

SPECIFICATION FOR APPROVAL

承認書

Description : Piezo Audio Transducer

Kingstate Part No. : KPEG1500NC

Customer's Model No. : _____

Specification No. : DOD-8533

Number Of The Edition : 1.2

CUSTOMER'S APPROVED SIGNATURE		

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Approved by	Checked by	Issued by

A. SCOPE 範疇

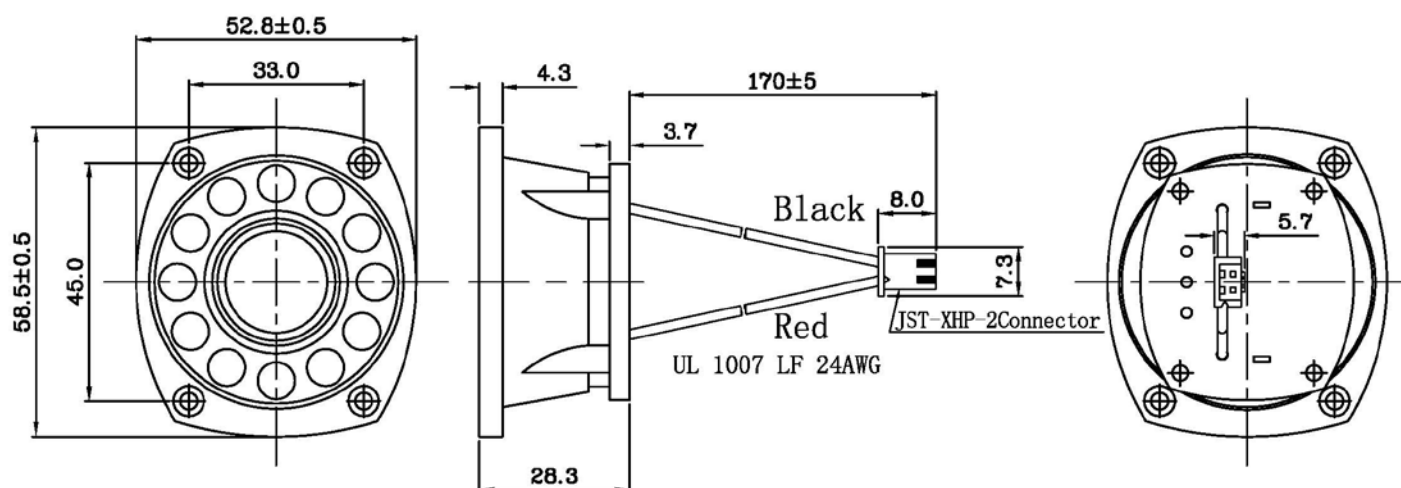
This specification applies piezo audio transducer, **KPEG1500NC**

此規格書適用於壓電式蜂鳴器 **KPEG1500NC**

B. SPECIFICATION 規格

No.	Item	Unit	Specification	Condition
1	Oscillation Frequency 振动频率	Hz	2700	square wave 方波
2	Operating Voltage 操作电压	Vp-p	3 ~ 85	
3	Rated Voltage 额定电压	Vp-p	85	
4	Current Consumption 消耗电流	mA	MAX. 90	at Rated Voltage 在额定电压下
5	Sound Pressure Level 輸出音压	dB	MIN103 Typical 108	at 30cm at Rated Voltage 在 30cm, 在额定电压下
6	Electrostatic Capacity 静电容量	pF	35000±30%	at 120Hz
7	Operating Temperature 操作温度	℃	-20~ +70	
8	Storage Temperature 儲存温度	℃	-30 ~ +85	
9	Dimension 尺寸	mm	Φ58.5x H28.3	See appearance drawing 請參考外觀尺寸图
10	Weight (MAX) 重量	gram	24	
11	Housing Material 外壳材質		ABS(Black)	
12	Terminal 端子		Wire type	See appearance drawing 請參考外觀尺寸图
13	Environmental Protection Regulation 环保法规		HSF	

C. APPEARANCE DRAWING 外觀尺寸圖



Tol : ± 0.5

Unit: mm

D.TESTING METHOD 测试方法

Standard Measurement conditions 标准测试条件

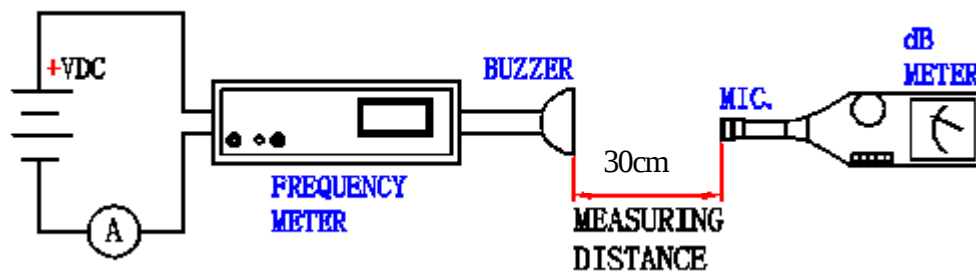
Temperature: $25 \pm 2^{\circ}\text{C}$ Humidity: 45-65%

温度: $25 \pm 2^{\circ}\text{C}$ 湿度: 45-65%

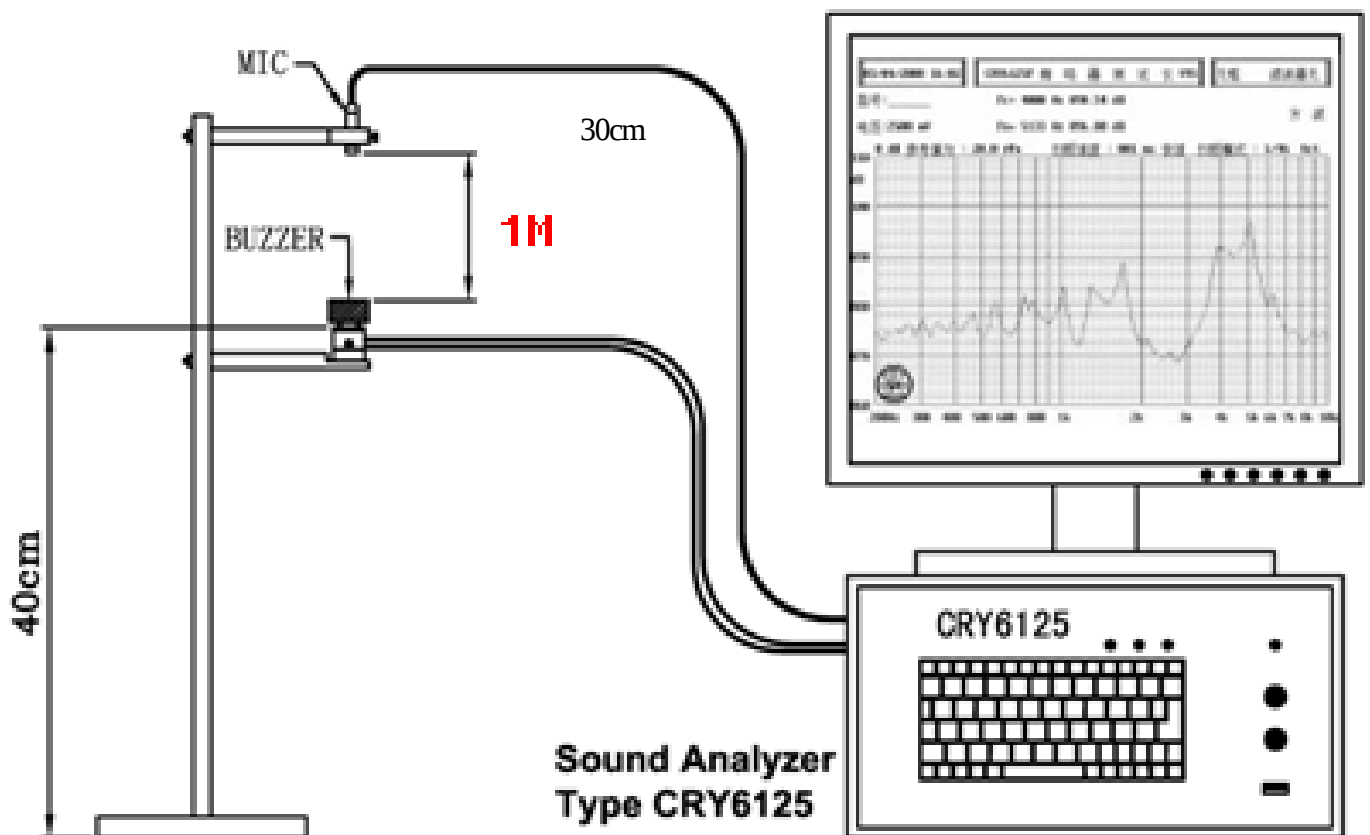
Acoustic Characteristics: 声学特性

The oscillation frequency, current consumption and sound pressure are measured by the measuring instruments shown below

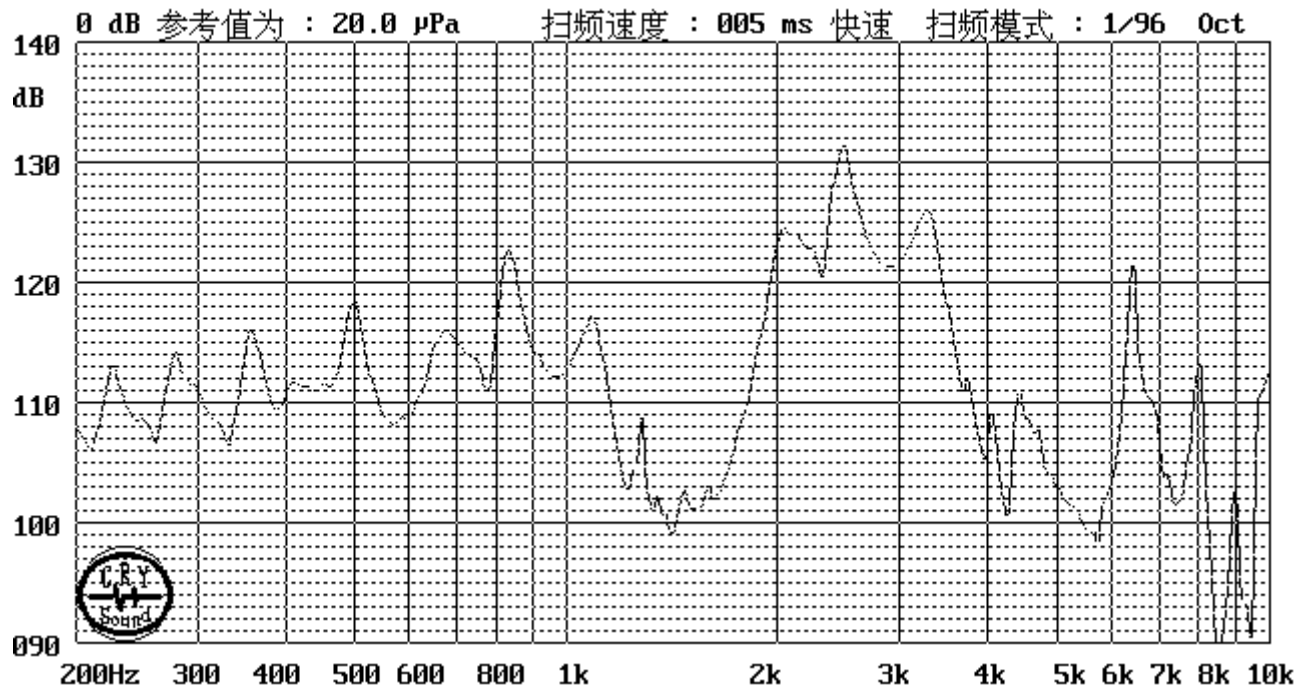
振动频率，电流消耗和音压由以下所示的测试设备测量



In the measuring test, buzzer is placed as follows: 在测量测试中，蜂鸣器放置在下图 所示位置

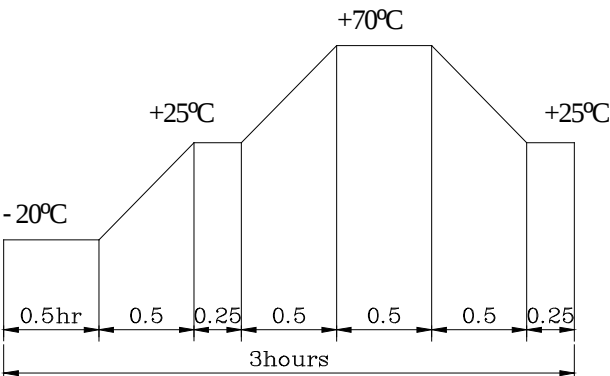


E. Typical Frequency Response Curve 频率响应曲线



F. RELIABILITY TEST 信赖性测试

NO.	ITEM	TEST CONDITION AND REQUIREMENT 测试条件和要求
1	High Temperature Test (Storage) 高温测试 (存储)	After being placed in a chamber with $85\pm2^{\circ}\text{C}$ for 96 hours and then being placed in normal condition for 2 hours. 置于 $85\pm2^{\circ}\text{C}$ 环境中 96 小时后, 再置于正常条件中 2 小时。 Allowable variation of SPL after test: $\pm 10\text{dB}$. 测试后允许 SPL 变化: $\pm 10\text{dB}$.
2	Low Temperature Test (Storage) 低温测试 (存储)	After being Placed in a chamber with $-30\pm2^{\circ}\text{C}$ for 96 hours and then being placed in normal condition for 2 hours. 置于 $-30\pm2^{\circ}\text{C}$ 环境中 96 小时后, 再置于正常条件中 2 小时。 Allowable variation of SPL after test: $\pm 10\text{dB}$. 测试后允许 SPL 变化: $\pm 10\text{dB}$.
3	Humidity Test 相对湿度测试	After being Placed in a chamber with 90-95% R.H. at $40\pm2^{\circ}\text{C}$ for 96 hours and then being placed in normal condition for 2 hours. 置于 $40\pm2^{\circ}\text{C}$, 相对湿度 90-95%环境中 96 小时, 然后置于正常条件中 2 小时。 Allowable variation of SPL after test: $\pm 10\text{dB}$. 测试后允许 SPL 变化: $\pm 10\text{dB}$.

4	Temperature Cycle Test 温度循环测试	The part shall be subjected to 5 cycles. One cycle shall be consist of : 单体承受温度循环测试 5 次,其循环内容如图示:  Allowable variation of SPL after test: $\pm 10\text{dB}$. 测试后允许 SPL 变化: $\pm 10\text{dB}$.
5	Drop Test 落下测试	Drop on a hard wood board of 4cm thick, any directions ,6 times, at the height of 75cm . 单体从 75cm 高度处, 以任意方向, 6 次, 落于 4cm 厚的硬木板上。 Allowable variation of SPL after test: $\pm 10\text{dB}$. 测试后 SPL 允许变化: $\pm 10\text{dB}$.
6	Vibration Test 振动测试	After being applied vibration of amplitude of 1.5mm with 10 to 55 Hz 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。 Allowable variation of SPL after test: $\pm 10\text{dB}$. 测试后 SPL 允许变化量: $\pm 10\text{dB}$.
7	Solderability Test 焊点附着性测试	Lead terminals are immersed in rosin for 5 seconds and then immersed in solder bath of $+300\pm 5^{\circ}\text{C}$ for 3 ± 1 seconds . 线材端子浸入松香中 5 秒, 然后浸入$+300\pm 5^{\circ}\text{C}$ 熔融焊锡槽中 3 ± 1 秒。 90% min. lead terminals shall be wet with solder (Except the edge of terminals). 浸入线材端子部分附着焊锡 90%以上 (末端断面不包括)
8	Terminal Strength Pulling Test 端子拉力测试	The force of 9.8N(1.0kg) is applied to each terminal in axial direction for 10 seconds.每个端子在轴向施加 9.8N (1.0kg) 的力 10 秒。 No visible damage and cutting off. 端子不松动, 不脱落

G. 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 +70°C with rated voltage applied. 在+70°C 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 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

H. PACKING STANDARD 包裝标准

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.

每个产品最小的包装单元应放置在纸板箱内, 并清楚标示料号, 质量和出货检测号, 在产品的运输和/或储存中不应出现任何机械损伤。