

Ideal for power supply
1a/1c/2a/2c/5A/10A
power relays

JW RELAYS



RoHS compliant

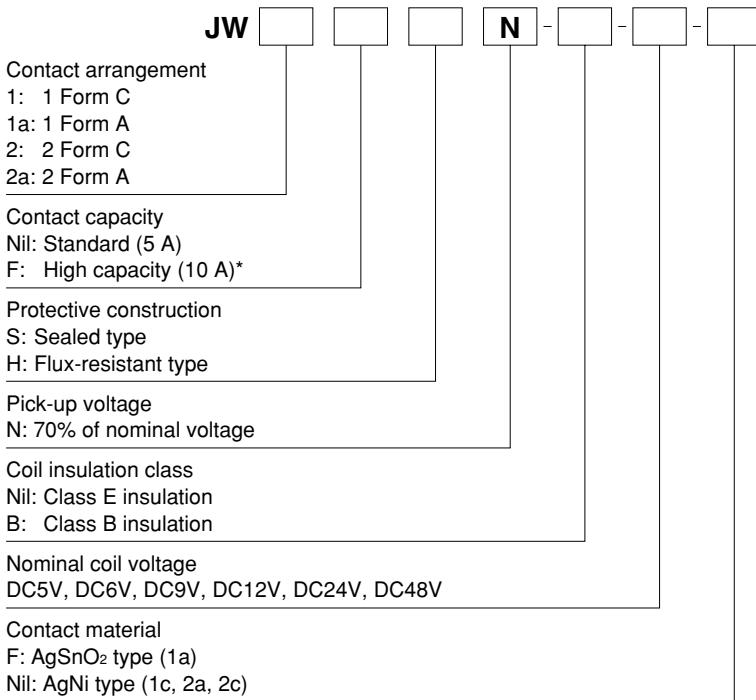
FEATURES

- Miniature package with universal terminal footprint
- High dielectric withstanding for transient protection:
10,000 V surge in μ s between coil and contact
- Sealed construction
- Class B coil insulation types available
- TV rated (TV-5) types available (only for 1 Form A type)
- VDE, TÜV, SEMKO, SEV, FIMKO, TV-5 also approved
- Sockets are available.

TYPICAL APPLICATIONS

- 1. Home appliances**
TV sets, VCR, Microwave ovens
- 2. Office machines**
Photocopiers, Vending machines
- 3. Industrial equipment**
NC machines, Robots, Temperature controllers

ORDERING INFORMATION



*Only for 1 Form A and 1 Form C type
Certified by UL, CSA, VDE, SEMKO, FIMKO and SEV
Note: When ordering TV rated (TV-5) types, add suffix-TV (available only for 1 Form A type).

TYPES

1) 1 Form A Standard (5A) type

| Nominal coil voltage | Sealed type | Flux-resistant type |
|----------------------|----------------|---------------------|
| | Part No. | Part No. |
| 5V DC | JW1aSN-DC5V-F | JW1aHN-DC5V-F |
| 6V DC | JW1aSN-DC6V-F | JW1aHN-DC6V-F |
| 9V DC | JW1aSN-DC9V-F | JW1aHN-DC9V-F |
| 12V DC | JW1aSN-DC12V-F | JW1aHN-DC12V-F |
| 24V DC | JW1aSN-DC24V-F | JW1aHN-DC24V-F |
| 48V DC | JW1aSN-DC48V-F | JW1aHN-DC48V-F |

Standard packing: Carton 100 pcs. Case 500 pcs.

3) 1 Form C Standard (5A) type

| Nominal coil voltage | Sealed type | Flux-resistant type |
|----------------------|-------------|---------------------|
| | Part No. | Part No. |
| 5V DC | JW1SN-DC5V | JW1HN-DC5V |
| 6V DC | JW1SN-DC6V | JW1HN-DC6V |
| 9V DC | JW1SN-DC9V | JW1HN-DC9V |
| 12V DC | JW1SN-DC12V | JW1HN-DC12V |
| 24V DC | JW1SN-DC24V | JW1HN-DC24V |
| 48V DC | JW1SN-DC48V | JW1HN-DC48V |

Standard packing: Carton 100 pcs. Case 500 pcs.

5) 2 Form A Standard (5A) type

| Nominal coil voltage | Sealed type | Flux-resistant type |
|----------------------|--------------|---------------------|
| | Part No. | Part No. |
| 5V DC | JW2aSN-DC5V | JW2aHN-DC5V |
| 6V DC | JW2aSN-DC6V | JW2aHN-DC6V |
| 9V DC | JW2aSN-DC9V | JW2aHN-DC9V |
| 12V DC | JW2aSN-DC12V | JW2aHN-DC12V |
| 24V DC | JW2aSN-DC24V | JW2aHN-DC24V |
| 48V DC | JW2aSN-DC48V | JW2aHN-DC48V |

Standard packing: Carton 100 pcs. Case 500 pcs.

2) 1 Form A High capacity (10 A) type

| Nominal coil voltage | Sealed type | Flux-resistant type |
|----------------------|-----------------|---------------------|
| | Part No. | Part No. |
| 5V DC | JW1aFSN-DC5V-F | JW1aFHN-DC5V-F |
| 6V DC | JW1aFSN-DC6V-F | JW1aFHN-DC6V-F |
| 9V DC | JW1aFSN-DC9V-F | JW1aFHN-DC9V-F |
| 12V DC | JW1aFSN-DC12V-F | JW1aFHN-DC12V-F |
| 24V DC | JW1aFSN-DC24V-F | JW1aFHN-DC24V-F |
| 48V DC | JW1aFSN-DC48V-F | JW1aFHN-DC48V-F |

Standard packing: Carton 100 pcs. Case 500 pcs.

4) 1 Form C High capacity (10 A) type

| Nominal coil voltage | Sealed type | Flux-resistant type |
|----------------------|---------------|---------------------|
| | Part No. | Part No. |
| 5V DC | JW1FNSN-DC5V | JW1FHNSN-DC5V |
| 6V DC | JW1FNSN-DC6V | JW1FHNSN-DC6V |
| 9V DC | JW1FNSN-DC9V | JW1FHNSN-DC9V |
| 12V DC | JW1FNSN-DC12V | JW1FHNSN-DC12V |
| 24V DC | JW1FNSN-DC24V | JW1FHNSN-DC24V |
| 48V DC | JW1FNSN-DC48V | JW1FHNSN-DC48V |

Standard packing: Carton 100 pcs. Case 500 pcs.

6) 2 Form C Standard (5A) type

| Nominal coil voltage | Sealed type | Flux-resistant type |
|----------------------|-------------|---------------------|
| | Part No. | Part No. |
| 5V DC | JW2SN-DC5V | JW2HN-DC5V |
| 6V DC | JW2SN-DC6V | JW2HN-DC6V |
| 9V DC | JW2SN-DC9V | JW2HN-DC9V |
| 12V DC | JW2SN-DC12V | JW2HN-DC12V |
| 24V DC | JW2SN-DC24V | JW2HN-DC24V |
| 48V DC | JW2SN-DC48V | JW2HN-DC48V |

Standard packing: Carton 100 pcs. Case 500 pcs.

Note: Class B coil insulation type is available.
Ex) JW1aSN-B-DC12V-F

* For sockets, see page 140.

RATING

1. Coil data

| Nominal coil voltage | Pick-up voltage (at 20°C 68°F) | Drop-out voltage (at 20°C 68°F) | Nominal operating current [±10%] (at 20°C 68°F) | Coil resistance [±10%] (at 20°C 68°F) | Nominal operating power | Max. applied voltage (at 20°C 68°F) |
|----------------------|---|---|---|---------------------------------------|-------------------------|--|
| 5V DC | 70%V or less of nominal voltage (Initial) | 10%V or more of nominal voltage (Initial) | 106mA | 47Ω | 530mW | 130%V of nominal voltage (at 60°C 140°F) 120%V of nominal voltage (at 85°C 185°F)*4 |
| 6V DC | | | 88mA | 68Ω | | |
| 9V DC | | | 58mA | 155Ω | | |
| 12V DC | | | 44mA | 270Ω | | |
| 24V DC | | | 22mA | 1,100Ω | | |
| 48V DC | | | 11mA | 4,400Ω | | |

2. Specifications

| Characteristics | Item | Specifications | | |
|--|--|--|--|--|
| | | Standard type | High capacity type | |
| Contact | Contact material | 1 Form A: AgSnO ₂ type 1 Form C, 2 Form A and 2 Form C: AgNi type | | |
| | Arrangement | 1 Form A, 1 Form C, 2 Form A and 2 Form C | 1 Form A and 1 Form C | |
| | Contact resistance (Initial) | Max. 100 mΩ (By voltage drop 6 V DC 1A) | | |
| Rating | Nominal switching capacity (resistive load) | 5A 250V AC, 5A 30V DC | 10A 250V AC, 10A 30V DC | |
| | Max. switching power (resistive load) | 1,250VA, 150W | 2,500VA, 300W | |
| | Max. switching voltage | 250V AC, 30V DC | | |
| | Max. switching current | 5A | 10A | |
| | Min. switching capacity (reference value)*1 | 100mA, 5V DC | | |
| Electrical characteristics | Insulation resistance (Initial) | Min. 1,000MΩ (at 500V DC) Measurement at same location as "Breakdown voltage" section. | | |
| | Breakdown voltage (Initial) | Between open contacts | 1,000 Vrms for 1 min. (Detection current: 10 mA) | |
| | | Between contact and coil | 5,000 Vrms for 1 min. (Detection current: 10 mA) | |
| | | Between contact sets | 3,000 Vrms for 1 min. (2 Form A, 2 Form C) (Detection current: 10 mA) | |
| | Temperature rise (coil) | 1 Form A: Max. 45°C 113°F, 1 Form C, 2 Form A and 2 Form C: Max. 55°C 131°F (resistive method, with nominal coil voltage and at nominal switching capacity, at 20°C 68°F) | 1 Form A: Max. 45°C 113°F, 1 Form C: Max. 55°C 131°F (resistive method, with nominal coil voltage and at nominal switching capacity, at 20°C 68°F) | |
| | Surge breakdown voltage*2 (Between contact and coil) (Initial) | 10,000 V | | |
| | Operate time (at nominal voltage) (at 20°C 68°F) | Max. 15 ms (excluding contact bounce time.) | | |
| Release time (at nominal voltage) (at 20°C 68°F) | Max. 5 ms (excluding contact bounce time) (Without diode) | | | |
| Mechanical characteristics | Shock resistance | Functional | 98 m/s ² (Half-wave pulse of sine wave: 11 ms; detection time: 10μs.) | |
| | | Destructive | 980 m/s ² (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 2.0 mm | |
| Expected life | Mechanical (at 180 times/min.) | Min. 5×10 ⁶ | | |
| | Electrical (at 6 times/min.) | Min. 10 ⁵ (at resistive load) | | |
| Conditions | Conditions for operation, transport and storage*3 | Ambient temperature*: -40°C to +60°C -40°F to 140°F (Class E), (Class B: -40°C to +85°C -40°F to 185°F) Humidity: 5 to 85% R.H. (Not freezing and condensing at low temperature) | | |
| | Max. operating speed (at nominal switching capacity) | Flux-resistant type: 20 times/min., Sealed type: 6 times/min. | | |
| Unit weight | | Approx. 13 g .46 oz | | |

* Specifications will vary with foreign standards certification ratings.

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. Wave is standard shock voltage of ±1.2×50μs according to JEC-212-1981

*3. 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.

*4. The pick-up and drop out voltages rise approximately 0.4% for every 1°C 33.8°F given a standard ambient temperature of 20°C 68°F. Therefore, when using relays where the ambient temperature is high, please take into consideration the rise in pick-up and drop out voltages and keep the coil applied voltage within the maximum applied voltage.

REFERENCE DATA

JW 1 Form A Standard (5A) type

1. Maximum operating power



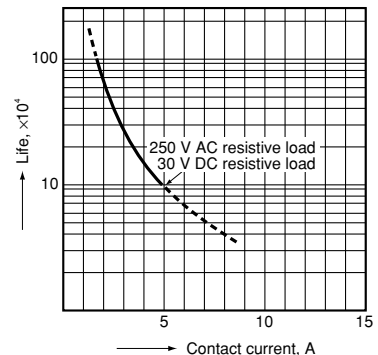
2. Operate/release time

Sample: JW1aSN-DC12V-F, 10 pcs.
Ambient temperature: 20°C 68°F



3. Life curve

1 Form A Standard (5 A) type



JW 1 Form A High Capacity (10 A) type

1. Maximum operating power



2. Operate/release time

Sample: JW1aFSN-DC12V, 10 pcs.
Ambient temperature: 20°C 68°F

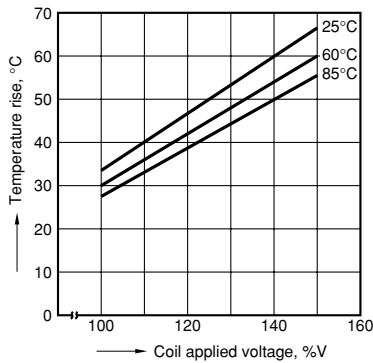


3. Life curve



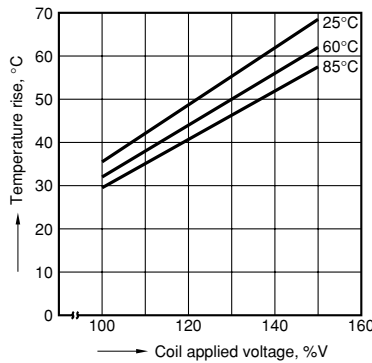
4-(1). Coil temperature rise
(Contact carrying current: 5A)

Sample JW1aFSN-DC12V-F, 6 pcs.
Point measured: Inside the coil



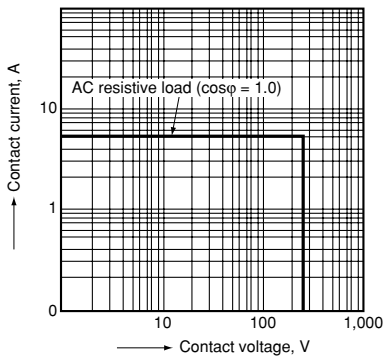
4-(2). Coil temperature rise
(Contact carrying current: 10 A)

Sample: JW1aFSN-DC12V-F, 6 pcs.
Point measured: Inside the coil



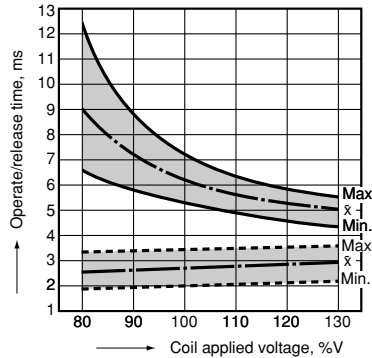
JW 1 Form C Standard (5 A) type

1-(3). Maximum operating power



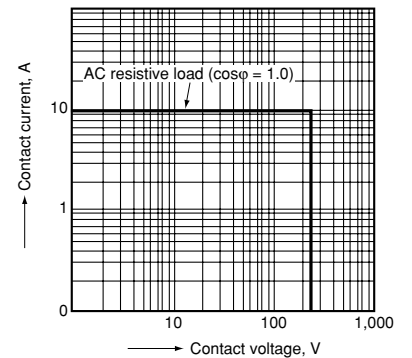
2. Operate/release time

Sample: JW1SN-DC12V-F, 6 pcs.
Ambient temperature: 20°C 68°F



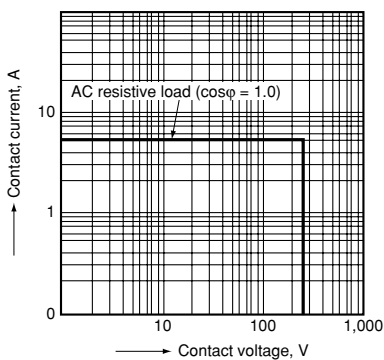
JW 1 Form C High Capacity (10 A) type

1. Maximum operating power



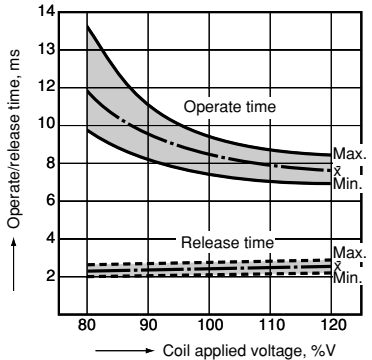
JW 2 Form A Standard (5 A) type

1. Maximum operating power



2. Operate/release time

Sample: JW2aSN-DC24V-F, 6 pcs.
Ambient temperature: 20°C 68°F



JW 2 Form C Standard (5 A) type

1. Maximum operating power



2. Operate/release time

Sample: JW2SN-DC12V-F, 6 pcs.
Ambient temperature: 20°C 68°F



DIMENSIONS (mm inch)

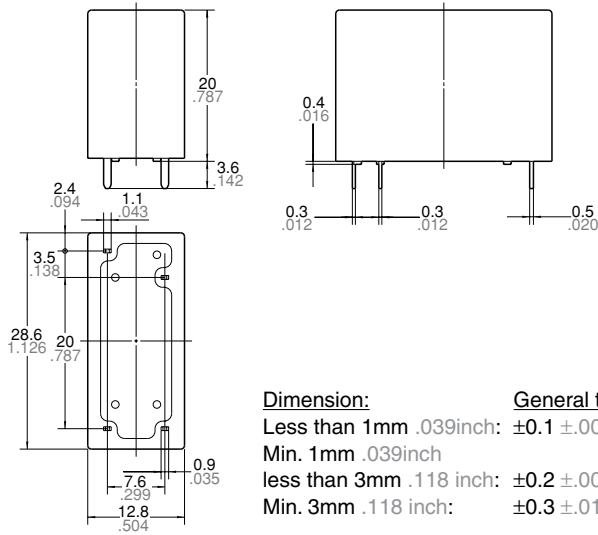
The CAD data of the products with a **CAD Data** mark can be downloaded from: <http://industrial.panasonic.com/ac/e/>

JW 1 Form A

CAD Data

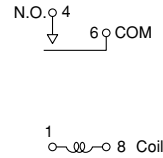


External dimensions



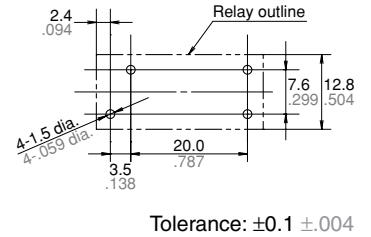
Dimension: **General tolerance**
 Less than 1mm .039inch: $\pm 0.1 \pm .004$
 Min. 1mm .039inch
 less than 3mm .118 inch: $\pm 0.2 \pm .008$
 Min. 3mm .118 inch: $\pm 0.3 \pm .012$

Wiring diagram (Bottom view)



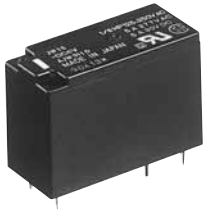
Note: Terminal numbers are not indicated on the relay.

PC board pattern (Bottom view)

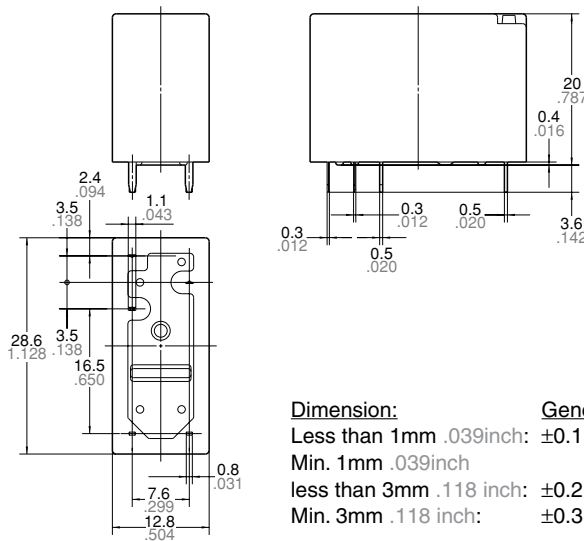


JW 1 Form C

CAD Data

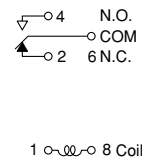


External dimensions



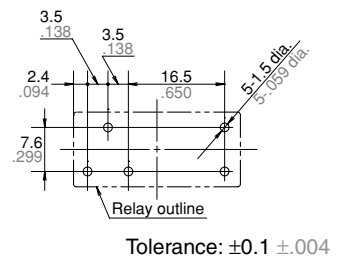
Dimension: **General tolerance**
 Less than 1mm .039inch: $\pm 0.1 \pm .004$
 Min. 1mm .039inch
 less than 3mm .118 inch: $\pm 0.2 \pm .008$
 Min. 3mm .118 inch: $\pm 0.3 \pm .012$

Wiring diagram (Bottom view)



Note: Terminal numbers are not indicated on the relay.

PC board pattern (Bottom view)

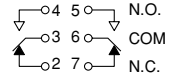


JW 2 Form A and 2 Form C

CAD Data



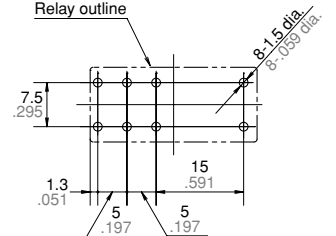
Wiring diagram (Bottom view)



1 --- 8 Coil

Note: Terminal numbers are not indicated on the relay.

PC board pattern (Bottom view)



Tolerance: $\pm 0.1 \pm .004$

Note: JW 2 Form A is as shown in the diagram above except the N.C. terminals are not present.

SAFETY STANDARDS

| Item | UL/C-UL (Recognized) | | CSA (Certified) | | VDE (Certified) | | TV rating (UL/CSA) | | TÜV (Certified) | | SEMKO (Certified) | | FIMKO | | SEV | |
|-----------------------------|----------------------|---|-----------------|---|-----------------|---|-------------------------------|-----------------------|----------------------|---|-------------------|---|----------|--|----------|-------------------------------|
| | File No. | Contact rating | File No. | Contact rating | File No. | Contact rating | File No. | Rating | File No. | Rating | File No. | Contact rating | File No. | Contact rating | File No. | Contact rating |
| Standard type 1 Form A | E43028 | 5A 277V AC 5A 30V DC 1/8HP 125V AC 1/8HP 250V AC | LR26550 etc. | 5A 277V AC 5A 30V DC 1/8HP 125V AC 1/8HP 250V AC B300 | 40013854 | 5A 250V AC (cos ϕ =1.0) 3A 250V AC (cos ϕ =0.4) Standard type 5A 30V DC (0ms) | UL E43028 CSA LR26550 etc. | 1a \rightarrow TV-5 | B 11 05 13461 305 | 5A 250V AC (cos ϕ =1.0) 3A 250V AC (cos ϕ =0.4) 5A 30V DC (0ms) | 817817 | 5A 250V AC (cos ϕ =1.0) 3A 250V AC (cos ϕ =0.4) 5A 30V DC (0ms) | 24965 | 5A 250V AC (cos ϕ =1.0) 5A 30V DC (0ms) | 11.0262 | 5A 250V AC (cos ϕ =1.0) |
| Standard type 1 Form C | E43028 | 5A 277V AC 5A 30V DC 1/8HP 125V AC 1/8HP 250V AC | LR26550 etc. | 5A 277V AC 5A 30V DC 1/8HP 125V AC 1/8HP 250V AC B300 | 40013854 | 5A 250V AC (cos ϕ =1.0) 3A 250V AC (cos ϕ =0.4) Standard type 5A 30V DC (0ms) | — | — | B 11 05 13461 305 | 5A 250V AC (cos ϕ =1.0) 3A 250V AC (cos ϕ =0.4) 5A 30V DC (0ms) | 817817 | 5A 250V AC (cos ϕ =1.0) 3A 250V AC (cos ϕ =0.4) 5A 30V DC (0ms) | 24965 | 5A 250V AC (cos ϕ =1.0) 5A 30V DC (0ms) | 11.0262 | 5A 250V AC (cos ϕ =1.0) |
| Standard type 2 Form A | E43028 | 5A 277V AC 5A 30V DC 1/8HP 125V AC 1/8HP 250V AC B300 | LR26550 etc. | 5A 277V AC 5A 30V DC 1/8HP 125V AC 1/8HP 250V AC B300 | 40013854 | 5A 250V AC (cos ϕ =1.0) 3A 250V AC (cos ϕ =0.4) Standard type 5A 30V DC (0ms) | — | — | B 11 05 13461 305 | 5A 250V AC (cos ϕ =1.0) 3A 250V AC (cos ϕ =0.4) 5A 30V DC (0ms) | 817817 | 5A 250V AC (cos ϕ =1.0) 3A 250V AC (cos ϕ =0.4) 5A 30V DC (0ms) | 24965 | 5A 250V AC (cos ϕ =1.0) 5A 30V DC (0ms) | 11.0262 | 5A 250V AC (cos ϕ =1.0) |
| Standard type 2 Form C | E43028 | 5A 277V AC 5A 30V DC 1/8HP 125V AC 1/8HP 250V AC B300 | LR26550 etc. | 5A 277V AC 5A 30V DC 1/8HP 125V AC 1/8HP 250V AC B300 | 40013854 | 5A 250V AC (cos ϕ =1.0) 3A 250V AC (cos ϕ =0.4) Standard type 5A 30V DC (0ms) | — | — | B 11 05 13461 305 | 5A 250V AC (cos ϕ =1.0) 3A 250V AC (cos ϕ =0.4) 5A 30V DC (0ms) | 817817 | 5A 250V AC (cos ϕ =1.0) 3A 250V AC (cos ϕ =0.4) 5A 30V DC (0ms) | 24965 | 5A 250V AC (cos ϕ =1.0) 5A 30V DC (0ms) | 11.0262 | 5A 250V AC (cos ϕ =1.0) |
| High capacity type 1 Form A | E43028 | 10A 277V AC 10A 30V DC 1/8HP 125V AC 1/8HP 250V AC | LR26550 etc. | 10A 277V AC 10A 30V DC 1/8HP 125V AC 1/8HP 250V AC B300 | 40013854 | 10A 250V AC (cos ϕ =1.0) 7A 250V AC (cos ϕ =0.4) High capacity type 10A 30V DC (0ms) | UL E43028 CSA LR26550 | 1a \rightarrow TV-5 | B 11 05 13461 305 | 10A 250V AC (cos ϕ =1.0) 7A 250V AC (cos ϕ =0.4) 10A 30V DC (0ms) | 817817 | 10A 250V AC (cos ϕ =1.0) 10A 30V DC (0ms) | 24965 | 10A 250V AC (cos ϕ =1.0) 5A 30V DC (0ms) | 11.0262 | 10A 250V AC (cos ϕ =1.0) |
| High capacity type 1 Form C | E43028 | 10A 277V AC 10A 30V DC 1/8HP 125V AC 1/8HP 250V AC | LR26550 etc. | 10A 277V AC 10A 30V DC 1/8HP 125V AC 1/8HP 250V AC B300 | 40013854 | 10A 250V AC (cos ϕ =1.0) 7A 250V AC (cos ϕ =0.4) High capacity type 10A 30V DC (0ms) | — | — | B 11 05 13461 305 | 10A 250V AC (cos ϕ =1.0) 7A 250V AC (cos ϕ =0.4) 10A 30V DC (0ms) | 817817 | 10A 250V AC (cos ϕ =1.0) 10A 30V DC (0ms) | 24965 | 10A 250V AC (cos ϕ =1.0) 5A 30V DC (0ms) | 11.0262 | 10A 250V AC (cos ϕ =1.0) |