

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

Product	DYNAMIC SPEAKER
Part No.	HDK-1608EA-1P1 (RoHS)
Customer Approval	

Approved By	Checked By	Made By
王台平 APR-06-2017	曹丽萍 APR-06-2017	Lily APR-06-2017

**常 州 华 龙 电 子 有 限 公 司**

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EDITION: 1.0



## 2. Specification

HDK-1608EA-1P1 (RoHS)

ITEM		SPECIFICATIONS	
01	Type	Dynamic speaker	
02	Dimension	External diameter 16.4 mm	
03	Rated Input Power	0.5W (Long Time)	
04	Max. Input Power	0.8W for 1 minute	
05	Impedance	8 ohm $\pm$ 15% at 1500Hz.	
06	Resonance Frequency (Fo)	720Hz $\pm$ 20% at Fo, 1V	
07	Sensitivity (S.P.L.)	91dB (0.1W / 0.1m) $\pm$ 3 dB	at AVE 0.8K, 1.0K, 1.2K, 1.5KHz.
		95dB (0.5W / 0.1m) $\pm$ 3 dB	
08	Frequency Range	Fo - 20KHz	
09	Total Harmonics Distortion	Max 8 % at 1 KHz, 0.5W.	
10	Voice Coil	Diameter 8.4mm	
11	Magnet	Rare earth permanent (Nd-Fe-B) magnet $\Phi$ 7.9 x1.0mm	
12	Weight	1.6g $\pm$ 0.3g	
13	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 - 0.5W	
15	Buzz, Rattle, etc.	Should not be audible at 2.0V sine Wave between Fo to 20KHz	
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°C to +60°C	
		Storage temperature: -30°C to +70°C	

### 3. Measuring Method

#### 3-1 .Test Condition

Standard

Temperature : 15 ~ 35°C

Relative humidity : 45% ~ 85%,

Atmospheric pressure : 860mbar to 1060mbar.

Judgement

Temperature : 20±3°C

Relative humidity : 60% ~ 70%,

Atmospheric pressure : 860mbar to 1060mbar

#### 3-2 . Standard Test Fixture

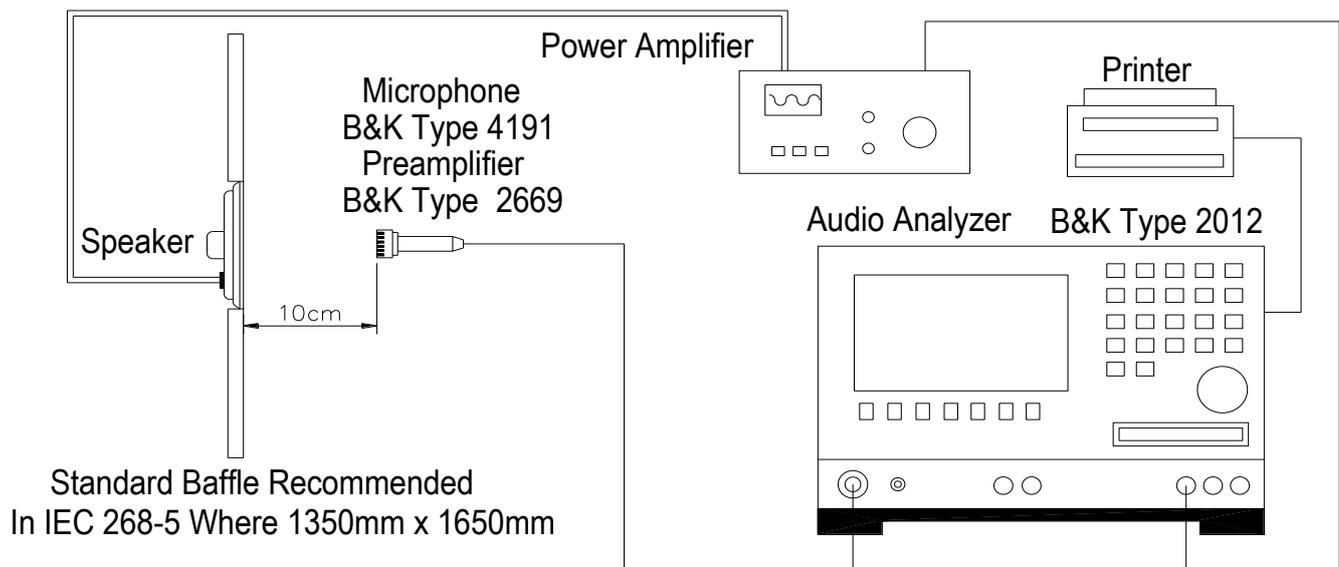
1. Input Power : 0.5W(2.0V)

2. Zero Level : -dB

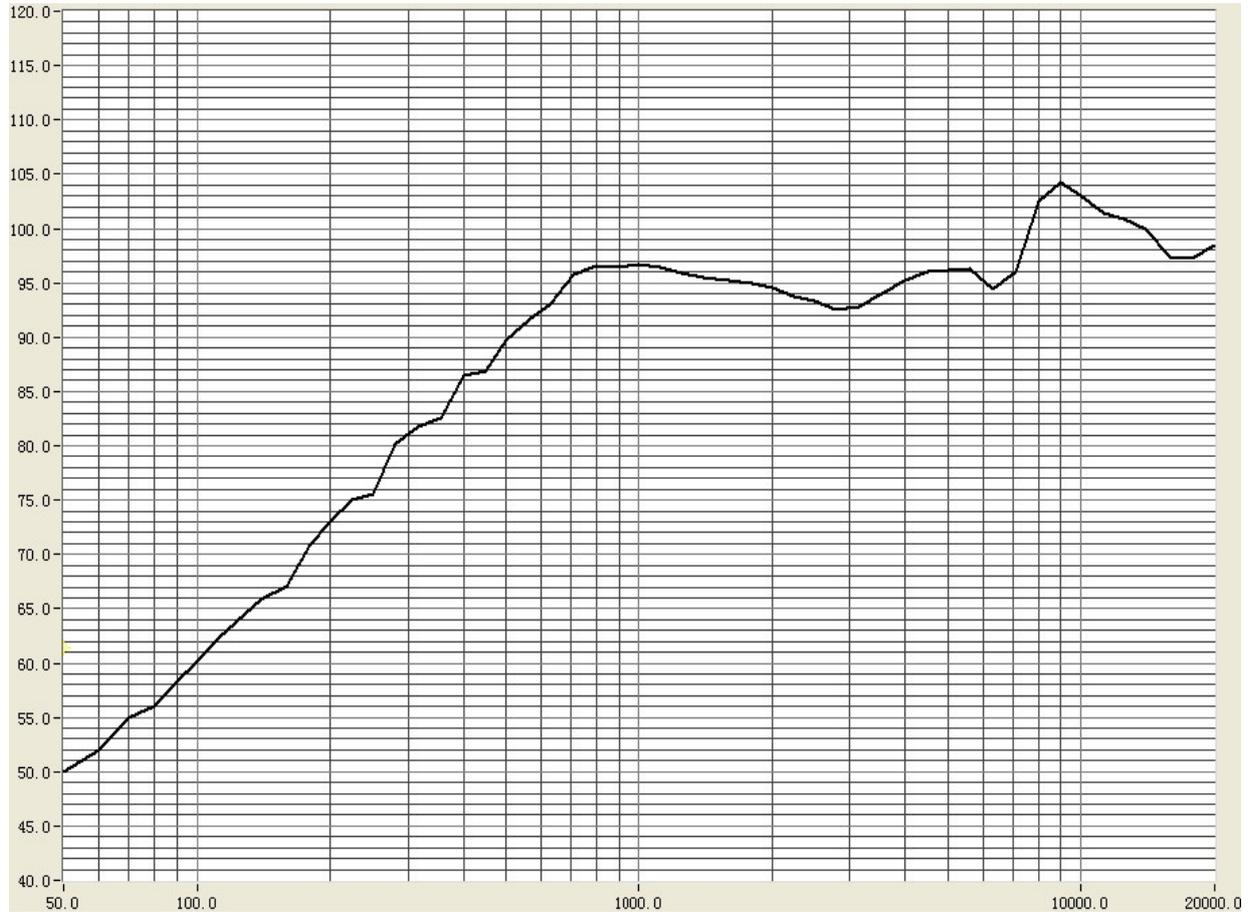
3. Mode : SPEAKER

4. potentiometer Range : 50dB

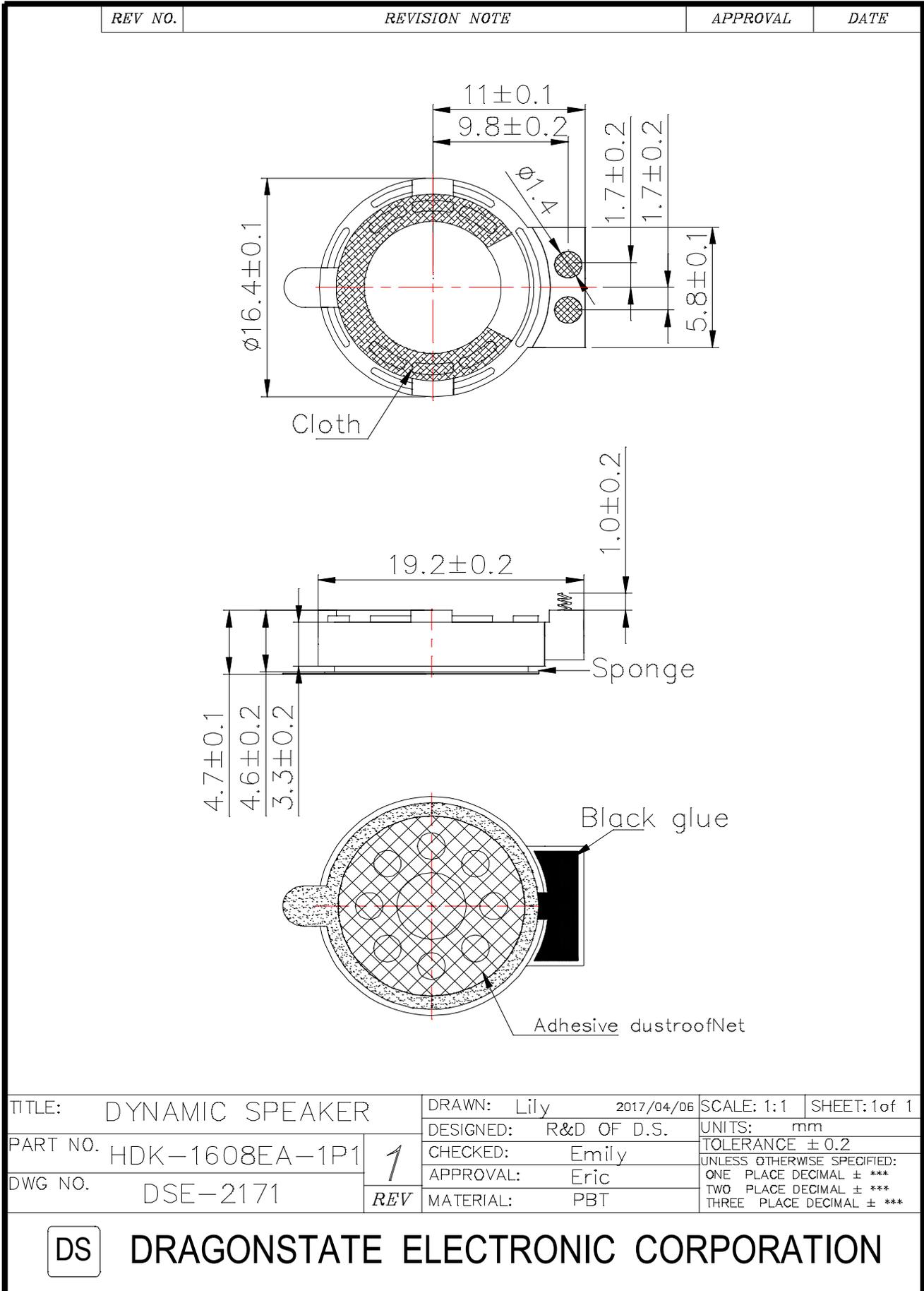
5. Sweep Time : 0.5sec



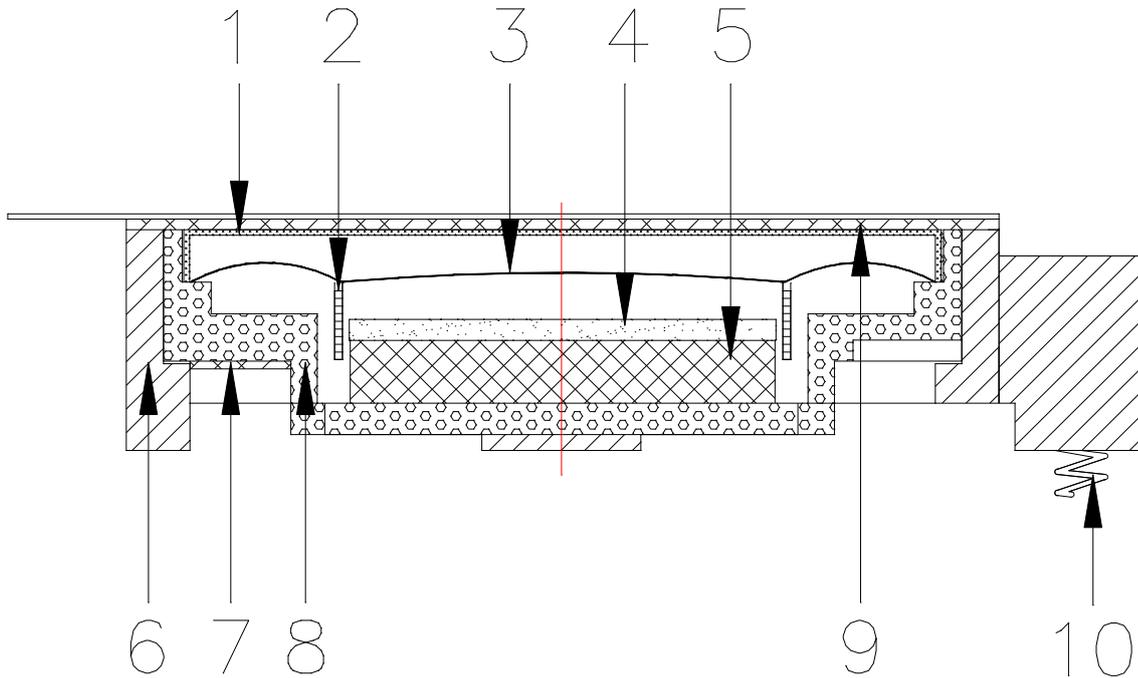
### 3-3. Frequency Response Curve



4. Dimension

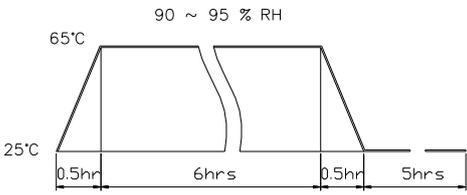


## 5. Material and Structure



NO	PART NAME	MATERIAL	Q`TY
1	CAP	SUS304	1
2	VOICE COIL	COPPER	1
3	DIAPHRAGM	PC	1
4	PLATE	SPCC	1
5	MAGNET	Nd-Fe-B	1
6	FRAME	PBT	1
7	ACOUSTIC CLOTH	UNWOVEN FABRIC	1
8	FRAME	PBT	1
9	GASKET	ADHESIVE+ DUSTROOF NET	1
10	Spring	FE 镀金	2

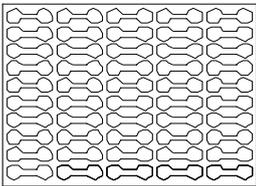
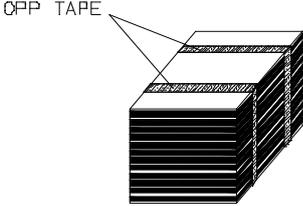
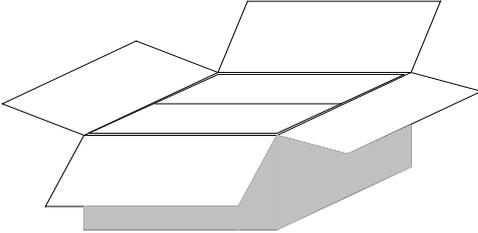
## 6. Reliability Test

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	Load 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.
<p>Criterion : After these test , the change of S.P.L shall be within <math>\pm 3</math> dB</p>		

### SOLDERING CONDITION

Recommend using constant branding iron in **30W**, and in temperature range  $350 \pm 10^{\circ}\text{C}$ .  
 Soldering time **2** seconds.

## 7. Packing

REV NO.	REVISION NOTE	APPROVAL	DATE
			
		Cover(325*245*5mm) Material: Paper	
	↓		
			
		Box(325*245*13mm) 100pcs Material: Paper+Epe	
			
		Middle(325*245*155mm) 1000pcs(10*100pcs) Material: Paper+Epe	
	↓		
			
		Outer Box(490*360*350mm) 5000pcs(5*1000pcs) Material: Paper	
		单位: mm	
TITLE: packing		DRAWN: Lily	2015/08/25
PART NO.		DESIGNED: R&D OF D.S.	SCALE: 2:1
DWG NO.		CHECKED: Emily	SHEET: 1 of 1
1		APPROVAL: Eric	UNITS: mm
		MATERIAL: ***	TOLERANCE
			20~11 ± 0.3
			10~5 ± 0.2
			<4 ± 0.1
<span style="border: 1px solid black; padding: 2px 5px; margin-right: 10px;">DS</span> <b>DRAGONSTATE ELECTRONIC CORPORATION</b>			