

# 产品规格说明书

## PRODUCT SPECIFICATION

|                |                                     |  |
|----------------|-------------------------------------|--|
| FILED BY BUYER | 客户名称<br>Buyer Name                  |  |
|                | 客户料号<br>Buyer Part No.              |  |
|                | 客户承认签章<br>Buyer Approved Signatures |  |

|                 |                                 |                                     |                   |
|-----------------|---------------------------------|-------------------------------------|-------------------|
| FILED BY LEADER | 文件编号<br>Spec No.                | Leader-2445                         |                   |
|                 | 品名<br>Part Name                 | 扁平振动马达<br>Coin Type Vibration Motor |                   |
|                 | 型号<br>Model No.                 | LCM1027A2445F                       |                   |
|                 | 样品承认日期<br>Date Samples Approved |                                     |                   |
|                 | 作成 Designed by                  | 检讨 Checked by                       | 承认 Approved by    |
|                 | 张婷婷<br>2021.03.06               | 张冠军<br>2021.03.06                   | 王运东<br>2021.03.06 |

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# 规格书内容

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## 1. 适用范围/ Applicable Scope

本说明书适用于扁平式永磁直流电机LCM1027A系列。

This specification applies to Coin Motor DC model LCM1027A series.

## 2. 使用条件/ Operating Conditions

| 项目/Item |                               | 规格/Specification                         |
|---------|-------------------------------|--|
| 2-1     | 额定电压<br>Rated voltage         | 3.0V DC                                  |
| 2-2     | 使用电压范围<br>Operating voltage   | 2.7~3.3V DC                              |
| 2-3     | 旋转方向<br>Rotation              | CW(clockwise) or CCW(contrary clockwise) |
| 2-4     | 使用环境<br>Operating environment | -20~+60°C, 0~95%RH                       |
| 2-5     | 保存环境<br>Storage environment   | -30~+70°C, 0~95%RH                       |

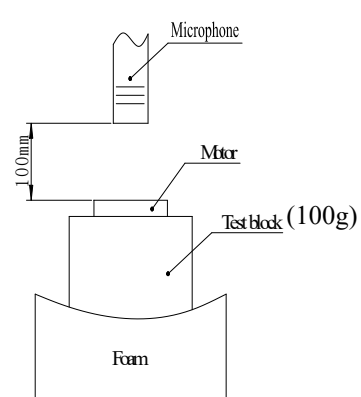
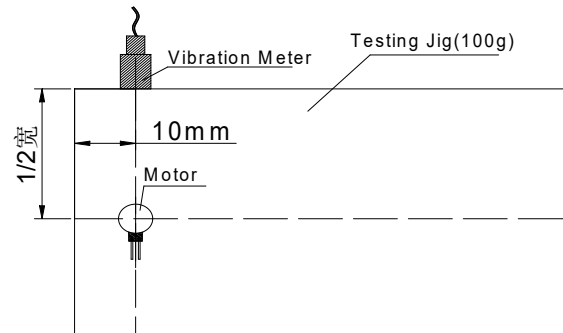
## 3. 测定条件/ Testing Conditions

| 项目/Item |                    | 规格/Specification              |
|---------|--------------------|-------------------------------|
| 3-1     | 温度<br>Temperature  | 25±3°C                        |
| 3-2     | 湿度<br>Humidity     | 65±20% RH                     |
| 3-3     | 气压<br>Air Pressure | 1013±40 hPa                   |
| 3-4     | 电源<br>Power        | 稳压直流电流<br>Constant DC Current |

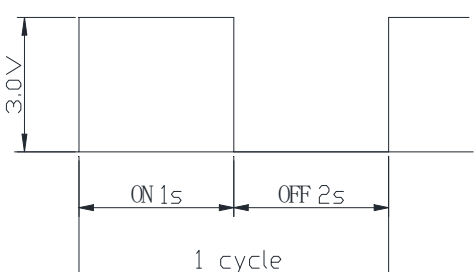
## 4. 初期电气性能/ Initial Electrical Characteristics

| 项目/Item |                               | 规格/Specification                                | 条件/Condition  |
|---------|-------------------------------|---|---|
| 4-1     | 额定转速<br>Rated Speed           | 10000rpm Min                                    | 额定电压下和额定负载下。<br>At rated voltage and rated load.            |
| 4-2     | 额定电流<br>Rated Current         | 80 mA Max                                       |   |
| 4-3     | 起动电流<br>Starting Current      | 120 mA Max                                      | 在最小起动电压下起动<br>Motor is rotating at min starting voltage.    |
| 4-4     | 起动电压<br>Starting Voltage      | 2.3V DC Max                                     |   |
| 4-5     | 绝缘电阻<br>Insulation Resistance | 10MΩ Min  | 在100V直流下，导线和机壳间测量<br>At DC 100V between lead wire and case. |
| 4-6     | 端子阻抗<br>Terminal Resistance   | 30Ω±15% (相接触)<br>60Ω±15% (相串联)<br>15Ω±15% (相并联) | 在25°C下<br>At 25°C   |

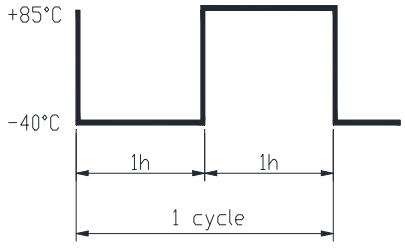
## 5. 机械性能/ Mechanical Characteristics

| 项目/Item |  | 规格/Specification  |
|---------|--|---|
| 5-1     | 底盖偏转强度<br>Bracket deflection strength  | 9.8N以上<br>≥9.8N   |
| 5-2     | 机械噪音<br>Mechanical noise   | 小于50分贝. A计权<br>≤50dB (A)  |
|         | <p>在额定电压下。<br/>背景噪音：不大于28dB.A计权<br/>电机轴向水平固定在约100g测试夹具上，<br/>拾音器沿轴向正对电机平面。<br/>测试距离10cm<br/>At rated voltage and scene noise as<br/>28dB (A)Max,<br/>the shaft is horizontally fastened to<br/>the test jig (100g).<br/>The Microphone faces the plane of<br/>motor along The shaft .<br/>The distance is 10cm.</p>  |   |
| 5-3     | Vibration Test<br>振动测定   | <p>1.0G Min</p>  |

## 6. 耐久性能/ Reliability Characteristics

| 项目/Item | 规格/Specification   | 判定标准/Judgment  |
|---------|--|--|
| 6-1     | <p>寿命<br/>Life</p>  <p>试验循环 /Test cycle: 86400 cycles</p> | <p>在常温常湿下放置4h后，电机性能应符合以下要求。</p> <ol style="list-style-type: none"> <li>1)额定转速:指标不低于初始值-30%；不高于初始值+50%</li> <li>2)额定电流:指标在初始值±30%以内。</li> <li>3)起动电压:2.3V DC Max直流电压。</li> </ol> <p>After 4h exposure in the ordinary temperature and humidity,the motor's performance should accord with below requirements:</p> <ol style="list-style-type: none"> <li>1)Rated speed:Data-30% Initial Min, Data+50% Initial Max.</li> <li>2)Rated current:Data ± 30% Max.</li> <li>3)Starting voltage: 2.3V DC Max</li> </ol> |

| 项目/Item |                                  | 规格/Specification   | 判定标准/Judgment  |
|---------|----------------------------------|--|--|
| 6-2     | 低温放置<br>Low Temperature Exposure | 温度 /Temperature: $-20 \pm 2^{\circ}\text{C}$<br>时间 /Time: 96h  | <p>在常温常湿下放置4h后, 电机性能应符合以下要求。</p> <p>1)额定转速:指标在初始值<math>\pm 30\%</math>以内。<br/>2)额定电流:指标在初始值<math>\pm 30\%</math>以内。<br/>3)起动电压:2.3V DC Max.</p> <p>After 4h exposure in the ordinary temperature and humidity, change rates of the motor's performance should accord with below requirements:</p> <p>1)Rated speed: within <math>\pm 30\%</math> of initial value.<br/>2)Rated current: within <math>\pm 30\%</math> of initial value.<br/>3)Starting voltage: 2.3V DC Max</p> |
| 6-3     | 湿度放置<br>Humidity Exposure        | 温度 /Temperature : $+ 40 \pm 2^{\circ}\text{C}$<br>湿度 /Humidity: 90 ~ 95%RH<br>放置时间 / Exposure time : 96h<br>无水气凝结 /No condensation of moisture   |  |
| 6-4     | 高温放置<br>High temp. Exposure      | 温度 /Temperature : $+70 \pm 2^{\circ}\text{C}$<br>时间 /Time : 96h  |  |
| 6-5     | 振动<br>Vibration                  | 频率 /Frequency: 10~55Hz<br>加速度 /Acceleration: 22m/s <sup>2</sup><br>周期 /Period: 10 Minutes log sweep (1.0G), (10~55~10Hz)<br>条件 /Condition: This motion shall be applied for a period of 10 minutes in direction of X, Y, Z.  |  |
| 6-6     | 自然跌落<br>Free fall                | 试验状态: 将马达固定在约100克(包括马达本身)的物体上, 落向水泥地面。<br>Test state: Set the motor to a block of an approx. 100g weight (including the motor) and drop it onto the concrete floor.<br>Height: 1.5m<br>Direction : $\pm x, \pm y, \pm z$<br>Number of times: 3 times each direction<br>Shock: 29420m/s <sup>2</sup> equivalent to 3000G. |  |

| 项目/Item |                          | 规格/Specification   | 判定基准 / Requirements   |
|---------|--------------------------|--|---|
| 6-7     | 滚筒试验<br>Barrel roll test | 滚筒高度: 1.0M<br>滚筒次数: 300次.<br>滚筒速率: 13±1次/分钟<br><br>Height: 1.0M<br>Times: 300 times.<br>Speed: 13±1 times/Minute     | 在常温常湿下放置4h后, 电机性能应符合以下要求。<br>1)额定转速:指标在初始值±30%以内。<br>2)额定电流:指标在初始值±30%以内。<br>3)起动电压:2.3V DC Max.<br>After 4h exposure in the ordinary temperature and humidity, change rates of the motor's performance should accord with below requirements:<br>1)Rated speed: within ±30% of initial value.<br>2)Rated current: within ±30% of initial value.<br>3)Starting voltage: 2.3V DC Max |
| 6-8     | 热冲击<br>Heat stock test   |  <p>试验循环 /Test cycle:32cycles</p> | 在常温常湿下放置4h后, 电机性能应符合以下要求。<br>1)额定转速:指标在初始值±30%以内。<br>2)额定电流:指标在初始值±30%以内。<br>3)起动电压:2.3V DC Max.<br>After 4h exposure in the ordinary temperature and humidity, change rates of the motor's performance should accord with below requirements:<br>1)Rated speed: within ±30% of initial value.<br>2)Rated current: within ±30% of initial value.<br>3)Starting voltage: 2.3V DC Max |

## 7. 标准测量方法/ Standard Measuring Method



振动量测试仪  
Vibration meter

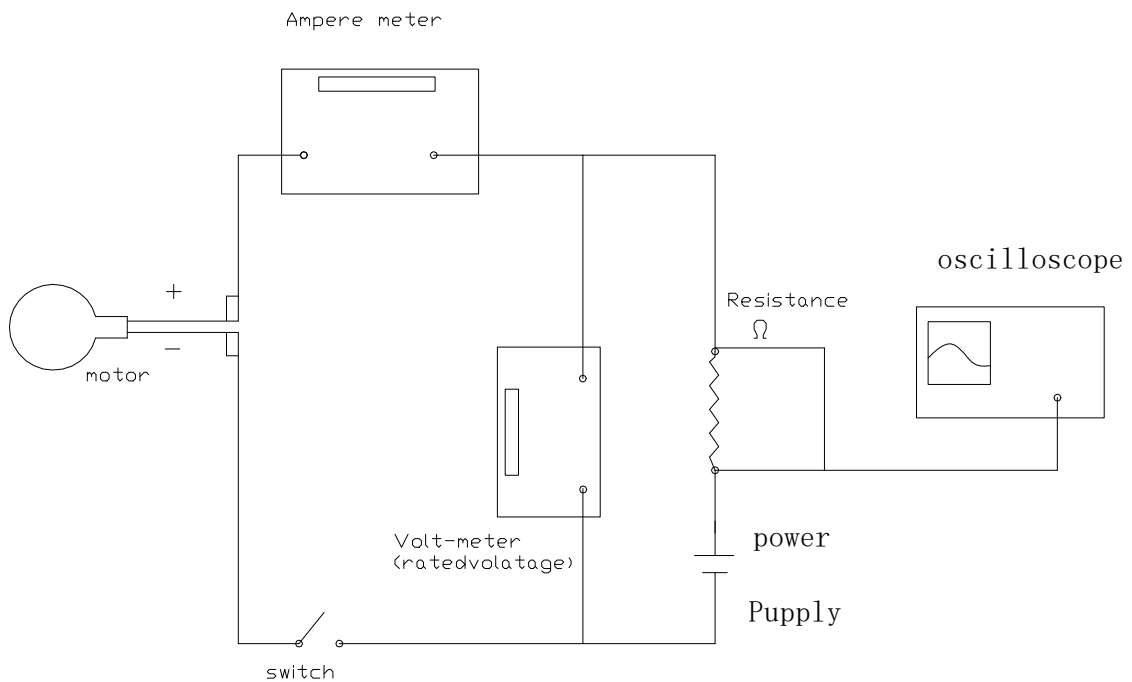
马达安放装置  
Test Jig (for  
Clamping  
the Motor in Place)

马达综合测试仪  
Multi-functional  
Test Mete

波形脉冲显示  
Oscilloscope

噪音测试仪  
Noise Test Meter

## 8. 测量方法及回路图/ Measuring Method & Circuit Map



## 9. 使用时注意事项/ Caution in Use

9-1 必须按照规格书标准使用,否则性能和寿命都将受到相当减少, 必须注意电压的使用范围。/ The performance and lifetime would be considerably reduced if the operation is not done as per the specification defines. Do pay attention to the range of operating voltage in use.

9-2 建议马达在六个月内使用,不要在以下环境中使用及保存:

- 高温和高湿的场所;
- 腐蚀性气体,如:  $H_2S$ 、 $SO_2$ 、 $NO_2$ 、 $Cl_2$ ;
- 生锈场所。

It is suggested to use the motors within 6 months as possible as you can.

It is not suggested to use or store the motors under the following conditions:

- High temperature and high humidity area.
- Corrosive gas environment, such as  $H_2S$ ,  $SO_2$ ,  $NO_2$ ,  $Cl_2$  etc.
- Dusty areas.

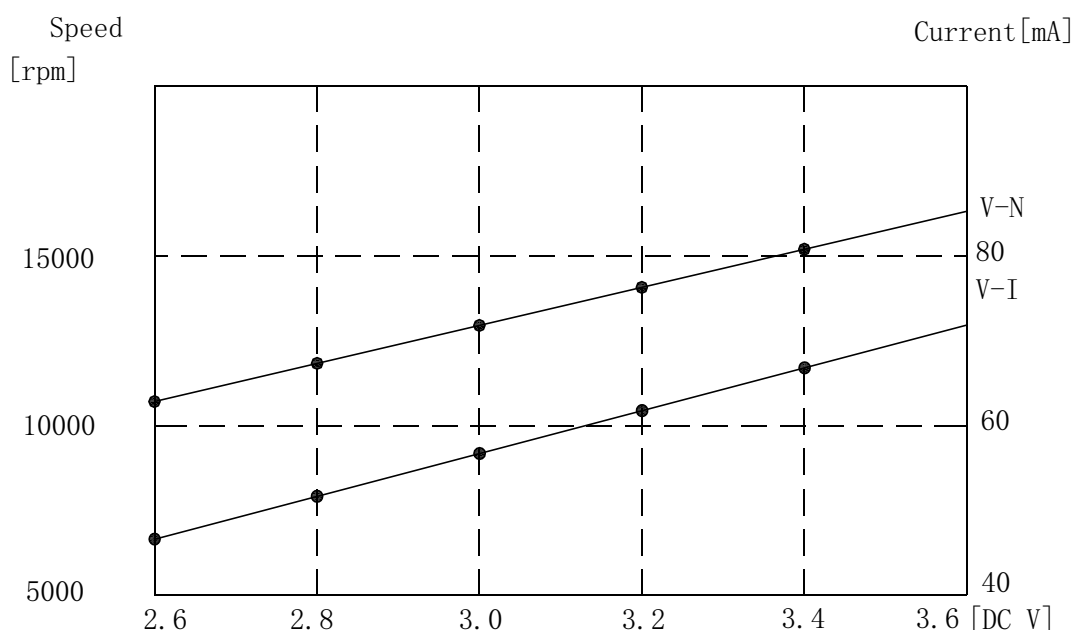
9-3 注意处理马达的工作环境, 避免含铁质物体被马达吸住, 否则马达将会产生噪声, 性能会降低, 从而减少产品可靠性。/ Keep clean the working environments to avoid the objects such as iron powder etc are attracted by the magnet. Otherwise, it would cause noise, function deterioration and lower reliability.

9-4 应确信本产品不会与相关标准、法律、政令相背。/ Be sure not to disobey the local laws and rules.

9-5 拿马达时, 要轻拿轻放。/ The motors should be taken up and placed gently in operation.

9-6 钢板面或边缘有少许锈斑是允许的。/ Slight rust on the edge of the steel housing is permitted.

## 10. 特性曲线图/Characteristics Graph





## 11. 环境管理物质/ Environmental Management Materials:

11.1 本产品应符合RoHS 指令要求和无卤素要求。

The product should be in compliance with RoHS/ REACH requirements:

\* 镉及其化合物最大允许含量为100PPM

Cadmium and Compound: ≤100PPM

\* 铅及其化合物最大允许含量为1000PPM

Lead and Compound: ≤ 1000PPM

\* 汞及其化合物最大允许含量为1000PPM

Hydrargyrum and Compound: ≤ 1000PPM

\* 六价铬及其化合物最大允许含量为1000PPM

+6 Chromium and Compound: ≤ 1000PPM

\* 多溴联苯及其化合物最大允许含量为1000PPM

PBB and Compound: ≤ 1000PPM

\* 多溴二苯醚及其化合物最大允许含量为1000PPM

PBDE and Compound: ≤ 1000PPM

\* 氯溴两种卤素之和最大允许含量为1500PPM

The allowed content of Cl and Br is 1500PPM Max for total.

\* 氯卤素最大允许含量为900PPM

The allowed content of Cl is 900PPM Max.

\* 溴卤素最大允许含量为900PPM

The allowed content of Br is 900PPM Max.

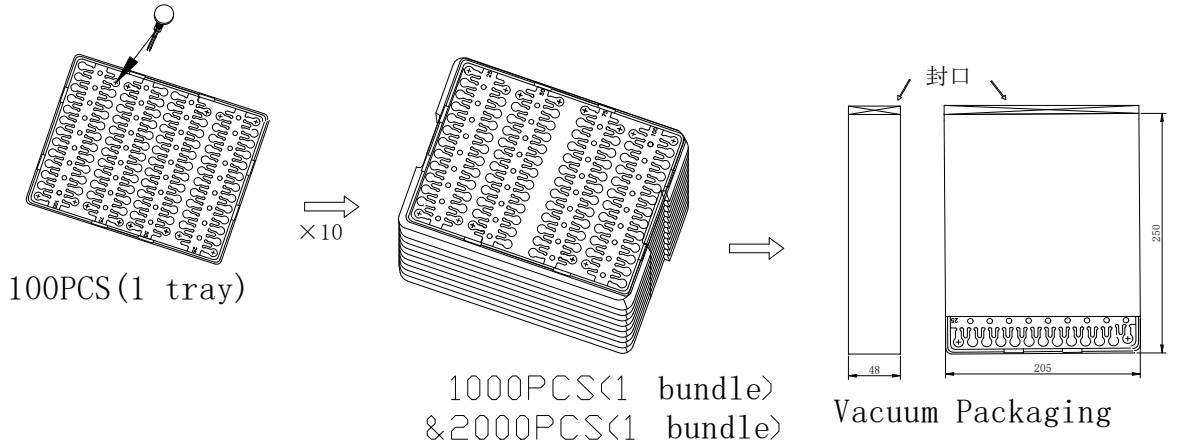
11.2 本品所含有以下物质是RoHS指令豁免项

The below substance contained in the motor is exempted from RoHS directives:

| 序号<br>NO. | 品名<br>Part Name       | 材质<br>Material      | 含有材质<br>Harzadaous<br>Substance | 允许容量<br>Limited Content | 部品重量<br>Weight of<br>Part |
|-----------|-----------------------|---------------------|---------------------------------|-------------------------|---------------------------|
| #1        | 含油轴承<br>Oiled Bearing | 铜合金<br>Copper Alloy | 铅<br>Pb                         | ≤4%                     | ≈0.03g                    |

## 12. 包装/ Packaging:

### 振动马达包装 Pack drawing of Vibrator Motor



包装尺寸/Packaging Size:

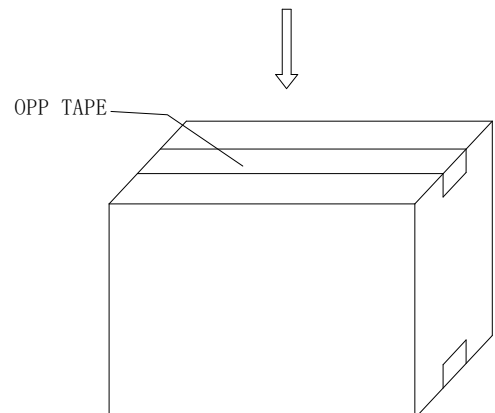
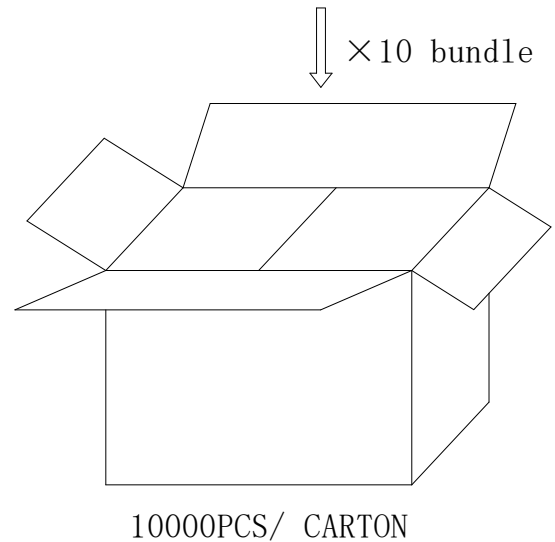
10000PCS/CARTON:  
CARTON SIZE: 430mm\*270mm\*220mm

包装试验要求:

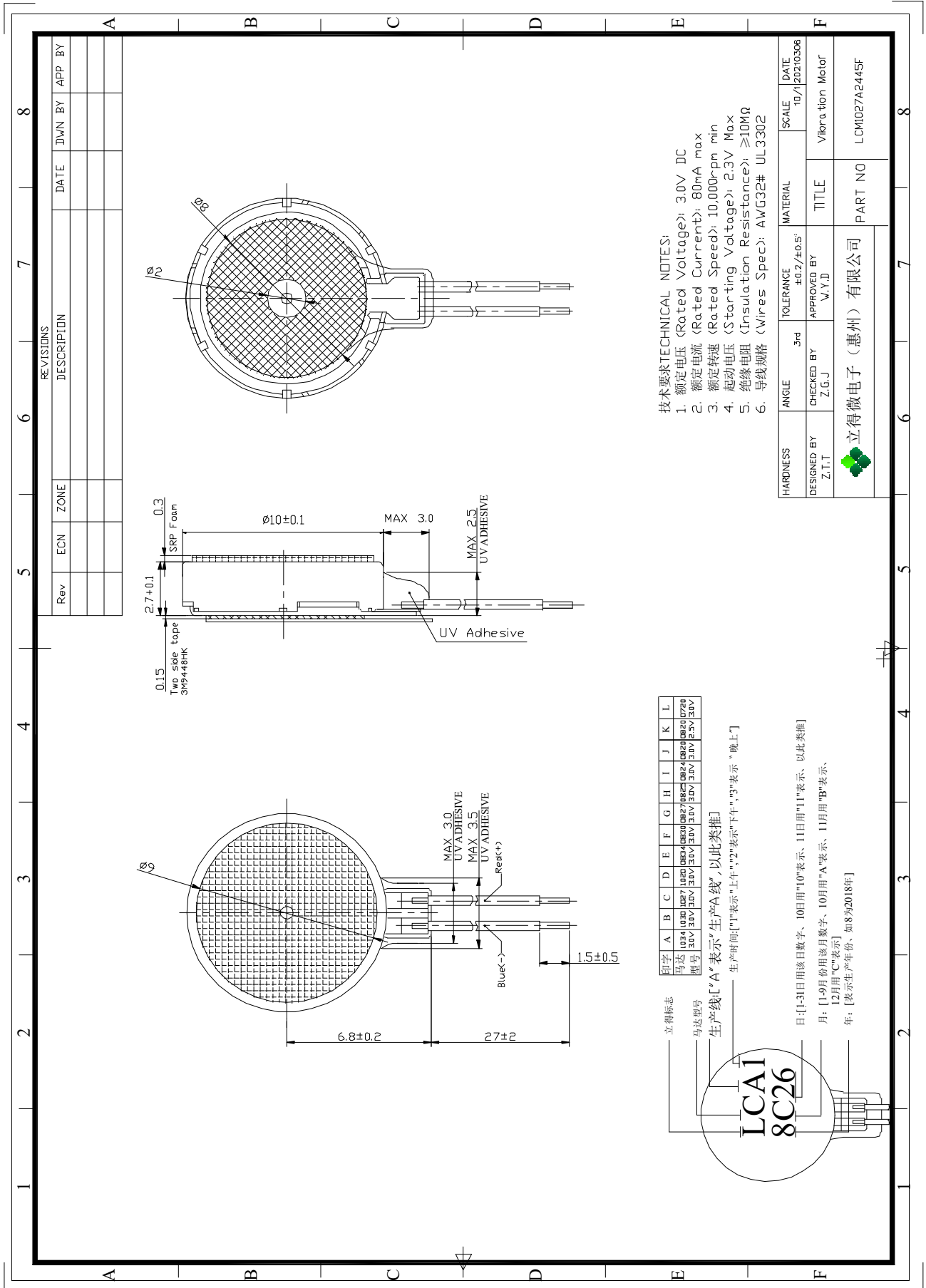
Packaging test requirements:

沿外包装箱±x, ±y和±z方向, 距水泥地面1.5m高度, 各自由跌落2次, 马达应无机械损伤, 电气性能仍符合标准要求。

Along the outer packing box + X, + y and + Z direction, from the cement ground 1.5m height, the free fall 2 times, the motor should have no mechanical damage, electrical performance is still in line with the standard requirements.



### 13. 外形图/ Mechanical Drawing:



|                   |                   |                     |       |
|-------------------|-------------------|---------------------|-------|
| 2021.03.06(REV,0) | 说明书/Specification | 编号/No.: leader-2445 | 10/10 |
|-------------------|-------------------|---------------------|-------|

#### 14. 更改记录/ Revision Records:

|                          |               |                 |                     |
|--------------------------|---------------|-----------------|---------------------|
| CUSTOMER<br>顾客           |               | SPEC NO<br>规格书号 | 编号/No.: leader-2445 |
| PRODUCT<br>MODEL<br>产品型号 | LCM1027A2445F | DATE<br>日期      | 2021.03.06          |

### REVISION RECORDS 修改记录表

| REV NO<br>修改号 | DATE<br>日期 | PAGE<br>页码 | REVISION ITEM<br>修改项目 | REASON<br>更改原因 |
|---------------|------------|------------|-----------------------|----------------|
| REV,0         | 2021.03.06 | /          | 产品发布                  |                |
|               |            |            |                       |                |
|               |            |            |                       |                |
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