Dynamic Loudspeaker

15×11×3.5 mm

Waterproof IPX7

With Spring

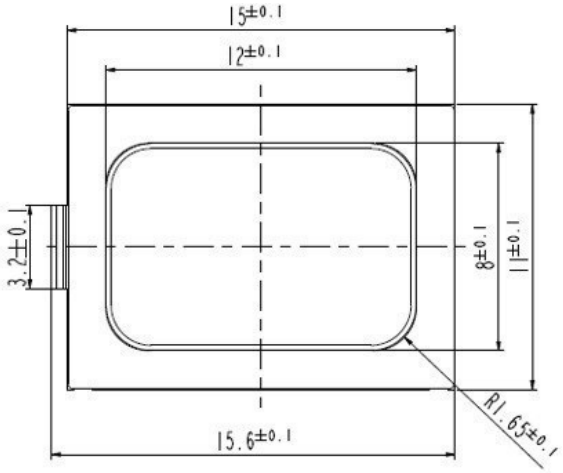
BR1511L035YN8WP

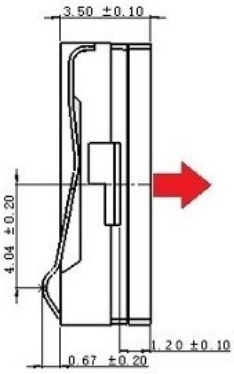
Revision

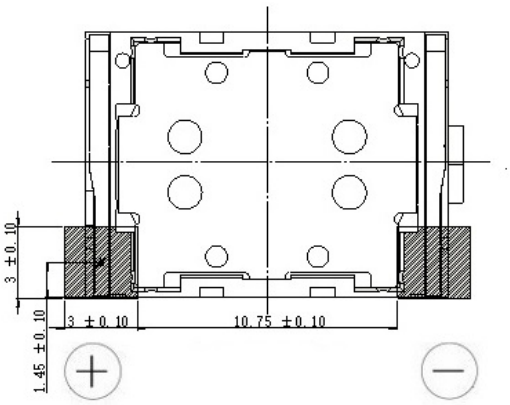
Date	Version	Status	Changes	Approver
2023/11/14	V0.1	Draft	First release	AX
2023/11/22	V0.2	Draft	Update frequency limited	AX

1. Mechanical Characteristics

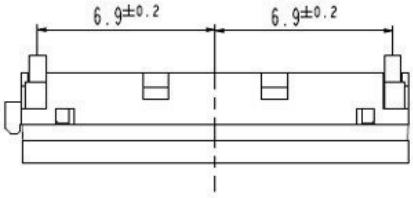
1.1. Mechanical Drawing







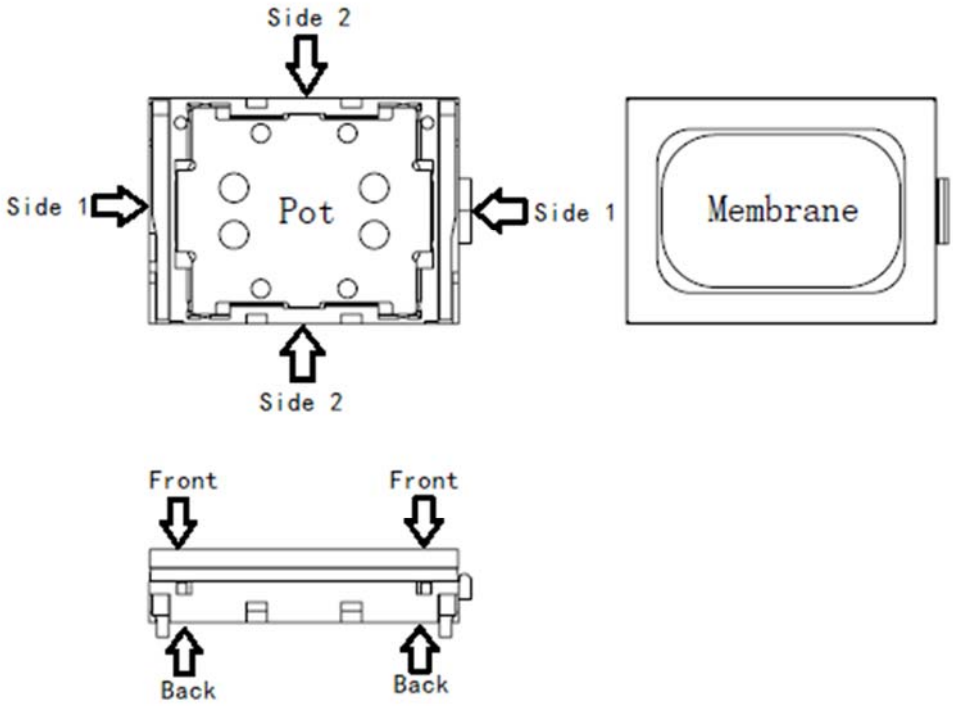
Positive voltage on pin '+' moves membrane in direction of red arrow!



1.2. Material List

1）	Membrane	PEEK
2）	Basket	PPA+33%BF
3）	Cover	Transparent PC
4）	Pot	SPCC
5）	Magnet	Nd-Fe-B
6）	Top plate	SPCC
7）	Spring	SUS301H
8）	Dimension	11X15X3.5mm
9）	Weight	1.55g

1.3. Force on component



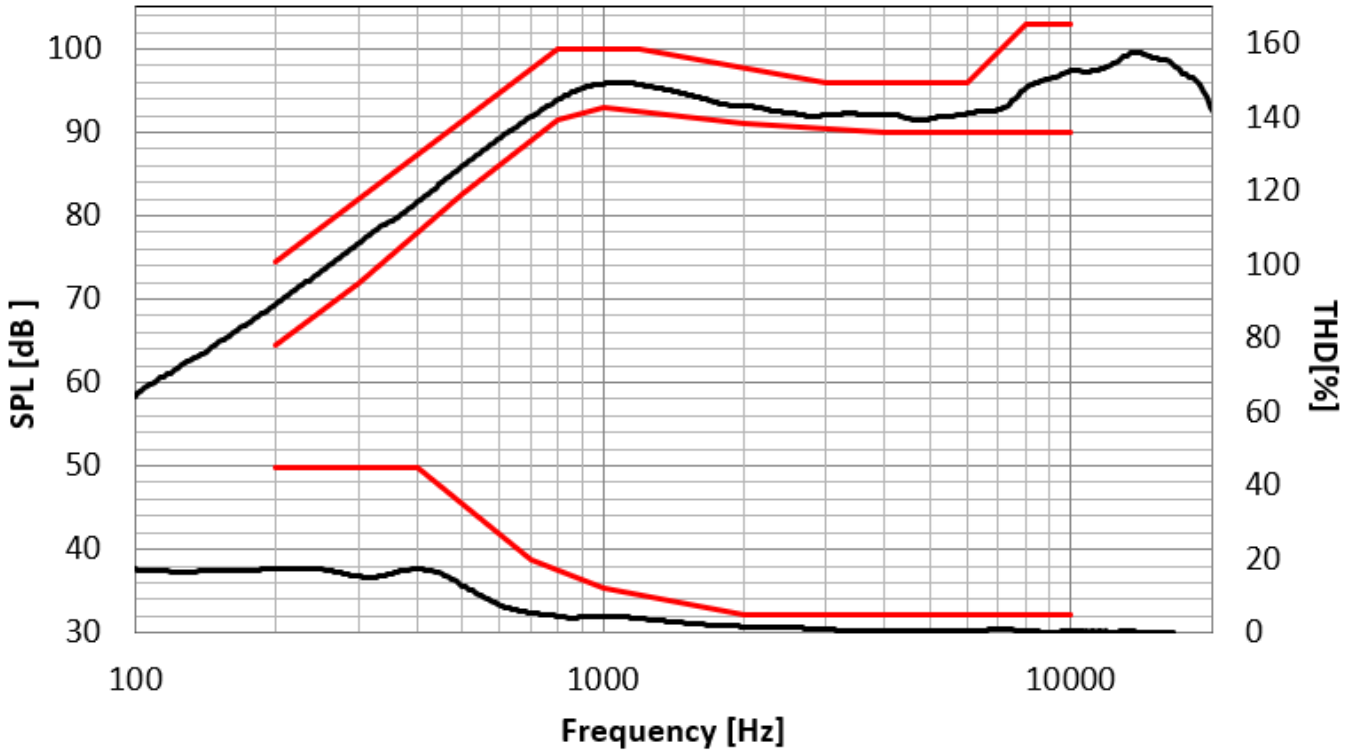
Forces On Component			
State	Min Surface of Pressure [mm²]	Max Permanent Force [N]	Max Handling Force [N]
From Front To Back	10	10	15
From Side 1 To Side 1	10	10	15
From Side 2 To Side 2	10	10	15
Pot	-	0	15
Membrane	-	0	0

2. Electro-Acoustic Characteristics

2.1. Frequency Response

Typical frequency response measured on baffle according to chapter 2.4

(distance d=10cm, with back cavity 1cm^3 at 2.83Vrms)



f(Hz)	SPL lower limit(dB)	f(Hz)	SPL upper limit(dB)	f(Hz)	THD upper limit(%)
300	70	300	83	400	45
1000	92	800	100	1000	20
3000	88	1200	100	2000	5
6000	88	3000	96	10000	5
10000	90	6000	96		
		8000	103		
		10000	103		

2.2. Electro-acoustic Parameters

Receiver mounted in adapter according to 2.6 measured on baffle according to 2.4.

1. Rated impedance	Z:	8Ω
2. Voice coil resistance	R:	7.4Ω ± 15%
3. Resonance frequency	F_0:	910Hz ± 15 %
(measured at 1ccm 2.83Vrms)		
4. Measured characteristic sensitivity (at 1W in 10cm)		94 ± 3dB
1cc back cavity at the frequency range:		2kHz

5. THD according to chapter 2.1

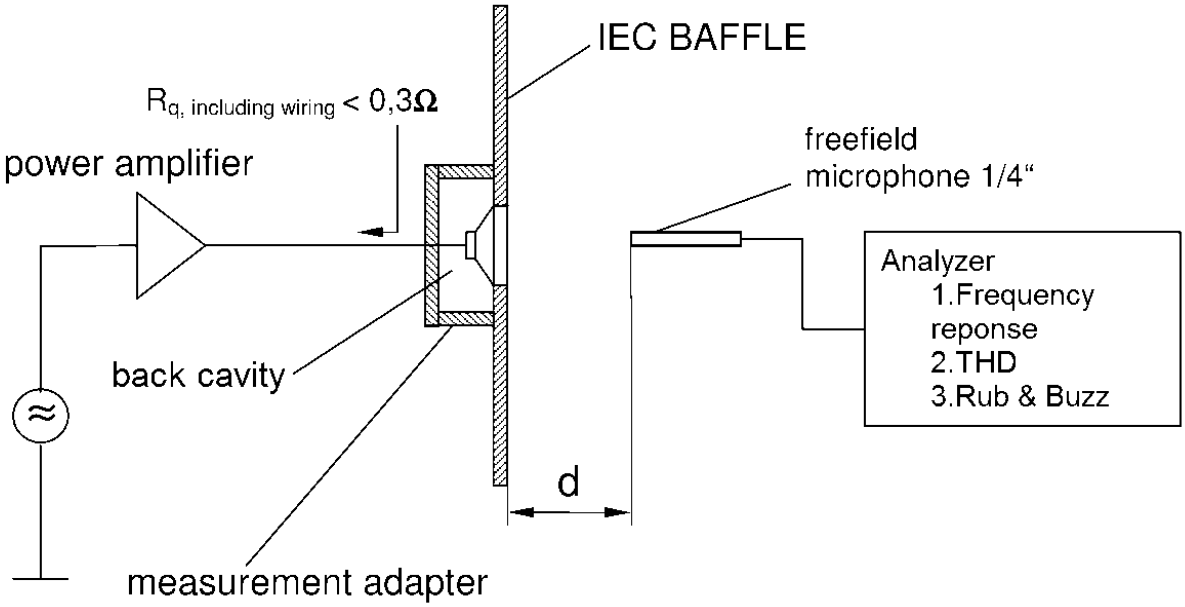
All acoustic measurements at 23±3°C

2.3. Power Handling

Loudspeaker mounted in lifetime test device (1ccm back cavity, open front)

1. MAX.SHORT TERM POWER (1sec. ON / 60sec. OFF)	1.5W (RMS)
(pink noise, 2nd order high pass filtered, -3dB at 800Hz, crest factor 2)	
2. MAX. CONTINUOUS POWER (168h)	1.0W (RMS)
(white noise, 2nd order high pass filtered, -3dB at 800Hz, crest factor 2)	

2.4. Measurement Setup (Acoustics)



2.5. Measured Parameters

2.5.1. Sensitivity

SPL is expressed in dB ref 20μPa, computed according to IEC 268-5

Measurement set up according to chapter 2.4

This test is performed for 100% of products in the production line

2.5.2. Frequency Response

Frequency response is measured according to test set up in chapter 2.4 and checked against the tolerance window defined in chapter 2.1. This Test is performed for 100% of products in the production line.

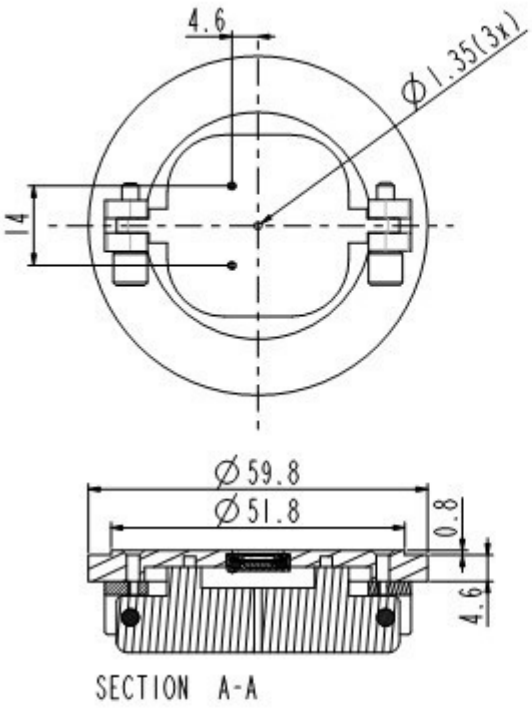
2.5.3. Total Harmonic Distortion (THD)

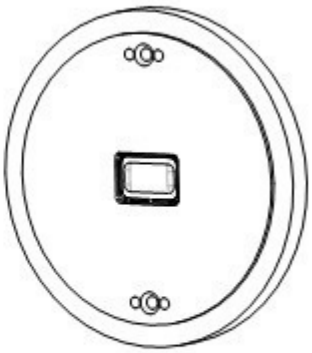
Total harmonic distortion (THD) is measured according to IEC 268-5 (2nd to 5th harmonics) and test set up in chapter 2.4 and checked against the tolerance window defined in chapter 2.1. This test is performed for 100% of products in the production line.

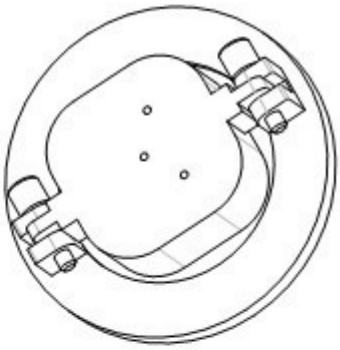
2.5.4. Rub& Buzz

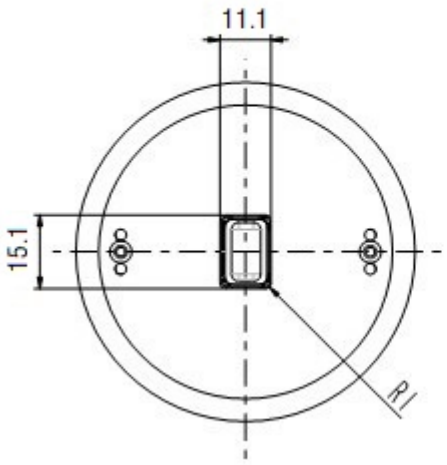
300-5000Hz at 2.83Vrms with 1cc back cavity will not result in any buzzing or extraneous sound

2.6. Measurement Adapter









3. Environmental Tests

20pcs fresh samples for each environmental test.
Immediately after reliability test, samples should be stored under climatic conditions such as normally exist in ordinary rooms. Unless otherwise noted, the recovery period should be 2 hours at least before performance test.
All samples after environmental test should meet the requirements specified in chapter 2.1 and 2.2.

3.1. Low Temperature Storage Test

Ref. EN 60068-2-1, -40 ±2°C, duration 168h, 2 hours recovery time.

3.2. High Temperature Storage Test

Ref. EN 60068-2-2, +85±2°C, duration 168h, 2 hours recovery time.

3.3. Long Term Operation Test

Ref. IEC60068-2-2. 168h. 1cc box Signal according to part 2 in chapter 2.3.

3.4. Short Term Maximum Power Test

60 cycles. 1cc box Signal according to part 1 in Chapter 2.3.

3.5. Water Resistant Acc. IPx7

10pcs parts must be immersed in 1m of water for 30min in an appropriate test adapter.
No ingress of water through the products allowed. Measurements after samples are dry. All samples fully operable. The allowable change in sensitivity shall not be greater than 3dB. All other acoustical parameters according specification with tolerances increased by 50%.

3.6. Temperature Cycle Test

Parameter	Test Method and Conditions	Duration	Evaluation Standard
Damp heat, cyclic (Ref. IEC 60068-2-30)	+25°C/+55°C 90% to 95% RH. Temp. change time <3h See Figure 5-2 below Caution: no condensed water on products!	6 cycles / 144h 12h at each temperature (inclusive temp ramp up/down)	Measurements after 2 hours recovery time. All samples fully operable. All acoustical parameters according specification with tolerances increased by 50 %.

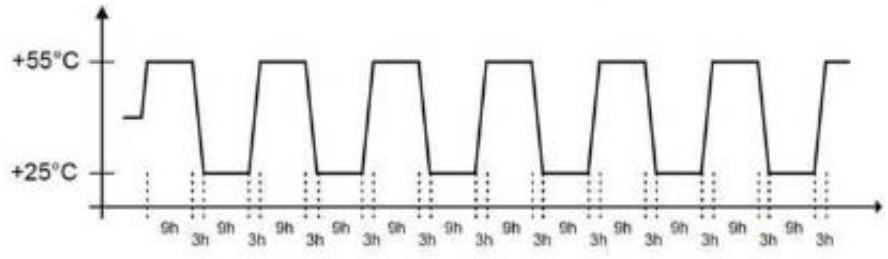


Figure 5-2: Temperature / Relative Humidity Cycle Test

4. Related Documents

Refer to general terms.

5. Legal Information

Refer to general terms.

6. Packaging information

6.1 Tray information
L×W×H(mm)=220×220×23
90pcs for each tray
6.2 Packing box
L×W×H(mm)=450×225×292
34 trays for each box,with total 3060pcs