

# 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-3733	
	品名 Part Name	无刷振动马达 BLDC Vibrator Motor	
	型号 Model No.	LBM0525A3733F	
	样品承认日期 Date Samples Approved		
	作成 Designed by	检讨 Checked by	承认 Approved by
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# 规格书内容

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## 1. 适用范围/ Applicable Scope

本说明书适用于无刷振动电机LBM0525A系列.

This specification applies to BLDC Vibrator Motor LBM0525A 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	2.7~3.8V DC
2-3 旋转方向 Rotation	CW(clockwise) Lead Wire Red(+), Blue(-)连接基准 Based on connecting lead wire Red(+), Blue(-)
2-4 使用环境 Operating Environment	-20~+60°C, 10~90%RH
2-5 保存环境 Storage Environment	-30~+70°C, 10~90%RH

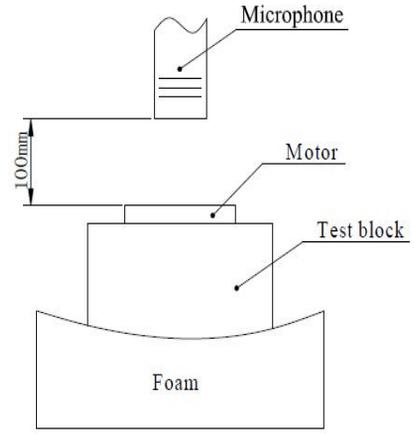
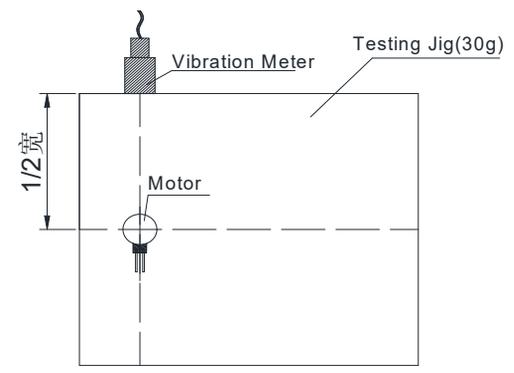
## 3. 测定条件/ Testing Conditions

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

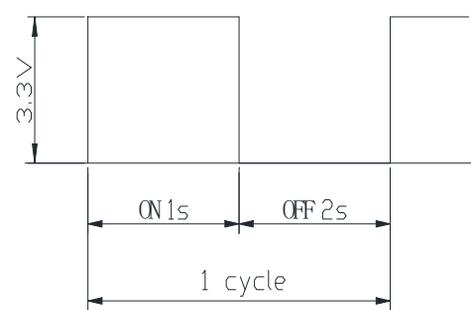
## 4. 初期电气性能/ Initial Electrical Characteristics

项目/Item	规格/Specification	条件/Condition
4-1 额定转速 Rated Speed	12000 rpm 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	90 mA Max	
4-3 起动电流 Starting Current	175mA Max	起动时所需的最小电压, (开/关 模式) Minimum voltage for starting(ON/OFF Test)
4-4 起动电压 Starting Voltage	2.7V DC Min	
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.

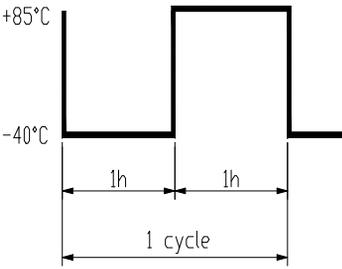
## 5. 机械性能/ Mechanical Characteristics

项目/Item		规格/Specification
5-1	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100mm 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>	
5-2	Vibration Test 振动测定	0.35G Min (PEAK)
		

## 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: 500,000 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+40%</li> <li>2)额定电流:指标在初始值±30%以内。</li> <li>3)起动电压:2.7V DC Min直流电压。</li> </ol> <p>After being left at normal temperature and humidity for 4 hours, the motor performance should meet the following requirements:</p> <ol style="list-style-type: none"> <li>1) Rated speed: should not be lower than 30% below the initial value; not higher than 40% above the initial value.</li> <li>2) Rated current: should be within ±30% of the initial value.</li> <li>3) Starting voltage: minimum 2.7V DC.</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: $-30 \pm 2^{\circ}\text{C}$ 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:2.7V DC Min.</p> <p>After being placed at normal temperature and humidity for 4 hours, the motor performance should meet the following requirements:</p> <p>1) Rated speed: The value should be within <math>\pm 30\%</math> of the initial value. 2) Rated current: The value should be within <math>\pm 30\%</math> of the initial value. 3) Starting voltage: 2.7V DC Min.</p>
6-3	高温放置 High Temperature Exposure	温度 /Temperature: $+70 \pm 2^{\circ}\text{C}$ 时间 /Time: 96h	
6-4	湿度放置 Humidity Exposure	温度 /Temperature : $+55 \pm 2^{\circ}\text{C}$ 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.	
6-6	自然跌落 Free Fall	试验状态: 将马达固定在约60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. 60g 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	

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: $13 \pm 1$ 次/分钟 滚筒治具: 包括马达60g  Height: 1.0M Times: 300 times. Speed: $13 \pm 1$ times/Minute Drum fixture: including motor 60g	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 $\pm 30\%$ 以内。 2)额定电流:指标在初始值 $\pm 30\%$ 以内。 3)起动电压:2.7V DC Min. After being placed at normal temperature and humidity for 4 hours, the motor performance should meet the following requirements: 1) Rated speed: The value should be within $\pm 30\%$ of the initial value. 2) Rated current: The value should be within $\pm 30\%$ of the initial value. 3) Starting voltage: 2.7V DC Min.
6-8	热冲击 Heat Stock Test	 试验循环 /Test cycle:50cycles	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 $\pm 30\%$ 以内。 2)额定电流:指标在初始值 $\pm 30\%$ 以内。 3)起动电压:2.7V DC Min. After being placed at normal temperature and humidity for 4 hours, the motor performance should meet the following requirements: 1) Rated speed: The value should be within $\pm 30\%$ of the initial value. 2) Rated current: The value should be within $\pm 30\%$ of the initial value. 3) Starting voltage: 2.7V DC Min.

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



振动量测试仪  
Vibration Meter

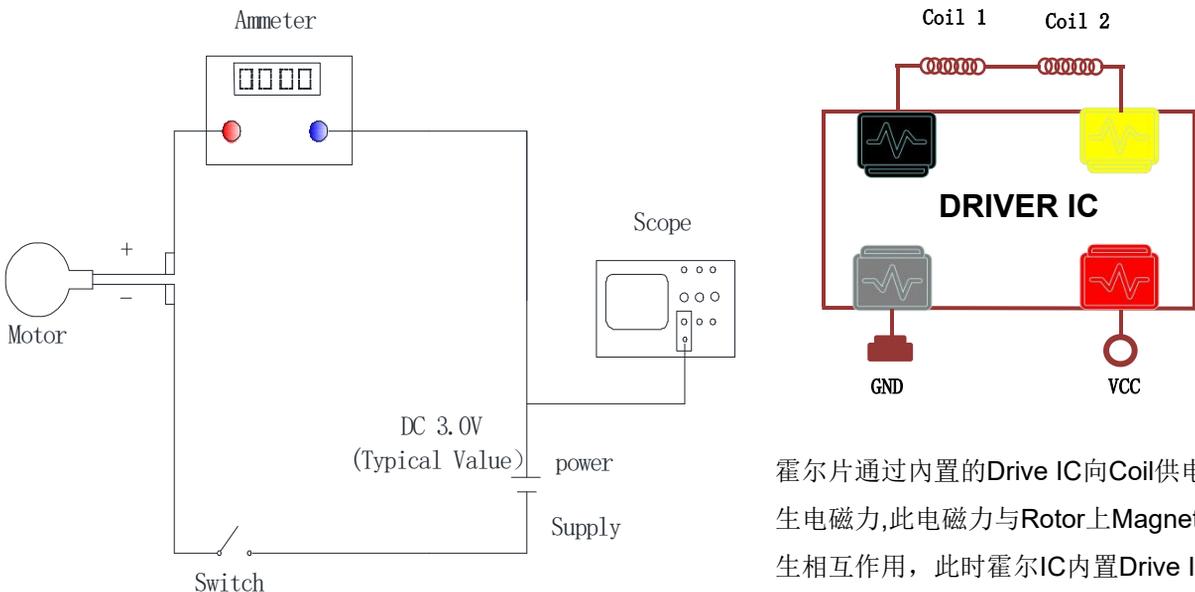
马达安放装置  
Test Jig (for  
clamping  
the motor in place)

马达综合测试仪  
Multi-functional  
Test Meter

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



霍尔片通过内置的Drive IC向Coil供电,Coil产生电磁力,此电磁力与Rotor上Magnet的磁力产生相互作用,此时霍尔片内置Drive IC感应到Magnet极性,从而间断向Coil供应电流使转子连续转动。

## 9. 使用时注意事项/ Caution in Use

### 9-1.重要技术声明 (Important Technical Statement: ) :

马达供电要求: 本产品马达启动瞬间峰值电流可达175mA, 为确保马达正常启动和稳定运行, 请客户主板设计时必须保证为马达供电线路, 提供不低于175mA的瞬时电流以及最低有效电压DC2.7V的供给能力; 如因供电电流不足导致马达启动失败、运行异常或产品损坏, 本公司不承担相关责任。

Motor Power Supply Requirements: The peak current at motor startup for this product can reach 175mA. To ensure normal motor startup and stable operation, the customer's motherboard design must guarantee that the motor power supply line can provide an instantaneous current of no less than 175mA and a minimum effective voltage of DC 2.7V. The company will not be responsible for any motor startup failure, abnormal operation, or product damage caused by insufficient power supply current.

### 9-2. 与规格不同使用的情况下,性能和寿命会发生问题.希望注意电压使用范围.

You might encounter functional and life problems if you use it different from the standard . Please be careful of the range of use, like voltage etc.

### 9-3. 马达使用时,一定要把图纸上的lead wire (+极)端子连接在供电电源的(+极), (-极) 端子连接在供电电源的(-极)后使用, 否则电机会即刻烧坏。

Motor use, be sure to draw on the lead wire (+ Pole) terminal connected to the power supply (+ Pole) , (- pole) terminal connected to the power supply (- pole) after use, otherwise the MOTOR will burn out

### 9-4. 在有害气体及高温高湿的场所保管对马达造成不良因素所以请注意保管.

Please be careful of that the storage in high temperature and humidity and noxious gas might cause hindrances to motors.

### 9-5. 为保护Drive IC, 请不要施加DC 3.8V以上.

Please do not use above DC 3.8V for preventing Driver IC.

### 9-6. 马达接近磁性物质或接触时会降低马达性能, 因此避免接近强磁场.

Please avoid being near and contacting magnetic materials like magnet which might encounter functional problems.

### 9-7. 能够自我吸附的物质 (铁, 粉末) 及灰尘等与马达混放时会出现转动不良, 异常音等, 会使马达的性能下降及信赖性受影响,因此取用及作业时应注意环境清洁.

If some materials(metal, powder) and dust become mixing condition in the motor it might cause feature declines by occurring rotation faulty and abnormal sound so please be clean the working environment and careful when you deal with the motor.

### 9-8. 因马达结构设计上无法做到密封性, 所以安装固定时请避免在马达周围打胶, 以防胶水渗入马达内部, 同时, 严禁使用瞬干胶, 以免其挥发产生白化现象, 导致马达失效

Due to the motor's structural design, it cannot be fully sealed. Therefore, when installing and securing it, please avoid applying sealant around the motor to prevent glue from seeping inside. Additionally, the use of super glue is strictly prohibited, as its fumes can cause whitening and result in motor failure.

### 9-9. 无法保证满足本式样范围以外使用的情况.

It can't guarantee if the motors are used out of the range of fulfilling this specification.

### 9-10. 本式样书内容的变更及追加是在双方协议下实施.

Any further conditions or change of this APPROVAL REQUEST take effect by mutual consent.

### 9-11. 马达必须在出厂后的六个月内组装到终端设备上. 如马达超过3~6个月未使用, 建议在使用前首先通电激活马达 (供电3~5秒), 以达到最佳振动效果.

The motor must be assembled to the terminal device within six months of shipping date. If the motor is not used for 3 to 6 months, it is recommended to activate the motor with electricity (powered on for 3~5 seconds) before use to achieve the best vibration effect.

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

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

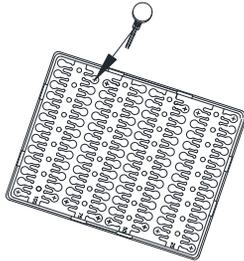
The allowed content of Cl is 900PPM Max.

\* 溴卤素最大允许含量为900PPM

The allowed content of Br is 900PPM Max.

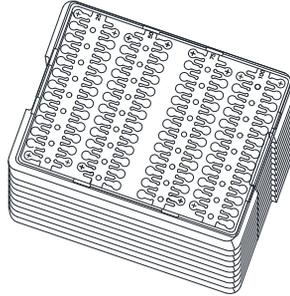
## 11. 包装/ Packaging:

### 无刷系列马达包装 Pack drawing of BLDC type

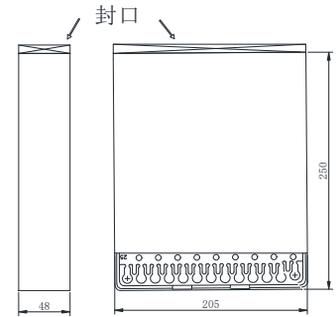


100PCS (1 tray)  
Tray size:  
250mm\*205mm\*10mm

×10



1000PCS (1 bundle)



Vacuum Packaging  
Size: 250mm\*205mm\*65mm

包装尺寸/Packaging Size:

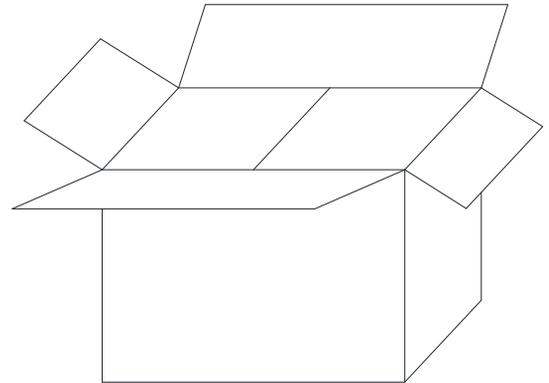
1000PCS:  
VACUUM PACKAGING  
SIZE: 250mm\*205mm\*65mm

4000PCS/CARTON:  
CARTON SIZE: 460mm\*285mm\*165mm  
8000PCS/CARTON:  
CARTON SIZE: 460mm\*285mm\*300mm

包装试验要求:

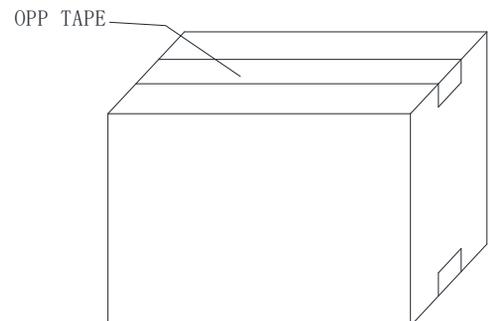
Packaging test requirements:  
沿外包装箱±x, ±y和±z方向, 距水泥地面1.5m高度, 各自由跌落2次, 马达应无机械损伤, 电气性能仍符合标准要求。  
Along the outer packing box + X, + y and + Z direction, from the cement ground 1.5m height, the free fall 2 times, the motor should have no mechanical damage, electrical performance is still in line with the standard requirements.

↓ ×4 bundle

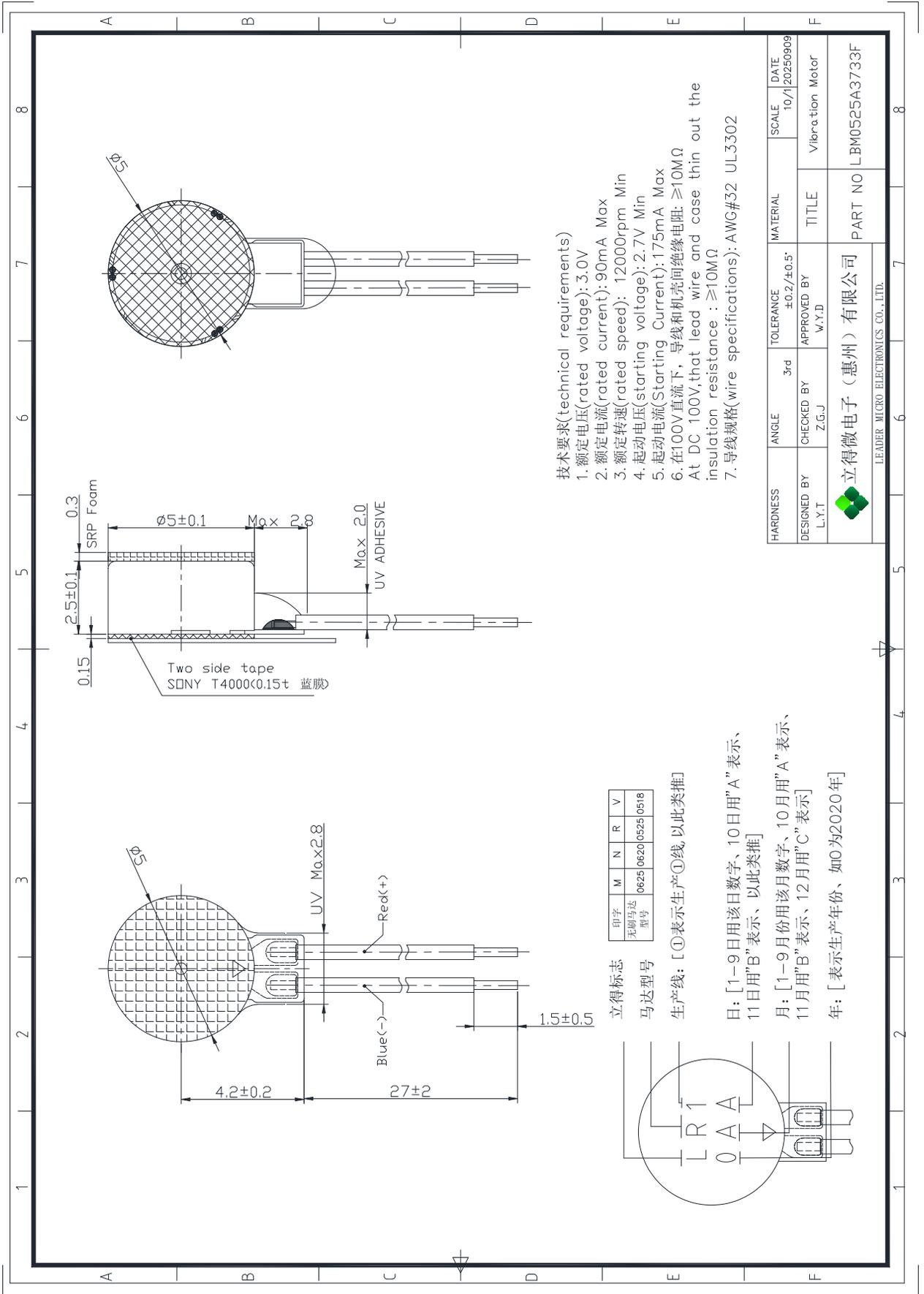


4000PCS/ CARTON

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12. 外形图/ Mechanical Drawing:



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### 13. 更改记录/ Revision Records:

CUSTOMER 顾客		SPEC NO 规格书号	编号/No.: leader-3733
PRODUCT MODEL 产品型号	LBM0525A3733F	DATE 日期	2025.12.30

### 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	2024.01.25	/	产品发布	
REV,1	2025.09.09	ALL	范式更新	
REV,2	2025.12.30	6/10	增加马达使用条件声明	