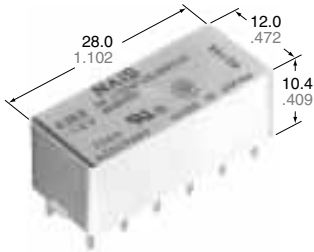


**Panasonic**  
ideas for life

**4 A CAPACITY,  
THE VARIETY OF CONTACT  
ARRANGEMENTS**

**S RELAYS**

## FEATURES



mm inch

- The variety of contact arrangements  
2 Form A 2 Form B, 3 Form A 1 Form B, 4 Form A
- Latching types available
- High sensitivity in small size 100 mW pick-up and 200 mW nominal operating power
- High shock and vibration resistance  
Shock: 50 G Vibration: 10 to 55 Hz at double amplitude of 3 mm .118 inch
- Wide switching range From 100 $\mu$ A 100 mV DC to 4 A 250 V AC
- Low thermal electromotive force  
Approx. 3  $\mu$ V
- Dual-In-Line packaging arrangement
- Amber types available

## SPECIFICATIONS

### Contacts

Arrangement	2 Form A 2 Form B, 3 Form A 1 Form B, 4 Form A		
Initial contact resistance, max. (By voltage drop 6 V DC 1 A)	50 m $\Omega$		
Initial contact pressure	Approx. 12 g .42 oz		
Contact material	Gold clad silver alloy		
Electrostatic capacitance	Approx. 3pF		
Thermal electromotive force (at nominal coil voltage)	Approx. 3 $\mu$ V		
Rating (resistive)	Nominal switching capacity	4 A 250 V AC, 3 A 30 V DC	
	Maximum switching power	1,000 VA, 90 W	
	Maximum switching voltage	250 V AC, 30 V DC (48 VDC at less than 0.5 A)	
	Max. switching current	4 A (AC), 3 A (DC)	
	Min. switching capacity <sup>#1</sup>	100 $\mu$ A 100 m V DC	
Expected life (min. operations)	Mechanical (at 50 cps)	10 <sup>8</sup>	
	Electrical (at 20 cpm)	4 A 250 V AC	10 <sup>5</sup>
		3 A 30 V DC	2 $\times$ 10 <sup>5</sup>

### Coil (polarized) (at 20°C 68°F)

Single side stable	Minimum operating power	Approx. 100 mW
	Nominal operating power	Approx. 200 mW
Latching	Minimum set and reset	Approx. 100 mW
	Nominal set and reset	Approx. 200 mW

### 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.

### Remarks

- \* Specifications will vary with foreign standards certification ratings.
- \*1 Measurement at same location as "Initial breakdown voltage" section
- \*2 Detection current: 10mA
- \*3 Excluding contact bounce time
- \*4 Half-wave pulse of sine wave: 11ms; detection time: 10 $\mu$ s
- \*5 Half-wave pulse of sine wave: 6ms
- \*6 Detection time: 10 $\mu$ s
- \*7 Refer to 6. Conditions for operation, transport and storage mentioned in AMBIENT ENVIRONMENT

### Characteristics (at 25°C 77°F 50% Relative humidity)

Max. operating speed	20 cpm for maximum load, 50 cps for low-level load (1 mA 1 V DC)	
Initial insulation resistance*1	10,000 M $\Omega$ at 500 V DC	
Initial breakdown voltage*2	Between open contacts	750 Vrms
	Between contact sets	1,000 Vrms
	Between contacts and coil	1,500 Vrms
Operate time*3 (at nominal voltage)(at 20°C)	Max. 15 ms (Approx. 8 ms)	
Release time (without diode)*3 (at nominal voltage)(at 20°C)	Max. 10 ms (Approx. 5 ms)	
Set time*3 (latching) (at nominal voltage)(at 20°C)	Max. 15 ms (Approx. 8 ms)	
Reset time*3 (latching) (at nominal voltage)(at 20°C)	Max. 15 ms (Approx. 8 ms)	
Initial contact bounce, max.	1 ms	
Temperature rise (at nominal voltage)(at 20°C)	Max. 35°C with nominal coil voltage and at maximum switching current	
Shock resistance	Functional*4	Min. 490 m/s <sup>2</sup> {50 G}
	Destructive*5	Min. 980 m/s <sup>2</sup> {100 G}
Vibration resistance	Functional*6	176.4 m/s <sup>2</sup> {18 G}, 10 to 55 Hz at double amplitude of 3 mm
	Destructive	235.2 m/s <sup>2</sup> {24 G}, 10 to 55 Hz at double amplitude of 4 mm
Conditions for operation, transport and storage*7 (Not freezing and condens- ing at low temperature)	Ambient temp.	-40°C to +65°C -40°F to +149°F
	Humidity	5 to 85% R.H.
Unit weight	Approx. 8 g .28 oz	

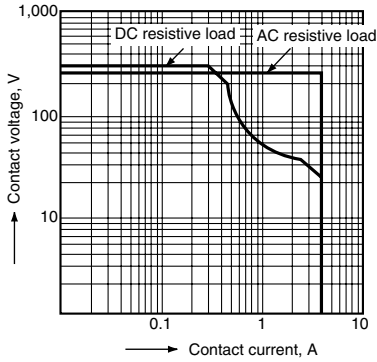
## TYPICAL APPLICATIONS

Telecommunications equipment, data processing equipment,  
facsimiles, alarm equipment, measuring equipment.

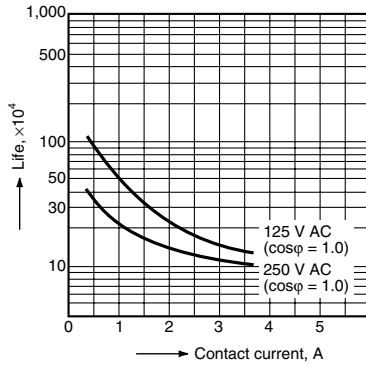


# REFERENCE DATA

## 1. Maximum switching power

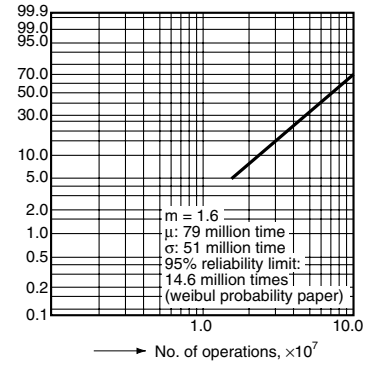


## 2. Life curve



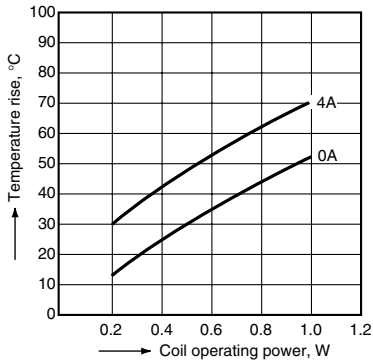
## 3. Contact reliability

Condition: 1V DC, 1mA  
 Detection level 10  $\Omega$   
 Tasted Sample: S4EB-24V, 10pcs



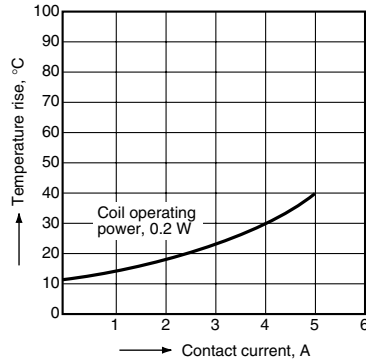
## 4.-(1) Coil temperature rise

Tested Sample: S4EB-24V, 4 Form A



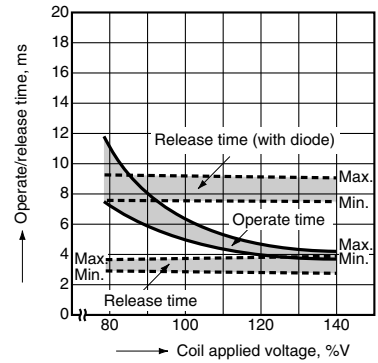
## 4.-(2) Coil temperature rise

Tested Sample: S4EB-24V, 4 Form A

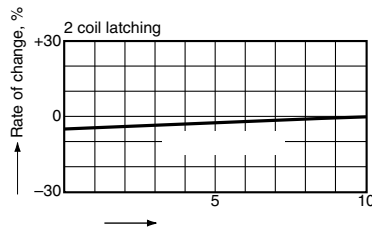
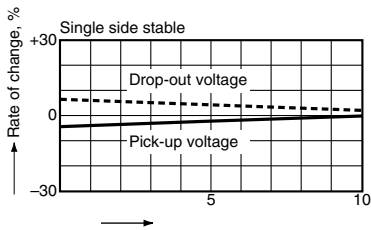
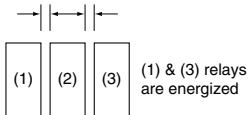


## 5. Operate and release time

(Single side stable type)  
 Tested Sample: S4EB-24V, 10pcs



## 6. Influence of adjacent mounting



## ACCESSORIES



S Relay Socket,  
S-PS

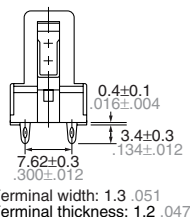
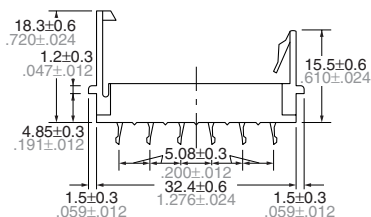
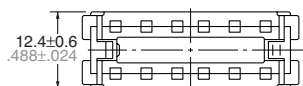
### Specifications

Breakdown voltage	1,500 Vrms between terminals
Insulation resistance	More than 100 MΩ between terminals at 500 V DC Mega
Heat resistance	150 ±3°C (302 ±5.4°F) for 1 hour.
Maximum continuous current	4 A

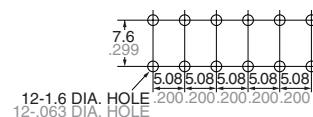
(Note: Don't insert or remove relays while in the energized condition.)

### Dimensions

mm inch

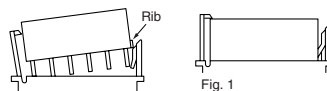


### PC board pattern (Copper-side view)



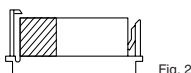
### Inserting and removing method

Inserting method: Insert the relay as shown in Fig. 1 until the rib of the relay snaps into the clip of the socket.

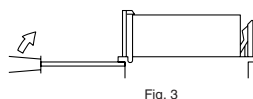


Removing method:

(1) Remove the relay straight from the socket holding the shaded portion of the relay as shown in Fig. 2.



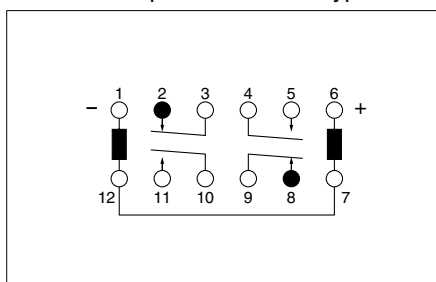
(2) When sockets are mounted in close proximity, use a slotted screw driver as shown in Fig. 3.



## NOTES

1. Special use of 2 coil latching types: 2 ways can be considered if 2 coil latching types are used as 1 coil latching types.  
(A) Reverse polarity is applied to the set coil of 2 coil latching type.  
(B) By shorting terminals 12 and 7, apply plus to 1, minus to 6 at set and plus to 6, minus to 1 at reset. Applied coil voltage should be the same as the nominal. Operating power will be reduced to one-half.

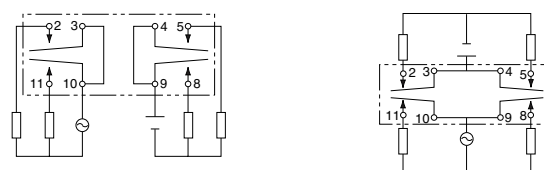
### Reset position of 2a2b type



2. Soldering operations should be accomplished as quick as possible; within 10 seconds at 250°C 482°F solder temperature or 3 seconds at 350°C 662°F. The header portion being sealed with epoxy resin, undue subjection to heat may cause loss of seal. Solder should not be permitted to remain on the header.

## CAUTIONS FOR USE

Based on regulations regarding insulation distance, there is a restriction on same-channel load connections between terminals No. 2, 3 and 4, 5, as well as between No. 8, 9 and 10, 11. See the figure below for an example.



- Between 2, 3 and 4, 5: different channels, therefore not possible
- Between 10, 11 and 8, 9: different channels, therefore not possible
- Between 2, 3 and 4, 5: same channels, therefore possible
- Between 10, 11 and 8, 9: same channels, therefore possible

No good

Good

**For Cautions for Use, see Relay Technical Information**