

产 品 规 格 书

PRODUCT SPECIFICATION

产品名称：扁平型振动马达

产品型号：1020-15-003-001

| APPROVED 本司确定 | DRAWN 编制 | CHECKED 审核 | APPROVAL 批准 | DATE 日期 |
|------------------|-------------|---------------|----------------|------------|
| | | MICHAEL | | |

MATERIAL or METHODS

Specifications

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1. Construction Form (结构形式)

| No. 序号 | ITEM 项目 | Contents 内容 |
|-----------|----------------------------|---|
| 1-1 | Motor Construction 电机结构 | Φ10-Flat Coreless Vibration Motor 直径为 10mm的扁平型无芯振动马达 |
| 1-2 | Coil Construction 线圈结构 | Flat Coreless Coil 扁平型无芯线圈 |
| 1-3 | Rectifying Method 换向方式 | Precious Brush and Commutator 贵金属电刷与换向器的换向 |

2. Standard Operating Condition (标准运行条件)

| No. 序号 | ITEM 项目 | Contents 内容 |
|-----------|---------------------------------------|---|
| 2-1 | Rated Voltage 额定电压 | DC 3.0V |
| 2-2 | Rated Load 额定负荷 | Vibration Weight 偏心锤 (内置) |
| 2-3 | Rotation Direction 旋转方向 | CCW or CW 逆时针或顺时针方向 |
| 2-4 | Motor Position 电机安装位置 | Any Position Available 任何位置都可以 |
| 2-5 | Voltage Range for Use 工作电压范围 | DC 2.5~3.5V |
| 2-6 | Allowable Temperature Range 允许温度范围 | Working Temperature: -20°C-70°C 工作温度: -20°C-70°C |
| 2-7 | Storage Environment 保存温度范围 | -30°C-80°C |

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Add: Measuring Condition (测试条件)

1. Measuring Temperature: 25 ± 2 测试温度: 25 ± 2
2. Measuring Relative Humidity: 45-75%RH 测试相对湿度: 45-5%RH

3. Electrical Characteristics (电性能)

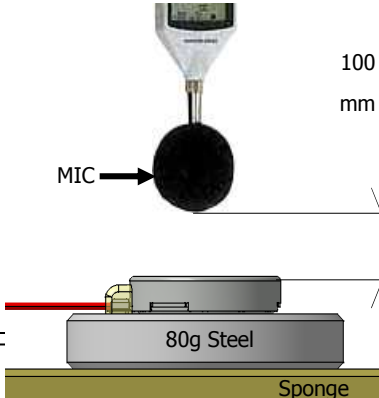
| No. 序号 | Item 项目 | Measuring Condition 测试条件 | Specification 规格 |
|-----------|-------------------------------|---|-------------------------------|
| 3-1 | Rated Speed 额定转速 | At Rated Voltage and Rated Load 额定电压及负荷下测试 | Min 10,000rpm |
| 3-2 | Rated Current 额定电流 | At Rated Voltage and Rated Load 额定电压及负荷下测试 | 80mA or less 80mA 以下 |
| 3-3 | Starting Voltage 起动电压 | At Rated Load and Step Voltage 额定负载及逐渐升高电压法测试 | DC2.3V or less DC2.3V 以下 |
| 3-4 | Insulation Resistance 绝缘电阻 | DC100V between Lead wire and Case 引线及电机机身之间的绝缘电阻 | 10M Ω Min |
| 3-5 | Insulation Voltage 绝缘电压 | DC50V between Lead wire and Motor Case 引线及电机机身之间施加DC50V电压一分钟 | No Destruction Occurs 不被击穿 |
| 3-6 | Terminal Resistance 端子电阻 | Measure between Terminals 端子间电阻 | 75 Ω Max |

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4. Mechanical Specification (机械要求)

| No 序号 | Item 项目 | Measuring Condition 测试条件 | Specification 规格 |
|----------|--------------------------|---|--|
| 4-1 | Configuration 外观尺寸 | Vernier-Calipers 游标卡尺 | As Specified in Outline Drawing. 参考相关外形尺寸图。 |
| 4-2 | Appearance 外观 | Visual Examination 目测 | Should be no Evidence of Mechanical Damage, Crack, Rust and Stain. 不得有明显的机械划痕, 裂缝, 锈迹, 污点。 |
| 4-3 | Weight 重量 | Balance 天平 | 0.9g Approx 约 0.9g |
| 4-4 | Mechanical Noise 机械噪音 |  | 50dB (A) Max (在 Motor 表面 100mm 处, 3.0V) 将电机固定, 使其保持不动。 |

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|-----|---------------------------------------|--|----------------------------|
| | | At Rated Voltage and Rated Load back ground Noise:50dB 额定电压及负荷下测试背景噪音 不超过 50 分贝。 | |
| 4-5 | Vibration Test 振动量测定 | <p>电机 → 80g 铁块 海绵 模型块:80g 测定装置:VM-83</p> | 0.8G (AVG) (Vm=DC 3.0V) |
| 4-6 | Down-lead' s loose Strength 引线抗拉强度 | | 9.8N or More 9.8N 以上 |

5. Reliability Test (可靠性试验)

| No. 序号 | Item 项目 | Contents 内容 |
|-----------|-----------------------------------|---|
| 5-1 | Life Test 寿命测试 | 1)Voltage: DC3.0V 测试电压: DC3.0V 2)Load: Vibrator 负荷:偏心锤 3)Temperature: 20°C±2°C 温度: 20°C±2°C 4)Relative Humidity: 60-70%RH 相对湿度: 60-70%RH Test Mode: Turn On the Motor for 2sec and than stop for 1sec, 100,000 Cycle. 测试方式: 开2秒 停1秒 运行100,000次 |
| 5-2 | High Temperature Exposure 高温放置 | Exposure to 80°C ± 2°C for 96hours, then return to Ordinary Temperature and Humidity for 2hours. 在温度80°C±2°C条件下放置96小时后, 在正常温度和湿度下放置2小时。 |
| 5-3 | Low Temperature Exposure 低温放置 | Exposure to -30°C for 96hours, then return to Ordinary Temperature and Humidity for 2hours. 在温度-30°C条件下放置96小时后, 在正常温度和湿度下放置2小时。 |
| 5-4 | Humidity Test 湿度测试 | Exposure to 40°C ± 2°C, 90-95%RH (Relative Humidity) for 96hours, then return to Ordinary Temperature and Humidity for 2hours. 在温度40°C±2°C, 90%RH(相对湿度)条件下放置96小时后, 在正常温度和湿度下放置2小时。 |
| | | Page 5 of 9 |
| | | Exposure to Heat test condition underline for 10time, then return to Ordinary Temperature and Humidity for 2hours. 在下列测试条件下循环10次后, 在正常温度和湿度下放置2小时。(转换温 |

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6. Performance and Characteristics (性能与特性)

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Should be satisfied with the requirements of table1 after Reliability test 5-1-5-7.
通过以上可靠性试验 5-1-5-7 以后应满足表 1 的要求。

表 1: 评估表

| No. 序号 | ITEM 项目 | Contents 内容 |
|-----------|--------------------------|---|
| 6-1 | Rated Current 额定电流 | Initial Data: $\pm 30\%$ Max 最大不超过初始值的 $\pm 30\%$ |
| 6-2 | Rated Speed 额定转速 | Initial Data: $\pm 30\%$ Max 最大不超过初始值的 $\pm 30\%$ |
| 6-3 | Life Test 寿命测试 | Initial Data: $\pm 40\%$ Max 最大不超过初始值的 $\pm 40\%$ |
| 6-4 | Starting Voltage 起动电压 | DC 2.3V Max 最大不超过DC2.3V |
| 6-5 | Others 其它 | 1) Should not fail in starting 应正常启动 2) Should not be unusual mechanical noise 无异常噪音 |

7. Cautions (注意事项)

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1) Allowable Range for Use 工作范围

Pay attention to Voltage and Current ranges for use, and Use the vibration motor in the Condition accordance with this specifications, or else the life and performance should be considerably reduced.

注意电压及电流的使用范围，并且要按本规格书的要求使用电机，否则电机的使用寿命和性能将发生显著的下降。

2) Storage 储存

Standard Storage Temperature: $-5-30^{\circ}\text{C}$

Standard Storage Relative Humidity: $\leq 75\%$

Avoids Storing in high temperature, High humidity or corrosive Gas Environment.

标准储存温度: $-5-30^{\circ}\text{C}$

标准储存相对湿度: $\leq 75\%$

避免放置在高温，潮湿及有腐蚀性气体的环境中。

3) Handling of Motor 电机使用

Do not press the product with more than 0.5Kgf or drop it, It can cause the transformation of performance or external appearance.

不许在电机上面施加0.5Kgf以上的压力或使其跌落，这样可能会影响其性能或使外观发生变形。

Do not drop into fluid. (such as Water, Alcohol, etc.)

要防止与液体接触。(水，酒精，等)

Do not expose this product to high temperature for extended periods of time, It may cause a decline in performance.

长时间放置在高温环境时有可能影响其电机的性能。

Please refrain from operating the Motors near Magnetic devices.

要避免放置在磁性物体附近。

The motor may cause slight electronic noise due to the contact between brush and Commutator.

由于电刷与整流子的接触电机有可能发生微弱的电子噪音。

Rust of plate(steel) and similar edge should be OK

钢板面或边缘有少许锈斑是允许的

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8 Mechanical Drawing (机械图)

8-1 Material Lead/导线材质: UL AWM 1571 AWG32

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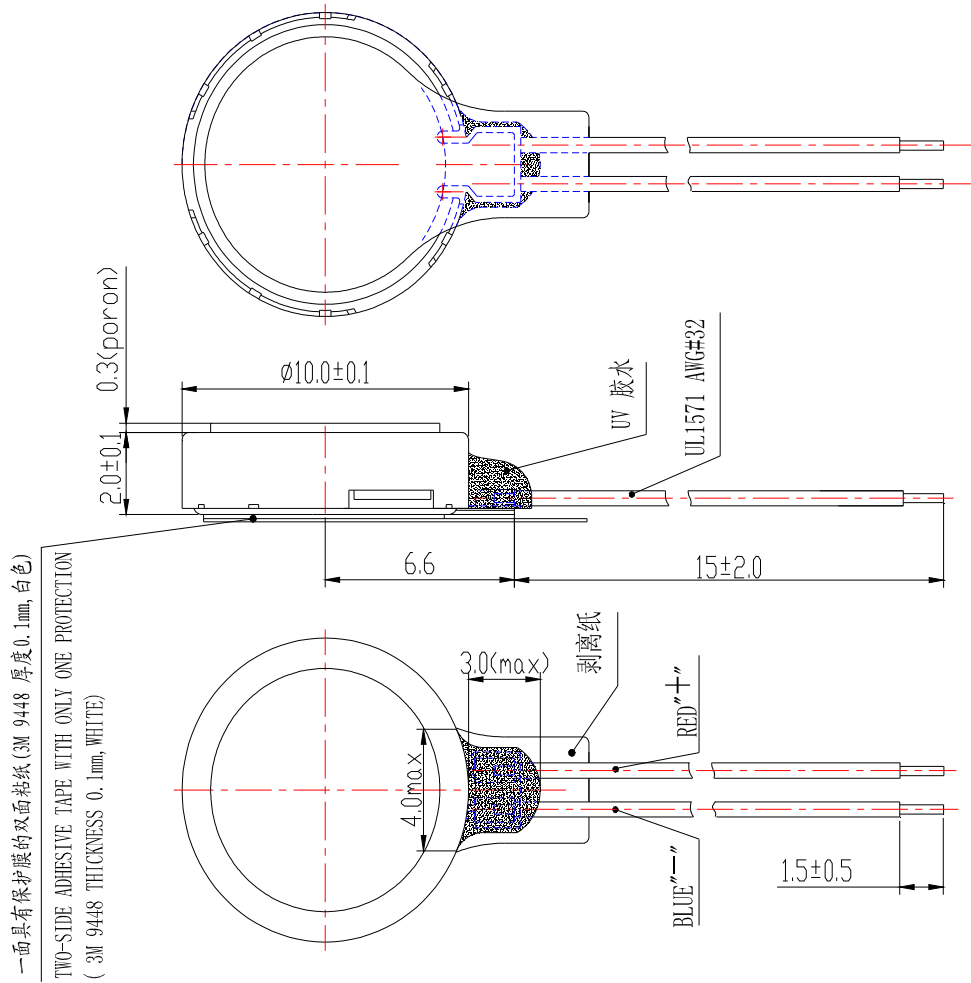


Figure 1 Motor Housing Configuration

图 1 电机外形结构图

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样品承认书 APPROVAL SHEET (RoHs)

| | | | |
|-----------------------|------------|-----------------------|--|
| 客户名称 Customer | | 产品型号 Specification | 1020-10-003-001 |
| 项目名称 project name | | 样品数量 QT 'Y Sample | |
| 送样日期 Date of Issue | 2012 年 月 日 | 承认项目 Approval | <input type="checkbox"/> 工程承认 <input type="checkbox"/> 量产承认 |

承认:

- | | |
|---|---|
| <p>1、规格尺寸: <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/></p> <p>3、震动指标: <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/></p> <p>5、概 述: _____</p> | <p>2、电压使用范围: <input type="checkbox"/> <input type="checkbox"/></p> <p>4、温 升 : <input type="checkbox"/> <input type="checkbox"/></p> |
|---|---|

注: 1、请在选择项相应的□内打上“√”。 2、需特别要求时在概述栏作简要注明。

客户承认签核 Customer Approval:

| | | |
|----------------------|----------------|-------------------------|
| 核 准 PROOFREAD | 确 认 CONFIRM | 承 认 APPROVAL |
| | | |
| DATE OF ISSUE 日 期 | Month 月 | Day 日 Year 年 |

内部签核 Signature

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