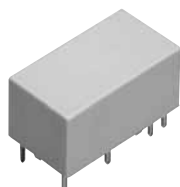




### 1a 8A, 1a1b/2a 5A small polarized power relays

## DSP RELAYS



RoHS compliant

Protective construction: Sealed type

### FEATURES

- 1. Compact with high contact rating**  
Even with small 10 mm .394 inch (H) x 11 mm .433 inch (W) x 20 mm .787 inch (L) (dimensions, high capacity switching is provided: 1a, 8 A 250 V AC; 2a and 1a1b, 5 A 250 V AC.
- 2. High switching capability**  
High contact pressure, low contact bounce, and wiping operation improve resistance to weld bonding. Resistant against lamp load and dielectric loading: 1a achieves maximum switching capacity of 2,000 VA (8A 250 V AC).

### 3. High sensitivity

Using the same type of high-performance polar magnetic circuits as DS relays, by matching the spring load to the magnetic force of attraction, greater sensitivity has been achieved. The resultant pick up sensitivity of about 190 mW makes possible direct driving of transistors and chips.

### 4. High breakdown voltage

Breakdown voltage has been raised by keeping the coil and contacts separate.

| Between contact and coil                                    | Between contacts  |
|---|---|
| 3,000 Vrms for 1 min.<br>5,000 V surge<br>breakdown voltage | 1,000 Vrms for 1 min.<br>1,500 V surge<br>breakdown voltage |

Conforms with FCC Part 68

### 5. Latching types available

### 6. Wide variation

Three types of contact arrangement are offered: 1a, 2a, and 1a1b. In addition, each is available in standard and reversed polarity types.

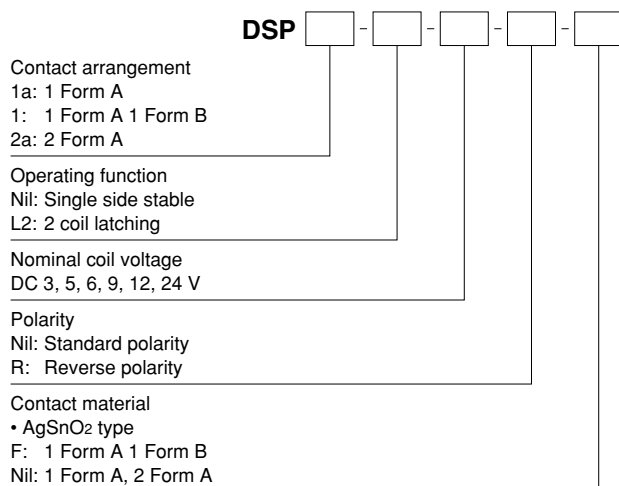
### 7. Sealed construction allows automatic washing

### 8. Complies with safety standards

Complies with Japan Electrical Appliance and Material Safety Law requirements for operating 200 V power supply circuits, and complies with UL, CSA, and TÜV safety standards.

### 9. Sockets are available

### ORDERING INFORMATION



Notes: 1. Reverse polarity types available (add suffix-R)  
2. Certified by UL, CSA and TÜV

## TYPES

| Contact arrangement  | Nominal coil voltage | Single side stable | 2 coil latching |
|----------------------|----------------------|--------------------|-----------------|
|                      |                      | Part No.           | Part No.        |
| 1 Form A             | 3V DC                | DSP1a-DC3V         | DSP1a-L2-DC3V   |
|                      | 5V DC                | DSP1a-DC5V         | DSP1a-L2-DC5V   |
|                      | 6V DC                | DSP1a-DC6V         | DSP1a-L2-DC6V   |
|                      | 9V DC                | DSP1a-DC9V         | DSP1a-L2-DC9V   |
|                      | 12V DC               | DSP1a-DC12V        | DSP1a-L2-DC12V  |
|                      | 24V DC               | DSP1a-DC24V        | DSP1a-L2-DC24V  |
| 1 Form A<br>1 Form B | 3V DC                | DSP1-DC3V-F        | DSP1-L2-DC3V-F  |
|                      | 5V DC                | DSP1-DC5V-F        | DSP1-L2-DC5V-F  |
|                      | 6V DC                | DSP1-DC6V-F        | DSP1-L2-DC6V-F  |
|                      | 9V DC                | DSP1-DC9V-F        | DSP1-L2-DC9V-F  |
|                      | 12V DC               | DSP1-DC12V-F       | DSP1-L2-DC12V-F |
|                      | 24V DC               | DSP1-DC24V-F       | DSP1-L2-DC24V-F |
| 2 Form A             | 3V DC                | DSP2a-DC3V         | DSP2a-L2-DC3V   |
|                      | 5V DC                | DSP2a-DC5V         | DSP2a-L2-DC5V   |
|                      | 6V DC                | DSP2a-DC6V         | DSP2a-L2-DC6V   |
|                      | 9V DC                | DSP2a-DC9V         | DSP2a-L2-DC9V   |
|                      | 12V DC               | DSP2a-DC12V        | DSP2a-L2-DC12V  |
|                      | 24V DC               | DSP2a-DC24V        | DSP2a-L2-DC24V  |

Standard packing: Carton: 50 pcs.; Case: 500 pcs.

Note: Reverse polarity type are manufactured by lot upon receipt of order.

\* Sockets available.

## RATING

### 1. Coil data

#### 1) Single side stable

| 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) |
|----------------------|---|---|---|---------------------------------------|-------------------------|-------------------------------------|
| 3V DC                | 80%V or less of nominal voltage (Initial) | 10%V or more of nominal voltage (Initial) | 100mA   | 30Ω                                   | 300mW                   | 130%V of nominal voltage            |
| 5V DC                |   |   | 60mA  | 83Ω                                   |                         |                                     |
| 6V DC                |   |   | 50mA  | 120Ω                                  |                         |                                     |
| 9V DC                |   |   | 33.3mA  | 270Ω                                  |                         |                                     |
| 12V DC               |   |   | 25mA  | 480Ω                                  |                         |                                     |
| 24V DC               |   |   | 12.5mA  | 1,920Ω                                |                         |                                     |

#### 2) 2 coil latching

| Nominal coil voltage | Set voltage (at 20°C 68°F)                | Reset 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) |
|----------------------|---|---|---|------------|---------------------------------------|------------|-------------------------|------------|-------------------------------------|
|                      |   |   | Set coil  | Reset coil | Set coil                              | Reset coil | Set coil                | Reset coil |                                     |
| 3V DC                | 80%V or less of nominal voltage (Initial) | 80%V or less of nominal voltage (Initial) | 100mA   | 100mA      | 30Ω                                   | 30Ω        | 300mW                   | 300mW      | 130%V of nominal voltage            |
| 5V DC                |   |   | 60mA  | 60mA       | 83Ω                                   | 83Ω        |                         |            |                                     |
| 6V DC                |   |   | 50mA  | 50mA       | 120Ω                                  | 120Ω       |                         |            |                                     |
| 9V DC                |   |   | 33.3mA  | 33.3mA     | 270Ω                                  | 270Ω       |                         |            |                                     |
| 12V DC               |   |   | 25mA  | 25mA       | 480Ω                                  | 480Ω       |                         |            |                                     |
| 24V DC               |   |   | 12.5mA  | 12.5mA     | 1,920Ω                                | 1,920Ω     |                         |            |                                     |

2. Specifications

| Characteristics                                    |  | Item   | Specifications  |   |   |
|--|--|--|---|---|---|
| Contact  | Arrangement  |  | 1 Form A  | 1 Form A 1 Form B   | 2 Form A  |
|  | Contact resistance (Initial)   |  | Max. 30 mΩ (By voltage drop 6 V DC 1A)  |   |   |
|  | Contact material   |  | Au-flashed AgSnO <sub>2</sub> type  |   |   |
| Rating   | Nominal switching capacity (resistive load)  |  | 8 A 250 V AC, 5 A 30V DC  | 5 A 250 V AC, 5 A 30 V DC                                 |   |
|  | Max. switching power (resistive load)  |  | 2,000 VA, 150 W   |   |   |
|  | Max. switching voltage   |  | 250 V AC, 125 V DC (0.2 A)  |   |   |
|  | Max. switching current   |  | 8 A (AC), 5 A (DC)  | 5 A (AC, DC)  |   |
|  | Nominal operating power  |  | 300 mW  |   |   |
|  | Min. switching capacity (Reference value)*1  |  | 10m A 5 V 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 1min. (Detection current: 10mA.)   |   |   |
|  |  | Between contact sets   | 2,000 Vrms (1 Form A 1 Form B, 2 Form A) (Detection current: 10mA.)                           |   |   |
|  |  | Between contact and coil   | 3,000 Vrms for 1min. (Detection current: 10mA.)   |   |   |
|  | Surge breakdown voltage*2 (Initial)  | between contacts and coil  | 5,000 V   |   |   |
|  | Operate time [Set time] (at 20°C 68°F) (Initial)   |  | Max. 10 ms [10 ms] (Nominal coil voltage applied to the coil, excluding contact bounce time.) |   |   |
| Release time [Reset time] (at 20°C 68°F) (Initial) |  | Max. 5 ms [10 ms] (Nominal coil voltage applied to the coil, excluding contact bounce time.) (without diode) |   |   |   |
| Mechanical characteristics                         | Shock resistance   | Functional   | Min. 196 m/s <sup>2</sup> (Half-wave pulse of sine wave: 11 ms; detection time: 10μs.)        |   |   |
|  |  | Destructive  | Min. 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 2 mm (Detection time: 10μs.)                               |   |   |
|  |  | Destructive  | 10 to 55 Hz at double amplitude of 3.5 mm   |   |   |
| Expected life                                      | Mechanical   |  | Min. 5×10 <sup>7</sup> (at 180 times/min.)  |   |   |
|  | Electrical   |  | Min. 10 <sup>5</sup> (resistive load)   |   |   |
| Conditions   | Conditions for operation, transport and storage*3 (Not freezing and condensing at low temperature) |  | Ambient temperature:<br>-40°C to +60°C<br>-40°F to +140°F                                     | Ambient temperature:<br>-40°C to +65°C<br>-40°F to +149°F | Ambient temperature:<br>-40°C to +60°C<br>-40°F to +140°F |
|  | Max. operating speed   |  | 3 cps   |   |   |
| Unit weight  |  |  | Approx. 4.5 g .16 oz  |   |   |

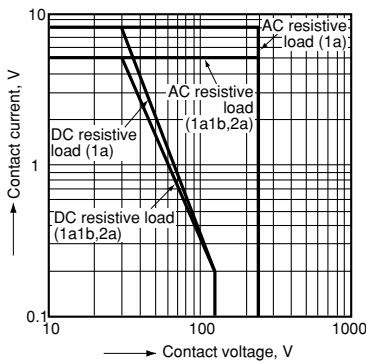
Notes: \*1. This value can change due to the switching frequency, environmental conditions, and desired reliability level, therefore it is recommended to check this with the actual load.

\*2. Wave is standard shock voltage of ±1.2×50μs according to JEC-212-1981

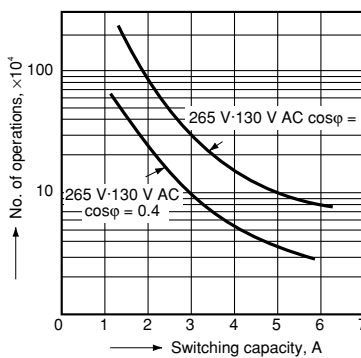
\*3. The upper limit of the ambient temperature is the maximum temperature that can satisfy the coil temperature rise value. Refer to Usage, transport and storage conditions in NOTES.

REFERENCE DATA

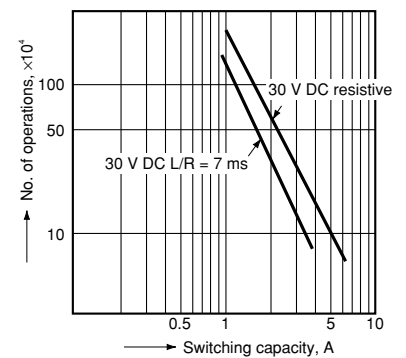
1. Max. switching capacity



2.-(1) Life curve (1 Form A 1 Form B)

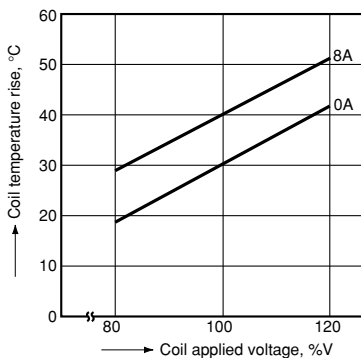


2.-(2) Life curve (1 Form A 1 Form B)



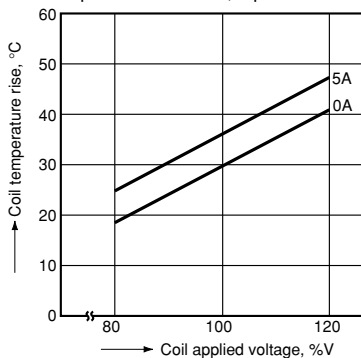
3.-(1) Coil temperature rise (1 Form A)

Tested sample: DSP1a-DC12V, 5 pcs.



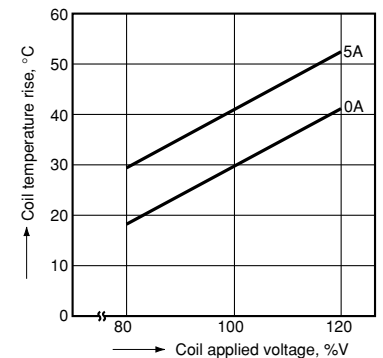
3.-(2) Coil temperature rise (1 Form A 1 Form B)

Tested sample: DSP1-DC12V, 5 pcs.



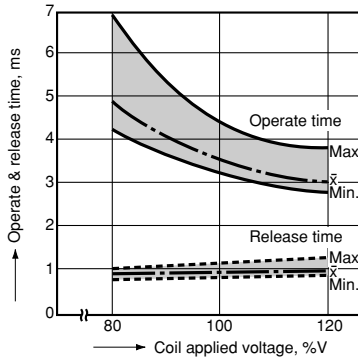
3.-(3) Coil temperature rise (2 Form A)

Tested sample: DSP2a-DC12V, 5 pcs.



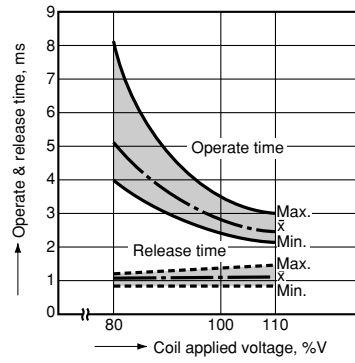
4.-(1) Operate & release time  
(without diode, 1 Form A)

Tested sample: DSP1a-DC12V, 5 pcs.



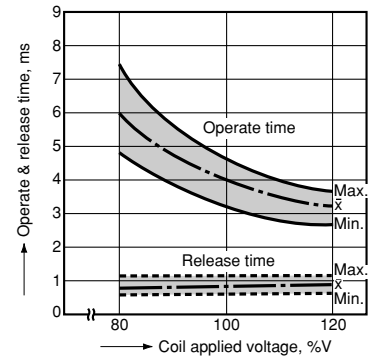
4.-(2) Operate & release time  
(without diode, 1 Form A 1 Form B)

Tested sample: DSP1-DC12V, 5 pcs.



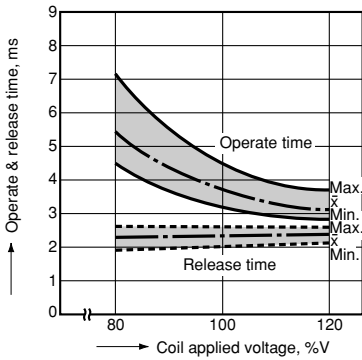
4.-(3) Operate & release time  
(without diode, 2 Form A)

Tested sample: DSP2a-DC12V, 5 pcs.



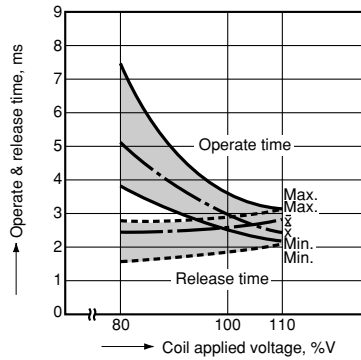
4.-(4) Operate & release time  
(with diode, 1 Form A)

Tested sample: DSP1a-DC12V, 5 pcs.



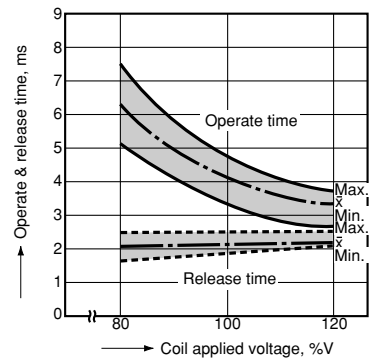
4.-(5) Operate & release time  
(with diode, 1 Form A 1 Form B)

Tested sample: DSP1-DC12V, 5 pcs.



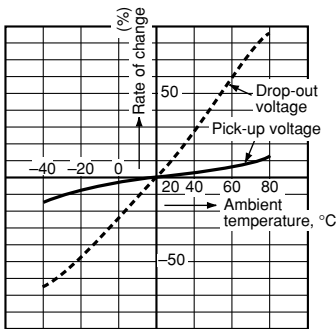
4.-(6) Operate & release time  
(with diode, 2 Form A)

Tested sample: DSP2a-DC12V, 5 pcs.



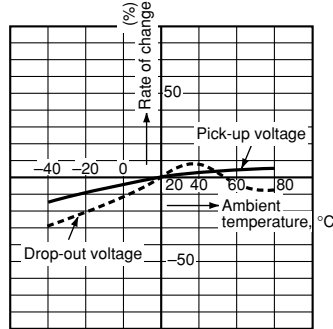
5.-(1) Change of pick-up and drop-out voltage  
(1 Form A)

Tested sample: DSP1a-DC12V, 5 pcs.



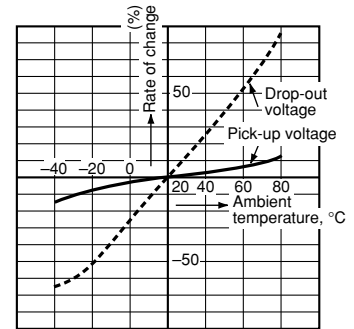
5.-(2) Change of pick-up and drop-out voltage  
(1 Form A 1 Form B)

Tested sample: DSP1-DC12V, 5 pcs.



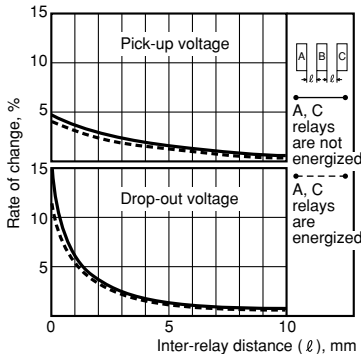
5.-(3) Change of pick-up and drop-out voltage  
(2 Form A)

Tested sample: DSP2a-DC12V, 5 pcs.



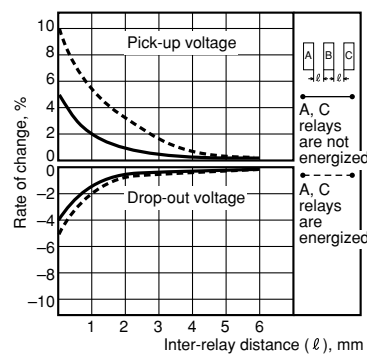
6.-(1) Influence of adjacent mounting  
(1 Form A)

Tested sample: DSP1a-DC12V, 5 pcs.



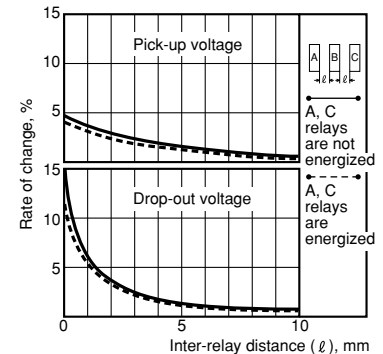
6.-(2) Influence of adjacent mounting  
(1 Form A 1 Form B)

Tested sample: DSP1-DC12V, 5 pcs.



6.-(3) Influence of adjacent mounting  
(2 Form A)

Tested sample: DSP2a-DC12V, 5 pcs.

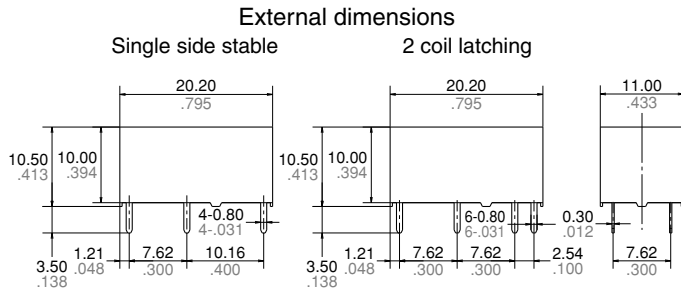


# DIMENSIONS (mm inch)

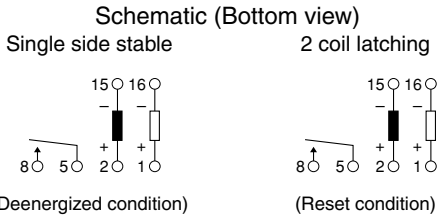
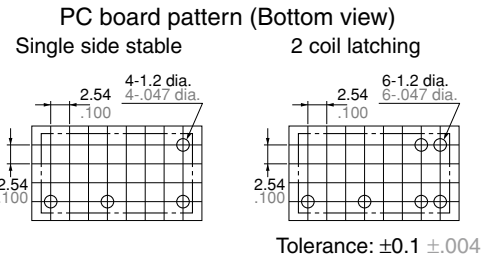
The CAD data of the products with a **CAD Data** mark can be downloaded from: <http://industrial.panasonic.com/ac/e/>

## 1. 1 Form A type

**CAD Data**

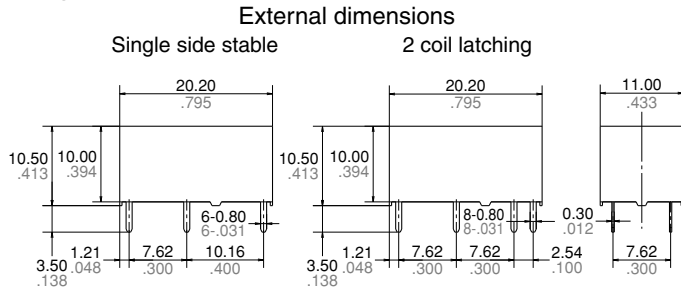
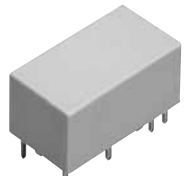


General tolerance:  $\pm 0.3 \pm 0.12$

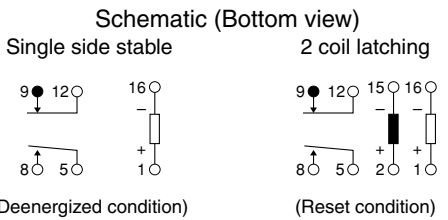
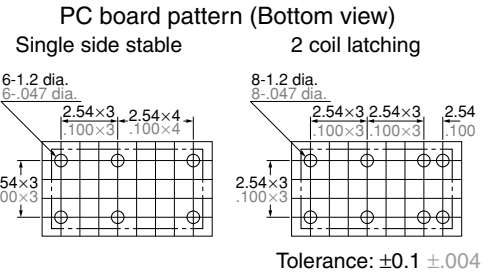


## 2. 1 Form A 1 Form B type

**CAD Data**

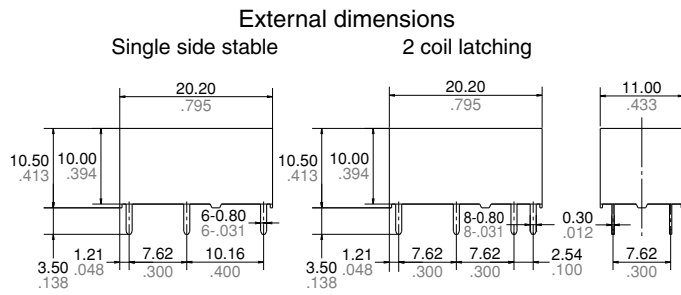


General tolerance:  $\pm 0.3 \pm 0.12$

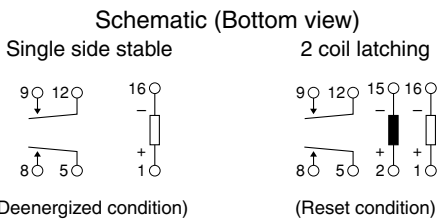
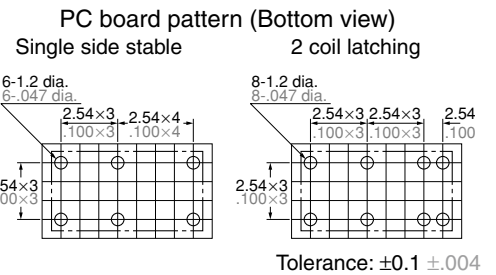


## 3. 2 Form A type

**CAD Data**



General tolerance:  $\pm 0.3 \pm 0.12$



## SAFETY STANDARDS

| Item                 | UL (Recognized) |  | CSA (Certified) |  | TÜV (Certified)      |  |
|----------------------|-----------------|--|-----------------|--|----------------------|--|
|                      | File No.        | Contact rating   | File No.        | Contact rating   | File No.             | Contact rating   |
| 1 Form A             | E43028          | 8A 125/250V AC General use<br>1/8HP 125/250V AC<br>5A 30V DC Resistive<br>B300                                 | LR26550         | 8A 125/250V AC General use<br>1/8HP 125/250V AC<br>5A 30V DC Resistive<br>B300   | B 13 11<br>13461 342 | 8A 250V AC (cosφ=1.0)<br>5A 250V AC (cosφ=0.4)<br>5A 30V DC (0 ms) |
| 1 Form A<br>1 Form B | E43028          | 5A 125/250V AC General use<br>1/8HP 125/250V AC<br>5A 30V DC Resistive<br>30W Max.: 1A 30V DC-0.24A<br>125V DC | LR26550         | 5A 125/250V AC General use<br>1/8HP 125/250V AC<br>5A 30V DC Resistive<br>30W Max.: 1A 30V DC-0.24A<br>125V DC<br>B300 | B 13 11<br>13461 342 | 5A 250V AC (cosφ=1.0)<br>3A 250V AC (cosφ=0.4)<br>5A 30V DC (0 ms) |
| 2 Form A             | E43028          | 5A 125/250V AC General use<br>1/10HP 125/250V AC<br>5A 30V DC Resistive  | LR26550         | 5A 125/250V AC General use<br>1/10HP 125/250V AC<br>5A 30V DC Resistive  | B 13 11<br>13461 342 | 5A 250V AC (cosφ=1.0)<br>3A 250V AC (cosφ=0.4)<br>5A 30V DC (0 ms) |

\* Remarks: The standard certified for may differ depending on where the product was manufactured.

## NOTES

### 1. For cautions for use, please read

“GENERAL APPLICATION GUIDELINES”.

### 2. Soldering conditions

Please obey the following conditions when soldering automatically.

- 1) Preheating: Within 120°C 248°F and within 120 seconds
- 2) Soldering iron: 260°C±5°C 500°F±41°F and within 6 seconds

### 3. Cleaning

For automatic cleaning, the boiling method is recommended. Avoid ultrasonic cleaning which subjects the relays to high frequency vibrations, which may cause the contacts to stick. It is recommended that a fluorinated hydrocarbon or other alcoholic solvents be used.

### 4. External magnetic field

Since DSP relays are highly sensitive polarized relays, their characteristics will be affected by a strong external magnetic field. Avoid using the relay under that condition.

### 5. Coil operating power

Pure DC current should be applied to the coil. The wave form should be rectangular. If it includes ripple, the ripple factor should be less than 5%. However, check it with the actual circuit since the characteristics may be slightly different.

**6. When using, please be aware that the a contact and b contact sides of 1 Form A 1 Form B type may go on simultaneously at operate time and release time.**



### ACCESSORIES

## DSP RELAYS PC BOARD SOCKETS



### TYPES

| Product name           | Part No.               |                     |
|------------------------|------------------------|---------------------|
|                        | For Single side stable | For 2 coil latching |
| For DSP1a              | DSP1a-PS               | DSP1a-PSL2          |
| For DSP1a, DSP1, DSP2a | DSP2a-PS               | DSP2a-PSL2          |

Standard packing: Carton: 50 pcs.; Case: 500 pcs.

### TYPES AND APPLICABLE RELAYS

| Type No.<br>Applicable relays | For DSP1a |            | For DSP1a, DSP1, DSP2a |            |
|-------------------------------|-----------|------------|------------------------|------------|
|                               | DSP1a-PS  | DSP1a-PSL2 | DSP2a-PS               | DSP2a-PSL2 |
| DSP1a relays                  | OK        | OK         | OK                     | OK         |
| DSP1a-L2 relays               |           | OK         |                        | OK         |
| DSP1 relays                   |           |            | OK                     | OK         |
| DSP1-L2 relays                |           |            |                        | OK         |
| DSP2a relays                  |           |            | OK                     | OK         |
| DSP2a-L2 relays               |           |            |                        | OK         |

### SPECIFICATIONS

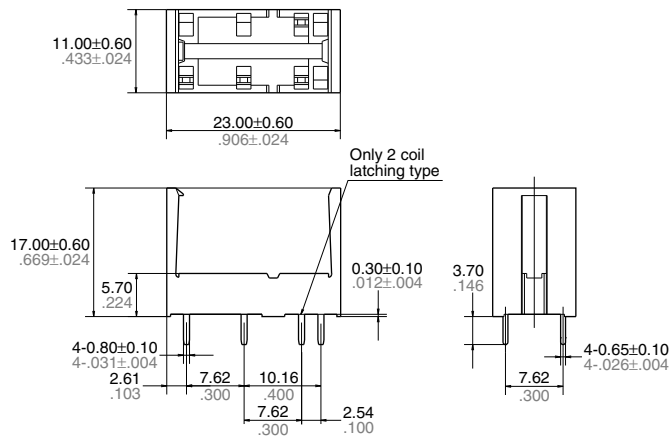
| Item                    | Specifications  |
|-------------------------|---|
| Breakdown voltage       | 3,000 Vrms between terminals<br>(Except for the portion between coil terminals) |
| Insulation resistance   | 1,000 MΩ between terminals at 500 V   |
| Heat resistance         | 150°C 302°F for 1 hour  |
| Max. continuous current | 8 A (DSP1a-PS and DSP1a-PSL2),<br>5 A (DSP2a-PS and DSP2a-PSL2)                 |

### DIMENSIONS (mm inch)

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

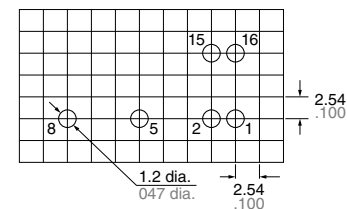
#### CAD Data

#### External dimensions

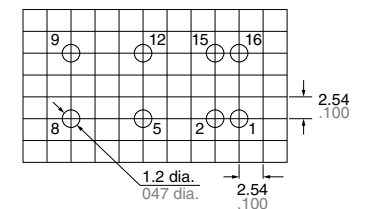


#### PC board pattern (Bottom view)

#### DSP1a-PS, DSP1a-PSL2



#### DSP2a-PS, DSP2a-PSL2

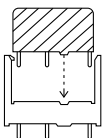


Note: Terminal No.2 and 15 are for DSP1a-PSL2 only.

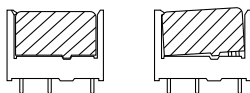
Note: Terminal No.2 and 15 are for DSP2a-PSL2 only.

### FIXING AND REMOVAL METHOD

1. Match the direction of relay and socket.



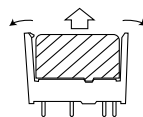
2. Both ends of relays are fixed so tightly that the socket hooks on the top surface of relays.



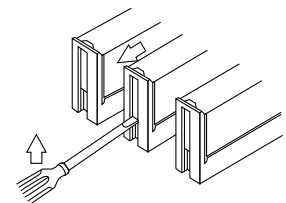
Good

No good

3. Remove the relay, applying force in the direction shown below.



4. In case there is not enough space for finger to pick relay up, use screw drivers in the way shown below.



Notes: 1. Exercise care when removing relays. If greater than necessary force is applied at the socket hooks, deformation may alter the dimensions so that the hook will no longer catch, and other damage may also occur.  
2. It is hazardous to use IC chip sockets.

---

Please contact .....

**Panasonic Corporation**

Electromechanical Control Business Division

■ 1006, Oaza Kadoma, Kadoma-shi, Osaka 571-8506, Japan  
[industrial.panasonic.com/ac/e/](http://industrial.panasonic.com/ac/e/)

**Panasonic**<sup>®</sup>

©Panasonic Corporation 2016



## X-ON Electronics

Largest Supplier of Electrical and Electronic Components

*Click to view similar products for [General Purpose Relays](#) category:*

*Click to view products by [Panasonic](#) manufacturer:*

Other Similar products are found below :

[PCN-105D3MH,000](#) [59641F200](#) [5JO-1000CD-SIL](#) [LY1SAC110120](#) [5X827E](#) [5X837F](#) [5X840F](#) [5X842F](#) [5X848E](#) [LY2N-AC120](#) [LY2S-AC220/240](#) [LY2-US-AC120](#) [LY3-US-AC120](#) [LY4F-UA-DC12](#) [LY4F-UA-DC24](#) [LY4F-US-AC120](#) [LY4F-US-AC240](#) [LY4F-US-DC24](#) [LY4F-VD-AC110](#) [LYQ20DC12](#) [M115C60](#) [M115N010](#) [M115N0150](#) [6031007G](#) [603-12D](#) [61211T0B4](#) [61212T400](#) [61222Q400](#) [61243B600](#) [61243C500](#) [61243Q400](#) [61311BOA2](#) [61311BOA6](#) [61311BOA8](#) [61311C0A2](#) [61311COA1](#) [61311COA6](#) [61311F0A2](#) [61311QOA1](#) [61311QOA4](#) [61311T0D6](#) [61311TOA6](#) [61311TOA7](#) [61311TOB3](#) [61311TOB4](#) [61311U0A6](#) [61312Q600](#) [61312T400](#) [61312T600](#) [61313U200](#)