



soberton inc.

# SP DYNAMIC SPEAKER UNIT

Acoustic Product Specification

Product Number: SP-2309



Release | Revision: B/2018

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## Dynamic Speaker Electroacoustic Characteristics

### Sound Pressure Level

85dB (1.0W/0.1M) ±3dB @AVE 1.0 KHz, 1.2 KHz, 1.5KHz, 2.0 KHz

### Typical Frequency Response Curve

Shown in Fig. 3

### Resonance Frequency

1500 ±20%Hz

### Frequency Range

F0 ~ 20KHz.

### Buzz, Rattle, Etc.

Not audible at 0.89V Sine wave between F0 ~ 20 KHz

### Input Power (Nominal and Maximum)

Rated Noise Power: 0.1W (In 1CC Box)

Short Term Max Power: 0.15W (In 1CC Box)

### Test Setup

Measuring conditions and procedures shown in Fig 1 & Fig 2

### Distortion

Less than 5% @ 1 KHz, input rated power

### AC Impedance

8Ω±15%

### Magnet

Rare earth permanent (NdFeB) magnet φ6.4x1.5mm

### Polarity

When positive voltage is applied to the terminal marked (+), diaphragm should be moved to the front.

### Dimensions

ø 23.0 x 8.5 mm

### Weight

3.2g

## General Specifications

### Operating Temperature Range

-20°C ~ +60°C

### Storage Temperature Range

-30°C ~ +70°C

### IP Rating

No rating



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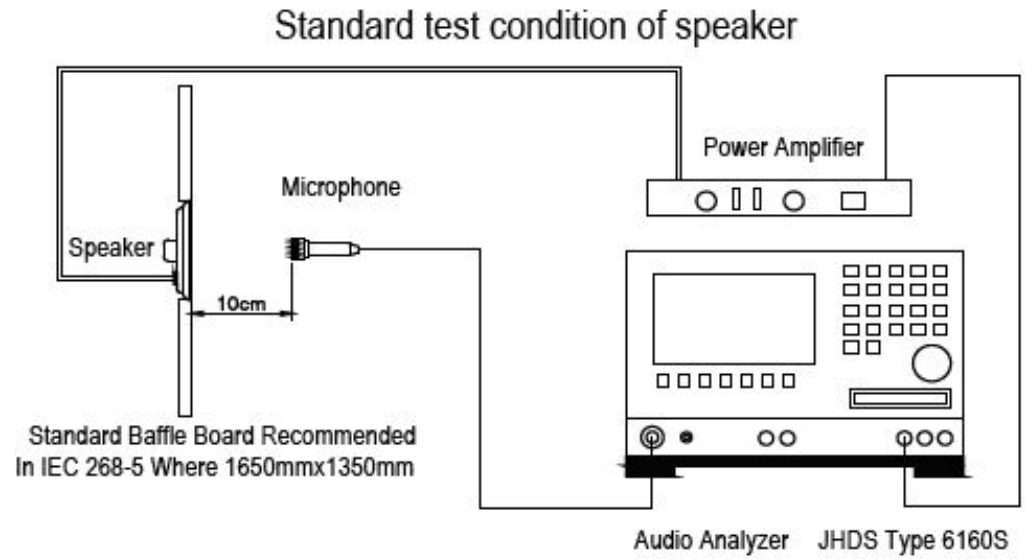
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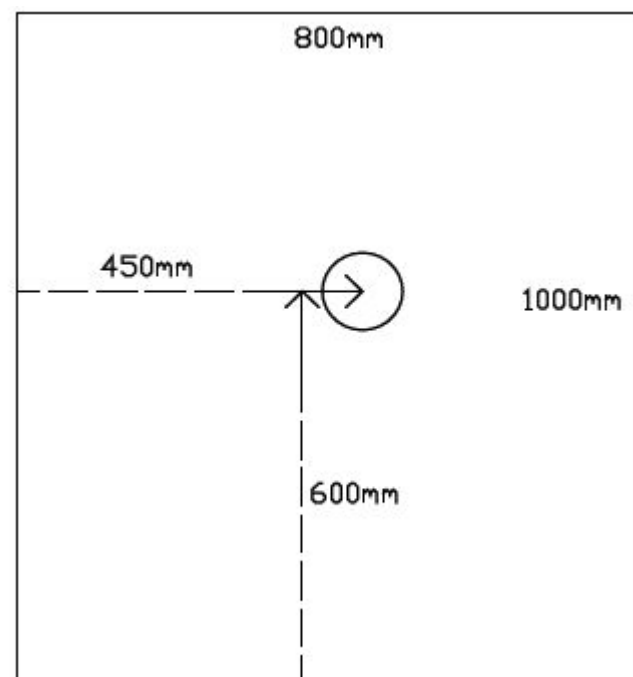
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## Measuring Method - Speaker Mode (Fig. 1)



## Block Diagram For Measurement Method (Fig. 2)



## Standard Test Conditions

### Standard Test Condition

Temperature 5 ~ 35°C

Relative humidity 45% ~ 85%

Atmospheric pressure 860 mbar ~ 1060 mbar



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## Reliability Tests

The sound pressure as specified will neither deviate more than  $\pm 3\text{dB}$  from the initial value, nor have any significant damage after any of following testing.

### High Temperature Test

High Temperature  $+85\pm 2^\circ\text{C}$

Duration 96 hours (leave 3 hours in normal temperature and then check)

### Low Temperature Test

Low Temperature  $-40\pm 3^\circ\text{C}$

Duration 96 hours (leave 3 hours in normal temperature and then check)

### Humidity Test

Temperature  $+40\pm 3^\circ\text{C}$

Relative Humidity 92%~95%

Duration 96 hours (leave 3 hours in normal temperature and then check)

### Vibration Test

10Hz ~55Hz ~10Hz sine-wave sweep 15 minutes 5G(constant)

X, Y, Z 3 directions, 2 hours each, total 6 hours

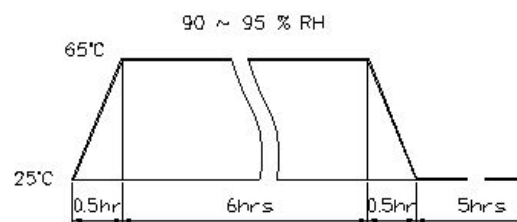
### Temperature Cycle Test

The part will be subjected to 5 cycles. One cycle shall be 12 hours and consist of:

Low temperature:  $-40^\circ\text{C}\pm 3^\circ\text{C}$

High temperature:  $+85^\circ\text{C}\pm 3^\circ\text{C}$

Cycle: one hour/cycle each and then keep 5 cycle in a room temperature



### Fix Drop Test

Fix on jig then drop from 152cm height to the concrete floor

X, Y, Z 6 directions 5 times each, total 30 times

### Free Drop Test

Free drop from 100cm height to the concrete floor

X, Y, Z 6 directions, 1 time each, total 6 times

### Load Test

Rated Power White noise is applied for 96 hours

### Terminal Strength Test

Capable of withstanding 1kg load for 30 seconds without resulting in any damage or rejection

### Max Power Test

Max power 1 minute on - 2 minutes off for 10 cycles



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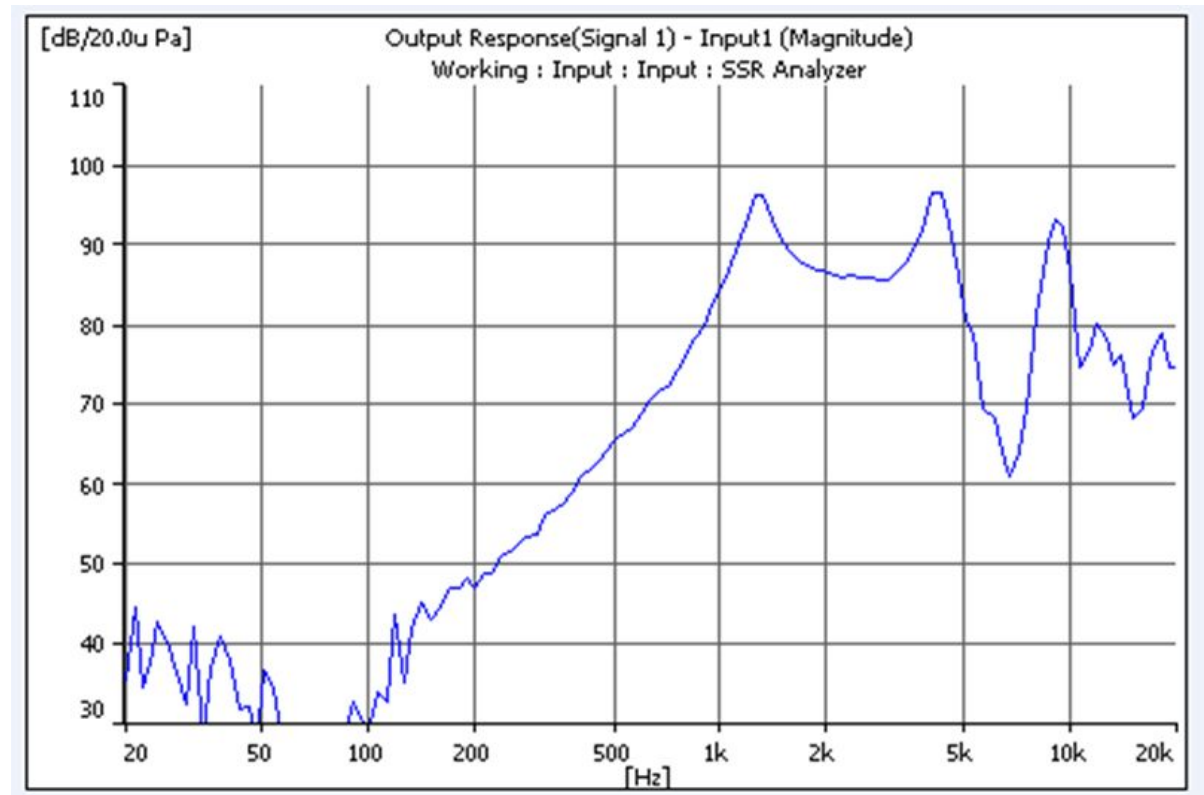
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### Frequency Response Curve (Fig. 3)

The swept sine-wave frequency response of a loudspeaker should ideally not deviate more than indicated.





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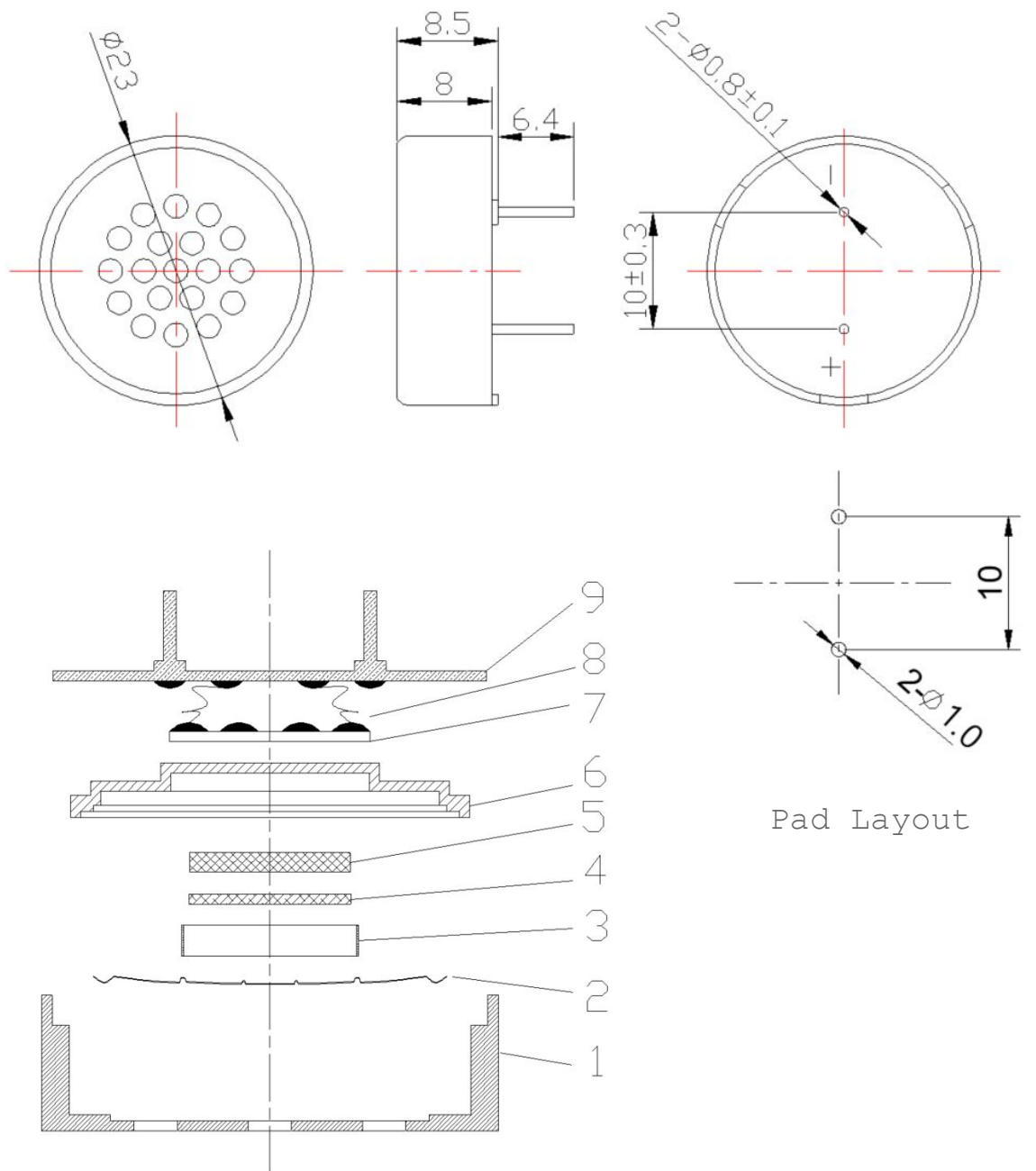
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## Dimensions

Tolerance:  $\pm 0.5$  (unit: mm)



No.	Part Name	Material	Quantity
1	Housing	ABS	1
2	Diaphragm	PET	1
3	Voice Coil	Cu	1
4	Magnet	NdFeB	1
5	Plate	SPCC	1
6	Frame	ABS	1
7	PCB	FR4	1
8	Connect Wire	Cu	2
9	Plug Board	Epoxy	1



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