


佛山鎡利電子有限公司
Vanson Electronics (NanHai) Co., Ltd.
 HTTP:// www.vecoc.com.cn
Luocun Industrial zone Nanhai District Foshan city
Guangdong Province China *Eail:vecof@vansonic.net*
 廣東省佛山市南海區羅村工業區 郵編:528226
 TEL:+86-757-8853 6828 FAX:+86-757-8853 6826

Specification

規 格 書

品名 (Product Name)	揚聲器 (Speaker)
料號 (Model No.)	P28KUG04X-W

Revision History			
Version	Date	Description	Author
V1.0	2009/09/25	Preliminary	WHK
V1.1	2010/01/17	Modify test condition	WHK
V1.2	2018/02/27	Update No.12	LHN

核準 (Approval)	高紅華	2018/02/27
審查 (Check)	曾憲財	2018/02/27
制作 (Author)	韋華刊	2018/02/27

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1.	MODEL:	28KUG04X-W	
2	Dimension & Weight	Outer Diameter	28×28 mm
		Baffle Opening	26.4ϕ mm
		Height	Refer to drawing
		Weight	9.5 Grams
3	Magnet	Materials	Rare Earth Size ϕ 12.8 × 2.2 mm
4.	DC Resistance	4 Ω \pm 15 %,	On OHM Meter
5.	Power Rating	Normal	2.0 Watts Maximum 3.0 Watts Sine Wave.
		Normal	Watts Maximum Watts Square Wave.
6.	Resonant Frequency	320 \pm 20 % Hz.	
7.	Output Sound Pressure Level (S.P.L.)	80 \pm 3 db/ 1.0 Watt · 0.5 Meter	
		Average at 800, 1000, 1200, 1500 Hz.	
8.	Frequency Range	180 ~ 18000 Hz. Average SPL – 10 db.	
9.	Distortion	5 % Maximum At 1000 Hz. 1.0 W.	
10	Abnormal Sound test	Must be Normal Tested By 2.83 Volts. Sine Wave.	
11	Load Test	Pink noise with HPF(High Pass Filter 235HZ-3db/Oct) 2.83 Volts. (RMS.) 96 Hours.	
12	Waterproof Level	IPX5	
13	Polarity	Diaphragm shall move Forward while Apply a Positive DC Signal to the " + " or " Marked " Terminal.	

Above Measuring condition under temperature : 15~35°C R.H. 25 ~75%. According to standard GB/T9396-1996

Mechanical and vibration test

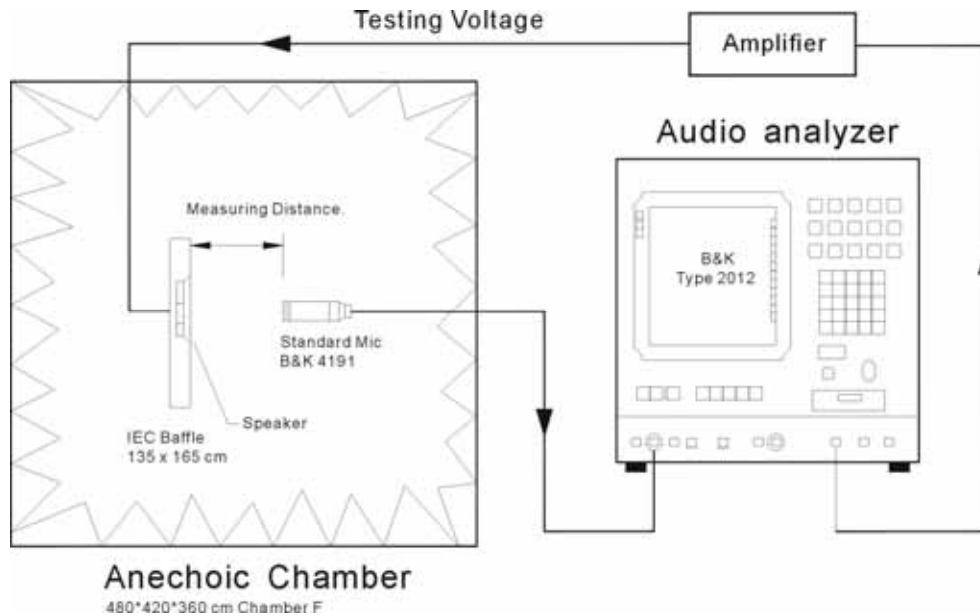
14	High Temperature	+ 85 \pm 2 °C	Humidity Random for 96 Hours. (GB2423.2-81)
15	Low Temperature	- 40 \pm 2 °C	Humidity Random for 96 Hours. (GB2423.1-81)
16	Humidity	+ 40 \pm 2 °C	Relative Humidity (RH) 90 ~ 95 % 96 Hours.
17	Vibration	Frequency 30 \pm 15 Hz, Amplitude 1.5 mm for 3 Hours. (GB11606.8-89)	
18	Drop test	75 CM free falling on Concrete floor, 10 times. (GB2423. 8-81)	
After test leave speakers at room temperature for 1 hour, SPL shall not deviate by \pm 3 db from pre-test			
19	Temperature Cycle test	- 40 ~ + 85 °C	4 Cycles Temperature test. (GB5170.18-87)

After test leave speakers at room temperature for 1 hour, SPL shall not deviate by \pm 4 db from pre-test Measurement, and meet above spec. item 6. 7. 8. 9. 10.

Please refer to next pages for more detailed testing method.

Test method and User precaution.

1. Characteristics measured according to standard GB/T 9396-1996
 - 1.1 Except other specified, measuring are under Temperature 15~35°C R.H. 25 ~75%
 - 1.2 Judgement condition Temperature 20 ±2 R.H. 63~67%
 - 1.3 .Product shelf life is valid for 12 months only.
2. Output Sound Pressure Level (S.P.L.) and distortion testing setup



3. Environment & Mechanical test:

3.1 High Temperature: GB2423.2-81

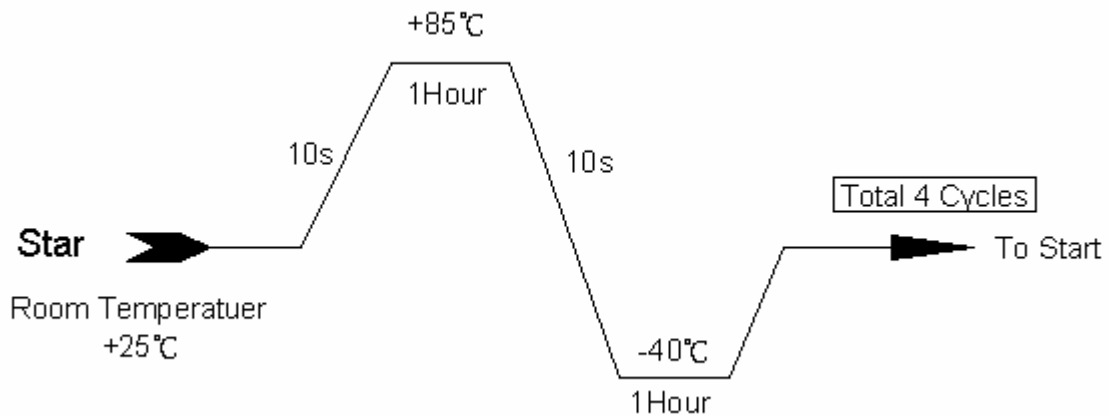
After exposure the speaker in the + 85 ± 2 °C chamber for 96 hours, then leave the speaker at room temperature for 1 hour, the SPL should not deviate by ± 3 db, and resonant frequency should not deviate by ± 50 Hz, compare with pre-test measurement.

3.2 Low Temperature: GB2423.1-81

After exposure the speaker in the -40 ± 2 °C chamber for 96 hours, then leave the speaker at room temperature for 1 hour, the SPL should not deviate by ± 3 db, and resonant frequency should not deviate by ± 50 Hz, compare with pre-test measurement.

3.3 Temperature cycle: GB5170.18-87

After exposure the speaker in the chamber, temperature cycle setting as below shows, SPL should not deviate by ± 4 db, and resonant frequency should not deviate by ± 80 Hz, compare with pre-test measurement.



3.4 Humidity: GB5170.18-87

After exposure the speaker in the + 40±2 °C, relative humidity 90% ~ 95% chamber for 96 hours, then leave the speaker at room temperature for 6 hours, the SPL should not deviate by ±3 db, and resonant frequency should not deviate by ±50 Hz, compare with pre-test measurement.

3.5 Vibration: GB11606.8-89

Frequency 30±15 Hz, Amplitude 1.5 mm for 3 Hours. After test, SPL shall not deviate by ±3 db from pre-test measurement,

3.6 Load test: GB/T 9396-1996

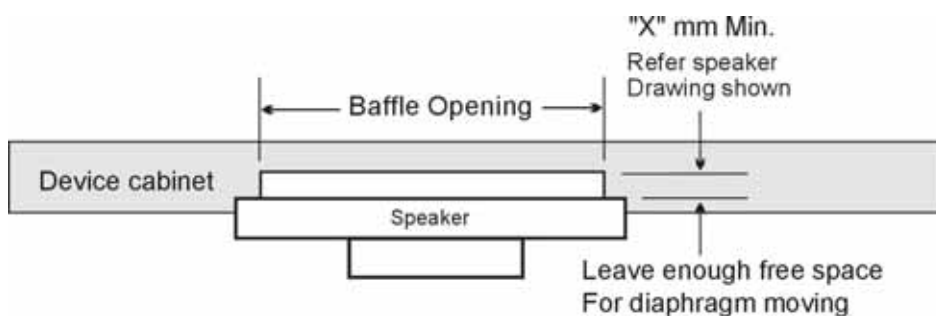
Speaker should not fail after apply 20 ~ 20K Hz pink noise with HPF rated power input (RMS), 96 hours. After test, SPL shall not deviate by ±3 db from pre-test measurement,

3.7 Drop test: GB2423. 8-81

75 cm free falling on concrete floor, 10 times. After test, SPL shall not deviate by ±3 db from pre-test measurement,

4. Mounting **precaution**

In order to keep speaker work normally, there shall leave enough free space for diaphragm moving, minimum distance required is marked in speaker mechanical drawing.



5. Measuring & standard referenced

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

5.1 Rated sine voltage.

It is stipulated by manufacturer, sine signal voltage that make speaker work continuously in rated frequency range, but the speaker wouldn't be damaged heartily or mechanically.

The persist time of the voltage is 1 hour.

5.2 The rated sine power.

The rated sine power is corresponding with the rated sine voltage, its definition is U_s^2/R , U_s indicates the maximum sin voltage, R indicates the rated impedance.

5.3 The rated noise power.

The rated noise power is corresponding with the rated noise voltage, its definition is U_n^2/R , U_n indicates the rated noise voltage, R indicates the rated impedance.

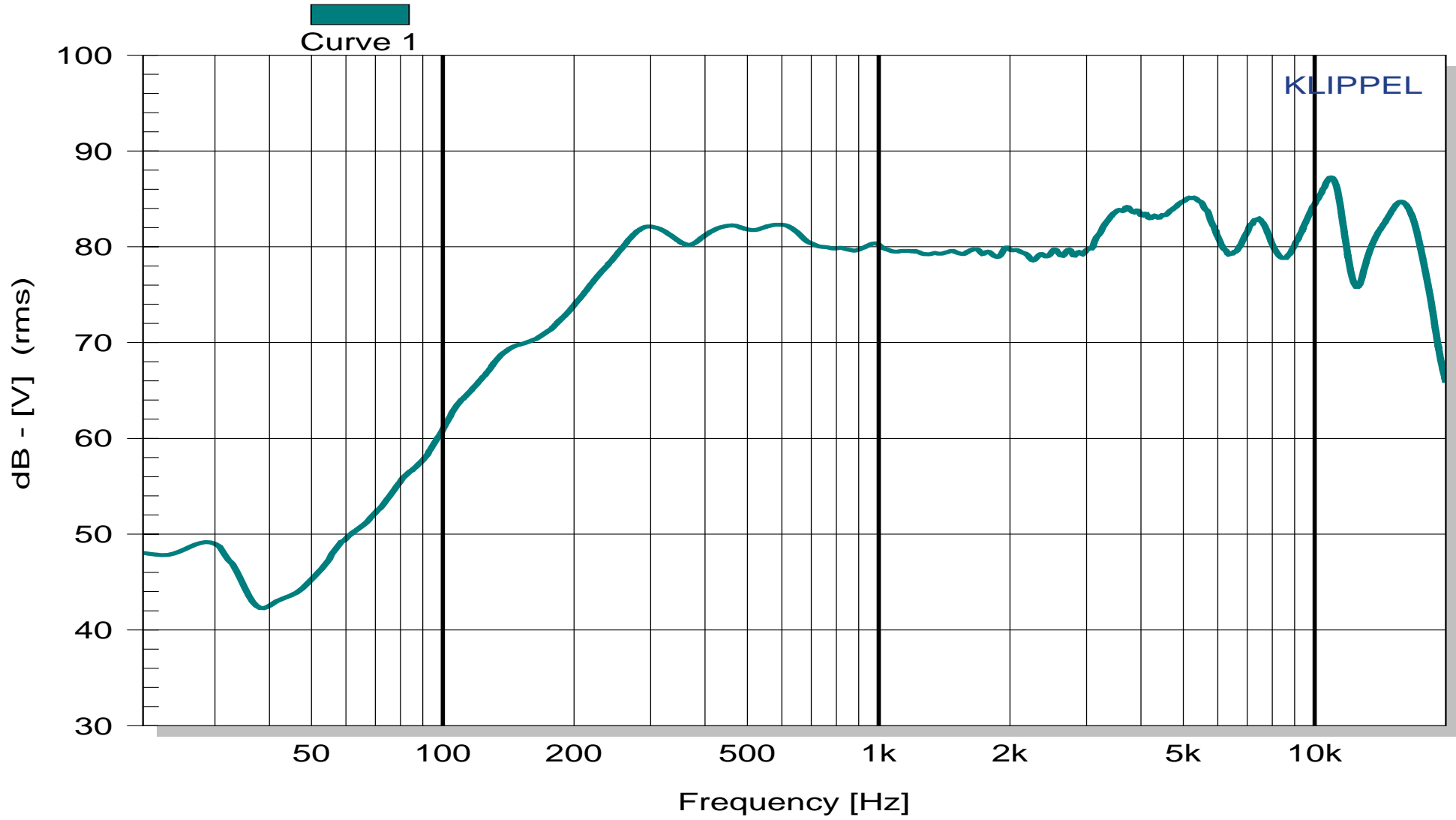


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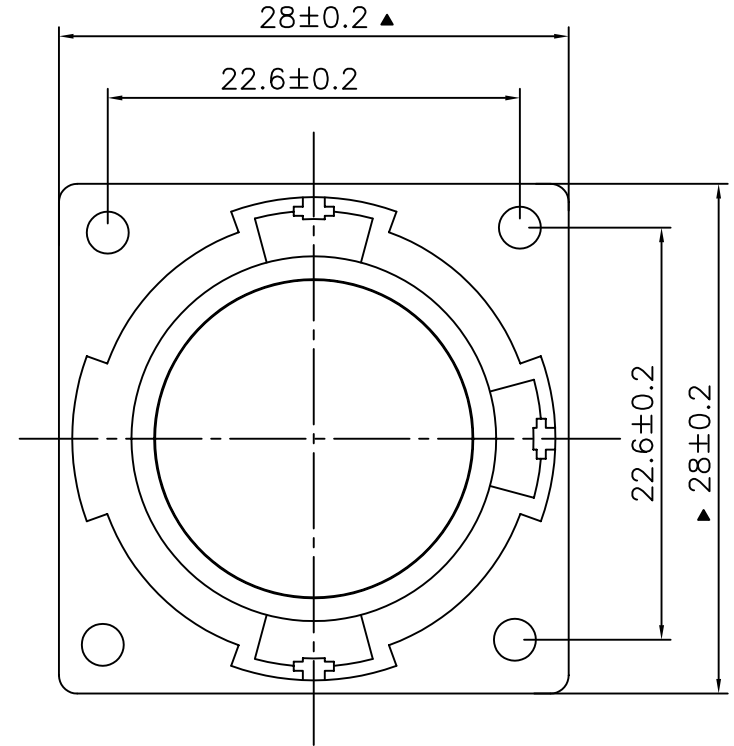
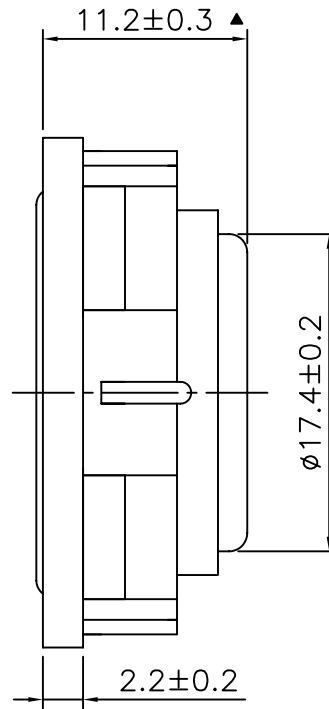
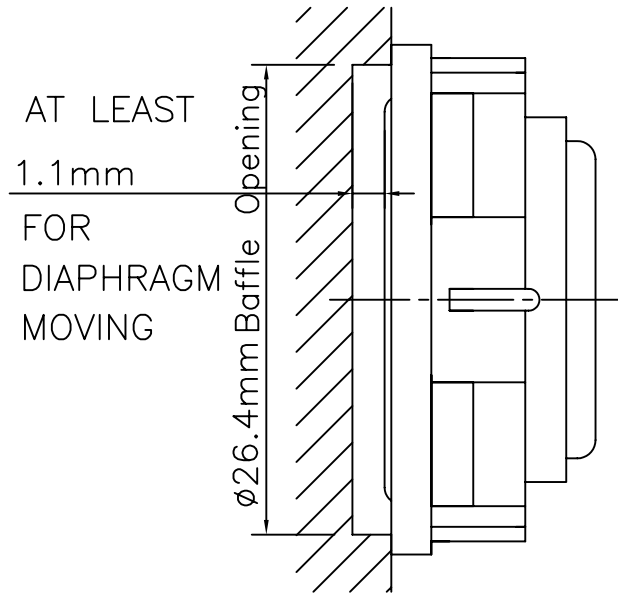
P28KUG04X-W

Measurement Condition:

VOL:2.0V(1W) DIS:0.5M



MOUNTING NOTICE



RANGE	TOL				✓
0-8	± 0.05	± 0.10	± 0.20	± 0.30	
8-16	± 0.10	± 0.15	± 0.25	± 0.40	
16-24	± 0.15	± 0.20	± 0.30	± 0.50	
24-50	± 0.20	± 0.25	± 0.40	± 1.0	
50-100	± 0.25	± 0.30	± 0.50	± 2	
>100	± 0.40	± 0.40	± 0.80	± 3	

▲ 為重點尺寸

V1.0	09.09.25		
VERSION	DATE	DESCRIPTION	
Unit: mm	Scale:	Appr.: 高紅華	
Tol.:		CHK.: 曾憲財	Dwg.: 韋華刊

Vanson Electronics (Nanhai) Co., Ltd.
 鎂利電子
 E-MAIL: vecof@vansonic.net
 TEL: +86-757-88536828 FAX: +86-757-88536826

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