

# 产品规格说明书

## PRODUCT SPECIFICATION

FILLED BY BUYER	客户名称 Buyer Name	
	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-3017		
	品名 Part Name	扁平振动马达 Coin Type Vibration Motor		
	型号 Model No.	LCM0720A3017F		
	样品提交日期 Date Samples Submitted			
	作成 Designed by	检讨 Checked by	承认 Approved by	
	<i>刘永春</i> 2020.12.29	<i>张冠军</i> 2020.12.29	<i>王运东</i> 2020.12.29	

### 立得微电子（惠州）有限公司

**Leader Micro Electronics (Huizhou) Co., Ltd.**

Tiger Industrial Park, Baigang, Xiaojinkou, Huizhui, Guangdong 516000, China

Tel: +86-752-5853255, Fax: +86-752-5839222, Website: www. leader-cn.cn

生产地址：中国广东省惠州市小金口老虎岭工业园，邮政编码：516000

# 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LCM0720A系列。

This specification applies to Coin Motor DC model LCM0720A 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(counter clockwise)
2-4	使用环境 Operating environment	-20~+60°C, 65±20%RH
2-5	保存环境 Storage environment	-30~+70°C, 65±20%RH

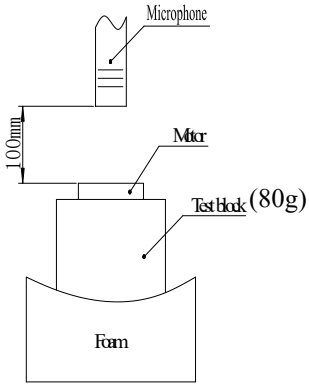
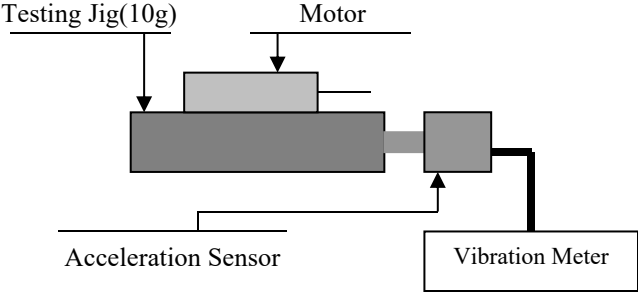
## 3. 测定条件/ Testing Conditions

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

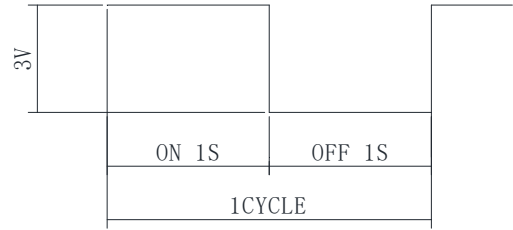
## 4. 初期电气性能/ Initial Electrical Characteristics

项目/Item		规格/Specification	条件/Condition
4-1	额定转速 Rated Speed	13000±3000rpm	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	≤85mA	
4-3	起动电流 Starting Current	≤120mA	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	≤2.5V DC	
4-5	绝缘电阻 Insulation Resistance	≥10MΩ	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	35Ω±15% (单相) 70Ω±15% (串联)	在25°C下 At 25°C

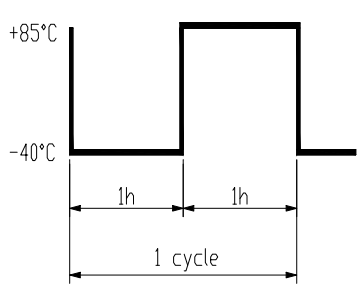
## 5. 机械性能/ Mechanical Characteristics

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	<p>小于50分贝. A计权 ≤50dB (A)</p> <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100mm</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 100mm.</p> 
5-3	Vibration Test 振动测定	<p>0.8G (AVG)</p> 

## 6. 耐久性能/ Reliability Characteristics

项目/Item	规格/Specification	判定标准/Judgment
6-1 寿命 Life	 <p>试验循环 /Test cycle: 50,000 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:2.5V 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: 2.5V DC Max</li> </ol>

项目/Item		规格/Specification	判定标准/Judgment
6-2	低温放置 Low Temperature Exposure	温度 /Temperature: $-40 \pm 2^{\circ}\text{C}$ 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。 2)额定电流:指标在初始值<math>\pm 30\%</math>以内。 3)起动电压:2.5V 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. 2)Rated current: within <math>\pm 30\%</math> of initial value. 3)Starting voltage: 2.5V DC Max</p>
6-3	高温放置 High Temperature Exposure	温度 /Temperature: $+ 80 \pm 2^{\circ}\text{C}$ 时间 /Time: 96h	
6-4	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	
6-5	振动 Vibration	频率 /Frequency: 10~55Hz 加速度 /Acceleration: 22m/s <sup>2</sup> 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.	<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。 2)额定电流:指标在初始值<math>\pm 30\%</math>以内。 3)起动电压:2.5V 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. 2)Rated current: within <math>\pm 30\%</math> of initial value. 3)Starting voltage: 2.5V DC Max</p>
6-6	自然跌落 Free fall	试验状态: 将马达固定在约50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: 1.2m Direction : $\pm x, \pm y, \pm z$ Number of times: 3 times each direction Shock: 29420m/s <sup>2</sup> equivalent to 3000G.	<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。 2)额定电流:指标在初始值<math>\pm 30\%</math>以内。 3)起动电压:2.5V 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. 2)Rated current: within <math>\pm 30\%</math> of initial value. 3)Starting voltage: 2.5V DC Max</p>

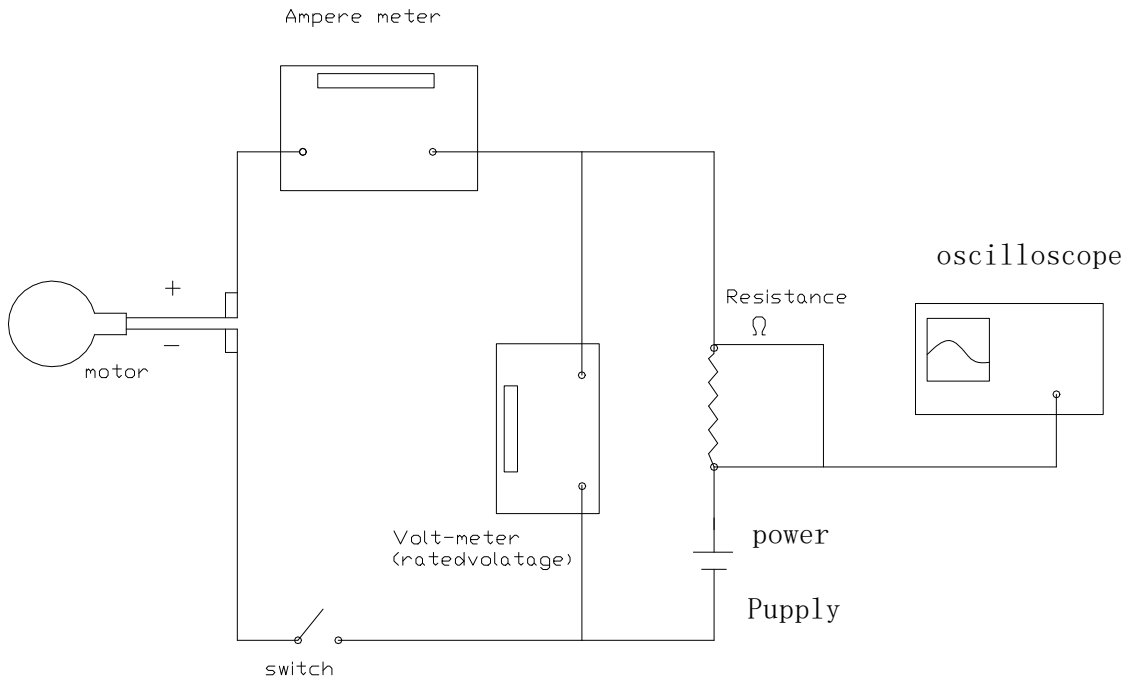
项目/Item		规格/Specification	判定基准 / Requirements
6-7	滚筒试验 Barrel roll test	滚筒高度: 1.0M 滚筒次数: 300次. 滚筒速率: 13±1次/分钟  Height: 1.0M Times: 300 times. Speed: 13±1 times/Minute	在常温常湿下放置4h后, 电机性能应符合以下要求。 1)额定转速:指标在初始值±30%以内。 2)额定电流:指标在初始值±30%以内。 3)起动电压:2.5V DC Max. After 4h exposure in the ordinary temperature 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: 2.5V DC Max
6-8	热冲击 Heat stock test	试验循环 /Test cycle: 15 cycles  	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:2.5V 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: 2.5V 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.

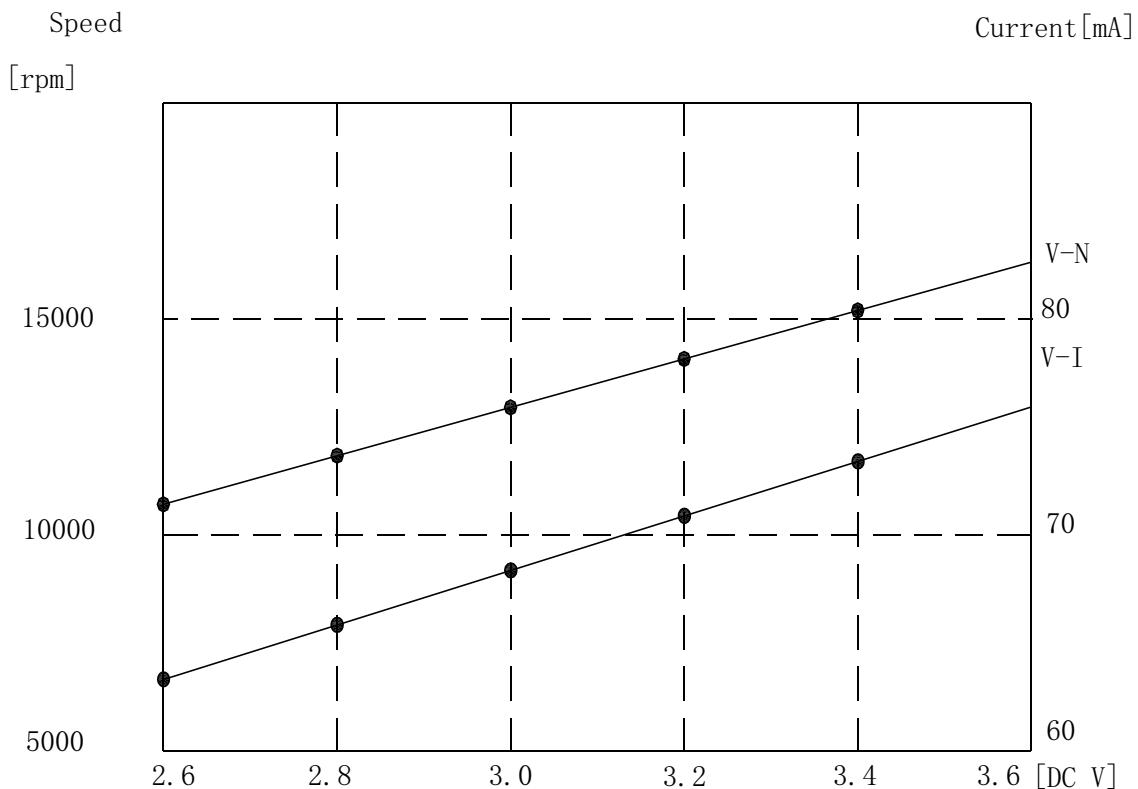
9-3 注意处理马达的工作环境, 避免含铁质物体被马达吸住, 否则马达将会产生噪声, 性能会降低, 从而减少产品可靠性。/ Keep clean the working environments to avoid the objects such as iron powder etc are attracted by the magnet. Otherwise, it would cause noise, function deterioration and lower reliability.

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.

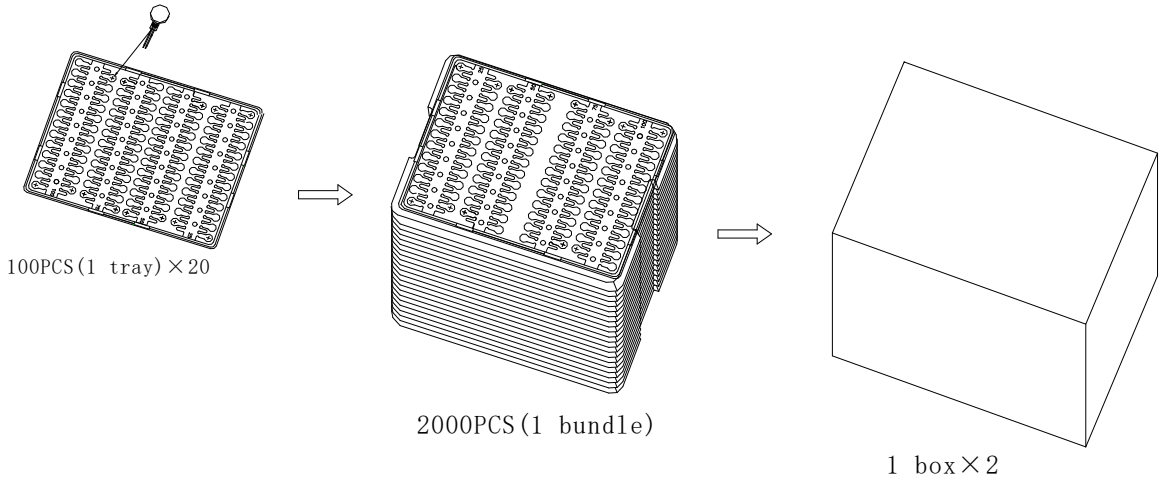
11.2 本品所含有以下物质是RoHS指令豁免项

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

序号 NO.	品名 Part Name	材质 Material	含有材质 Harzadaous Substance	允许容量 Limited Content	部品重量 Weight of Part
#1	含油轴承 Oiled Bearing	铜合金 Copper Alloy	铅 Pb	$\leq 4\%$	$\approx 0.03\text{g}$

## 12. 包装/ Packaging:

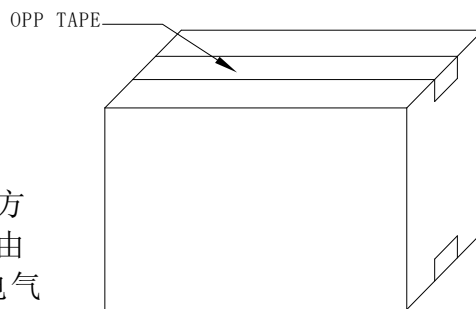
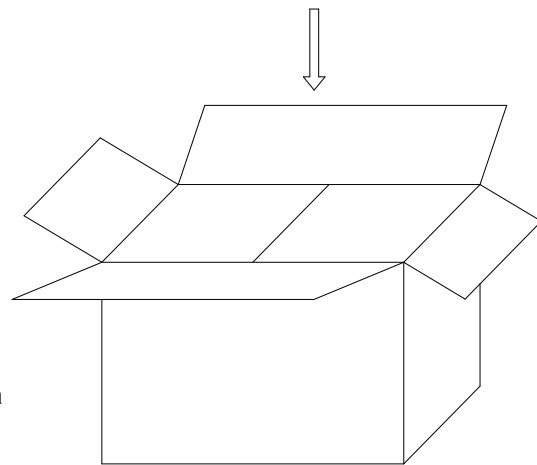
扁平系列马达包装  
Pack drawing of coin type



## Remarks:

4000PCS/CTN: 46cm × 28.5cm × 16cm

8000PCS/CTN: 46cm × 28.5cm × 30.5cm

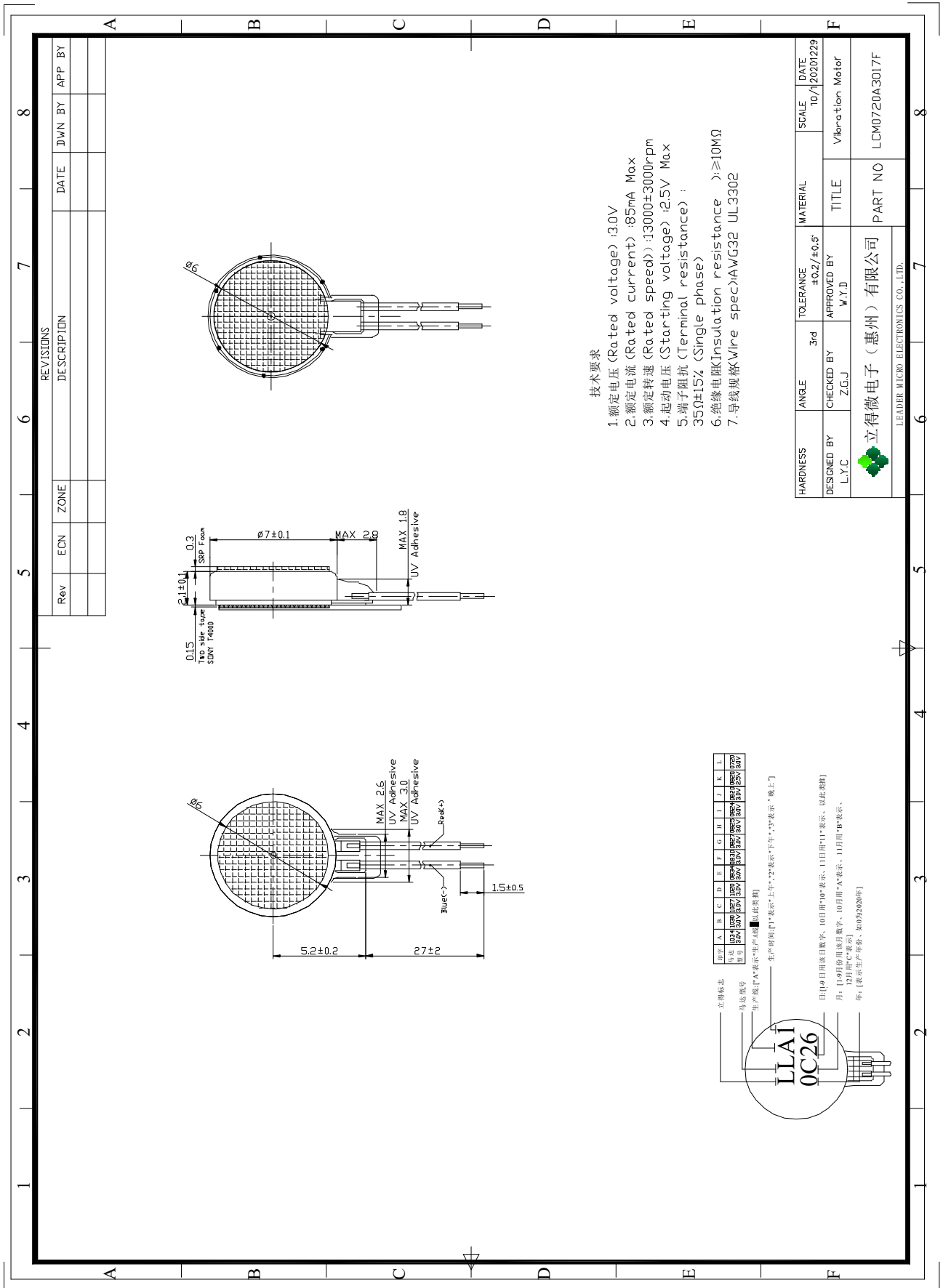


## 包装试验要求:

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。

立得微电子(惠州)有限公司  
技术开发部

13. 外形图/ Mechanical Drawing:



**14. 更改记录/ Revision Records:**

CUSTOMER 顾客		SPEC NO 规格书号	编号/No.: leader-3017
PRODUCT MODEL 产品型号	LCM0720A3017F	DATE 日期	2020.12.29

**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	2020.12.29	/	产品发布	

单击下面可查看定价，库存，交付和生命周期等信息

[>>Leader\(立得\)](#)