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PUIaudio



Data Sheet	AS04204PR-2

The **AS04204PR-2** is designed for applications that require robust low-frequency response and low THD in compact designs.

Features:

- 83.5dBSPL: 1W dissipation, distance = 0.5m
- 10.0W continuous dissipation
- 160Hz free-air resonance
- 42.2mm diameter x 24.65mm dimensions

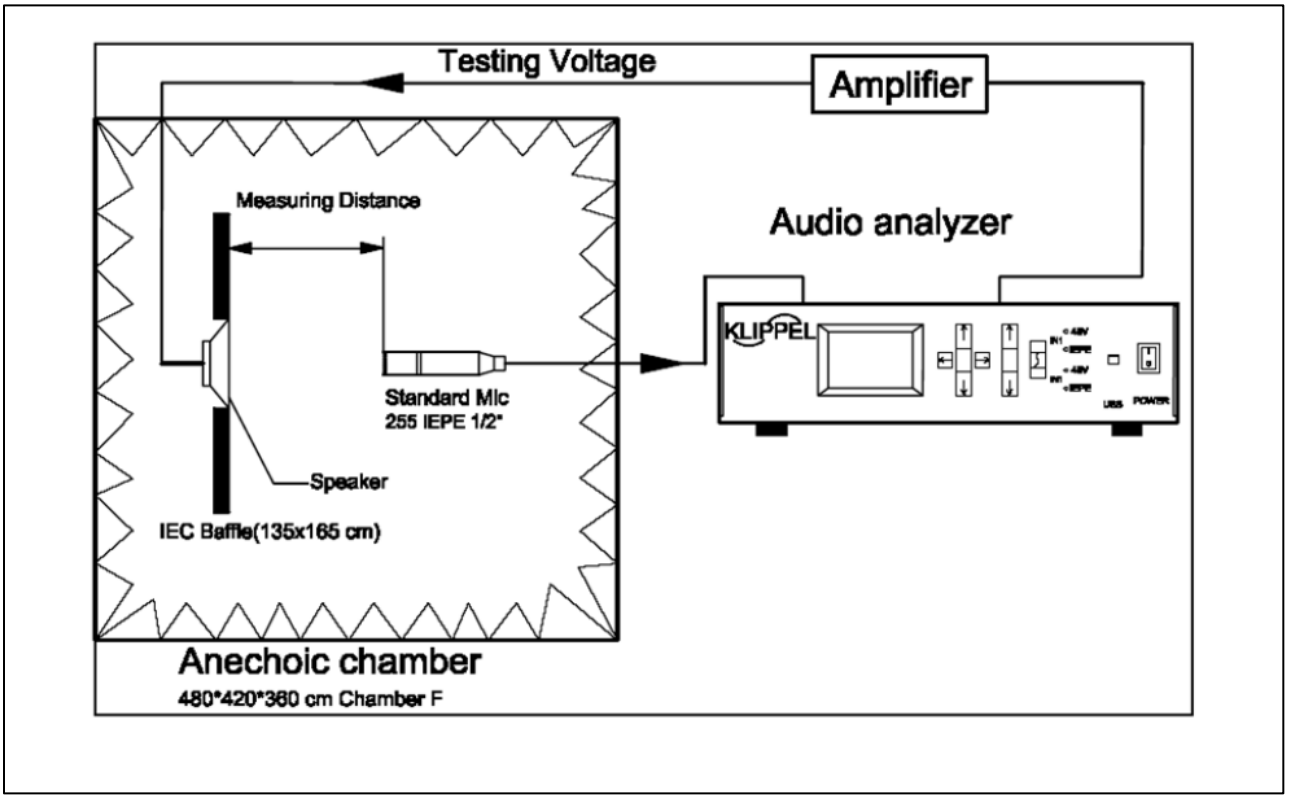
Specifications

(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.

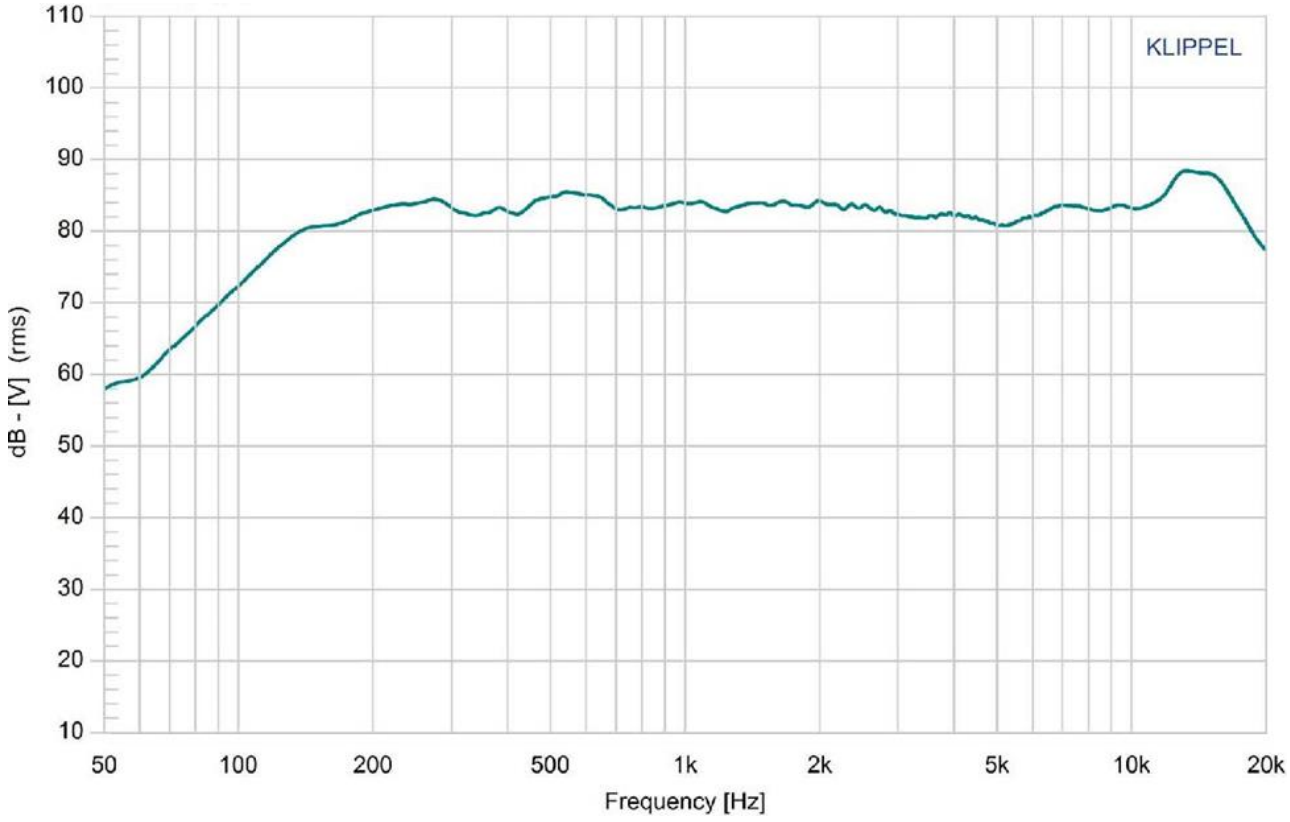
Parameters	Values	Units
Rated Input Power	10	Watts
Maximum Input Power	12	Watts
Impedance	4 ±15%	Ohms
Sensitivity (SPL) P_{DRIVE} = 1.0W, distance = 0.5m f = ave. 0.8kHz, 1.0kHz, 1.2kHz, 1.5kHz	83.5 ±3	dB
Resonant Frequency (f_O)	160 ±20%	Hz
Frequency Range (-10 dB)	90 ≤ f ≤ 20,000	Hz
Total Harmonic Distortion (THD) f = 1kHz, P_{DRIVE} = 1.0W	≤5	%
Frame Material	PBT + 15% GF	-
Magnet Material	NdFeB	-
Diaphragm Material	PU + Paper	-
Weight	47.5	gm
Buzz, Rattle, etc.	Not audible with P_{DRIVE} = 6.0W, sine wave	-
Polarity	Applying positive dc current to "+" terminal moves diaphragm forward	-
Operating Temperature Range	-25 ≤ T_O ≤ 50	°C
Storage Temperature Range	-25 ≤ T_S ≤ 60	°C
Environmental Compliance	RoHS/REACH	-

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Measurement Method (measured with P_{DRIVE} = 1.0, distance = 0.5m)

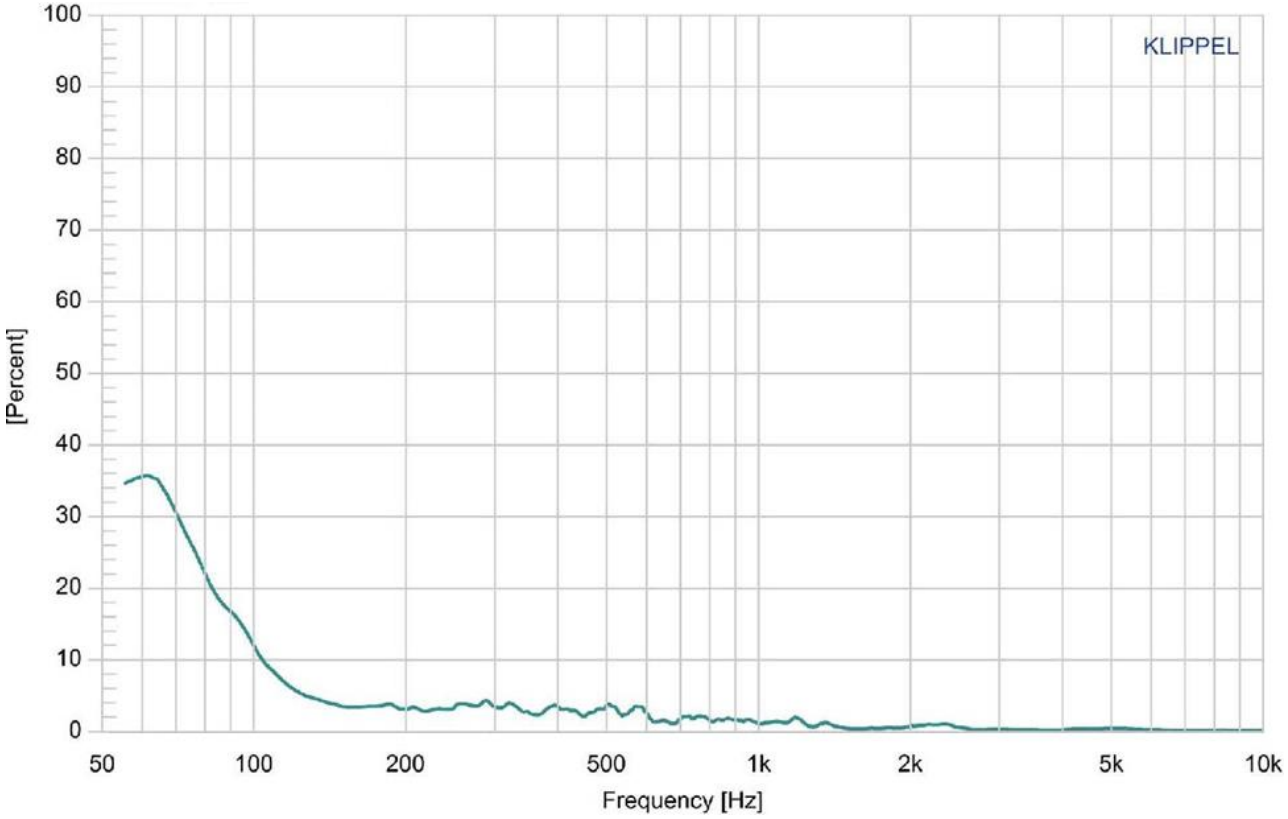


Typical Frequency Response (P_{DRIVE} = 1W, distance = 50cm on baffle)

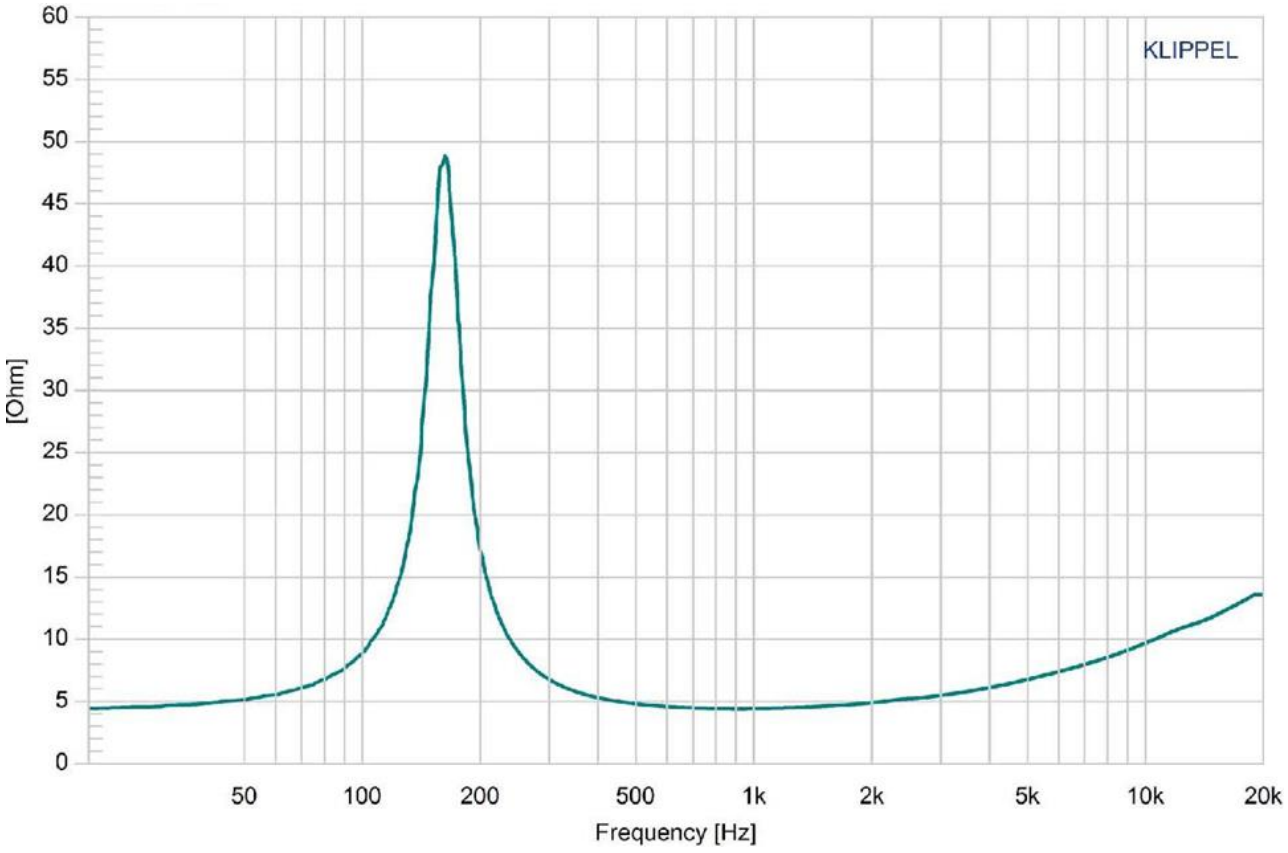


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Typical THD vs. Frequency (P_{DRIVE} = 1W)



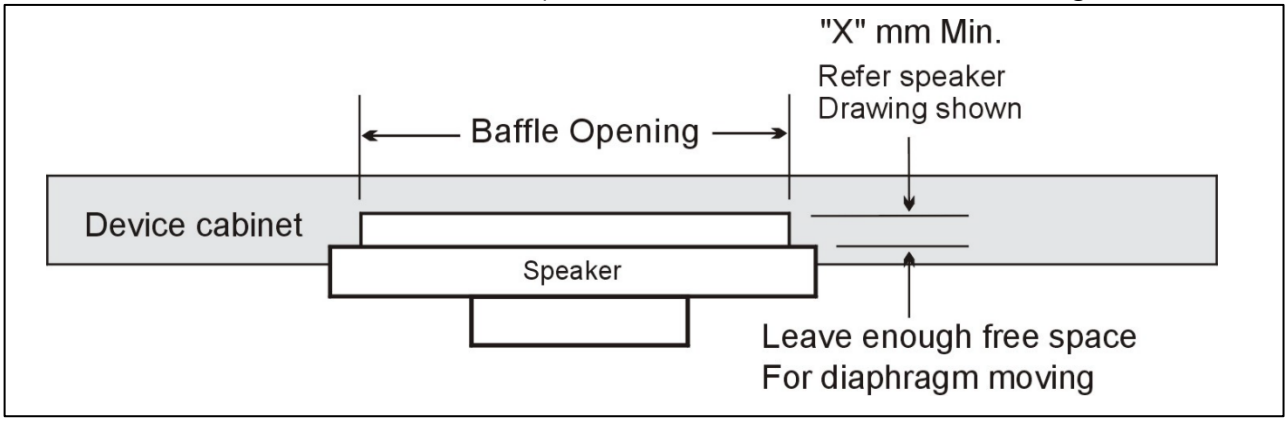
Typical Impedance Response



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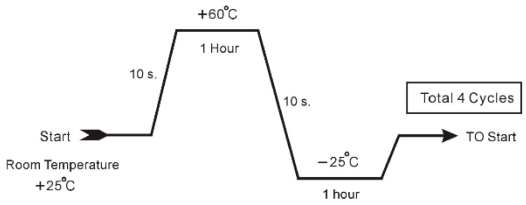
Mounting Precautions

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



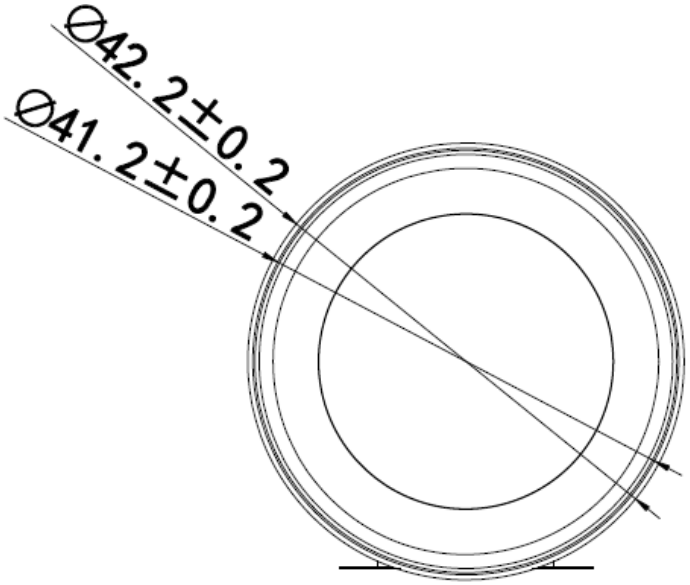
3.0mm.

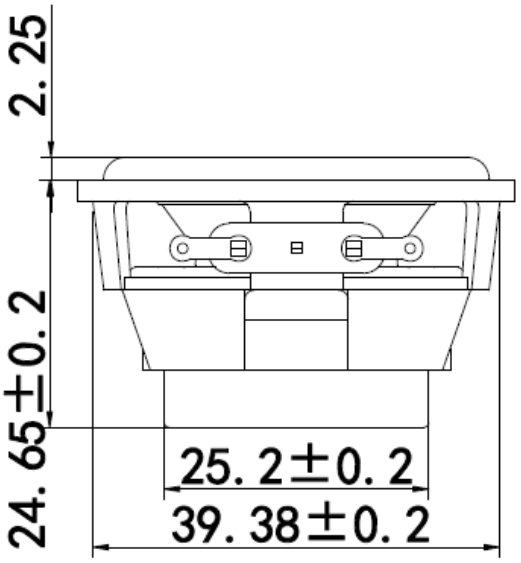
Reliability Testing

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/T 9396-1996	Speaker should not fail after applying 20Hz ~ 20kHz pink noise with HPF rated power input (RMS), 96 hours.	

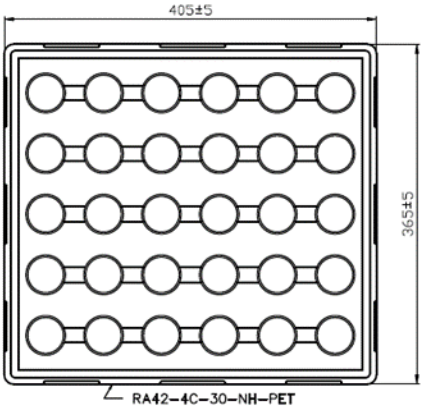
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Dimensions (All dimensions in mm; tolerance is +0.5mm, unless otherwise stated.)

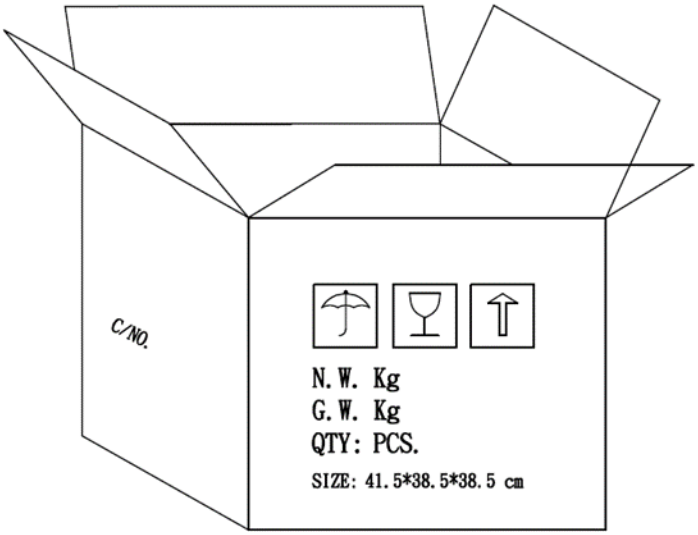


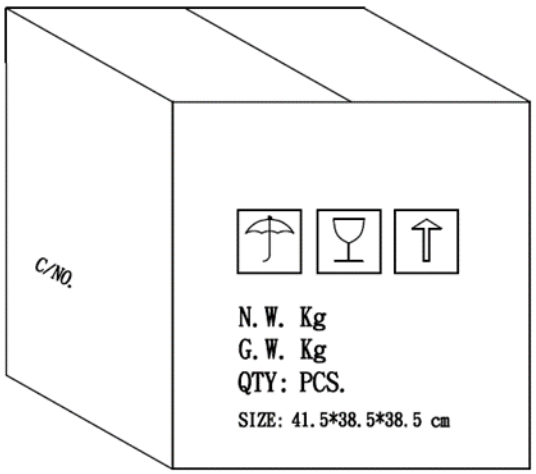


Packaging



NOTE
30 PCS per Layer
Total 12 Layer per box
Total 360 PCS per box
41.5*38.5*38.5 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.

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Detailed Parameters

Electrical Parameters			
Specification	**Value**	**Description**	**Unit**
Re	3.98	electrical voice coil resistance at DC	Ohm
Le	0.069	frequency independent part of voice coil inductance	mH
L2	0.047	para-inductance of voice coil	mH
R2	2.27	electrical resistance due to eddy current losses	Ohm
Cmes	203.68	electrical capacitance representing moving mass	µF
Lces	2.43	electrical inductance representing driver compliance	mH
Res	21.26	resistance due to mechanical losses	Ohm
fs	226.1	driver resonance frequency	Hz
Mechanical Parameters (using laser)			
Specification	**Value**	**Description**	**Unit**
Mms	1.295	mechanical mass of driver diaphragm assembly including air load	g
Mmd (Sd)	1.267	mechanical mass of voice coil and diaphragm without air load	g
Rms	0.299	mechanical resistance of total-driver losses	kg/s
Cms	0.383	mechanical compliance of driver suspension	mm/N
Kms	2.61	mechanical stiffness of driver suspension	N/mm
Bl	2.522	force factor (Bl product)	-
Lambda s	0.098	suspension creep factor	-
Loss Factors			
Specification	**Value**	**Description**	**Unit**
Qtp	0.97	total Q-factor considering all losses	-
Qms	6.153	mechanical Q-factor of driver in free air considering Rms only	-
Qes	1.151	electrical Q-factor of driver in free air considering Re only	-
Qts	0.97	total Q-factor considering Re and Rms only	-
Other Parameters			
Specification	**Value**	**Description**	**Unit**
Vas	0.0395	equivalent air volume of suspension	liter
n0	0.038	reference efficiency (2 pi-radiation using Re)	%
Lm	78.01	characteristic sound pressure level (SPL at 1m for 1W @ Re)	dB
Lnom	78.03	nominal sensitivity (SPL at 1m for 1W @ Zn)	dB
rmse Z	4.75	root-mean-square fitting error of driver impedance Z(f)	%
rmse Hx	2.41	root-mean-square fitting error of transfer function Hx (f)	%
Series Resistance	0	resistance of series resistor	Ohm
Sd	8.54	diaphragm area	cm^2

Specifications Revisions

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

Note:

1. Unless otherwise specified:
    A. All dimensions are in millimeters.
    B. Default tolerances are ±0.5mm and angles are ±3°.
2. Specifications subject to change or withdrawal without notice.