

MESSRS.

SPECIFICATION FOR APPROVAL**承 认 书**

Product	动态式扬声器 DYNAMIC SPEAKER
Part No.	HDK-151108ZA-16C (RoHS)
Customer	
Customer Part No.	

Approved By	Checked By	Made By
王台平 JUN-20-2019	曹丽萍 JUN-20-2019	LILY JUN-20-2019

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1. Specification

HDK-151108ZA-16C (RoHS)

ITEM		SPECIFICATIONS
01	Type 屬性	Dynamic speaker 动态式扬声器
02	Dimension 尺寸	External diameter 15*11 mm 外径 15*11mm
03	Rated Input Power 额定输入功率	0.7W (in 1cc box)
04	Max. Input Power 最大输入功率	1.0W For 1 Minute (in 1cc box) 1.0W 内 1 分钟
05	Nominal Impedance 阻抗	8ohm $\pm$ 15% at 2KHz.
	DC Resistance 直流电阻	7.2ohm $\pm$ 15%
06	Resonance Frequency (Fo)谐振频率	650Hz $\pm$ 20% (in free air)(在自由场)
	Resonance Frequency (Fo)谐振频率	950Hz $\pm$ 20% (in 1cc box)(在 1CC 腔体内)
07	Sensitivity (S.P.L.)灵敏度	90 $\pm$ 3 dB /0.5W/0.1m at1.0KHz in free air
08	Frequency Range 频率范围	Fo – 20KHz
09	Dustproof and waterproof 防水	IP67 (1 metre 30 minutes)
10	Total Harmonics Distortion 谐波失真	Max 10% at 1 KHz,0.7W.
11	Weight 重量	1.5g $\pm$ 5%g
12	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
13	Operation Test 工作测试	Must be normal at program source – 0.7W 测试的工作功率為 0.7W
14	Buzz, Rattle, etc.异音测试	Must be normal at sine wave 2.37Vrms (in 1cc box)from Fo~20KHz 加電壓 2.37V 在 1cc 腔体内頻頻 Fo to 20KHz 的正旋波時不會聽到任何杂音
15	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
16	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
17	Temperature 温度	Operating temperature: -20°C to +70°C工作温度: -20°C to +70°C Storage temperature: -20°C to +70°C儲存温度: -20°C to +70°C

2-1.Test Condition 测试条件

Standard 标准测试

Temperature 温度 : 15 ~ 35°C

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°C

Relative humidity 相对湿度: 60% ~ 70%,

Atmospheric pressure 大气压力 : 860mbar to 1060mbar

2-2.Standard Test Fixture 标准测试设置

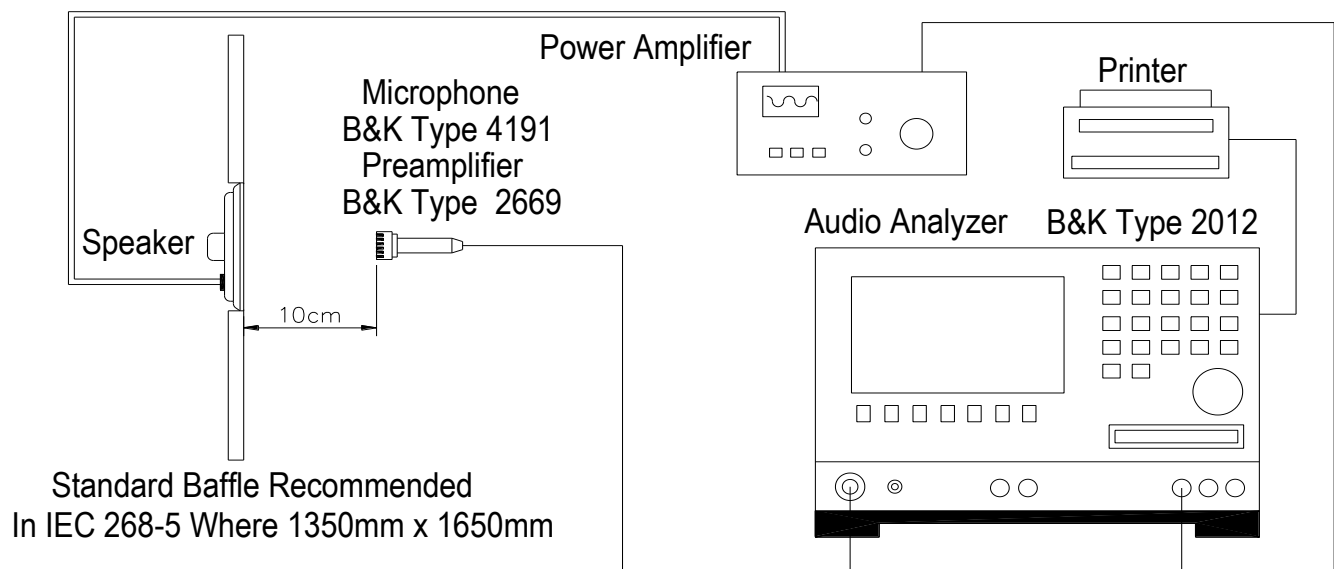
1.Input Power 输入功率: 0.5W (2.0V)

2.Zero Level : -dB

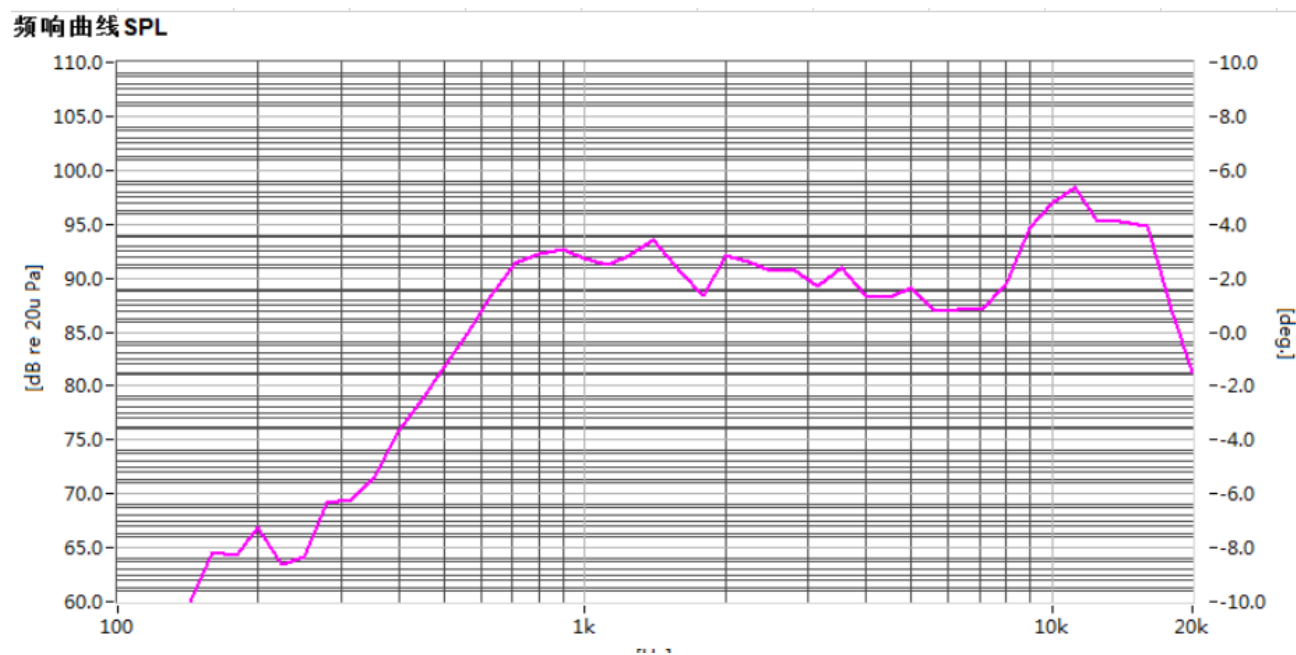
3.Mode 模式 : SPEAKER 喇叭

4.potentiometer Range : 50dB

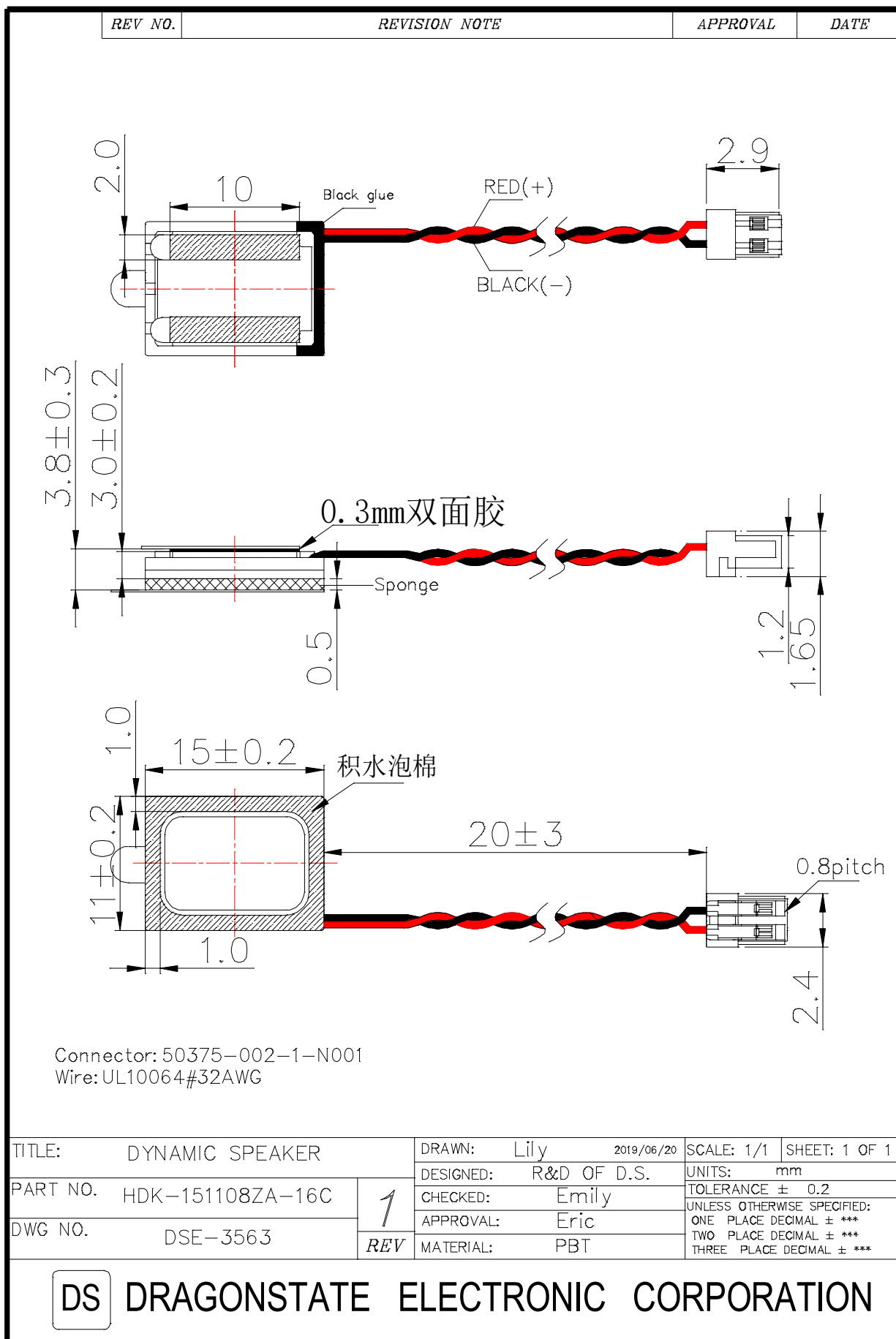
5.Sweep Time 扫描时间 : 0.5sec



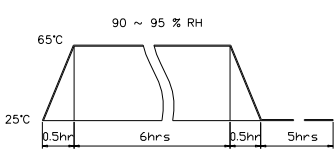
2-3.Frequency Response Curve 频响曲线



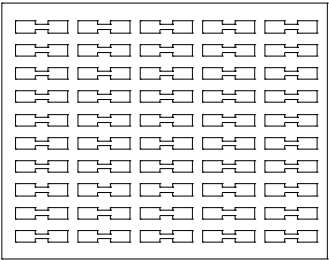
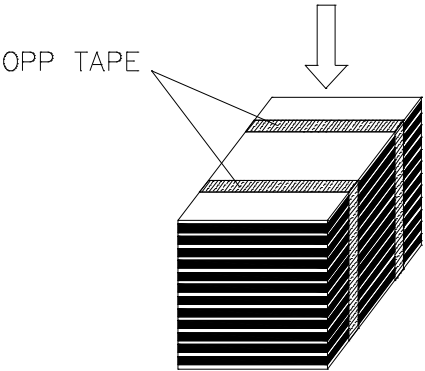
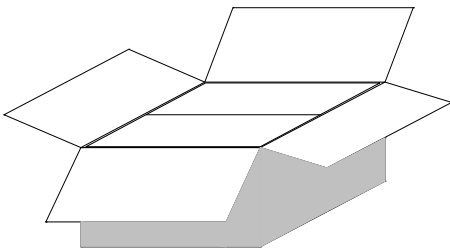
3.Dimension 尺寸



4. Reliability Test 可靠度测试

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 $-20^{\circ}\text{C}\pm 3^{\circ}\text{C}$ 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 cycle between 25°C and 65°C. The temperature rises from 25°C to 65°C over 0.5 hours, stays at 65°C for 6 hours, and then falls back to 25°C over 0.5 hours. The relative humidity is 90% to 95% RH during the 6-hour high-temperature plateau.
05	Thermal cycle test. 热循环测试	Low temperature: $-20^{\circ}\text{C}\pm 3^{\circ}\text{C}$, 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 $-20^{\circ}\text{C}\pm 3^{\circ}\text{C}$ 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 white noise is applied for 96 hours 额定功率白噪声持续 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
12	Protection against liquids 防水测试	Protected against 30 Minutes of immersion under 1M pressure 产品在 1m 水压下 30 分钟无漏水
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		

5.Packing

REV NO.	REVISION NOTE	APPROVAL	DATE
	 Cover(290*225*3mm) Material: Paper		
	 Box(290*225*10mm) 100pcs Material: Paper+Epe		
	 Middle(290*225*135mm) 1000pcs(10*100pcs) Material: Paper+Epe		
	 Outer Box(515*320*280mm) 4000pcs(4*1000pcs) Material: Paper		
單位: mm			
TITLE: Packing		DRAWN: Lily 2012/10/17	
PART NO.		DESIGNED: R&D OF D.S.	
DWC NO.		CHECKED: Emily	
REV		APPROVAL: Eric	
		MATERIAL:	
		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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