DB Products Limited

Approval Sheet

Model Number: 69PZ22400OLFPH-A

Reference Number: 4-001
Date: 15-Oct-2014
Prepared by: Joey Lin
Approved by: William Fan

Approval by

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Company Name:
Sign by:
Title:
Date:

Purpose and the scope

This document contains the specific specifications (electrical and mechanical), inspection standard and the reliability standard for the purpose of the customer's approval.

1. Description

Miniature electro-piezo transducer

2. Applications

Clock, Telephone, Toys, Household appliance, Office equipment Automotive, etc.

3. Product origin

In China

5. Test conditions

Test should be made under the conditions of room temperature (20 ± 10 º C) normal humidity (60 ± 20 %) and normal atmospheric pressure. In the case, however, that the judgment is questionable the test conditions are to be changed to room temperature 20 ± 2 º C, relative humidity 60 ~ 70 % and normal atmospheric pressure.

6. Ozone guarantee

Certificate on the elimination of ozone layer destroying substances such as Freon

7. Quality protection

The specifications of the mentioned model are based on this document. Other specification outside than this document must be discussed with us before we insert into this approval document. It means that we will not guarantee the specifications outside than this approval document.

8. Warranty.

The warranty period will commence upon the date of the receipt of the parts from DB Products Limited. In the event that the warranty is not specified on the purchasing order, the warranty period shall be half year from the date of delivery.

9. Soldering conditions

The miniature external drive piezo transducer by DB Products Limited should not be exposed to extremely high temperatures for prolonged period of time. As excessive heat will degrade the internal structure of the unit, soldering should be conducted as quickly as possible.

Recommended temperature and time for soldering

Hand soldering (for ABS, Hi-Temp abs, FR ABS, Nylon)

300 º C thermal iron

The measuring of the sound output are based on the DB's products with the mentioned model under the condition without any assembly process. It is normal with some deviations of the sound output after the assembly process such as hand soldering, wave soldering and IR reflow.

10. Washing conditions

The products mentioned with " remove after washing " could be washed by our recommended solvent.

11. Flux removing solvents

In the view of the recent requirement for total elimination of ozone-depleting chemicals, we have decided to recommend our customers to use deionized water for their cleaning process at the condition given below, instead of "CFC" that was conventionally used.

Cleaning solvent	: deionized water
Solvent temperature	: 55 ± 5 º C
Immersion time	: 5 ± 0.5 minutes

12. Mounting method

DB recommends the mounting must be fixed including the flange and the bottom. It is because if any gap with the mounting wall, a vibration sound would be happened.

13. Resonant frequency

DB Products Limited could guarantee the sound output on the specific resonant frequency on this mentioned approval document. Customers must consult db products on the other requested resonant frequency if necessary.

14. Input voltage

The input voltage must be within the operating range. Outside than this range would damaged the internal structure. it is dangerous that the user must consult db products limited before they use it in outside operating range.

15. Driving circuit

A simple driving circuit without the amplification function is acceptable because it have no winding core inside to create the back voltage.

16. Input waveform

Our DB Product Limited studies all the specifications are based on either the square wave or sine wave. We will apply the peak to peak value in the square wave value and root means square rms for the sine wave.

17. Sound emission hole

DB Products Limited recommends the design to use our buzzer in their application should be no barrier with minimum 5mm to the sound emission. It will cause the shifting of the resonant frequency.

18. Mounting precaution

If mount the flange mount buzzer on the pc board, beware no to fix to tight to deform the housing of the buzzer. It will cause low sound output, no sound and shifting frequency.

19. Specification

Items	Specifications	Conditions
- Max. Input Voltage	30.0 V p-p	Square Wave
- Capacitance	12000 pF ± 30.0 %	at 120 Hz
- Input Signal	5.0 V p-p	Square Wave
- Minimum Sound Output	More Than 85.0 dBA at Measuring Distance	(A Range) from a microphone with applying the input signal with the testing set up Fig 1.
- Measuring Distance	10.0 cm	
- Resonant Frequency	4000 Hz	
Dimension	See drawing attached	
Appearance		There should be no remarkable stains, rusts or flaws.
- Housing Material	PBT	
-Color	Black	
-Weight	2.5 g	
-Operating Temperature	-40.0 ~ +85.0 ° C	
-Storage Temperature	-40.0 ~ +85.0 ° C	

20. Inspection Standard

Item Tested	Sym	Standard	AQL	Level	Inspection by means of	Remarks
No Sounding		Within the operating voltage	0.25	II	Ear	At each lowest, rated, highest operating voltage, there should be no sounding, harsh sound and remarkable sound decrease at rated frequency square wave.
- Sound Output		More than minimum sound output 85.0 dBA mentioned in specifications when applying at input signal	1.00	II	Sound Pressure Level	Distance at measuring distance with mounting to inspection device in a standard manner. (A range)
- Current		Less than 5.0 mA when applying at input signal	0.65	I	Multimeter	(0.5 or 1.0 class) input signal.
- Capacitance		12000 pF ± 30 %	0.65	I	Multimeter	At 120 Hz
- Outer Diameter	A	ø 22.1 ± 0.4 (mm)	1.50	S-3	Electronic Calipers	To be measured at the maximum dia.
- Overall Height	B	7.2 ± 0.3 (mm)	1.50	S-3	Electronic Calipers	
Terminal Strength		More than 1.0 kg	0.65	S-3	Tension Gauge	By pulling each terminal
State of Solder			1.00	II	Magnifying Glass	Soldered points and/or coil disposition should be proper. (Crossed coil wires should not be accepted.)
Rust			1.00	II	Eye	Any rust should not be accepted.
Stain			1.50	II	Eye	There should be no remarkable stains.
Adhesion			1.50	II	Eye	Adhesion should be made sufficiently and there should be no outflow of adhesive agent.
Other appearance			1.50	II	Eye	

21. Reliability Test

Item	Method of the test	Standard
Operating temperature	Driving from the lowest operating temperature to the highest operating temperature within 30 minutes or 2 cycles then expose to the room temp for 2 hours.	All specifications must be satisfied after the test.
Storage in high temperature	Storage in test box for 96 hours under the highest operating temperature then expose to the room for 2 hours.	
Storage in low temperature	Storage in test box for 96 hours under the lowest operating temperature then expose to the room for 2 hours.	
Life test in the room temperature	Operate the buzzer continuously for 1000 hours with applying at the rated signal.	
Temperature cycle test	Make the test for 5 cycles without applying power as Fig.2, then expose to the room temp for 2 hours.	
Temperature / Humidity cycle test	Make the test for 10 cycles without applying power as Fig.3, then expose to the room temp for 2 hours.	
Vibration test	Make the test for the directions of X, Y, and Z as Fig.4 for 2 hours each (total 6 hours). TO-AND-FRO sweep time (from 10 to 55 Hz and then 55 to 10) is 1minute.	
Drop test	Drop a buzzer naturally from the height of 700 mm onto the surface of 10 mm thick wooden board. Two directions; that is upper and side of the buzzer are to be applied for this drop test as Fig.5.	

Fig.1 Measuring Method

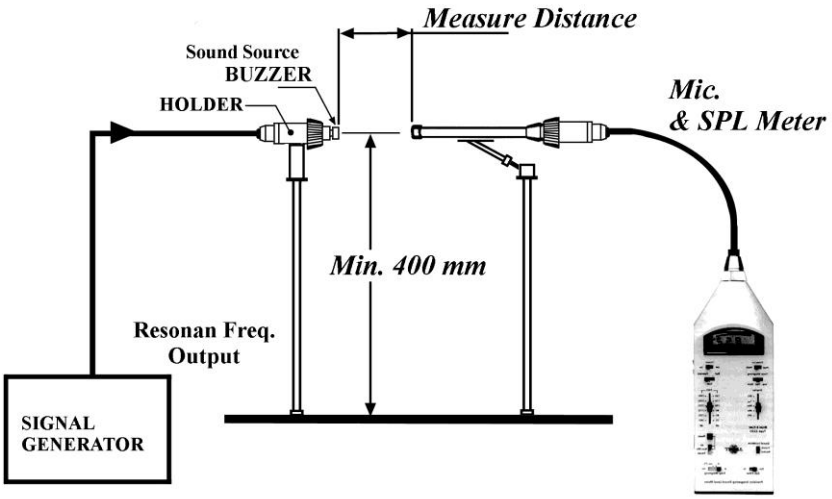


Fig.2 Temperature Cycle test

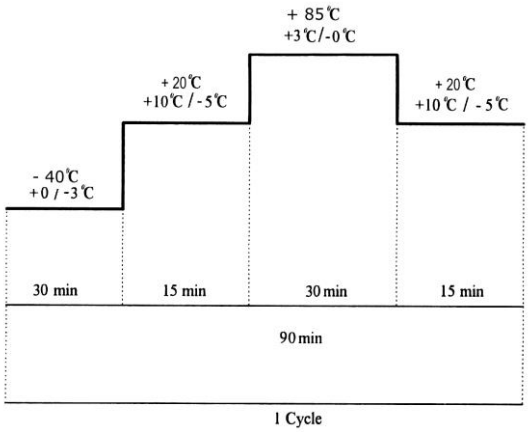


Fig. 3 Temperature / Humidity cycle test

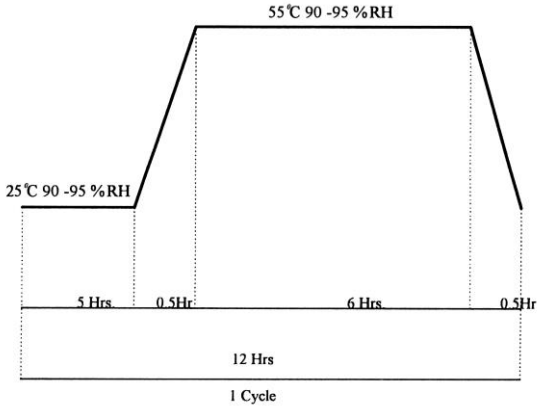


Fig. 4 Vibration test

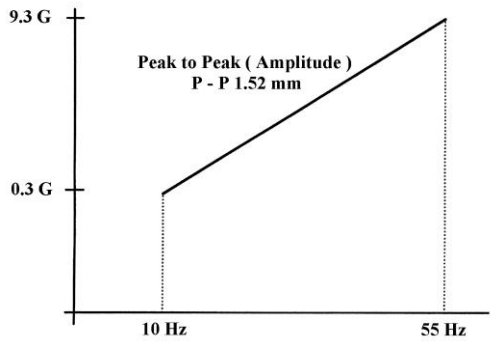
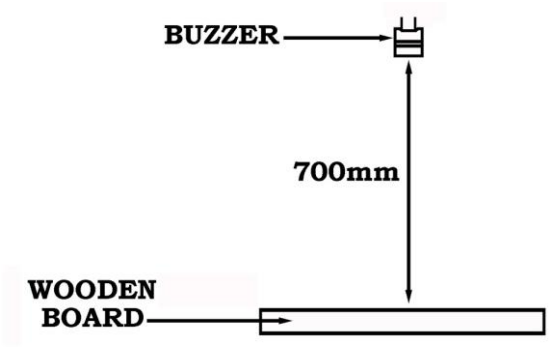
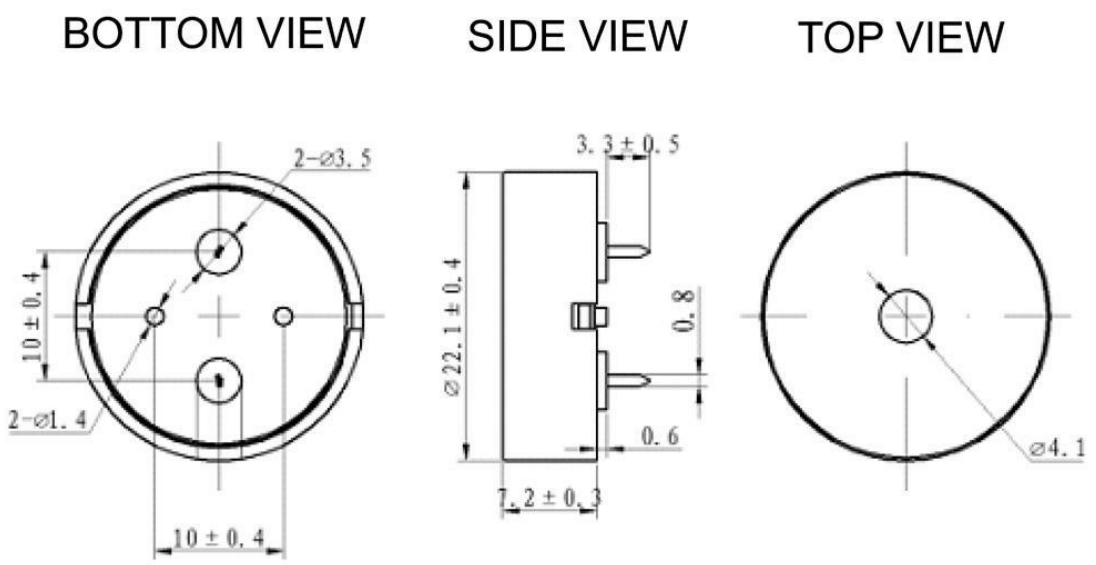


Fig. 5 Drop test



22. Mechanical Draw



all dimensions are in mm

23. Frequency Response