

**MESSRS.**  

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**SPECIFICATION FOR APPROVAL****承 认 书**

<b>Product</b>	<b>WATERPROOF TYPE SPEAKER</b>
<b>Part No.</b>	<b>HDK-2008AA-9C1 (RoHS)</b>
<b>Customer</b>	
<b>Customer Part No.</b>	

<b>Approved By</b>	<b>Checked By</b>	<b>Made By</b>
王台平 AUG-25-2017	曹丽萍 AUG-25-2017	LILY AUG-25-2017

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**1. Specification**

HDK-2008AA-9C1 (RoHS)

ITEM		SPECIFICATIONS	
01	Type	Dynamic speaker	
02	Dimension	External diameter 20 mm	
03	Rated Input Power	1.0W	
04	Max. Input Power	1.2W for 1 minute	
05	Impedance	8.0 ohm $\pm$ 15% at 2000Hz.	
	DC Resistance	7.8 ohm $\pm$ 15% at 2000Hz.	
06	Resonance Frequency (Fo)	950Hz $\pm$ 20% at Fo, 1V	
07	Sensitivity (S.P.L.)	97 dB (0.5W / 0.1m) $\pm$ 3 dB	at AVE0.8,1.0,1.2,1.5 KHz
		100dB (1.0W / 0.1m) $\pm$ 3 dB	
08	Frequency Range	Fo – 20KHz	
09	Total Harmonics Distortion	Max 8 % at 1 KHz, 1.0W.	
10	Voice Coil	Diameter 10.25 mm	
11	Dustproof and waterproof	IP67 (1 metre 30 minutes)	
12	Magnet	Rare earth permanent (Nd-Fe-B) magnet $\Phi$ 9.7x1.2 mm	
13	Weight	2.0g $\pm$ 0.2g	
14	Appearance	Should not exist any obstacle to be harmful to normal operation; damages, cracks, rusts and distortions, etc.	
15	Operation Test	Must be normal at program source – 1.0W	
16	Buzz, Rattle, etc.	Should not be audible at 2.83V sine Wave between Fo to 20KHz	
17	Polarity	When positive voltage is applied to the terminal marked (+), diaphragm should move to the front.	
18	Terminal Strength	Capable of withstand 1kg load for 30 seconds without resulting in any damage or rejection.	
19	Temperature	Operating temperature: -40°C to +80°C	
		Storage temperature: -40°C to +80°C	

## 2. Test Condition

### STANDARD

Temperature : 15 ~ 35°C

Relative humidity : 25% ~ 85%,

Atmospheric pressure : 860mbar to 1060mbar.

### BASIC

Temperature : 20±3°C

Relative humidity : 60% ~ 70%,

Atmospheric pressure : 860mbar to 1060mbar

Standard Test Fixture

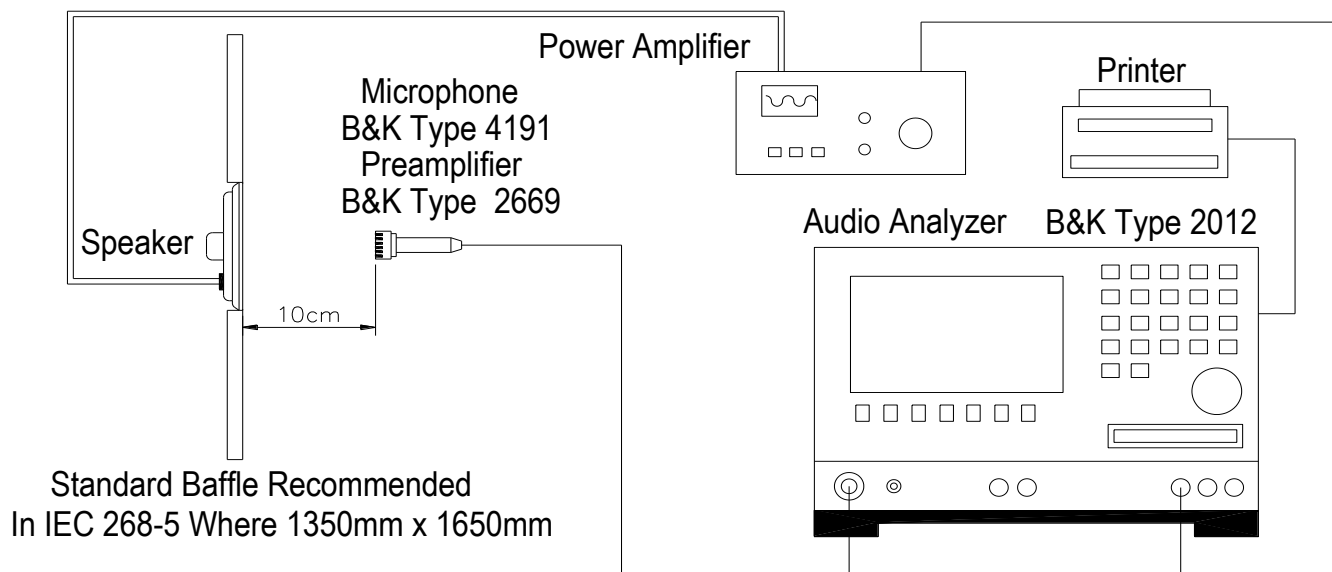
1.Input Power : 0.5W ( 2.0V )

2.Zero Level : -dB

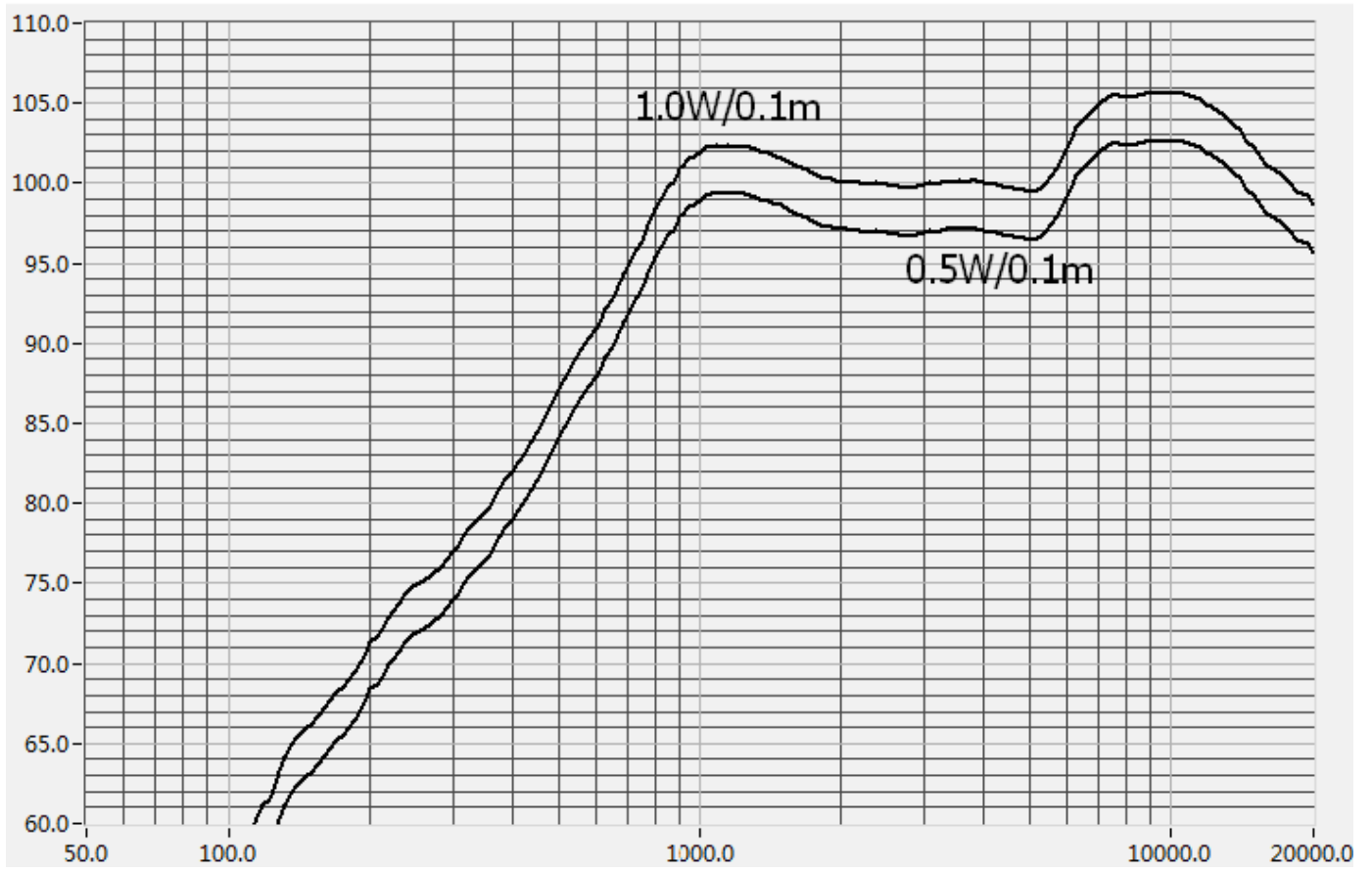
3.Mode : SPEAKER

4.potentiometer Range : 50dB

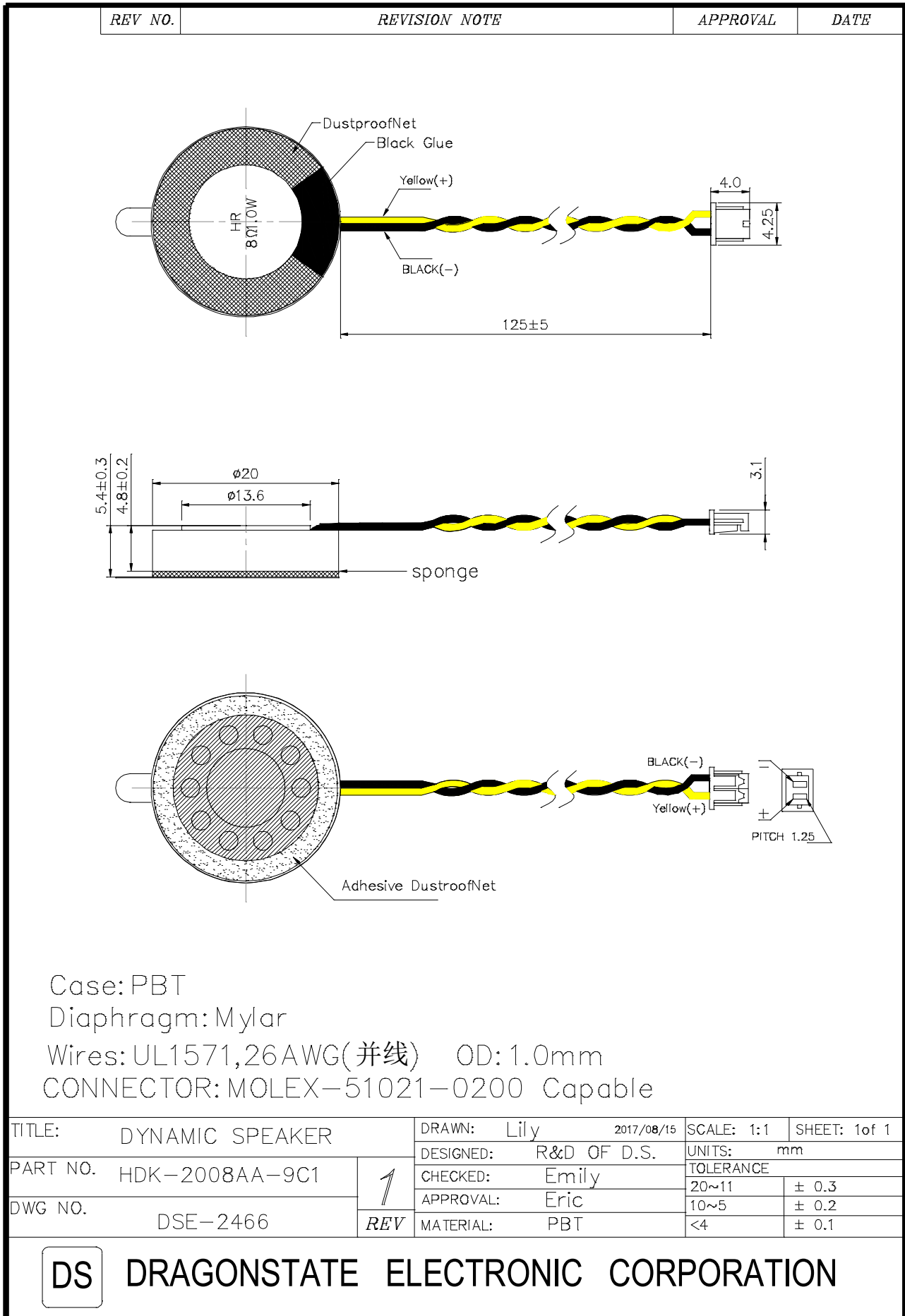
5.Sweep Time : 0.5sec



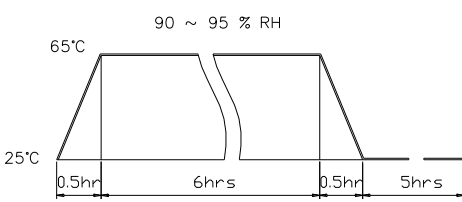
### 3.Frequency Response Curve



### 4. Dimension



## 5. Reliability Tests

Items.		Specifications
01	<b>High temp. Test</b>	Keep 96 hours at $+80^{\circ}\text{C} \pm 3^{\circ}\text{C}$ and leave 3 hours in normal temperature and then check
02	<b>Low temp. Test</b>	Keep 96 hours at $-40^{\circ}\text{C} \pm 3^{\circ}\text{C}$ and leave 3 hours in normal temperature and then check
03	<b>Humidity test</b>	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	<b>Temp./Humidity cycle</b>	<p>The part shall be subjected 5 cycles. One cycle shall be 12 hours and consist of;</p> 
05	<b>Thermal cycle test.</b>	Low temperature: $-40^{\circ}\text{C} \pm 3^{\circ}\text{C}$ , temperature: $+80^{\circ}\text{C} \pm 3^{\circ}\text{C}$ , cycle: 1 hour/cycle each, and then keep 5 cycles in a room.
06	<b>Vibration</b>	10~200~10Hz sin-wave sweep 15min. 5G(constant) X,Y, Z 3 direction. 2 hours each, total 6 hours.
07	<b>Fix drop test</b>	Fix on jig. Then drop from 152cm height to the concrete floor X, y, z 6 direction. 5 times each, total 30 times.
08	<b>Free drop test</b>	Free drop from 100cm height to the concrete floor X, y, z 6 direction. 1 times each, total 6 times.
09	<b>Rated Power test</b>	Rated Power white noise is applied for 96 hours
10	<b>Max Power test</b>	Max power 1 min on – 2 min off 10 cycles.
11	<b>Terminal strength test</b>	Capable of withstand 1kg load for 30 seconds without resulting in any damage or rejection.
12	<b>Protection against liquids</b>	Protected against 30 Minutes of immersion under 1M pressure



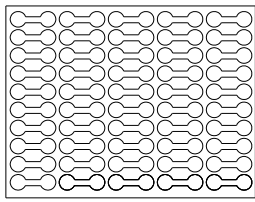
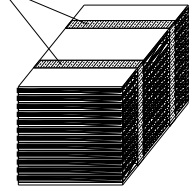

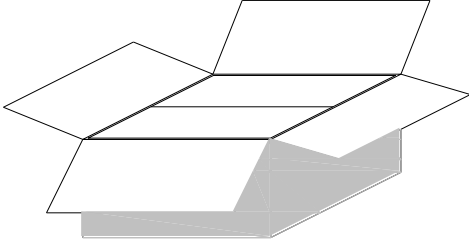
**Criterion: After these test , the change of S.P.L shall be within  $\pm 3$  dB .**

### SOLDERING CONDITION

Recommend using constant branding iron in **15 ~ 30W**, and in temperature range  **$350 \pm 10^{\circ}\text{C}$** .

Soldering time not over **3** seconds.

### 6.Packing

REV NO.	REVISION NOTE	APPROVAL	DATE
	 Cover(350*290*5mm) Material: Paper		
	  Box(350*290*15mm) 100pcs Material: Paper+Epe		
	OPP TAPE  Middle(350*290*180mm) 1000pcs(10*100pcs) Material: Paper+Epe		
	  Outer Box(490*360*350mm) 5000pcs(5*1000pcs) Material: Paper		
单位: mm			
TITLE: packing		DRAWN: <i>Lily</i> 2013/12/06 SCALE: 2:1 SHEET: 1 of 1	
PART NO.		DESIGNED: R&D OF D.S. UNITS: mm	
DWG NO.		CHECKED: <i>Emily</i> TOLERANCE	
		20~11 ± 0.3	10~5 ± 0.2
REV 1		APPROVAL: <i>Eric</i> <4 ± 0.1	
		MATERIAL: ***	
<div style="display: inline-block; border: 1px solid black; padding: 2px 5px; margin-right: 10px;">DS</div> <b>DRAGONSTATE ELECTRONIC CORPORATION</b>			

