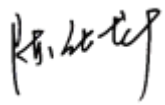
产品规格书

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.	G-B014	版本	A/0
品名描述 Product Description	LRA Coin Type Vibration Motor		
型号Part No.	G0832012		
送样日期Date			
设计Designed by	审核Checked by	批准Approved by	
陈满			
2017.09.29	2017.09.29	2017.09.29	

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1. REVISION HISTORY

REV No.	Date	Description	Inspector	Designed	Approved

Scope

This specification is applied to G0832012 vibrator for a mobile telephone or personal devices, manufactured by JINLONG MACHINERY

Contents

1. Structure and material

1.1 structure

Items	Specification
1. Motor structure	Resonant type vibrator
2. Number of phases	1-phase
3. Number of magnet pole	1-poles (Axial type)

1.2 Material

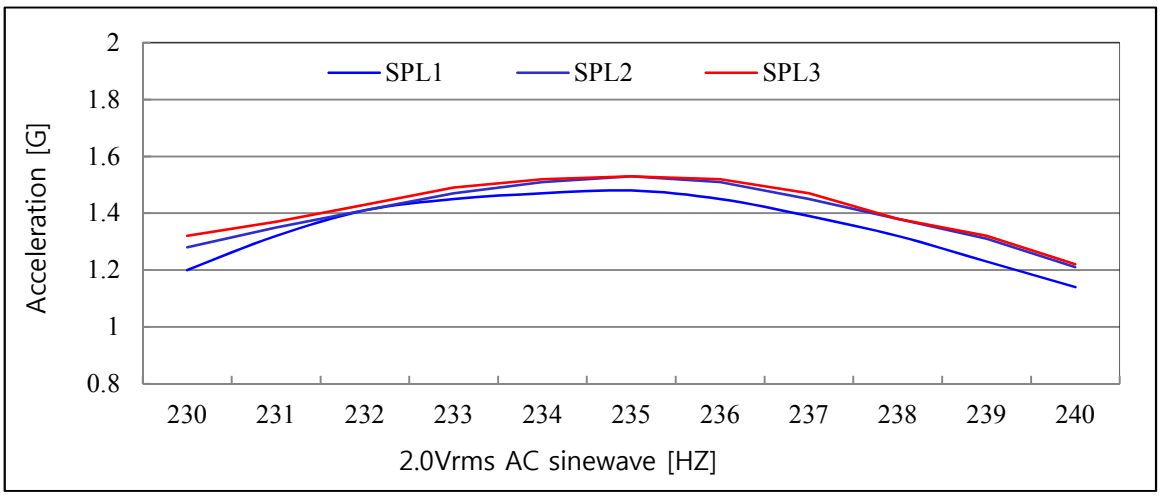
Items	Specification
1. Case, Bracket	SPC
2. Magnet	Nd-Fe-B Magnet
3. Coil	Self-bonded polyurethan copper wire
4. Spring	SUS-301

2. Rated specifications

No.	Items	Specification
2-1	Input voltage note.1)	2.0Vrms, sine wave
2-2	Operational frequency	235Hz
2-3	Vibration	1.5 ± 0.3 Grms
2-4	Rated current	90mArms max.
2-5	Terminal resistance	26 ± 3 Ω
2-6	Rising time	30 ms Max.(50% of the steady state)
2-7	Falling time note.2)	50 ms max.(50% of the steady state)
2-8	Acoustic noise	45 dB(A) max.
2-9	Weight of the product	(2.0 ± 0.1) gram
2-10	Allowable temperature range note.3)	1) Working temperature : -20℃ ~ +70℃ 2) Storage temperature : -40℃ ~ +80℃
2-11	Standard test condition	Section. 5.

Note.1) Square wave Input voltage may cause a little difference on the performance.
Note.2) Phase shift circuit or algorithm is needed to decrease the falling time.
Note.3) The allowable temperature range is corresponded to the reliability specifications.

3. Frequency response characteristics



Note) The resonant frequency is normally distributed and controlled so as to be near 235Hz.

4. Reliability

No.	I t e m s	Test condition
4-1	High Temperature Storage Test Condition	− Sample Quantity :4 − Test Temperature:70℃ − Test Duration:240hours − Criterion ■ Acceleration and other parameters(Resistance, Rated Current and Noise) must be within Specification defined. ■ The measurement is conducted after 4 hours of recovery after climatic test.
4-2	Low Temperature Storage Test Condition	− Sample Quantity :4 − Test Temperature:-30℃ − Test Duration:240hours − Criterion ■ Acceleration and other parameters(Resistance, Rated Current and Noise) must be within Specification defined. ■ The measurement is conducted after 4 hours of recovery after climatic test.
4-3	Thermal Shock Resistance Test Condition	− Sample Quantity :4 − Temp./Duration Time :-30℃ ⟷ 70℃,duration time 30 minutes. − Test Cycle:50 cycles − Criterion ■ Acceleration and other parameters(Resistance, Rated Current and Noise) must be within Specification defined. ■ The measurement is conducted after 4 hours of recovery after climatic test.
4-4	High Temperature Humidity Life Test Condition	− Sample Quantity :20 − Test Condition Put linear vibration motor into temperature-humidity chamber and input rated voltage and frequency (f0=resonance frequency[Note 4]) to driving the linear vibration motor running continuously. ■ Test Environment :Temperature :60℃, Humidity 95%RH. ■ Test Duration :240 hours -Check Cycle :Before/after test and every 120 hours to measure the all electrical characteristic. − Criterion : <u>After 240 hours test</u> ■ The fluctuation of acceleration and other parameters (Resistance, Rated Current) are not over ±30% of its initial value after the test. Noise must be within specification defined. ■ The measurement is conducted after 4 hours of recovery after climatic test.
4-5	Low Temperature Life Test Condition	− Sample Quantity :20 − Test Condition Put linear vibration motor into temperature-humidity chamber and input rated voltage and frequency (f0=resonance frequency[Note 4]) to driving the linear vibration motor running continuously. ■ Test Environment :Temperature :-20℃ ■ Test Duration :240 hours -Check Cycle: Before/after test and every 120 hours to measure the electrical characteristic. − Criterion : <u>After 240 hours test</u> ■ The fluctuation of acceleration and other parameters (Resistance, Rated Current) are not over ±30% of its initial value after the test. Noise must be within specification defined. ■ The measurement is conducted after 4 hours of recovery after climatic test.

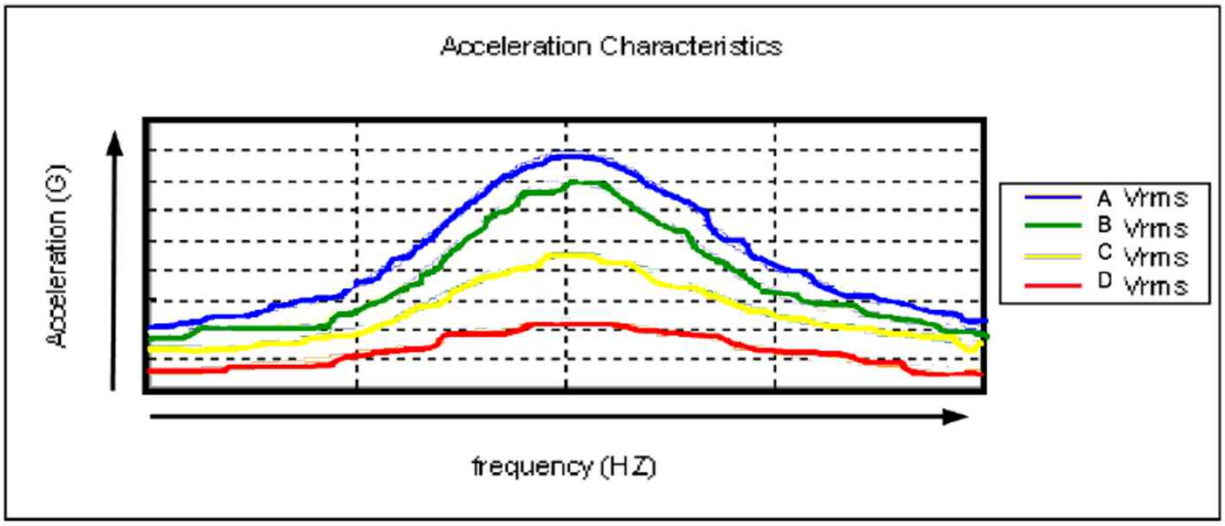
4. Reliability

<table>
<tr><th>No.</th><th>I t e m s</th><th>Test condition</th></tr>
<tr><td>4-6</td><td>H2s Corrosion Resistance</td><td>− Sample Quantity :4
− Concentration: 3±1 ppm
− Test Environment: Temperature 40±2℃, Humidity 80%RH
− Test Duration Time: 240hours
− Criterion
■ Acceleration and other parameters(Resistance, Rated Current and Noise) must be within Specification defined.
■ The measurement is conducted after 4 hours of recovery after climatic test.</td></tr>
<tr><td>4-7</td><td>Non-Operating Random Vibration Test</td><td>− Sample Quantity :4
<table>
<tr><th colspan="2">Non-operating Random Vibration</th></tr>
<tr><th colspan="2">3 axes, 10 minutes per axis, 6.06 G_{rms}</th></tr>
<tr><th>Frequency (Hz)</th><th>A.S.D. (G^2 / Hz)</th></tr>
<tr><td>20</td><td>0.0098</td></tr>
<tr><td>80</td><td>0.04</td></tr>
<tr><td>350</td><td>0.04</td></tr>
<tr><td>2000</td><td>0.0069</td></tr>
</table>
− Criterion
■ Acceleration and other parameters(Resistance, Rated Current and Noise) must be within Specification defined.</td></tr>
<tr><td>4-8</td><td>Free Fall Drop Test Condition</td><td>− Sample Quantity :4
− Weight: Set the linear vibration motor to the around 100g(include the linear vibration motor) weight of block.
-Drop Height: 150cm
− Floor Material: Steel
− Direction:±X, ±Y, ±Z ; total 6 faces
− Number of Times: Each face 3 Times
− Criterion
■ Acceleration and other parameters(Resistance, Rated Current and Noise) must be within Specification defined.</td></tr>
<tr><td>4-9</td><td>Vibration Grms Force Test Condition</td><td>−Sample Quantity :4
Before the test, below parameters should be followed to set up a plastic jig.
− Jig Material：ABS (D=1.17~1.23 g/cm3)
− Jig Weight：100±5% g
− Jig Dimension：44mm length Cubic
− Test procedure：
1.Hang up the test jig four corner string.
2.Lock the linear vibration motor on front side center of Cubic jig.
3.Attach G sensor on the center of other five sides
4.Measure for the Grms force data.
5.Measuring time is 20 sec.
6.Capture 0~2000Hz Frequency response.
7.Record the Max Grms and Average Grms is product SPEC.
− Criterion : This test result data is for reference.</td></tr>
</table>

After test, the evaluation items of table 1 should be satisfied.

4. Reliability

Note.4: It MUST be found out for Frequency Characteristics of Linear Vibration Motor before you execute related life test. Then, the
rated voltage and the frequency (f0=Resonance frequency) are chose from frequency characteristics chart. Please refer to below
example of frequency characteristics chart for motor.



※ A dummy jig for free-drop

mass : 130gr ± 10%
Size : 110 X 65 X 16 mm
Material : POM
Thickness of the cushion tape : 1.0mm
(Compressive ratio : 50%)
The upper case is faced to the cushion tape

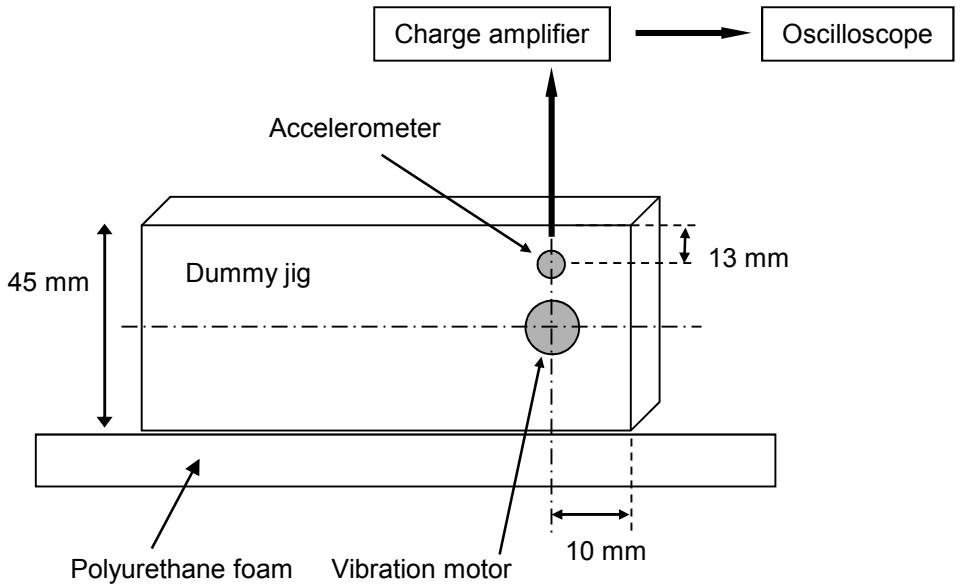
Table 1. Evaluation items after reliability test

No.	Items	Specification
1-1	Rated current	90mA max.
1-2	Vibration	Shall not exceed ±30% from the initial value
1-3	Acoustic noise	45dB(A) max.
1-4	Others	No deformation, crack, separation of parts.

5. Standard Test Condition.

■ Measurement of performance
All the performances are measured at normal temperature (25±2 ℃) and humidity(60 ±20%RH).

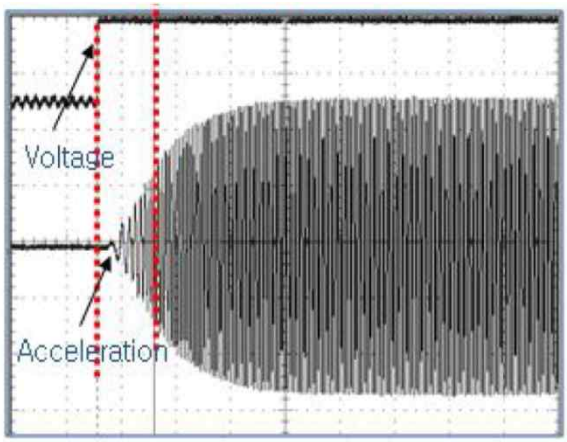
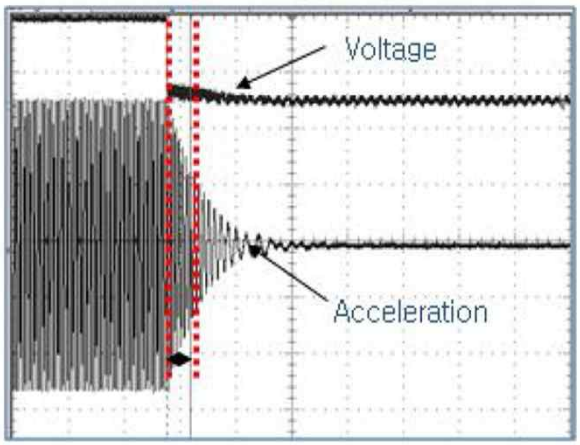
5.1 Vibration



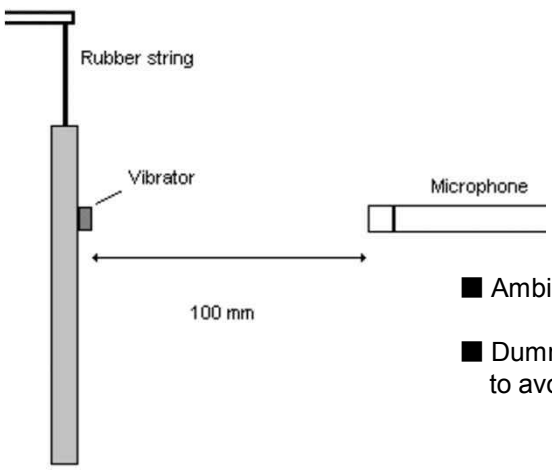
■ Specification of the dummy Jig
- Size : 45mm x 105mm x 15mm
- Weight : 100gr
- Material : Bakelite
- Vibration motor should be attached by using a double-sided tape.

5.2 Rise/Falling time

■ Rising time : The time when the acceleration reaches 50% of the vibration force(or steady-state) after the power is applied.
■ Falling time : The time when the acceleration reaches 50% of the vibration force(or steady-state) after the power is disconnected.

Rise time	Falling time
	

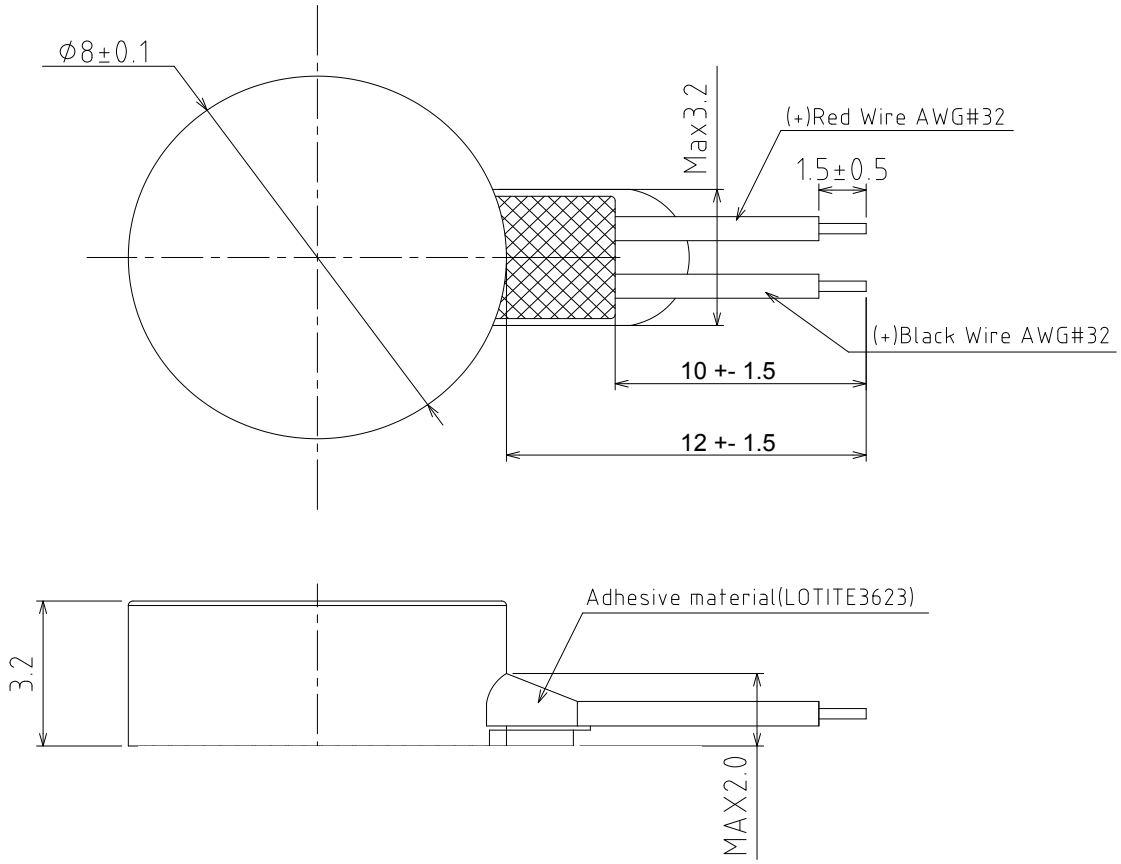
5.3 Acoustic noise



■ Ambient noise level : 23dB(A)

■ Dummy jig must be suspended by a rubber string to avoid disturbance.

7. Outline drawings



Notes

1. Tolerance of no-indication : ±0.2 mm

Part Number		Company	**JINLONG MACHINERY**	Approval No.	
Specification	**Φ8 x 3.2T**	Name of applied Model	**G0832012**	Enactment	**2017.09.29**
				Revision	

8. Cautions

8.1 Allowable range for use

Unless it is used in accordance with the specifications, the performance and life may be considerably reduced. Due attention should be paid to the voltage and current ranges for use.

8.2 Storage

Avoid storing in high temperature, high humidity or corrosive gas environment.

8.3 Handling of vibrator

- Do not bring a magnetized object near or into contact with the surface because there is a fear of performance deterioration.
- Attention must be paid to the handling and working environments because incoming of magnetic particle into the vibrator cause noise, characteristic deterioration, thus reducing the reliability.
- Do not press the product with more than 0.5Kg.f. Strong pressing may cause the decrease of the performance or the deformation of the product.