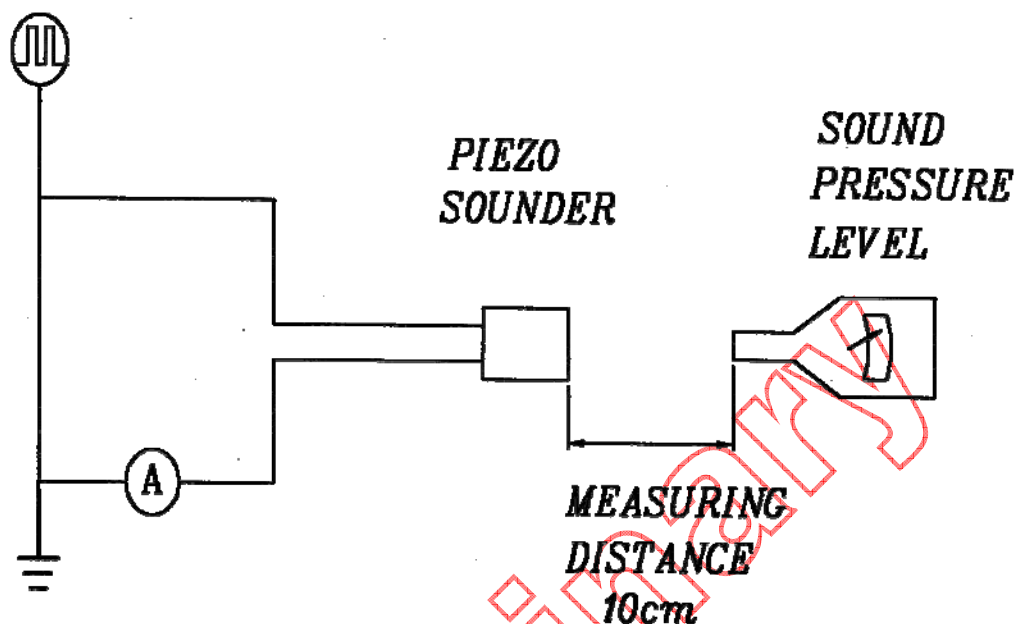
D. TYPICAL FREQUENCY RESPONSE CURVE 頻率響應曲線



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

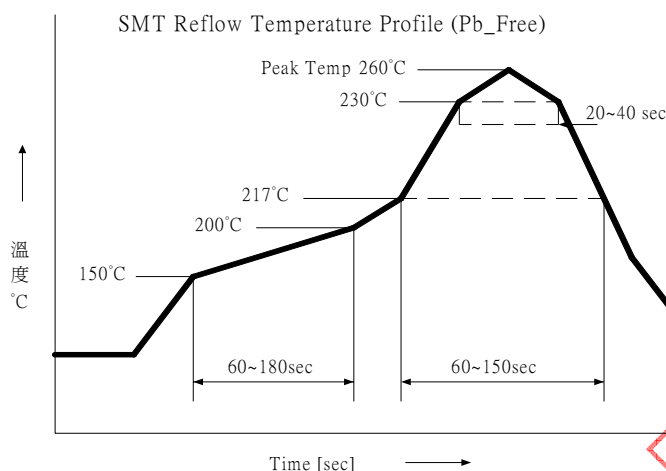
S.G : Hewlett Packard 33120A 函數信號產生器或同等品

F. MECHANICAL CHARACTERISTICS 機械特性

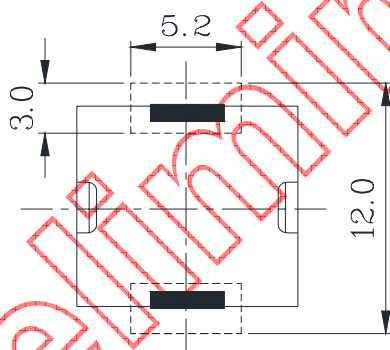
No.	Item	Test Condition	Evaluation standard
1	Solderability 焊錫附著性	Lead terminals are immersed in solder bath of $+350\pm 5^{\circ}\text{C}$ for 3 ± 1 second. 端子置於錫膏內, 錫膏溫度: $+350\pm 5^{\circ}\text{C}$. 焊接時間: 3 ± 1 秒.	95% surface of lead pads must be covered with fresh solder 錫膏須覆蓋端子上方 95%
2	Soldering Heat Resistance 焊錫耐熱性	The product is followed the reflow temperature curve to test its reflow thermo stability. 產品依照迴焊溫度曲線測試迴焊耐熱性.	No interference in operation. 操作上無任何不良.
3	Terminal Mechanical Strength 端子強度	Lead pads shall be soldered on the pc board, and the force 9.8N(1.0kg) shall be applied behind the part for 10 seconds. 將端子焊在 PC 板上後, 對單體施以 9.8N(1.0kg) 拉力 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 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.
6	Temperature tolerance of Conductive Silver Paste 導電銀漿耐溫性	Conductive Silver Paste curing at 150°C and then it can bear temperature less than 260°C . 導電銀漿在 150°C 下固化後最高可承受 260°C	No interference in operation. 操作上無任何不良.

7	Survivability of Reflow process 迴流焊次數	Buzzer cannot through reflow process more than 2 times and please reference Temperature profile as figure 'G. Recommended Temperature Profile For Reflow Oven' is recommended. 依照“建議迴流爐溫度曲線”圖，最多可承受兩次迴流焊	No interference in operation. 操作上無任何不良。
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G. Recommended Temperature Profile For Reflow Oven 建議迴流爐溫度曲線



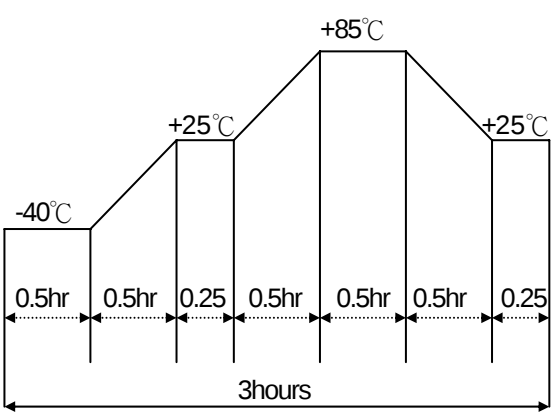
H. Recommended land pattern 建議基板設計尺寸圖



Recommendable Land Pattern

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 +85°C for 240 hours 置於+85°C環境中 240 小時	Being placed for 4 hours at +25°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 $\pm 10\text{dB}$
2	Low temp. test 低溫測試	After being placed in a chamber at -40°C for 240 hours 置於-40°C環境中 240 小時	
3	Humidity test 相對濕度測試	After being placed in a chamber at +40°C and 90 $\pm$ 5% relative humidity for 240 hours 置於+40°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: 	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.
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J. 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) 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. 2. Intermittent life test 室溫壽命測試(間歇) A duty cycle of 1 minute on, 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.	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	:	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。

Preliminary