



# 电子元器件规格书 RELAY SPECIFICATION

|                       |                          |
|-----------------------|--------------------------|
| 器件名称 Name :           | 继电器 (RoHS) RELAY         |
| 型号规格 Product Name:    | MPA-S-112-C (0.36W, 10A) |
| 客户名称 Customer:        |                          |
| 客户编码 Customer Number: |                          |
| 版 本 Version:          | V1.0                     |

## (客户批准) Customer Approval

|                     |
|---------------------|
| (盖章处) STAMPING AREA |
|                     |

|                  |                |                 |
|------------------|----------------|-----------------|
| 批准 Approved By   | 审核 Checked By  | 编制 Created By   |
| 黄晓湖 XIAOHU HUANG | 林罗豪 LUOHAO LIN | 洪泽钊 ZEZHAO HONG |

注意事项(Remarks: ):

- 1、 本规格书双方签字后正式生效，本规格书连同封面共 11 页；

(Specification come into force after signed by both parties. Total 11 pages)

- 2、 本规格书一式两份，版本由使用方与供方共同维护；

Two copies of this specification, maintained by both parties.

- 3、 任何对内容的改动必须经双方同意，并以书面文件的形式发布。

Any changes must agreed by both parties, and publish the form of a written document.

本规格书有中英文两种版本。如有冲突，以中文版本为准，英文版本则为参考。(This specification is made out in both Chinese and English versions. We hereby set Chinese version as standard and English version as a reference if any conflicts occur.)



**变更记录Update records**

| 序号<br>No. | 更改内容<br>Change Contents | 更改原因<br>Change Reason | 更改时间<br>Date | 责任人<br>person |
|-----------|-------------------------|-----------------------|--------------|---------------|
|           |                         |                       |              |               |
|           |                         |                       |              |               |
|           |                         |                       |              |               |
|           |                         |                       |              |               |

**一 浙江美碩继电器认证类型及认证号 Approvals type and approvals number**

|     |                 |                |
|-----|-----------------|----------------|
| 1.1 | CQC certificate | CQC09002036999 |
| 1.2 | UL certificate  | E313266        |
| 1.3 | TUV certificate | R50184948      |

**二 线圈参数 Coil Specification**

|     |                                 |                                                     |
|-----|---------------------------------|-----------------------------------------------------|
| 2.1 | 额定电压<br>Rated voltage           | 12VDC                                               |
| 2.2 | 线圈电阻<br>Coil resistance         | $400\Omega \pm 10\%$ (at $23 \pm 1^\circ\text{C}$ ) |
| 2.3 | 额定功率<br>Rated power             | 0.36W                                               |
| 2.4 | 最大允许电压<br>Max.allowable voltage | 18V                                                 |

**三 触点参数 Contact Specification**

|     |                                 |            |
|-----|---------------------------------|------------|
| 3.1 | 触点额定参数<br>Contact rating        | 10A 250VAC |
| 3.2 | 最大切换电流<br>Max.Switching current | 10A        |
| 3.3 | 最大触点容量<br>Max. contact capacity | 2500VA     |
| 3.4 | 最小适用负载<br>Min.Applicable Load   | 1A 6VDC    |

**四 操作性能 Operate Performances**

|     |                            |                                    |
|-----|----------------------------|------------------------------------|
| 4.1 | 接触电阻<br>Contact resistance | $\leq 100\text{m}\Omega$ (1A 6VDC) |
| 4.2 | 吸合电压<br>Operate voltage    | $\leq 9\text{VDC}$                 |
| 4.3 | 释放电压<br>Release voltage    | $\geq 1.2\text{VDC}$               |
| 4.4 | 吸合时间<br>Operate time       | $\leq 10\text{ms}$                 |
| 4.5 | 释放时间<br>Release time       | $\leq 5\text{ms}$                  |

**五 寿命要求 Life Requirements**

|     |                         |                                                                               |
|-----|-------------------------|-------------------------------------------------------------------------------|
| 5.1 | 电气寿命<br>Electrical Life | 100,000 次, 常温条件, 阻性负载, 动作频率:<br>30 次/分钟, 50% 占空比, 1 秒通 1 秒断 (常开、<br>常闭分别单独实验) |
|-----|-------------------------|-------------------------------------------------------------------------------|

|     |                         |                                                                                                                                                                                                            |
|-----|-------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|     |                         | 100,000 cycle ,Normal temperature condition, resistive load, Action frequency: 30 times / min, 50% duty cycle, 1 second NO 1second NC (normally open, normally closed, respectively, separate experiments) |
| 5.2 | 机械寿命<br>Mechanical Life | 1,000,000 次, (无负载, 300 次/分钟)<br>1,000,000 cycle ,No load,300 cycles/minute                                                                                                                                 |

## 六 安全及环境性能要求

### Safety and environmental performance requirements

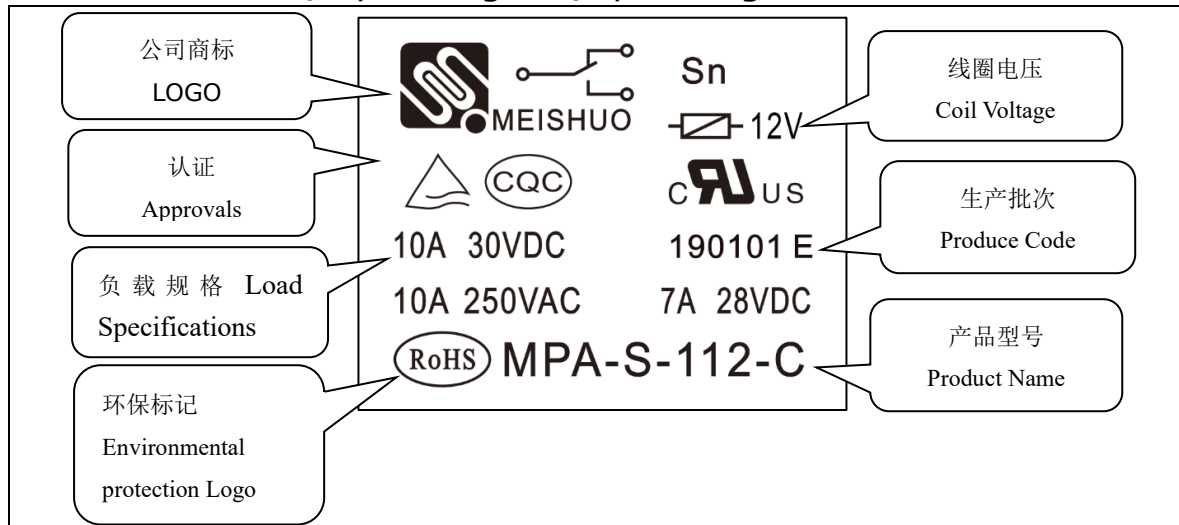
|     |                                |                                                                                                                                                                                                                                                                                                                              |
|-----|--------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 6.1 | 存储条件<br>Storage Condition      | 温度: -20~+40℃, 湿度: 20%~85%RH<br>Temperature : -20 ~ +40 ℃ ,Humidity:20% ~ 85%RH                                                                                                                                                                                                                                               |
| 6.2 | 使用条件<br>Use Condition          | 温度: -40~+85℃, 湿度: 20%~85%RH<br>Temperature : -40 ~ +85 ℃ ,Humidity:20% ~ 85%RH                                                                                                                                                                                                                                               |
| 6.3 | 安装方向<br>Installation direction | 端子向下<br>Terminal down                                                                                                                                                                                                                                                                                                        |
| 6.4 | 绝缘电阻<br>Insulation resistance  | 断开触点间、触点和线圈间: 1000MΩ Min (500VDC)<br>Open contacts、Contacts and coil:1000MΩ Min (500VDC)                                                                                                                                                                                                                                     |
| 6.5 | 介质耐压<br>Dielectric Strength    | 断开触点间: 1000VAC (1mA) (50/60Hz)1Min<br>Open contacts: 1000VAC (1mA) (50/60Hz)1Min<br>触点和线圈间: 1500VAC (1mA) (50/60Hz)1 Min<br>Contacts and coil: 1500VAC (1mA) (50/60Hz)1 Min                                                                                                                                                  |
| 6.6 | 引出脚强度<br>Lead-out strength     | 在垂直于引出脚方向上施加 15N 的拉力 6s, 继电器应无异常。<br>The relay shall not be abnormal if a 15N pull force of 6S is applied perpendicular to the direction of the lead pin.                                                                                                                                                                    |
| 6.7 | 耐振动性<br>Vibration resistance   | 6.7.1 耐久振动: 在振动为双振幅 1.5mm、无励磁的状态时、以振动频率 10~55~10 Hz/分的振荡在 XYZ 的各方向上进行 2 小时后, 在外观、构造、性能上应没有异常。<br>Durable vibration When the vibration is a double amplitude of 1.5 mm or less, the oscillation at a vibration frequency of 10 to 55 to 10 Hz / minute is performed for 2 hours in each direction of the XYZ, and there is no |

|     |                                    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
|-----|------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|     |                                    | <p>abnormality in appearance, configuration, and performance.</p> <p>6.7.2 误动作振动: 在振动为双振幅 1.5mm、励磁的状态时、以振动频率为 10~55~10Hz/分的振荡在 XYZ 的各方向上进行 5 分钟时, 实验中应没有误动作。实验后在外观、构造、性能上应没有异常。</p> <p>Malfunctioning vibration When the vibration is a double amplitude of 1.5 mm and the excitation state is performed, the oscillation at a vibration frequency of 10 to 55 to 10 Hz / minute is performed for 5 minutes in each direction of the XYZ, and there is no malfunction in the experiment. After the experiment in appearance, structure, performance should be no exception.</p>                                                                                                        |
| 6.8 | 耐冲击性<br>Impact resistance          | <p>6.8.1 耐久冲击: 在无励磁的状态下, 以加速度为 1,000m/s<sup>2</sup>的冲击在XYZ的各方向进行5次后, 在外观、构造、性能上应没有异常。</p> <p>Durable impact In the absence of excitation, the acceleration of 1,000m / s<sup>2</sup> in the XYZ in the direction of the five times, in the appearance, structure, performance should be no exception.</p> <p>6.8.2 误动作冲击: 在励磁的状态时、以加速度为200m/s<sup>2</sup>的冲击在XYZ的各方向进行2次时, 实验中应没有误动作。实验后在外观、构造、性能上应没有异常。</p> <p>Malfunctioning In the state of excitation, when the acceleration of 200m / s<sup>2</sup> in the XYZ in the direction of the two times, the experiment should be no malfunction. After the experiment in appearance, structure, performance should be no exception.</p> |
| 6.9 | 耐低温性<br>Low temperature resistance | <p>6.9.1 使用时耐低温: 将没有外加电压和电流的继电器放入温度为-40±2℃的恒温槽内连续保持2小时后、在保持原状态的同时对实验回路外加额定电压进行实验时, 继电器能正常动作。(在0℃时不结冰状</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |

|      |                                             |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
|------|---------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|      |                                             | <p>态)</p> <p>Use low temperature when used The relay will be able to move normally when the rated voltage is applied to the experimental circuit while maintaining the original state for 2 hours in a constant temperature tank with no voltage and current applied to the temperature of <math>-40 \pm 2^{\circ}\text{C}</math>. (No ice at <math>0^{\circ}\text{C}</math>)</p> <p>6.9.2 贮存时耐低温性：将继电器放入温度为<math>-20 \pm 2^{\circ}\text{C}</math>的恒温槽内连续保持 72 小时后，移放入常温常湿的地方，擦去水滴，放置 1~2 小时，随后检查其构造、动作、绝缘电阻、介电性能，应没有异常。</p> <p>Low temperature resistance when stored The relay placed in the temperature of <math>-20 \pm 2^{\circ}\text{C}</math> constant temperature tank for 72 hours, then moved to the room temperature and humidity, wipe the water droplets, put 1 to 2 hours, then check its structure, action, insulation resistance, Dielectric properties should be no exception.</p>                                                                          |
| 6.10 | <p>耐高温性<br/>High temperature resistance</p> | <p>6.10.1 使用时耐高温性 在继电器的控制回路上加额定电压、主回路通额定电流的状态下，将其放入 <math>85 \pm 2^{\circ}\text{C}</math> 的恒温槽内连续 2 小时后，在保持原状态的同时对实验回路进行开关实验时，继电器应能正常动作。</p> <p>Use high temperature resistance In the relay control circuit plus rated voltage, the main circuit through the rated current state, put it into the <math>85 \pm 2^{\circ}\text{C}</math> constant temperature tank for 2 hours, while maintaining the original state of the experimental circuit for the switch test, The relay should be able to operate normally.</p> <p>6.10.2 贮存时耐高温性 将继电器放入温度为 <math>40 \pm 2^{\circ}\text{C}</math> 的恒温槽内连续保持 72 小时后，移放入常温常湿的地方，擦去水滴、放置 1~2 小时，随后检查其构造、动作、绝缘电阻、介电性能、应没有异常。</p> <p>High temperature resistance when stored The relay placed in the temperature of <math>40 \pm 2^{\circ}\text{C}</math> constant temperature tank for 72 hours, then transferred to the room temperature and humidity, wipe the water droplets, put 1 to 2 hours, then check its structure, action,</p> |

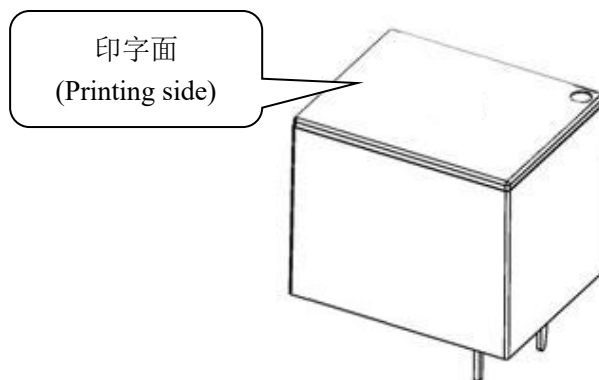
|      |                            |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
|------|----------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|      |                            | insulation resistance, mediated Electrical performance should be no exception.                                                                                                                                                                                                                                                                                                                                                                                                                    |
| 6.11 | 耐湿性<br>Moisture resistance | <p>6.11.1 将继电器放入温度为 <math>40 \pm 2^{\circ}\text{C}</math>、相对湿度为 90~95% 的环境里连续保持 48 小时后，移到常温常湿的地方放置 1 小时以上、2 小时以内后检查其构造、动作、绝缘电阻、介电性能，应没有异常。</p> <p>The relay placed in the temperature of <math>40 \pm 2^{\circ}\text{C}</math>, relative humidity of 90 ~ 95% of the environment for 48 hours in a row, moved to room temperature and humidity place for 1 hour or more, 2 hours after the check its structure, action, insulation Resistance, dielectric properties, should be no exception.</p> |
| 6.12 | 可焊性<br>Solderability       | <p>6.12.1 <math>235 \pm 5^{\circ}\text{C}</math>, <math>3 \pm 1\text{s}</math> (有铅焊接); <math>260 \pm 5^{\circ}\text{C}</math>, <math>3 \pm 1\text{s}</math> (无铅焊接), 90% 以上引脚面积覆锡。</p> <p>(<math>235 \pm 5^{\circ}\text{C}</math>, <math>3 \pm 1\text{s}</math>, Leaded soldering, <math>260 \pm 5^{\circ}\text{C}</math>, <math>3 \pm 1\text{s}</math>, No Leaded soldering, More than 90% of the lead area of tin.)</p>                                                                          |
| 6.13 | 阻燃性<br>Flame retardancy    | <p>6.13.1 按照 IEC60695-2-11 灼热丝测试要求中的 <math>750^{\circ}\text{C}</math> 灼热丝可燃性试验方法，外壳和基座在灼热丝接触测试面的过程中火焰持续时间不超过 2 秒。</p> <p>According to IEC 60695-2-11 burning wire test requirements in the <math>750^{\circ}\text{C}</math> glow wire flammability test method, the case and the base in the glow wire contact test surface in the process of flame duration of not more than 2 seconds.</p>                                                                                                      |

## 七 厂家型号及型号含义、丝印图案及各部位含义说明（体现厂家、批号、认证等）

**Manufacturer P/N ,Meaning of P/N, Printing and remarks**


注：此印字图中批次号带“E”表示继电器可通过灼热丝测试

Note: the batch number "E" in this print indicates that the relay can pass the hot wire test



|          |             |                 |                |                   |
|----------|-------------|-----------------|----------------|-------------------|
| MPA      | -S: 塑封型     | -1:1 组          | 12:12V         | -C:Form C(转换)     |
| MPA      | -S: Sealed  | -1:1 group      | 12:12VDC       | -C: Form C(NO/NC) |
| A:产品型号   | B:产品结构      | C:触点组数          | D:线圈电压         | E: 触点形式           |
| A: Model | B:Structure | C:Contact Group | D:Coil voltage | E: Contact Form   |

## 八 生产批号标识 (Produce Code) XX XX XX (

1 2 3

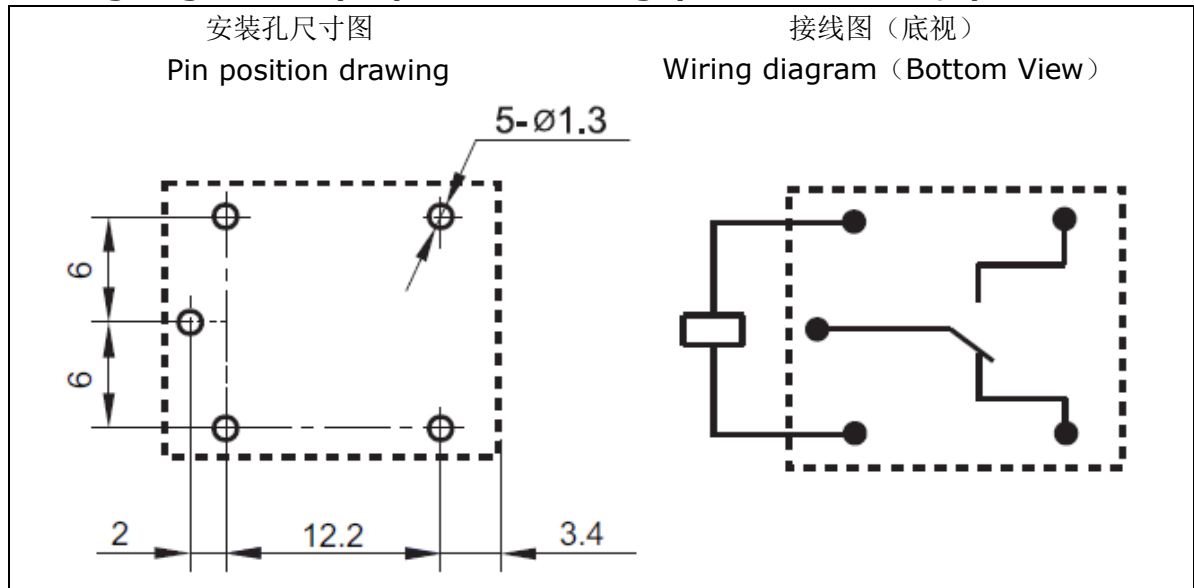
1、年份批号 (Year) (10-2010, ……)

2、月份编号 (Month) (01, 02, 03, 04, 05, 06, 07, 08, 09, 10, 11, 12)

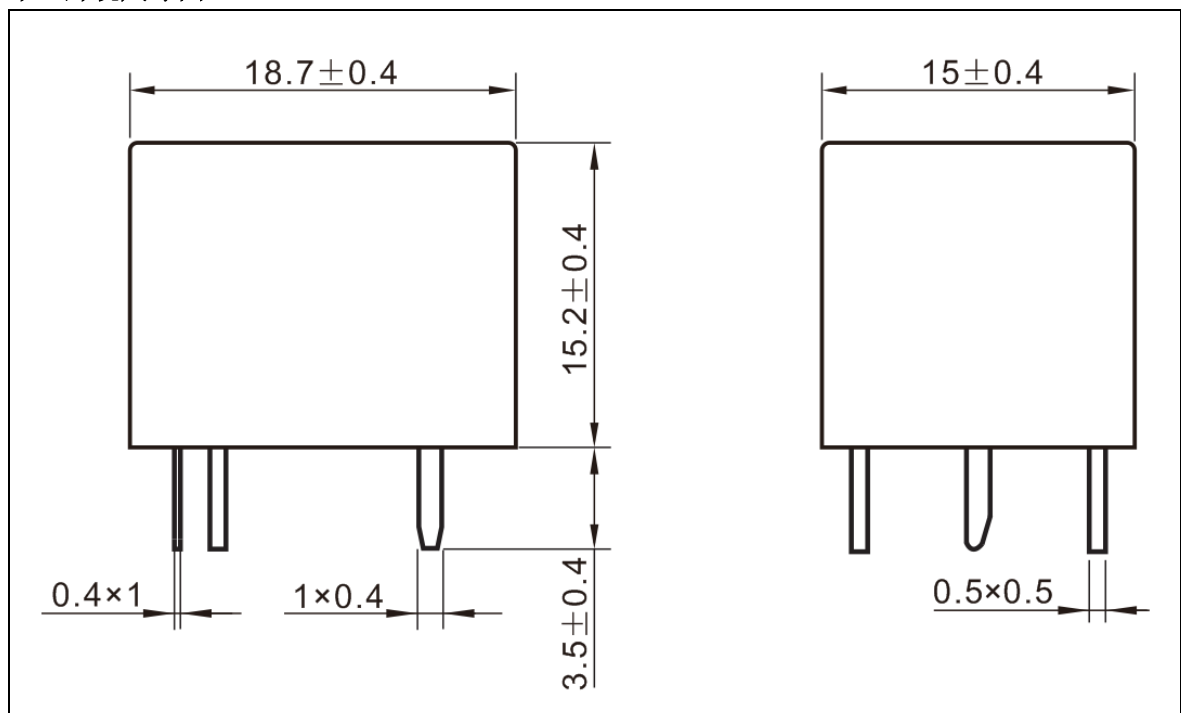
3、流水批号 (Serial number) (01, ……)

九 接线及装配尺寸图 (孔距公差 $\pm 0.2\text{mm}$ , 孔径公差 $\pm 0.1\text{mm}$ )

Wiring diagram and pin position drawing (pin distance $\pm 0.2$ , Apert  $\pm 0.1$ )



十 外观尺寸图 Outline Dimensions



备注：外形图中产品部分未注公差尺寸，当尺寸 $\leq 1\text{mm}$ ，公差为 $\pm 0.2\text{mm}$ ；

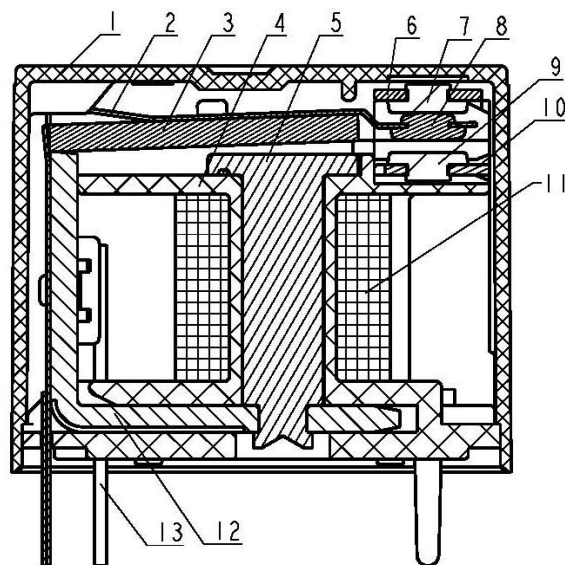
当尺寸在  $1 \sim 5\text{mm}$ ，公差为 $\pm 0.3\text{mm}$ ；当尺寸 $> 5\text{mm}$ ，公差为 $\pm 0.4\text{mm}$ 。

Note:

The tolerance dimension of the product parts in outline drawing is  $\leq 1\text{ mm}$ , tolerance is  $\pm 0.2\text{ mm}$ ;

When the dimension is  $1 \sim 5\text{ mm}$ , the tolerance is  $\pm 0.3\text{ mm}$ ; When size  $> 5\text{ mm}$ , tolerance is  $\pm 0.4\text{ mm}$ .

## 十一 主要零部件 Important Part And Components



| 序号<br>(NO.) | 零部件名称 | Part Name              | 序号<br>(NO.) | 零部件名称 | Part Name              |
|-------------|-------|------------------------|-------------|-------|------------------------|
| 1           | 外壳    | Case                   | 7/9         | 静点    | Stationary Contact     |
| 2           | 动簧片   | Moving spring          | 8           | 动点    | Moveable Contac        |
| 3           | 衔铁    | Armature               | 10          | 常开静簧脚 | NO Stationary Terminal |
| 4           | 线圈架   | Bobbin                 | 11          | 漆包线   | Insulation wire        |
| 5           | 铁芯    | Core                   | 12          | 轭铁    | Yoke                   |
| 6           | 常闭静簧脚 | NC Stationary Terminal | 13          | 引线针   | Coil-Termina           |

## 十二 零部件成分、供应商等

### component brand, parameters, ingredients, etc

| 序号<br>(No.) | 零件名称<br>(Part Name)  | 材料<br>(Material)              | 供应商<br>(Supplier)                                                            |
|-------------|----------------------|-------------------------------|------------------------------------------------------------------------------|
| 1           | 外壳<br>Case           | 工程塑料<br>Plastic               | 宝理/新光/杜邦/三菱/南通<br>(Polyplastics / Shin Kong / DuPont / Mitsubishi / Nantong) |
| 2           | 动簧片<br>Moving spring | 铜合金<br>Copper alloy           | 鑫科/三菱/兴业/博威 (Xinke / Mitsubishi / Industrial / Bowei )                       |
| 3           | 衔铁<br>Armature       | 电工纯铁<br>Electrician pure iron | 太钢/宝钢/鞍钢<br>(TISCO/ANSTEEL/BAOSTEEL)                                         |

|     |                                 |                               |                                                                              |
|-----|---------------------------------|-------------------------------|------------------------------------------------------------------------------|
| 4   | 线圈架<br>Bobbin                   | 工程塑料<br>Plastic               | 宝理/新光/杜邦/三菱/金发<br>(Polyplastics / Shin Kong / DuPont / Mitsubishi / King FA) |
| 5   | 铁芯<br>Core                      | 电工纯铁<br>Electrician pure iron | 太钢/宝钢/鞍钢<br>(TISCO/ANSTEEL/BAOSTEEL)                                         |
| 6   | 常闭静簧脚<br>NC Stationary Terminal | 铜合金<br>Copper alloy           | 鑫科/三菱/兴业/博威 (Xinke / Mitsubishi / Industrial / Bowei )                       |
| 7/9 | 静点<br>Stationary Contact        | 银合金<br>Silver alloy           | 福达/聚星/格林/宁波电工<br>(Foodar/Green/Juxing/ Gold Point)                           |
| 8   | 动点<br>Moveable Contac           | 银合金<br>Silver alloy           | 福达/聚星/格林/宁波电工<br>(Foodar/ Green/Juxing/ Gold Point)                          |
| 10  | 常开静簧脚<br>NO Stationary Terminal | 铜合金<br>Copper alloy           | 鑫科/三菱/兴业/博威 (Xinke / Mitsubishi / Industrial / Bowei )                       |
| 11  | 漆包线<br>Insulation wire          | 3UEW                          | 蓉胜/一致/益利素勒/大连富士<br>Ronsen/Yichi/ Elektrisola/FUJI                            |
| 12  | 轭铁<br>Yoke                      | 电工纯铁<br>Electrician pure iron | 太钢/宝钢/鞍钢<br>(TISCO/ANSTEEL/BAOSTEEL)                                         |
| 13  | 引线针<br>Coil-Termina             | 铜包钢<br>Copper clad steel      | 跃兴/宏福<br>(Hongfu/Yuexing)                                                    |

### 十三 来料包装形式 packaging

|      |                              |                                                                                                                                         |
|------|------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------|
| 13.1 | 来料包装形式<br>Incoming packaging | 内包装用塑盒（管）包装，外包装用牢固的纸箱包装。<br>The inner packaging is packed in plastic box or tube, wrapped in a solid carton                             |
| 13.2 | 运输规定<br>Shipping regulations | 产品运输过程中应注意防止重压、跌落、防潮和防热。<br>During product transportation, care should be taken to prevent heavy pressure, dropping, moisture and heat. |

### 十四 厂家扫描版本附件 Factory scan version of the annex 无 NIL