

**BeStar Technologies Inc.**

Address: 761 N. 17th Street Unit 4, St. Charles, IL 60174

Tel : 847-261-2850 E-mail : [sales@bestartech.com](mailto:sales@bestartech.com) Web : [www.bestartech.com](http://www.bestartech.com)

Document Number : 9805-94  
Revision : A7  
Total Pages : 5  
Prepare by : Loki, Lo  
Date : 19 August, 2015

**SoniCrest** Brand Acoustic Components[www.jlsonicrest.com](http://www.jlsonicrest.com)

Document Type : Specification  
Product Type : Piezo Sound Generator Component  
Part Number : HPA45A

A3 - Update layout and format by Leo, Sin on 9 Mar., 2001	A7 - Update section 4 - 8 by Loki, Lo on 19 Aug., 2015	
A4 - Update electrical specification by Leo, Sin on 25 May, 2001		
A5 - Update reliability specification by Leo, Sin on 1 Jun., 2001		
A6 - Update section 4 - 7 by Loki, Lo on 25 Jan., 2013		

This material is the property of BeStar Technologies Inc.  
Unauthorized copying or use of this material is prohibited.

## 1. Purpose and Scope

This document contains both general requirements, qualification requirements, and those specific electrical, mechanical requirements for this part.

## 2. Description

Ø45mm piezo sound generator, RoHS compliant.

## 3. Application

Telecommunication Equipment, Computers and Peripherals, Portable Equipment, Automobile Electronics, POS System, etc.

## 4. Component Requirement

### 4.1. General Requirement

4.1.1. Operating Temperature Range	: -30°C to +50°C
4.1.2. Storage Temperature Range	: -40°C to +60°C
4.1.3. Weight	: Approx. 9g
4.1.4. Housing Material	: MPPO

### 4.2. Electrical Requirement

4.2.1. Rated Voltage (Sine Wave)	: 12Vp-p
4.2.2. Operating Voltage	: 2 ~ 50Vp-p
4.2.3. Capacitance at 120Hz	: 240 ± 30% nF
4.2.4. Sound Pressure level at 30cm (Applying rated voltage and 3200Hz)	: >=100dB
4.2.5. Frequency Range	: 2200 ~ 4000Hz
4.2.6. Rated Current	: <=10mA

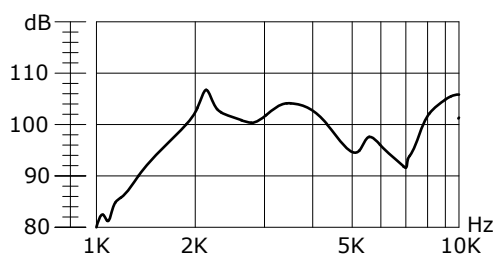
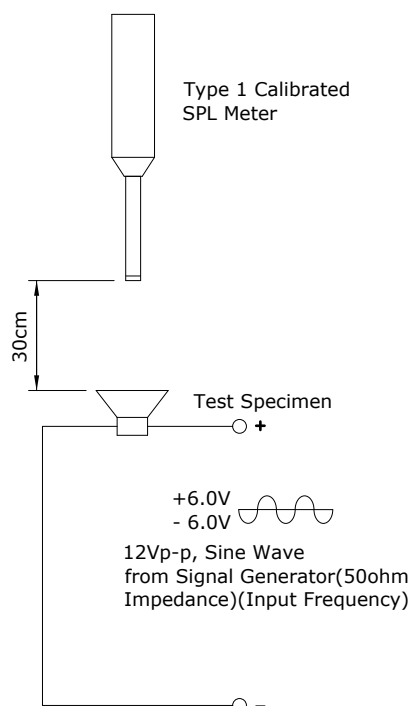


Figure 1. Frequency Response

### 4.3. Mechanical Requirement

4.3.1. Layout and Dimension	: See Section 7, Figure 3
-----------------------------	---------------------------

#### 4.4. Test Setup



**Figure 2. Test Setup**

**Notes :** Apply rated voltage and frequency from Signal Generator. Measure SPL using a calibrated SPL meter 10cm from the alert port. Sound level meter to be in accordance with IEC651 (1979) Type 1 and/or ANSI S1.4-1983. The meter must be checked on a daily basis using a calibrated acoustic calibrator recommended by the manufacturer. Measurement should be carried out in a free field environment or at least 40cm from any surface.

## 5. Reliability Test

- 5.1. High Temperature** : Subject samples to  $+85 \pm 2^{\circ}\text{C}$  and operate for 4 hours with rated power and resonance frequency. Components must be fully stabilized at temperature extremes before data is taken, which may require up to a 2 hours soak.
- 5.2. Low Temperature** : Subject samples to  $-40 \pm 2^{\circ}\text{C}$  and operate for 4 hours with rated power and resonance frequency. Components must be fully stabilized at temperature extremes before data is taken, which may require up to a 2 hours soak.
- 5.3. Temperature Shock** : Each temperature cycle shall consist of 30 minutes at  $-40^{\circ}\text{C}$ , 15 minutes at  $+20^{\circ}\text{C}$ , 30 minutes at  $+85^{\circ}\text{C}$  and 15 minutes at  $+20^{\circ}\text{C}$ . Test duration is for 5 cycles. Components must be fully stabilized at temperature extremes before data is taken which may require up to a 4 hours soak.
- 5.4. Static Humidity** : Expose to  $+40 \pm 2^{\circ}\text{C}$  with 90 to 95% relative humidity for 24 hours. Final dry at room ambient for 4 hours before taking final measurement.
- 5.5. Drop Test** : Drop samples naturally from the height of 80cm onto a 50mm thick wooden board for six times.
- 5.6. Random Vibration** : Secure samples. Vibrated randomly 10Hz ~ 55Hz ~ 10Hz with 1.5mm peak amplitude. The test duration is 2 hours per plane.
- 5.7. Solderability** : Pins shall be immersed in molten solder maintained at  $+230^{\circ}\text{C} \pm 5^{\circ}\text{C}$  for a period of  $3 \pm 0.5\text{s}$ .

## 6. Recommended Soldering Condition

- 6.1. Manual Soldering** :  $380 \pm 20^{\circ}\text{C}$  within 3s

7. Mechanical Layout

Unit : mm  
Tolerance : Linear    XX.X        = ±0.3  
                             XX.XX      = ±0.05  
                             Angular      = ±0.25°  
(unless otherwise specified)

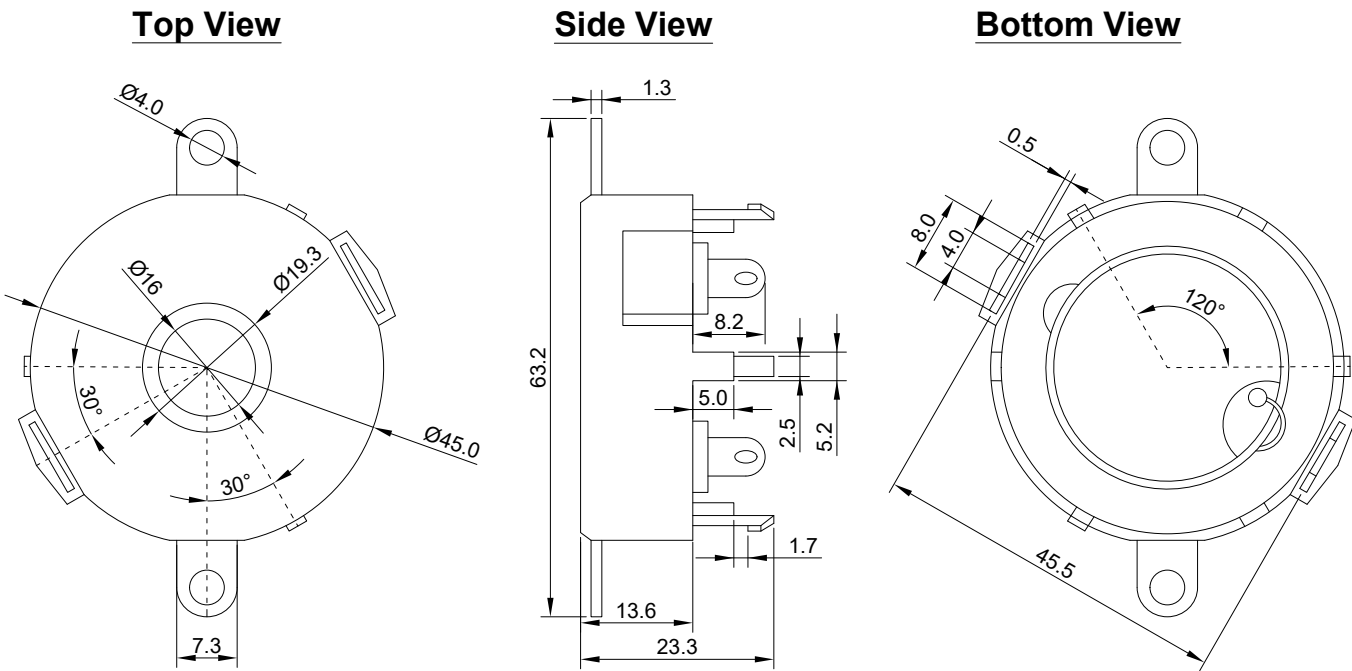


Figure 3. HPA45A Mechanical Layout

8. Standard Packing Layout

8.1. Packing Quantity : 36 pieces per tray, 16 trays per carton. (Total 576 pieces per carton)

8.2. Tray and Carton Layout

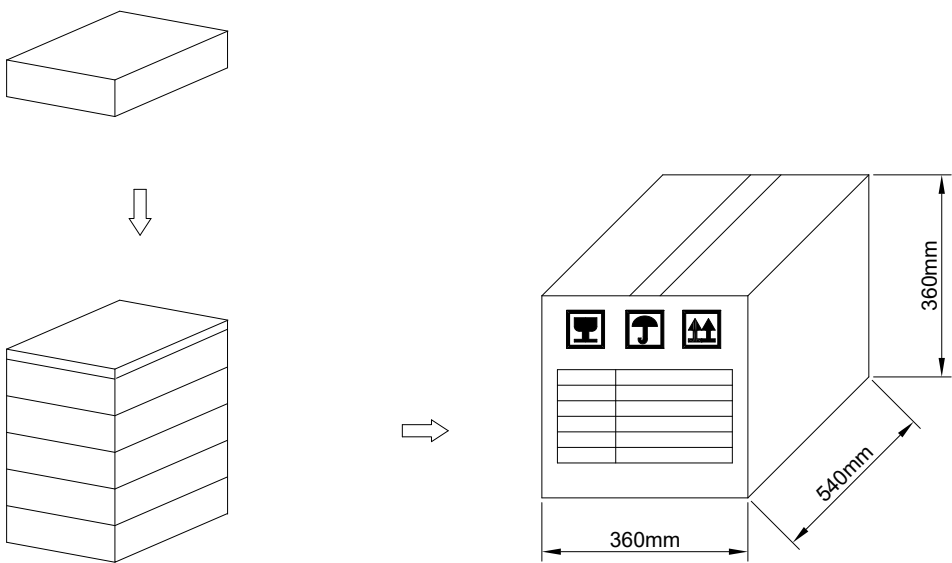


Figure 4. Tray and Carton Layout