



重庆市灵龙电子有限公司

CHONGQING LINGLONG ELECTRONIC CO., LTD.

承 认 书

SPECIFICATION FOR APPROVAL

客 户Customer:

项目名称Project:


规格型号Part No:

C0827L-066330026-1001

| 客 户 确 认/ Customer Approved | |
|----------------------------|-----------------|
| 料 号/ Part No. | 签 章/ Signatures |
| | |

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|-------------|-------------|
| 存货编码/Stock | 30108010080 |
| 拟制/Drawn | 陈君 |
| 审核/Check | 秦代伟 |
| 批准/Approved | 章启策 |


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|  | 产品规格书/specification | No | LL-3-J-25321 |
| | | 版本Revision | B. 2 |
| | 存货编码/Stock code.: 30108010080 | 页码Page | 1 of 10 |
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制/修订履历
Revision History

| 日期Date | 版本Revision | 制/修订内容Revision contents | 页码Page | 制/修订人 Revisor |
|----------|------------|-------------------------|--------|---------------|
| 12-7-12 | A. 1 | 新制订 | 10 | 许雪梅 |
| 2013-3-5 | A. 2 | 新增建议高度尺寸 | 第7页 | 魏友平 |
| 2015-6-5 | A. 3 | 更改旋转方向 | 2 | 陈君 |
| 16-4-27 | A. 4 | 寿命更改为96小时 | 4 | 陈君 |
| 16-6-30 | A. 5 | 增加喷码、批号说明 | 7、8 | 陈君 |
| 16-11-30 | B. 1 | 振动量更改为0.8G Min | 3 | 陈君 |
| 17-1-10 | B. 2 | 额定电流更改为85 mA Max | 3 | 陈君 |
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1. 适用范围/General

本规格书适用于重庆灵龙电子有限公司所提供的产品: C0827L-066330026-1001

The specification is applicable to lnlon's part: C0827L-066330026-1001

2. 使用条件/Operating condition

| No | 项目/Item | 规格/Specification |
|-----|-------------------------------|--|
| 2-1 | 额定电压 Rated voltage | 3.0 V DC |
| 2-2 | 使用电压范围 Operating voltage | 2.7~3.3V DC |
| 2-3 | 旋转方向 Rotatio no rientation | CW(clockwise) |
| 2-4 | 马达位置 Motor position | 全方位 All positions |
| 2-5 | 使用环境 Operating environment | -20~60°C, 10~90% (RH) 无水气凝结 No coagulation of moisture |
| 2-6 | 保存环境 Storage environment | -30~70°C, 10~90% (RH) 无水气凝结 No coagulation of moisture |


3. 测量条件/Measuring condition

一般情况下, 马达可以在5~35°C, 相对湿度45~85% (RH) 的环境中测试。为了保证一致性, 测试应在下表规定内进行Normally, it should be tested under 5~35°C, 45~85% (RH) .To ensure the coherence, it must be tested according to the below chart.

| No | 项目/Item | 规格/Specification |
|-----|----------------------|-------------------------------|
| 3-1 | 温度 Temperature | 25±3°C |
| 3-2 | 湿度 Humidity | (63%~67%) RH |
| 3-3 | 位置 Motor position | 马达水平放置/lay motor horizontally |

4. 机械要求/Mechanical specification

| No | 项目/Item | 规格/Specification | 测定条件/备注 Measuring condicions/Remark |
|-----|------------------|---|---|
| 4-1 | 外观 Appearance | 不应有明显的机械损伤、锈蚀等现象 No evidence of machanical damage, rust corrsion, and so on. | 目视检查 Visual examination |
| 4-2 | 尺寸 Dimensions | 见外形图 As specified in outline drawing | 使用游标卡尺或千分尺测量 Test with vernier caliper or micrometer |

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| No | 项目/Item | 规格/Specification | 测定条件/备注 Measuring condicions/Remark |
|-----|--------------------------------------|------------------|--|
| 4-3 | 引线抗拉强度Anti-pulling strength of cable | 5N(0.5kgf)Min | 破坏性测试, 对导线沿着轴向施加拉力 Devastating test, pulling force to the cable along the horizontal shaft. |

5. 性能特征/Performance and characteristics

| No | 项目/Item | 规格/Specification | 测定条件/备注 Measuring condicions/Remark |
|-----|-------------------------------|-----------------------|---|
| 5-1 | 额定转速 Rated speed | 10000 rpm Min | 在额定电压和额定负载下。 At rated voltage and rated load . |
| 5-2 | 额定电流 Rated current | 85 mA Max | |
| 5-3 | 启动电压 Starting voltage | 2.3V DC Max | 在额定负载下转子的任意位置。 At rated load any position of rotor. |
| 5-4 | 端子阻抗 Terminal resistance | 相接触 Phase contact | 28 Ω ±15% |
| | | 相串联 Phase senrial | 56 Ω ±15% |
| | | 相并联 Phase parallel | 15 Ω ±15% |
| 5-5 | 绝缘电阻 Insulation resistance | 10M Ω Min | 在100V 直流电压下, 导线和机壳间进行测量 Test between lead wire and case at DC 100V |
| 5-6 | 振动量 Vibration quantity | 0.8G Min | 见下图 See beow |

额定电压下, 电机固定在90*50*8的铝制板夹具(约100g)的左边, 夹具垂直悬空或放在海棉垫上. 将加速度感应器用双面胶粘在电机所对应的夹具的右边 (如图所示). 使用VM-83振动仪, 参数设置如下:

加速度(m/s²): 30

HPF (HZ): 50

LPF (HZ): 300

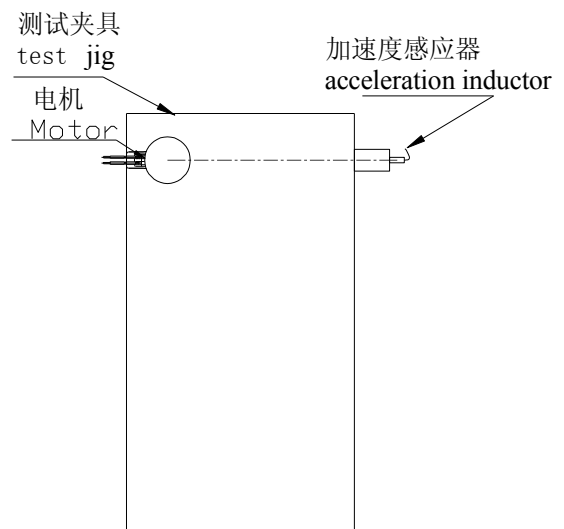
探测方式: RMS


At rated voltage, fasten the motor upto the left of aluminium-board jig (size:90*50*8), which is upright and hanged in the air or upon the sponge. Adhibit the acceleration inductor to the right side of the jig with double-faced tape(as right drawing). Use the apparatus VM-83, the parameter is as below:

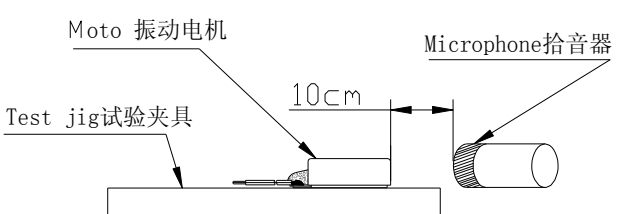
Acceleration(m/s²): 30

HPF (HZ): 50

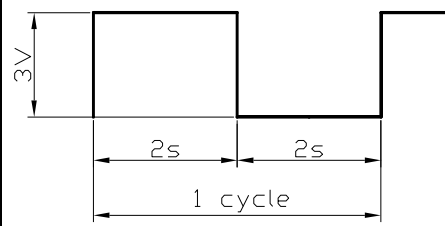
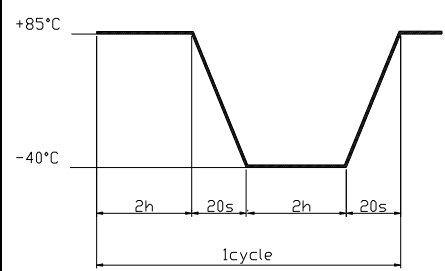
LPF (HZ): 300




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| No | 项目/Item | 规格/Specification | 测定条件/备注 Measuring condicions/Remark |
|--|--------------------------|-----------------------------|--|
| 5-7 | 机械噪音 Mechanical noise | 小于50分贝.A计权 50db(A)Max 50 | 见下图: See below |
| <p>额定电压下, 背景噪声≤ 28 dB(A), 电机轴向水平固定在测试夹具上(100g), 拾音器沿轴向正对电机平面, 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> | | | |
|  <p>Moto 振动电机 Microphone拾音器</p> <p>Test jig试验夹具 10cm</p> | | | |

6. 可靠性/Reliability

| No | 项目/Item | 测试条件/Specification | 判定标准/Judgment |
|-----|---|---|--|
| 6-1 | 寿命 Life |  <p>常温常湿下共循环96小时。 Cycle 96h in the ordinary temperature and humidity.</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"> 1) 额定转速: 指标不低于初始值-30%; 不高于初始值+50% 2) 额定电流: 指标在初始值$\pm 30\%$以内。 3) 起动电压: 2.3V DC Max直流电压。 <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"> 1) Rated speed: Data-30% Initial Min, Data+50% Initial Max. 2) Rated current: Data$\pm 30\%$ Max. 3) Starting voltage: 2.3V DC Max |
| 6-2 | 低温贮存放置 Low temperature storage test | <p>温度Temperature: $-40 \pm 2^\circ\text{C}$</p> <p>时间Time: 96h</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"> 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: 2.3V DC Max直流电压。 <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"> 1) Rated speed: Data$\pm 30\%$ Max 2) Rated current: Data$\pm 30\%$ Max. 3) Starting voltage: 2.3V DC Max |
| 6-3 | 高温贮存放置 High temperature storage test | <p>温度Temperature: $80 \pm 2^\circ\text{C}$</p> <p>时间Time: 96h</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"> 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: 2.3V DC Max直流电压。 <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"> 1) Rated speed: Data$\pm 30\%$ Max 2) Rated current: Data$\pm 30\%$ Max. 3) Starting voltage: 2.3V DC Max |
| 6-4 | 湿度放置 Humidity exposure | <p>温度Temperature: $60 \pm 2^\circ\text{C}$</p> <p>湿度Humidity: 90~95RH</p> <p>放置时间Exposure time: 96h</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"> 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: 2.3V DC Max直流电压。 <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"> 1) Rated speed: Data$\pm 30\%$ Max 2) Rated current: Data$\pm 30\%$ Max. 3) Starting voltage: 2.3V DC Max |
| 6-5 | 热冲击 Heat stock test |  <p>周期Period: 32times</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"> 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: 2.3V DC Max直流电压。 <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"> 1) Rated speed: Data$\pm 30\%$ Max 2) Rated current: Data$\pm 30\%$ Max. 3) Starting voltage: 2.3V DC Max |

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| No | 项目/Item | 测试条件/Specification | 判定标准/Judgment |
|-----|--------------------------|---|--|
| 6-6 | 振动 Vibration | 全振幅Full swing:1.5mm (p-p) 频率Frequency:10 to 55Hz 周期Cycle:20min (10~55~10Hz) 方向Orientation:x、y、z 时间Time:2h | 在常温常湿下放置4h后, 电机性能应符合条款5:性能特征要求。 After 4h exposure in the ordinary temperature and humidity, the motor's performance should accord with item 5:Performance requirements. |
| 6-7 | 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。 高度:1.5m 方向:±x. ±y. ±z 次数:每个方向2次 Test state:Fasten the motor onto a object(100g) and then let it fall down to the ground. Height:1.5m Orientation:±x. ±y. ±z Times:2times per orientation | 在常温常湿下放置4h后, 电机性能应符合条款5:性能特征要求。 After 4h exposure in the ordinary temperature and humidity, the motor's performance should accord with item 5:Performance requirements. |
| 6-8 | 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:300times. Speed:13±1times/M | 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直流电压。 After 4h exposure in the ordinary temperature and humidity, the motor's performance should accord with below requirements: 1) Rated speed:Data±30% Max 2) Rated current:Data±30% Max. 3) Starting voltage: 2.3V DC Max |

7. 环境管理物质/Environmental management materials:

7.1 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 requirements:

* 镉及其化合物最大允许含量为100PPM

Cadmium and Compound:100PPM Max

* 铅及其化合物最大允许含量为1000PPM

Lead and Compound:1000PPM Max

* 汞及其化合物最大允许含量为1000PPM

Hydrargyrum and Compound:1000PPM Max

* 六价铬及其化合物最大允许含量为1000PPM

+6 Chromium and Compound:1000PPM Max

* 多溴联苯及其化合物最大允许含量为1000PPM

PBB and Compound:1000PPM Max



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*多溴二苯醚及其化合物最大允许含量为1000PPM

PBDE and Compound:1000PPM Max

*氯溴两种卤素之和最大允许含量为1500PPM

The allowed content of Cl,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

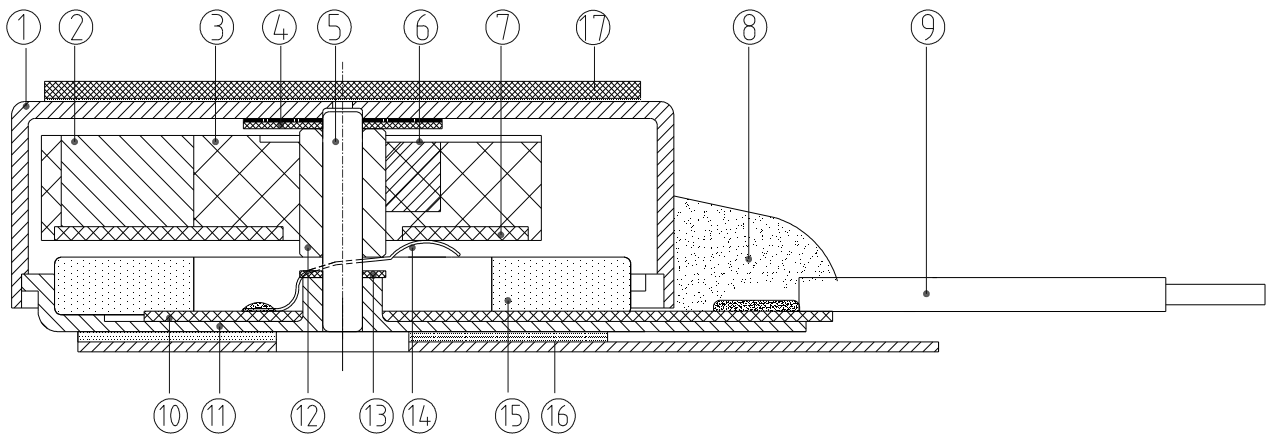
The allowed content of Br is 900PPM Max.

7.2本品含有以下物质,是RoHS指令豁免项

The product contains below materials, which are released from RoHS:

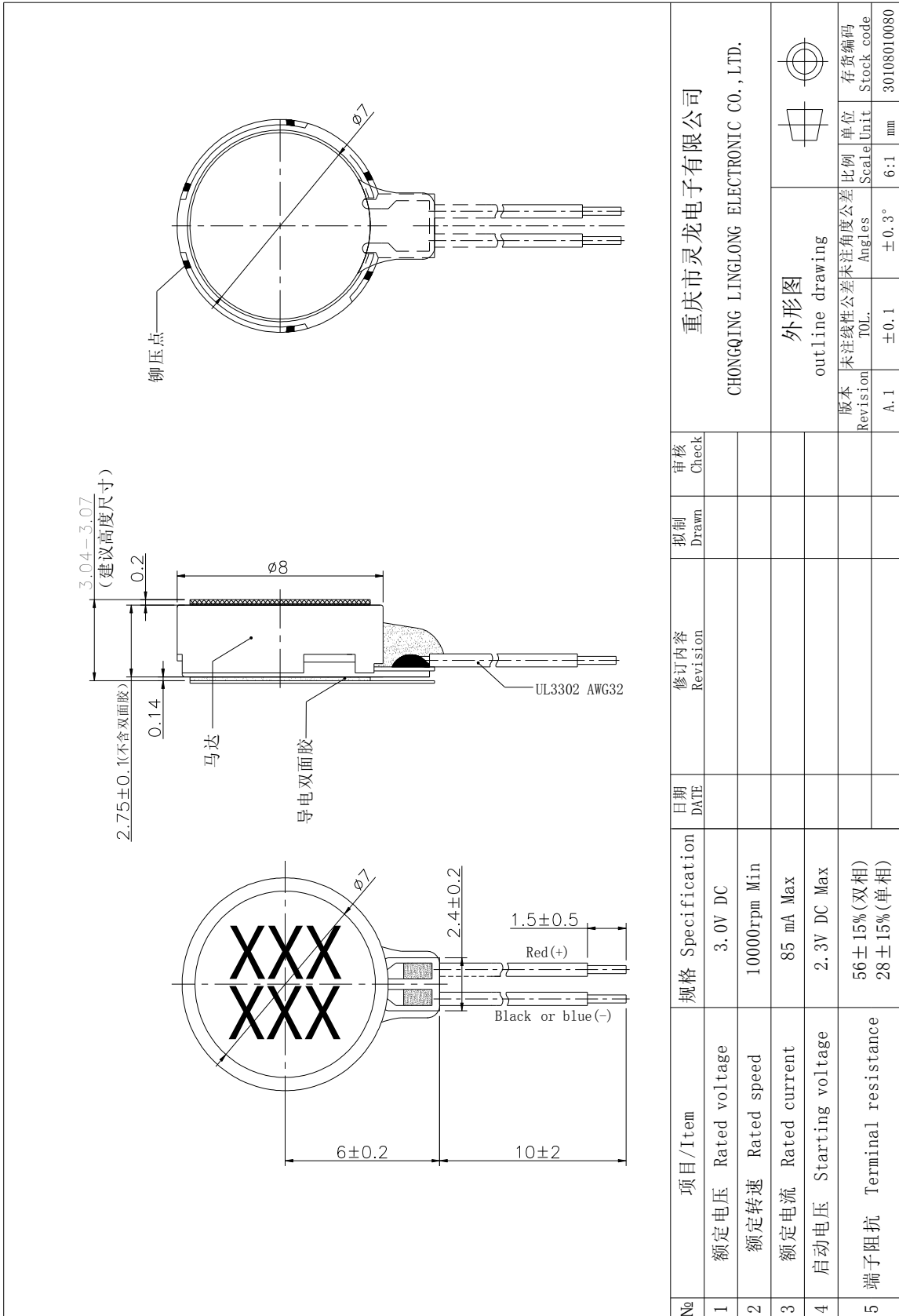
| NO | 品名 Part No. | 材质 Material | 含有物质 Substance included | 最大允许含量 Max content | 部品重量 Parts Weight |
|----|--------------------------|---------------------|-------------------------------|-----------------------|----------------------|
| 1 | 含油轴承 Bearing with Oil | 铜合金 Copper alloy | 铅 Lead | 40000PPM | ≈0.03g |

8. 电机结构图/Motor configuratoin drawing




| NO | 名称/Name | NO | 名称/Name |
|----|------------------------|----|---------------------|
| 1 | 上机壳upper case | 10 | 软PCB板Soft PCB |
| 2 | 振子weight | 11 | 下机壳lower case |
| 3 | 塑料Plastic | 12 | 含油轴承oil bearing |
| 4 | 粘性垫片Adhesive mat patch | 13 | 垫圈Gasket |
| 5 | 轴shaft | 14 | 电刷Brush |
| 6 | 线圈Coil | 15 | 磁钢Alnico |
| 7 | 硬PCB板Hard PCB | 16 | 双面胶Double-face tape |
| 8 | 胶水glue | 17 | 海绵垫foam |
| 9 | 电子线electric wire | | |

9. 电机外形图/Motor outline drawing:



| | | | | | | | | | | | | | |
|--|--------------------------|--------------------------------|----------------|----------------|------------|----------------|-------|-------------|-----|------------|----|--------------------|-------------|
| 重庆市灵龙电子有限公司 CHONGQING LINGLONG ELECTRONIC CO., LTD. | | 外形图 outline drawing | 版本 Revision | 未注线性公差 TOL. | 公差 ±0.1 | 角度公差 Angles | ±0.3° | 比例 Scale | 6:1 | 单位 Unit | mm | 存货编码 Stock code | 30108010080 |
| No | 项目/Item | 规格 Specification | 日期 DATE | 修订内容 Revision | 绘制 Drawn | 审核 Check | | | | | | | |
| 1 | 额定电压 Rated voltage | 3.0V DC | | | | | | | | | | | |
| 2 | 额定转速 Rated speed | 10000rpm Min | | | | | | | | | | | |
| 3 | 额定电流 Rated current | 85 mA Max | | | | | | | | | | | |
| 4 | 启动电压 Starting voltage | 2.3V DC Max | | | | | | | | | | | |
| 5 | 端子阻抗 Terminal resistance | 56 ± 15% (双相) 28 ± 15% (单相) | | | | | | | | | | | |

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11. 包装要求/Packing requirements:

11-1: 每个吸塑盒里放100PCS电机, 包装盒尺寸为248*203*13.5

100pcs/pallet, pallet size:248*203*13.5mm

11-2: 每21个包装盒用胶带捆成一捆, 数量为2000PCS.

21pallets/bundle, Qty:2000pcs

11-3: 每捆装入一个内箱里面, 数量为2000PCS. 内箱尺寸为260*220*170

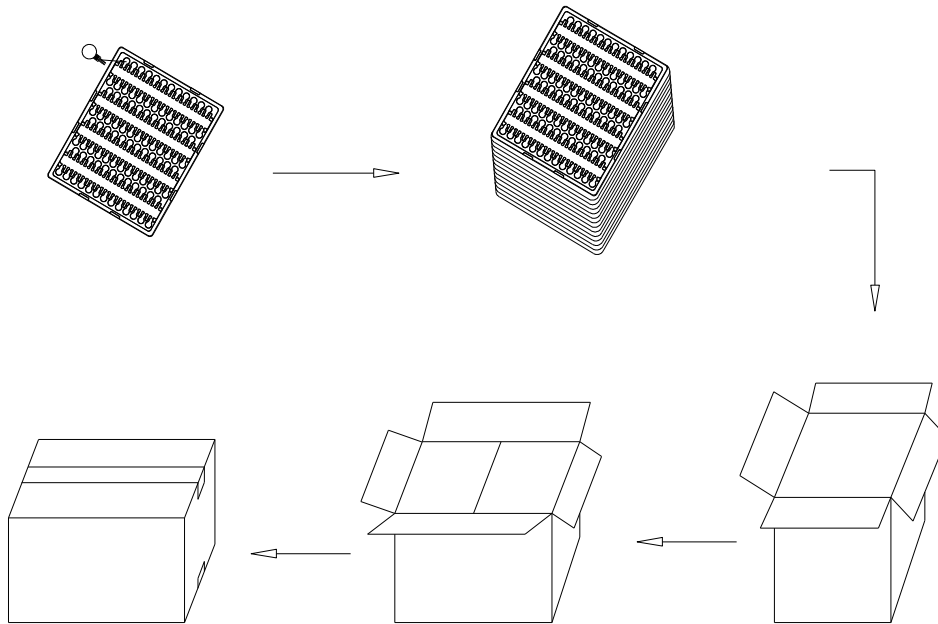
1bundles/inner box, Qty:2000pcs. box size:260*220*170

11-4: 每两个内箱放入一个外箱里, 外箱尺寸为470*275*185

2 inner-box/outer-box, box size:470*275*185 mm

11-5: 外箱封箱, 数量和生 产批次, 均注明在外箱上面.

Seal the outer box and indicate the quantity, Lot No. on it.



11-6 包装试验要求/Packing test requirements:

(1) 标准: 整箱重量 $\leq 9\text{kg}$, 跌落高度设定为75cm; 整箱重量 $> 9\text{kg}$ 但 $\leq 23\text{kg}$, 跌落高度设定为60cm。


Standard: Gross weight $\leq 9\text{kg}$ Fall height is 75cm; Gross 9kg $<$ weight $\leq 23\text{kg}$ Fall height is 60cm.

(2) 试验方法: A、每面跌落1次, 共6次; B、任选三条同一角的棱, 各跌落一次, 共3次。

Test method: A、Fall one time per face, six times in total; B、Chose eight arris and fall one time each, three times in total.

(3) 判定基准: 经过跌落试验后, 产品外观、性能无不良。

Judgement: After the fall test, the appearance and the performance are both passed.

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12. 使用注意事项说明/Matters to be paid attention to when using motor

12-1 电机在运输过程中应小心轻放，避免碰撞敲击引起的电机机身和性能受损。

Please place the motors carefully in transportation to avoid any damage to the motor body or its electric function because of collision.

12-2 电机不能在高温、高湿、带有腐蚀性气体的环境中贮存和使用，否则有可能导致电机的性能下降。

Please don't leave and use the motors in the environment of high temperature, high humidity and corrosion gas, or it would cause the function to fall down.

12-3 不能长时间用外力锁死振动轮，以免烧坏线圈，电机不能工作。

Please don't lock up the vibrating wheel, or the coil would be burned up and the motors can't operate.

12-4 避免接触或靠近强磁性物体，否则有可能导致电机性能下降。

Please prevent from magnetic objects, or it may cause the function fall down.

12-5 请在6个月内使用，在使用时和打开包装时，请避免水气凝结。

Please use the motors within six months and prevent them from coagulation of moisture when open the package and use them.