

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

Product	WATERPROOF TYPE SPEAKER
Part No.	HDK-160908ZA-3W5 (RoHS)
Customer Approval	
Customer Part No.	

Approved By	Checked By	Made By
王台平 OCT-17-2017	曹丽萍 OCT-17-2017	LILY OCT-17-2017

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

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EDITION:1.1

## 1. Specification

HDK-160908ZA-3W5 (RoHS)

ITEM		SPECIFICATIONS
01	Type	Dynamic speaker
02	Dimension	External diameter 16*9 mm
03	Rated Input Power	0.5W In 1cc Box
04	Max. Input Power	0.8W In 1cc Box For 1 Minute
05	Impedance	8 ohm $\pm$ 15% at 1000Hz.
06	Resonance Frequency (Fo)	750Hz $\pm$ 20% at Fo, 1V
	Resonance Frequency (Fo)	950Hz $\pm$ 20% 0.5w/10cm while testing in 1cc box
07	Sensitivity (S.P.L.)	89 $\pm$ 3Db at (AVG 0.8,1.0,1.2,1.5)KHz 0.5W/0.1m
08	Frequency Range	Fo – 20KHz
09	Dustproof and waterproof	IP67
10	Total Harmonics Distortion	Max 5% at 1 KHz,0.1W.
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.
13	Operation Test	Must be normal at program source – 0.5W
14	Buzz, Rattle, etc.	Should not be audible at 2.0V sine Wave between Fo to 20KHz
15	Polarity	When positive voltage is applied to the terminal marked (+), diaphragm should move to the front.
16	Terminal Strength	Capable of withstand 1kg load for 30 seconds without resulting in any damage or rejection.
17	Temperature	Operating temperature: -30℃ to +70℃ Storage temperature: -40℃ to +80℃

## 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

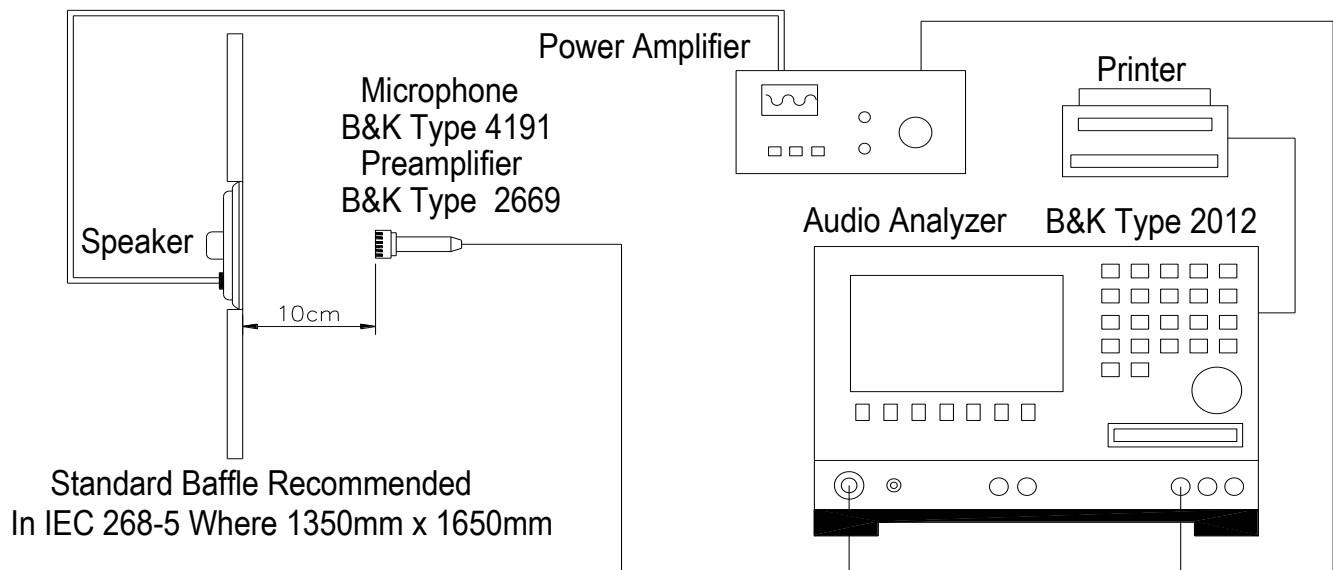
1. Input Power : 0.5W ( 2.0V )

2. Zero Level : -Db

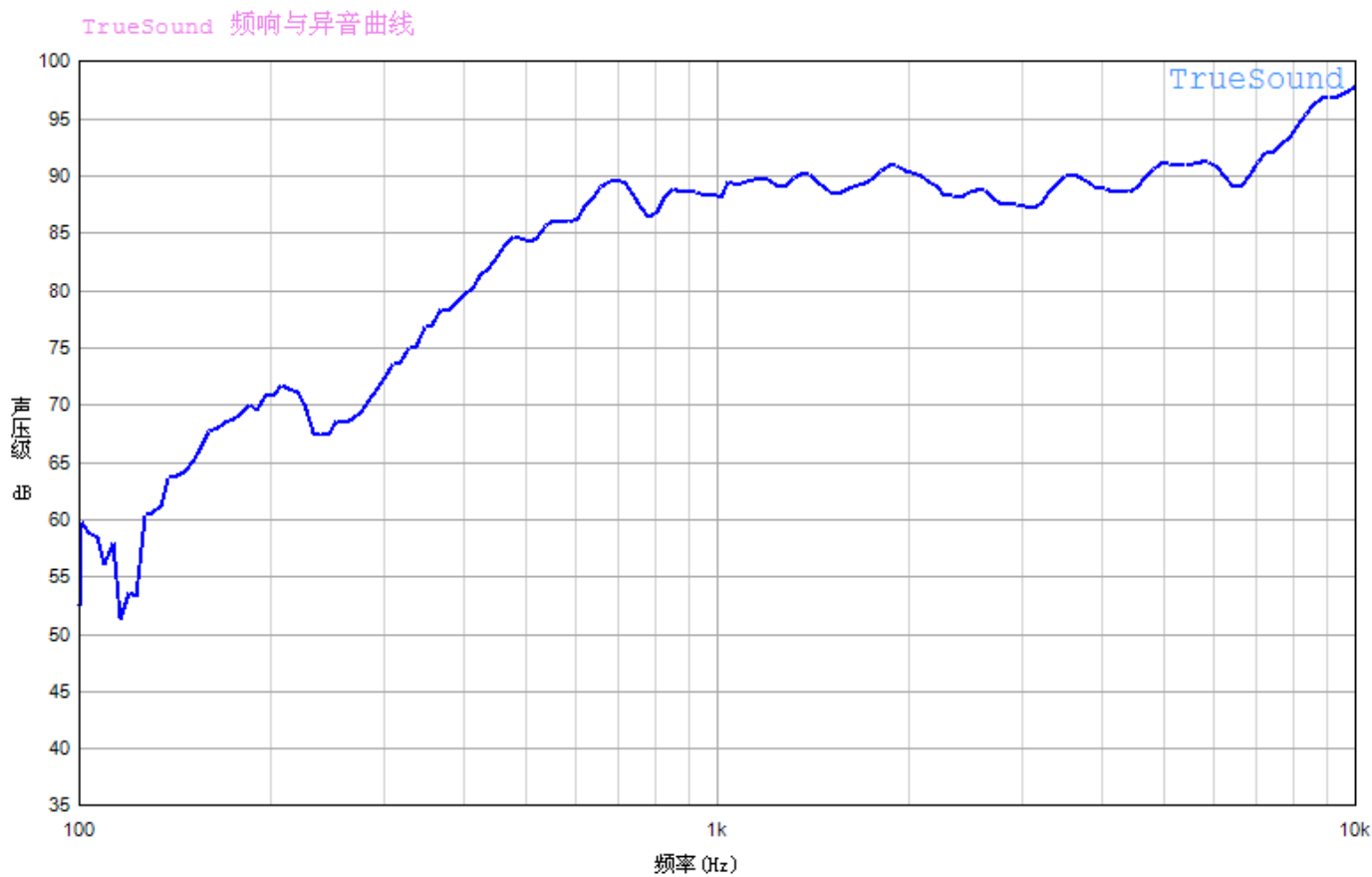
3. Mode : SPEAKER

4. potentiometer Range : 50Db

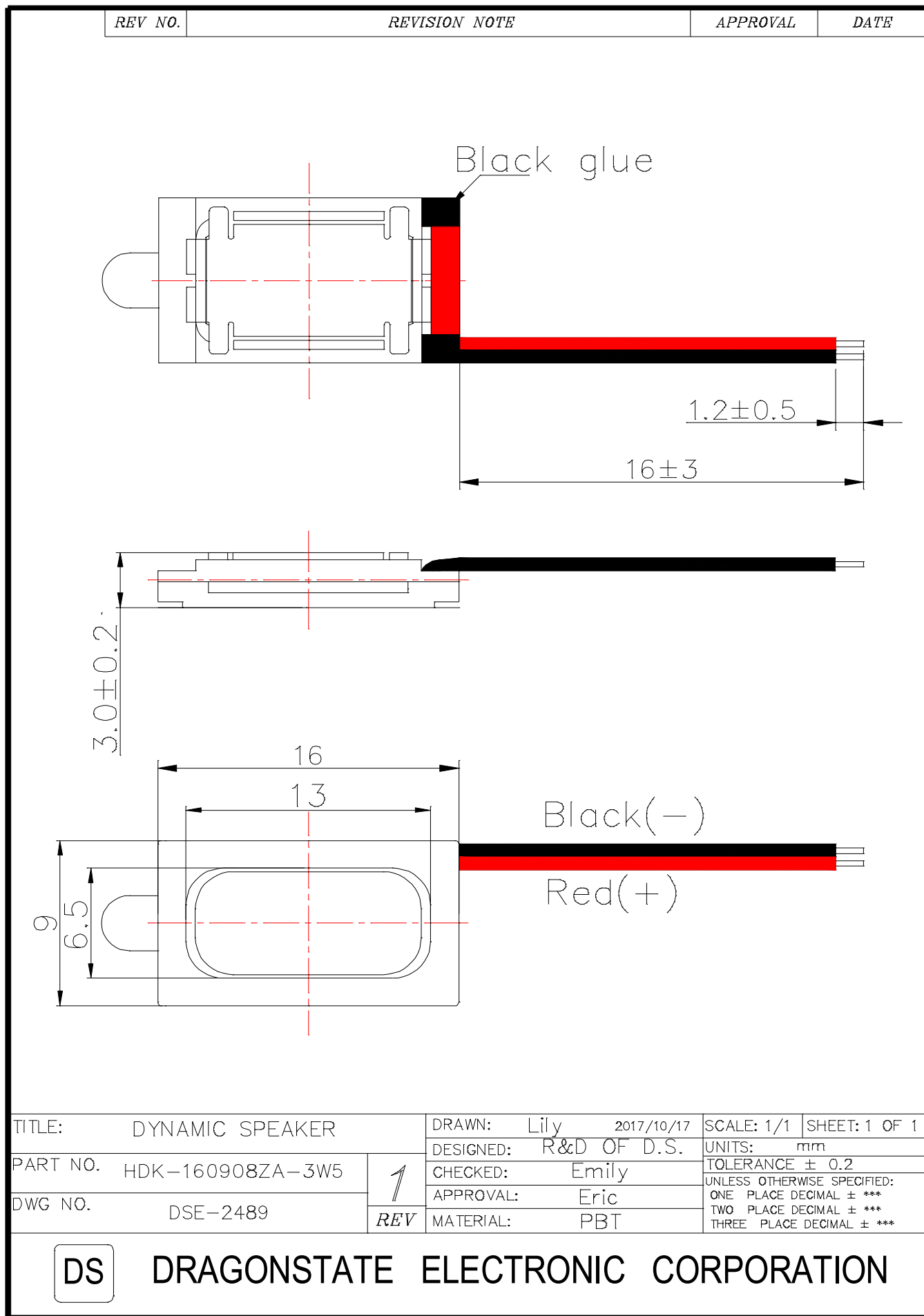
5. Sweep Time : 0.5sec



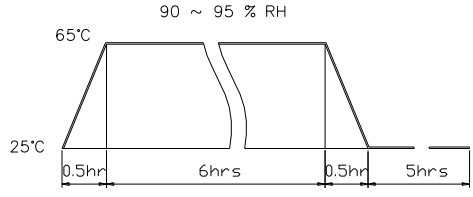
## 2-3.Frequency Response Curve



### 3.Dimension




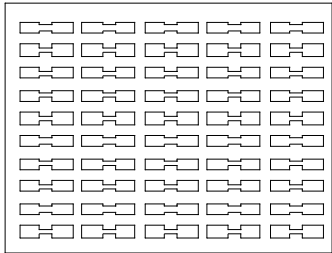
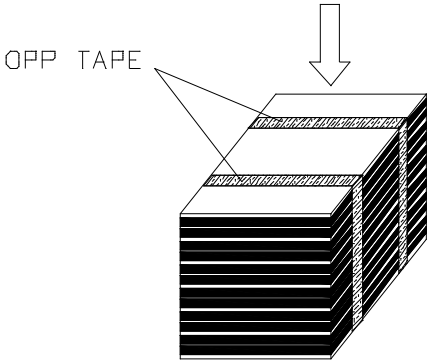
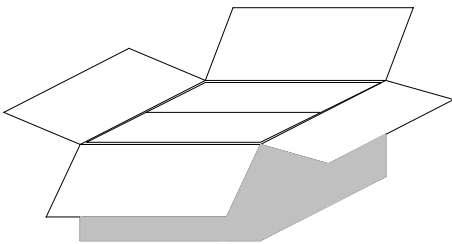
#### 4. Reliability tests

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 $-30^{\circ}\text{C} \pm 3^{\circ}\text{C}$ and leave 3 hours in normal temperature and then check
03	Humidity test	Keep 96 hours at $+60^{\circ}\text{C} \pm 3^{\circ}\text{C}$ 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	Fix drop test	Fix on jig. Then drop from 152cm height to the concrete floor X, y, z 6 direction. 5 times each, total 30 times.
08	Free drop test	Free drop from 100cm height to the concrete floor X, y, z 6 direction. 1 times each, total 6 times.
09	Rated Power test	Rated Power white noise is applied for 96 hours
10	Max Power test	Max power 1 min on – 2 min off 10 cycles.
11	Terminal strength test	Capable of withstand 1kg load for 30 seconds without resulting in any damage or rejection.
12	Protection against liquids	Protected against 30 minutes of immersion under 1M pressure
<b>Criterion: After these test , the change of S.P.L shall be within <math>\pm 3 \text{ Db}</math> .</b>		

#### 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.	
DWC NO.		CHECKED: Emily	
<div style="border: 1px solid black; padding: 5px; display: inline-block;">1</div> 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
<div style="border: 1px solid black; padding: 5px; display: inline-block;">DS</div> DRAGONSTATE ELECTRONIC CORPORATION			

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