

**MESSRS.****SPECIFICATION FOR APPROVAL****承 认 书**

Product	DYNAMIC SPEAKER
Part No.	HDK-151108ZA-5W10 (RoHS)
Customer	
Customer Part No.	M2

Approved By	Checked By	Made By
王台平 JUL-07-2017	曹丽萍 JUL-07-2017	LILY JUL-07-2017

**常 州 华 龙 电 子 有 限 公 司****DRAGONSTATE ELECTRONIC CORPORATION**

中国江苏省常州市新区电子园新四路 36 号

Tel: +86-519-85110078. 86-519-85106698, Fax: +86-519-85101081

EDITION:1.1

## 1. Specification

HDK-151108ZA-5W10(RoHS)

ITEM		SPECIFICATIONS
01	Type	Dynamic speaker
02	Dimension	External diameter 15*11 mm
03	Rated Input Power	0.8W In 1cc Box
04	Max. Input Power	1.0W In 1cc Box For 1 Minute
05	Impedance	8 ohm $\pm$ 15% at 2KHz.
06	Resonance Frequency (Fo)	600Hz $\pm$ 20% (in free air)
	Resonance Frequency (Fo)	900Hz $\pm$ 20% (in 1cc box)
07	Sensitivity (S.P.L.)	87 $\pm$ 3 dB /0.5W/0.1m at 2.0KHz
08	Frequency Range	Fo – 20KHz
09	Dustproof and Waterproof	IP67 (1 Meter 30 Minutes)
10	Total Harmonics Distortion	Max 10% at 1 KHz,0.5W.
11	Weight	1.5g $\pm$ 5%g
12	Appearance	Should not exist any obstacle to be harmful to normal operation; damages, cracks, rusts and distortions, etc.
14	Operation Test	Must be normal at program source – 0.8W
15	Buzz, Rattle, etc.	Must be normal at sine wave 0.89Vrms (in free air) /2.53Vrms(in 1.0cc box) from 200~3400Hz
16	Polarity	When positive voltage is applied to the terminal marked (+), diaphragm should move to the front.
17	Terminal Strength	Capable of withstand 1kg load for 30 seconds without resulting in any damage or rejection.
18	Temperature	Operating temperature: -20 $^{\circ}$ C to +70 $^{\circ}$ C Storage temperature: -20 $^{\circ}$ C to +70 $^{\circ}$ C

## 2-1. Test Condition

### Standard

Temperature : 15 ~ 35℃

Relative humidity : 25% ~ 85%,

Atmospheric pressure : 860mbar to 1060mbar.

### Basic

Temperature : 20±3℃

Relative humidity : 60% ~ 70%,

Atmospheric pressure : 860mbar to 1060mbar

## 2-2. Standard Test Fixture

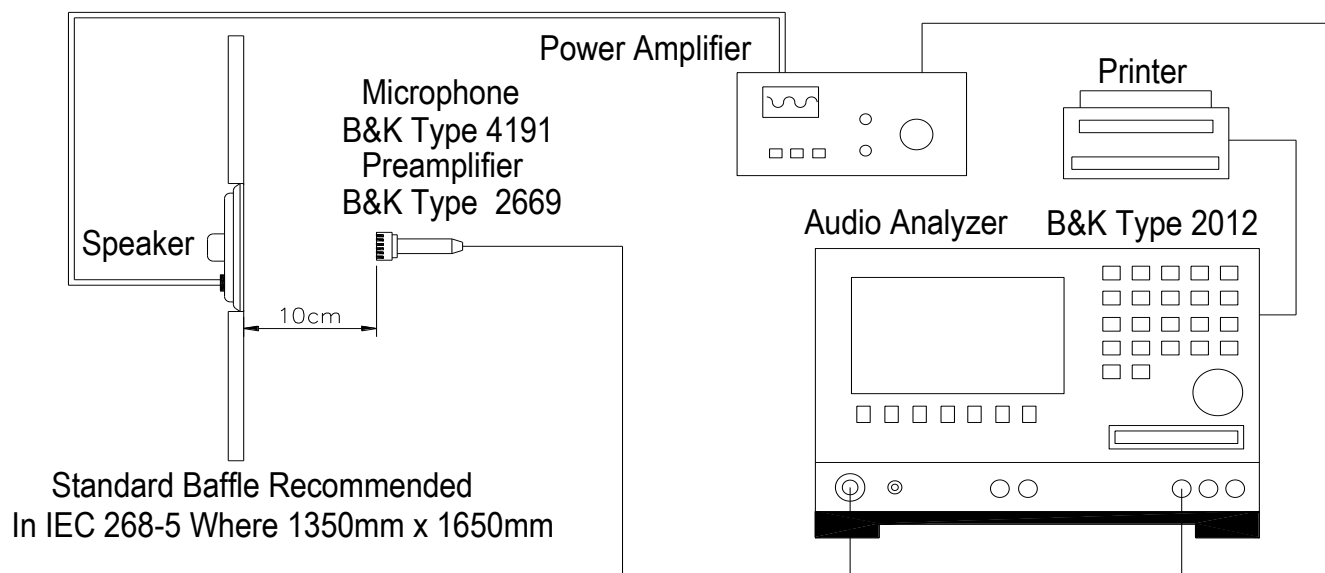
1. Input Power : 0.5W ( 2.0V )

2. Zero Level : -dB

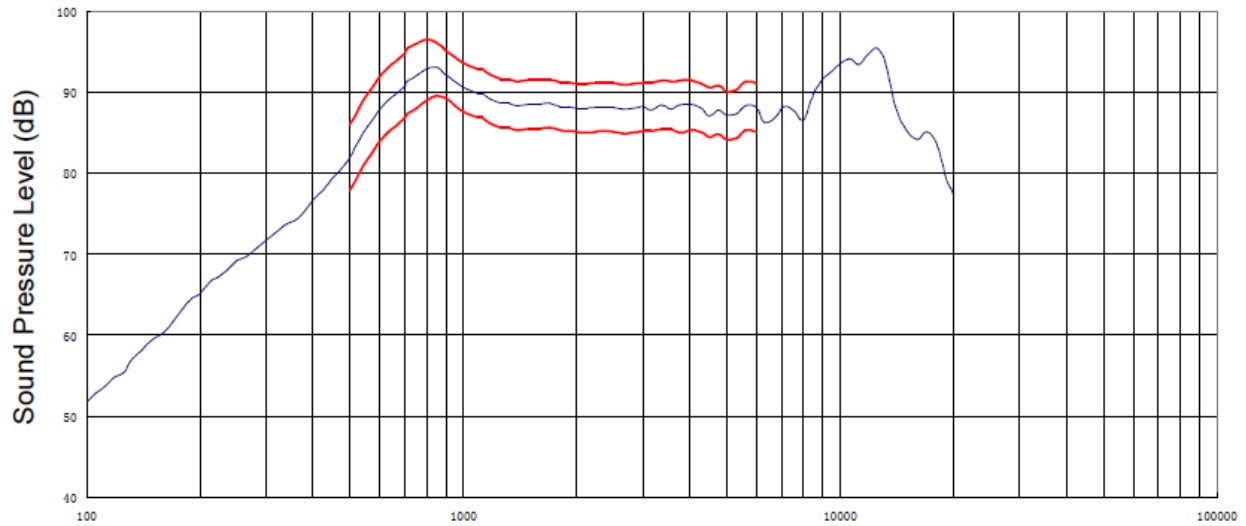
3. Mode : SPEAKER

4. potentiometer Range : 50dB

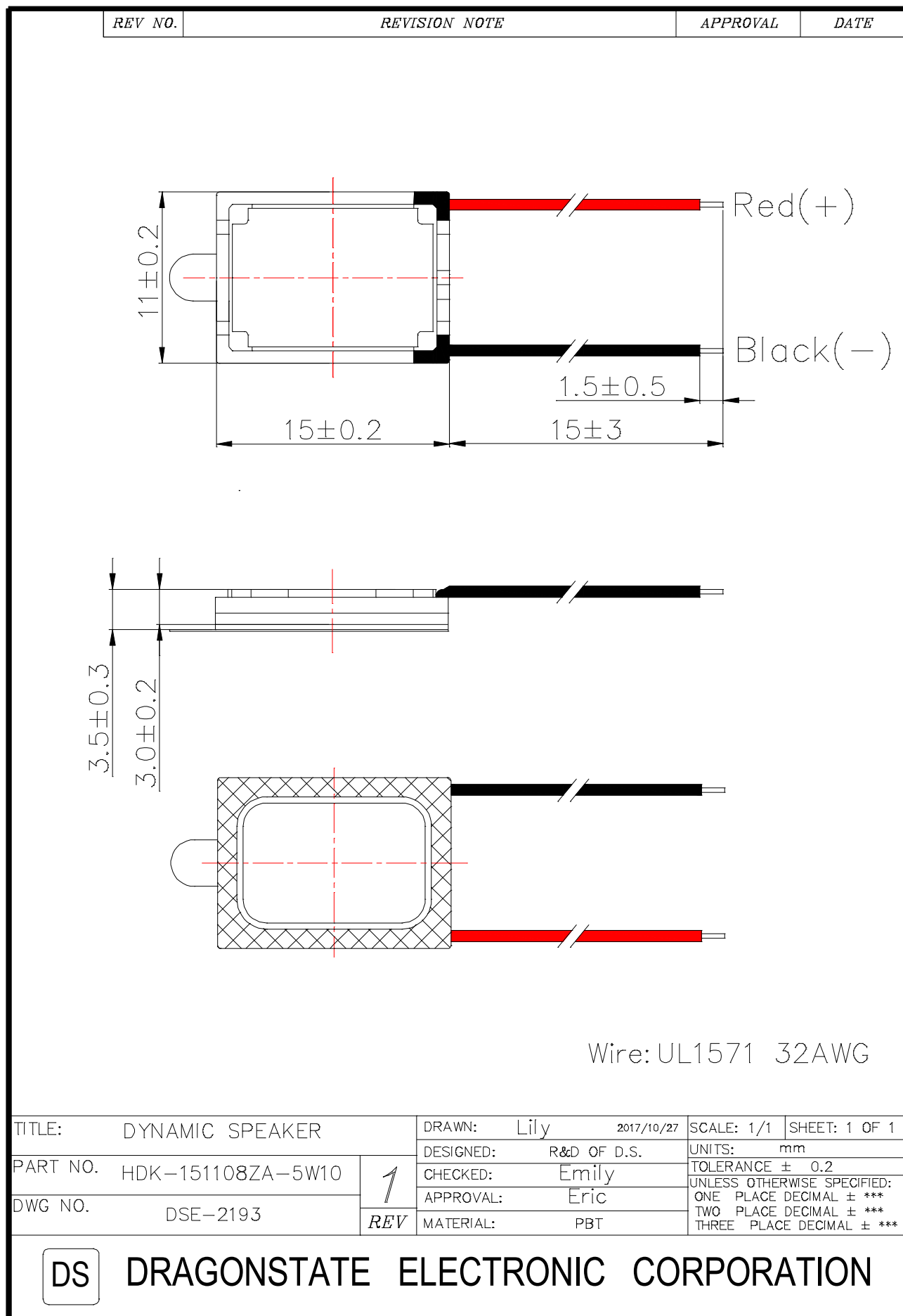
5. Sweep Time : 0.5sec



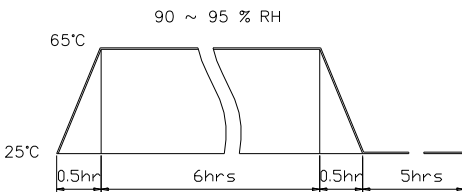
## 2.3 Frequency Response Curve



### 3.Dimension



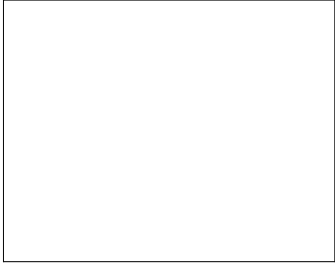
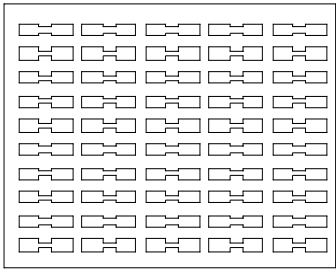
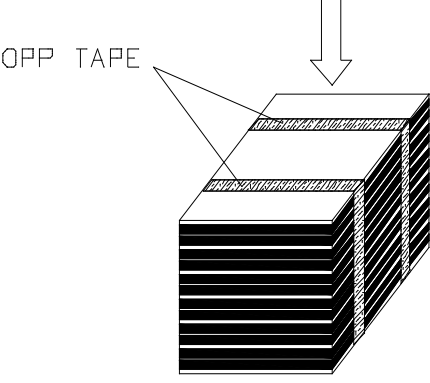
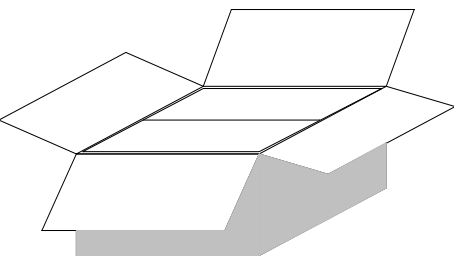
#### 4. Reliability Tests

Items.		Specifications
01	High temp. Test	Keep 96 hours at $+70^{\circ}\text{C} \pm 3^{\circ}\text{C}$ and leave 3 hours in normal temperature and then check
02	Low temp. Test	Keep 96 hours at $-20^{\circ}\text{C} \pm 3^{\circ}\text{C}$ and leave 3 hours in normal temperature and then check
03	Humidity test	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.
04	Temp./Humidity cycle	<p>The part shall be subjected 5 cycles. One cycle shall be 12 hours and consist of;</p> 
05	Thermal cycle test.	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.
06	Vibration	10~200~10Hz sin-wave sweep 15min. 5G(constant) X,Y, Z 3 direction. 2 hours each, total 6 hours.
07	Free drop test	Free drop from 100cm height to the concrete floor X, y, z 6 direction. 1 times each, total 6 times.
08	Rated Power test	Rated Power white noise is applied for 24 hours (in Pink noise in 1cc box)
09	Max Power test	Max power 1 min on – 2 min off 10 cycles.
10	Protection against Liquids	Protected against 30mins of immersion under 1m pressure

#### Soldering Condition

Recommend using constant branding iron in 15 ~ 30W, and in temperature range  $350 \pm 10^{\circ}\text{C}$ . Soldering time not over 3 seconds.

## 5.Packing

REV NO.	REVISION NOTE	APPROVAL	DATE
	 <p>Cover(290*225*3mm) Material: Paper</p>		
	 <p>Box(290*225*10mm) 100pcs Material: Paper+Epe</p>		
	 <p>Middle(290*225*135mm) 1000pcs(10*100pcs) Material: Paper+Epe</p>		
	 <p>Outer Box(515*320*280mm) 4000pcs(4*1000pcs) Material: Paper</p>		
单位: mm			
TITLE: Packing		DRAWN: Lily	2012/10/17
PART NO.		DESIGNED: R&D OF D.S.	SCALE: 2:1
DWG NO.		CHECKED: Emily	SHEET: 1 of 1
REV		APPROVAL: Eric	UNITS: mm
		MATERIAL:	TOLERANCE
			20~11 ± 0.3
			10~5 ± 0.2
			<4 ± 0.1

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[illegible]