



**RoHS compliant**

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

# JS RELAYS

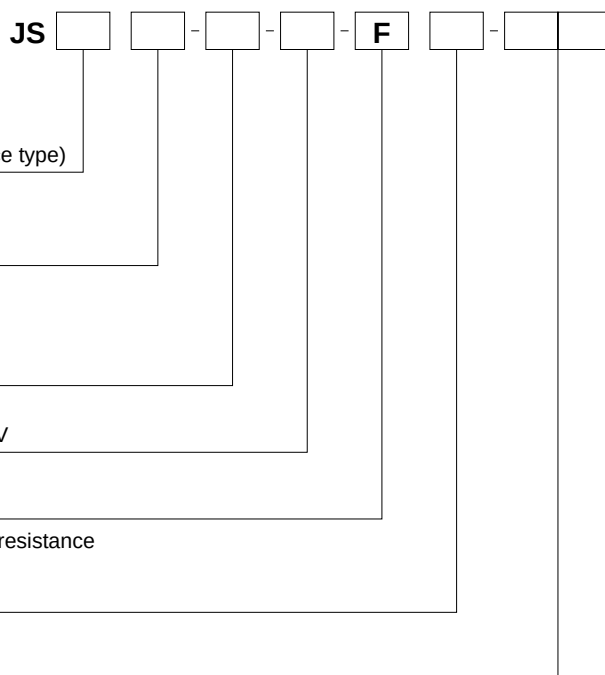
## FEATURES

- **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



### Contact arrangement

1: 1 Form C (Standard)

1a: 1 Form A (Standard)

1aP: 1 Form A (Long endurance type)

### Protective construction

Nil: Sealed type

F: Flux-resistant type

Coil insulation class

Nil: Class E insulation

B: Class B insulation

F: Class F insulation

Nominal coil voltage (DC)

5V, 6V, 9V, 12V, 18V, 24V, 48V

Contact material

F: AgSnO<sub>2</sub> type

### Flame resistance and tracking resistance

Nil: -

T: EN60335-1 (Conform)

Surge voltage

6K: 6kV type

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                                                                                                                                                                                                                                                         | 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)                                                                                                                                                                                                                                                          |                                                                                                                                                |
|                                                  | Nominal operating power                                       |                                                                                                                              | 360mW                                                                                                                                                                                                                                                                      |                                                                                                                                                |
|                                                  | Min. switching capacity* <sup>1</sup>                         |                                                                                                                              | 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* <sup>2</sup> |                                                                                                                              | −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)* <sup>3</sup><br>−40°C to +105°C −40°F to +221°F (Class F insulation)* <sup>3</sup><br>Humidity: 5 to 85% R.H. (Not freezing and condensing at low temperature) | −40°C to +105°C −40°F to +221°F* <sup>3</sup> ;<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                                                                                                                                                                                                                                                       |                                                                                                                                                |

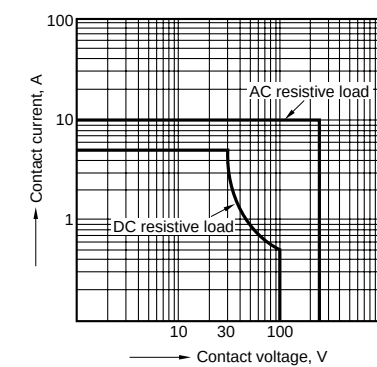
Notes: \*1. This value can change due to the switching frequency, environmental conditions, and desired reliability level, therefore it is recommended to check this with the actual load.

\*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.

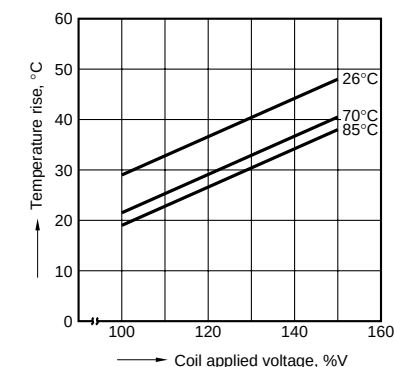
\*3. When using relays in a high ambient temperature, consider the pick-up voltage rise due to the high temperature (a rise of approx. 0.4% V for each 1°C 33.8°F with 20°C 68°F as a reference) and use a coil impressed voltage that is within the maximum applied voltage range.

REFERENCE DATA

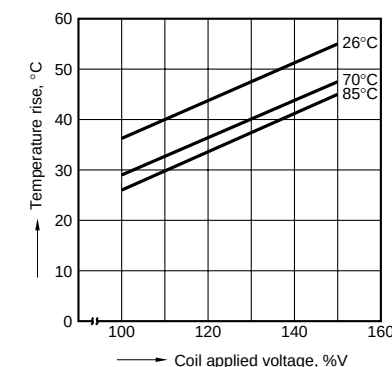
1. Maximum value for switching capacity



2.-(1) Coil temperature rise  
Sample: 5 pcs., JS1a-24V-F  
Measured portion: Inside the coil  
Contact current: 5 A

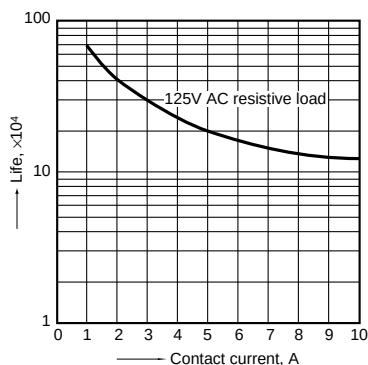


2.-(2) Coil temperature rise  
Sample: 5 pcs., JS1a-24V-F  
Measured portion: Inside the coil  
Contact current: 10 A



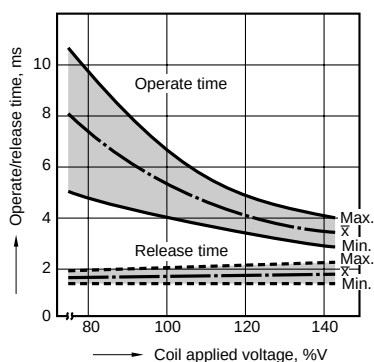
## 3. Life curve

Ambient temperature: Room temperature



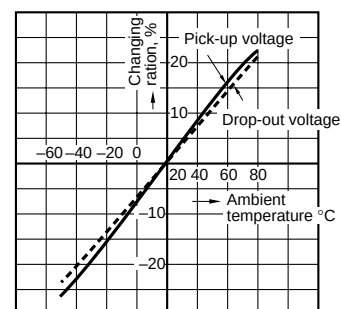
## 4. Operate/release time

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



## 5. Ambient temperature characteristics

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

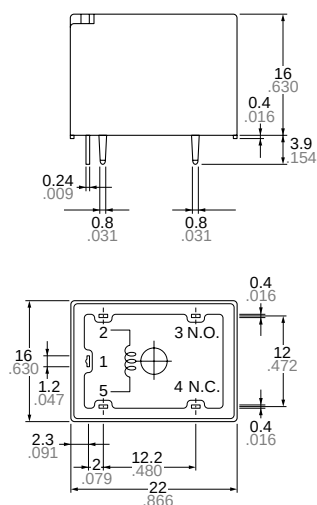


## DIMENSIONS (mm inch)

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

## Dimension:

Less than 1mm .039inch:

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

Min. 3mm .118 inch:

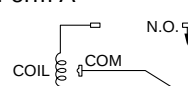
## General tolerance

 $\pm 0.1 \pm 0.04$  $\pm 0.2 \pm 0.08$  $\pm 0.3 \pm 0.12$ 

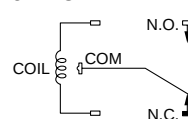
## Schematic

## (Bottom view)

## 1 Form A



## 1 Form C

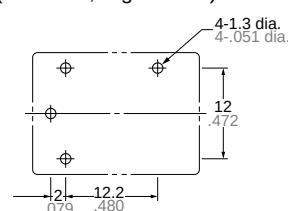


## PC board pattern

## (Bottom view)

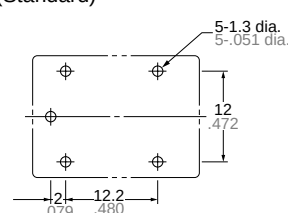
## 1 Form A

(Standard, High Power)



## 1 Form C

(Standard)

Tolerance:  $\pm 0.1 \pm 0.04$ 

## 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>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 ( $\cos\phi=1.0$ )<br>6A 250V AC ( $\cos\phi=1.0$ ) | 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 ( $\cos\phi=1.0$ )<br>6A 250V AC ( $\cos\phi=1.0$ ) |

## For Cautions for Use.

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[JS1AF-18V-F](#) [JS1AF-24V](#) [JS1AF-24V-F](#) [JS1AF-48V](#) [JS1AF-48V-F](#) [JS1AF-5V](#) [JS1AF-5V-F](#) [JS1AF-6V](#) [JS1AF-6V-F](#)  
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[JS1-24V-Y2](#) [JS1-24V-Y3](#) [JS1-3V](#) [JS1-4V](#) [JS1-6V-TV](#) [JS1A-12V-TV](#) [JS1A-18V](#) [JS1A-18V-F](#) [JS1A-24V-TV](#) [JS1A-](#)  
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[JS1A-B-12V-Y2](#) [JS1A-B-18V](#) [JS1A-B-18V-F](#) [JS1A-B-24V](#) [JS1A-B-24V-F](#) [JS1A-B-48V](#) [JS1A-B-48V-F](#) [JS1A-B-5V](#)  
[JS1A-B-5V-F](#) [JS1A-B-6V](#) [JS1A-B-6V-F](#) [JS1A-B-9V](#) [JS1A-B-9V-F](#) [JS1AF-12V-TV](#) [JS1AF-B-12V](#) [JS1AF-B-12V-F](#)

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