

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

Product	DYNAMIC SPEAKER
Part No.	HDK-4008BB-12 (RoHS)
Customer	
Customer Part No.	

Approved By	Checked By	Made By
王台平 SEP-28-2018	曹丽萍 SEP-28-2018	LILY SEP-28-2018

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**1. SPECIFICATION**

HDK-4008BB-12 (RoHS)

ITEM		SPECIFICATIONS	
01	Type	Dynamic speaker	
02	Dimension	External diameter 40 mm	
03	Rated Input Power	0.5W	
04	Max. Input Power	1.0W for 1 minute	
05	Impedance	8 ohm $\pm$ 15% at 1000Hz.	
06	Resonance Frequency (Fo)	420Hz $\pm$ 20% at Fo, 1V	
07	Sensitivity (S.P.L.)	98dB (0.5W / 0.1m) $\pm$ 2dB	at AVE 0.6, 0.8, 1.0, 1.5KHz
08	Frequency Range	Fo - 5KHz	
09	Total Harmonics Distortion	Max 8 % at 1 KHz, 0.5W.	
10	Voice Coil	Diameter 13.5 mm	
11	Magnet	Rare earth permanent (Nd-Fe-B) magnet $\Phi$ 12.5x1.5 mm	
12	Weight	9.6g $\pm$ 0.5g	
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	

**2. Test Condition**

## 2. 1STANDARD

Temperature : 15 ~ 35°C

Relative humidity : 25% ~ 85%,

Atmospheric pressure : 860mbar to 1060mbar.

## 2. 2BASIC

Temperature : 20±3°C

Relative humidity : 60% ~ 70%,

Atmospheric pressure : 860mbar to 1060mbar

## Standard Test Fixture

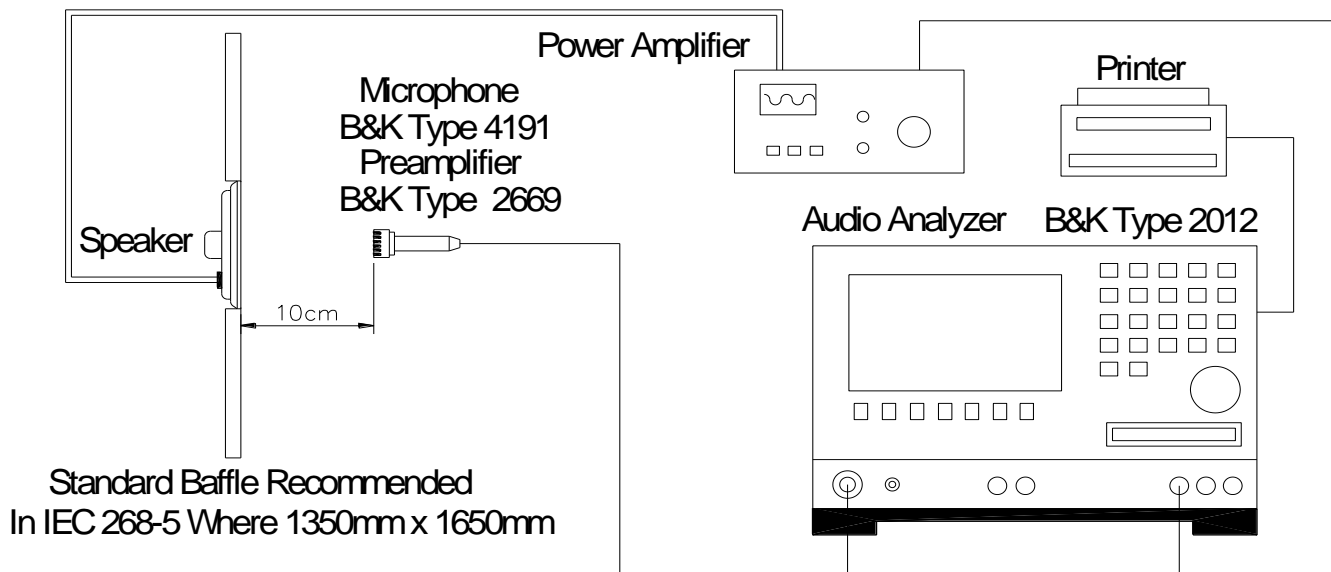
1. Input Power : 2.0W ( 2.0V )

2. Zero Level : -dB

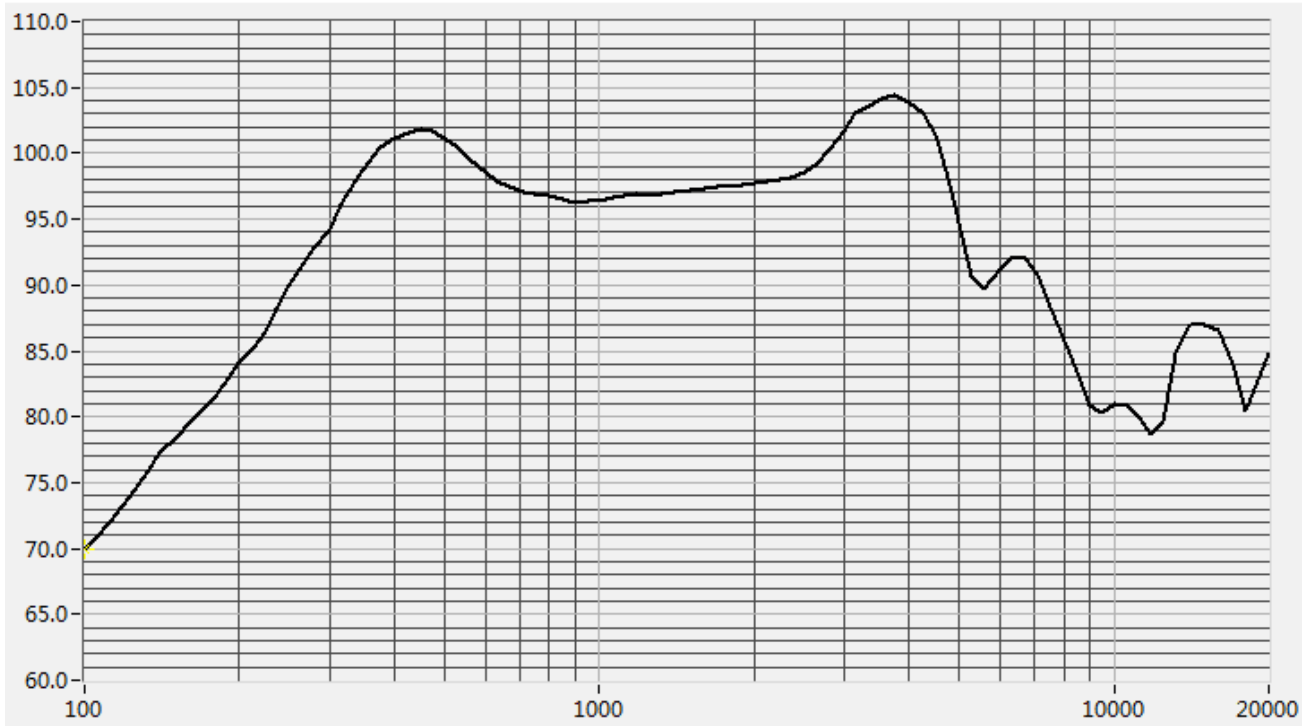
3. Mode : SPEAKER

4. potentiometer Range : 50dB

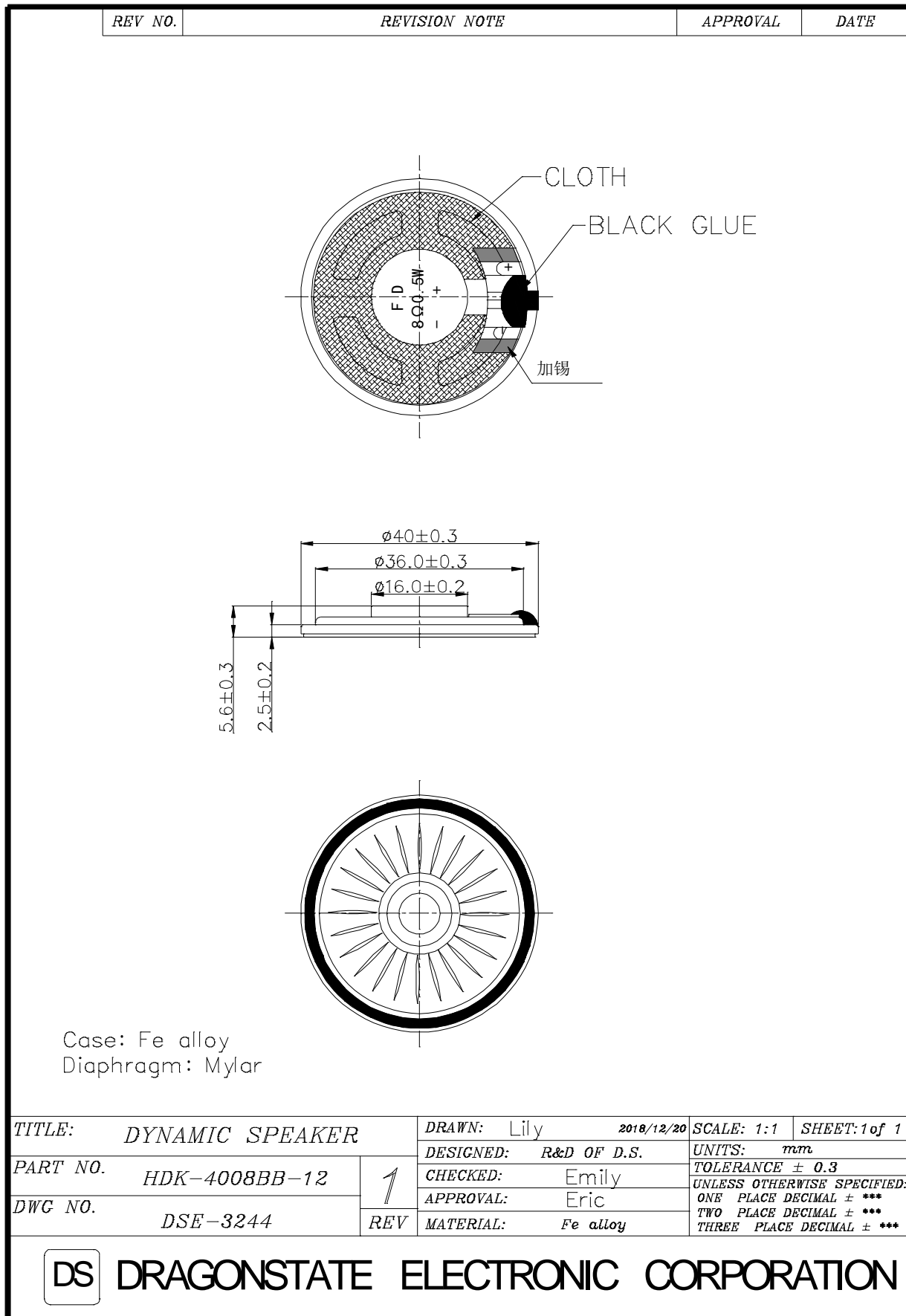
5. Sweep Time : 0.5sec



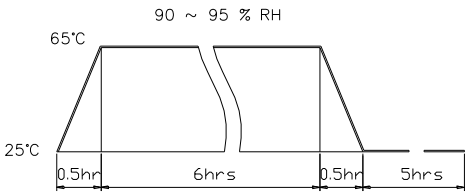
## 2.3 Frequency Response Curve



### 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	$10 \sim 200 \sim 10\text{Hz}$ 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.


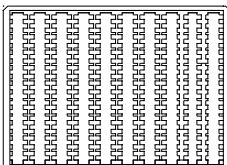
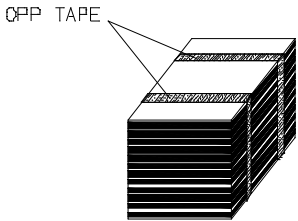
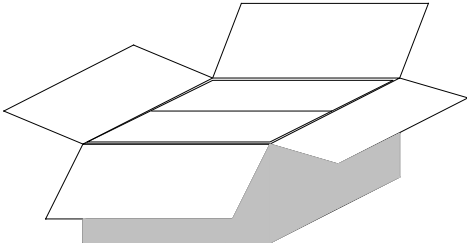
Criterion:

After these test , the change of S.P.L shall be within  $\pm 3$  dB .

#### SOLDERING CONDITION

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

**5. PACKING**

REV NO.	REVISION NOTE	APPROVAL	DATE
			
	Cover{375*275*12mm} Material: Eps		
	↓		
			
	Box{375*275*48mm} 200pcs Material: Eps		
			
	Middle{375*275*260mm} 1000pcs(5*200pcs) Material: Eps		
	↓		
			
	Outer Box{570*390*260mm} 2000pcs(2*1000pcs) Material: Paper		
单位: mm			
TITLE: packing		DRAWN: Lily	2013/12/08
PART NO.		DESIGNED: R&D OF D.S.	SCALE: 2:1
DWG NO.		CHECKED: Emily	SHEET: 1 of 1
<div style="border: 1px solid black; display: inline-block; padding: 5px;">1</div> REV		APPROVAL: Eric	UNITS: mm
		MATERIAL: ***	TOLERANCE
			20~11 ± 0.3
			10~5 ± 0.2
			<4 ± 0.1
<div style="border: 1px solid black; display: inline-block; padding: 5px;">DS</div> DRAGONSTATE ELECTRONIC CORPORATION			