

MESSRS.

SPECIFICATION FOR APPROVAL**承 認 書**

Product	动态式扬声器 DYNAMIC SPEAKER
Part No.	HDK-4004BB-4C (RoHS)
Customer	
Customer Part No.	

Approved By	Checked By	Made By
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EDITION:1.1

1.Specification

HDK-4004BB-4C (RoHS)

ITEM		SPECIFICATIONS	
01	Type 屬性	Dynamic speaker 动态式扬声器	
02	Dimension 尺寸	External diameter Φ 40mm 外径 Φ 40 mm	
03	Rated Input Power 额定输入功率	2.0W	
04	Max. Input Power 最大输入功率	2.2W for 1 minute 2.2W 在内 1 分钟	
05	Impedance 阻抗	4 ohm $\pm$ 15% at 2000Hz 1.0V	
06	Resonance Frequency (Fo) 谐振频率	600Hz $\pm$ 20% at Fo 1V	
07	Sensitivity (S.P.L.) 灵敏度	95dB (890mV / 0.1m) $\pm$ 3 dB	at AVE1.0KHz
08	Frequency Range 频率范围	Fo – 7KHz	
09	Total Harmonics Distortion 谐波失真	Max 10 % at 1 KHz, 2.0W.	
10	Voice Coil 音圈	Diameter 13.3 mm	
11	Magnet 磁铁	Rare earth permanent (Nd-Fe-B) magnet Φ 12.7*1.5mm 钕铁硼材质 外径 Φ 12.7*1.5 mm	
12	Weight 重量	9.4g $\pm$ 0.2g	
13	Appearance 外观	Should not exist any obstacle to be harmful to normal operation; damages, cracks, rusts and distortions, etc. 沒有會影響功能的:損壞,裂痕,鏽跡,變型等	
14	Operation Test 工作测试	Must be normal at program source – 2.0W 测试的工作功率為 2.0W	
15	Buzz, Rattle, etc. 异音测试	Should not be audible at 2.83V sine Wave between 200 to 5KHz 加電壓 2.83V 频率 Fo to 20KHz 的正旋波時不會聽到任何杂音	
16	Polarity 极性	When positive voltage is applied to the terminal marked (+), diaphragm should move to the front. 正電壓接至(+)極時,音膜振動是朝向喇叭前方	
17	Terminal Strength 端子强度	Capable of withstand 1kg load for 30 seconds without resulting in any damage or rejection. 能夠承受 1kg 負載達 30 秒不會造成任何損壞	
18	Temperature 温度	Operating temperature: -30°C to +70°C 工作溫度: -30°C to +70°C Storage temperature: -30°C to +70°C 儲存溫度: -30°C to +70°C	

2-1. Test Condition 测试条件

Standard 标准测试

Temperature 温度 : 15 ~ 35℃

Relative humidity 相对湿度 : 25% ~ 85%,

Atmospheric pressure 大气压力 : 860mbar to 1060mbar.

Basic 基本测试

Temperature 温度: 20±3℃

Relative humidity 相对湿度: 60% ~ 70%,

Atmospheric pressure 大气压力: 860mbar to 1060mbar

2-2. Standard Test Fixture 标准测试设备

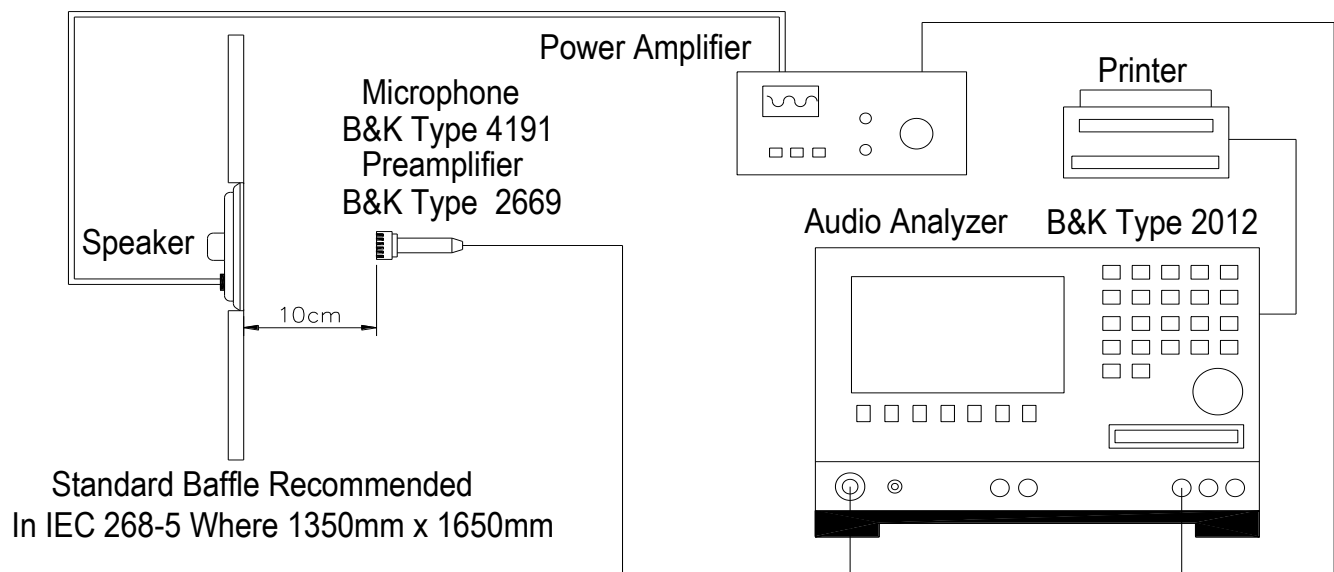
1. Input Power 输入功率: (890mV)

2. Zero Level : -dB

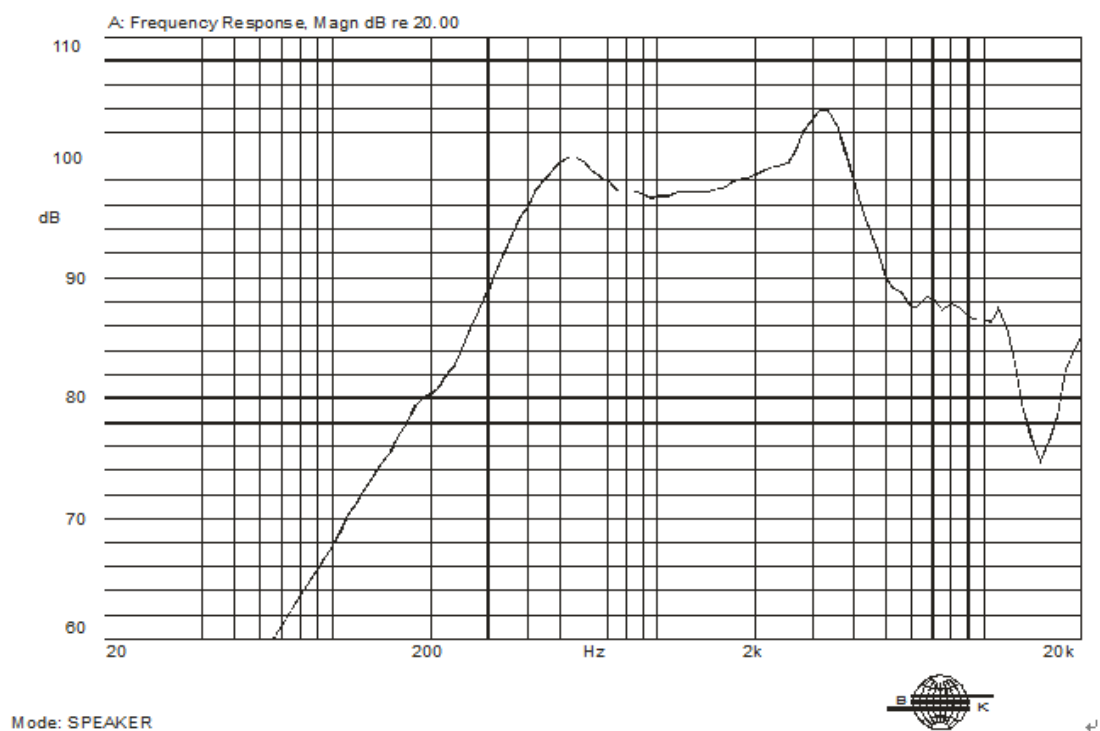
3. Mode 模式: SPEAKER 喇叭

4. potentiometer Range : 50dB

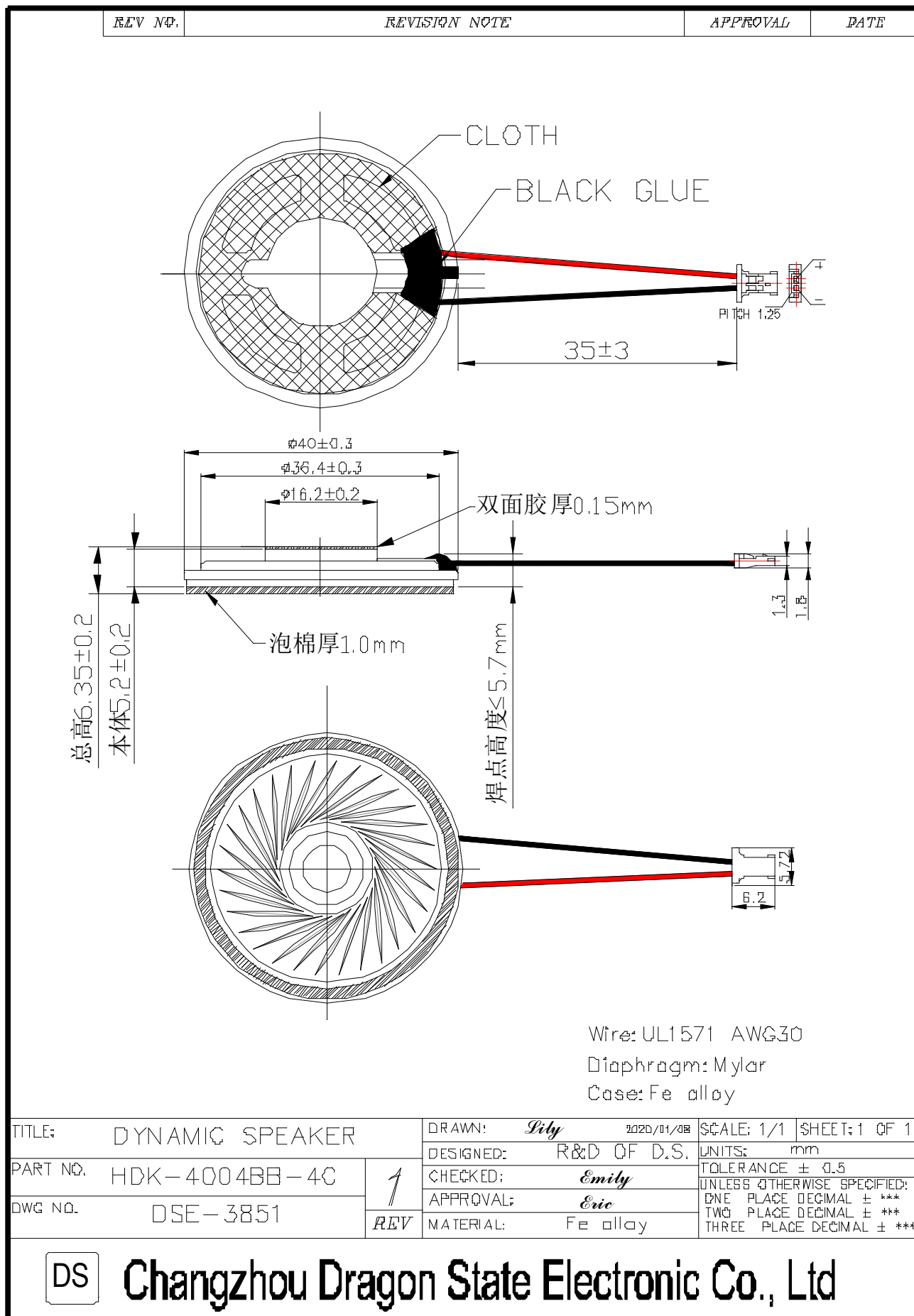
5. Sweep Time 扫描时间: 0.5sec



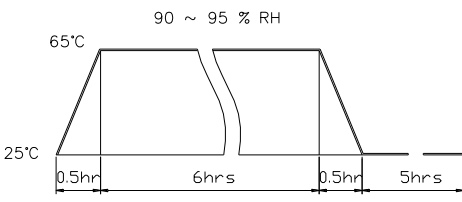
2.3 Frequency Response Curve 频响曲线



3.Dimension 尺寸



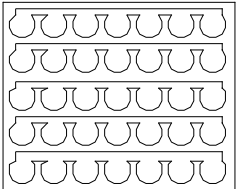
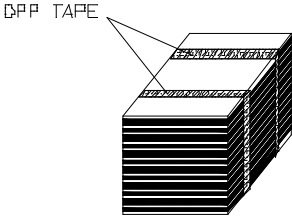
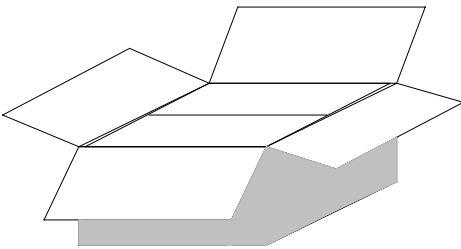
4. Reliability Test 可靠性测试

Items.		Specifications
01	High temp. Test 高温测试	Keep 96 hours at $+70^{\circ}\text{C}\pm 3^{\circ}\text{C}$ and leave 3 hours in normal temperature and then check $+70^{\circ}\text{C}\pm 3^{\circ}\text{C}$ 持续 96 小时, 在常温下存放 3 小时后测试
02	Low temp. Test 低温测试	Keep 96 hours at $-20^{\circ}\text{C}\pm 3^{\circ}\text{C}$ and leave 3 hours in normal temperature and then check $-30^{\circ}\text{C}\pm 3^{\circ}\text{C}$ 持续 96 小时, 在常温下存放 3 小时后测试
03	Humidity test 湿度测试	Keep 96 hours at $+40^{\circ}\text{C}\pm 3^{\circ}\text{C}$ relative humidity 95% and leave 3 hours in normal temperature and then checked. $+40^{\circ}\text{C}\pm 3^{\circ}\text{C}$ 相对湿度 95%持续 96 小时, 在常温下存放 3 小时后测试
04	Temp./Humidity cycle 温湿度循环测试	The part shall be subjected 5 cycles. One cycle shall be 12 hours and consist of; 在以下条件 5 次循环, 每次 12 小时, 在常温下存放 3 小时后测试  The graph shows a temperature profile over time. It starts at 25°C, ramps up to 65°C over 0.5 hours, holds at 65°C for 6 hours, ramps down to 25°C over 0.5 hours, and then holds at 25°C for 5 hours. The humidity is maintained at 90% to 95% RH during the 6-hour high-temperature hold.
05	Thermal cycle test. 热循环测试	Low temperature: $-30^{\circ}\text{C}\pm 3^{\circ}\text{C}$, temperature: $+70^{\circ}\text{C}\pm 3^{\circ}\text{C}$, cycle: 1 hour/cycle each, and then keep 5 cycles in a room. 低温 $-30^{\circ}\text{C}\pm 3^{\circ}\text{C}$ 高温 $+70^{\circ}\text{C}\pm 3^{\circ}\text{C}$ 一小时一个周期, 同一个试验箱 5 个周期
06	Vibration 振动测试	10~200~10Hz sin-wave sweep 15min. 5G(constant) X,Y, Z 3 direction. 2 hours each, total 6 hours. 10~200~10Hz 正弦波振动 15 分钟, X,Y, Z 三个面, 2 小时一次, 共 6 小时
07	Fix drop test 固定跌落测试	Fix on jig. Then drop from 152cm height to the concrete floor X, y, z 6 direction. 5 times each, total 30 times. 固定夹具中, 152cm 跌落水泥地, X,Y, Z 六个面, 每面 5 次, 共 30 次
08	Free drop test 自由跌落测试	Free drop from 100cm height to the concrete floor X, y, z 6 direction. 1 times each, total 6 times. 100cm 跌落水泥地, X,Y, Z 六个面, 每面 1 次, 共 6 次
09	Rated Power test 额定功率测试	Rated Power Pink noise is applied for 96 hours 额定功率粉噪声持续 96 hours
10	Max Power test 最大功率测试	Max power 1 min on – 2 min off 10 cycles. 最大功率 1 分钟通, 停 2 分钟, 10 次循环
11	Terminal strength test 拉力测试	Capable of withstand 1kg load for 30 seconds without resulting in any damage or rejection 1kg 拉力 30 秒, 没有导致产品损坏
Criterion: After these test, the change of S.P.L shall be within ± 3 dB. 所有试验后, 音压都在 ± 3 dB 之内		

Soldering Condition 焊接条件

Recommend using constant branding iron in 15 ~ 30W, and in temperature range $350\pm 10^{\circ}\text{C}$. Soldering time not over 3 seconds. 推荐使用恒温烙铁 15~30W, 在温度范围 $350\pm 10^{\circ}\text{C}$. 焊接时间 2 秒。

5.Packing 包装

REV NO.	REVISION NOTE	APPROVAL	DATE
 ↓  ↓  ↓  Cover{350*280*5mm} Material: Eps Box{350*280*16mm} 35pcs Material: Eps Middle{350*280*160mm} 350pcs Material: Eps Outer Box{590*390*405mm} 1400pcs Material: Paper			
单位: mm			
TITLE: packing		DRAWN: Lily 2014/05/23	
PART NO.		DESIGNED: R&D OF D.S.	
DWG NO.		CHECKED: Emily	
		APPROVAL: Eric	
		MATERIAL: xxx	
		SCALE: 2:1	
		SHEET: 1 of 1	
		UNITS: mm	
		TOLERANCE	
		20~11 ± 0.3	
		10~5 ± 0.2	
		<4 ± 0.1	

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