

# SPECIFICATIONS

Item : Piezoelectric Multiple Speaker

Model No. : HAP-BME-20-13N01

DATE : 2008. 03. 11

**SUSUMU CO., LTD.**

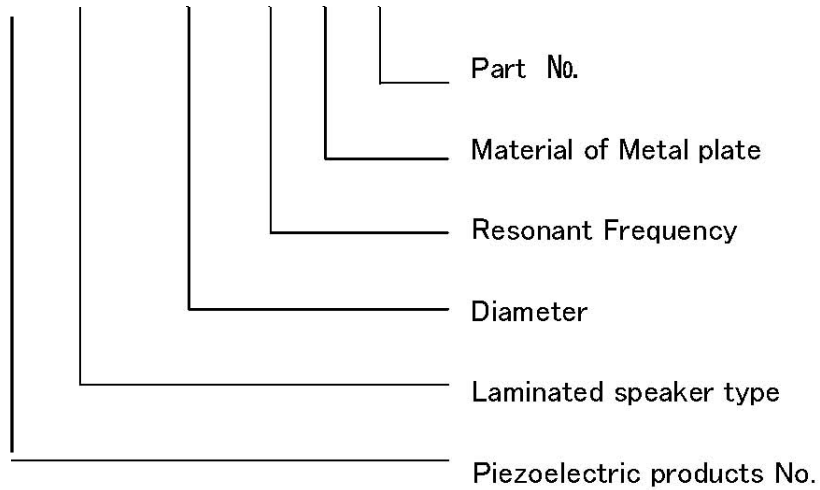
- 1. Application**
- 2. Part Number**
- 3. Dimensions**
- 4. Rating**
- 5. Electrical Characteristics**
- 6. Reliability Test**
- 7. Notice for Application**

1. Application

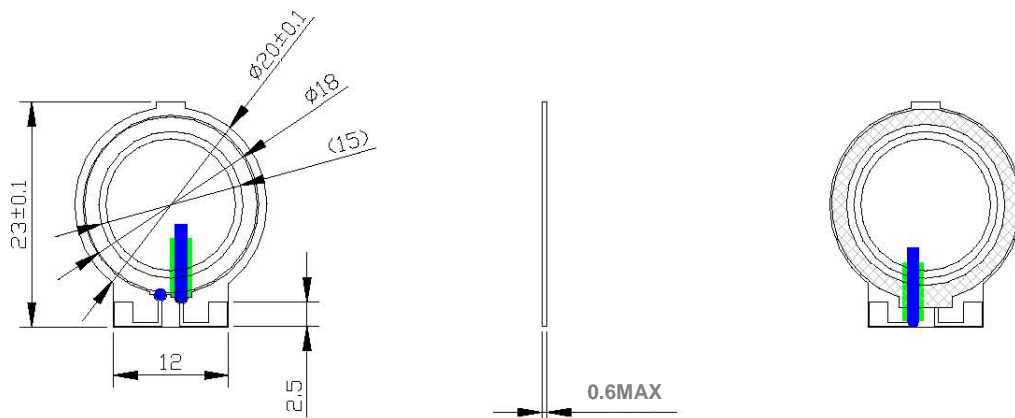
This specification applies fro piezoelectric speaker, HAP-BME-20-13N01.

2. Part Number

HAP - BME - 20 - 13 N 01



3. Dimensions



Unit: mm  
Tolerance:  $\pm 0.3$

#### 4. Rating

Static Capacitance : 900nF±30%  
 Rated Input Voltage : 10Vp-p Max.  
 Operating Temperature Range : -30 ~ +60°C  
 Storage Temperature Range : -30 ~ +70°C

#### 5. Electrical characteristics

	Items	Conditions	Standards
(1)	Sound Pressure Level (S.P.L.)	Input Voltage:1Vr ms Sine wave Distance from microphone:10cm Average Sound Pressure Level of 4 points (8 00、1k、 1.5k、 2kHz) ※Ⅱ	More than 72dB
(2)	Resonant Frequency	Input Voltage:1Vr ms Sine wave	850Hz~ 1250Hz
(3)	Static Capacitance	Input Voltage:1Vrms Sine wave、 120Hz	900nF±30%
(4)	Rated applied Voltage※Ⅰ	Sine wave	1V rms(2.8Vp-p)
(5)	Max. applied Voltage	Sine wave	10Vp-p

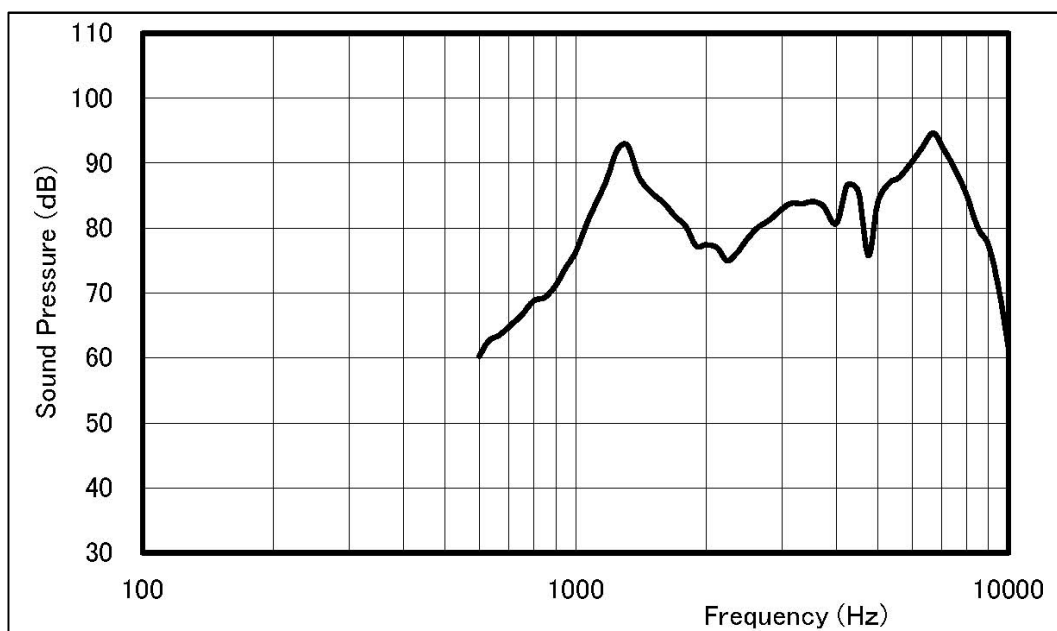
\* Ⅰ The characteristics of above condition No.(1)(2)(3) shall be satisfied.

\* Ⅱ :Measurement condition is at the normal condition.

Normal condition:Measurement is usually executed under the condition of the room temperature at (5~35°C)、and the room humidity(45~85%)

In case of suspicion on the judgment, the condition shall be at 25±2°C(Temp.)、 60~70%(Hum.)

#### Frequency Characteristics (Example)



## 6. Reliability Test Items

Items	Test Conditions	Standards for Judgment
Anti-Humidity	Leaving in the 40°C-90%RH for 96hr	(1)The change of average sound pressure level shall be within $\pm 3\text{dB}$ before and after a test. (2)The changing rate of resonant frequency shall be within $\pm 30\%$ before and after a test. (3)The changing rate of static capacitance shall be within $\pm 30\%$ before and a after a test.
High-Temp. Exposure	Leaving in the 70°C for 96hr	
Low-Temp. Exposure	Leaving in the -25°C for 96hr	
Heat Cycle	Repeat 5 cycles. (1 Cycle : -25°C for 30min, and 70°C 30min)	
Moving Continuation	Apply SN-1 signal at 8Vp-p for 96hr at the room temperature.	
Anti-Impact	Apply the Impact Gravity at 1500G from horizontal and vertical direction for each 3 times (total 6 times)	
Vibration Test	Apply the vibration of 10~55Hz、Amplitude:1.5mm、1min/cycle to the direction X & Y for 2hr each .	

## 7. Notice for Application

- 7.1 Please do not apply D.C. directly to the piezoelectric speaker.
- 7.2 The piezoelectric ceramics are used for speaker. The ten or more volts surge voltage may generate by impact, falling or the change of temperature. Pay attention to the protection of the peripheral circuits.
- 7.3 Please do not push by finger on the diaphragm of speaker.
- 7.4 Please do not apply the power which may change the shape of piezoelectric speaker.
- 7.5 Please do not fasten the installation part by the strength to bend the case at the piezoelectric speaker installation.
- 7.6 Please do not drop the piezoelectric speaker carelessly.
- 7.7 Please hold more than 0.2mm of gap for the mounting surface side at the time of piezoelectric speaker installation.
- 7.8 Please consider so that the pole part of the piezoelectric speaker does not short-circuit with a metallic department of other metal components and the steel cases.

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