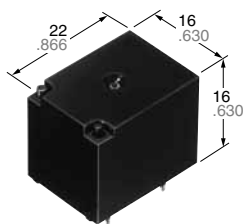




## Cubic type 1a/1c 10A power relays

# JS RELAYS



**RoHS compliant**

Protective construction: Flux-resistant type/Sealed type

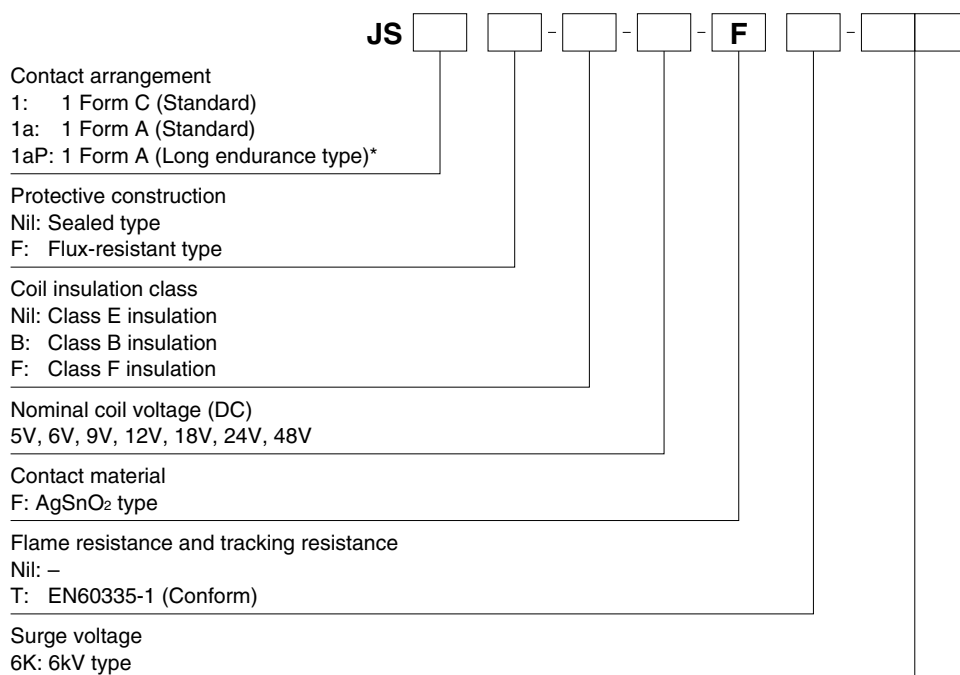
## FEATURES

- 1. Miniature size with universal terminal footprint**
- 2. High contact capacity: 10 A**
- 3. TV-5 type available (Standard type)**  
1 Form A type → TV-5  
1 Form C type → TV-5 (N.O. side only)
- 4. VDE, TÜV also approved**
- 5. Sealed construction for automatic cleaning (Standard type)**
- 6. Class B and F coil insulation type also available**
- 7. EN60335-1 GWT compliant (Tested by VDE) type available**
- 8. 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



\* 1 Form A long endurance 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. 1 Form A long endurance type is Flux-resistant type only (Class B insulation only).  
3. EN60335-1 GWT compliant types available. When ordering, please add suffix "T".  
Ex) JS1aF-B-12V-FT  
4. 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                                                                                                                                                                                                                                 | 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                                                                                                                                                                                       | 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)                                                                                                                                                                                                               | 2,770VA 150W                                                                                                   |
|                                                  | Max. switching voltage                            |                                                            | 250V AC, 100V DC (0.5A)                                                                                                                                                                                                                            |                                                                                                                |
|                                                  | Max. switching current                            |                                                            | 10A (AC), 5A (DC)                                                                                                                                                                                                                                  |                                                                                                                |
|                                                  | Min. switching capacity (reference value)*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)                                                                                                                                                                                                   |                                                                                                                |
|                                                  | 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>                                                                                                                                                                                                                               |                                                                                                                |
| 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) |
| 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.

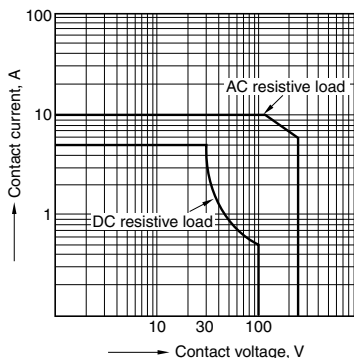
## 3. Electrical life

Condition: Resistive load, at 20°C 68°F, at 20 times/min.

| Type                            | Switching capacity | No. of operations                         |
|---------------------------------|--------------------|-------------------------------------------|
| 1 Form A, 1 Form C              | 10A 125V AC        | min. 1×10 <sup>5</sup>                    |
|                                 | 6A 277V AC         |                                           |
|                                 | 5A 30V DC          |                                           |
| N.O.                            | 10A 250V AC        | min. 5×10 <sup>4</sup>                    |
| 1 Form A<br>Long endurance type | 10A 277V AC        | min. 2×10 <sup>5</sup>                    |
|                                 | 10A 277V AC        | min. 1.5×10 <sup>5</sup> (at 105°C 221°F) |
|                                 | 5A 30V DC          | min. 1×10 <sup>5</sup>                    |

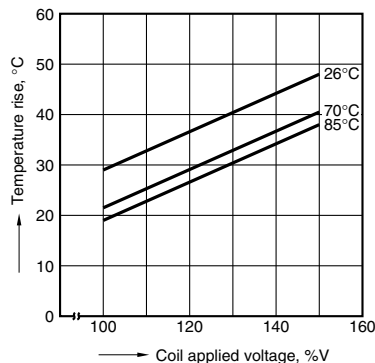
## REFERENCE DATA

### 1. Maximum value for switching capacity



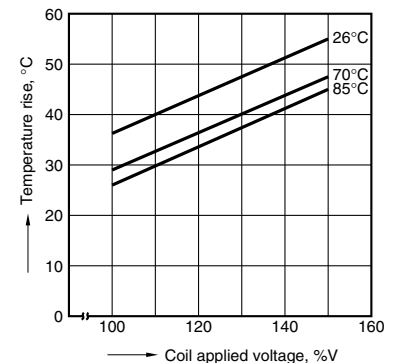
### 2.-(1) Coil temperature rise

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



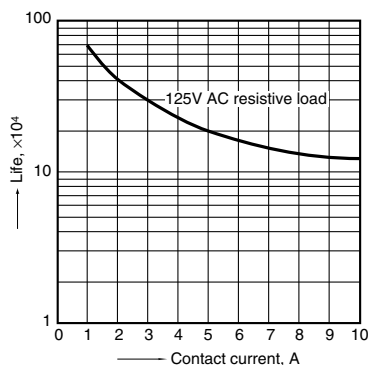
### 2.-(2) Coil temperature rise

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



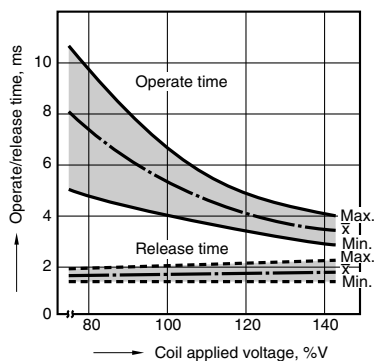
## 3. Life curve

Ambient temperature: Room temperature



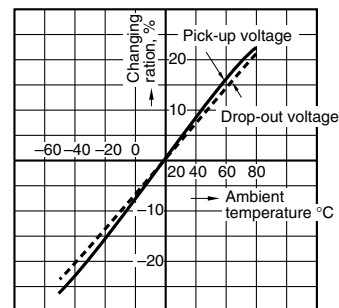
## 4. Operate/release time

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



## 5. Ambient temperature characteristics

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



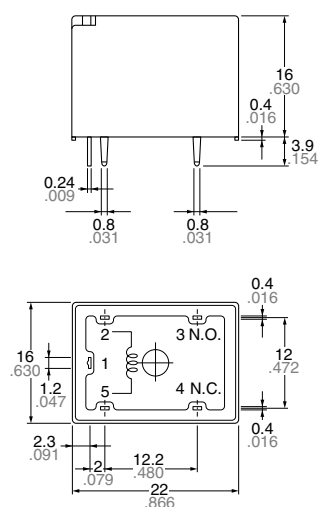
## DIMENSIONS (mm inch)

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

## Dimension:

Less than 1mm .039inch:

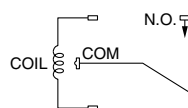
Min. 1mm .039inch less than 3mm .118 inch:

Min. 3mm .118 inch:

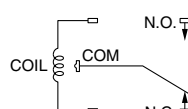
## General tolerance

 $\pm 0.1 \pm .004$  $\pm 0.2 \pm .008$  $\pm 0.3 \pm .012$ Schematic  
(Bottom view)

## 1 Form A

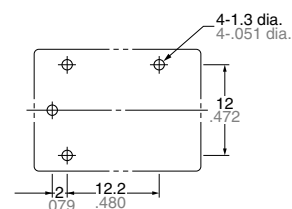


## 1 Form C

PC board pattern  
(Bottom view)

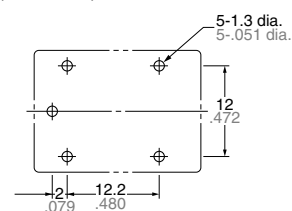
## 1 Form A

(Standard, High Power)



## 1 Form C

(Standard)

Tolerance:  $\pm 0.1 \pm .004$

## SAFETY STANDARDS

| Type          | UL/C-UL (Recognized) |                          |             |                   | CSA (Certified) |                |                 |
|---------------|----------------------|--------------------------|-------------|-------------------|-----------------|----------------|-----------------|
|               | File No.             | Contact rating           | Temperature | Cycles            | File No.        | Contact rating | Cycles          |
| Standard type | E43028               | 10A 125V AC (N.C.)       | —           | —                 | LR26550         | 10A 125V AC    | 10 <sup>5</sup> |
|               |                      | 6A 277V AC               | —           | 10 <sup>5</sup>   |                 | 12A 125V AC    | 10 <sup>5</sup> |
|               |                      | 5A 30V DC                | —           | 10 <sup>5</sup>   |                 | 6A 277V AC     | 10 <sup>5</sup> |
|               |                      | 1/8HP 125V AC            | —           | 10 <sup>5</sup>   |                 | 5A 30V DC      | 10 <sup>5</sup> |
|               |                      | 1/8HP 277V AC            | —           | 10 <sup>4</sup>   |                 | 1/8HP 125V AC  | 10 <sup>5</sup> |
|               |                      | 12A 125V AC              | 70°C 158°F  | 10 <sup>5</sup>   |                 | 1/8HP 277V AC  | 10 <sup>5</sup> |
|               |                      | 10A 125V AC (N.O.)       | 85°C 185°F  | 10 <sup>5</sup>   |                 | —              | —               |
|               |                      | 4FLA/4LRA 240V AC (N.O.) | 105°C 221°F | 10 <sup>5</sup>   |                 | —              | —               |
|               |                      | 2FLA/4LRA 240V AC (N.C.) | 105°C 221°F | 3×10 <sup>4</sup> |                 | —              | —               |
|               |                      | 1/3HP 277V AC (N.O.)     | 75°C 167°F  | 10 <sup>5</sup>   |                 | —              | —               |

| Type          | VDE (Certified) |                        |             |                 | TUV (Certified) |                        |                 |
|---------------|-----------------|------------------------|-------------|-----------------|-----------------|------------------------|-----------------|
|               | File No.        | Contact rating         | Temperature | Cycles          | File No.        | Contact rating         | Cycles          |
| Standard type | 40011475        | 10A 125V AC (cosφ=1.0) | 70°C 158°F  | 10 <sup>4</sup> | B 12 09         | 10A 125V AC (cosφ=1.0) | 10 <sup>5</sup> |
|               |                 | 6A 250V AC (cosφ=1.0)  | 70°C 158°F  | 10 <sup>5</sup> | 13461 336       | 6A 250V AC (cosφ=1.0)  | 10 <sup>5</sup> |

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

## NOTES

1. For cautions for use, please read “GENERAL APPLICATION GUIDELINES”.

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Please contact .....

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