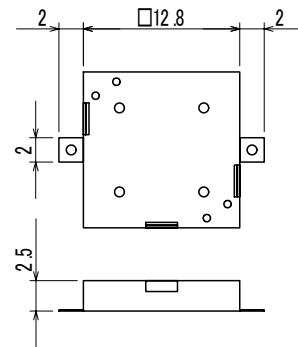
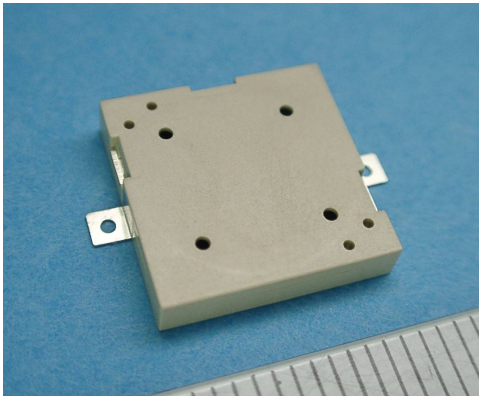


SMD EPM12SH

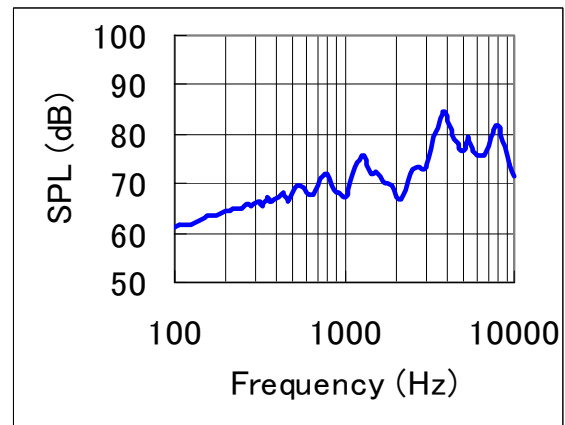
Super Mini Surface Mount Piezo Transducer



Dimension (:mm)

Features

- Small, thin package only 2.5mm high
- Low cost, High quality
- High sound output
- Available taped reel, or bulk packed



Specifications

	EPM12SH(B)	EPM12SH(T)
Operating Voltage (Max)	25V _{p-p}	
Sound Pressure @10cm,5V _{p-p} ,4.1kHz	80dB (Typ.)	
Current Consumption @5V _{p-p} ,4.1kHz	3mA (Max)	
Static Capacitance @1kHz	16.0nF +/- 30%	
Operating Temperature	-40 ~ +85 degC	
Storage Temperature	-40 ~ +85 degC	
Weight	0.5 g	
Packing Condition	1000 pcs/box	1000 pcs/Taping

NIHON CERATEC CO.,LTD.

7-12-18,Daiichi Ginza Bldg.3F,Ginza,Chuo-ku,Tokyo,104-0061 Japan TEL. +81-3-5565-6262 FAX. +81-3-5565-6270
2700 Augustine, Suite 101, Santa Clara, CA 95054, USA TEL. +1-408-567-0347 FAX. +1-408-567-0357
<http://www.ceratech.co.jp/> E-mail : piezo-electric@ceratech.co.jp

Messrs.

Specification for Piezoelectric Sounder

Model Name: PIEZOELECTRIC SOUNDER

Parts No: EPM12SH

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

Approved	Checked	Drawing

7-5, HARAJUKU, HIDAKA-SHI, SAITAMA,
350-1205 JAPAN

TEL +81-429-85-1111

FAX +81-429-89-7378

NIHON CERATEC CO., LTD.

MEGACERA DIVISION

1. Scope

This specification relates to the piezoelectric sounder intended to be used in alarm systems, etc. Please contact us before using any of the products in the applications not described above.

2. Part Number

2.1 Model name: Piezoelectric Sounder (SMD Type)

2.2 Part No.: EPM12SH

3. Specification

3.1 Appearance, Dimensions & Weight

As per attached drawing and the weight is approx. 0.6 g

3.2 Test Conditions

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

3.3 Electrical Characteristics

(1) Static Capacitance: $16.0 \text{ nF} \pm 30\%$ (at 1kHz)

(2) Input Voltage: 25 Vp-p max.

(3) Sound Pressure Level: 75 dB min. (at 4.1kHz, 5Vp-p)
 80 dB typ. (at 4.1kHz, 5Vp-p)

(4) Rated Current: $3.5 \text{ mA} \pm 30\%$ (at 4.1kHz, 5Vp-p)

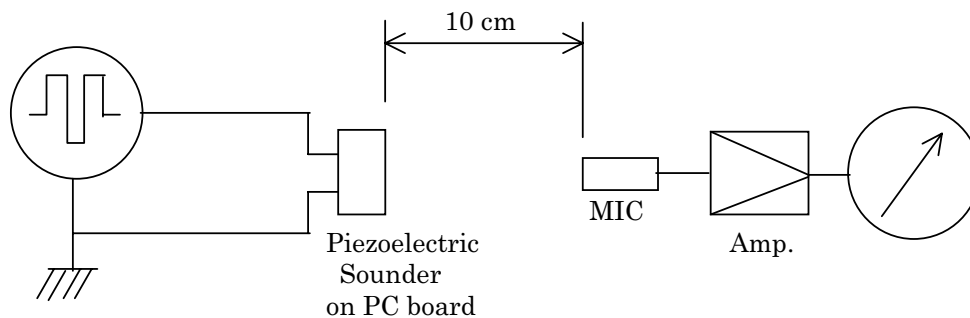
(5) Operating Temperature Range: $-40 \sim +105$

(6) Storage Temperature Range: $-40 \sim +105$

4. Measuring Method

4.1 S.P.L. Measuring Circuit

Input Signal: 5Vp-p, 4.1kHz, Square wave



4.2 Measuring Condition

Parts shall be measured under a condition (Temperature: $+5 \sim +35$, Humidity: $45 \sim 85\% \text{ R.H.}$) unless the standard condition (Temperature: $+25 \pm 3$, Humidity: $60 \pm 10\% \text{ R.H.}$) is regulated to measure.

5. Soldering Heat Resistance (Re-flow)

Following profile of heat stress is applied to sounder, then being place in natural condition for 1 hour, sounder shall be measured.

5.1. Pre-heating conditions shall be $+140$ to $+160$ for 60 to 120 seconds. Ascending time up to $+150$ shall be longer than 30 second.

5.2. Heating conditions shall be within 10 seconds at $+230$ min., but peak temperature shall be lower than $+235$.

6. Inspection

	<u>Item</u>	<u>Method</u>	<u>Level</u>	<u>AQL</u>
1	appearance, configuration	visual	S-3	0.65%
2	size	direct measure	n = 10	(0.1) limit
3	S.P.L.	item 4.1	S-3	0.65%
4	Cp	Cap. meter	S-3	0.65%

7. Packing:

Units shall be packed for shipping and storage so as not do damage, identifying by labeling with Manufacturer's name, part No, lot No, and quantity.

8. Note

8.1 Caution in case of handling.

- (1) Do not drop the product. When subjected to a mechanical shock, the product (piezoelectric sounder) may accumulate a high voltage, resulting in an electric shock to anyone who touches it. Also if such a product is connected to a circuit, it may damage transistor, LSI and/or other electric components. The product, which may have accidentally been subjected to a mechanical shock, can be made safe by shorting them between the poles.
- (2) Take special protective measures to prevent deterioration and breakdowns, whenever the products 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
- (3) When operating the product outdoors, protect it from moisture to ensure normal operation.
- (4) Do not apply a DC current to the product, Otherwise, silver migration may occur, which will lower the insulation resistance and cause the product to stop functioning.
- (5) Protect LSI by using a varistor or zener diode. External heat or mechanical shock makes product to generate several 10Vp-p voltage.

8.2 Caution in case of storing

To prevent deterioration and breakdowns, do not store products 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 H₂S

8.3 Other Precautions

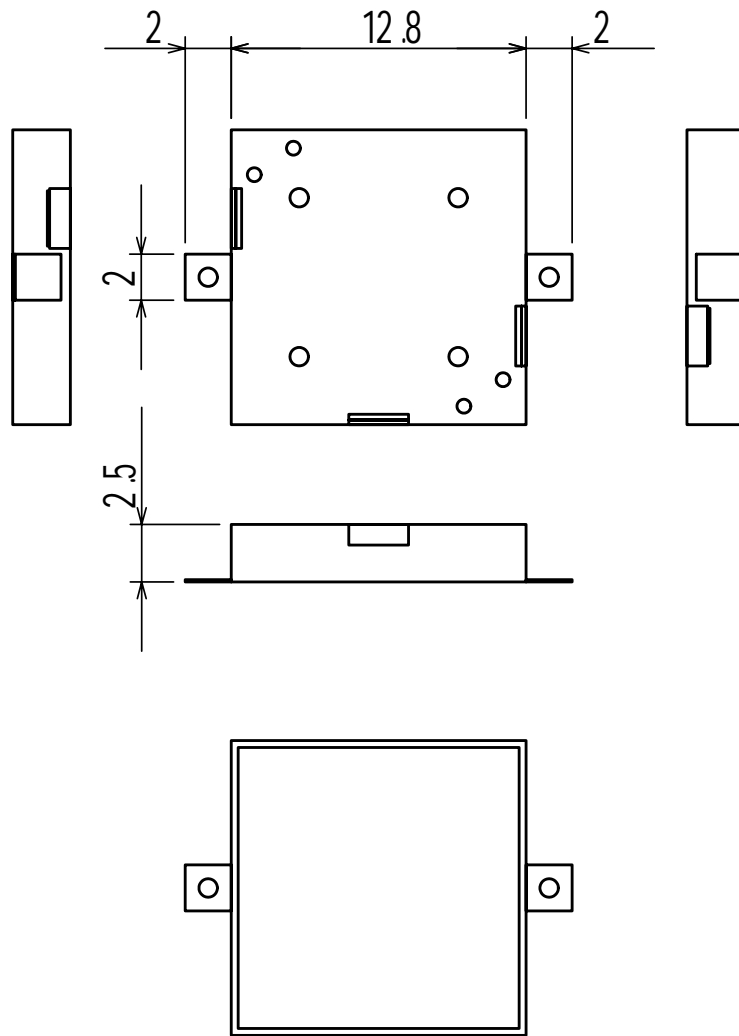
- (1) Do not disassemble, repair or modify the product, to maintain the initial performance and safety standard of it.
- (2) The products contain the lead so that the disposal of industrial wastes has to be required.

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.

10. Bill of materials

Metal plate	42%Ni – 58%Fe Alloy
Piezo ceramic	PZT
Terminal	Phosphor Bronze with Tin plating
Case (Housing)	Liquid Crystal Polymer (UL: 94V-0)



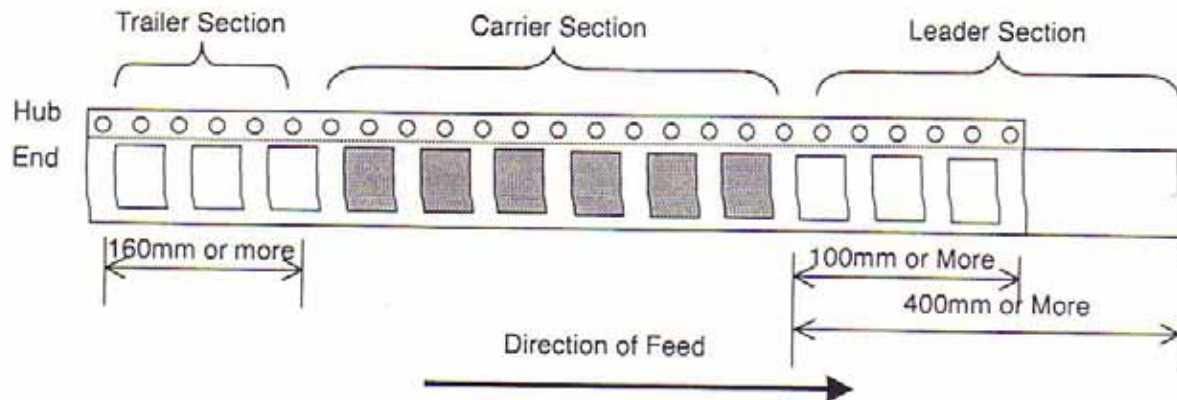
3						
2						
1						
	Date	Modify			Drawing	Check
	Scale	Free mm			Model Name PIEZOELECTRIC SOUNDER	
	Dimensions				Part No. EPM12SH	
	Drawing	Design	Check	Approved		
		N. Iwaki				
NIHON CERATEC CO., LTD. MEGACERA DIV.					Drawing No.	

I. Dimensions and structure of taping

Scope of application: **EPM12S**

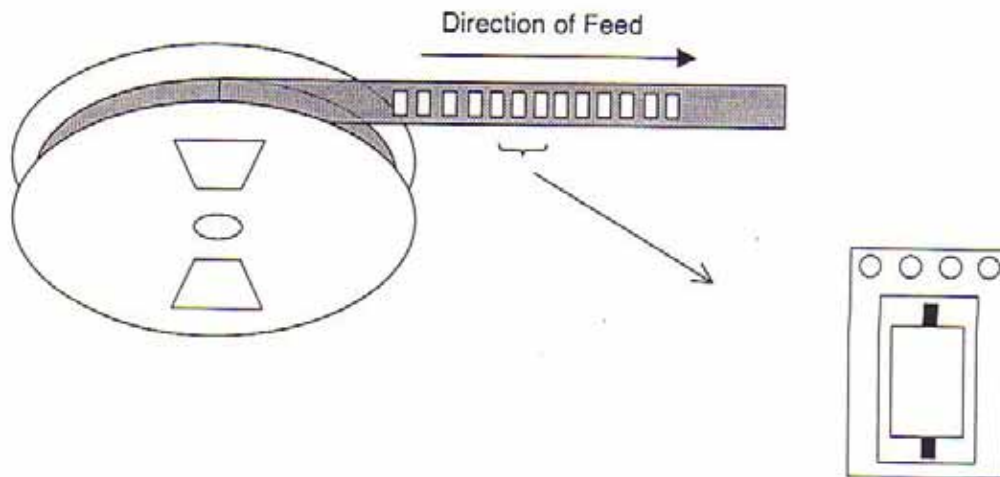
(A) Tapes at leader and trailer

The following shows the dimensions and structure of the taping.



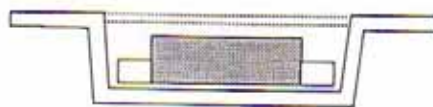
(B) Orientation of parts

The following shows the terminal pin position of parts against the tape feeding direction.



(C) Insertion of parts

Parts are inserted so that their marked surfaces face upward and mounting surfaces face downward.



(D) Number of parts per winding reel

The number of packaged parts per reel is 1000.

(E) Structure of taping

Parts are inserted into the plastic emboss carrier tape and the top cover tape is crimped on the carrier tape.

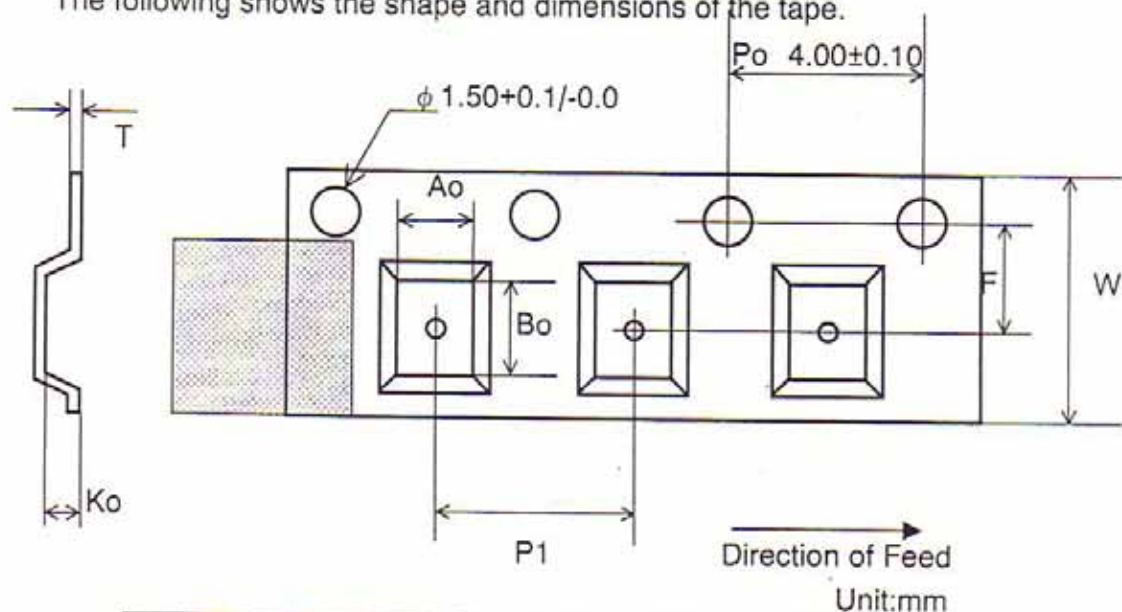
(F) Taping performance

- (1) Both the carrier tape and top cover tape shall withstand a tensile force of 10N.
- (2) The peel back force strength of the top cover tape shall be 0.1 to 0.7N when the top cover tape is pulled at a speed of 300 mm/min. and an angle of 165 to 180°.
- (3) No parts shall be missing in the reel.
- (4) For anti-static measures, both the carrier tape and cover tape are made of conductive plastic. And the reel is made of chipboard.

II. Tape specifications

(A) Shape and dimensions

The following shows the shape and dimensions of the tape.



Unit:mm			
Ao	13.00	±	0.10
Bo	16.95	±	0.10
Ko	2.70	±	0.10
T	0.30	±	0.01
F	11.50	±	0.01
P1	16.00	±	0.10
W	24.00	±	0.30

Remarks: The tolerance of accumulation pitch (P_o) error shall be ± 0.2 mm/10 pitches.

III. Packing and marking

(A)Packing

Each reel containing taped parts is put in an Anti-static bag.

(B)Labels

The label showing the following information shall be attached to each reel and carton box.

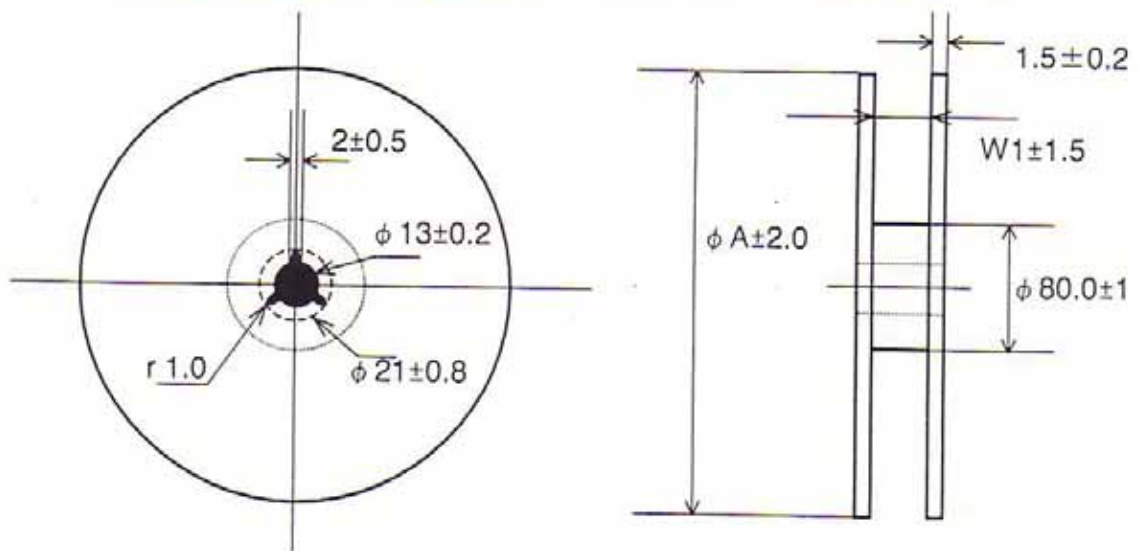
- i)Manufacturer name, or its abbreviation or trademark
- ii)Part name or model name
- iii)Quantity
- iv)Manufacture date or its abbreviation
- v)Lot No.

IV.Reel specifications

(A)Shape and dimensions

The following shows the shape and dimensions of the reel.

Class	Side plate material	Core material
Chipboard-reel	Chipboard	PSP



Unit:mm

A	W					
	For8mm	For12mm	For16mm	For24mm	For32mm	For44mm
330	9.5	13.5	17.5	25.5	34.0	45.5

V. Packing specifications

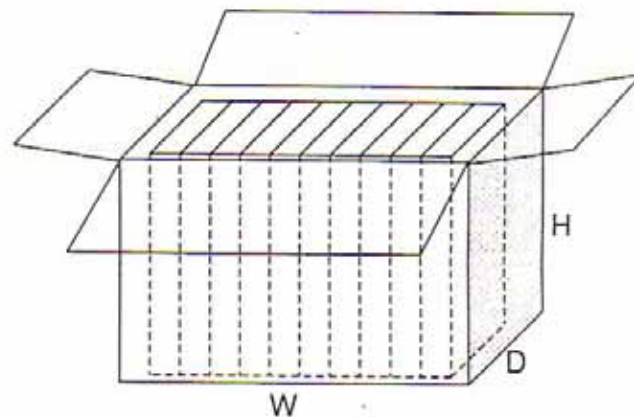
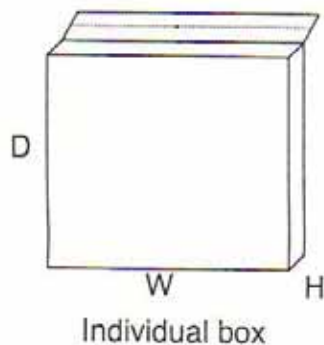
(A) Packing method

- (1) Each reel containing taped parts is put in the individual carton box.
- (2) Individual carton boxes containing the reel are put in the shipping carton box. At this time, as a rule, individual carton boxes are vertically put in the shipping carton box as shown in the figure below.
- (3) Individual carton boxes containing the reel are arranged in the shipping carton box as shown in the figure below. If the number of individual carton boxes in the shipping carton box is less than the specified quantity per shipping carton box, cushion materials (air cap, etc) are put to secure and protect the reels.

(B) Shape and dimensions

Unit:mm

Number of reels	Class	W	D	H	Material
Individual carton box		340	340	30	White one-layer corrugated cardboard
1 to 7 reels	Shipping carton box (medium)	275	355	385	Two-layer corrugated cardboard
8 to 14 reels	Shipping carton box (large)	540	355	385	



(The above figure shows when the shipping carton box (large) is used.)