

SPECIFICATION FOR APPROVAL

承認書

Description : **Piezo Audio Transducer**

Kingstate Part No. : **KPEG153H**

Customer's Model No. : _____

Specification No. : **DOD-3233**

Number Of The Edition : **1.2**

CUSTOMER'S APPROVED SIGNATURE		



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Approved by	Checked by	Issued by
Jell 4/25	Jell 4/25	Sean 4/25

SPEC SHEET REVISION RECORD

成品承認書修訂記錄

DRAWING NO. : DOD-3233 圖 號: DODO-3233			P/N: KPEG153H 料 號: KPEG153H
REVISE DATE 修訂日期	APPLICANT 提出者	Version 版次	Revise 修訂記錄內容
2018/4/10	Sean	1.1	修訂 KPEG105 規格(轉自 KPEG105)
2018/04/25	Sean	1.2	修改操作溫度上限

Preliminary

A. SCOPE 範疇

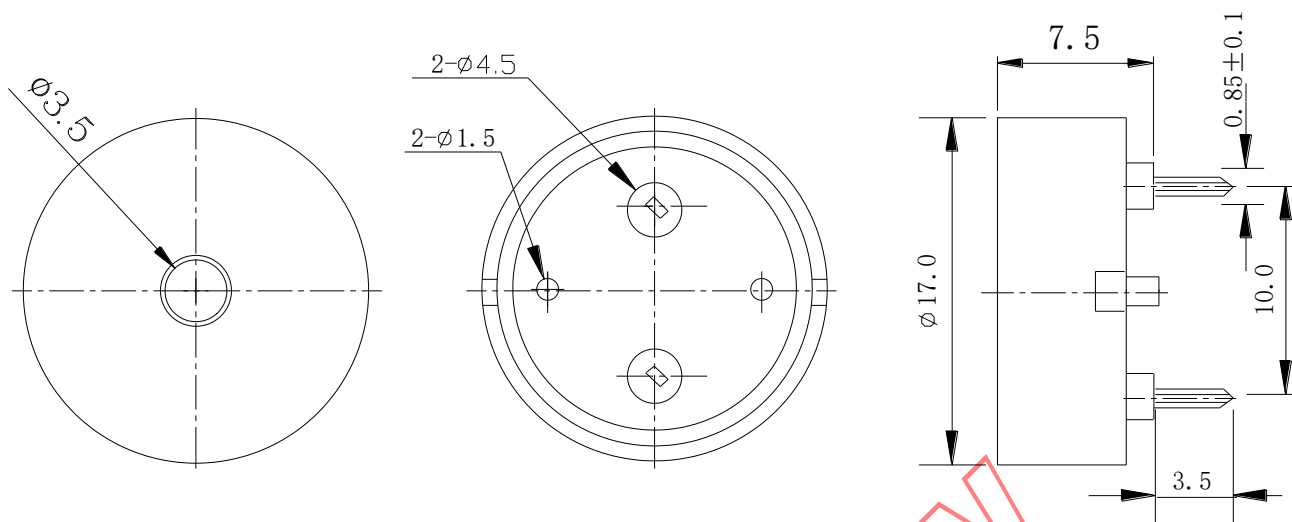
This specification applies piezo audio transducer, **KPEG153H**

此規格書適用於壓電式蜂鳴器, **KPEG153H**

B. SPECIFICATION 規格

No.	Item	Unit	Specification	Condition
1	Operating Frequency 操作頻率	KHz	4.0	
2	Operating Volt. 操作電壓	Vp-p	3 ~ 25	
3	Rated Voltage 額定電壓	Vp-p	10	
4	Current consumption 消耗電流	mA	Max 15 (Typical 10)	At 10Vp-p, square wave, 4.0KHz Measure by FLUKE 87V
5	Sound pressure level 輸出音壓	dB	MIN 88	10Vp-p at 10cm, square wave, 4KHz
6	Electrostatic 靜電容量	pF	15,000 $\pm$ 30%	At 120Hz/1V
7	Operating temp. 操作溫度	°C	-40 ~ +70	
8	Storage temp./Humidity 儲存溫度/濕度	°C/RH%	-40 ~ +80 / 20-75RH%	
9	Storage life 保存期限	month	6	
10	Dimension 尺寸	mm	ϕ 17.0x H7.5	See appearance drawing 請參照外觀尺寸圖
11	Weight (MAX) 重量	gram	1.5 $\pm$ 0.5	
12	Material 材質		PBT (BLACK)	
13	Terminal 端子		Pin type	
14	Environmental Protection Regulation 環保法規		RoHS2.0	

C. APPEARANCE DRAWING 外觀尺寸圖

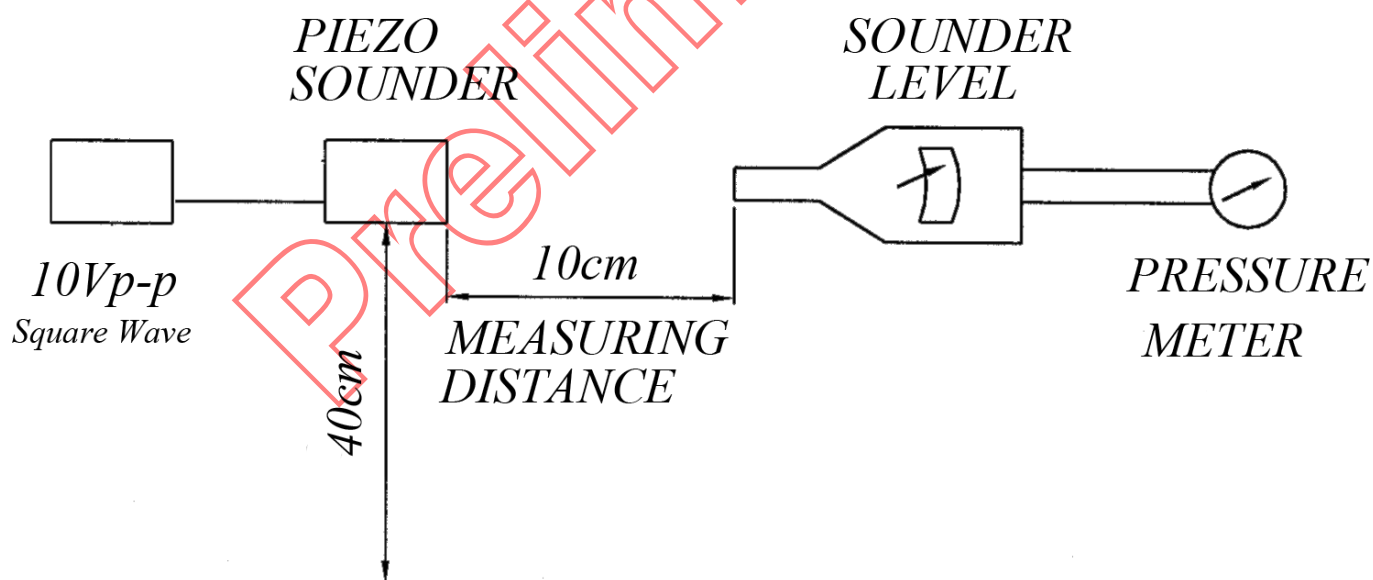


Tol : ± 0.5

Unit : mm

D. MEASURING METHOD 測量方法

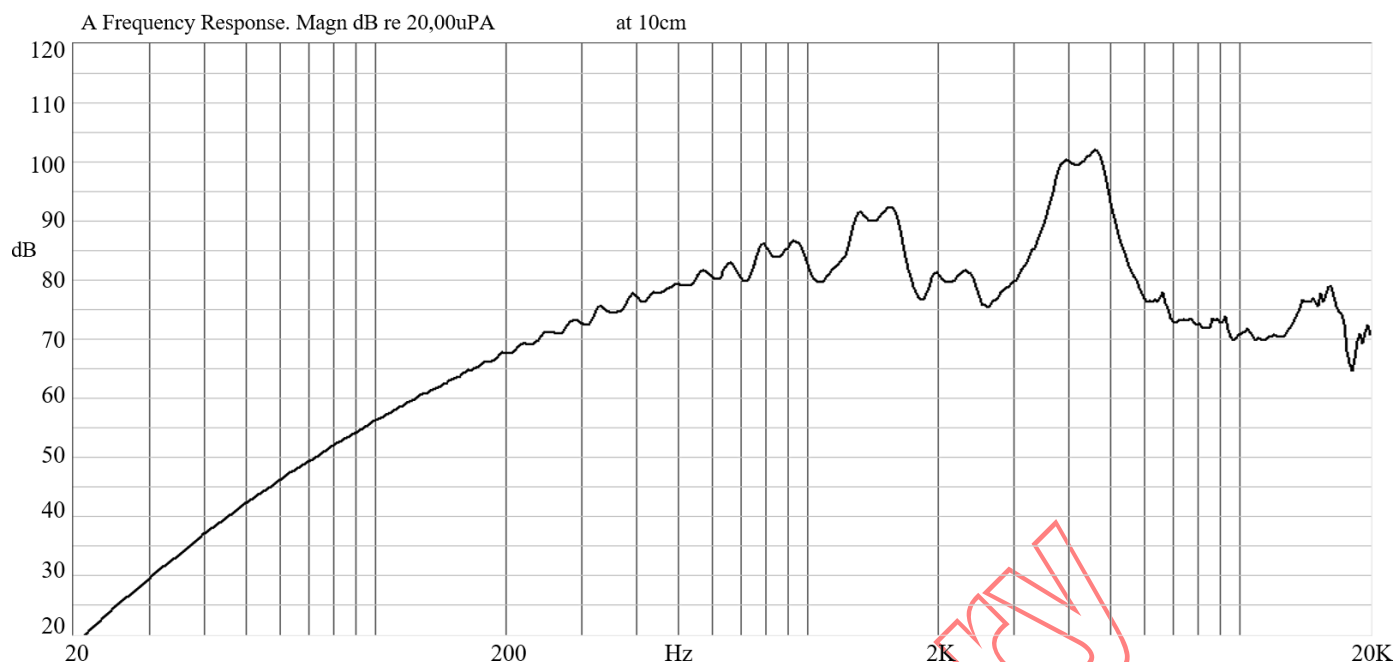
S.P.L. Measuring Circuit 音壓測試接線圖



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

Mic : RION 噪音計 UC30 或同等品

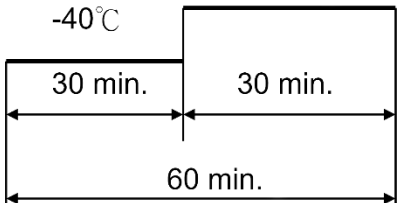
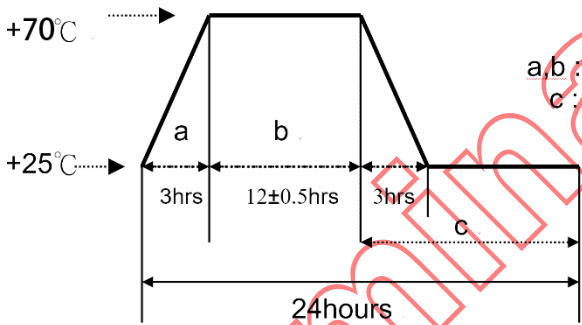
E. TYPICAL FREQUENCY RESPONSE CURVE 頻率響應曲線



F. MECHANICAL CHARACTERISTICS 機械特性

No.	Item	Test Condition	Evaluation standard
1	Solderability 焊錫附著性	Lead terminals are immersed in rosin for 5 seconds and then immersed in solder bath of $+270\pm5^{\circ}\text{C}$ for 3 ± 1 seconds. 端子部份浸入松香溶液 5 秒後,再浸入 $+270\pm5^{\circ}\text{C}$ 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 sounder's body in solder bath of $+260\pm5^{\circ}\text{C}$ for 3 ± 1 seconds. 距離端子根部 1.5mm 的位置,浸入 $+260\pm5^{\circ}\text{C}$ 的焊錫槽 3 ± 1 秒.	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 (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.

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 +70°C for 96 hours 置於+70°C環境中 96 小時	After the test the part shall meet specifications with-out any degradation in appearance and performance except SPL. after 4 hours at +25°C. the SPL should be in $\pm 10\text{dBA}$ compared with initial one. 經測試後, 靜置於+25°C (室溫) 環境中 4 小時後, 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$\pm 10\text{dBA}$內.
2	Low temp. test 低溫測試	After being placed in a chamber at -30°C for 96 hours 置於-30°C環境中 96 小時	
3	Thermal Shock 熱衝擊試驗	The part shall be subjected to 10 cycles. One cycle shall consist of, 對單體施以熱衝擊試驗 10 次循環, 其循環內容如圖示: 	
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) The part shall be subjected to 48 hours at +55°C with 10Vp-p, applied. 在+55°C環境下, 輸入 10Vp-p, 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 5000 times at room temp. (+25±10°C) with 10Vp-p, applied. 在室溫下(+25±10°C), 輸入 10Vp-p, 通電 1 分鐘/斷電 1 分鐘, 測試 5000 次循環.	After the test the part shall meet specifications with-out any degradation in appearance and performance except SPL. after 4 hours at +25°C. the SPL should be in $\pm 10\text{dBA}$ compared with initial one. 經測試後, 靜置於+25°C (室溫) 環境中 4 小時後, 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$\pm 10\text{dBA}$內.

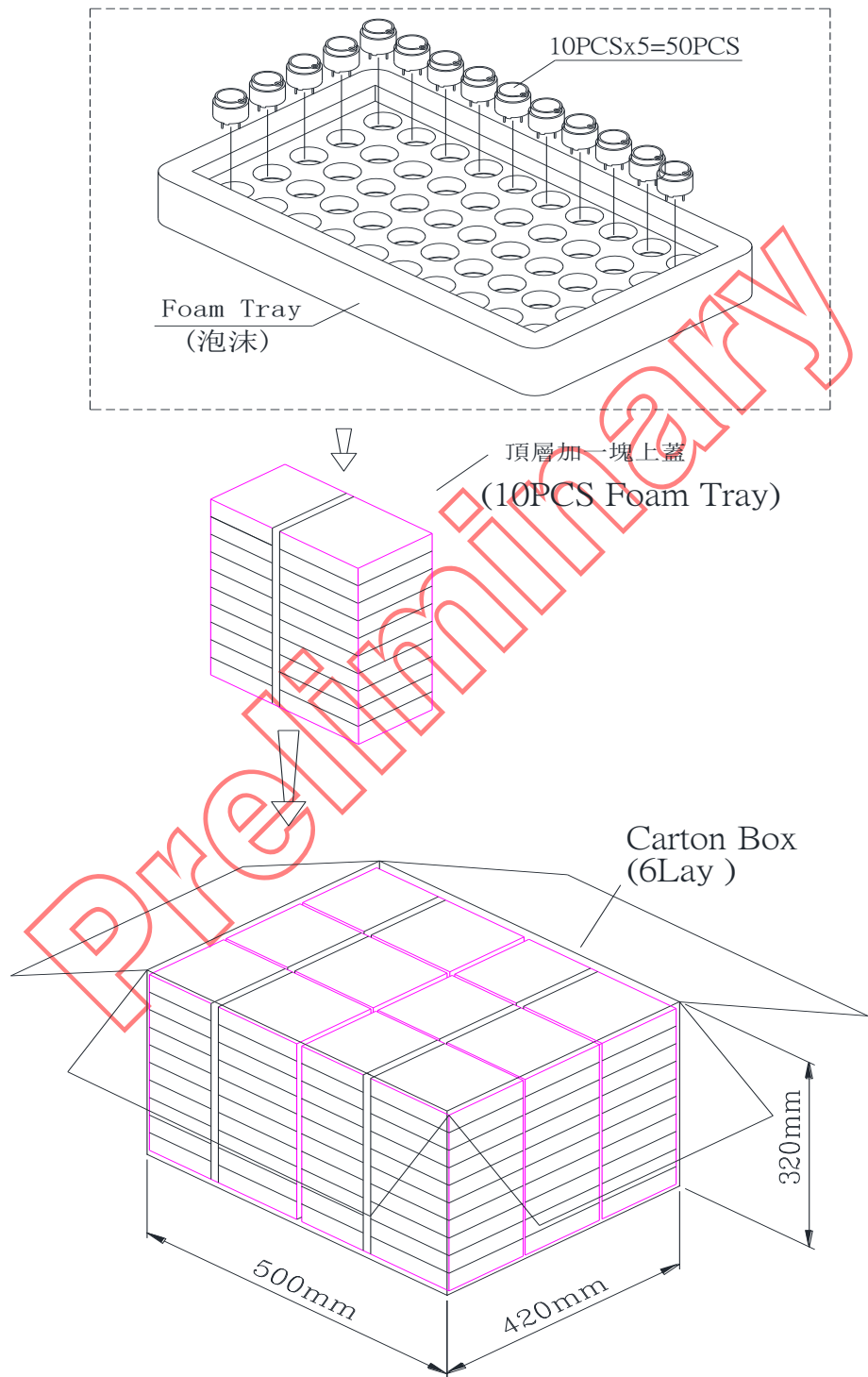
TEST CONDITION.

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

I.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。



Foam Tray	230mmx135mmx35mm	1x50PCS=50PCS
Lay		10x50PCS=500PCS
Carton Box	500mmx420mmx320mm	6x500PCS=3000PCS