

MESSRS.

SPECIFICATION FOR APPROVAL

承 認 书

Product	DYNAMIC SPEAKER
Part No.	HDK-3608BA-3C (RoHS)
Customer	
Customer Part No.	

Approved By	Checked By	Made By
Eric 21.4.22	Niko 21.4.22	Tim 21.4.22

常 州 华 龙 电 子 有 限 公 司

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EDITION:1.1

1. Specification

HDK-3608BA-3C (RoHS)

ITEM		SPECIFICATIONS	
01	Type	Dynamic speaker	
02	Dimension	External diameter 36 mm	
03	Rated Input Power	3W	
04	Max. Input Power	3.5W for 1 minute	
05	Impedance	8 ohm \pm 15% at 2000Hz.	
06	Resonance Frequency (Fo)	650Hz \pm 20% at Fo, 1V	
07	Sensitivity (S.P.L.)	107 dB (3W / 0.1m) \pm 3 dB	at AVE0.8K, 1.0K, 1.2K, 1.5KHz
08	Frequency Range	Fo - 8KHz	
09	Total Harmonics Distortion	Max 10 % at 1KHz, 3W/0.1M	
10	Weight	9.9g \pm 0.3g	
11	Dustproof and Waterproof	IP67	
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 - 3W	
14	Buzz, Rattle, etc.	Should not be audible at 4.9V sine Wave between 300 to 5KHz	
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°C to +70°C Storage temperature: -30°C to +70°C	

2-1. Test Condition

Standard

Temperature : 15 ~ 35℃

Relative humidity : 25% ~ 85%,

Atmospheric pressure : 860mbar to 1060mbar.

BasicTemperature : $20 \pm 3^{\circ}\text{C}$

Relative humidity : 60% ~ 70%,

Atmospheric pressure : 860mbar to 1060mbar

2-2. Standard Test Fixture

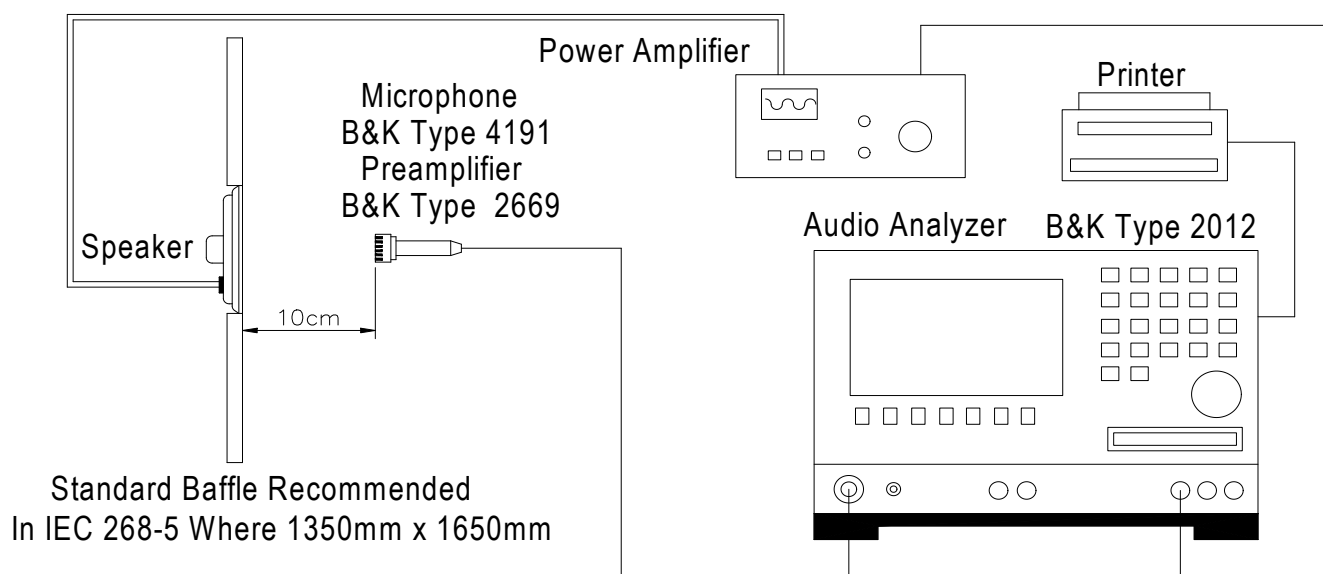
1. Input Power : 3W (4.9V)

2. Zero Level : -dB,

3. Mode : SPEAKER

4. potentiometer Range : 50dB

5. Sweep Time : 0.5sec



2-3. FREQUENCY RESPONSE (SPL curve, IMP curve THD curve, R&B curve)

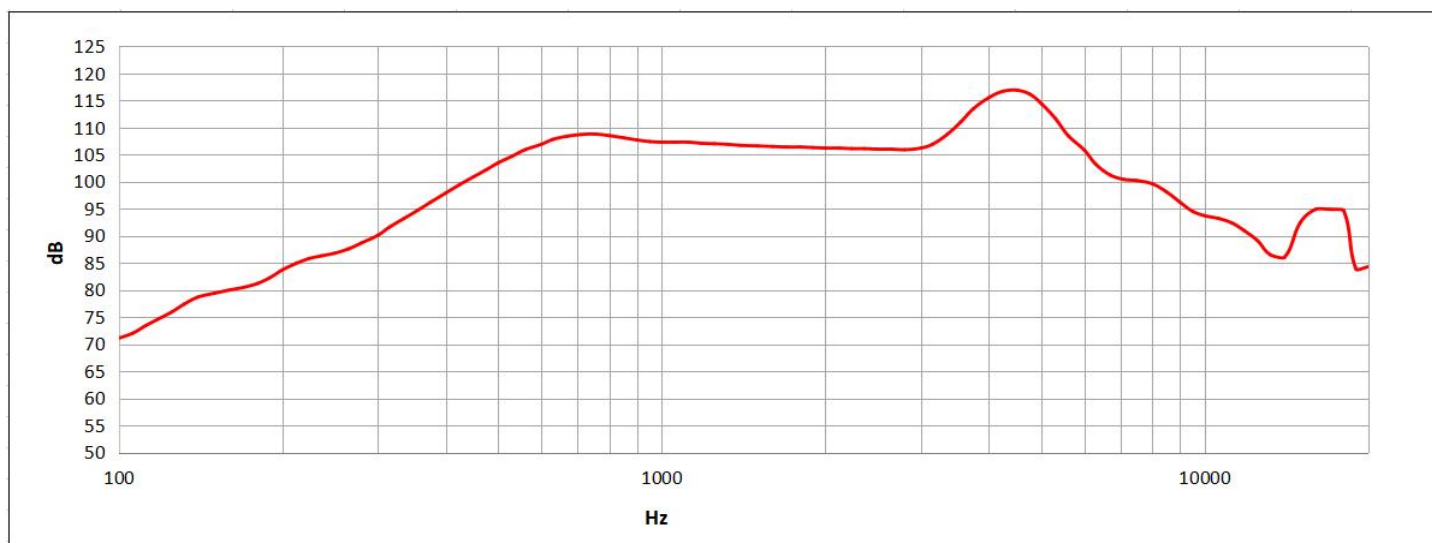


Fig.1 Frequency response

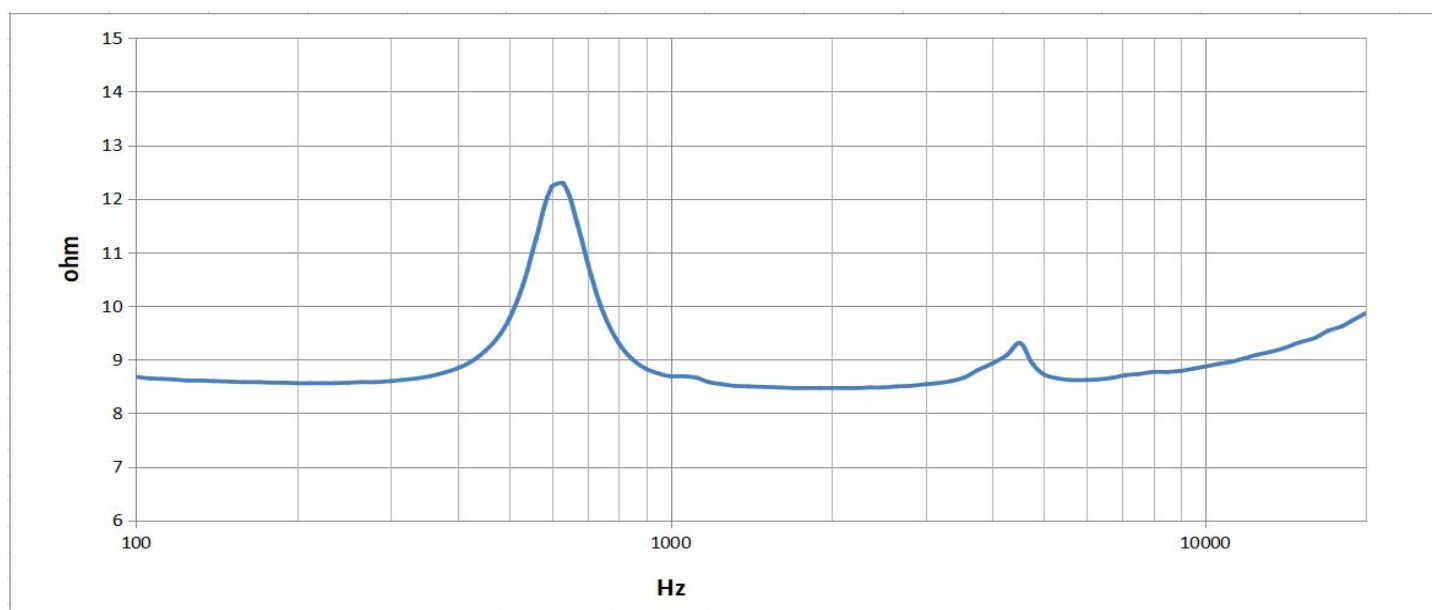


Fig.2 IMP

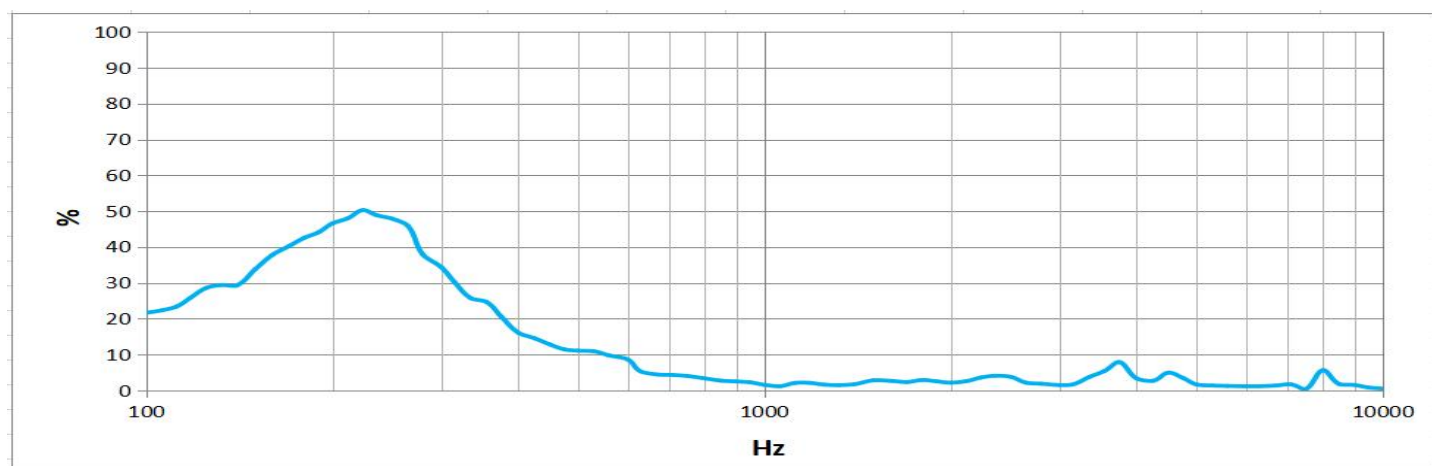


Fig.3 THD

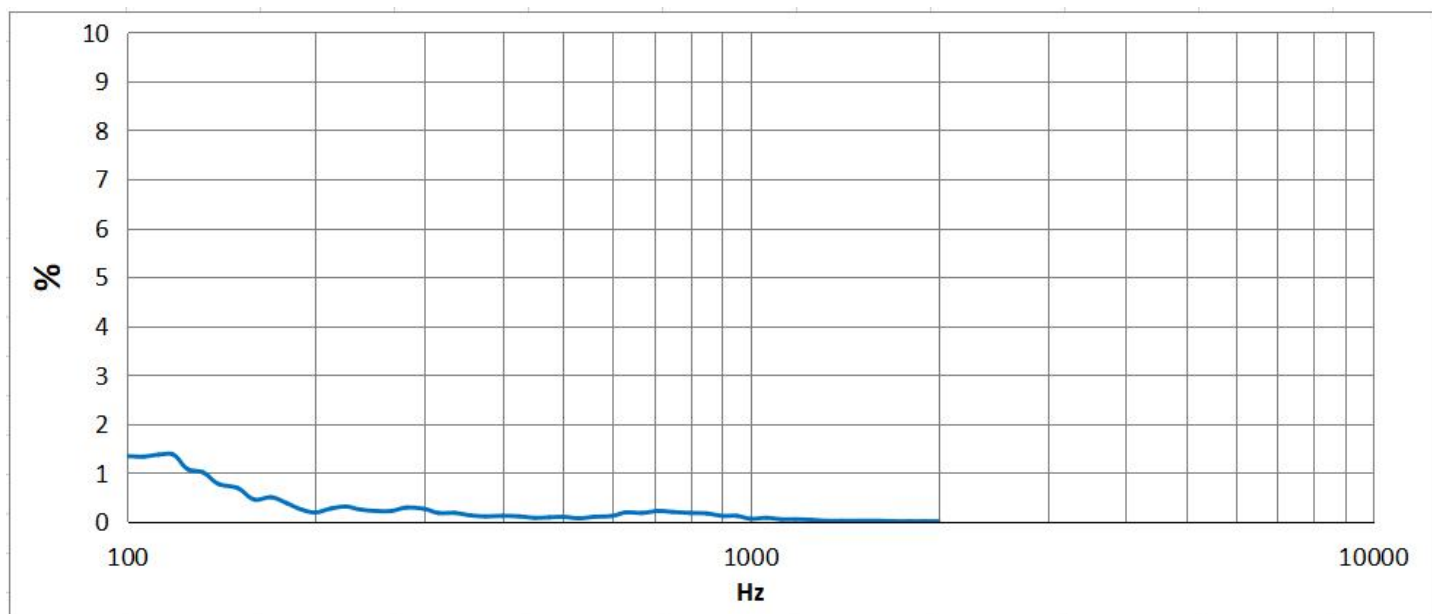
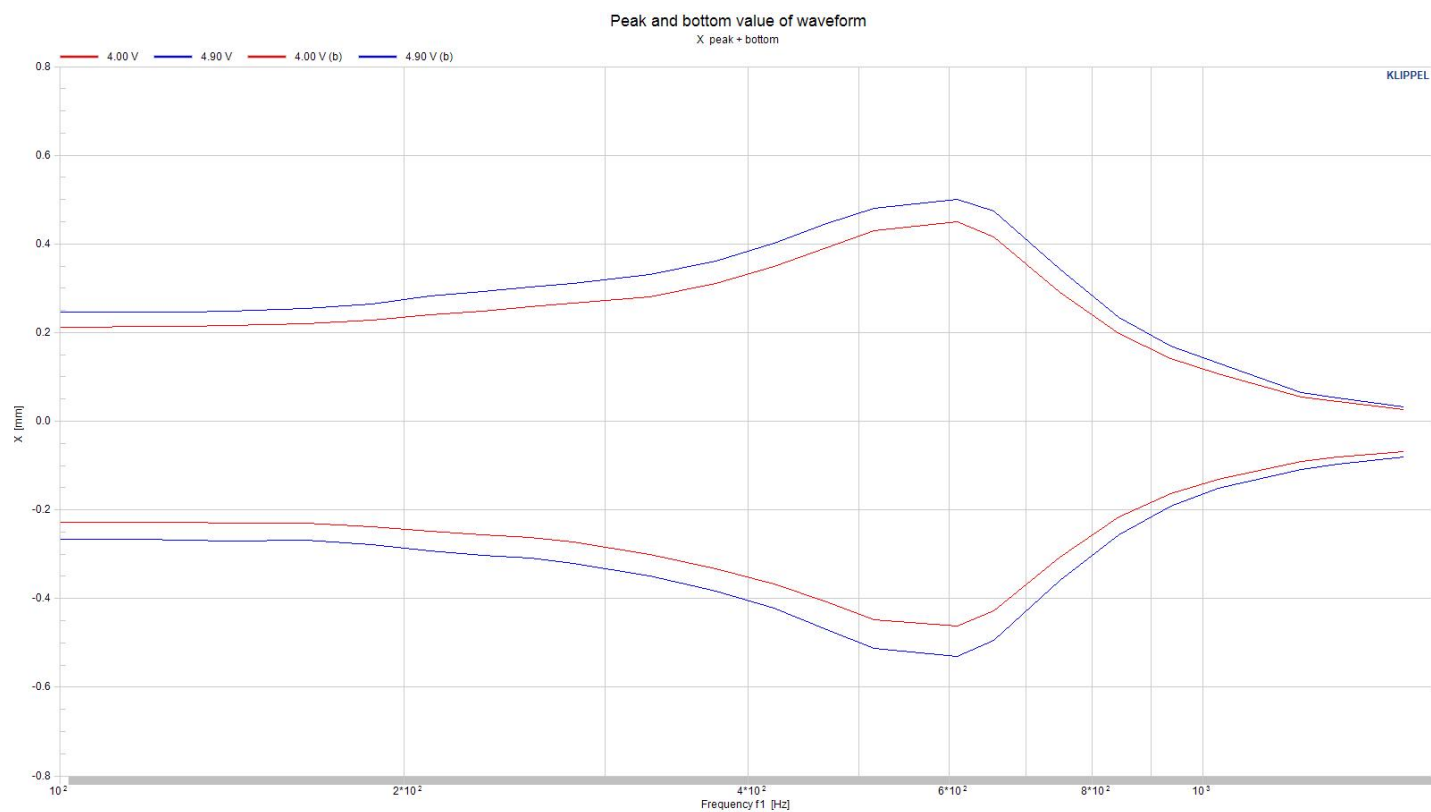


Fig. 4 R&B

3. Amplitude test curve

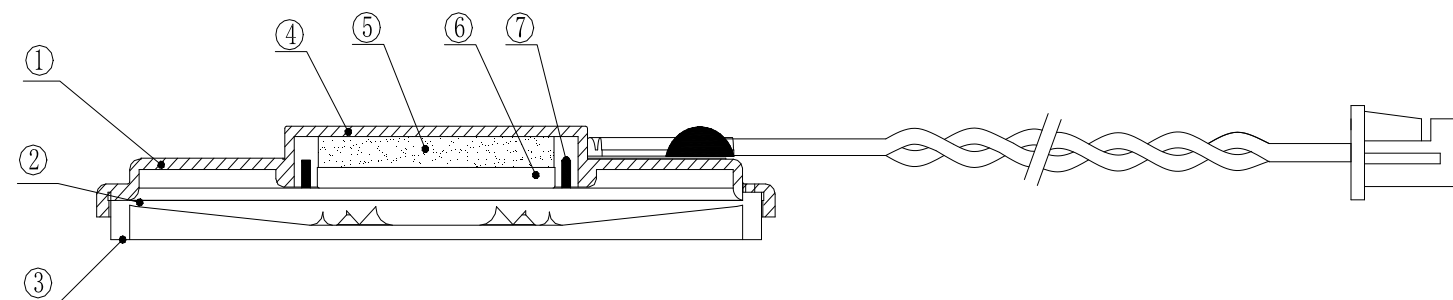


4. T/S parameter

parameter	data	unit	Note
F0	605	Hz	Resonant frequency in free air
Rdc	8.04	Ohm	Electrical voice coil resistance at DC
BL	0.915	N/A	Force factor
Mms	172	mg	Mechanical mass of drive diaphragm assembly including air load and voice coil
Cms	0.402	mm/N	Mechanical compliance of driver suspension
Rms	0.086	kg/s	Mechanical resistance of total-driver losses
Sd	4.15	cm ²	Diaphragm area
Vas	9.8	cc	Equivalent air volume of suspension
Qms	7.582		Mechanical Q factor of driver in free air considering Rms only.
Qes	6.272		Electrical Q factor of driver in free air considering Re only.
Qts	3.433		Total Q-factor considering Re and Rms only.

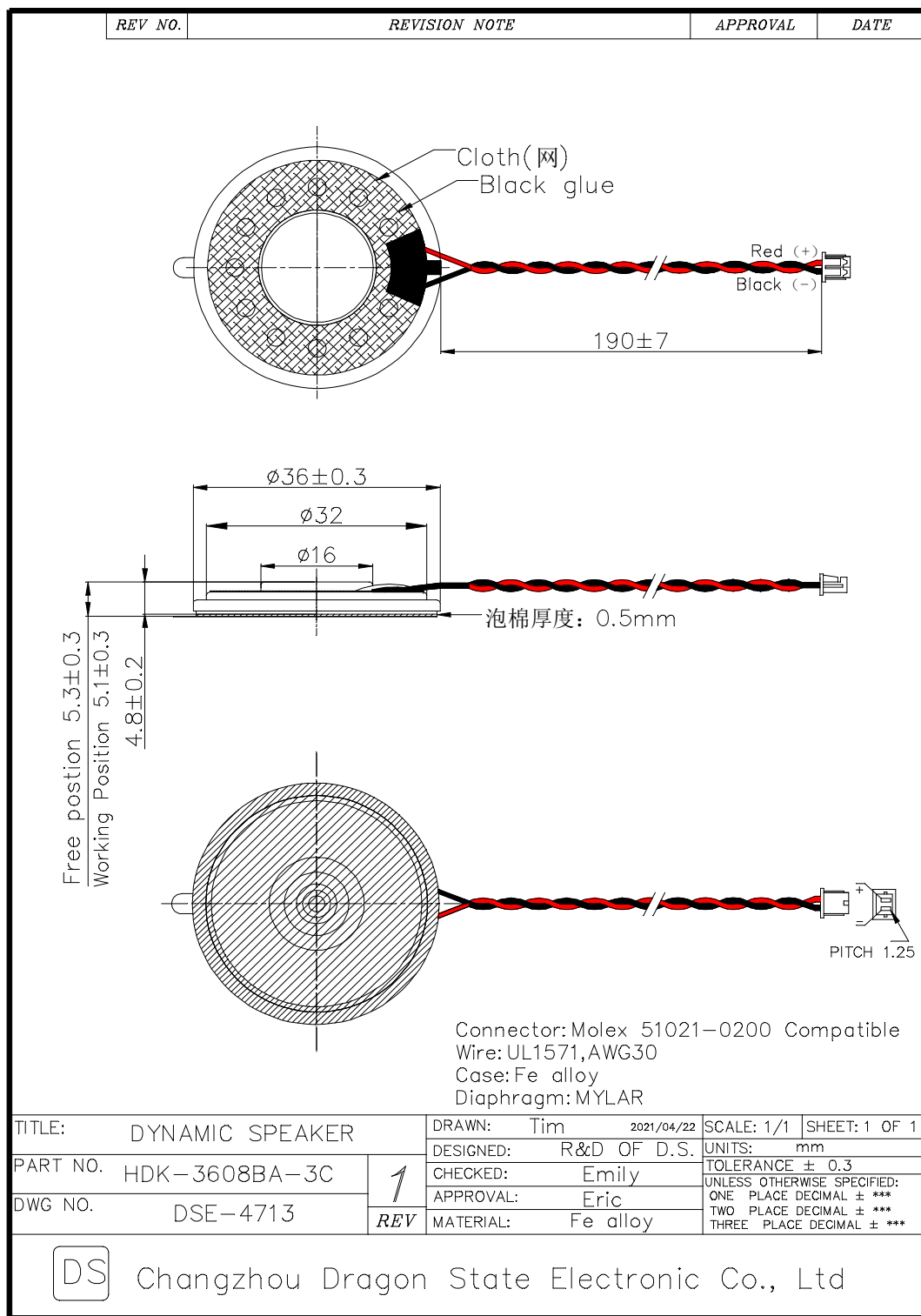
5. Bill of material

侧面剖面图

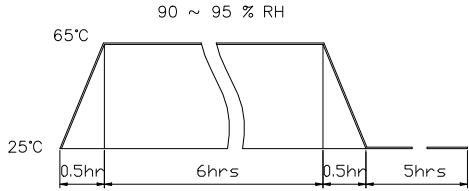


ITEM	DESCRIPTIONS	MATERIAL	QTY	Remarks
1	Frame	Fe alloy	1	
2	Diaphragm	Mylar	1	
3	Front cover	Plastic	1	
4	Yoke	Fe alloy	1	
5	Magnet	Nd-Fe-B	1	
6	plate	Iron	1	
7	Voice coil	copper	1	

6. Dimension




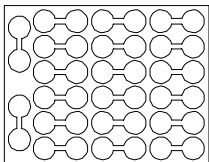
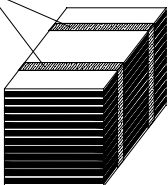
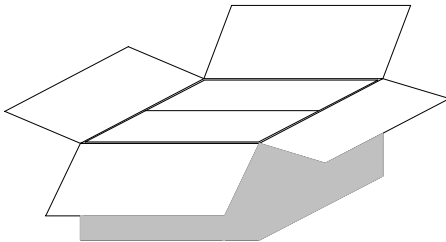
7. Reliability Test

Items.		Specifications
01	High temp. Test	Keep 48 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 48 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 48 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 pink noise is applied for 48 hours Sine wave between 200 to 3400 kHz
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 ± 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.

8. Packing

REV NO.	REVISION NOTE	APPROVAL	DATE
<div style="display: flex; justify-content: space-between; align-items: flex-start;"> <div style="text-align: center;">  <p>↓</p>  <p>↓</p> <div style="display: flex; align-items: center;">  <div style="margin-left: 10px;">OPP TAPE</div> </div> <p>↓</p>  </div> <div style="margin-left: 20px;"> <p>Cover(330*250*5mm) Material: Eps</p> <p>Box(330*250*16mm) 40pcs Material: Eps</p> <p>Middle(330*250*160mm) 440pcs Material: Eps</p> <p>Outer Box(490*350*360mm) 1800pcs(3*440+480pcs) Material: Paper</p> </div> </div>			
单位: mm			
TITLE: packing		DRAWN: Lily 2014/06/09 SCALE: 2:1 SHEET: 1 of 1	
PART NO.		DESIGNED: R&D OF D.S. UNITS: mm	
DWG NO.		CHECKED: Emily TOLERANCE	
		APPROVAL: Eric 20~11 ± 0.3	
		MATERIAL: *** 10~5 ± 0.2	
		<4 ± 0.1	
<div style="display: flex; align-items: center; justify-content: center;"> <div style="border: 1px solid black; padding: 5px; margin-right: 10px;">DS</div> <div>Changzhou Dragon State Electronic Co., Ltd</div> </div>			