



### »» Features 特点

- ☐ Heavy duty 54A 277VAC, 50A 400VAC power type.  
大功率54A 277VAC、50A 400VAC功率继电器。
- ☐ DPDM contact configuration with large contact gap  
2.1mm / 3.0mm version.  
常开触点，二组动合，加大触点间距2.1mm / 3.0mm。
- ☐ Conforms to European photovoltaic standard IEC 62109-1.  
符合欧洲光伏标准IEC 62109-1。
- ☐ Coil holding voltage can be reduced to 50~55% V of the nominal coil voltage for saving energy.  
线圈保持电压可降至线圈额定电压的50~55% V，以达节能功效。
- ☐ High performance PCB power relay for photovoltaic power generation systems (solar inverter).  
高性能功率继电器，可用于光伏系统(太阳能逆变器)。
- ☐ Complies with RoHS-Directive 2011/65/EU.  
符合RoHS 2011/65/EU指令。

### »» Type List 型号列表

| Terminal style<br>引出端形状  | Contact form<br>触点形状 | Contact gap<br>触点间距 | Designation (provided with)<br>分类名称 |                     |
|--------------------------|----------------------|---------------------|-------------------------------------|---------------------|
|                          |                      |                     | Dust cover<br>防尘盖型                  | Flux tight<br>防助焊剂型 |
| PCB terminal<br>PCB 用引出端 | 2A<br>(DPDM)         | 2.1mm               | 510H-P-2A-F-D                       | 510H-P-2A-F-C       |
|                          |                      |                     | -----                               | 510C-P-2A-F-C       |
|                          |                      | 3.0mm               | 510H-P-2A1-F-D                      | 510H-P-2A1-F-C      |
|                          |                      |                     | -----                               | 510C-P-2A1-F-C      |

### »» Ordering Information 型号命名

510 H - P - 2A □ - F - C □  
1 2 3 4 5 6 7 8

- |        |                                                                  |          |                                                                                                 |
|--------|------------------------------------------------------------------|----------|-------------------------------------------------------------------------------------------------|
| 1. 510 | -- Basic series designation<br>基本型号                              | 5. Blank | -- Contact gap ≥2.1mm<br>触点间距 ≥2.1mm                                                            |
| 2. H   | -- High power type<br>高容量型                                       | 1        | -- Contact gap ≥3.0mm<br>触点间距 ≥3.0mm                                                            |
| C      | -- Characteristic flexible type<br>标准型                           | 6. F     | -- Class F<br>F级绝缘                                                                              |
| 3. P   | -- PCB terminal<br>PCB用引出端                                       | 7. D     | -- Dust cover 防尘盖型                                                                              |
|        |                                                                  | C        | -- Flux tight 防助焊剂型                                                                             |
| 4. 2A  | -- Form A, double-pole, double-make<br>(DPDM)<br>常开触点，二组动合(DPDM) | 8. □     | -- Coil voltage (please refer to the<br>coil rating data for the availability)<br>线圈电压(请参考线圈参数) |

### »» Contact Rating 触点额定负载

| Type 型式                          | 510H                                         | 510C                                                                                                                                |
|----------------------------------|----------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------|
| Rated load (Resistive)<br>阻性负载   | 54A 240VAC, On 1s /Off 9s, at 85°C, 10K ops. | 50A 240VAC, On 1s /Off 9s, at 85°C, 6K ops.<br>Making 20A, Carrying 50A, Breaking 20A /<br>400VAC, On 1s /Off 9s, at 85°C, 30K ops. |
| Max. switching current<br>最大开关电流 | 54A                                          | 50A                                                                                                                                 |
| Max. switching voltage<br>最大开关电压 | 277VAC                                       | 400VAC                                                                                                                              |

## »» Coil Rating 线圈参数 (DC)

| Rated voltage<br>额定电压<br>(V) | Rated current<br>额定电流<br>±10 % at 23°C<br>(mA) | Coil resistance<br>线圈电阻<br>±10 % at 23°C<br>(Ω) | Pick up voltage<br>(Max.)<br>吸合电压<br>(最大值)<br>at 23°C <sup>(1)</sup> | Drop out voltage<br>(Min.)<br>释放电压<br>(最小值)<br>at 23°C | Continuous voltage<br>持续电压<br>at 85°C <sup>(2)</sup> | Power consumption<br>at rated / holding voltage<br>额定/保持电压<br>功耗 |
|------------------------------|------------------------------------------------|-------------------------------------------------|----------------------------------------------------------------------|--------------------------------------------------------|------------------------------------------------------|------------------------------------------------------------------|
| 12                           | 449                                            | 26.7                                            | 75 % of rated voltage<br>额定电压的75%                                    | 5 % of rated voltage<br>额定电压的5%                        | 50~55 % of rated voltage<br>额定电压的50~55%              | approx. 约<br>5.4W / 1.35W <sup>(2)</sup>                         |
| 24                           | 226                                            | 106                                             |                                                                      |                                                        |                                                      |                                                                  |

Notes : (1) To energize relay properly apply 100%~120% nominal coil voltage for 200ms.

继电器施加全额线圈电压的100%~120%维持200毫秒。

(2) Coil holding voltage is 50~55% of nominal voltage after applying nominal voltage for 200ms.

线圈保持电压是全额线圈电压维持200毫秒后，降至全额线圈电压的50~55%。

## »» Specification 技术参数

|                                                          |                                                                                                           |                                                  |
|----------------------------------------------------------|-----------------------------------------------------------------------------------------------------------|--------------------------------------------------|
| Contact material<br>触点材料                                 | Ag alloy<br>银合金                                                                                           |                                                  |
| Contact resistance <sup>(1)</sup><br>接触电阻 <sup>(1)</sup> | 100mΩ Max. (at 1A/6VDC by 4-wire resistance measurement 四端法)<br>6 mΩ Max. (By voltage drop 10A) (以10A压降法) |                                                  |
| Operate time <sup>(1)</sup><br>吸合时间 <sup>(1)</sup>       | 30ms Max.                                                                                                 |                                                  |
| Release time <sup>(1)</sup><br>释放时间 <sup>(1)</sup>       | 30ms Max.                                                                                                 |                                                  |
| Vibration resistance<br>振动                               | Operating extremes<br>稳定工作                                                                                | 10~50Hz , amplitude 振幅 1.5 mm                    |
|                                                          | Damage limits<br>损坏极限                                                                                     | 10~50Hz , amplitude 振幅 1.5 mm                    |
| Shock resistance<br>冲击                                   | Operating extremes<br>稳定工作                                                                                | 10G                                              |
|                                                          | Damage limits<br>损坏极限                                                                                     | 100G                                             |
| Life expectancy<br>预期寿命                                  | Mechanical<br>机械                                                                                          | 1,000,000 ops.<br>(frequency 动作频率 9,000 ops./hr) |
| Operating ambient temperature<br>工作环境温度                  | -40~+85°C (no freezing 不结冰)                                                                               |                                                  |
| Weight<br>重量                                             | Approx. 约90 g                                                                                             |                                                  |

Notes : (1) Initial value. Operate and release time excluding contact bounce.

初始值。吸合/释放时间不包含触点弹跳时间。

(2) All tests are conducted under room temperature and room humidity.

所有测试皆在常温常湿下执行。

(3) Consider the heat of PCB is necessary, please check the actual condition of PCB.

必须考虑PC板温度，请检查实际PC板条件状态。

(4) Applying no diode to this relay. The life expectancy will be lower when a diode is used. To use a varistor (ZNR) could absorb the coil surge of relay that is recommended.

禁用二极管。若使用二极管会缩短预期寿命。建议使用突波吸收器(ZNR)来吸收继电器的线圈脉冲。

(5) Do not use the relay exceeding the coil rating, contact rating and life expectancy, or this may cause the risk of overheating.

使用继电器请勿超过线圈规格负载、触点额定负载和预期寿命，否则可能会造成过热的风险。

(6) To assure optimum performance, avoid the relay from dropping, hitting, or other unnecessary shocks.

为保障继电器的理想性能，请避免继电器遭受摔落、碰撞，以及不必要的冲击。

(7) Do not switch the contacts without any load as the contact resistance may become increased rapidly.

请勿在无通负载下开闭触点，以免接触阻抗快速增加。

(8) Please contact Song Chuan for the detailed information.

详细内容请与松川公司联系。

## »» Insulation Data 绝缘参数

|                                                             |                                                                                                                                            |
|-------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------|
| Insulation resistance <sup>(1)</sup><br>绝缘电阻 <sup>(1)</sup> | 1000MΩ Min. (DC 500V)                                                                                                                      |
| Dielectric strength <sup>(1)</sup><br>介质耐压 <sup>(1)</sup>   | Between open contact<br>开路触点间 : AC 2000V, 50/60Hz 1 min.                                                                                   |
|                                                             | Between contact and coil<br>触点线圈间 : AC 4000V, 50/60Hz 1 min.                                                                               |
|                                                             | Between contact circuits<br>触点回路间 : AC 2000V, 50/60Hz 1 min.                                                                               |
| Insulation of IEC 61810-1 / IEC 61810-1绝缘                   |                                                                                                                                            |
| Clearance / creepage distances<br>空间/爬面距离                   | Between coil to contact<br>触点线圈间 : Double 双倍/Reinforce 加强,<br>≥3.0mm / ≥5.0 mm (for 250VAC)<br>≥3.0mm / ≥8.0 mm (for 400VAC of 510C type)  |
|                                                             | Between open contact<br>开路触点间 : Basic 基本, ≥1.5 mm/ ≥2.5 mm<br>≥3.0 mm/ ≥4.0 mm (for 400VAC & 2A1 of 510C type only)                        |
|                                                             | Between contact circuits<br>触点回路间 : Double 双倍/Reinforce 加强,<br>≥3.0mm / ≥5.0 mm (for 250VAC)<br>≥3.0mm / ≥8.0 mm (for 400VAC of 510C type) |
| Rated insulation voltage<br>额定绝缘电压                          | 250V (for 510H type), 250V/400V (for 510C type)                                                                                            |
| Rated impulse withstand voltage<br>额定脉冲耐压                   | 2500V                                                                                                                                      |
| Pollution degree<br>污染等级                                    | 2                                                                                                                                          |
| Rated voltage<br>额定电压                                       | 230 / 400V                                                                                                                                 |
| Overvoltage category<br>过电压类别                               | II                                                                                                                                         |
| Compliant with European photovoltaic standard / 符合欧洲光伏标准    |                                                                                                                                            |
| Contact gap<br>触点间距                                         | 2.1 mm Min. (IEC 62109-1 and VDE 0126)                                                                                                     |
|                                                             | 3.0 mm Min. (IEC 62109-1 and VDE 0126)                                                                                                     |

Notes : (1) Initial value.  
初始值。

## »» Safety Approval 安规认证

|               |          |           |
|---------------|----------|-----------|
| Certified 认证  | UL / CUL | TUV       |
| File No. 认证编号 | E88991   | R50199385 |

## »» Safety Approval Rating 安规认证负载

### ◆ 510H type

|            |            |
|------------|------------|
| UL / CUL   | TUV        |
| 54A 277VAC | 54A 250VAC |

### ◆ 510C type

|                                                                                                           |                                                         |
|-----------------------------------------------------------------------------------------------------------|---------------------------------------------------------|
| UL / CUL                                                                                                  | TUV                                                     |
| 20A 277VAC, Resistive, Carrying current 50A<br>20A 400VAC, Resistive, Carrying current 50A <sup>(1)</sup> | Making 20A , Carrying 50A , Breaking 20A <sup>(2)</sup> |

Notes : (1) For Non-Industrial application use only.  
非工业用途适用。

(2) With 50%~55% modulation of nominal coil voltage.  
调节至全额线圈电压的50%~55%。

