

Name	Security Level
BELLSING® BSP dynamic speaker	Open
Version	A Total of 5 Pages
REV C	

# D12 dynamic speaker

## BSP120CAB32

### Product Data Sheet

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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
10/21/2021	A	Initial Release	Jerry
11/1/2021	B	Update parameter	Jerry
3/9/2021	C	Update 20~40kHz parameters for Hires application	Allen

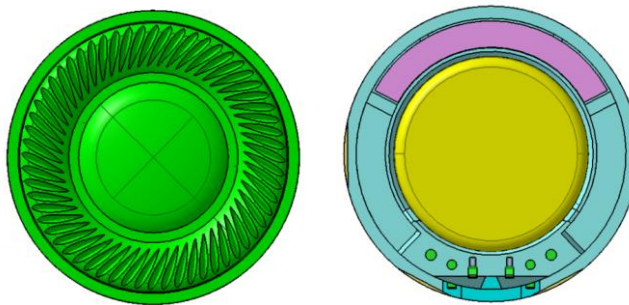
## BSP120CAB32 dynamic speaker

### 1.1 Description

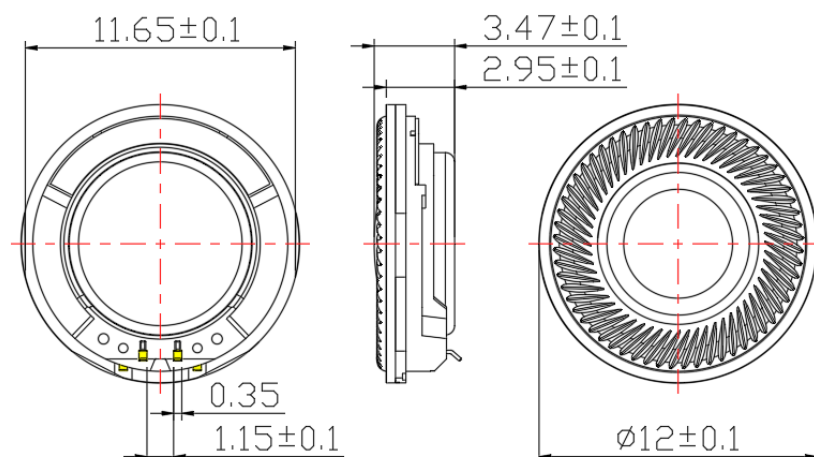
This product works on the principle of permanent magnet. When electro-magnetic field and voice coil, on which a vibration membrane is attached, receive a current signal, the membrane vibrates and the air around the diaphragm will be compressed. Sound will be induced through such kind of compression and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

The BSP120 is a high performance  $\Phi 12\text{mm}$  dynamic speaker, recommended to be used in consumer electronics inear products.

### 1.2 Mechanical Specification



Mechanical dimension: please refer to the drawing below

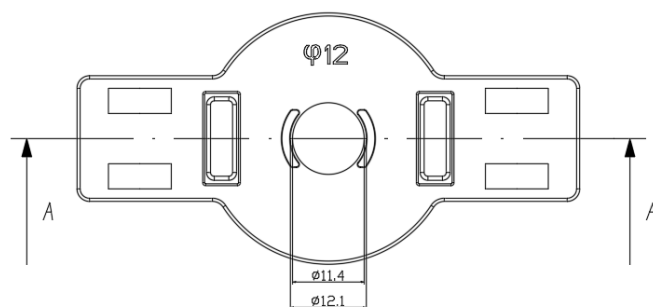
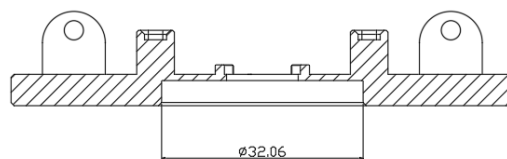
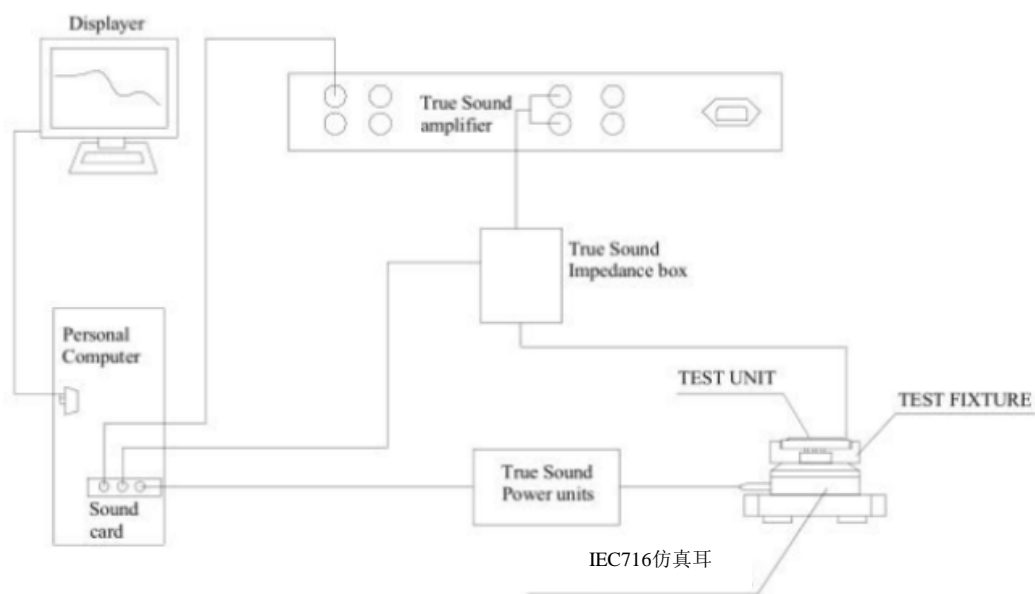


## 1.3 Electro-acoustic Specifications

### 1.3.1 Operation and storage environment conditions

- Operating Temperature Range:  $-10^{\circ}\text{C}$  to  $+65^{\circ}\text{C}$
- Storage Temperature Range:  $-10^{\circ}\text{C}$  to  $+65^{\circ}\text{C}$

### 1.3.2 Test Method



### 1.3.3 Electric-Acoustic Specification

Test Item	Nominal	Tolerance	Comments
Impedance in free air	32	$\pm 10\%$	@1kHz, 1mW
DC resistance	30	$\pm 10\%$	
Rated power	3mW		
Maximum shor-term power	10mW		
Resonance Frequency (F0)	260 $\pm$ 20%Hz in free air		179mVrms
Sound pressure level	105 $\pm$ 3dB SPL at 1kHz (0dB=20 $\mu$ Pa)		179mVrms IEC711
SPL	See Figure1		179mVrms
THD	See Figure2		179mVrms
Frequency Range	20~40kHz		
Rub & Buzz	Must be free audible noise from 50 Hz to 3KHz		A sine sweep At 300mVrms
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

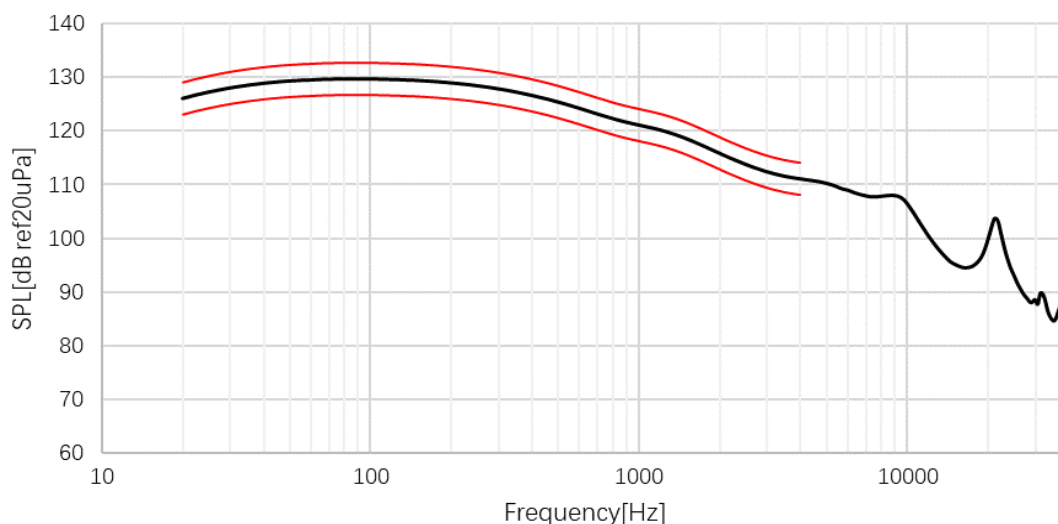


Figure 1

**Test signal: 20Hz~40kHz, 1/12 Oct, 0.179Vrms, IEC716 coupler**

Frequency (Hz)	Upper limits (dB)	Lower limite (dB)
20-4000	+3	-3

## 1.3.5 THD

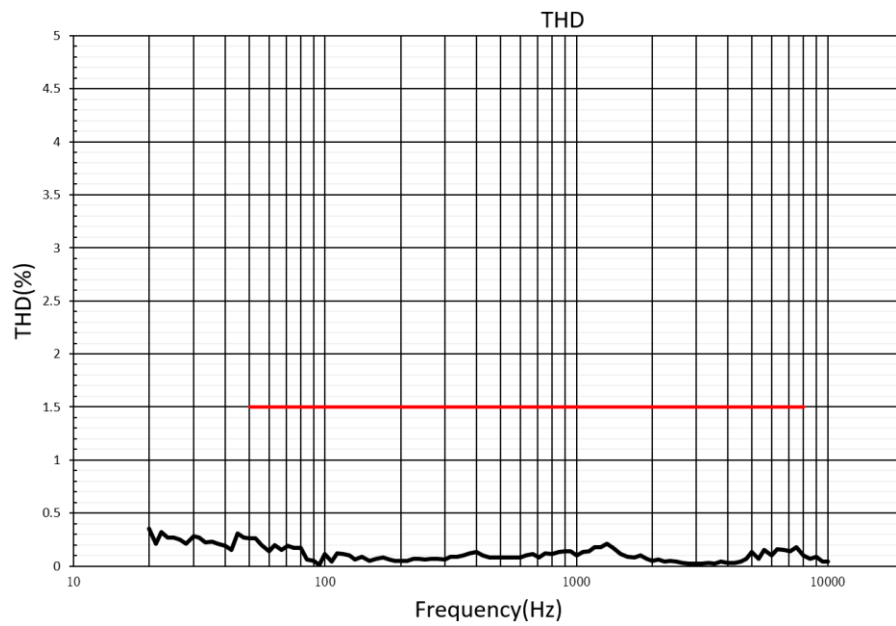
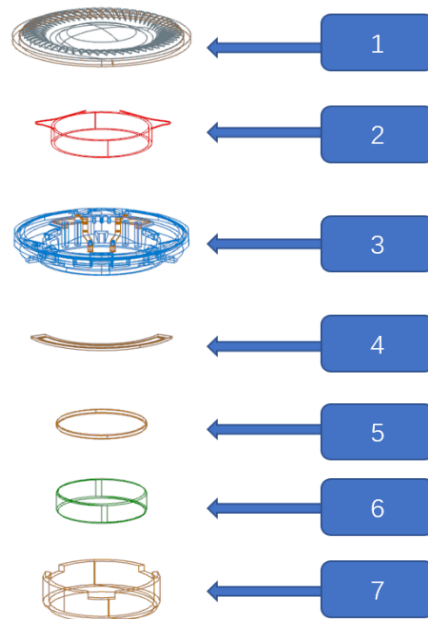


Figure 2

Test signal: 20Hz~20kHz, 1/12 Oct, 0.179Vrms, IEC716 coupler

Frequency (Hz)	THD limits (%)
100~8000	1.5

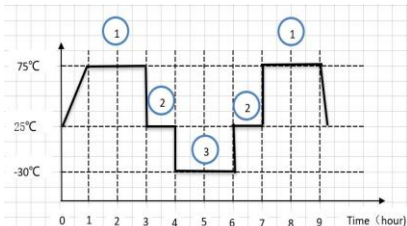
## 1.4 Part list



PART NO.	PART NAME	Q'TY	MATERIAL
1	Diaphragm	1	PU+Fiber
2	Coil	1	CU
3	Frame	1	PPA+SUS301
4	Dust mesh	1	Mesh
5	Plate	1	SPCC
6	Magnet	1	Nd-Fe-B
7	Yoke	1	SPCC

## 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	Load Test	Input 0.3V white noise is applied for 96 hours, at room
1.5.2	High Temperature Test	Temperature: $+65^{\circ}\text{C} \pm 3$ Duration: 48 hours (recovery 2 hours of conditions at $25^{\circ}\text{C}$ )
1.5.3	Low Temperature Test	Temperature: $+65^{\circ}\text{C} \pm 3$ Duration: 48 hours (recovery 2 hours of conditions at $25^{\circ}\text{C}$ )
1.5.4	Humidity Test	Temperature: $+40^{\circ}\text{C} \pm 3$ Relative Humidity: 90%~95% RH Duration: 48 hours (recovery 2 hours of conditions at $25^{\circ}\text{C}$ )
1.5.5	Drop Test	Height: 1.0m Cycle: 6 cycles
1.5.6	Temperature Shock Resistance	<p>Temperature: <math>25^{\circ}\text{C} \rightarrow 75^{\circ}\text{C}</math> (2H) <math>\rightarrow 25^{\circ}\text{C}</math> (1H) <math>\rightarrow -30^{\circ}\text{C}</math> (2H) <math>\rightarrow 25^{\circ}\text{C}</math> (1H)            Cycle: 6 cycles            Duration: 2 hour,            After test placing time: <math>25^{\circ}\text{C}</math> placed 1H</p> 
1.5.7	Salt Spray Test	Industrial salt: 5% Purification of water: 95% temperature: $35 \pm 3^{\circ}\text{C}$ Duration: 24 hours
1.5.8	Terminal Strength Test	Duration: 5 sec. Load: 0.5Kg



## 1.6 Package

- 200pcs speakers in each tray
- 5 trays in one inner pack
- 10 inner packs in one big carton