



产品规格书

PRODUCT SPECIFICATION

客户名称Buyer Name	
客户料号Buyer Part No.	
客户承认签章 Buyers Approval & Signatures	

文件编号Spec No.		版本	A/5
品名描述 Product Description	LRA 扁平振动马达 LRA Coin vibration motor		
型号Part No.	VG1040003D		
送样日期Date			
设计Designed by	审核Checked by	批准Approved by	
陳满	陈北叶		
2024.08.09	2024.08.09	2024.08.09	

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1. Revision History

修改号 Rev. No.	日期 Rev. Date	页码 Page No.	修改项目 Revised Item	更改原因 Reason
A/0	2019.04.27	/	产品颁布/ Release for Production	
A/1	2020.07.01	/	changed company name from JINLONG MACHINERY to VYBRONICS, changed part # from G1040003D to VG1040003D	Rebranding
A/2	2022.08.23	/	Update temperature range	
A/3	2022.12.19	/	Change double sided tape size from 9mm to 8mm	
A/4	2024.02.29	/	Change foam thickness to 0.35mm	
A/5	2024.08.09	/	Update motor specifications	Production optimization

2. Application

This specification provides structure, function and usage condition of Linear Vibrator used in mobile communication devices for silent alert.

3. Operating , Storage Temperature /Humidity Conditions

No	Item	Condition
3-1	Operating Temperature Range	- 25°C ~ + 70°C
3-2	Storage Temperature Range	- 40°C ~ + 80°C

4. Measurement Conditions

No	Item	Condition
4-1	Temperature	20 ± 5 °C
4-2	Humidity	65 ± 20%RH
4-3	Rated Input Voltage	2.5Vrms AC, Sinewave
4-4	Input Voltage Range	0.1 ~ 2.5 Vrms AC
4-5	Input Frequency	150 ~ 200Hz (f0 : 170±5 Hz)
4-6	Operating Attitude	Refer to Figure 1

※ Measurement Method

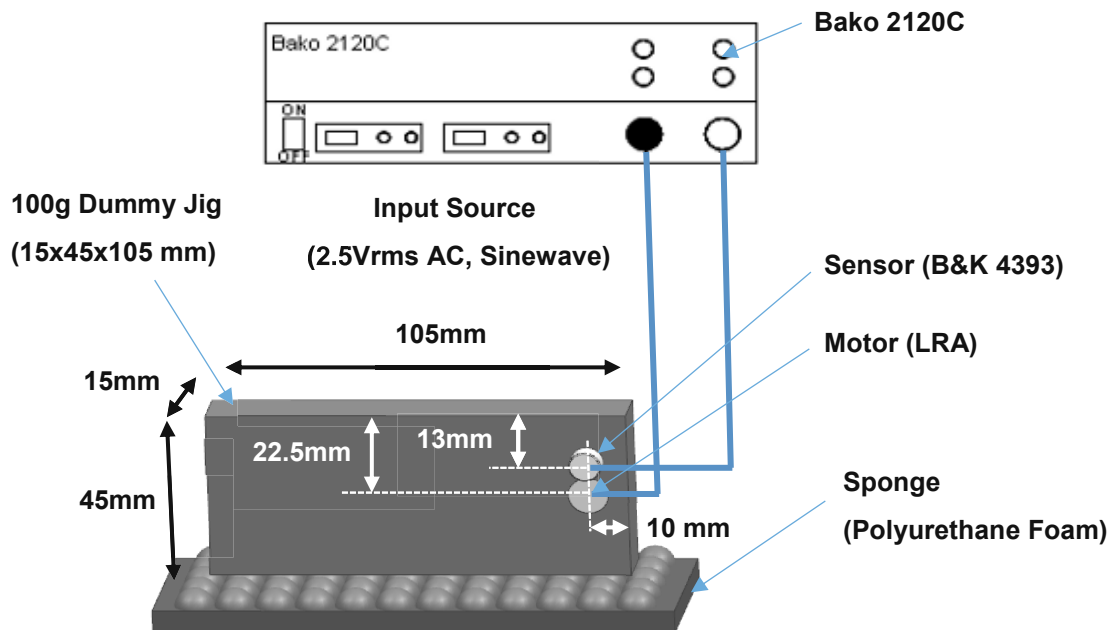


Figure 1. An Example of Measurement Method of Linear Vibrator

☐ Position of Linear Vibrator and Accelerometer (Refer to Figure 1)

- Linear Vibrator should be mounted to vibrate 15mm direction (y-direction) of Jig.
- Accelerometer also should be installed to measure y-direction vibration of Jig

☐ Position of Dummy Jig

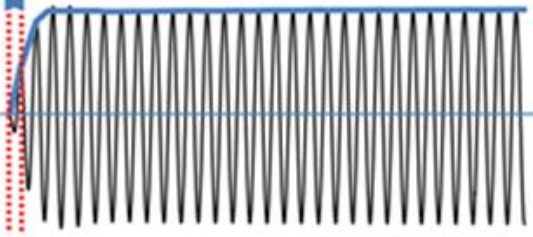
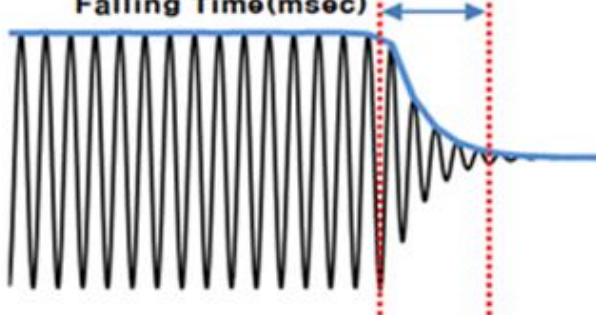
- 15mm*105mm plane of Dummy Jig should be located on Sponge
- At measurement of acceleration, Dummy Jig should be stabilized

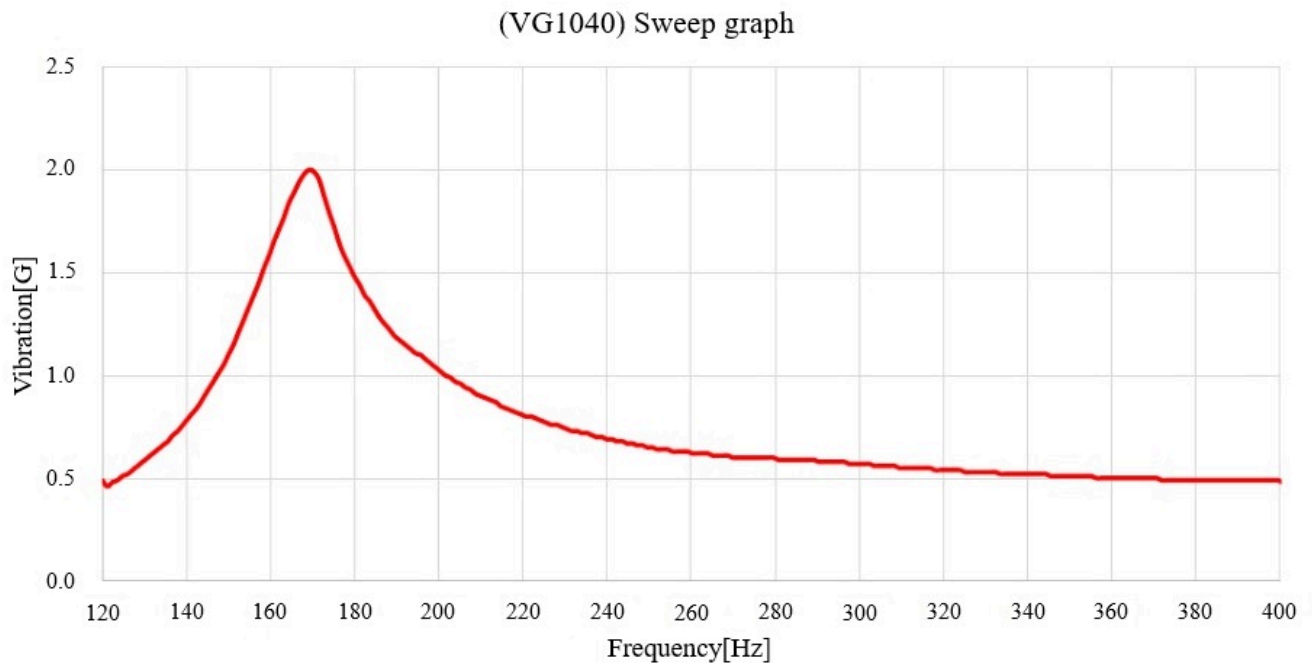
☐ Measurement of Acceleration

- Acceleration should be measured 2~3 second later after input source is applied
- For the precise measurement, Acceleration should be measured 3 times and adopted average value on each Linear Vibrator

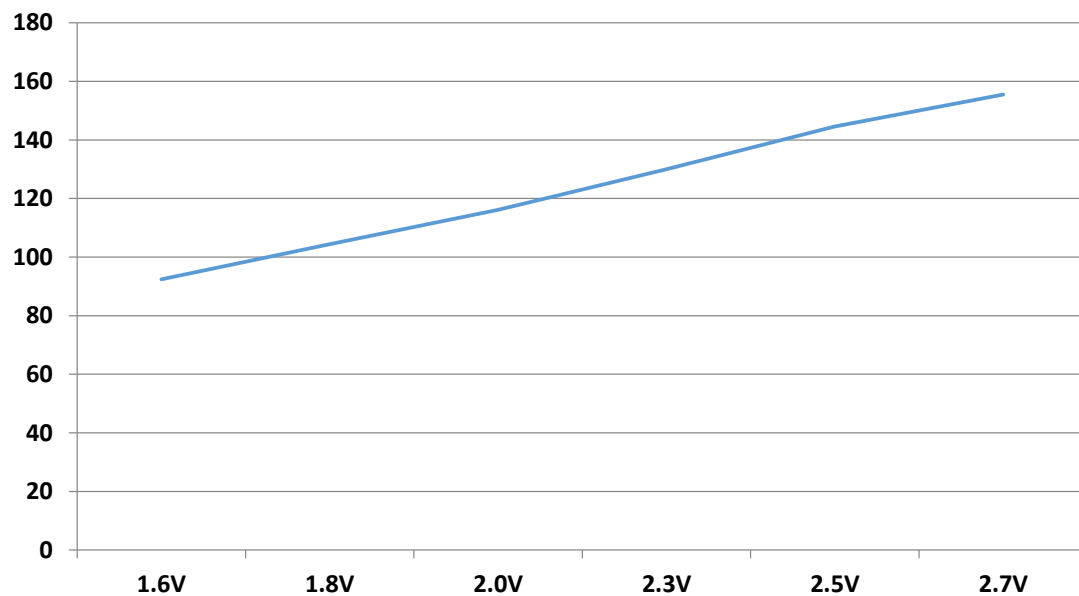
5. Specifications

No	Item	
5-1	Resistance	12.0 ± 2 Ω
5-2	Rated Current	Max 200 mArms (Input Source : 2.5Vrms AC, Sinewave)
5-3	Acceleration	Min 0.8 G @ 150Hz Min 1.5 G @ 170Hz Min 0.9 G @ 200Hz (Input Source : 2.5Vrms AC, Sinewave)
5-4	Frequency Characteristics	Refer to Graph 1
5-5	Motor Height	4.05 ± 0.05mm - Put the Case of the motor on Jig after zero setting and measure center point of bracket by Height Gauge.
5-6	Noise	Max. 50 dB(A) - 10cm distance from microphone, (Input Source : 2.5Vrms AC, Sinewave)
5-7	Noise by mechanical touch (Noise_T)	Max 35dB (Input Source : 2.5Vrms AC, Sinewave) - This is full inspection method in the mass production instead of measurement of 5-6 Noise - Measurement method · Equipment : Bako 2120C · It measures Noise touch(Mechanical touch) through vibration signal by acceleration sensor
5-8	Insulation Resistance	Min 10 MΩ (Input 100V DC, the insulation resistance between the vibrator case and terminal)

No	Item	Specification
5-9	Rising Time	<p>Max 10msec</p> <p>- The time reaching to 50% of normal acceleration from power on</p> <p>Rising Time(msec)</p> 
5-10	Falling Time	<p>Max 50msec</p> <p>- The time reaching to 10% of normal acceleration from power off</p> <p>Falling Time(msec)</p> 



Graph 1. Frequency Characteristics



Graph 2. Current vs Voltage

6. Reliability Test Condition

No	Item	Condition
6-1	Life test	Operating at rated input voltage and input frequency for 1,000,000 cycles. 1 cycle is 2 Sec On, 1 Sec Off.
6-2	Thermal shock test	- 40°C ~ 85°C in each of 2Hrs(1cycle), Total 15 cycles. Transition time is 5 minutes max. After the test, the Vibrator should be measured after room-temperature storage for 4Hrs.
6-3	High temperature storage test	+70°C, 168Hrs, After the test, the Vibrator should be measured after room-temperature storage for 4Hrs.
6-4	Low temperature storage test	-30°C, 168Hrs, After the test, the Vibrator should be measured after room-temperature storage for 4Hrs.
6-5	Static humidity test	+50°C, 95%RH, 120Hrs, After the test, the Vibrator should be measured after room-temperature storage for 4Hrs.
6-6	Vibration test	Vibrator that is attached to a 160g dummy jig is vibrated with 2.2G, 10~55Hz/min for 10min in each of X,Y,Z axis..
6-7	Mechanical shock test	The Vibrator that is attached to a 160g dummy jig is dropped to a steel floor 30 times(6 face, 5 times in each of X,Y,Z axis) from 1.5m in height.

Due to this LRA's wide bandwidth , the use of Haptic drivers that make use of "auto-resonance" detection can not be used. Please use the [Dongwoon Anatech Part # DW7914A](#) or equivalent.

☐ **Judgement**

① After test, The following specifications must be satisfied.

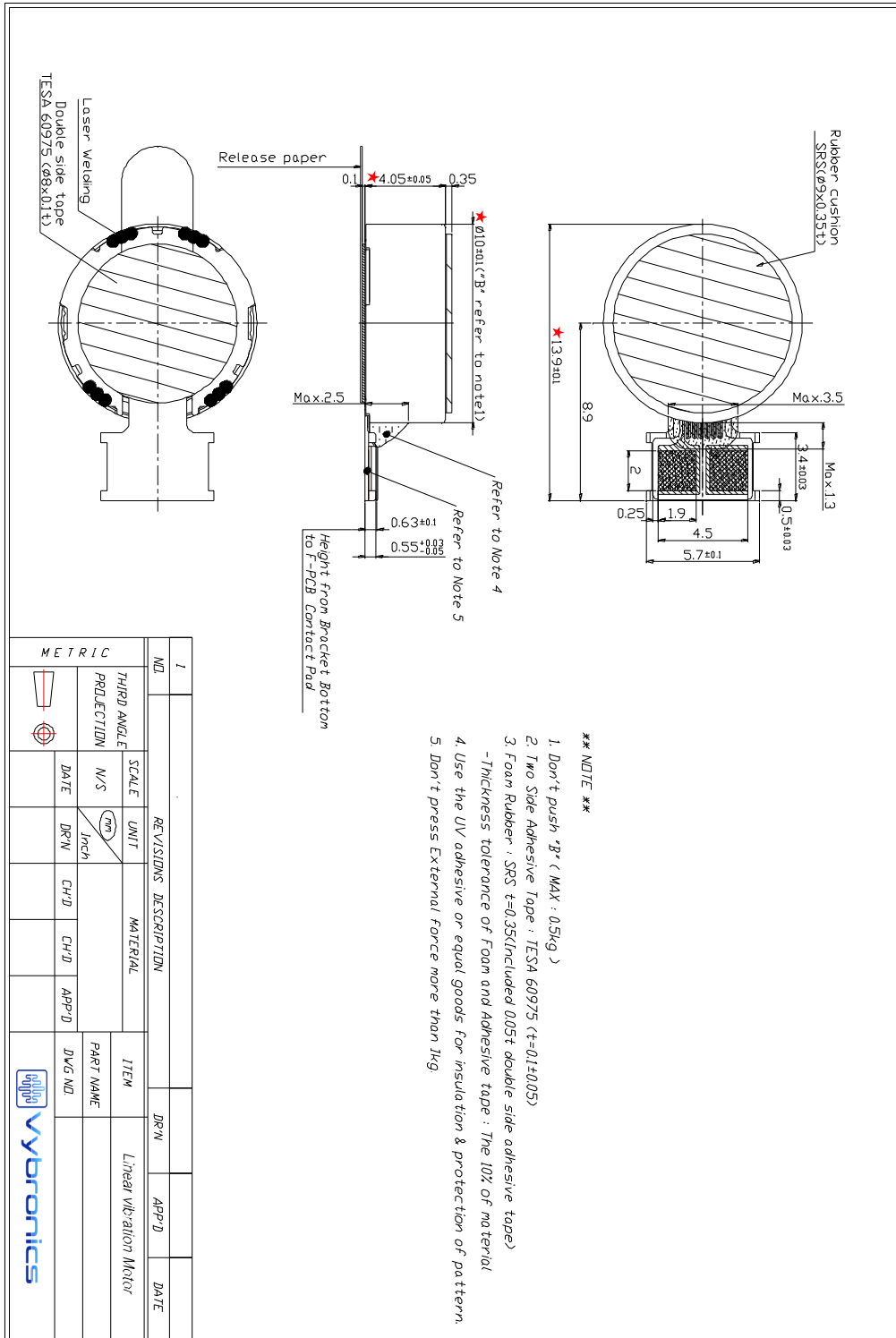
- Acceleration : Within initial Value $\pm 30\%$
- Rated Current : Max 170 mA rms
- Noise_T : Max. 35dB

② There should be no abnormalities in appearance and structure.

7. Cautions for Use

- (1) Do not press the product with more than 0.5Kgf or drop it.
It can cause the transformation of performance or external appearance.
- (2) Do not use under the following conditions. It may cause a decline in performance
 - Do not drop into fluid (such as water, alcohol etc.)
 - Do not keep at high temperature or high humidity for extended periods of times
 - Do not use near gases which cause erosion
 - Please refrain from operating the vibrator near magnetic devices.
- (3) The vibrator has a strong magnet. So please be aware that it has a magnetic force on the surface of the bracket.
- (4) To optimize the vibration force, Rated frequency and voltage could be changed as to assemble condition.
- (5) Please refer to the packaging drawing. It can be modified by the request of the user.
- (6) If any problems are occurred, Both the user and Vybronic shall try to solve the problem by mutual agreement and on reflection of the specification sheet.
- (7) The storage condition is 5°C~35°C, 15%~65% RH, 1year about packing.

8. Drawing

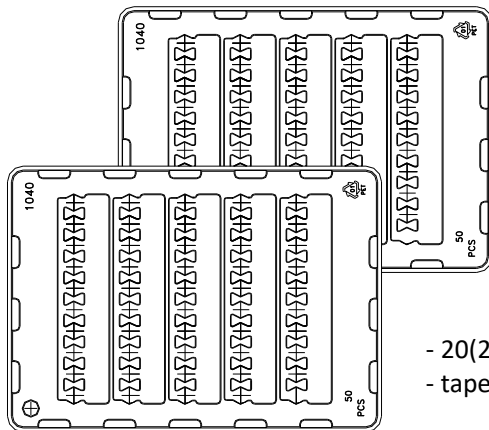


9. Packing

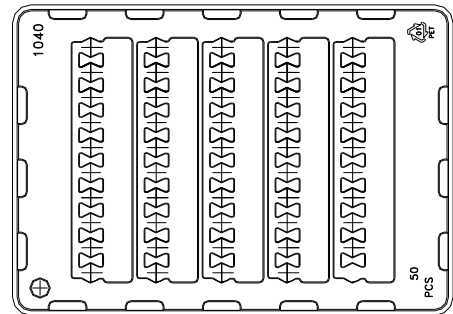
9-1. Paking q'ty : 4,000 PCS / Box

9-2. Out box size : 520 mm × 350 mm × 175 mm

9-3. Load max 6boxes



- 20(21) Tray x 2 = 4,000ea
- tape packing



1 Tray : 50ea

