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PUIaudio



Data Sheet AS02504MO-SP9

The **AS02504MO-SP9** is designed for applications such as hand-held devices, portable devices, and devices that value compact design.

Features:

- 89dBSPL: P_{DRIVE} = 1.0W, distance = 0.1m
- 2.0W continuous dissipation
- 700Hz free-air resonance (2cc sealed back-volume)
- 25mm x 9mm x 3.0mm dimensions

Specifications

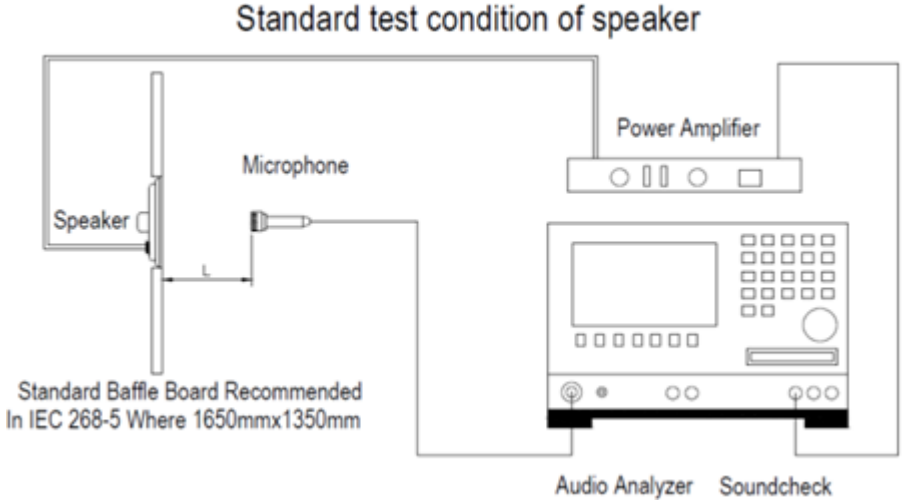
(Specifications measured with following conditions: ambient temperature; 15°C ≤ T_A ≤_35°C, relative humidity; 25% ≤ RH_A ≤ 75%, according to standard GB/T9396-1996, unless otherwise stated. Judgement Condition: ambient temperature; 20 ±2°C; relative humidity; 63% ≤ RH_A ≤ 67%. Product shelf life valid for 12 months.

Parameters	Values	Units
Rated Input Power (in 2cc box)	2.0	Watts
Maximum Input Power (in 2cc box)	2.5	Watts
Impedance	4 ±15%	Ohms
Sensitivity (SPL) f = ave. 0.8kHz, 1.0kHz, 1.2kHz, 1.5kHz 2cc sealed back-volume P_{DRIVE} = 1.0W, distance = 0.5m P_{DRIVE} = 1.0W, distance = 0.1m P_{DRIVE} = 2.0W, distance = 0.1m	 75 ±3 89 ±3 92 ±3	dB
Resonant Frequency (f_0) 2cc sealed back-volume	700 ±20%	Hz
Frequency Range (-10 dB) 2cc sealed back-volume	$f_0 \le f \le 20{,}000$	Hz
Total Harmonic Distortion (THD) f = 1 kHz, P_{DRIVE} = 2.0W, 2cc sealed back-volume	≤ 5	%
Frame Material	PC+20%GF	-
Magnet Material	NdFeB	-
Diaphragm Material	Composite	-
Weight	2.3	gm

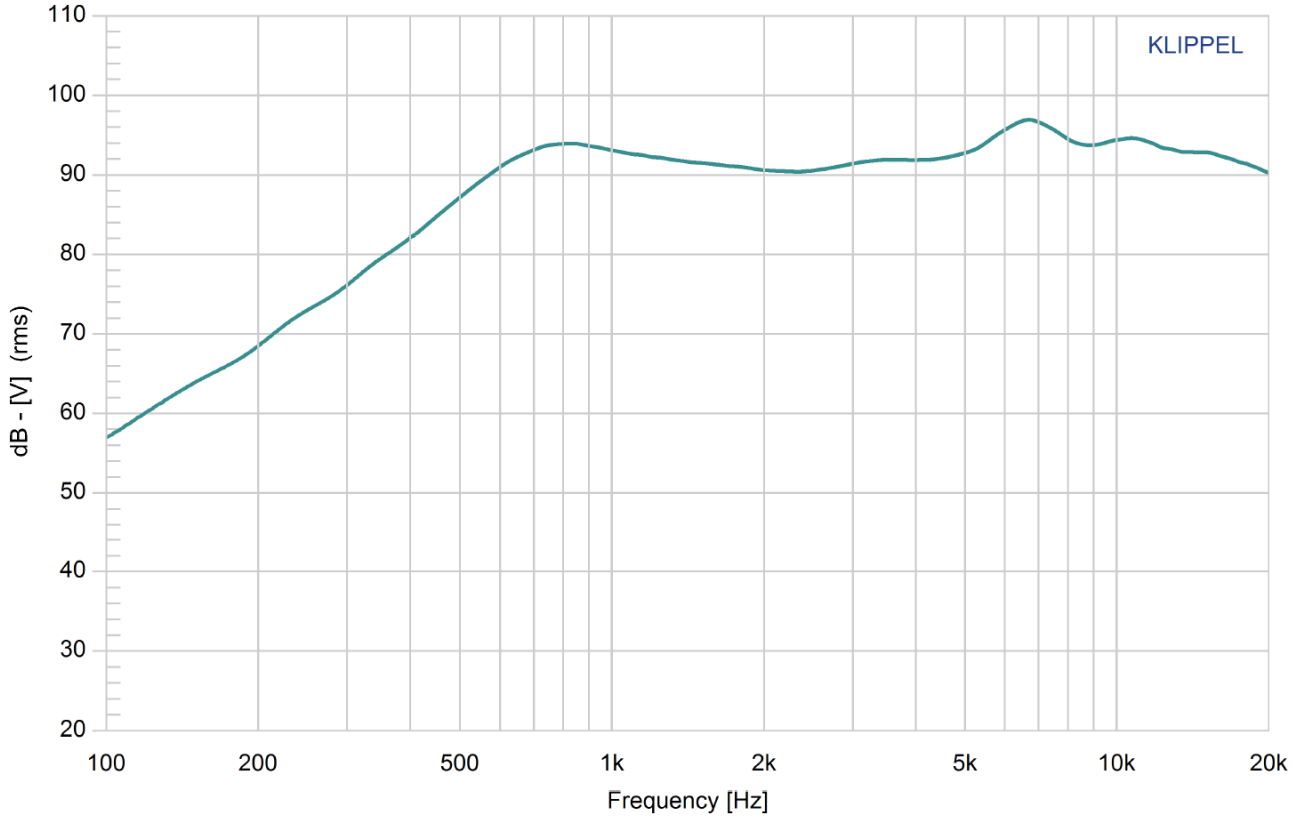
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Buzz, Rattle, etc.	Not audible with P_{DRIVE} = 2.0W, sine wave, 2cc sealed back-volume	-
Polarity	Applying positive dc current to "+" terminal moves diaphragm forward	-
Operating Temperature Range	$-25 \leq T_O \leq 50$	°C
Storage Temperature Range	$-25 \leq T_S \leq 60$	°C
Environmental Compliance	RoHS/REACH	-

Measurement Method (Measured with P_{DRIVE} = 2.0W, distance = 0.1m, 2cc sealed back-volume)

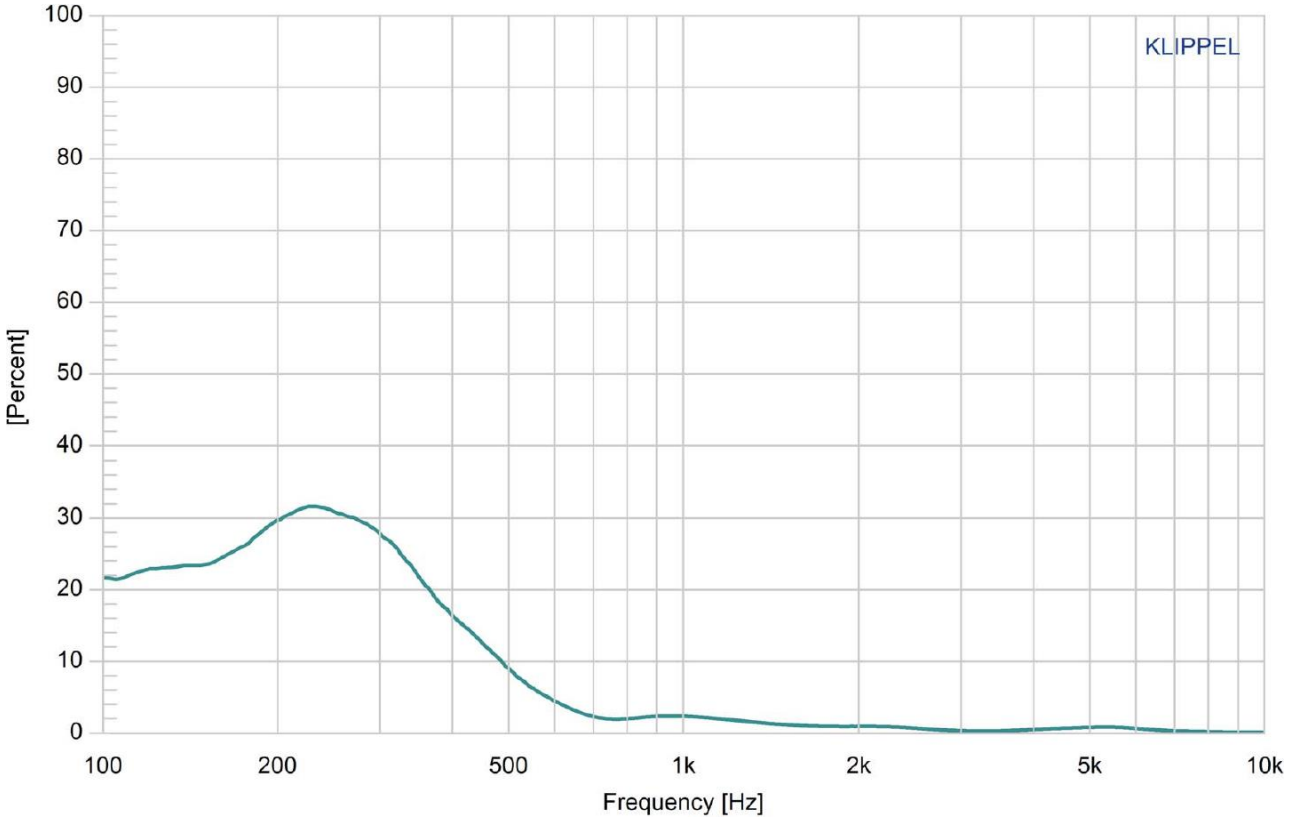


Typical Frequency Response (P_{DRIVE} = 2.0W, distance = 0.1m, 2cc sealed back-volume)

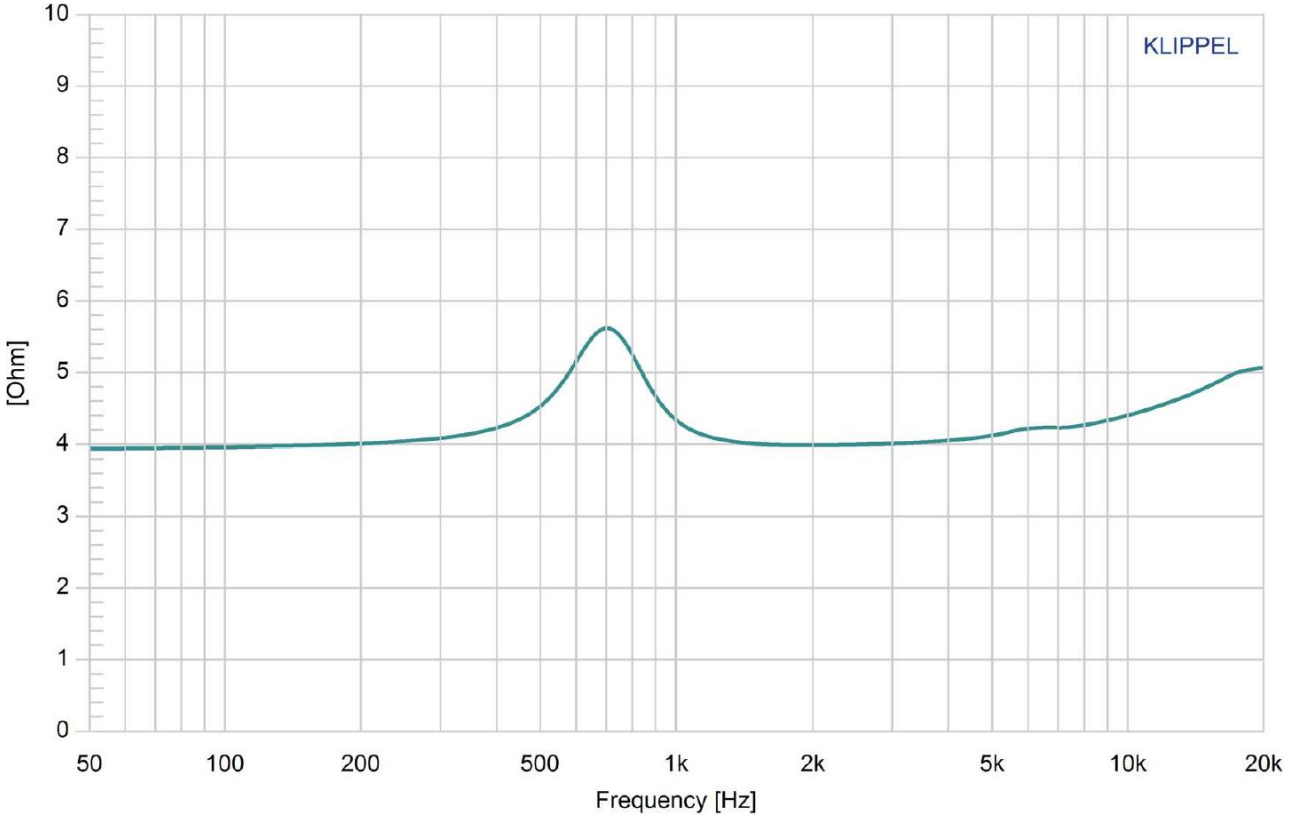


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Typical THD vs. Frequency (P_{DRIVE} = 2.0W, 2cc sealed back-volume)



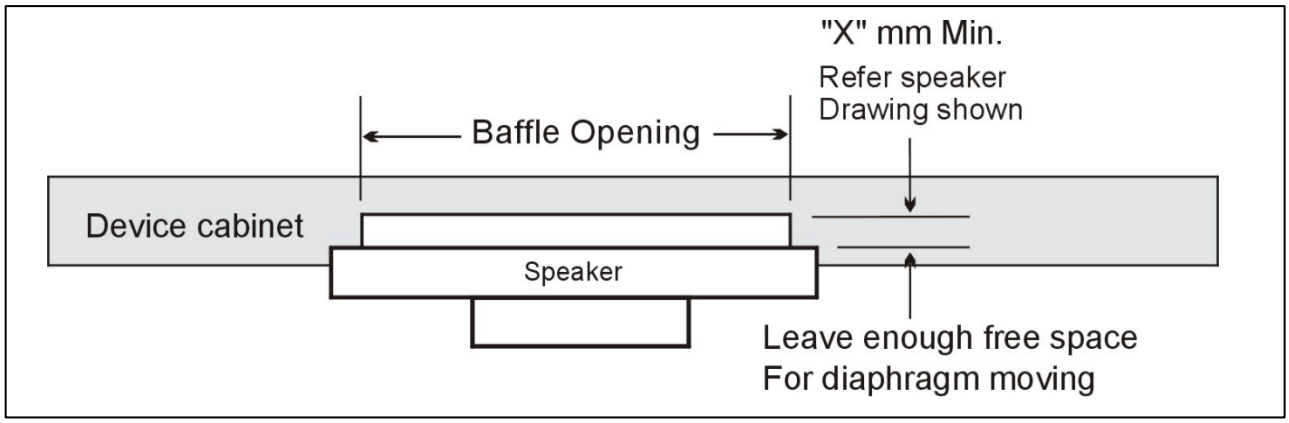
Typical Impedance Response (2cc sealed back-volume)



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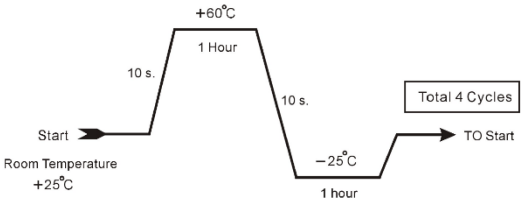
Mounting Precautions

To ensure normal operation of the speaker, allow enough free space for diaphragm



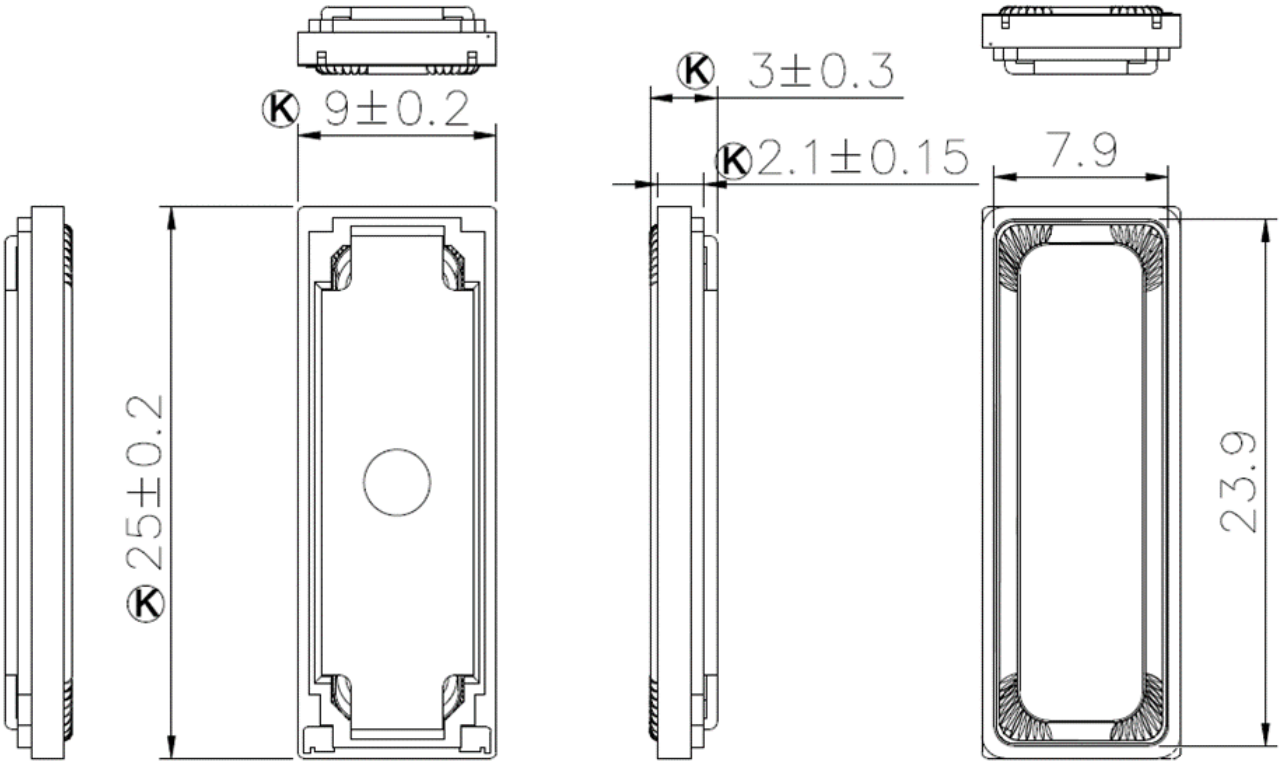
movement. The minimum distance required, "X," is the dimensioned drawing below is 0.5mm.

Reliability Testing

Type of Test	Test Specifications	Judgement
High Temperature Test GB2423.2-81	96 hours at +60°C ± 2°C followed by one hour in normal room temperature	SPL shall not deviate by ±3dB. Resonant frequency shall not deviate by ±50Hz. (compared with pre-test measurement)
Low Temperature Test GB2423.1-81	96 hours at -25°C ± 2°C followed by one hour in normal room temperature	
Humidity Test GB5170.18-87	96 hours at +40°C ± 2°C with relative humidity between 90% and 95% followed by 6 hours in normal room temperature	
Temperature Cycle Testing GB5170.18-87		SPL shall not deviate by ±4dB. Resonant frequency shall not deviate by ±80Hz. (compared with pre-test measurement)
Vibration Test GB11606.8-89	Frequency 30±15 Hz, Amplitude 1.5 mm for 3 Hours	SPL shall not deviate by ±3dB. (compared with pre-test measurement)
Drop Test GB2423.8-81	75 cm free falling on concrete floor, 10 times.	
Load Test GB/T12060.5-2011	Speaker should not fail after applying 20Hz ~ 20kHz pink noise with HPF rated power input (RMS), 96 hours.	

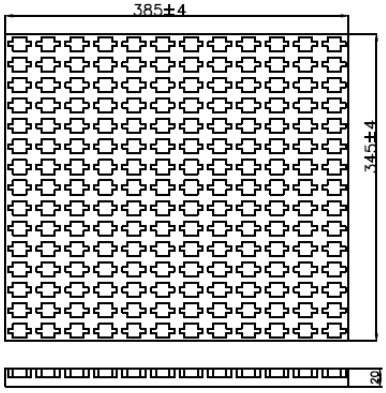
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Dimensions (Measured in mm. Tolerance = ±0.2mm.)

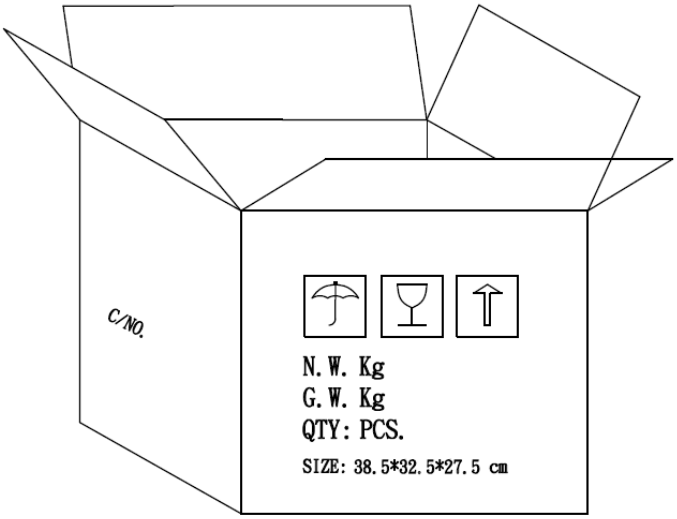


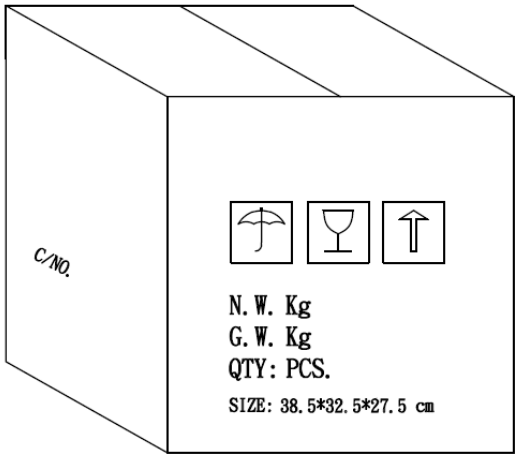
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Packaging



NOTE
180 PCS per Layer
Total 12 Layer per box
Total 2160 PCS per box
38.5*32.5*27.5 cm
HF+ROHS 2





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Measurement & Standard Reference

Abstract from GB/T 9396-1996 and IEC 268-5:1989: methods of measurement for main characteristics of loudspeakers.

5.1 Rated sine voltage.

A sinusoidal signal voltage specified by the manufacturer which makes the speaker work continuously in the rated frequency range, without causing electrical or mechanical damage to the speaker. The continuous voltage time is 1 hour.

5.2 Rated sine power.

The rated sine power corresponding with the rated sine voltage defined by: U_S^2/R, where U_s indicates the rated sin voltage and R indicates the rated impedance of the speaker.

5.3 Rated noise power.

The rated sine power corresponding with the rated sine voltage defined by: U_n^2/R, where U_n indicates the rated sin voltage and R indicates the rated impedance of the speaker.

Specifications Revisions

Revision	Description	Date	Approved
A	Datasheet released from Engineering	03/25/2024	KH

Notes:

1. Unless otherwise specified:
   A. All dimensions are in millimeters.
   B. Default tolerances are ±0.2mm and angles are ±3°.
2. Specifications subject to change or withdrawal without notice.