



AUTOMOTIVE SPEAKER

Product No. 120225

BLS32-11-04H16.6W55M

Issue No. BS/TES01.2049



**Features:**

- Large power
- Audio exchange
- Loud sound output
- RoHS

Drawn by	Checked by	Approved by	Customer approved
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## 1.Characteristics

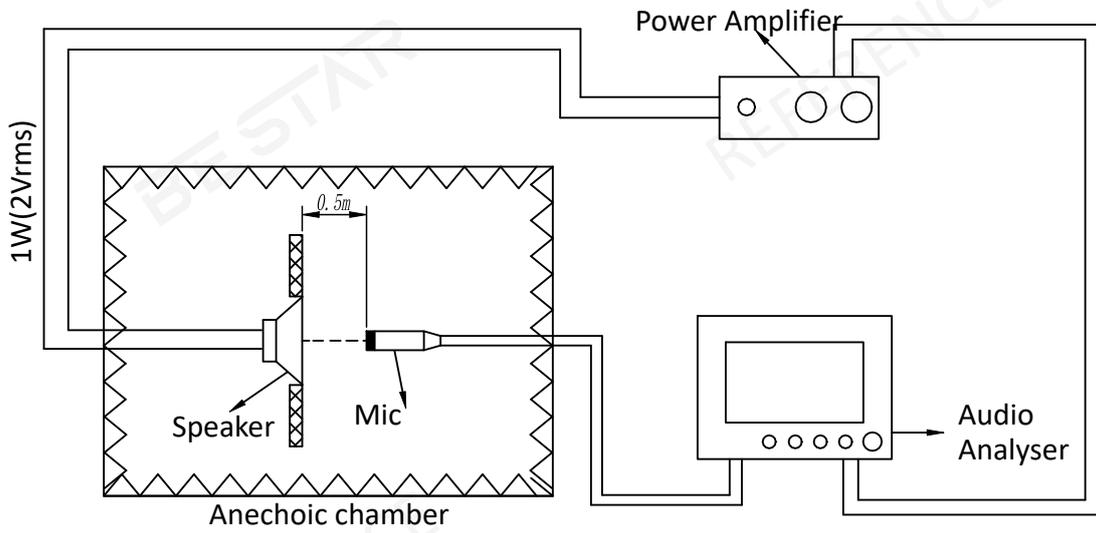
### 1.1Technical terms

1. Size	see drawing
2. Impedance (at 1KHz)	$4\pm 15\% \Omega$
3. Rated input power	4W(4V)
4. Maximum input power	5W(4.47V)
5. Resonance frequency	$400\pm 20\% \text{Hz}$
6. Frequency response	F0~16KHz
7. Buzz & Rattle(at sine wave 4Vrms)	must be normal
8. SPL(0.5m/1W)	$80\pm 3\text{dB}$ (at 0.8K,1.0K,1.2K,1.5KHz average)
9. THD	Max 5%(1W/0.5m, 400Hz-16KHz)
10. Operating temperature	-40...+85°C
11. Storage temperature	-40...+85°C



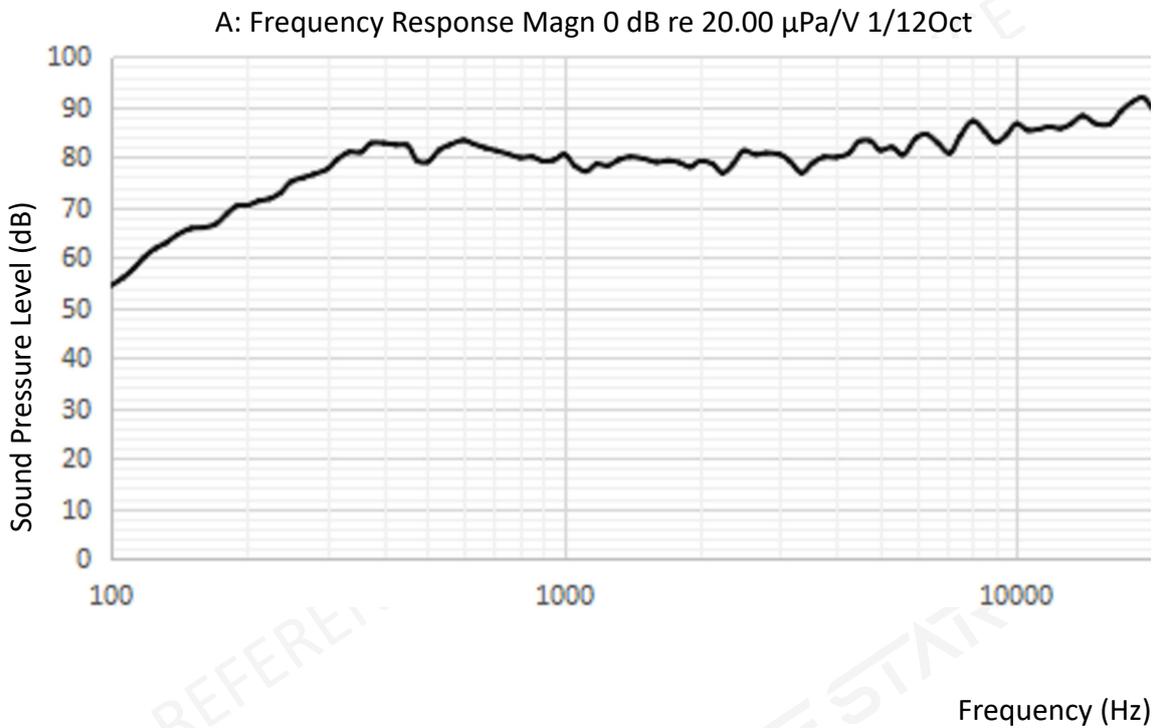


### 1.2 Test method:





### 1.3 Frequency Response Curve (only for reference)



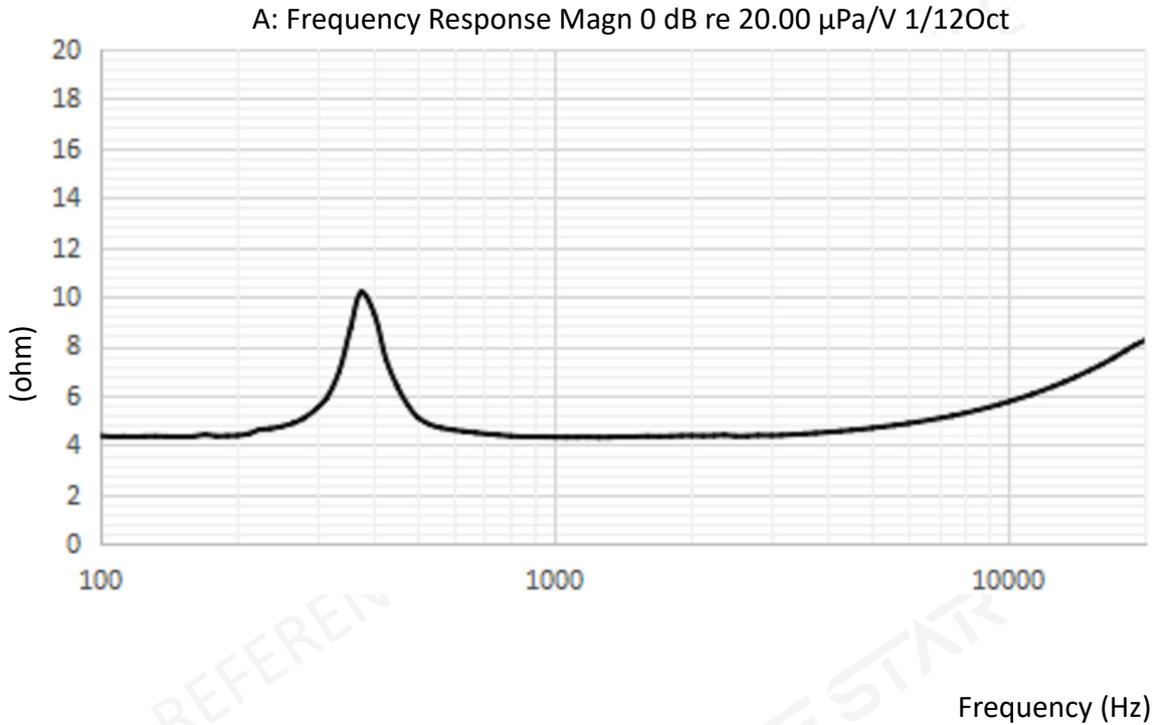
#### 1.3.1 Sensitivity

SPL is expressed in dB rel 20  $\mu$ Pa, computed according to IEC 268-5.  
Measurement set up according chapter 1.2 and parameters according chapter 1.3.





### 1.4 F0 Curve (only for reference)



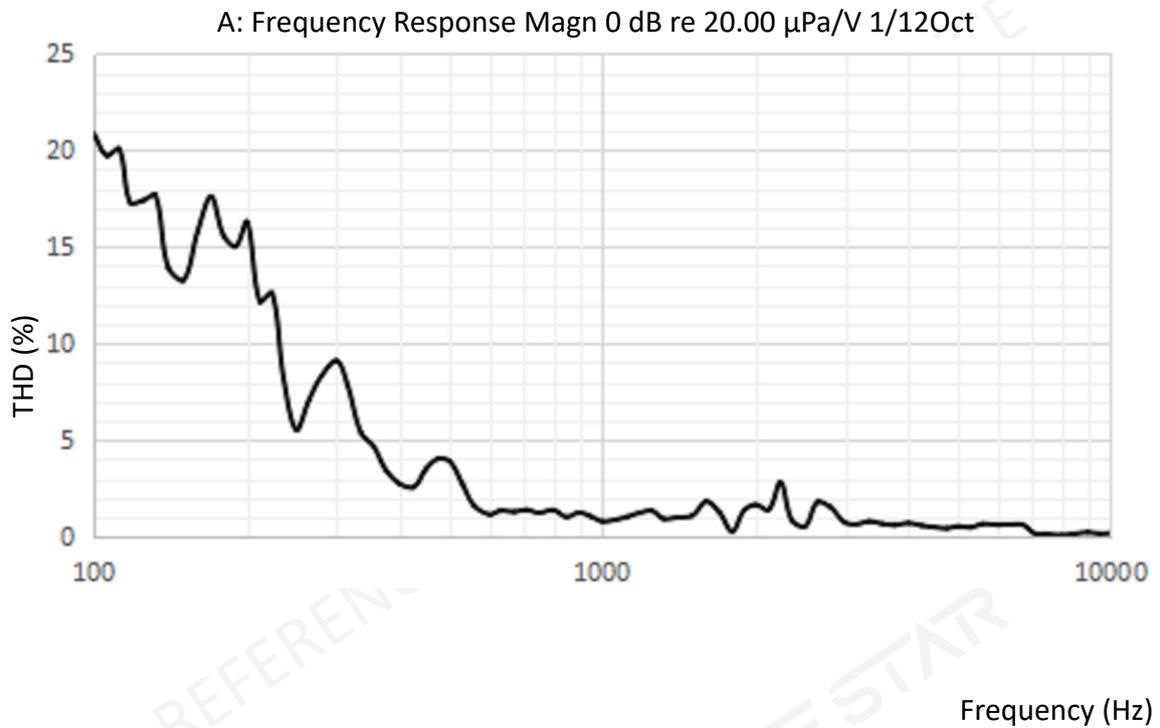
#### 1.4.1 Resonance Frequency

Resonance frequency is measured according test set up in chapter 1.2 and parameters according chapter 1.4





## 1.5 Total Harmonic Distortion (only for reference)



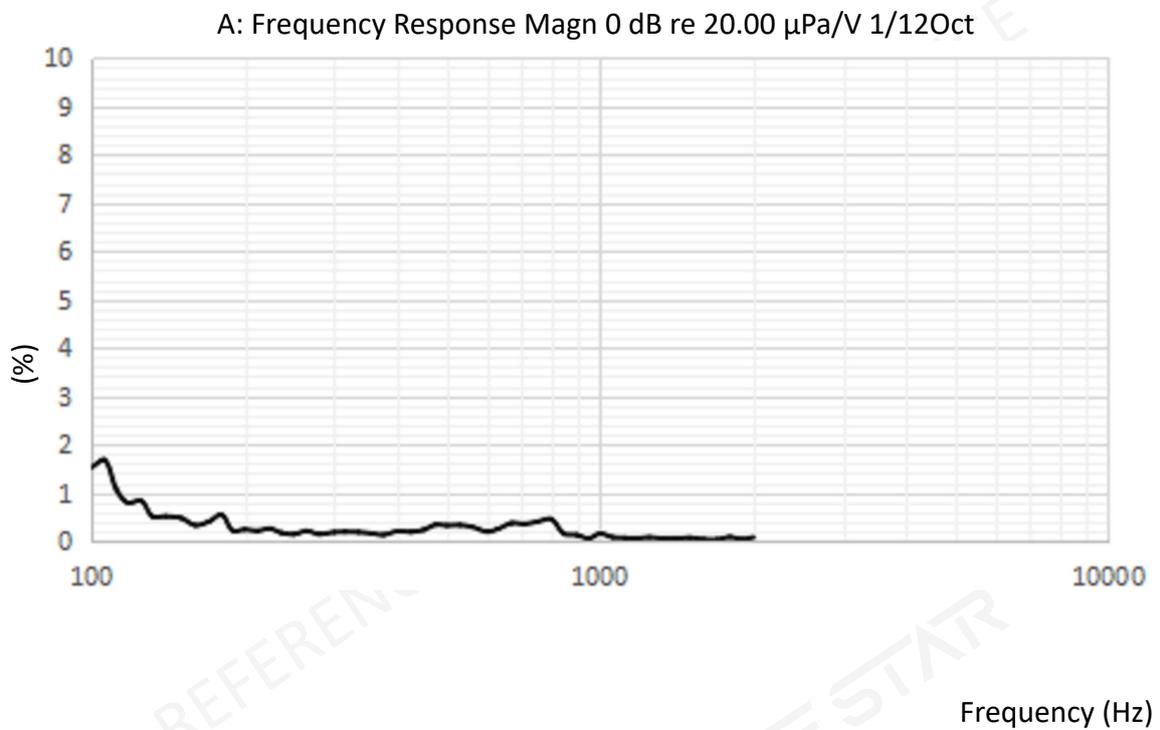
### 1.5.1 THD

THD is measured according test set up in chapter 1.2 and parameters according chapter 1.5





## 1.6 R&B Curve (only for reference)



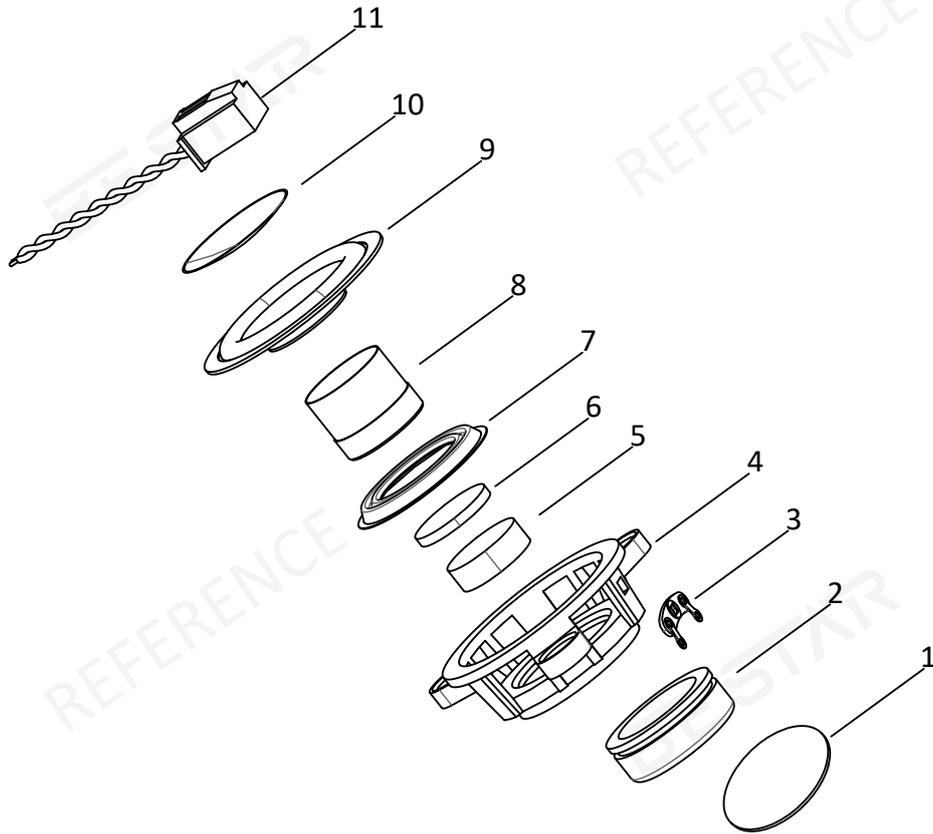
### 1.6.1 R&B

R&B is measured according test set up in chapter 1.2 and parameters according chapter 1.6

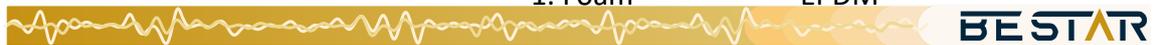




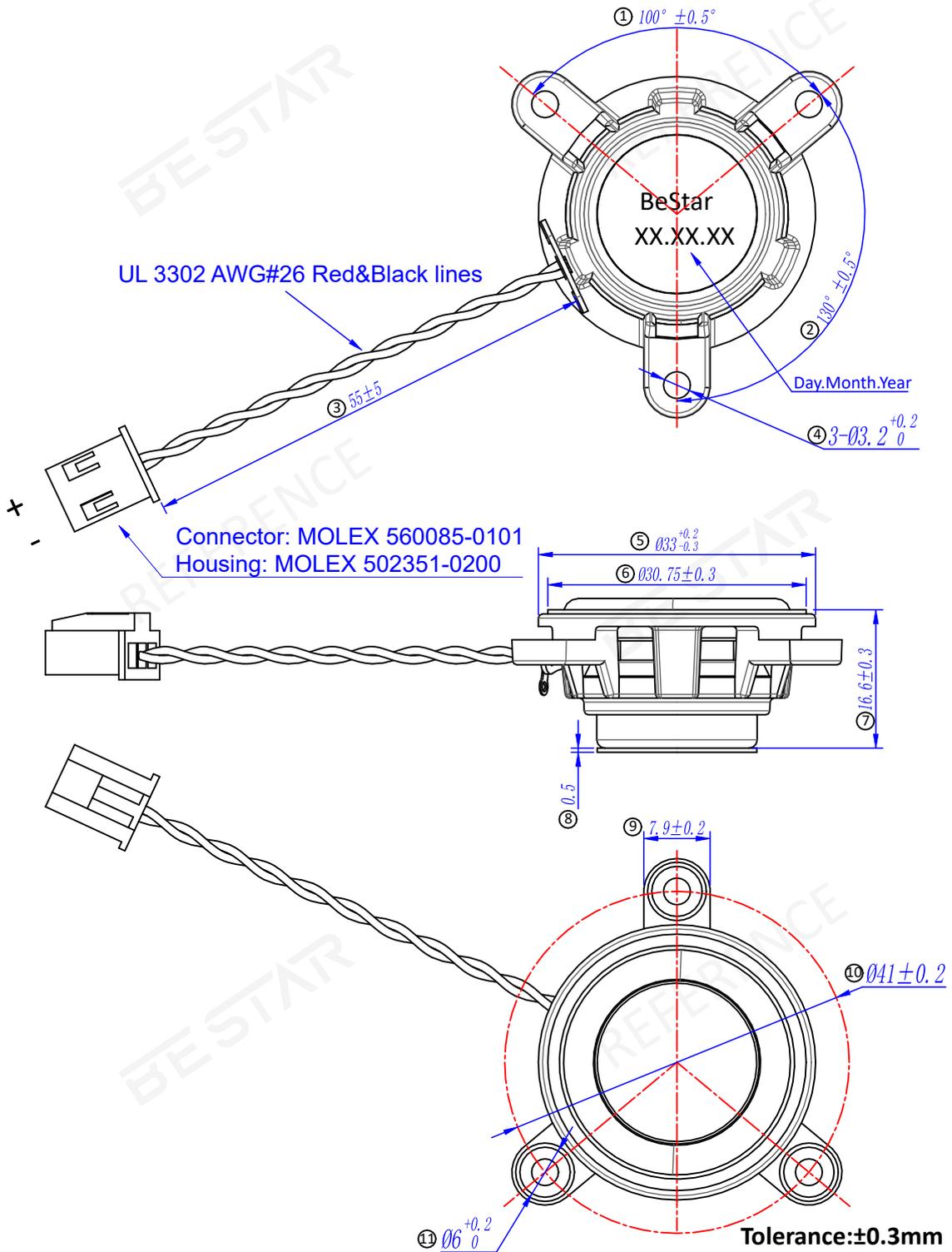
## 2.Part List



11.Wire leads	Connector:MOLEX 560085-0101 Housing:MOLEX 502351-0200 UL3302 AWG#26 Red&Black wire
10.Dust cap	PEI
9. Waterproof	Rubber edge+Paper
8. Voice coil	Kapton+PESV
7. Damper	Nomex
6. Plate	SPCC
5. Magnet	NdFeB
4. Frame	PBT+30%GF
3. Junction board	White cardboard+Rivets
2. Magnet bowl	SPCC
1. Foam	EPDM



### 3. Dimension





## 4. Reliability test

### 4.1 Ordinary temp life

Room temperature sine wave F0-5KHz (4Vrms) input 96 hours frequency scanning speed 1.5s. At the end of the experiment, the product was placed at room temperature for 2 hours, and then the abnormal sound frequency sweep and acoustic parameters were tested. Sinusoidal wave 4Vrms (F0-5KHz) sweeps without abnormal sound, F0 should meet the original specification requirements, and the output sound pressure variation is within  $\pm 3\text{dB}$ .

### 4.2 High temp life

Under the condition of high temperature  $+85^\circ\text{C}$ , the frequency band F0-5KHz was set, and the sinusoidal wave signal of 4W(4Vrms) was input into the product for frequency scanning test. The frequency scanning speed was 1.5 seconds for 96 hours continuously. At the end of the experiment, the product was placed at room temperature for 2 hours, and then the abnormal sound frequency sweep and acoustic parameters were tested. Sinusoidal wave 4Vrms (F0-5KHz) sweeps without abnormal sound, F0 should meet the original specifications, and the output sound pressure variation is within  $\pm 6\text{dB}$ .

### 4.3 Low temp life

Under the condition of low temperature  $-40^\circ\text{C}$ , the frequency band F0-5kHz was set, and the sinusoidal wave signal of 4W(4Vrms) was input into the product for frequency scanning test. The frequency scanning speed was 1.5 seconds for 96 hours continuously. At the end of the experiment, the product was placed at room temperature for 2 hours, and then the abnormal sound frequency sweep and acoustic parameters were tested. Sinusoidal wave 4Vrms (F0-5KHz) sweeps without abnormal sound, F0 should meet the original specifications, and the output sound pressure variation is within  $\pm 6\text{dB}$ .

### 4.4 Constant temp and humidity load test

Under the condition of constant temperature  $+40\pm 2^\circ\text{C}$  relative humidity of  $93\pm 2\%\text{RH}$ , the frequency band F0-5KHz was set, and the sinusoidal wave signal of 4W(4Vrms) was input into the product for frequency sweep at a frequency speed of 1.5 seconds for 48 hours continuously. At the end of the experiment, the product was placed at room temperature for 2 hours, and then the abnormal sound frequency sweep and acoustic parameters were tested. Sinusoidal wave 4Vrms (F0-5KHz) sweeps without abnormal sound, F0 should meet the original specifications, and the output sound pressure variation is within  $\pm 6\text{dB}$ .

### 4.5 High temp preservation test

The product was placed in an environment of  $+85^\circ\text{C}$  for 96 hours. After the end of the experiment, the product was placed in room temperature for 2 hours and then tested for abnormal sound frequency sweep and acoustic parameters. Sinusoidal wave 4Vrms (F0-5KHz) sweeps without abnormal sound, F0 should meet the original specification requirements, and the output sound pressure variation is within  $\pm 3\text{dB}$ .



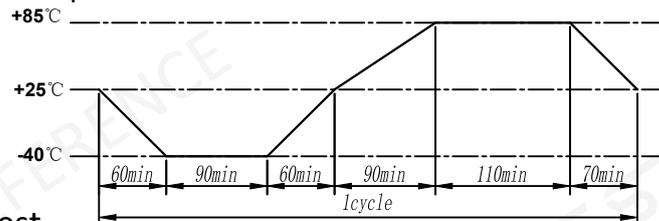


#### 4.6 Low temp preservation test

The product was placed in an environment of  $-40^{\circ}\text{C}$  for 96 hours. After the end of the experiment, the product was placed in room temperature for 2 hours and then tested for abnormal sound frequency sweep and acoustic parameters. Sinusoidal wave 4Vrms (F0-5KHz) sweeps without abnormal sound, F0 should meet the original specification requirements, and the output sound pressure variation is within  $\pm 3\text{dB}$ .

#### 4.7 Thermal cycling test

The product is subjected to 30 times of temperature cycling impact, and the cycling content is as shown in the figure. Power on from 210 minutes to 410 minutes from the beginning of the cycle, the frequency band F0-5kHz was set, and the sinusoidal wave signal of 4W(4Vrms) was input into the product for frequency scanning test. After the end of the experiment, the product is placed at room temperature for 2 hours, and then abnormal sound frequency sweep and acoustic parameters are tested. Sinusoidal wave 4Vrms (F0-5KHz) sweeps without abnormal sound, F0 should meet the original specifications, and the output sound pressure variation is within  $\pm 6\text{dB}$ .



#### 4.8 Vibration test

Vibration frequency is from 10Hz to 1000Hz. The root mean square of acceleration is  $27.1\text{m/s}^2$ . The power spectral density is shown in the figure. Temperature curve and power-on time are the same as temperature cycle test. 8 hours in each X, Y and Z direction. After the test, part of the product mechanism has no appearance defects such as separation, deformation, gap and cracking, etc., and the sinusoidal wave sweeps 4Vrms (F0-5KHz) without abnormal sound. F0 should meet the original specification requirements, and the output sound pressure variation is within  $\pm 3\text{dB}$ .



#### 4.9 Drop test

Free fall on concrete 1m high once every 3 surfaces for a total of 6 times. After the test, there is no separation, deformation, clearance or cracking in part of the product. The sinusoid wave sweeps 4Vrms (F0-5KHz) without abnormal sound. F0 should meet the original specifications and the variation of output sound pressure is within  $\pm 3\text{dB}$ .

#### 4.10 Tensile test

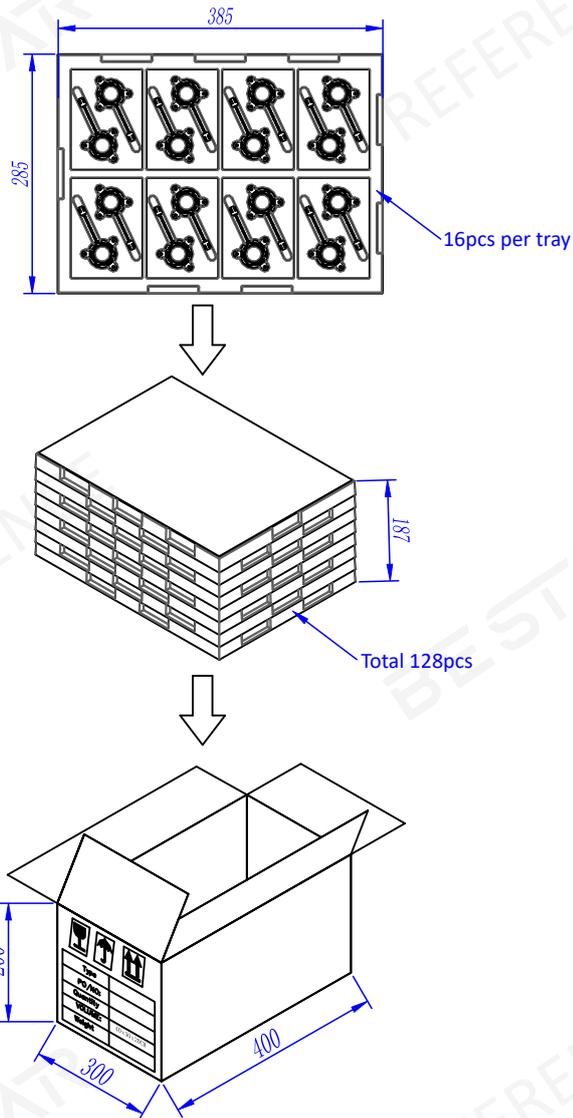
Pull the plug cord with a force of 9.8N for 10 seconds. After the test, there is no separation in part of the product. The sinusoid wave sweeps 4Vrms (F0-5KHz) without abnormal sound. F0 should meet the original specifications and the variation of output sound pressure is within  $\pm 3\text{dB}$ .





## 5. Packing

### 5.1 Packing drawing (unit:mm)



### 5.2 Packing quantity

- 1) 16 pcs per tray
- 2) 8 trays per carton
- 3) Total 128 pcs per carton
- 4) Carton size: 400×300×200(mm)





## 6. History change record

Version	Change Items	Date	Drawn	Checked	Approved
A0	First Edition	2021.08.26	Ronnie.Li	Litra.Yang	Peter.Huang

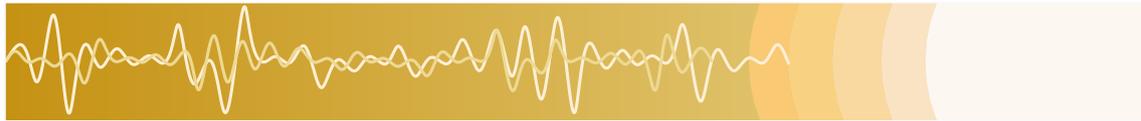
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## 7. Important Notice

### 7.1 The products mustn't be washed

### 7.2 Store Condition (packaging)

The products should be stored in the room, where the temperature/humidity is stable.

And avoid such places where there are large temperature changes. Please store the products at the following conditions:

Temperature: -10 to + 40 °C Humidity: 15 to 85% R.H.

### 7.3 Expire Date on Storage

Expire date (Shelf life) of the products is six months after delivered under the conditions of a sealed and an unopened package. Please use the products within six months after delivered.

If you store the products for a long time (more than six months), use carefully because the products may be degraded in the solderability and/or rusty. Please confirm solderability and characteristics for the products regularly.

### 7.4 Notice on Product Storage

(1) Please do not store the products in a chemical atmosphere (Acids, Alkali, Bases, Organic gas, Sulfides and so on), because the characteristics may be reduced at quality, and/or be degraded in the solderability due to the storage in a chemical atmosphere.

(2) Please use the products immediately after the package is opened, because the characteristics may be reduced at quality, and/or be degraded in the solderability due to storage under the poor condition.

### 7.5 Rated and Max input power

#### Rated input power

Rated input power is the maximum (limit) value which can be input to the component intentionally. If the actual input power to component keeps exceeding Rated Input power, it will damage the component acoustic performances and reliability. In the worst case, the component will get broken and no sound.

#### Max input power

Max input power is the maximum (limit) value for unexpected input power which is caused in the customer's circuit like surge voltage. If the actual input power to component keeps exceeding Maximum input power, it will break the component and cause no sound in a short time. Please note that component will have a risk to get broken if the unexpected input power continues.

The value of input power is set based on the sinusoidal power in the normal speaker use. If the special signal is input to component, the values of Rated and Max input power will be different. Please make a well-investigation at your laboratory in the case of the special signal input.

