

## 1a/1c 10A cubic type power relays

# JS RELAYS



RoHS compliant

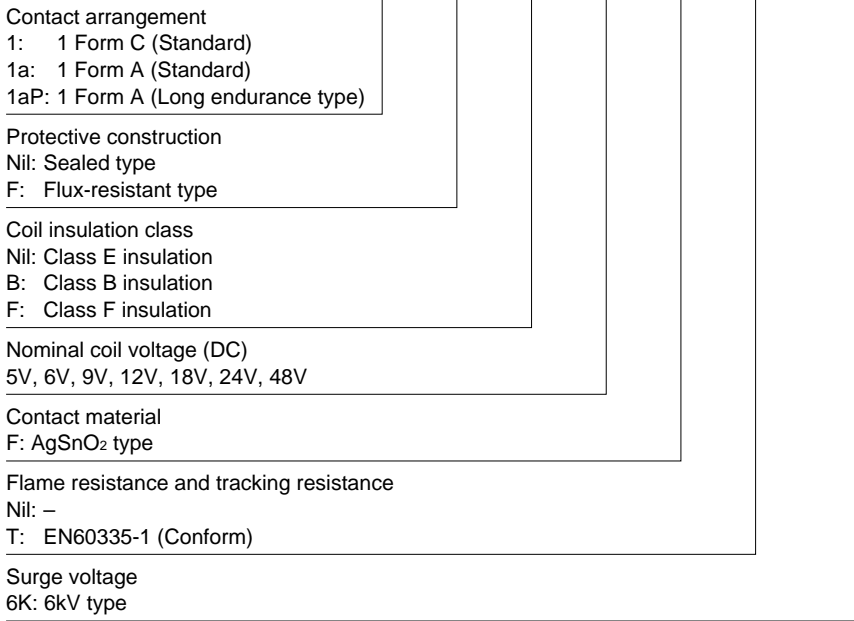
### FEATURES

- Miniature size with universal terminal footprint
- High contact capacity: 10 A
- TV-5 type available (Standard type)  
1 Form A type → TV-5  
1 Form C type → TV-5 (N.O. side only)
- VDE, TÜV also approved
- Sealed construction for automatic cleaning (Standard type)
- Class B and F coil insulation type also available.
- EN60335-1 GWT compliant (Tested by VDE) type available
- Surge voltage 6 kV type also available

### TYPICAL APPLICATIONS

1. Home appliances  
Air conditioner, heater, etc.
2. Office machines  
PPC, facsimile, etc.
3. Vending machines

### ORDERING INFORMATION



Standard: UL, CSA, VDE, TÜV (Standard type)  
 UL, CSA, VDE (Long endurance type and EN60335-1 GWT compliant type)  
 UL, CSA (Surge voltage 6kV type)

Notes: 1. When ordering TV rated (TV-5) types, please consult us.  
 2. Contact arrangement 1aP type is Flux-resistant type only (Class B insulation only).

## TYPES

| Contact arrangement             | Nominal coil voltage | Sealed type | Flux-resistant type |
|---------------------------------|----------------------|-------------|---------------------|
|                                 |                      | Part No.    | Part No.            |
| 1 Form A<br>(Standard)          | 5V DC                | JS1a-5V-F   | JS1aF-5V-F          |
|                                 | 6V DC                | JS1a-6V-F   | JS1aF-6V-F          |
|                                 | 9V DC                | JS1a-9V-F   | JS1aF-9V-F          |
|                                 | 12V DC               | JS1a-12V-F  | JS1aF-12V-F         |
|                                 | 18V DC               | JS1a-18V-F  | JS1aF-18V-F         |
|                                 | 24V DC               | JS1a-24V-F  | JS1aF-24V-F         |
|                                 | 48V DC               | JS1a-48V-F  | JS1aF-48V-F         |
| 1 Form A<br>Long endurance type | 5V DC                | –           | JS1aPF-B-5V-F       |
|                                 | 6V DC                | –           | JS1aPF-B-6V-F       |
|                                 | 9V DC                | –           | JS1aPF-B-9V-F       |
|                                 | 12V DC               | –           | JS1aPF-B-12V-F      |
|                                 | 18V DC               | –           | JS1aPF-B-18V-F      |
|                                 | 24V DC               | –           | JS1aPF-B-24V-F      |
|                                 | 48V DC               | –           | JS1aPF-B-48V-F      |
| 1 Form C<br>(Standard)          | 5V DC                | JS1-5V-F    | JS1F-5V-F           |
|                                 | 6V DC                | JS1-6V-F    | JS1F-6V-F           |
|                                 | 9V DC                | JS1-9V-F    | JS1F-9V-F           |
|                                 | 12V DC               | JS1-12V-F   | JS1F-12V-F          |
|                                 | 18V DC               | JS1-18V-F   | JS1F-18V-F          |
|                                 | 24V DC               | JS1-24V-F   | JS1F-24V-F          |
|                                 | 48V DC               | JS1-48V-F   | JS1F-48V-F          |

Standard packing Carton: 100 pcs. Case: 500 pcs.

Notes: 1. Class B and F coil insulation types available.

Ex) JS1aF-B-12V-F, JS1aF-F-12V-F

2. EN60335-1 GWT compliant types available. When ordering, please add suffix "T".

Ex) JS1aF-B-12V-FT

3. Surge voltage 6kV types available. When ordering, please add suffix "6K" (except for Long endurance type and EN60335-1 GWT compliant type).

Ex) JS1aF-B-12V-F-6K

## RATING

### 1. Coil data

| Nominal coil voltage | Pick-up voltage<br>(at 20°C 68°F)            | Drop-out voltage<br>(at 20°C 68°F)           | Nominal operating current<br>[±10%] (at 20°C 68°F) | Coil resistance<br>[±10%] (at 20°C 68°F) | Nominal operating power<br>(at 20°C 68°F) | Max. applied voltage<br>(at 70°C 158°F)                                      |
|----------------------|--|--|--|--|---|--|
| 5V DC                | 70%V or less of nominal voltage<br>(Initial) | 10%V or more of nominal voltage<br>(Initial) | 72 mA  | 69.4Ω                                    | 360mW                                     | 130%V of nominal voltage<br><br>[When using relays at 85°C 185°F, see Note*] |
| 6V DC                |  |  | 60 mA  | 100 Ω                                    |   |  |
| 9V DC                |  |  | 40 mA  | 225 Ω                                    |   |  |
| 12V DC               |  |  | 30 mA  | 400 Ω                                    |   |  |
| 18V DC               |  |  | 20 mA  | 900 Ω                                    |   |  |
| 24V DC               |  |  | 15 mA  | 1,600 Ω                                  |   |  |
| 48V DC               |  |  | 7.5mA  | 6,400 Ω                                  |   |  |

Note: \* When using relays in a high ambient temperature, consider the pick-up voltage rise due to the high temperature (a rise of approx. 0.4% V for each 1°C 33.8°F with 20°C 68°F as a reference) and use a coil impressed voltage that is within the maximum applied voltage range.

## 2. Specifications

| Characteristics            | Item  | Specifications   |  |
|----------------------------|---|--|--|
| Contact                    | Contact material                                  | AgSnO <sub>2</sub> type  |  |
|                            | Contact resistance (Initial)                      | Max. 100 mΩ (By voltage drop 6 V DC 1A)  |  |
|                            | Arrangement                                       | 1 Form A, 1 Form C<br>1 Form A Long endurance type   |  |
| Rating                     | Nominal switching capacity (resistive load)       | 10 A 250 V AC (NO), 10 A 125 V AC, 6 A 277 V AC, 5 A 30 V DC<br>10 A 250 V AC, 10 A 277 V AC, 5 A 30 V DC  |  |
|                            | Max. switching power (resistive load)             | 2,500VA 150W (NO), 1,662VA 150W (NC)<br>2,770VA 150W   |  |
|                            | Max. switching voltage                            | 250V AC, 100V DC (0.5A)  |  |
|                            | Max. switching current                            | 10A (AC), 5A (DC)  |  |
|                            | Nominal operating power                           | 360mW  |  |
|                            | Min. switching capacity*1                         | 100mA, 5V DC   |  |
| Electrical characteristics | Insulation resistance (Initial)                   | Min. 100MΩ (at 500V DC) Measurement at same location as "Breakdown voltage" section.   |  |
|                            | Breakdown voltage (Initial)                       | Between open contacts  | 750 Vrms for 1 min. (Detection current: 10 mA)   |
|                            |   | Between contact and coil   | 1,500 Vrms for 1 min. (Detection current: 10 mA)   |
|                            | Temperature rise (coil)                           | Max. 35°C 95°F (By resistive method, nominal coil voltage applied to the coil; contact carrying current: 10A, at 70°C 158°F)   |  |
|                            | Operate time (at nominal voltage) (at 20°C 68°F)  | Max. 10 ms (excluding contact bounce time.)  |  |
|                            | Release time (at nominal voltage) (at 20°C 68°F)  | Max. 10 ms (excluding contact bounce time) (Without diode)   |  |
| Mechanical characteristics | Shock resistance                                  | Functional   | 98 m/s <sup>2</sup> (Half-wave pulse of sine wave: 11 ms; detection time: 10μs.)   |
|                            |   | Destructive  | 980 m/s <sup>2</sup> (Half-wave pulse of sine wave: 6 ms.)   |
|                            | Vibration resistance                              | Functional   | 10 to 55 Hz at double amplitude of 1.6 mm (Detection time: 10μs.)  |
|                            |   | Destructive  | 10 to 55 Hz at double amplitude of 2 mm  |
| Expected life              | Mechanical (at 180 times/min.)                    | Min. 10 <sup>7</sup>   |  |
|                            | Electrical (resistive load)                       | 1×10 <sup>5</sup><br>[10A 125V AC, 6A 277V AC, 5A 30V DC]<br>5×10 <sup>4</sup> (NO contact only)<br>[10A 250V AC]  | 2×10 <sup>5</sup><br>[10A 277V AC]<br>1.5×10 <sup>5</sup><br>[10A 250V AC (at 20 times/min., 105°C 221°F)]<br>1×10 <sup>5</sup><br>[5A 30V DC] |
| Conditions                 | Conditions for operation, transport and storage*2 | -40°C to +70°C -40°F to +158°F (Class E insulation)<br>-40°C to +85°C -40°F to +185°F (Class B insulation)*3<br>-40°C to +105°C -40°F to +221°F (Class F insulation)*3<br>Humidity: 5 to 85% R.H. (Not freezing and condensing at low temperature) | -40°C to +105°C -40°F to +221°F*3;<br>Humidity: 5 to 85% R.H. (Not freezing and condensing at low temperature)                                 |
|                            | Max. operating speed                              | 20 times/min. (at nominal switching capacity)  |  |
| Unit weight                |   | Approx. 12 g .423 oz   |  |

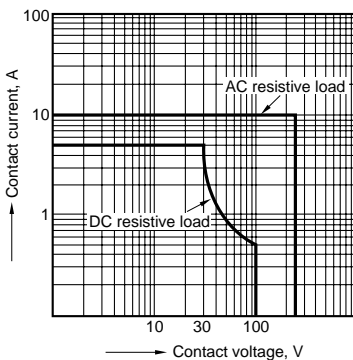
Notes: \*1. This value can change due to the switching frequency, environmental conditions, and desired reliability level, therefore it is recommended to check this with the actual load.

\*2. The upper limit of the ambient temperature is the maximum temperature that can satisfy the coil temperature rise value. Refer to Usage, transport and storage conditions in NOTES.

\*3. When using relays in a high ambient temperature, consider the pick-up voltage rise due to the high temperature (a rise of approx. 0.4% V for each 1°C 33.8°F with 20°C 68°F as a reference) and use a coil impressed voltage that is within the maximum applied voltage range.

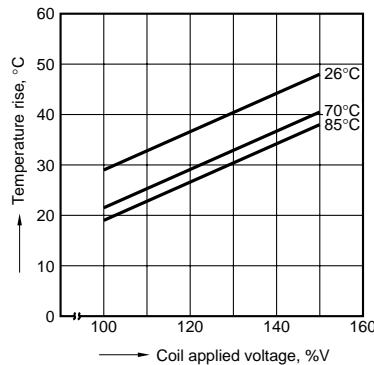
## REFERENCE DATA

### 1. Maximum value for switching capacity



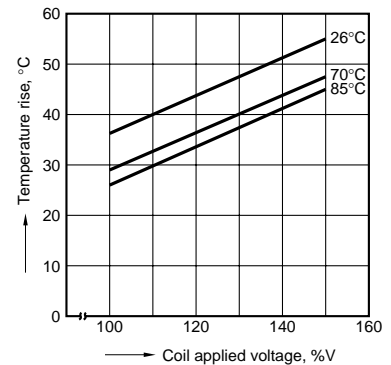
### 2.-(1) Coil temperature rise

Sample: 5 pcs., JS1a-24V-F  
Measured portion: Inside the coil  
Contact current: 5 A



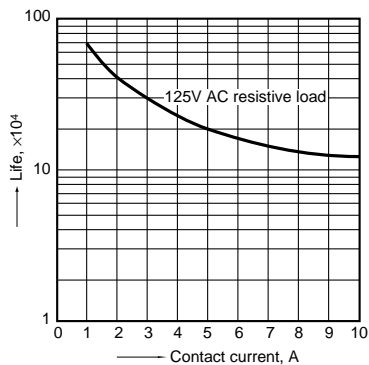
### 2.-(2) Coil temperature rise

Sample: 5 pcs., JS1a-24V-F  
Measured portion: Inside the coil  
Contact current: 10 A



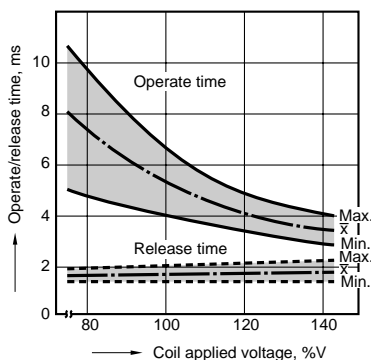
3. Life curve

Ambient temperature: Room temperature



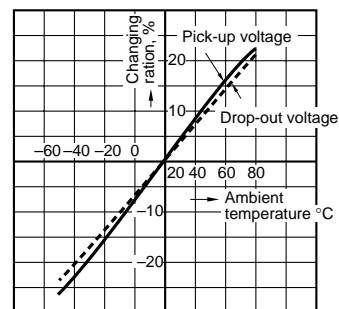
4. Operate/release time

Sample: 25 pcs., JS1-12V-F



5. Ambient temperature characteristics

Sample: 6 pcs., JS1-12V-F



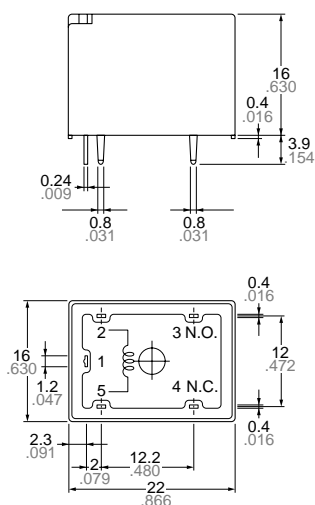
**DIMENSIONS** (mm inch)

The CAD data of the products with a **CAD Data** mark can be downloaded from: <http://industrial.panasonic.com/ac/e/>

**CAD Data**



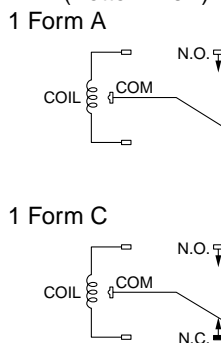
External dimensions



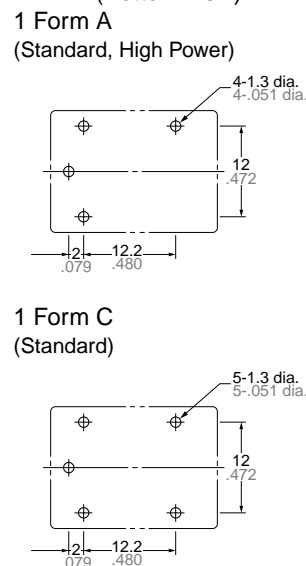
Note: Terminal No. 4 is only for Standard 1 Form C type

|  |                          |
|--|--------------------------|
| <b>Dimension:</b>                          | <b>General tolerance</b> |
| Less than 1mm .039inch:                    | ±0.1 ±.004               |
| Min. 1mm .039inch less than 3mm .118 inch: | ±0.2 ±.008               |
| Min. 3mm .118 inch:                        | ±0.3 ±.012               |

Schematic (Bottom view)



PC board pattern (Bottom view)



Tolerance: ±0.1 ±.004

**SAFETY STANDARDS**

| UL/C-UL (Recognized) |   | CSA (Certified) |  | VDE (Certified) |   | TV rating (UL/CSA)             |                           | TÜV (Certified)      |   |
|----------------------|---|-----------------|--|-----------------|---|--------------------------------|---------------------------|----------------------|---|
| File No.             | Contact rating  | File No.        | Contact rating   | File No.        | Contact rating                                  | File No.                       | Rating                    | File No.             | Rating  |
| E43028               | 10A 125V AC, 6A 277V AC<br>5A 30V DC, 1/8HP 125V AC<br>1/8HP 277V AC<br>12A 125V AC<br>12A 277V AC<br>10A 125V AC (N.O., 85°C)<br>4FLA/4LRA125V AC 105°C (N.O.)<br>2FLA/4LRA125V AC 105°C (N.C.)<br>1/8HP 277V AC 75°C N.O. | LR26550         | 10A 125V AC<br>12A 125V AC<br>6A 277V AC<br>12A 277V AC<br>5A 30V DC<br>1/8HP 125V AC<br>1/8HP 277V AC | 40011475        | 10A 125V AC (cosφ=1.0)<br>6A 250V AC (cosφ=1.0) | UL<br>E43028<br>CSA<br>LR26550 | 1a→TV-5<br>1c→TV-5 (N.O.) | B 10 02<br>13461 271 | 10A 125V AC (cosφ=1.0)<br>6A 250V AC (cosφ=1.0) |

**For Cautions for Use.**

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