



# 厦门宏发电声股份有限公司

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## 产品规格书

### Specification

文件编号 File No.: 4527518GGS365

顾客 Customer: 深圳市立创电子商务有限公司

顾客产品名称 Your Product Name: \_\_\_\_\_

顾客零件号 Your Part No.: \_\_\_\_\_

宏发产品名称 Our Product Name: 继电器 RELAY

宏发产品型号 Our Product Model: JQC-3FF/024-1HS(551)

发布日期 Publish Date: 2024年8月26日

生产工厂 Production Plant: 四川宏发电声有限公司

Sichuan Hongfa Electroacoustic Co.,Ltd.

版本 Version: a 更改单号 Number of Modification: \_\_\_\_\_

宏发审批签字 Signature by Hongfa			顾客签字或盖章 Stamp or signature by customer
拟制 Make	审核 Check	批准 Approved	负责人 By:
何德明	余国祥	高山	日期 Date:

特别说明:

1. 此规格书请顾客在 2 周内确认, 如未在规定时间内答复, 则视为同意。
2. 自提供规格书之日起 2 年内, 顾客没有下单订货, 本规格书失效。
3. 此规格书未经宏发盖章, 视为无效。

Special claim:

1. This specification is expected to be confirmed within 2 weeks. Without feedback after 2 weeks, Hongfa will consider it's approved by the customer automatically.
2. This specification will be invalid if no order within 2 years.
3. This specification is deemed invalid if it is not stamped by Hongfa.



### 变更履历 Revision Record

顾客 Customer		产品型号 Part No.		
变更版 Version No.	变更日期 Change Date	变更内容 Description	原因 Reason	负责人 By



## 产品规格书 Specification

顾客 Customer: 深圳市立创电子商务有限公司宏发料号 Hongfa Part No: 45275185197

## 1 品种 Type Model

1.1 种类 Kinds: 电磁继电器 Electromagnetic Relay1.2 型号 Type: JQC-3FF/024-1HS(551)1.3 外形尺寸 Outline: 19 mm×15.2 mm×15.5 mm1.4 触点形式 Contact Arrangement: 1组常开 1 Form A1.5 触点材料 Contact Material: 银合金 silver alloy

## 2 安全认证 Safety Approval

认证机构 Certification Agency	认证号 File No.
UL/CUL	E134517
VDE	40023708
CQC	CQC12002076529

上述认证号代表该产品取得相关认证,但具体认证内容请以我公司提交的认证证书为准。

The above certificate No. is just a license No. Please refer to the certificates we supplied for detail information.

## 3 线圈额定参数 Coil Rating

at 23 °C

额定电压 Rated Voltage Vd. c.	动作电压 <sup>(1)</sup> Operate Voltage Vd. c.	释放电压 <sup>(1)</sup> Release Voltage Vd. c.	允许最大线圈电压 <sup>(2)</sup> Max. Allowable Voltage Vd. c.	线圈电阻 Coil Resistance Ω	线圈功耗 Coil Power W 大约 Approx.
24	≤18	≥2.4	31.2*	1600×(1±10%)	0.36

备注: (1) 上述值为初始值。

(2) 允许最大线圈电压是指继电器线圈在短时间内能够承受的最大电压值。

Note: (1) The data shown above are initial values

(2) Maximum allowable coil voltage refers to the maximum voltage which relay coil could endure in a short period of time.

## 4 触点参数 Contact Specification

4.1 触点额定负载 Contact Rating: 10 A 250Va. c.4.2 最大切换电流 Max. Switching Current: 15 A 125Va. c.4.3 最大切换电压 Max. Switching Voltage: 277 Va. c.4.4 最小适用负载 min. Applicable Load: 6V 1 A

## 5 性能 Performance



5.1 接触电阻 Contact Resistance: 100 mΩ max. (at 6 Vd. c. 1A)。(四端法 Four Probe Method)

5.2 动作时间 Operate Time: ≤ 10 ms

5.3 释放时间 Release Time: ≤ 5 ms

5.4 耐久性 Endurance

5.4.1 电耐久性 Electrical Endurance (试验时要打开外壳上的气孔 Open the ventilation hole test)

结构型式 Version	触点负载 Contact Rating	环境温度 Ambient Temperature	通断比 ON: OFF	电耐久性 Electrical Endurance
H 型 type H	NO:10 A 250 Va. c. 阻性负载 resistive load	常温 Room Temperature	1s: 9s	$5 \times 10^4$ 次 (ops)

5.4.2 机械耐久性 Mechanical Endurance

结构型式 Version	触点负载 Contact Rating	环境温度 Ambient Temperature	通断比 ON: OFF	机械耐久性 Mechanical Endurance
H 型 type H	无负载 No load	常温 Room Temperature	0.1s: 0.1s	$1 \times 10^7$ 次 (ops)

5.5 介质耐压 Dielectric Strength (漏电流 Leak Current: 1 mA)

5.5.1 断开触点电路的各引出端之间 Between terminals of each opened contact circuit: 750 Va. c. (50/60 Hz 1 min)

5.5.2 所有线圈引出端与所有触点电路引出端之间 Between all coil terminals and all contact circuit terminals: 2000 Va. c. (50/60 Hz 1 min)

5.6 绝缘电阻 Insulation Resistance

5.6.1 断开触点电路的各引出端之间 Between terminals of each opened contact circuit: 100 MΩ (500 Vd. c.)

5.6.2 所有触点电路引出端与所有线圈引出端之间 Between all contact circuit terminals and all coil terminals: 100 MΩ (500 Vd. c.)

5.7 线圈温升 Coil Temperature Rise: 70 K max.

以 110% 额定电压激励, 触点负载 10 A 250 Va. c.。环境温度: 85 °C。

Applied voltage of coil 110% rated voltage, Carry current of contact

10 A 250 Va. c.. Environmental temperature is 85 °C.

5.8 振动 Vibration

稳定性: 双振幅 1.5 mm, 频率 10 Hz~55 Hz, 每个方向各 1 小时, 闭合回路的断开或断开回路的闭合时间应不超过 100 μs。

Functional: 10 Hz~55 Hz, 1.5 mm double amplitude, 1 hour Per Cross-axis. No opening or closing of any closed or opened contact circuit respectively shall exceed 100 μs.

5.9 冲击 Shock

稳定性: 98 m/s<sup>2</sup> (脉冲持续时间 11 ms), 6 次 (三个相互垂直轴线的每一个方向 6 次, 总共 36 次), 闭合回路的断开或开路回路的闭合时间应不超过 100 μs。

Malfunction: 98 m/s<sup>2</sup> (Duration 11 ms), 6 shocks (six ops in both directions of each



of the three mutually perpendicular axes, totally 36 ops), No opening or closing of any closed or opened contact circuit respectively shall exceed 100  $\mu$ s.

强度: 980 m/s<sup>2</sup> (脉冲持续时间 6 ms), 6 次(三个相互垂直轴线的每一个方向 6 次, 总共 36 次) 继电器外观、结构和性能不应有异常。

Durability: 980 m/s<sup>2</sup>(Duration 6 ms), 6 shocks (six ops in both directions of each of the three mutually perpendicular axes, totally 36 ops) It shall be no abnormalities in appearance, construction and performance.

#### 5.10 引出脚强度 Terminal Strength:

PCB 引出脚: 在 PCB 引出脚方向上施加 5 N/10 s 拉力或压力, 继电器应无异常。

PCB Terminal: The relay shall be no abnormalities while bring or press 5 N/10 s force on the PCB terminals in the directions of it.

#### 5.11 耐焊接热 Soldering Heat Resistance:

5.11.1 焊接温度 Soldering Temperature: (260 $\pm$ 3)  $^{\circ}$ C

5.11.2 焊接时间 Soldering Time: (10 $\pm$ 1) s

继电器应无异常 There shall be no abnormalities.

5.12 焊接性能 Solderability: 继电器引出端在焊锡温度 (250 $\pm$ 3)  $^{\circ}$ C 下, 浸锡时间 (3 $\pm$ 0.3) s 之后, 被浸锡部分应有 90% 以上连续覆盖一层锡层

#### 5.13 耐温性 Temperature Resistance

##### 5.13.1 耐热 Heat Resistance

(85 $\pm$ 2)  $^{\circ}$ C 温度中放置 16 h, 恢复常温 2 h 后, 继电器的结构及性能应无异常。

Must be free from any abnormality in both the construction and characteristics after the relay is lift in a temperature of (85 $\pm$ 2)  $^{\circ}$ C for 16 h and then in room temperature and humidity for 2 h.

##### 5.13.2 耐寒 Cold Resistance

(-40 $\pm$ 2)  $^{\circ}$ C 度中放置 16 h, 恢复常温 2 h 后, 继电器的结构及性能应无异常。

Must be free from any abnormality in both the construction and characteristics after the relay is lift in a temperature of (-40 $\pm$ 2)  $^{\circ}$ C for 16 h and then in room temperature and humidity for 2 h.

#### 5.14 耐湿性 Moisture Resistance

在温度 (40 $\pm$ 2)  $^{\circ}$ C 相对湿度 90%~95% RH 中放置 16 h, 恢复常温 2 h 后, 继电器的结构及性能应无异常。且绝缘电阻应不小于 50 M $\Omega$  (500 Vd. c.)。

Must be free from any abnormality in both the construction and characteristics after the relay is lift in a humidity of 90% to 95% RH for 16 h and then in room temperature and humidity for 2 h. Insulation resistance however must be 50 M $\Omega$  (500 Vd. c.).

## 6 产品标识 Marking

6.1 外壳颜色 Case Color: 黑色 Black

6.2 印字位置 Marking Position: 顶面 Top Face



## 6.3 激光打标 Laser marking



## 7 标准测试条件 Standards Test Condition

- 7.1 温度 Temperature: 23°C ± 5°C
- 7.2 湿度 Humidity: 25 % ~ 75 % RH
- 7.3 方向 Direction of Measurement: 任意 Free

## 8 使用环境条件 Operate Ambient Conditions

- 8.1 环境温度 Ambient Temperature: -40 °C ~ 85 °C
- 8.2 环境湿度 Ambient Humidity: 5 % ~ 85 % RH
- 8.3 安装方向 Mounting Direction: 任意 Free

注：使用环境条件不能导致继电器内部产生结露、结冰，否则会导致继电器失效。

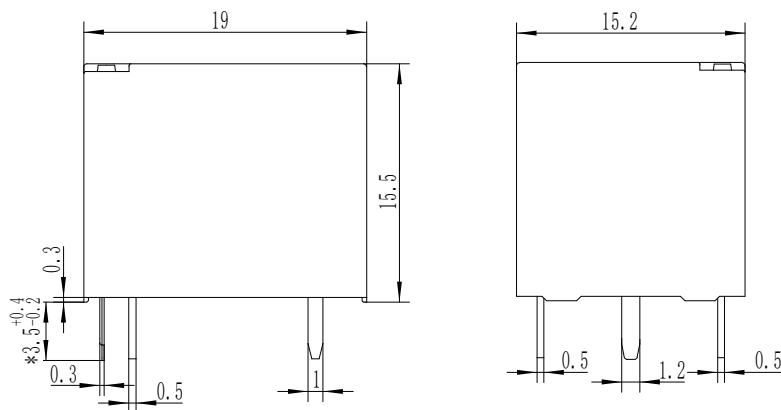
Note: The ambient environment of application shall not cause any dewing or icing inside the relay. Otherwise, the relay may fail to work consequently.

## 9 贮存条件 Storage Condition

- 9.1 温度 Temperature: 0 °C ~ 40 °C
- 9.2 湿度 Humidity: 20 % ~ 80 % RH
- 9.3 环境 Environment
- 9.3.1 产品贮存场地不能有腐蚀性气体 Store in locations where the product is not exposed to corrosive gas.
- 9.3.2 贮存中应避免阳光直照产品 Keep product is not exposed to the direct ray of the sun.
- 9.3.3 堆码高度 Stacking Height : ≤ 5 层 layers.

## 10 产品结构 Configuration

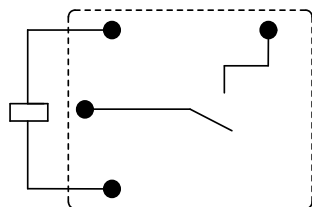
### 10.1 外形图 Outline Schematic



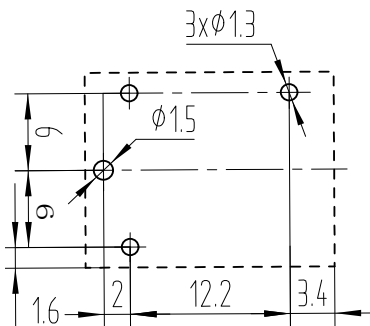
注：“\*”引出脚长度尺寸  $3.5^{+0.4}_{-0.2}$  为沾锡前标准，沾锡后锡尖长度应  $\leq 1\text{mm}$ 。

Note: “\*” PIN length  $3.5^{+0.4}_{-0.2}$  is for standard before tinning, after tinning, the tip length should be  $\leq 1\text{mm}$

### 10.2 接线图(底视)Wiring Diagram(Bottom View)



### 10.3 安装孔尺寸图 (底视图) PCB Layout (Bottom View)



产品外形尺寸未注尺寸公差及 PC 板未注尺寸公差按表 1 执行。

All unspecified tolerance(including outline dimension and PC board dimension) according to Annex.1.

表 1 Annex 1

产品外形尺寸未注尺寸公差 Outline dimensions hadn't specified tolerance		PC 板未注尺寸公差 PC board dimensions hadn't specified tolerance
外形尺寸 Outline Dimensions	公差 Tolerance	±0.1
≤1	±0.2	
>1~5	±0.3	
>5	±0.4	



## 11 订货标记 Ordering Information

JQC-3FF / 024- 1H S (551)

① ② ③ ④ ⑤

- ① 产品型号 Type JQC-3FF
- ② 线圈电压 Coil voltage 024: 24Vd. c.
- ③ 触点形式 Contact arrangement 1H: 一组常开 (1 Form A)
- ④ 封装方式 Construction S: 塑封型 (Plastic sealed)
- ⑤ 特殊特性代码 Suffix code (551): 通用代码 common code

## 12 主要零部件 Important Part And Components

序号 Serial No.	零部件名称 Part And Components Name	材料名称 Material Name	备注 Remark
1	引出脚 Terminal	铜合金 Copper alloy	
2	线圈架 Bobbin	工程塑料 Engineering plastic	
3	动簧片 Spring	铜合金 Copper alloy	
4	轭铁 Yoke	电工纯铁 Iron	
5	衔铁 Armature	电工纯铁 Iron	
6	外壳 Housing	工程塑料 Engineering plastic	
7	铁芯 Core	电工纯铁 Iron	
8	定位片 fixing bridge	铁 Iron	
9	动触点 Movable contact	银合金 silver alloy	
10	静触点 Stationary contact	银合金 silver alloy	
11	下静簧片 Stationary spring	铜合金 Copper alloy	
12	线圈 Coil	漆包线 electro-magnetic wire	

## 13 其他说明 Others

**13.1** 对于塑封型产品,在焊接完成后,如果要进行清洗,请与宏发技术中心联系。Regarding the plastic sealed relay, if cleaning is necessary after welding, please contact with Hongfa R&D center.

或者,对于塑封型产品,在焊接完成后,应将继电器自然冷却到 40℃ 以下,再进行清洗、表面处理等后处理,其中,清洗液、表面处理剂的温度也应控制在 40℃ 以下。清洗时,禁止使用超声波清洗,禁止使用汽油、三氯乙烷、氟里昂等对继电器结构件和环境有影响的清洗液。Or regarding the plastic sealed relay, we should leave it cooling naturally until below 40℃ after welding, then clean it and deal with the appearance, remarkably the temperature of cleaning solvent should also be controlled below 40℃. Please note to forbid cleaning the relay by ultrasonic, forbid using the solvent like as gasoline, Freon, and so on, which would affect the configuration of relay or affect the environment.

**13.2** 避免在强磁场条件下使用继电器,外界强磁场会造成继电器动作和释放等参数发生变化。To avoid using relays under strong magnetic field because it will change the parameters





of relay such as pull-in and drop-out voltage.

**13.3** 对宏发而言，不可能评定继电器在每个应用领域、应用环境的所有性能参数要求，因而，客户应根据具体的使用条件选择与之相匹配的产品，若有疑问，请与宏发联系获得更多的技术支持。但产品的选型责任仅由客户负责。We could not evaluate all the performance and all the parameters for every possible application field and environment. Thus the user should be in a right position to choose the suitable produce for their own application. If there is any query, please contact Hongfa for the technical service. However, it is the user's responsibility to determine which product should be used only.

**13.4** 本产品规格书中标称的使用环境温度范围指的是产品在特定负载条件下的最大耐受温度范围。对于防爆规格产品的使用环境温度按相应防爆认证证书的规定。Operating temperature range in this specification refers to the maximum tolerable temperature range under specific load conditions. To explosion-proof product, the ambient temperature should conform to regulations in related explosion-proof certification.

**13.5** 继电器的电耐久性次数可能会因使用环境条件的不同而有差异。对于部分产品，为获得更好的电耐久性能，需打开外壳的透气孔。产品的电耐久性能详细情况见认证证书。当使用环境条件与认证条件不同时，电耐久性次数需要具体试验确认。Differences in relay electrical endurance cycles would exist due to difference in operating ambient conditions. To some products, in order to better perform in electrical endurance, vent hole is required to be opened. The electrical endurance of the products detailed in the safety certificates. In case that the condition in real applications is different from safety certificates, the electrical endurance of the relay must be confirmed by tests.

**13.6** 本产品规格书供客户使用时参考，其中，未明确规定的要求条件，参考“继电器术语解释及使用指南”（见 <https://source.cn.hongfa.com/pdf/web/viewer.html?file=\Uploads\Down\PDF\GR1001.pdf>）。The specification is for reference only. See to “Terminology and Guidelines” (see <https://source.cn.hongfa.com/pdf/web/viewer.html?file=\Uploads\Down\PDF\GR1005.pdf>) for more information.

**13.7** 为了保持继电器的性能，请注意不要使继电器掉落或受到强冲击。建议掉落后的继电器报废。To maintain the performances of relays, please do not make the relay drop or be shocked strongly. Suggest that the relays dropped be scrapped.

**13.8** 规格书内的各项性能参数是基于标准测试条件下测得的初始值。  
All the performance data listed in the data sheet are the initial values tested under standard testing condition.

**13.9** 请避免让继电器在含有机硅的环境下使用，否则有机硅进入继电器内部后，有可能会导导致继电器触点加速失效。使用环境气体中，如果含有水汽及 H<sub>2</sub>S、SO<sub>2</sub>、NO<sub>2</sub>、Cl、P、粉尘等以及目前未知的有害物质、元素，可能会导致继电器使用过程中，触点发生电阻变大、接触不良等。以上情况下，请对产生有害物质、元素的物料进行管控或使用塑封继电器规格，并进行相关试



验验证，确认是满足使用要求。Please avoid using the relay in an environment containing organic silicon, otherwise the entry of organic silicon into the relay may acceleration contact failure. If there are harmful substances and elements such as water vapor, H<sub>2</sub>S, SO<sub>2</sub>, NO<sub>2</sub>, Cl, P, dust, etc., as well as unknown harmful substances and elements, In the use of environmental gases, it may lead to increased contact resistance and poor contact during the use of relays. In the above situations, please control the materials that produce harmful substances and elements or use plastic sealed type, and arrange relevant tests to confirm that it meet the requirements for actual use.

**13.10** 人工使用电烙铁进行焊接或补焊时，烙铁头温度范围应控制在：340℃~360℃之间，焊接时间应在3s以内。When manually using an electric soldering iron for welding or repair welding, the temperature range of the soldering iron head should be controlled between 340℃ and 360℃, and the welding time should be within 3 seconds.

**13.11** 若PCBA板要喷涂防护剂，为防止防护剂回吸影响产品正常工作，喷涂防护剂前应确保继电器表面温度≤30℃（尽可能接近室温），喷涂防护剂后若要进行热固化，请确保固化温度≤60℃且防护剂应完全固化。If the PCBA board needs to be sprayed with protective agent, in order to prevent the back absorption of the protective agent from affecting the normal operation of the product, the surface temperature of the relay should be ensured to be ≤30℃ (as close as possible to room temperature) before spraying the protective agent. If thermal curing is required after spraying the protective agent, please ensure that the curing temperature is ≤60℃, and the protective agent should be fully cured.

**13.12** 环保措施 Environmental Protection

宏发产品均符合 RoHS 要求

Hongfa products are all RoHS compliant.

**13.13** 宏发保留对产品更改的权利，客户在首次下单之前应确认此规格书内容，必要时可要求我司提供新的规格书。Hongfa reserves the right to make changes. Customers should reconfirm the contents of the specification before first orders and ask for us to supply a new specification if necessary.

**13.14** 事前协议事项 Priority Consultation :无