

## Ultra-miniature Piezoceramic Sounder (Externally-driven)

EPM121A0A is an encased ultra-miniature sounder designed to produce a clear sound wave, even at frequencies other than the resonant frequency of the sounding body of a piezoceramic sounder and to be driven by an external signal such as a clock signal. This sounder is characterized by low power consumption, miniaturized size and light weight, making it suitable for sounding applications in various types of compact electronic devices and equipment.

### Features

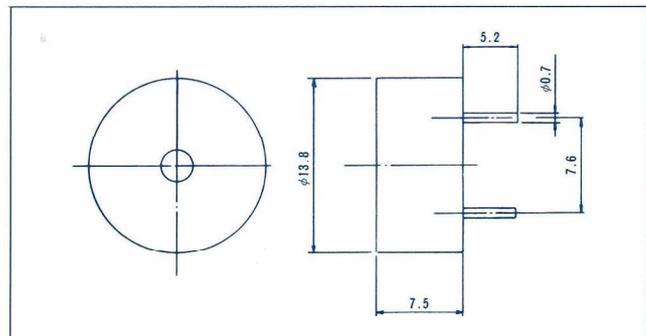
1. Ultra-miniature in cubic volume and light in weight.
  2. Low power consumption.
  3. No electric noise due to contacting parts: superior reliability and lifetime.
  4. Encased pin type enables easy mounting of sounder on printed circuit boards.
  5. This sounder conforms to EIAJ Standards.
- ※ EIAJ=Electronic Industries Association of Japan.



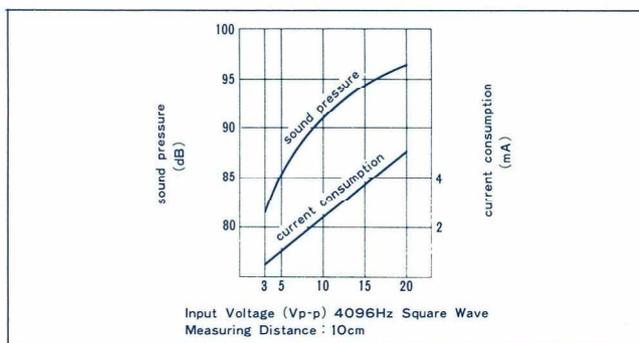
### Specifications

Item code (EIAJ)	EPM121A0A (PS-RP2-C14-41)
Input	Square wave, 5Vp-p · 4.1KHz
Sound pressure (S.P.L)	80dB min. (distance: 10cm)
Current consumption	4mA max./5Vp-p
Static capacitance	17,000pF ± 30%
Max. input voltage	20Vp-p
Operating temperature range	-20 ~ +70°C
Weight	1g
Case material	ABS(UL94HB)

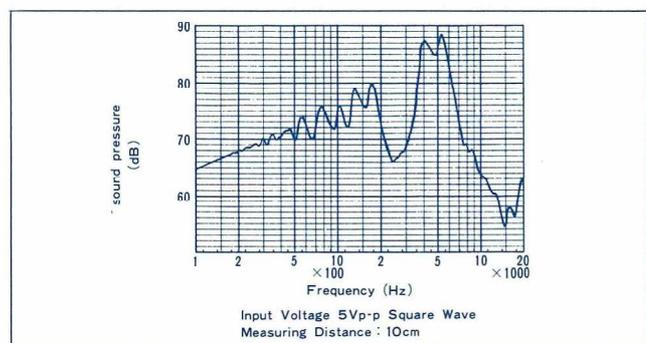
### Shape & Dimensions



#### ● Voltage-Sound Pressure · Current Consumption



#### ● Sound Pressure · Frequency



Specifications may be changed without notice.



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Date :20.Apr.2005

Drawing No.: A S - A \* \* \* \*

Messrs.

## APPROVAL SHEET

Model Name Piezoceramic Sounder

Parts No. E P M 1 2 1 A 0 A

Please sign here, and return one copy to us by mail;  
Keep the other copy for your files.

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**NIHON CERATEC CO., LTD.**  
**MEGACERA DIVISION**

Approved	Checked	Drawing

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1 . Subject

This specification will apply to Piezoceramic Sounder  
EPM121A0A.

2 . Purchaser

2 . 1 Code NO.: \_\_\_\_\_

2 . 2 Part NO.: \_\_\_\_\_

3 . Supplier

3 . 1 Code NO. : \_\_\_\_\_

3 . 2 Part NO. :  E P M 1 2 1 A 0 A

4 . Scope

4 . 1 Appearance Dimensions

As per attached drawing No.  A S - A \* \* \* \* 7 / 7

4 . 2 Test Conditions

All measurements shall be made ambient temperature of  $25 \pm 5$   
and may also be permissible in between 5 ~ 35 relative humidity  
65% unless otherwise specified herein.

4 . 3 Electrical Characteristics

- (1)Sound Pressure Level : 80d B min. ( item 5.1 )
- (2)Current Consumption : 4 m A max
- (3)Capacitance(Cd) : 17,000 pF  $\pm$  30%
- (4)Input Voltage : 20 Vp-p max.
- (5)Operating Temp. : - 20 ~ + 70
- (6)Storage Temp. : - 30 ~ + 80
- (7)Operating Humidity : 80%RH max ( at 40 、 No condense )

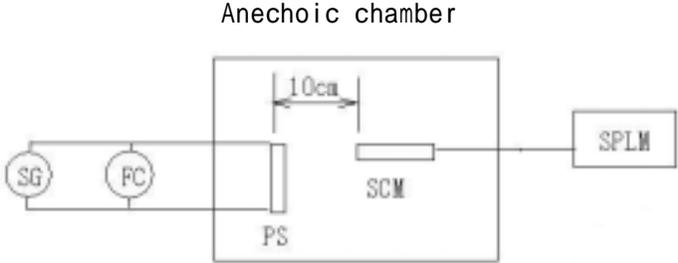
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## 5 . Test Method

### 5.1 Electrical Characteristics test method

ITEM	CONDITIONS
5.1 Sound Pressure Level & Oscillating Frequency	<div style="text-align: center;">  </div> <p>(Input 5Vp-p 4096 KHz square wave.)</p> <p>SG ; Signal Generator            FC ; Frequency Counter            PS ; Piezo Sounder            SCM; Standard Condenser microphone            SPLM ; Sound Pressure Level Meter (RION NA-40)</p>

### 5.2 Electrostatic Capacitance

This is measured by LCR meter.( at 1KHz, 1Vrms )

## 6 . Evaluation Testing

Test is done with JIS Z-9015-sampling plan for inspection by lot tolerance percent defective method.

	ITEM	METHOD	LEVEL	AQL
1	Appearance, Configuration	visual	S-3	0.65%
2	Sound Pressure Level	item 5.1	S-3	0.65%
3	Size	direct	n=5	(0.1) limit
4	Capacitance	item 5.1	S-3	0.65%

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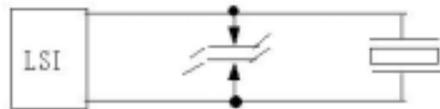
## 7 . Packing

Units shall be packed for shipping and storage so as not to be damaged, identifying by labeling with manufacture's name, part NO., lot NO. and quantity.

## 8 . Note

### 8 . 1 Caution in case of mounting and handling.

- (1) To prevent malfunctions, install the sounder so that it does not come into contact with other components on its side or top surface.
- (2) There should not be any obstacle within 15mm from the top of the sounder. Also , There should not be covered the sound opening with an adhesive tape or the like. If the sound hole is blocked, the sounder may habit abnormal oscillation or stop functioning.
- (3) The sounder can not be soldered by flow and reflow. In case of flow and reflow soldering, the case may be deformed.
- (4) Do not apply a DC current to the piezoceramic sounder. Otherwise, silver migration may occur, which will lower the insulation resistance and cause the sounder to stop functioning.
- (5) Use the sounder within the operation voltage range. A higher voltage may damage the diaphragm and other components or cause a fire. With a lower voltage, the sound may not be produced.
- (6) To protect an LSI from a counter voltage of the sounder, which may be caused by an external mechanical or heat shock, connect a zener diode or varister in parallel to the LSI. as shown in following figure.



(7) Do not drop the sounder. When subjected to a mechanical shock, the sounder may accumulate a high voltage inside its piezoceramic elements, resulting in an electric shock to anyone who touches it. Also if such a sounder is connected to a circuit, it may damage transistors and/or other electronic components.

Sounders which may have accidentally been subjected to a mechanical shock can be made safe by shorting them between the poles. Then check the sound pressure, tone and appearance before use.

(8) Do not apply strong force to the pins before they are soldered. If the pins are bent or cut due to excessive force, the sounder may not generate sound.

(9) The installation position of the sounder and acoustic impedance of the surrounding affect the sound. Please pay attention to appropriate setting.

(10) Do not use the sounder in a corrosive ambience, such as an ambience containing sulfur hydrides. Otherwise, a normal sound may not be generated due to corrosion of the components and diaphragm.

(11) When washing, be sure that a solvent or the vapor of a solvent does not infiltrate the sounder, so preventing deterioration and damage by the solvent trapped inside the casing.

(12) Take special protective measures to prevent deterioration and breakdowns, whenever the sounders are used in the following unfriendly areas:

Dusty places

Moist places

Hot or frosty places

Humid places

Areas exposed to sunlight

Area exposed to solvents or their vapor

(13) When operating the sounder outdoors, protect it from moisture to ensure normal operation.

(14) The sounder is intended for applying to personal computers, office automation units, communication units, audio-visual units, amusement units and other general household electrical appliances, no applying medical units, aeronautics units, space units and so on.

## 8 . 2 Caution in case of storing

To prevent deterioration and breakdowns, do not store units in the following places:

- Dusty places
- Hot or frosty places.
- Areas exposed to sunlight
- Places with leaking or infiltrating water
- Humid places
- Areas exposed to solvents or their vapor
- Areas exposed to corrosive gases, such as H<sub>2</sub>S

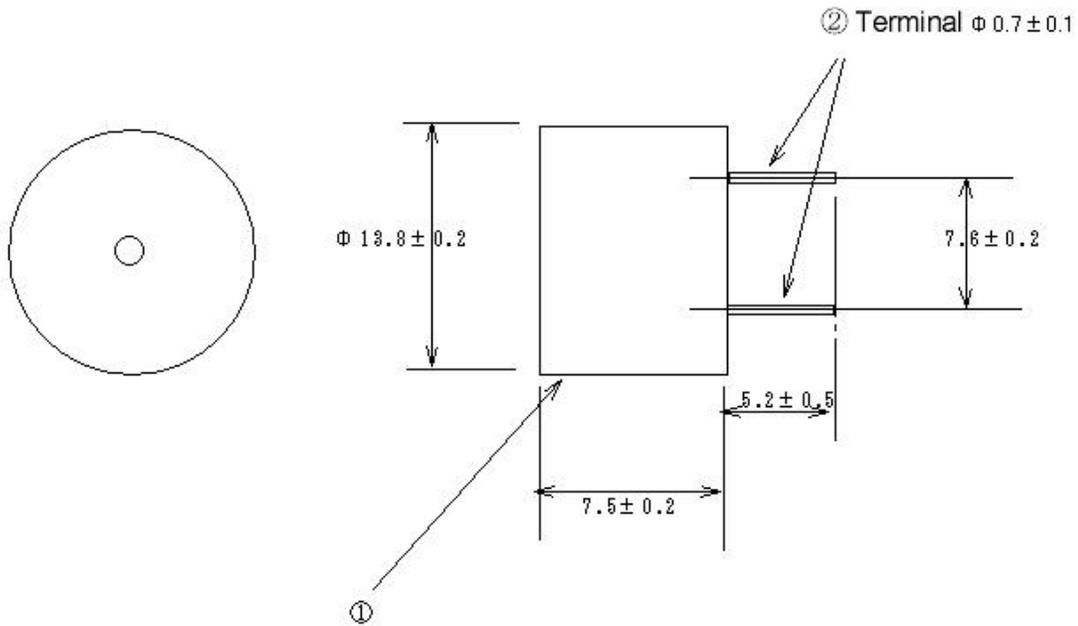
## 8 . 3 Other Precautions

- (1) Do not disassemble, repair or modify units, to maintain the initial performance and safety standard of it.
- (2) The products contain the lead so that the disposal of industrial wastes has to be required.

## 9 . General requirements :

- (1) In the case of different interpretation in this specification, discussions shall be made to agree each other.
- (2) With the worrying which exerts an influence on the efficiency being under for the material and the process change which is thought of, we make to cope after contacting(in the eye place of 2 months before) beforehand to you.

Appearance and dimensions (unit : mm)



(1)Material

Case : ABS (Blue)

Terminal : Brass (Sn/Cu plated)

(2)Appearance

There are no remarkable dirt, crack and crack detrimental to a performance.

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