

1. 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.

2. Description

Loud Speaker.

3. Applications

Feature Telephone, Cordless Phone, Computer, Instrument etc.

4. Product origin

In China

5. Test conditions

Test should be made under the conditions of room temperature (20 ± 10 °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 °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 specifications 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 speaker 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 ° C Thermal iron 2 seconds

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 ° C

Immersion time : 5 ± 0.5 minutes

12. Signal input polarity

When a positive dc voltage is applied to the terminal marked (+) or red the diaphragm should move to the front..

13. Operation test

Must be normal at program source same as the power rating.

14. Specification

Items	Specifications	Conditions
Size	Ø 50.0 x 16.0 (mm)	
Normal Power Rating	0.5 W	
Maximum Power Rating	1.0 W	
Impedance	8.0	± 15 % at 1000 Hz 1.0 V
Resonant Frequency (<i>f</i> 0)	500 Hz	± 20 % at 1.0 V
Sound Pressure Level	84.0 dB	± 3.0 dB / 0.5 W power / measuring distance at 800 , 1000 , 1200 , 1500Hz average
Measuring Distance	50.0 cm	
Frequency Range	<i>f</i> 0 ~ 4.0 KHz	
Distortion	5.0% Max	At 1000 Hz 0.5 W
Magnet	Ø 32 x 18 x 6 (mm)	
Housing Material	Metal	
Diaphragm Material	Paper	
Weight	45.0 g	
Operating Temperature	- 30.0 ~ + 70.0 ° C	
Storage Temperature	- 40.0 ~ + 85.0 ° C	
Buzzing and Rattles	2.0 V	Must be normal at this sine wave between

15. Inspection Standard

Item tested	Sym	Standard	AQL	Level	Inspection by means of	Remarks
Sound Pressure Level		Should be within 84.0 ± 3.0 dB	1	II	Audio analyzer	1.0 W power / measuring distance at 800 , 1000 , 1200 , 1500 Hz average
Impedance		8.0	0.65	I	Impedance Meter	± 15 % measured at 1000 Hz at 1.0 V
Outer Diameter		Ø 50.0 ± 0.5 (mm)	1.5	S-3	Electronic Calipers	To be measured at the maximum dia.
Height		16.0 ± 1.0 (mm)	1.5	S-3	Electronic Calipers	To be measured at the maximum height on the body only.
Rust			1	II	Visual	Any rust should not be accepted.
Stain			1.5	II	Visual	There should be no remarkable stains.
Adhesion			1.5	II	Visual	Adhesion should be made sufficiently and there should be no outflow of adhesive agent.
Other Appearance			1.5	II	Visual	

16. Reliability Test

Item	Method of the test	Standard
Storage in high Temperature	Storage in test box for 96 hours under the +85.0 ° C then expose to the room temperature for 1 hours	All specifications must be satisfied after the test.
Storage in low Temperature	Storage in test box for 96 hours under the -40.0 ° C then expose to the room temperature for 1 hours	
Load Test	Shall be normal after test at white noise source 1W 96 hours	
Temperature Shock Test	Low temperature : - 20.0 ± 2.0 ° C High temperature : + 60.0 ± 2.0 ° C Cycle : 1 hour each temp. And then removal back to normal temp for 1 hour.	
Temp./ Humidity Cycle Test	Keep 96 hours at 90 to 95 %, + 40.0 ± 2.0 ° C then removal back to normal temperature for 6 hours	
Drop Test	Drop a speaker contained in normal box into a board 5.0 mm thick 10 times form a height 0.75 m and then test.	

17 . Equipment List

Name	Model
Audio Analyzer	Bruel & kjaer
Acoustic Chamber	Bruel & kjaer
Audio Calibrator	Bruel & kjaer
Amplifier	Bruel & kjaer

Fig.1 Measuring Method

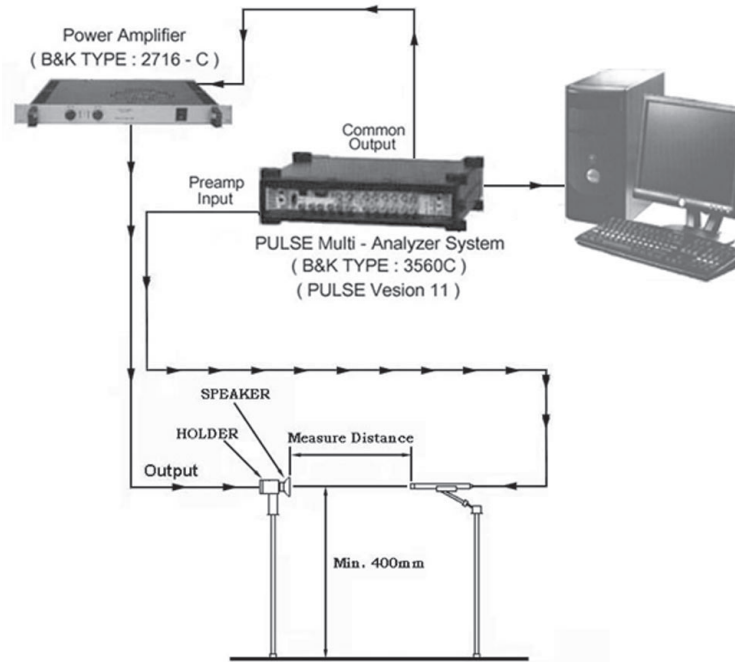


Fig.2 Temperature Shock Test

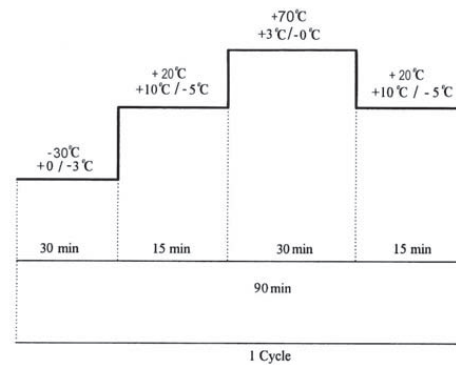
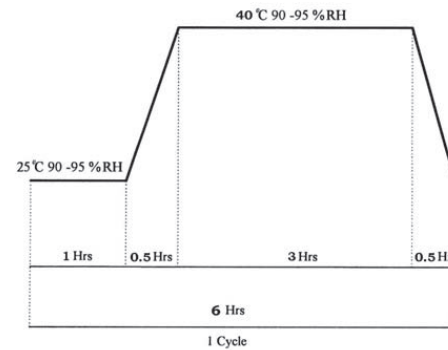
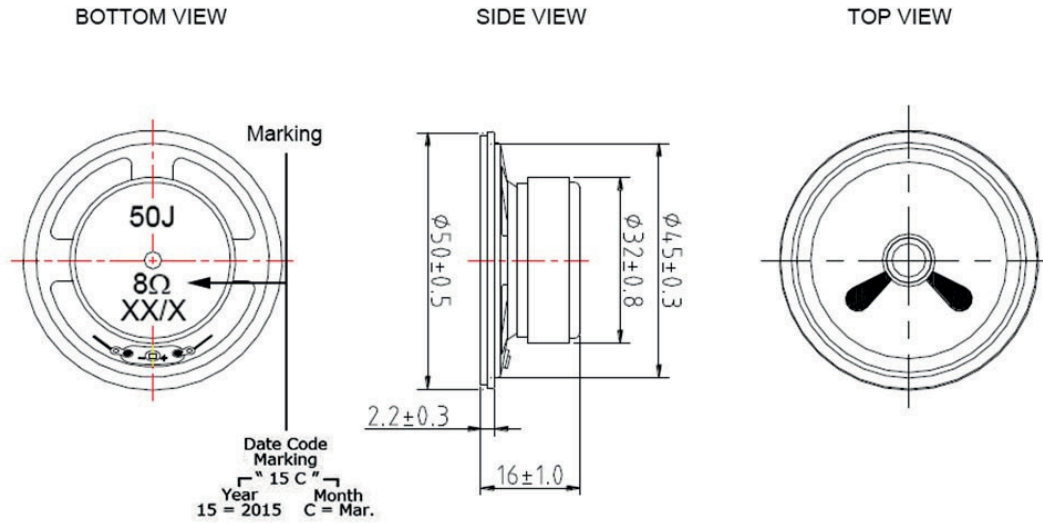


Fig. 3 Temperature / Humidity cycle test



18. Mechanical Draw



Unit : mm

Tolerance : ± 0.5 mm

19. Frequency Response

