



LJ DEVICE CO., LTD.

力臻股份有限公司

LJ DEVICE CO., LTD.

零件規格書 / 承認書

SPECIFICATION FOR APPROVAL

CUSTOMER : _____

DESCRIPTION : _____ VIBRATOR _____

MODEL : _____ FG-Y03082028L2001B _____

CUSTOMER PART NO : _____

APPROVED SIGNATURES

| | | | |
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| Rev | Date | Description | Designed | Checked | Approved |
|-----|-----------|-------------|----------|---------|----------|
| A | 2018/8/23 | Release | | Kevin | |
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| | |
|-------------|--------------------|
| 型号/Part No. | FG-Y03082028L2001B |
|-------------|--------------------|

1. 适用范围/General Scope
 本说明书适用于圆筒式永磁直流电机 FG-Y03082028L2001B 型
 This specification applies to cylindrical permanent-magnetic motors DC model FG-Y03082028L2001B.

2. 使用条件/Operating Conditions

| 项目/Item | 规格/Specifications | 条件·备注/Conditions & Remarks |
|-----------------------------------|---|--|
| 2-1 额定电压 Rated voltage | 3.0V DC | |
| 2-2 额定负荷 Rated load | 振子 Counterweight | 见 10. 外形图 As specified in 10. Outline Drawing |
| 2-3 旋转方向 Rotation | C.W/C.C.W (clockwise or counter clockwise) | |
| 2-4 马达位置 Motor position | 全方位 All position | |
| 2-5 使用电压范围 Operating voltage | 2.2~3.6V DC | |
| 2-6 使用环境 Operating environment | -30 ~ 70℃, 常湿 /Ordinary Humidity:65±20%RH | 无水气凝结 No condensation of moisture |
| 2-7 保存环境 Storage environment | -40 ~ 80℃, 常湿 /Ordinary Humidity:65±20%RH | 无水气凝结 No condensation of moisture |

3. 测定条件/Measuring Conditions

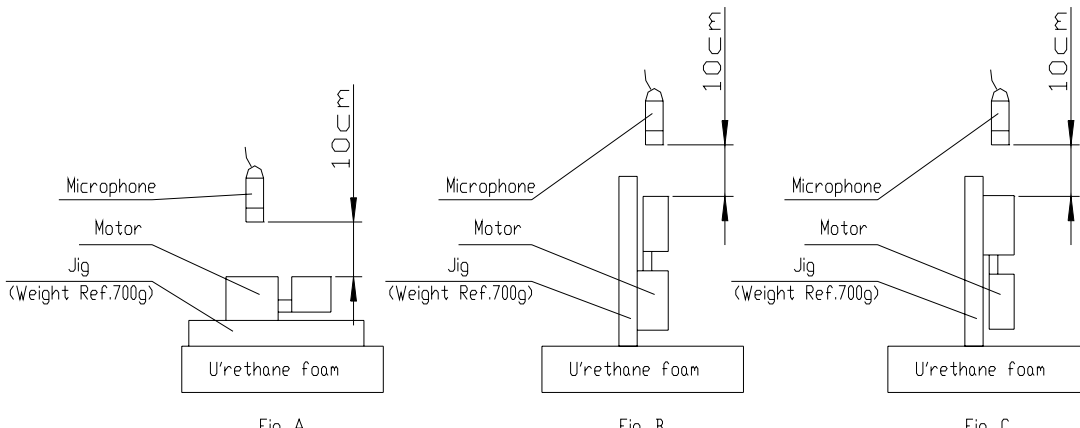
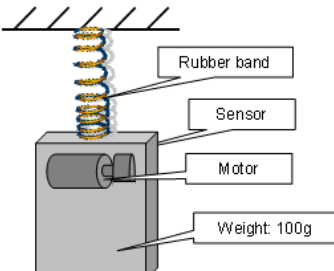
| 项目/Item | 规格/Specifications | 条件·备注/ Conditions & Remarks |
|--------------------------|--------------------------------|--|
| 3-1 温度 Temperature | 20±2℃ | |
| 3-2 湿度 Humidity | 63%~67% RH | |
| 3-3 位置 Motor position | 轴向水平 Motor shaft horizontal | 将马达固定在试验台上 Lock the motor in a test fixture |

标准测试条件为温度 20℃，湿度 65%。如无疑异，也可在温度 5~35℃、湿度 45~85%的条件下测试。马达测试时，放置方向为轴向水平。/The measurement at 20℃ & 65%RH is standard. If the judgment is not questionable, recognize measurement at 5℃ to 35℃ & relative humidity 45% to 85%. Direction of motor is shaft horizontal.

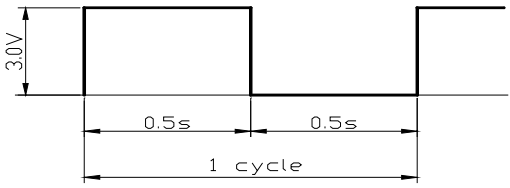
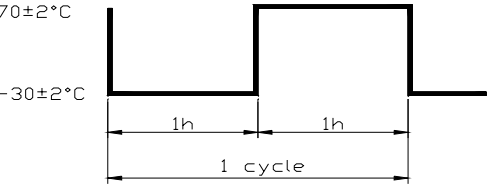
4. 机械要求/Mechanical Specifications

| 项目/Item | 规格/ Specifications | 条件·备注/ Conditions & Remarks |
|---|---|--|
| 4-1 结构 Configuration | 见 10. 外形图 As specified in 10. Outline Drawing | Outline drawing No: FG-Y03082028L2001B |
| 4-2 外观 Appearance | 不含有机械损坏及不适当的浸蚀等。 There shall be no evidence of mechanical damage and shall not have inadequate corrosion and so on | 目测（容许范围根据样品外形） Visual examination(allowable extent is based on boundary sample) |
| 4-3 轴向间隙 Shaft end play | 0.05mm~0.2mm | |
| 4-4 振子固定力 Holding strength of vibration weight | 30N (3kgf) Min | |
| 4-5 导线固定力 Holding strength of lead wire | 8N (0.8kgf) Min | |

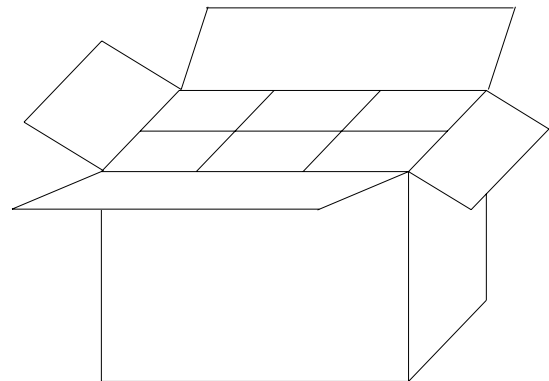
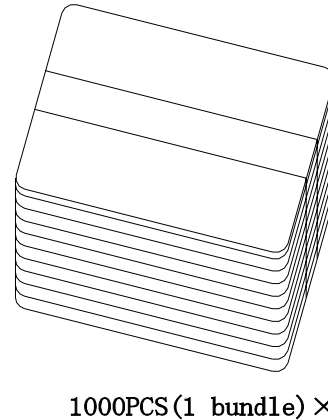
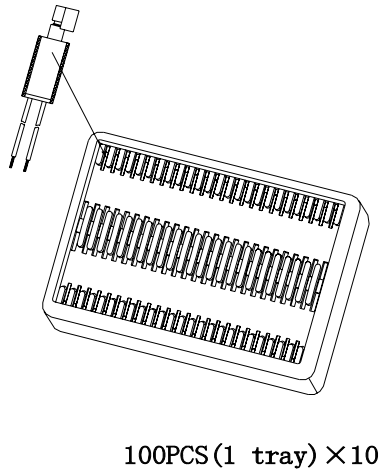
5. 性能特征/Performance and Characteristics

| 项目/Item | 规格/ Specifications | 条件·备注/ Conditions & Remarks |
|---------|---|---|
| 5-1 | 额定转速 Rated speed | 13,000±2,500rpm |
| 5-2 | 额定电流 Rated current | 100 mA Max |
| 5-3 | 堵转电流 Stall current | 120 mA Max |
| 5-4 | 起动电压 Starting voltage | 2.4V DC Max |
| 5-5 | 绝缘电阻 Insulation resistance | 1MΩ Min |
| 5-6 | 端子阻抗 Terminal resistance | 30Ω (±20%) |
| | 机械噪音 Mechanical noise | 45dB(A)Max |
| 5-7 | <p>在额定电压、额定负载（振子）下 背景噪音：不大于 28dB.A 计权 测试仪器：B&k 夹具重量：700g At rated voltage and rated load (Counterweight). Back ground noise 28dB(A) Max Measuring instruments: B&k Weight of jig:700g</p>  | |
| 5-8 | <p>振动量 Vibrations: (P-P 值)</p> <p>测量模具/Using dummy set: 100g 测试设备/Test equipment: RION VM-83 感测器/Sensor: RION PV-90B (感测器置于马达背面 /Sensors placed on the back of motor)</p> | <p>约 1.0G (Reference)</p> <p>在额定电压、额定负载（振子）下 At rated voltage and rated load (Counterweight)</p>  |
| 5-9 | 响应时间 Response time | 约 37ms About 37ms |
| | | 在额定电压 3.0v 下, 达到振动量的 50% At rated volatage 3.0v, reaches the 50% vibrations |

6. 可靠性/Reliability

| 项目/Item | 规格/ Specifications | 判定标准/Judgment | | | | | | | | | | | | |
|------------------------------------|---|---|------------|------------|-------------------|------------|------------|----------------|-------------|--------------|------|-----|-------------------|--|
| 6-1 寿命 Life time |  <table border="1" data-bbox="371 501 1018 674"> <tr> <td>位置 Position</td> <td>电压 Volt</td> <td>负荷 Load</td> <td>温度 Temp</td> <td>湿度 Humi</td> <td>寿命 Life</td> </tr> <tr> <td>轴水平 Horizon</td> <td>Rated 额定</td> <td>Weight 振子</td> <td>20°C</td> <td>65%</td> <td>300,000 Cycles</td> </tr> </table> | 位置 Position | 电压 Volt | 负荷 Load | 温度 Temp | 湿度 Humi | 寿命 Life | 轴水平 Horizon | Rated 额定 | Weight 振子 | 20°C | 65% | 300,000 Cycles | <p>试验后, 马达应符合项 7-1 的要求。 After the test, motors shall be approved as specified in item 7-1.</p> |
| 位置 Position | 电压 Volt | 负荷 Load | 温度 Temp | 湿度 Humi | 寿命 Life | | | | | | | | | |
| 轴水平 Horizon | Rated 额定 | Weight 振子 | 20°C | 65% | 300,000 Cycles | | | | | | | | | |
| 6-2 低温放置 Low temp exposure | <p>温度 /Temperature: $-40\pm 2^{\circ}\text{C}$ 时间 /Time: 96h</p> | | | | | | | | | | | | | |
| 6-3 高温放置 High temp. Exposure | <p>温度 /Temperature: $80\pm 2^{\circ}\text{C}$ 时间 /Time: 96h</p> | <p>在常温常湿下放置 2h 后, 马达应符合项 7-2 的要求。 After 2 hours exposure in ordinary temperature and humidity, Motors shall be approved as specified in item 7-2.</p> | | | | | | | | | | | | |
| 6-4 湿度放置 Humidity exposure | <p>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</p> | | | | | | | | | | | | | |
| 6-5 振动 Vibration | <p>全振幅 /Displacement : 1.5mm (p-p) 频率 /Frequency: 10 ~ 55Hz 加速度 /Acceleration: 22m/s^2 周期 /Period: 20min 完成 10~55~10Hz /20 Minutes log sweep 10~55~10Hz 方向 /Direction: x, y, z 时间 /Time: 每个方向 2h /Each 2 hours</p> | <p>测试结果应符合项 7-2 的要求。 After the test motors shall be approved as specified in item 7-2.</p> | | | | | | | | | | | | |
| 6-6 自然跌落 Free fall | <p>试验状态/Test state: 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。 Set the motor to the approximately 100g (include the motor) weight of block drop the motor on the concrete floor. 高度 /Height: 1.5m 方向 /Direction: 6 个面 / 6 faces 次数 /Number of times: 每个面 2 次 / Twice 2 each</p> | <p>测试结果应符合项 7-2 的要求。 After the test motors shall be approved as specified in item 7-2.</p> | | | | | | | | | | | | |
| 6-7 热冲击 Heat shock test | <p>试验循环 /Test cycle :20 cycles</p>  | <p>在常温常湿下放置 2h 后, 马达应符合项 7-2 的要求。 After 2 hours exposure in ordinary temperature and humidity, Motors shall be approved as specified in item 7-2.</p> | | | | | | | | | | | | |

Y03L 圆柱马达包装 Packaging drawing of Y03L cylindrical motor



包装试验要求

1. 标准

- (1) 整箱重量小于等于9kg的, 跌落高度设定为75cm.
- (2) 整箱重量大于9kg但小于等于23kg的, 跌落高度设定为60cm.

2. 试验方法:

跌落要求为六面三棱一角.

- (1) 六面: 先从最大两面跌, 然后是中间大小的两面, 最后跌最小的两面, 一共六次.
- (2) 三棱: 指任选三条同一角的棱, 跌落秩序: 最长棱, 中间长度, 最短的, 一共三次.
- (3) 一角: 指上一步三条棱所组成的角, 跌落一次.

3. 判定基准

经过跌落试验后, 产品外观、性能无不良。

Package Test Requirement:

1. Criteria

- (1) The weight of the whole carton less than 9kg, the dropping height is 75cm.
- (2) The weight of the whole carton more than 9kg and less than 23kg, the dropping height is 60cm.

2. Test Methods:

Dropping requirement is 6 faces, 3 arris, 1 angle.

- (1) 6 faces: First dropping with two biggest faces, then dropping with another two middle faces, at last dropping with two smallest faces, once per face, total 6 faces.
- (2) 3 arris: Choose any 3 arris which make up of the same the angle, the dropping sequence is the longest arris, middle arris, shortest arris. Total 3 times.
- (3) 1 angle: Point to the angle which is made up with the 3 arris in the above step. Dropping for 1 time.

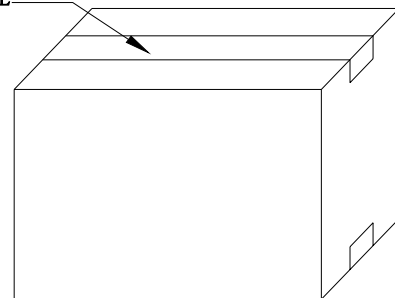
3. Judgement Criterion

After drop test, no evidence of damage on the appearance and performance.

Remarks:

- 1000PCS/CTN: 23.5cm × 17cm × 27cm
- 2000PCS/CTN: 33.5cm × 23.5cm × 27cm
- 4000PCS/CTN: 46.5cm × 33.5cm × 27cm
- 6000PCS/CTN: 50.5cm × 46.5cm × 27cm

OPP TAPE



10. 外形图/Outline Drawing

FG-Y03082028L2001B

导线焊接技术要求:

1、电烙铁温度:

300°C~360°C

2、焊锡时间: 0.5s 左右

注意事项:

单根导线不建议重复焊接。

技术要求/Technical requirement

1. 额定电压/Rated voltage: 3.0V

2. 额定电流/Rated current: 100mA Max

3. 额定转速/Rated speed: 13000±2500rpm

4. 堵转电流/Stall current: 120mA Max

5. 端子阻抗/Terminal resistance: 30Ω (±20%)

6. 起动电压/Starting voltage: 2.4V Max

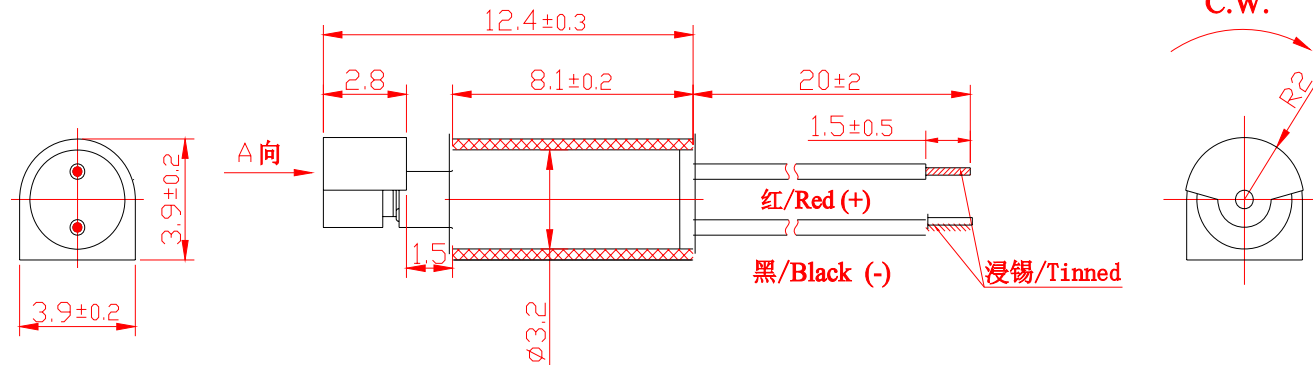
7. 轴向间隙/Shaft end play: 0.05~0.2mm

8. 导线规格/Lead wire spec: AWG32 UL3302

9. 导线固定力/Holding strength of Lead wire: >8N

10. 所有尺寸为A向压紧后的尺寸(不包括轴向间隙)
/Overall length is measured after counterweight
being pressed against body in direction A. (Shaft
end play is not included.)

11. 未注线性公差为/Unmarked tolerance: ±0.1mm



借(通)用件登记

底图总号

签字

日期

| 标记 | 处数 | 分区 | 更改文件号 | 签名 | 日期 | 阶段标记 | 重量 | 比例 |
|----|-----|------------|-------|----|----|------|----|-----|
| 设计 | 张勇 | 2018.08.23 | 标准化 | | | | | |
| 校对 | 陈国栋 | 2018.08.23 | | | | | | 5:1 |
| 审核 | 徐旭 | 2018.08.23 | | | | A/6 | | |
| 工艺 | | | 批准 | | | 共 页 | | 第 页 |

外形图

FG-Y03082028L2001B

2018.08.23

说明书/Specification

编号/NO. FUGE-L2001B

代号/code: 0

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