



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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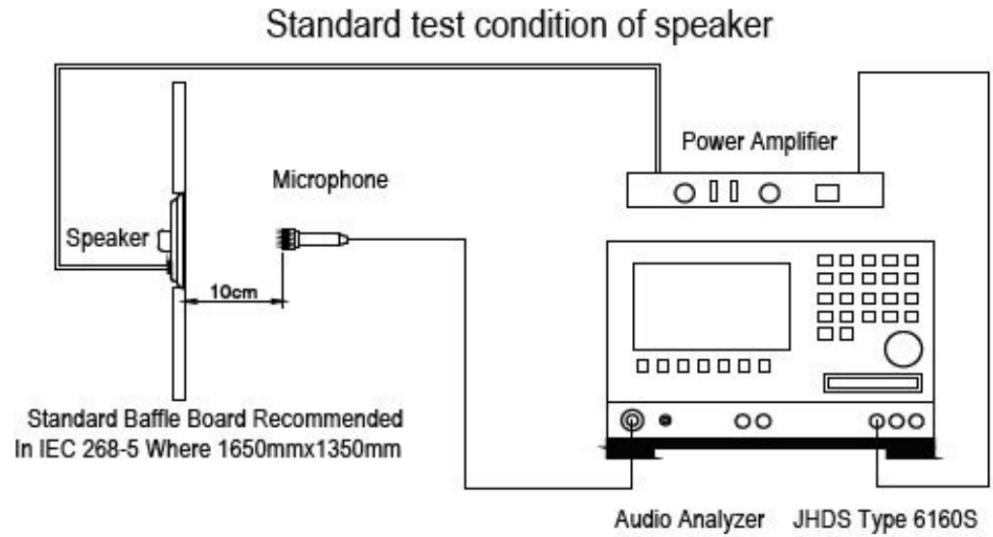
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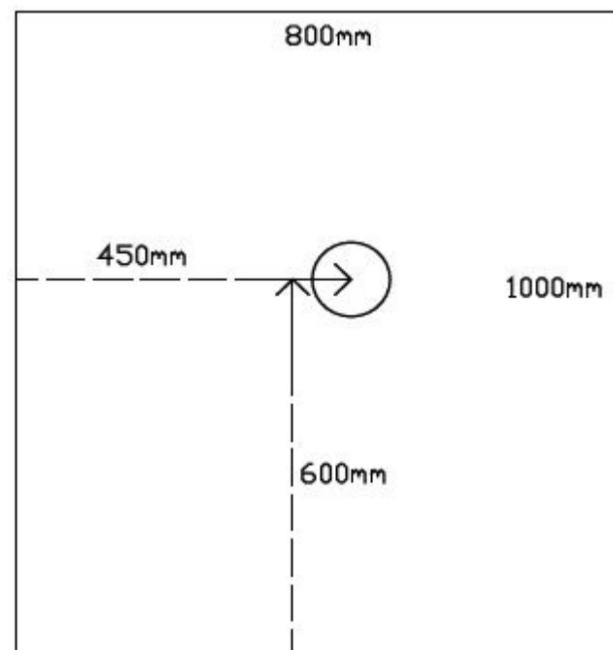
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Measuring Method - Speaker Mode (Fig. 1)



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

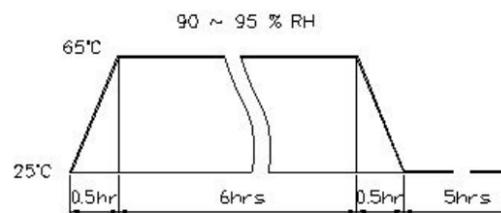
Temperature Cycle Test

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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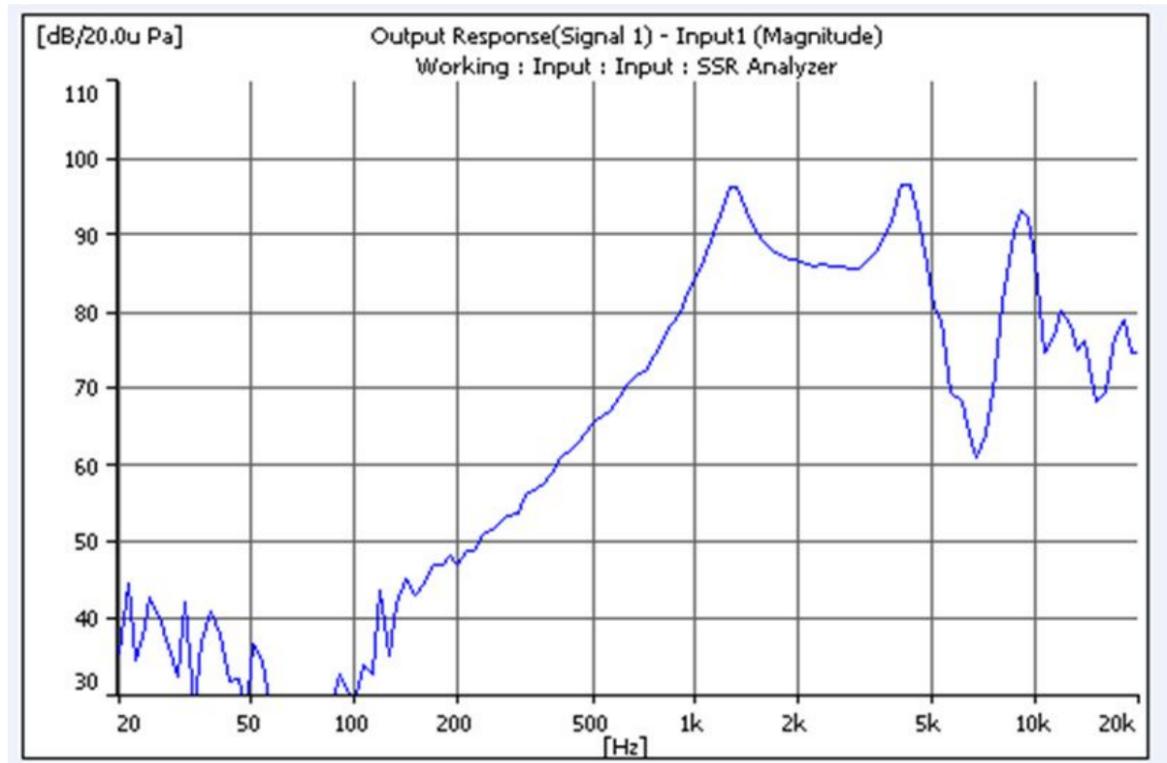
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Frequency Response Curve (Fig. 3)

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





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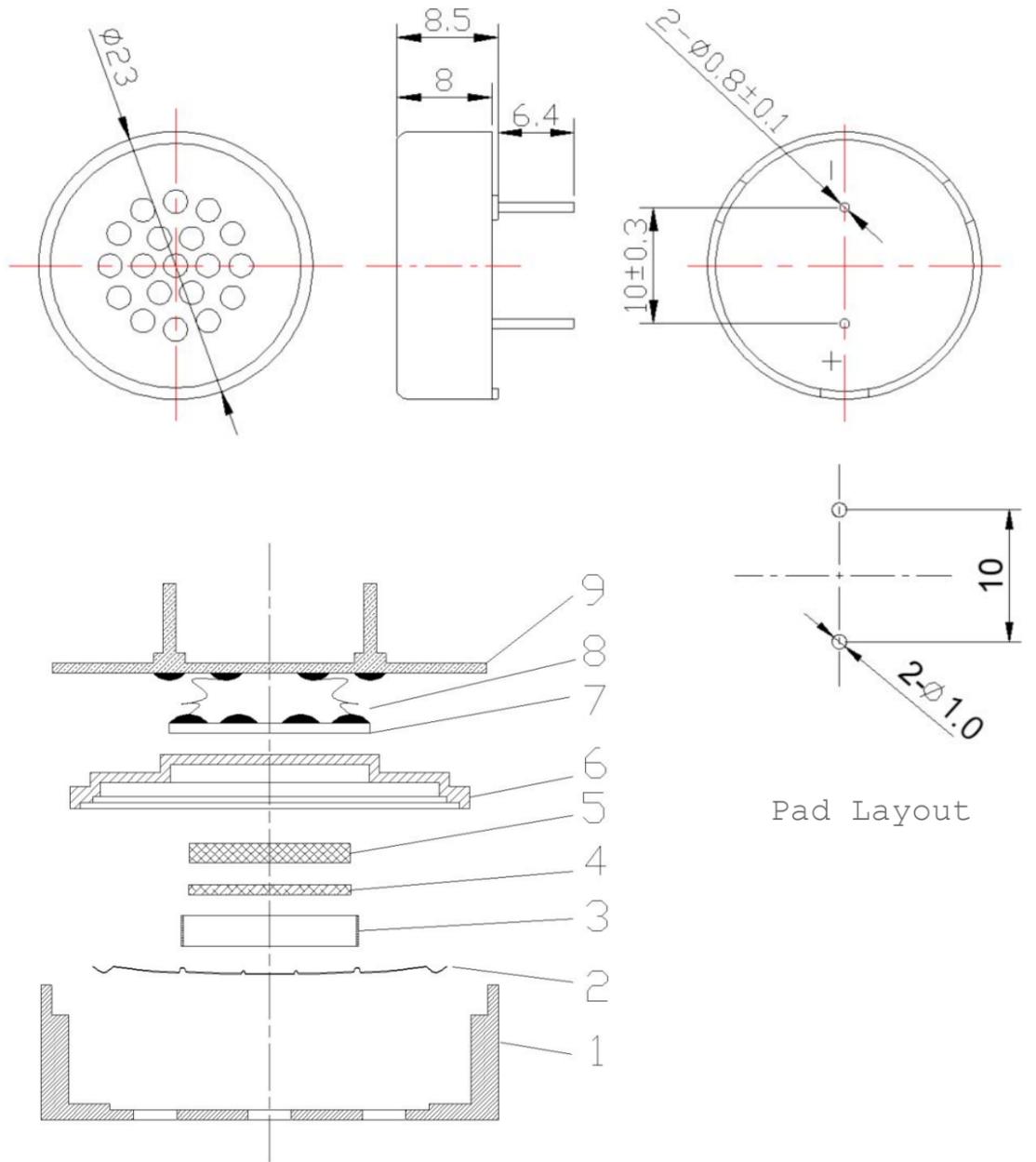
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Dimensions

Tolerance: ± 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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