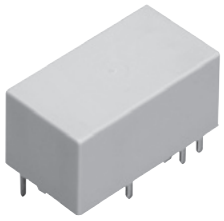
1a 8A, 1a1b/2a 5A small polarized power relays

DSP RELAYS



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 highperformance 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. 5,000 V surge breakdown voltage	1,000 Vrms for 1 min. 1,500 V surge 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**

TYPICAL APPLICATIONS

1. **Office and industrial electronic devices**
2. **Terminal devices of information processing equipment, such as printer, data recorder**
3. **Office equipment (copier, facsimile)**
4. **Measuring instruments**
5. **NC machines, temperature controllers and programmable logic controllers**

ORDERING INFORMATION

DSP □-□-□-□-□

- Contact arrangement
  1a : 1 Form A
  1 : 1 Form A 1 Form B
  2a : 2 Form A
- Operating function
  Nil : Single side stable
  L2 : 2 coil latching
- Nominal coil voltage (DC)
  3, 5, 6, 9, 12, 24 V
- Polarity
  Nil : Standard polarity
  R : Reverse polarity
- Contact material
  • $AgSnO_2$ type
  F : 1 Form A 1 Form B
  Nil : 1 Form A, 2 Form A

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

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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 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

- Operating characteristics such as 'Operate voltage' and 'Release voltage' are influenced by mounting conditions, ambient temperature, etc. Therefore, please use the relay within ± 5% of rated coil voltage.
- 'Initial' means the condition of products at the time of delivery.

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)	100 mA	30Ω	300mW	130%V of nominal voltage
5V DC			60 mA	83Ω		
6V DC			50 mA	120Ω		
9V DC			33.3mA	270Ω		
12V DC			25 mA	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)	100 mA	100 mA	30Ω	30Ω	300mW	300mW	130%V of nominal voltage
5V DC			60 mA	60 mA	83Ω	83Ω			
6V DC			50 mA	50 mA	120Ω	120Ω			
9V DC			33.3mA	33.3mA	270Ω	270Ω			
12V DC			25 mA	25 mA	480Ω	480Ω			
24V DC			12.5mA	12.5mA	1,920Ω	1,920Ω			

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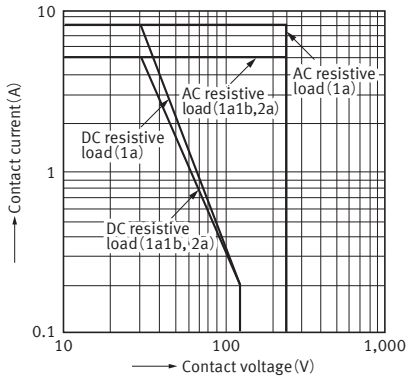
2. Specifications

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 AgSnO2 type		
Rating	Nominal switching capacity (resistive load)		8 A 250 V AC, 5A 30V DC	5 A 250 V AC, 5 A 30 V DC	
	Max. switching power (resistive load)		2,000 VA, 150 W	1,250 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/s² (Half-wave pulse of sine wave: 11 ms; detection time: 10μs.)		
		Destructive	Min. 980 m/s² (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. 5×10⁷ (at 180 times/min.)		
	Electrical		Min. 10⁵ (resistive load)		
Conditions	Conditions for operation, transport and storage*3 (Not freezing and condensing at low temperature)		Ambient temperature: –40°C to +60°C –40°F to +140°F	Ambient temperature: –40°C to +65°C –40°F to +149°F	Ambient temperature: –40°C to +60°C –40°F to +140°F
	Max. operating speed		3 cps		
Unit weight			Approx. 4.5 g .16 oz		

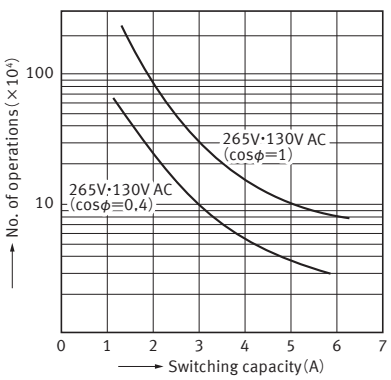
Notes: *1. This value can change due to the switching frequency, environmental conditions, and desired reliability level, therefore it is recommended to check this with the actual load.
*2. Wave is standard shock voltage of ±1.2×50μs according to JEC-212-1981
*3. The upper limit of the ambient temperature is the maximum temperature that can satisfy the coil temperature rise value. Refer to Usage, transport and storage conditions in NOTES.

REFERENCE DATA

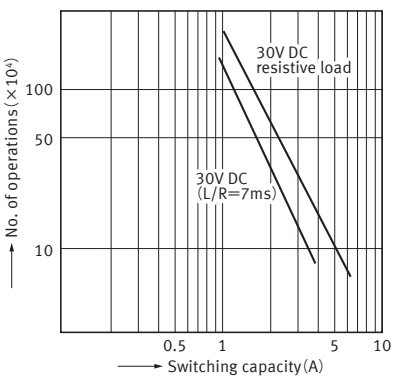
1. Max. switching capacity



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

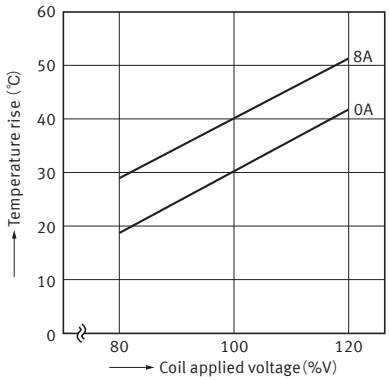


2.-(2) Life curve (1 Form A 1 Form B)



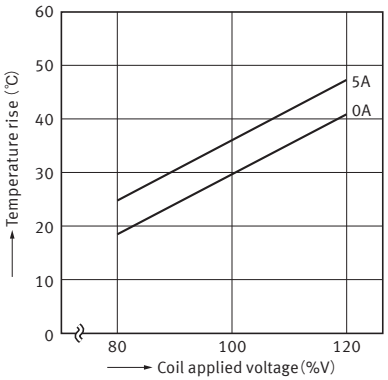
3.-(1) Coil temperature rise (1 Form A)

Tested sample：DSP1a-12V DC, 5 pcs.



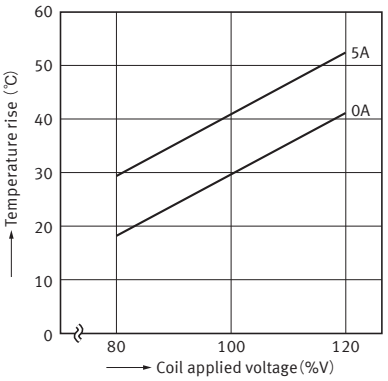
3.-(2) Coil temperature rise (1 Form A 1 Form B)

Tested sample：DSP1-12V DC, 5 pcs.



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

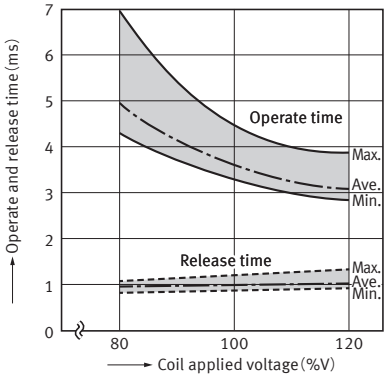
Tested sample：DSP2a-12V DC, 5 pcs.



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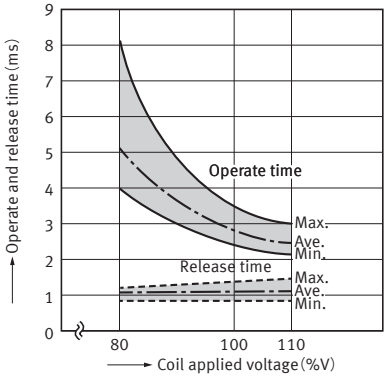
4.-(1) Operate & release time
(without diode, 1 Form A)

Tested sample：DSP1a-12V DC, 5 pcs.



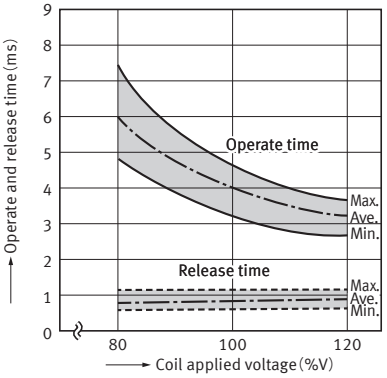
4.-(2) Operate & release time
(without diode, 1 Form A 1 Form B)

Tested sample：DSP1-12V DC, 5 pcs.



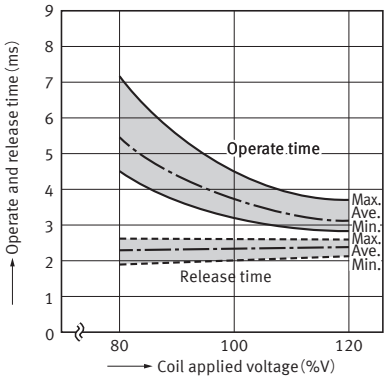
4.-(3) Operate & release time
(without diode, 2 Form A)

Tested sample：DSP2a-12V DC, 5 pcs.



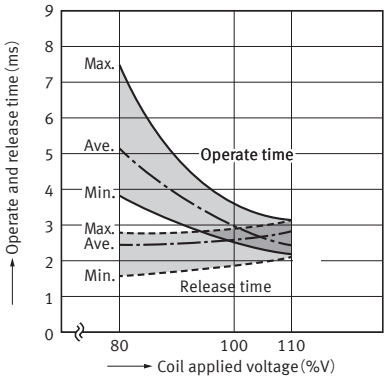
4.-(4) Operate & release time
(with diode, 1 Form A)

Tested sample：DSP1a-12V DC, 5 pcs.



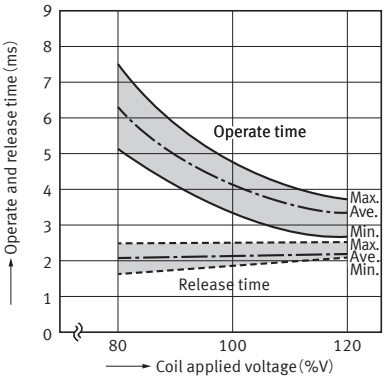
4.-(5) Operate & release time
(with diode, 1 Form A 1 Form B)

Tested sample：DSP1-12V DC, 5 pcs.



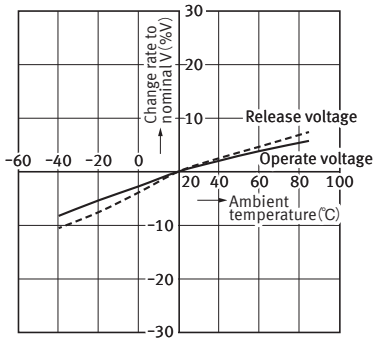
4.-(6) Operate & release time
(with diode, 2 Form A)

Tested sample：DSP2a-12V DC, 5 pcs.



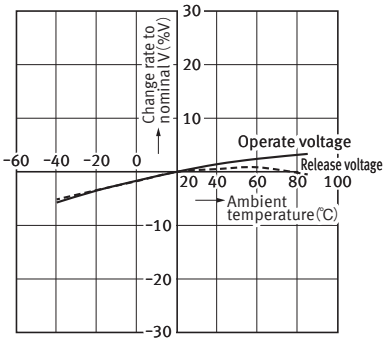
5.-(1) Change of pick-up and drop-out voltage
(1 Form A)

Tested sample：DSP1a-12V DC, 5 pcs.



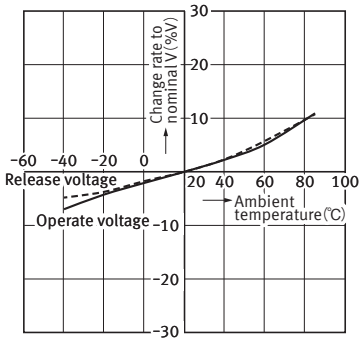
5.-(2) Change of pick-up and drop-out voltage
(1 Form A 1 Form B)

Tested sample：DSP1-12V DC, 5 pcs.



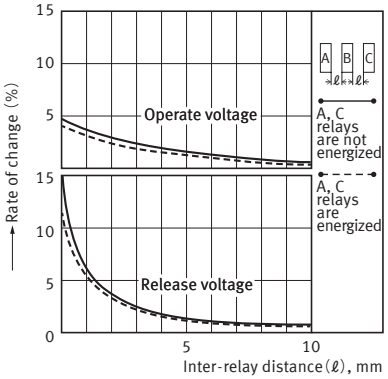
5.-(3) Change of pick-up and drop-out voltage
(2 Form A)

Tested sample：DSP2a-12V DC, 5 pcs.



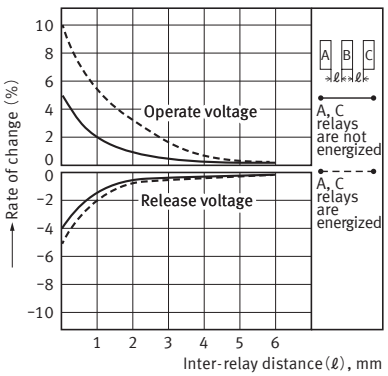
6.-(1) Influence of adjacent mounting
(1 Form A)

Tested sample：DSP1a-12V DC, 5 pcs.



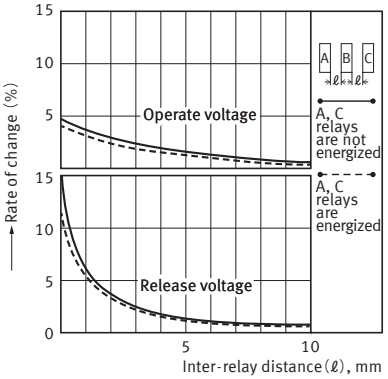
6.-(2) Influence of adjacent mounting
(1 Form A 1 Form B)

Tested sample：DSP1-12V DC, 5 pcs.



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

Tested sample：DSP2a-12V DC, 5 pcs.



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DIMENSIONS (mm)

CAD The CAD data of the products with a "CAD" mark can be downloaded from our Website.

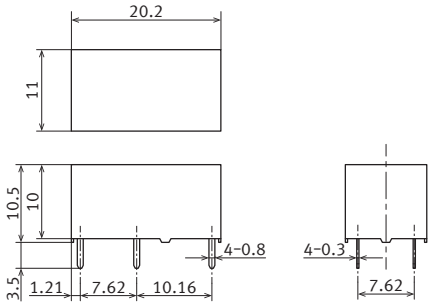
1. 1 Form A type

CAD

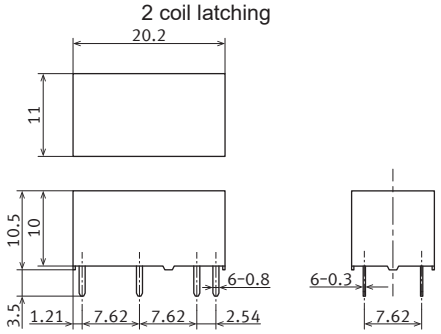


External dimensions

Single side stable

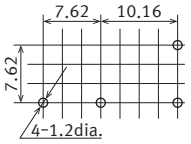


2 coil latching



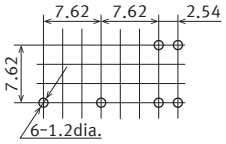
PC board pattern (Bottom view)

Single side stable



Tolerance ±0.1

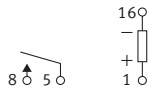
2 coil latching



Tolerance ±0.1

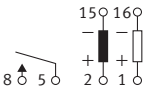
Schematic (Bottom view)

Single side stable



(Deenergized condition)

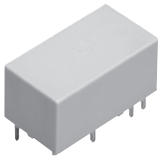
2 coil latching



(Reset condition)

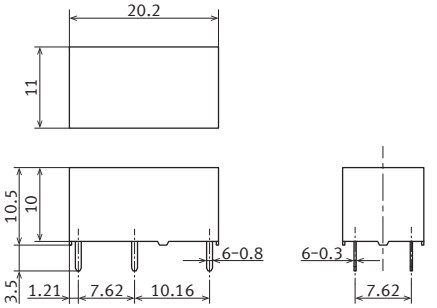
2. 1 Form A 1 Form B type

CAD



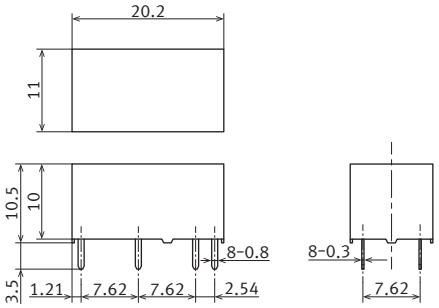
External dimensions

Single side stable



General tolerance ±0.3

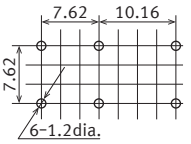
2 coil latching



General tolerance ±0.3

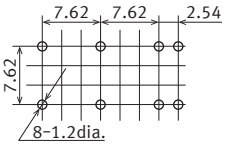
PC board pattern (Bottom view)

Single side stable



Tolerance ±0.1

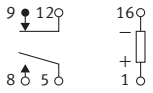
2 coil latching



Tolerance ±0.1

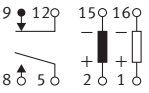
Schematic (Bottom view)

Single side stable



(Deenergized condition)

2 coil latching



(Reset condition)

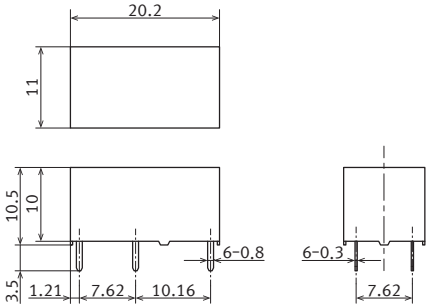
3. 2 Form A type

CAD



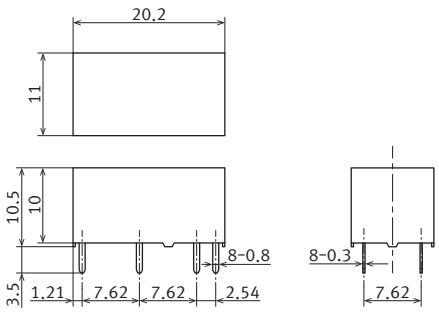
External dimensions

Single side stable



General tolerance ±0.3

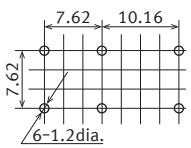
2 coil latching



General tolerance ±0.3

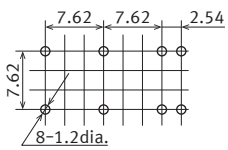
PC board pattern (Bottom view)

Single side stable



Tolerance ±0.1

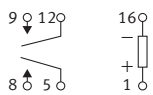
2 coil latching



Tolerance ±0.1

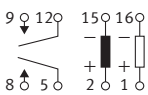
Schematic (Bottom view)

Single side stable



(Deenergized condition)

2 coil latching



(Reset condition)

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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 1/6HP 125/250V AC 5A 30V DC Resistive B300	LR26550	8A 125/250V AC General use 1/6HP 125/250V AC 5A 30V DC Resistive B300	B 13 11 13461 342	8A 250V AC (cosφ =1.0) 5A 250V AC (cosφ =0.4) 5A 30V DC (0 ms)
1 Form A 1 Form B	E43028	5A 125/250V AC General use 1/6HP 125/250V AC 5A 30V DC Resistive 30W Max.: 1A 30V DC-0.24A 125V DC	LR26550	5A 125/250V AC General use 1/6HP 125/250V AC 5A 30V DC Resistive 30W Max.: 1A 30V DC-0.24A 125V DC B300	B 13 11 13461 342	5A 250V AC (cosφ =1.0) 3A 250V AC (cosφ =0.4) 5A 30V DC (0 ms)
2 Form A	E43028	5A 125/250V AC General use 1/10HP 125/250V AC 5A 30V DC Resistive	LR26550	5A 125/250V AC General use 1/10HP 125/250V AC 5A 30V DC Resistive	B 13 11 13461 342	5A 250V AC (cosφ =1.0) 3A 250V AC (cosφ =0.4) 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.

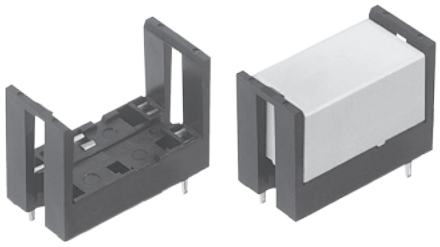
Please refer to **"the latest product specifications"** when designing your product.

• Requests to customers :
https://industrial.panasonic.com/ac/e/salespolicies/

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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. / 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

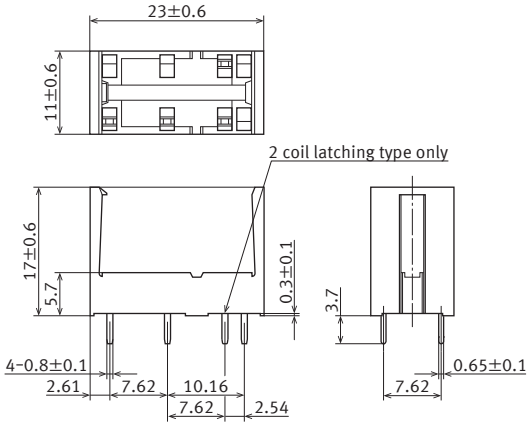
SPECIFICATIONS

Item	Specifications
Breakdown voltage	3,000 Vrms between terminals (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), 5 A (DSP2a-PS and DSP2a-PSL2)

DIMENSIONS (mm)

CAD The CAD data of the products with a "CAD" mark can be downloaded from our Website.

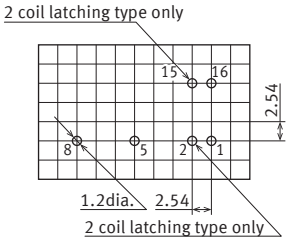
CAD External dimensions



General tolerance ±0.3

PC board pattern (Bottom view)

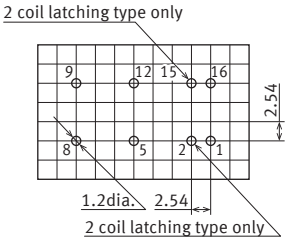
DSP1a-PS, DSP1a-PSL2



Tolerance ±0.1

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

DSP2a-PS, DSP2a-PSL2

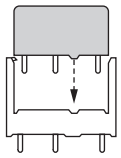


Tolerance ±0.1

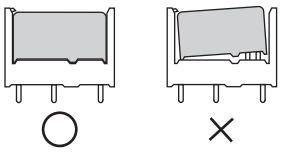
Note : Terminal No.2 and 15 are for DSP2a-PSL2 only.

FIXING AND REMOVAL METHOD

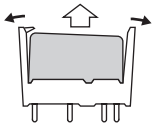
1. Match the direction of relay and socket.



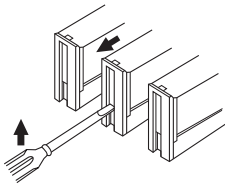
2. Both ends of relays are fixed so tightly that the socket hooks on the top surface of relays.



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.

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GUIDELINES FOR POWER RELAYS AND HIGH-CAPACITY DC CUT OFF RELAYS USAGE

For cautions for use, please read "GUIDELINES FOR RELAY USAGE".
https://industrial.panasonic.com/ac/e/control/relay/cautions_use/index.jsp

Precautions for Coil Input

■Long term current carrying

A circuit that will be carrying a current continuously for long periods without relay switching operation. (circuits for emergency lamps, alarm devices and error inspection that, for example, revert only during malfunction and output warnings with form B contacts) Continuous, long-term current to the coil will facilitate deterioration of coil insulation and characteristics due to heating of the coil itself.
For circuits such as these, please use a magnetic-hold type latching relay. If you need to use a single stable relay, use a sealed type relay that is not easily affected by ambient conditions and make a failsafe circuit design that considers the possibility of contact failure or disconnection.

■DC Coil operating power

Steady state 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, please check with the actual circuit since the electrical characteristics may vary. The rated coil voltage should be applied to the coil and the set/reset pulse time of latching type relay differs for each relays, please refer to the relay's individual specifications.

■Coil connection

When connecting coils of polarized relays, please check coil polarity (+,-) at the internal connection diagram (Schematic). If any wrong connection is made, it may cause unexpected malfunction, like abnormal heat, fire and so on, and circuit do not work. Avoid impressing voltages to the set coil and reset coil at the same time.

■Maximum allowable voltage and temperature rise

Proper usage requires that the rated coil voltage be impressed on the coil. Note, however, that if a voltage greater than or equal to the maximum continuous voltage is impressed on the coil, the coil may burn or its layers short due to the temperature rise. Furthermore, do not exceed the usable ambient temperature range listed in the catalog.

■Operate voltage change due to coil temperature rise

(Hot start)
In DC relays, after continuous passage of current in the coil, if the current is turned OFF, then immediately turned ON again, due to the temperature rise in the coil, the pick-up voltage will become somewhat higher. Also, it will be the same as using it in a higher temperature atmosphere. The resistance/temperature relationship for copper wire is about 0.4% for 1°C, and with this ratio the coil resistance increases. That is, in order to operate of the relay, it is necessary that the voltage be higher than the pick-up voltage and the pick-up voltage rises in accordance with the increase in the resistance value. However, for some polarized relays, this rate of change is considerably smaller.

Ambient Environment

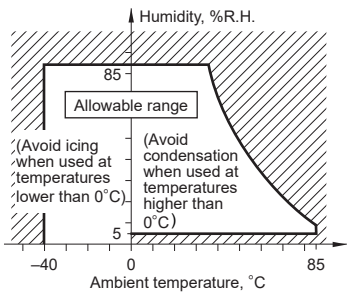
●Usage, Transport, and Storage Conditions

During usage, storage, or transportation, avoid locations subjected to direct sunlight and maintain normal temperature, humidity and pressure conditions.

●Temperature/Humidity/Pressure

When transporting or storing relays while they are tube packaged, there are cases the temperature may differ from the allowable range. In this case be sure to check the individual specifications. Also allowable humidity level is influenced by temperature, please check charts shown below and use relays within mentioned conditions. (Allowable temperature values differ for each relays, please refer to the relay's individual specifications.)

1) Temperature:
The tolerance temperature range differs for each relays, please refer to the relay's individual specifications
2) Humidity:
5 to 85 % RH
3) Pressure:
86 to 106 kPa



●Dew condensation

Condensation occurs when the ambient temperature drops suddenly from a high temperature and humidity, or the relay is suddenly transferred from a low ambient temperature to a high temperature and humidity. Condensation causes the failures like insulation deterioration, wire disconnection and rust etc. Panasonic Corporation does not guarantee the failures caused by condensation.
The heat conduction by the equipment may accelerate the cooling of device itself, and the condensation may occur. Please conduct product evaluations in the worst condition of the actual usage. (Special attention should be paid when high temperature heating parts are close to the device. Also please consider the condensation may occur inside of the device.)

●Icing

Condensation or other moisture may freeze on relays when the temperature become lower than 0°C.This icing causes the sticking of movable portion, the operation delay and the contact conduction failure etc. Panasonic Corporation does not guarantee the failures caused by the icing.
The heat conduction by the equipment may accelerate the cooling of relay itself and the icing may occur. Please conduct product evaluations in the worst condition of the actual usage.

●Low temperature and low humidity

The plastic becomes brittle if the switch is exposed to a low temperature, low humidity environment for long periods of time.

●High temperature and high humidity

Storage for extended periods of time (including transportation periods) at high temperature or high humidity levels or in atmospheres with organic gases or sulfide gases may cause a sulfide film or oxide film to form on the surfaces of the contacts and/or it may interfere with the functions. Check out the atmosphere in which the units are to be stored and transported.

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●Package

In terms of the packing format used, make every effort to keep the effects of moisture, organic gases and sulfide gases to the absolute minimum.

●Silicon

When a source of silicone substances (silicone rubber, silicone oil, silicone coating materials and silicone filling materials etc.) is used around the relay, the silicone gas (low molecular siloxane etc.) may be produced.

This silicone gas may penetrate into the inside of the relay. When the relay is kept and used in this condition, silicone compound may adhere to the relay contacts which may cause the contact failure. Do not use any sources of silicone gas around the relay (Including plastic seal types).

●NOx Generation

When relay is used in an atmosphere high in humidity to switch a load which easily produces an arc, the NOx created by the arc and the water absorbed from outside the relay combine to produce nitric acid. This corrodes the internal metal parts and adversely affects operation. Avoid use at an ambient humidity of 85%RH or higher (at 20°C). If use at high humidity is unavoidable, please contact our sales representative.

Others

■Cleaning

1) Although the environmentally sealed type relay (plastic sealed type, etc.) can be cleaned, avoid immersing the relay into cold liquid (such as cleaning solvent) immediately after soldering. Doing so may deteriorate the sealing performance.
2) Cleaning with the boiling method is recommended(The temperature of cleaning liquid should be 40°C or lower).
   Avoid ultrasonic cleaning on relays. Use of ultrasonic cleaning may cause breaks in the coil or slight sticking of the contacts due to ultrasonic energy.

Please refer to **"the latest product specifications"** when designing your product.
•Requests to customers:
https://industrial.panasonic.com/ac/e/salespolicies/

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Please contact .....

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