

Name	Security Level
BELLSING® BSP dynamic speaker	Open
Version	A Total of 9 Pages
REV B	

# D10 dynamic speaker

## BSP100CAB32

### Product Data Sheet

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Approver:	Nick Zheng	Date:	2022-06-13



Shenzhen Bellsing Acoustic Tech. Co., Ltd.

# Restricted

## 1. Security Warning

The information contained in this document is the exclusive proprietary to Bellsing Inc., and should not be disclosed to any third party without the written consent of Bellsing Inc.

## 2. Environmental Requirement

This s product including all components must be free from lead (Pb) and other banned substances according to customer's requirements.

## 3. Record Update

Date	Version	Description	Editor
8/15/2021	A	Initial Release	Jerry
6/13/2022	B	Modify speaker specification	Shane

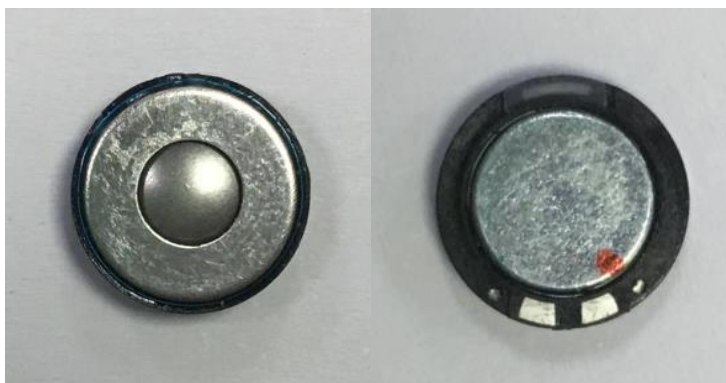
## BSP100CAB32 dynamic speaker

### 1.1 Description

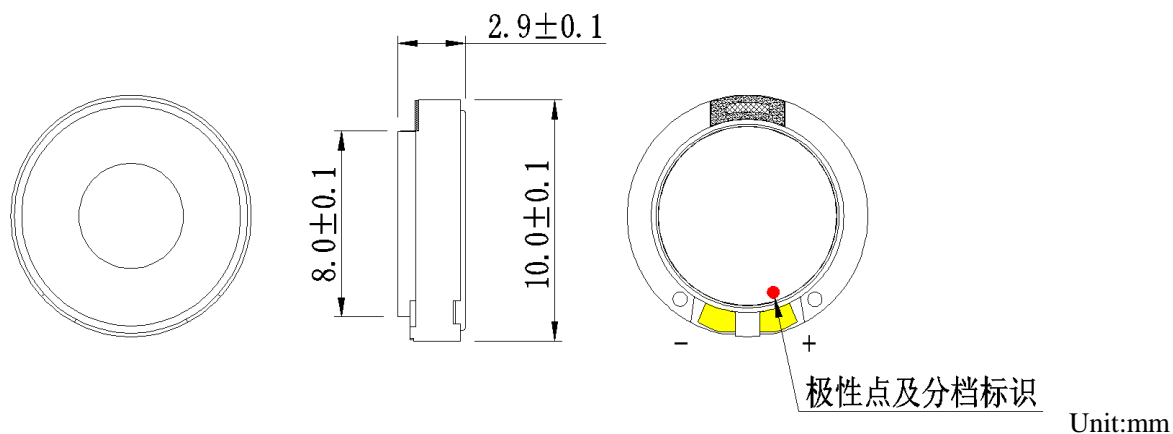
This product works on the principle of permanent magnet. When electro-magnetic field and voice coil, on which a vibration membrane is attached, receive a current signal, the membrane vibrates and the air around the diaphragm will be compressed. Sound will be induced through such kind of compression and then the electronic signal is transformed into sound signal.

The BSP100 is a high performance  $\Phi 10\text{mm}$  dynamic speaker, recommended to be used in consumer electronics inear products.

### 1.2 Mechanical Specification



Mechanical dimension: please refer to the drawing below

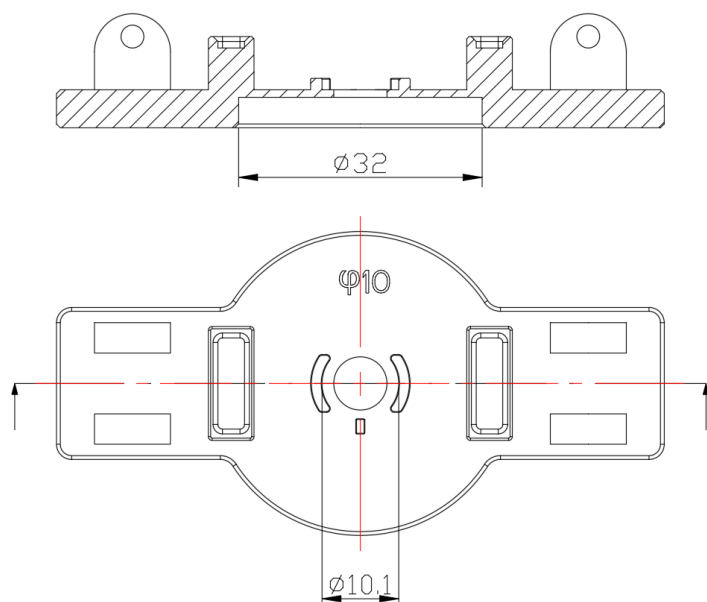
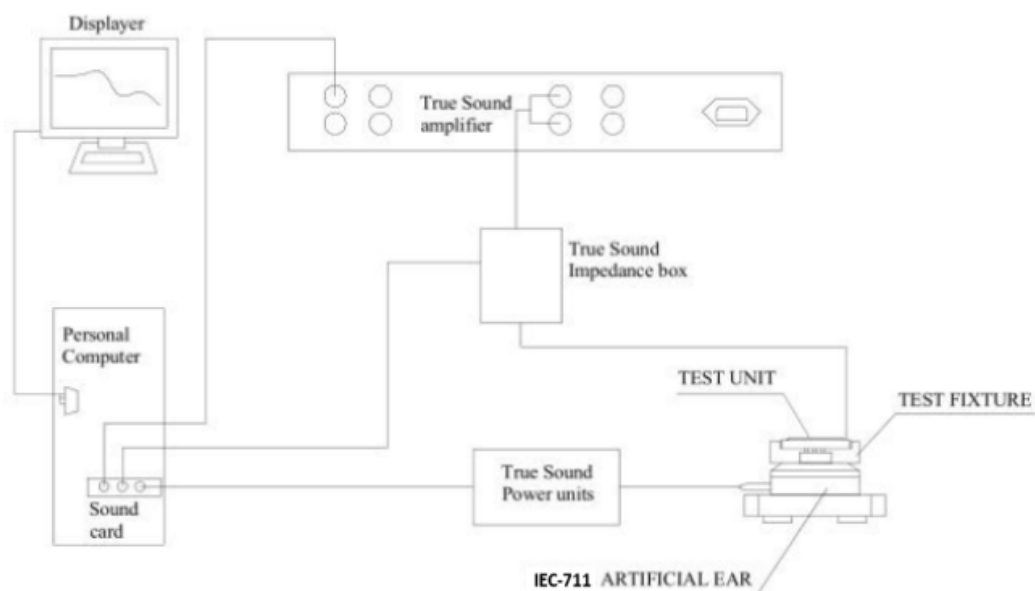


## 1.3 Electro-acoustic Specifications

### 1.3.1 Operation and storage environment conditions

- Operating Temperature Range: -20°C to +55°C
- Storage Temperature Range: -20°C to +60°C

### 1.3.2 Test Method



### 1.3.3 Electric-Acoustic Specification

Test Item	Nominal	Tolerance	Comments
Impedance	32	$\pm 10\%$	
DC resistance	32	$\pm 10\%$	
Rated power	5mW		
Maximum short-term power	10mW		
Resonance Frequency (F0)	490 $\pm 10\%$ Hz in free air		179mVrms
Sound pressure level	109.1 $\pm 3$ dB SPL at 1kHz		179mVrms IEC711
SPL	See Figure1		179mVrms
THD	See Figure2		179mVrms
Frequency Range	20~20kHz		
Rub & Buzz	Must be free audible noise from 50 Hz to 3KHz		400mVrms
Polarity	When a DC source's "+" polarity is attached to speaker's "+" polarity, and "-" polarity is attached to speaker's "-" polarity, the membrane will move towards "-" orientation.		

### 1.3.4 Nominal Frequency Response Curve

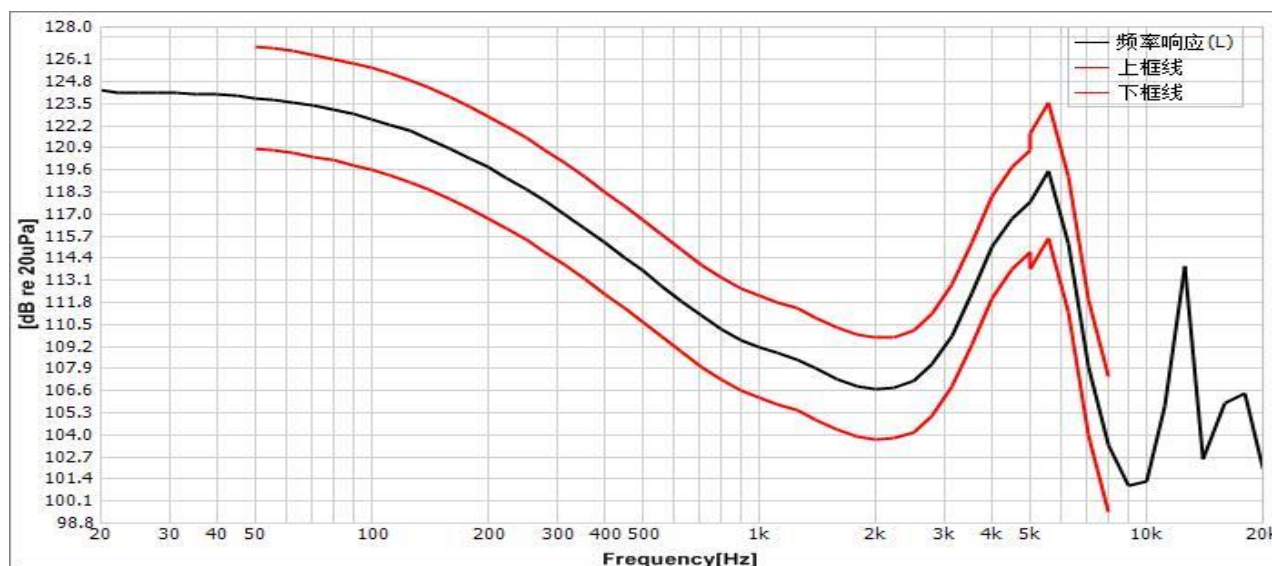


Figure 1 Typical FR curve

Test signal: 20Hz~20kHz, 1/24 Oct, 0.179Vrms, IEC standard 711 coupler

Frequency (Hz)	Upper limits (dB)	Lower limit (dB)
50-5000	+3	-3
5001-8000	+4	-4

## 1.3.5 THD

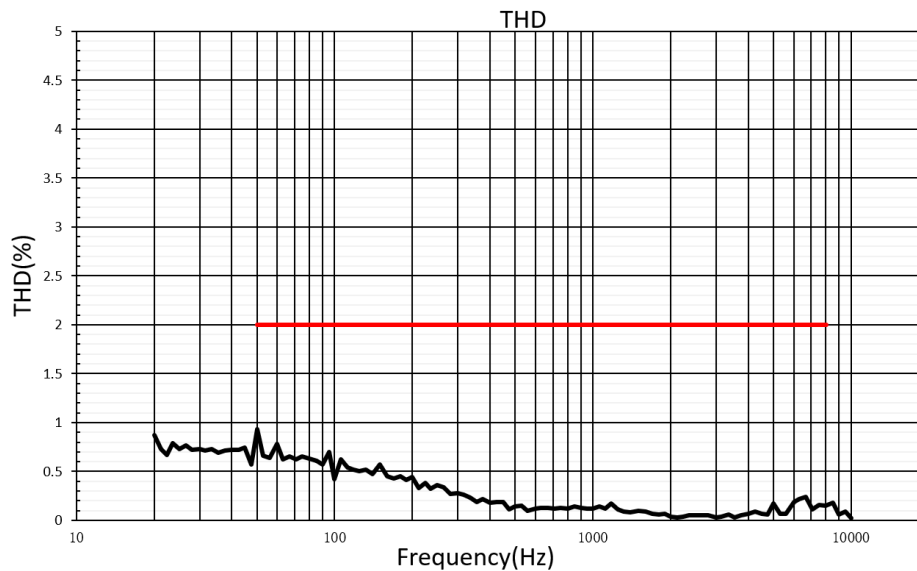


Figure 2 Typical THD curve

Test signal: 20Hz~20kHz, 1/24 Oct, 0.179Vrms, IEC standard 711 coupler

Frequency (Hz)	THD limits (%)
50~8000	2

## 1.3.6 TS parameters

T/S	NUMERICAL	UNIT
Mms	0.016	g
Fs	549.8	Hz
Sd	0.402	cm <sup>2</sup>
Re	29.35	Ohm
Qm	0.804	
Qe	4.301	
Qt	0.698	
Rm	0.048	kg/s
BL	0.551	N/A
Vas	0.0119	l
X-max	0.3	mm

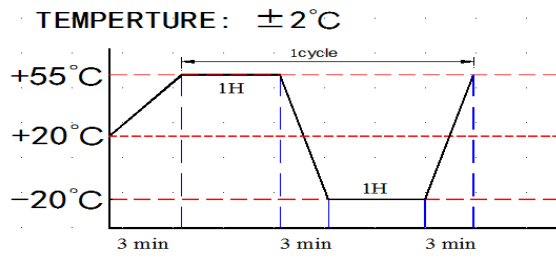
## 1.4 Part list

PART NO.	PART NAME	Q'TY	MATERIAL
1	Cover	1	SUS304
2	Diaphragm	1	PU+Ti
3	Coil	1	Cu
4	Frame	1	PBT
5	Dust mesh	1	Mesh
6	Yoke	1	SPCC
7	Magnet	1	Nd-Fe-B
8	PCB	1	SUS

## 1.5 Reliability Test Criteria

After any following tests the response at 1KHz shall not deviate more than  $\pm 3\text{dB}$  from the initial value

No	Item	Test Conditions
1.5.1	High Temperature Life	Temperature: $55^{\circ}\text{C}$ Duration: 96hrs, power off
1.5.2	Low Temperature Test Storage	Temperature: $-20^{\circ}\text{C}$ Duration: 96hrs, power off
1.5.3	Humidity Test	Temperature: $40 \pm 3^{\circ}\text{C}$ Humidity: 95%RH Duration: 96hrs, power off
1.5.4	High/ Low Temperature load	$60^{\circ}\text{C}$ , 8 hours, at rated power $-20^{\circ}\text{C}$ , 8 hours, at rated power
1.5.5	Drop Test	In X, Y and Z directions, the height of 0.75M falls 3 times in each direction (The products without front cover are placed in the protective shell)

1.5.6	Temperature Shock	<p>Temperature: <math>-20\pm 3^{\circ}\text{C}</math>, <math>20\pm 3^{\circ}\text{C}</math>, <math>+55\pm 3^{\circ}\text{C}</math></p> <p>Time: 5 cycles</p> 
1.5.7	Long Term Load Test	<p>white noise</p> <p>5mW (0.4V) for 96 hours</p>
1.5.8	Salt Spray Test	<p>5% concentration sodium chloride solution</p> <p>PH value 6.7-7.2</p> <p>Solution temperature in the experiment box <math>35\pm 2^{\circ}\text{C}</math></p> <p>Air temperature of the experiment box is <math>47\pm 2^{\circ}\text{C}</math></p> <p>Time is 24 hours</p>
1.5.9	Short Term Maximum Power Load Test	<p>pink noise, Max power, last for 1 second power on and 59 seconds power off, 60 times</p>

## 1.6 Package

- 200pcs speakers in each tray
- 32 trays in one inner pack

