

产品规格说明书

PRODUCT SPECIFICATION

| | | |
|-----------------|-------------------------------------|---------------|
| FILLED BY BUYER | 客户名称 Buyer Name | 德方电子 (Denovo) |
| | 客户料号 Buyer Part No. | |
| | 客户承认签章 Buyer Approved Signatures | |

| | | | |
|------------------|---------------------------------|-------------------------------------|-------------------|
| FILLED BY LEADER | 文件编号 Spec No. | Leader-3327 | |
| | 品名 Part Name | 扁平振动马达 Coin Type Vibration Motor | |
| | 型号 Model No. | LCM1027A3327F | |
| | 样品承认日期 Date Samples Approved | | |
| | 作成 Designed by | 检讨 Checked by | 承认 Approved by |
| | 张婷婷 2022.08.03 | 张冠军 2022.08.03 | 王运东 2022.08.03 |

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规格书内容

Contents of Specifications

| | |
|---|-------|
| 1. 适用范围/ Applicable Scope | 1/10 |
| 2. 使用条件/ Operating Conditions | 1/10 |
| 3. 测试条件/ Test Conditions | 1/10 |
| 4. 初期电气性能/ Initial Electrical Characteristics | 1/10 |
| 5. 机械性能/ Mechanical Characteristics | 2/10 |
| 6. 耐久性能/ Reliability Characteristics | 3/10 |
| 7. 标准测量方法/ Standard Measuring Method | 5/10 |
| 8. 测量方法及回路图/ Measuring Method & Circuit Map | 5/10 |
| 9. 使用注意事项/ Cautions in Use | 6/10 |
| 10. 特性曲线图/ Characteristics Graph | 6/10 |
| 11. 环境管理物质/ Environmental Management Materials: | 7/10 |
| 12. 包装/ Packaging | 8/10 |
| 13. 外形图/ Mechanical Drawing | 9/10 |
| 14. 更改记录/ Revision Records | 10/10 |

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

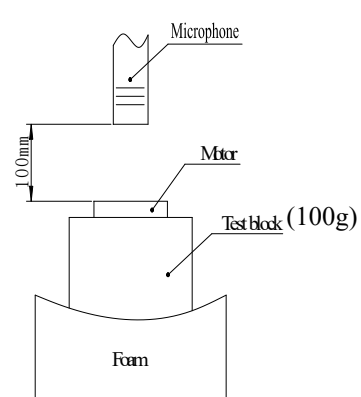
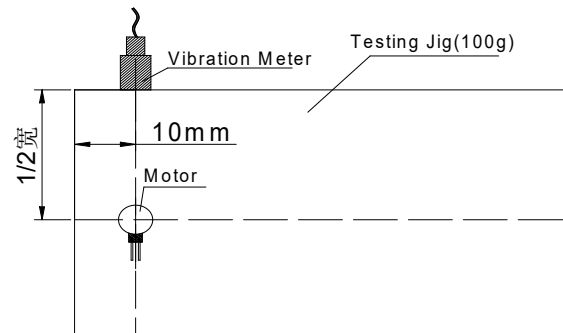
3. 测定条件/ Testing Conditions

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

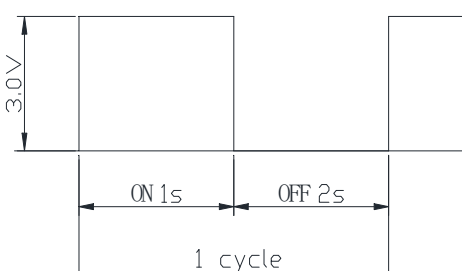
4. 初期电气性能/ Initial Electrical Characteristics

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

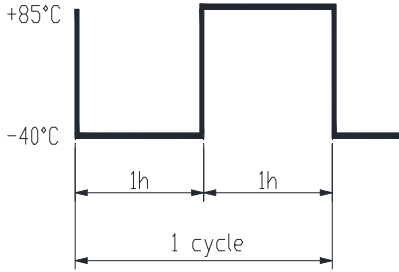
5. 机械性能/ Mechanical Characteristics

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

6. 耐久性能/ Reliability Characteristics

| 项目/Item | 规格/Specification | 判定标准/Judgment |
|---|------------------|--|
| 6-1 | 寿命 Life | <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:指标不低于初始值-30%；不高于初始值+50%</p> <p>2)额定电流:指标在初始值±30%以内。</p> <p>3)起动电压:2.3V DC Max直流电压。</p> <p>After 4h exposure in the ordinary temperature and humidity,the motor's performance should accord with below requirements:</p> <p>1)Rated speed:Data-30% Initial Min, Data+50% Initial Max.</p> <p>2)Rated current:Data ± 30% Max.</p> <p>3)Starting voltage: 2.3V DC Max</p> |
|  <p>试验循环 /Test cycle: 86400 cycles</p> | | |

| 项目/Item | | 规格/Specification | 判定标准/Judgment |
|---------|----------------------------------|--|---------------|
| 6-2 | 低温放置 Low Temperature Exposure | 温度 /Temperature: $-20 \pm 2^{\circ}\text{C}$ 时间 /Time: 96h | |
| 6-3 | 湿度放置 Humidity Exposure | 温度 /Temperature : $+ 40 \pm 2^{\circ}\text{C}$ 湿度 /Humidity: 90 ~ 95%RH 放置时间 / Exposure time : 96h 无水气凝结 /No condensation of moisture | |
| 6-4 | 高温放置 High temp. Exposure | 温度 /Temperature : $+70 \pm 2^{\circ}\text{C}$ 时间 /Time : 96h | |
| 6-5 | 振动 Vibration | 频率 /Frequency: 10~55Hz 加速度 /Acceleration: 22m/s ² 周期 /Period: 10 Minutes log sweep (1.0G), (10~55~10Hz) 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 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。 Test state: Set the motor to a block of an approx. 100g weight (including the motor) and drop it onto the concrete floor. Height: 1.5m Direction : $\pm x, \pm y, \pm z$ Number of times: 3 times each direction Shock: 29420m/s ² equivalent to 3000G. | |
| | | | |

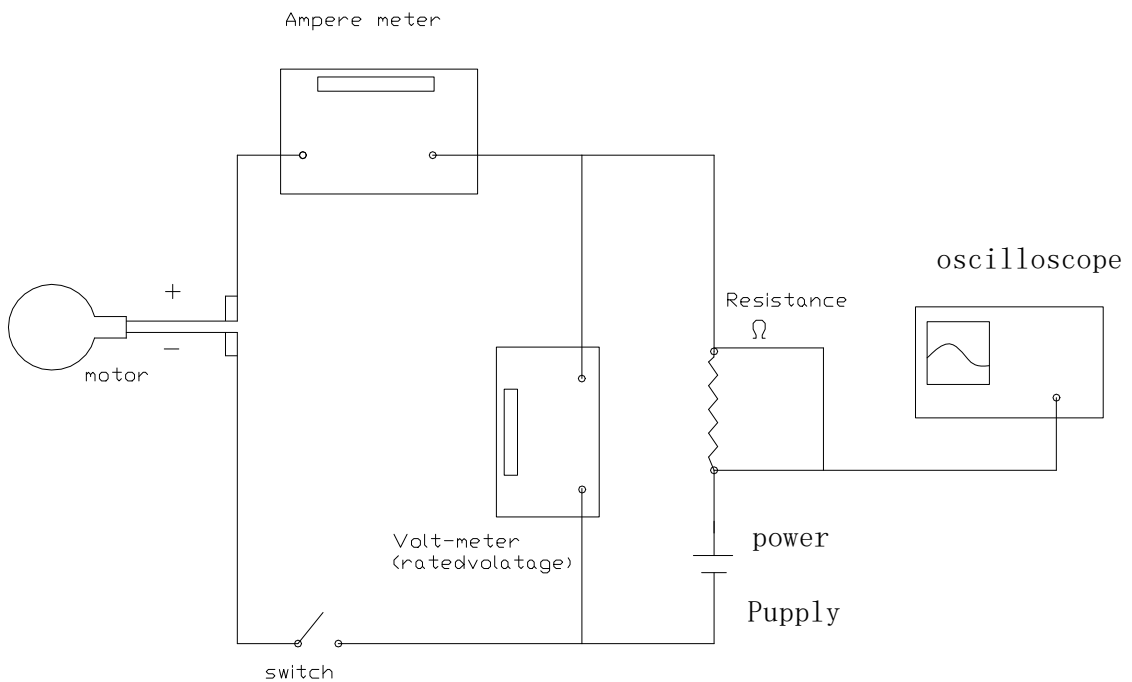
| 项目/Item | | 规格/Specification | 判定基准 / Requirements |
|---------|--------------------------|--|---|
| 6-7 | 滚筒试验 Barrel roll test | 滚筒高度: 1.0M 滚筒次数: 300次. 滚筒速率: 13±1次/分钟 Height: 1.0M Times: 300 times. Speed: 13±1 times/Minute | 在常温常湿下放置4h后, 电机性能应符合以下要求。 1)额定转速:指标在初始值±30%以内。 2)额定电流:指标在初始值±30%以内。 3)起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

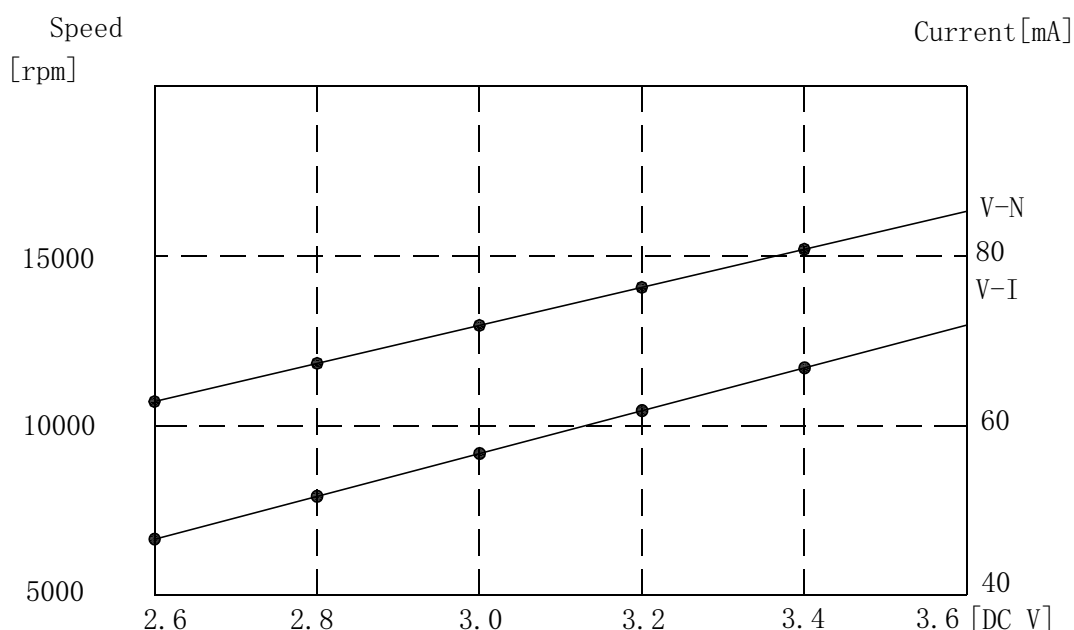
9-3 注意处理马达的工作环境, 避免含铁质物体被马达吸住, 否则马达将会产生噪声, 性能会降低, 从而减少产品可靠性。/ Keep clean the working environments to avoid the objects such as iron powder etc are attracted by the magnet. Otherwise, it would cause noise, function deterioration and lower reliability.

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: $\leq 100\text{PPM}$

* 铅及其化合物最大允许含量为1000PPM

Lead and Compound: $\leq 1000\text{PPM}$

* 汞及其化合物最大允许含量为1000PPM

Hydrargyrum and Compound: $\leq 1000\text{PPM}$

* 六价铬及其化合物最大允许含量为1000PPM

+6 Chromium and Compound: $\leq 1000\text{PPM}$

* 多溴联苯及其化合物最大允许含量为1000PPM

PBB and Compound: $\leq 1000\text{PPM}$

* 多溴二苯醚及其化合物最大允许含量为1000PPM

PBDE and Compound: $\leq 1000\text{PPM}$

* 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.

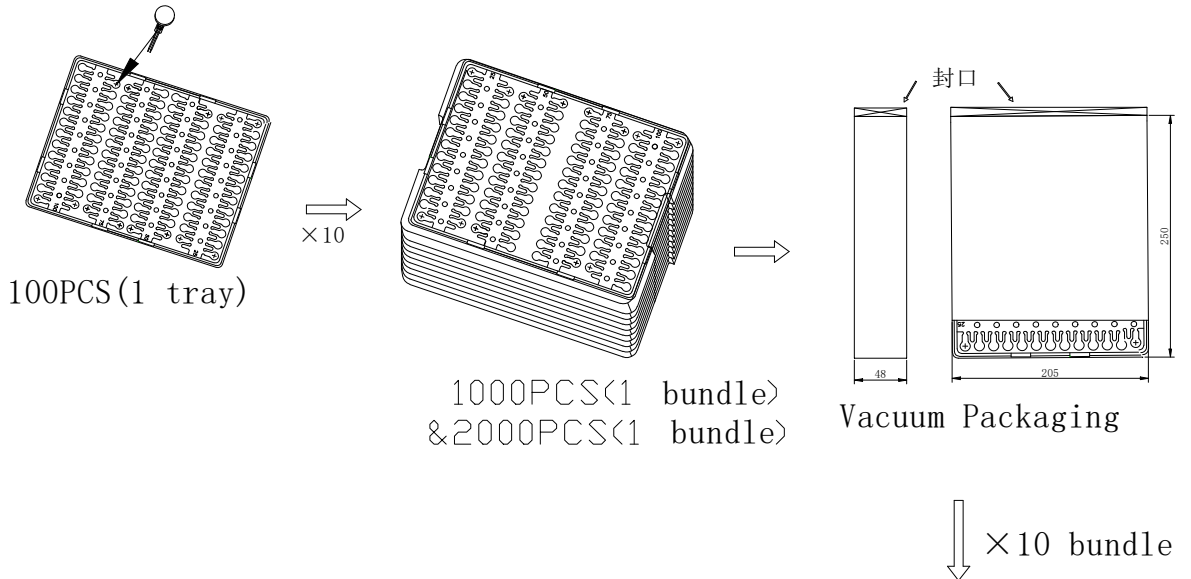
* 溴卤素最大允许含量为900PPM

The allowed content of Br is 900PPM Max.

12. 包装/ Packaging:

振动马达包装

Pack drawing of Vibrator Motor



包装尺寸/Packaging Size:

10000PCS/CARTON:

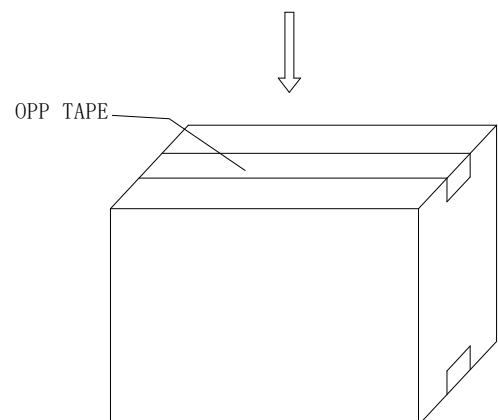
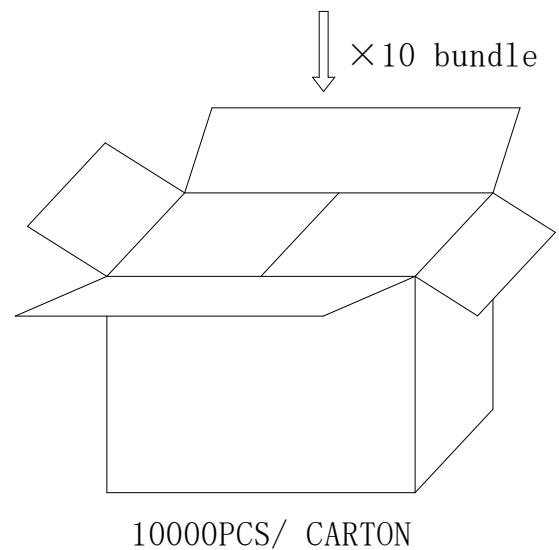
CARTON SIZE: 430mm*270mm*220mm

包装试验要求:

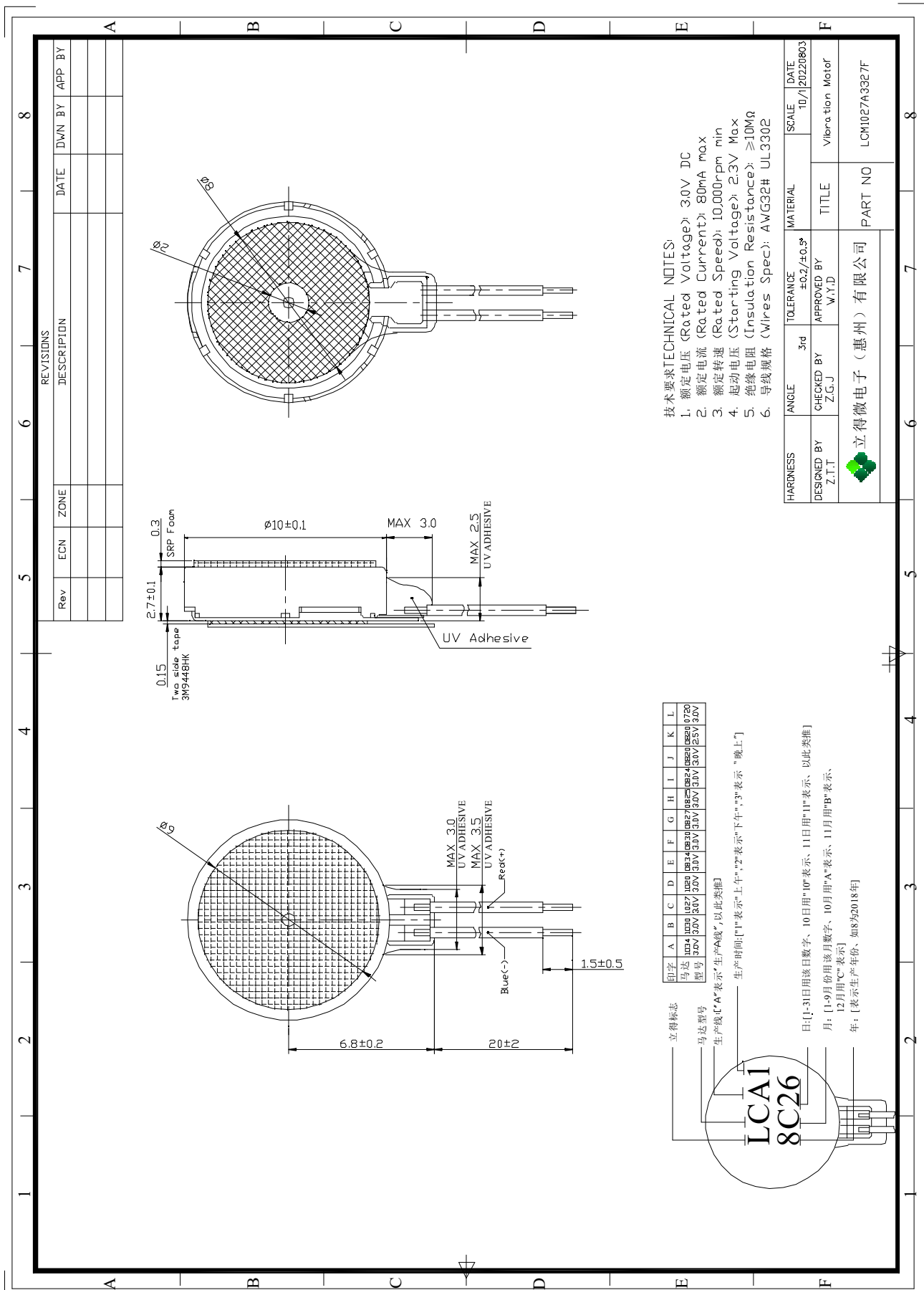
Packaging test requirements:

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:



| HARDNESS | ANGLE | 3rd | TOLERANCE | MATERIAL | SCALE | DATE |
|---------------|------------|-------------|---------------------------|---------------|-----------|------|
| | | | $\pm 0.2/\pm 0.5^{\circ}$ | | 10/7/2022 | 0803 |
| DESIGNED BY | CHECKED BY | APPROVED BY | TITLE | | | |
| Z.T.T | Z.G.J | W.Y.D | Vibration Motor | | | |
| 立得微电子(惠州)有限公司 | | | PART NO | LCM1027A3327F | | |

技术要求TECHNICAL NOTES:
 1. 额定电压 (Rated Voltage): 30V DC
 2. 额定电流 (Rated Current): 80mA max
 3. 额定转速 (Rated Speed): 10,000rpm min
 4. 启动电压 (Starting Voltage) $\geq 3V$ Max
 5. 绝缘电阻 (Insulation Resistance): $\geq 10M\Omega$
 6. 导线规格 (Wires Spec): AWG32# UL3302

| 印字 | A | B | C | D | E | F | G | H | I | J | K | L |
|----|------|------|------|------|------|------|------|------|------|------|------|------|
| 马达 | 1027 | 1027 | 1027 | 1027 | 1027 | 1027 | 1027 | 1027 | 1027 | 1027 | 1027 | 1027 |
| 型号 | 30V | 30V | 30V | 30V | 30V | 30V | 30V | 30V | 30V | 30V | 30V | 30V |

立得标志
 马达型号
 生产标志 "A" 表示 "生产A线", 以此类推
 生产时间: "1" 表示 "上午", "2" 表示 "下午", "3" 表示 "晚上"

LCM1027A3327F
 8C26

日: []-31日用该日数字, 10日用"10"表示, 11日用"11"表示, 以此类推]
 月: []-9月份用该月数字, 10月用"A"表示, 11月用"B"表示, 12月用"C"表示]
 年: []表示生产年份, 如8为2018年

| | | | |
|-------------------|-------------------|---------------------|--|
| 2022.08.03(REV,0) | 说明书/Specification | 编号/No.: leader-3327 | 德方代理 原装正品 975528187877 10/10 www.denovocn.com |
|-------------------|-------------------|---------------------|--|

14. 更改记录/ Revision Records:

| | | | |
|--------------------------|---------------|-----------------|---------------------|
| CUSTOMER 顾客 | | SPEC NO 规格书号 | 编号/No.: leader-3327 |
| PRODUCT MODEL 产品型号 | LCM1027A3327F | DATE 日期 | 2022.08.03 |

REVISION RECORDS 修改记录表

| REV NO 修改号 | DATE 日期 | PAGE 页码 | REVISION ITEM 修改项目 | REASON 更改原因 |
|---------------|------------|------------|-----------------------|----------------|
| REV,0 | 2022.08.03 | / | 产品发布 | |
| | | | | |
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