



soberton inc.

## SP DYNAMIC SPEAKER UNIT

Acoustic Product Specification

Product Number: SP-1609S



Release | Revision: B/2018

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## Dynamic Speaker Electroacoustic Characteristics

### Sound Pressure Level

92±3dB SPL @ 2KHz 1.0V(Sine wave) 0.1m measured with baffler shown in Fig.1. (1CC BOX)

### Measuring Diagram

Shown in Fig.1

### Typical Frequency Response Curve

Shown in Fig. 2

### Resonance Frequency

850±20%Hz @ 1Vrms. (In 1CC BOX)

### Input Power (Nominal and Maximum)

Rated Noise Power: 0.7W (In 1CC Box)

Short Term Max Power: 1.0W (In 1CC Box)

### Operation Test

Must be free audible noise (buzzes and rattles)

200 ~ 5000Hz frequency range, input level up to 2.0Vrms (In 1CC BOX)

### Distortion

Less than 10% at 1KHz 1V

## General Specifications

### Operating Temperature Range

-25°C ~ +65°C

### Storage Temperature Range

-40°C ~ +85°C

### AC Impedance

6Ω±15% (@2KHz 1Vrms)

### Dimension

16 x 9 x 4.3 mm

### IP Rating

No rating



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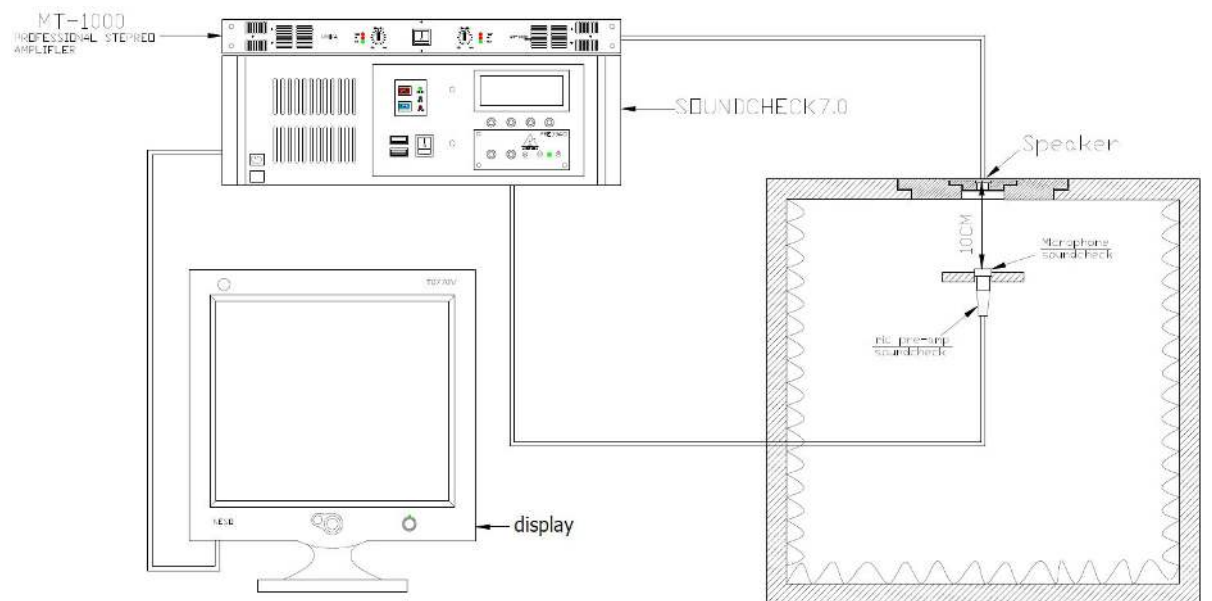
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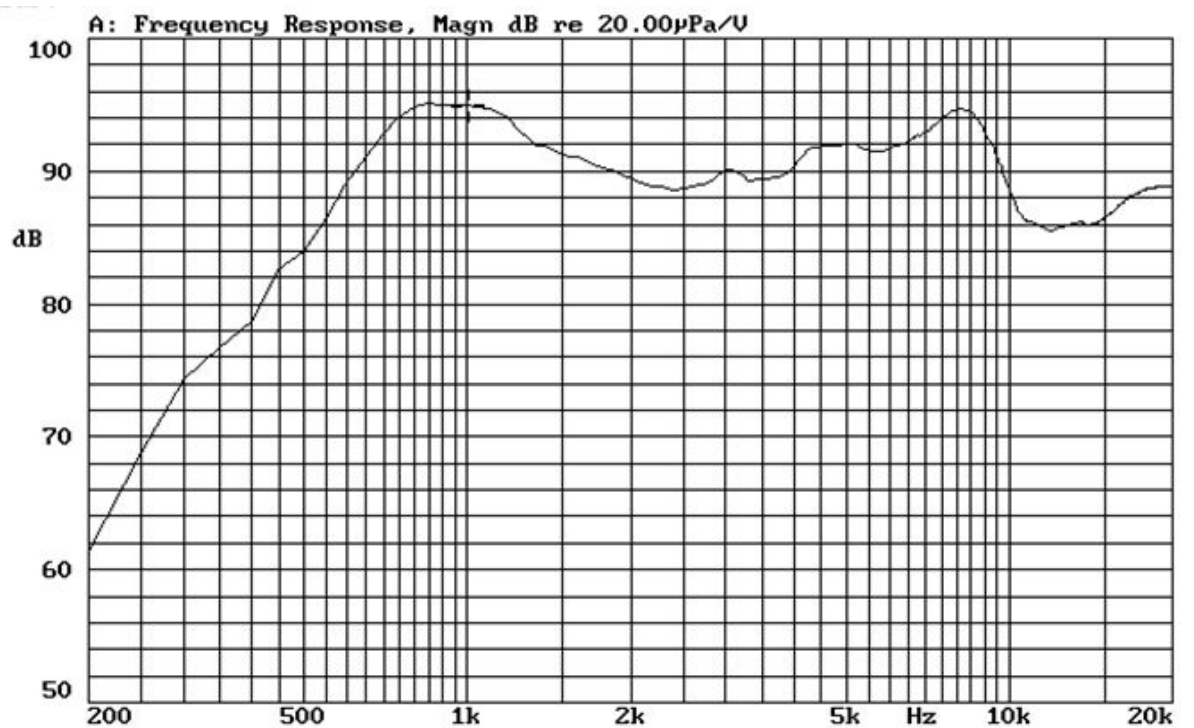
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## Frequency Measuring Circuit - Receiver Mode (Fig. 1)



## Typical Frequency Response Curve - Speaker Mode (Fig. 2)



## TEST CLIMATIC CONDITIONS

### Standard Test Condition

Temperature 17 ~ 25°C

Relative humidity 45% ~ 80%

Atmospheric pressure 860~1060 hPa



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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

### Low Temperature Test

Low Temperature  $-40\pm 2^\circ\text{C}$

Duration 96 hours

### Heat Shock Test (See in Fig. 3)

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

Low Temperature  $-40\pm 2^\circ\text{C}$

Changeover Time  $< 20$  seconds

Duration 1 hour (high), 1 hour (low)

Cycle 10

### Humidity Test

Temperature  $+40\pm 2^\circ\text{C}$

Relative Humidity 90%~95%

Duration 96 hours

### Temperature Cycle Test (See in Fig. 4)

Temperature  $-40^\circ\text{C}$   $+85^\circ\text{C}$

Duration 45 minutes 45 minutes

Temperature gradient  $1\sim 3^\circ\text{C}/\text{min}$

Cycle 10

### Drop Test

Mounted with dummy set mass 100 g

Height 1.5 m

Cycle 6 (1 each plain) onto the concrete board

### Load Test

Speaker mode: White noise (EIA filter) for 96 hours @ 0.7W (1CC BOX) (2.37Vrms)



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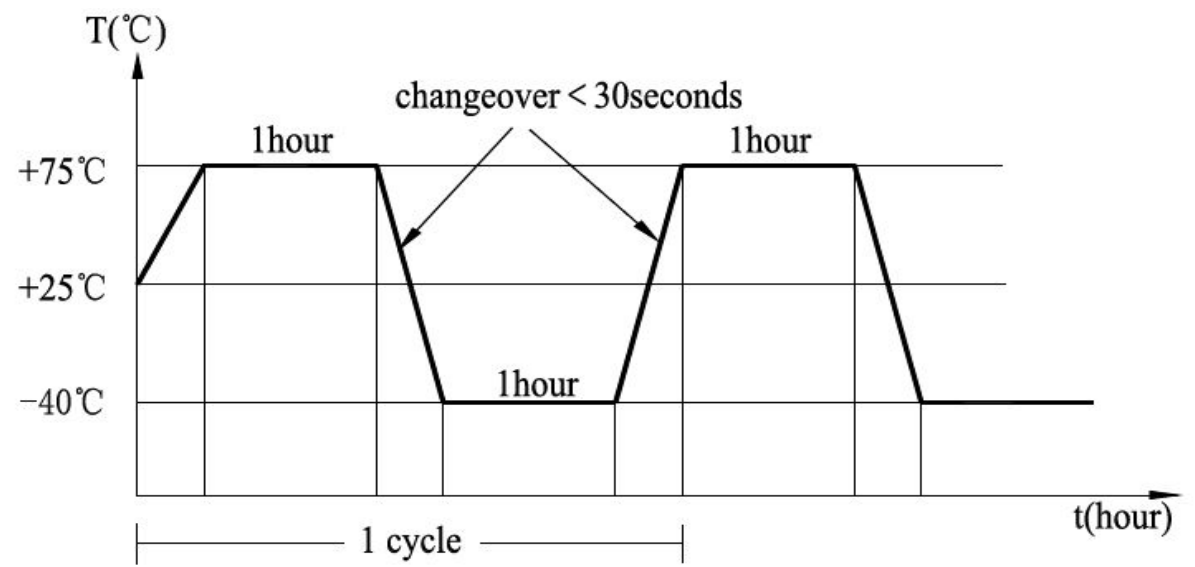
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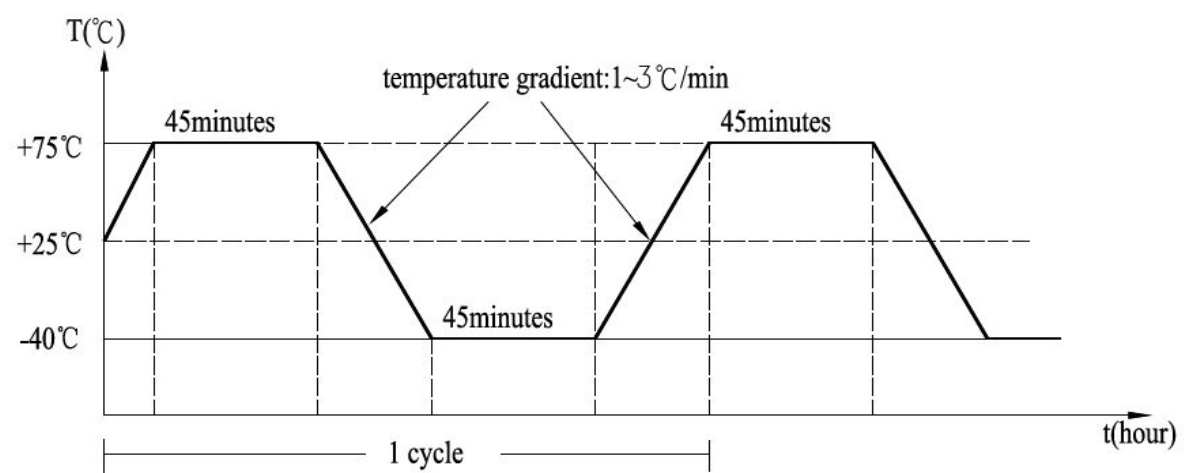
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## Heat Shock Test (Fig. 3)



## Temp. Cycle Test (Fig. 4)





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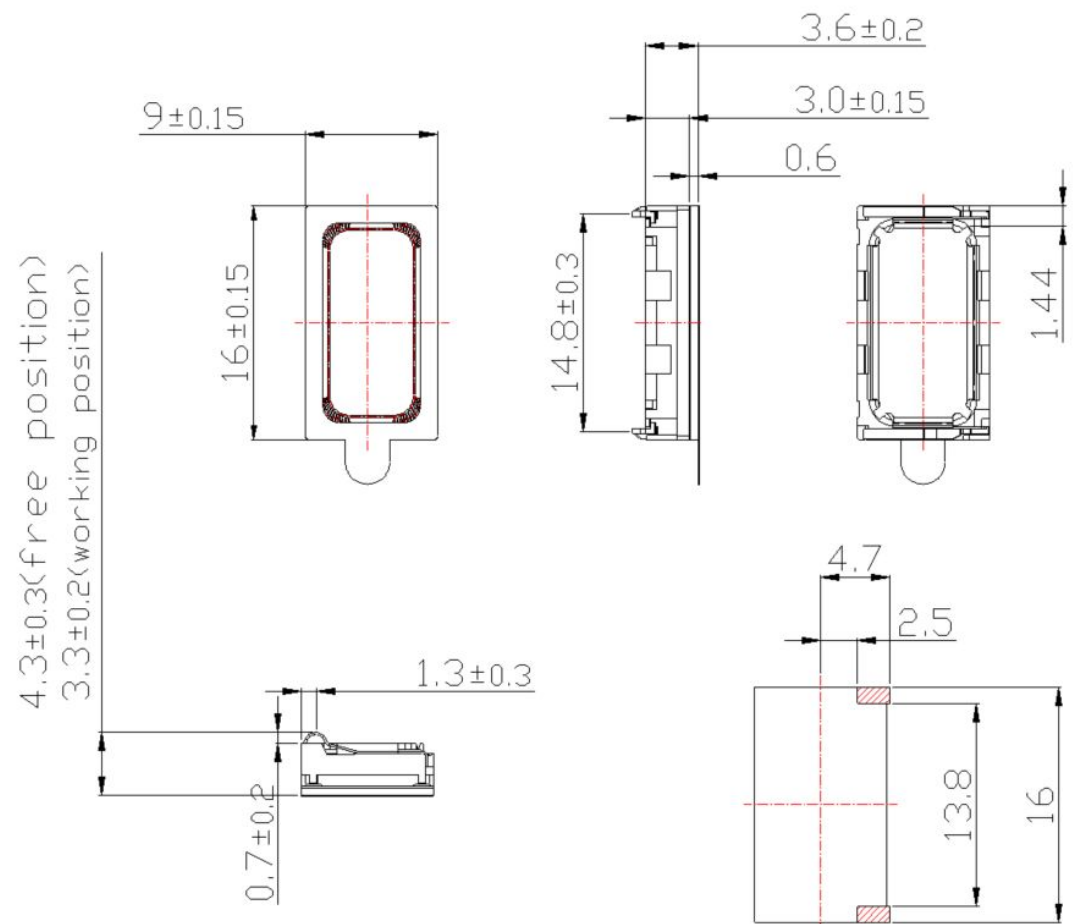
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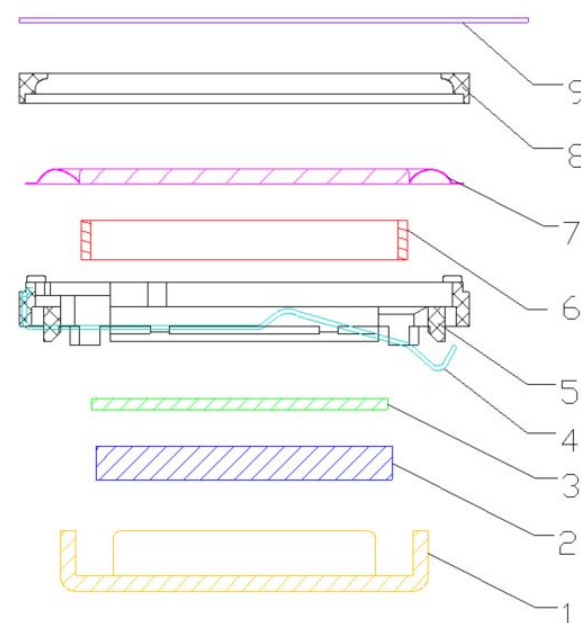
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## Dimensions

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



P.C.B. Layout



| No. | Part Name       | Material | Quantity |
|-----|-----------------|----------|----------|
| 1   | Yoke            | Iron     | 1        |
| 2   | Magnet          | Nd Fe B  | 1        |
| 3   | Plate           | Iron     | 1        |
| 4   | Spring Terminal | SUS      | 2        |
| 5   | Frame           | PPA      | 1        |
| 6   | Voice Coil      | Copper   | 1        |
| 7   | Diaphragm       | PEEK     | 1        |
| 8   | Cap             | PPA      | 1        |
| 9   | PAD             | PE       | 1        |



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