

## 2) 2 coil latching

| Type     | Nominal coil voltage | Set voltage (at 20°C 68°F)                | Reset voltage (at 20°C 68°F)              | Nominal operating current [ $\pm 10\%$ ] (at 20°C 68°F) |            | Coil resistance [ $\pm 10\%$ ] (at 20°C 68°F) |                | Nominal operating power (at 20°C 68°F) |            | Coil inductance |                 | Max. applied voltage (at 40°C 104°F) |
|----------|----------------------|---|---|---|------------|---|----------------|--|------------|-----------------|-----------------|--------------------------------------|
|          |                      |   |   | Set coil  | Reset coil | Set coil                                      | Reset coil     | Set coil                               | Reset coil | Set coil        | Reset coil      |                                      |
| Standard | 3V DC                | 70%V or less of nominal voltage (Initial) | 70%V or less of nominal voltage (Initial) | 66.7mA  | 66.7mA     | 45 $\Omega$                                   | 45 $\Omega$    | 200mW                                  | 200mW      | Approx. 10mH    | Approx. 10mH    | 5.5V DC                              |
|          | 5V DC                |   |   | 38.5mA  | 38.5mA     | 130 $\Omega$                                  | 130 $\Omega$   | 192mW                                  | 192mW      | Approx. 31mH    | Approx. 31mH    | 9.0V DC                              |
|          | 6V DC                |   |   | 33.7mA  | 33.7mA     | 180 $\Omega$                                  | 180 $\Omega$   | 200mW                                  | 200mW      | Approx. 40mH    | Approx. 40mH    | 11.0V DC                             |
|          | 12V DC               |   |   | 16.7mA  | 16.7mA     | 720 $\Omega$                                  | 720 $\Omega$   | 200mW                                  | 200mW      | Approx. 170mH   | Approx. 170mH   | 22.0V DC                             |
|          | 24V DC               |   |   | 8.4mA   | 8.4mA      | 2,850 $\Omega$                                | 2,850 $\Omega$ | 202mW                                  | 202mW      | Approx. 680mH   | Approx. 680mH   | 44.0V DC                             |
|          | 48V DC               |   |   | 7.4mA   | 7.4mA      | 6,500 $\Omega$                                | 6,500 $\Omega$ | 355mW                                  | 355mW      | Approx. 1,250mH | Approx. 1,250mH | 65.0V DC                             |

## 2. Specifications

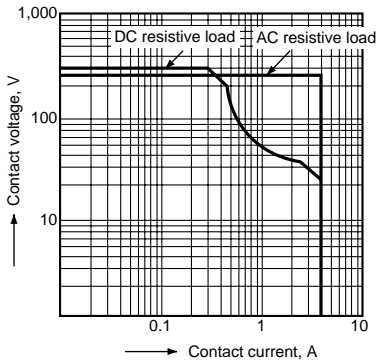
| Characteristics                          | Item  | Specifications  |  |
|--|---|---|--|
| Contact                                  | Arrangement   | 2 Form A 2 Form B, 3 Form A 1 Form B, 4 Form A  |  |
|  | Contact resistance (Initial)  | Max. 50 m $\Omega$ (By voltage drop 6 V DC 1A)  |  |
|  | Electrostatic capacitance (initial)   | Approx. 3pF   |  |
|  | Contact material  | Au clad Ag alloy (Cd free)  |  |
|  | Thermal electromotive force (at nominal coil voltage) (initial)   | Approx. 3 $\mu$ V   |  |
| Rating                                   | Nominal switching capacity (resistive load)   | 4 A 250 V AC, 3 A 30 V DC   |  |
|  | Max. switching power (resistive load)   | 1,000 VA, 90 W  |  |
|  | Max. switching voltage  | 250 V AC, 48 V DC (30 to 48 V DC at less than 0.5 A)  |  |
|  | Max. switching current  | 4 A (AC), 3 A (DC)  |  |
|  | Minimum operating power   | 100 mW (Single side stable, 2 coil latching) (Except 48V DC type)   |  |
|  | Nominal operating power   | 200 mW (Single side stable, 2 coil latching) (Except 48V DC type)   |  |
|  | Min. switching capacity (Reference value)*1   | 100 $\mu$ A 100 m V DC  |  |
| Electrical characteristics               | Insulation resistance (Initial)   | Min. 10,000M $\Omega$ (at 500V DC)<br>Measurement at same location as "Breakdown voltage" section.                              |  |
|  | Breakdown voltage (Initial)   | Between open contacts   | 750 Vrms for 1min. (Detection current: 10mA.)  |
|  |   | Between contact sets  | 1,000 Vrms for 1min. (Detection current: 10mA.)  |
|  |   | Between contact and coil  | 1,500 Vrms for 1min. (Detection current: 10mA.)  |
|  | Temperature rise (coil) (at 20°C 68°F)  | Max. 35°C<br>(By resistive method, nominal coil voltage applied to the coil; contact carrying current: 4A.)                     |  |
|  | Operate time [Set time] (at 20°C 68°F)  | Max. 15 ms [15 ms] (Nominal coil voltage applied to the coil, excluding contact bounce time.)                                   |  |
| Release time [Reset time] (at 20°C 68°F) | Max. 10 ms [15 ms] (Nominal coil voltage applied to the coil, excluding contact bounce time.) (without diode) |   |  |
| Mechanical characteristics               | Shock resistance  | Functional  | Min. 490 m/s <sup>2</sup> (Half-wave pulse of sine wave: 11 ms; detection time: 10 $\mu$ s.) |
|  |   | 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 3 mm (Detection time: 10 $\mu$ s.)                        |
|  |   | Destructive   | 10 to 55 Hz at double amplitude of 4 mm  |
| Expected life                            | Mechanical  | Min. 10 <sup>8</sup> (at 50 cps)  |  |
|  | Electrical  | Min. 10 <sup>5</sup> (4 A 250 V AC), Min. 2 $\times$ 10 <sup>5</sup> (3 A 30 V DC) (at 20 times/min.)                           |  |
| Conditions                               | Conditions for operation, transport and storage*2   | Ambient temperature: -55°C to +65°C -67°F to +149°F<br>Humidity: 5 to 85% R.H. (Not freezing and condensing at low temperature) |  |
|  | Max. operating speed  | 20 times/min. for maximum load, 50 cps for low-level load (1 mA 1 V DC)   |  |
| Unit weight                              |   | Approx. 8 g .28 oz  |  |

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

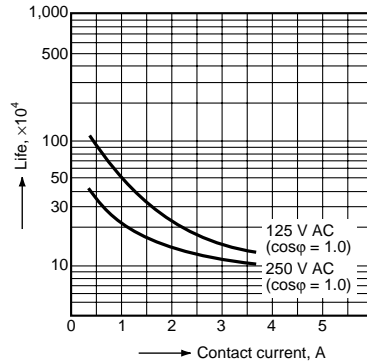
\*2. The upper limit of the ambient temperature is the maximum temperature that can satisfy the coil temperature rise value. Refer to Usage, transport and storage conditions in NOTES.

# REFERENCE DATA

## 1. Maximum switching power

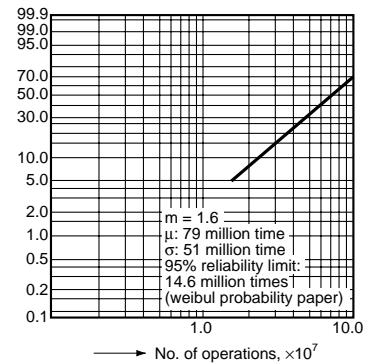


## 2. Life curve



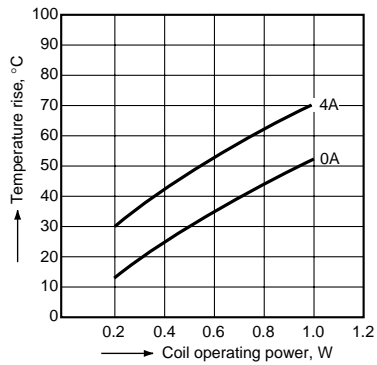
## 3. Contact reliability

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



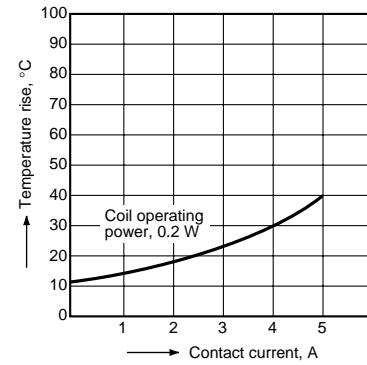
## 4.-(1) Coil temperature rise

Tested Sample: S4EB-24V, 4 Form A



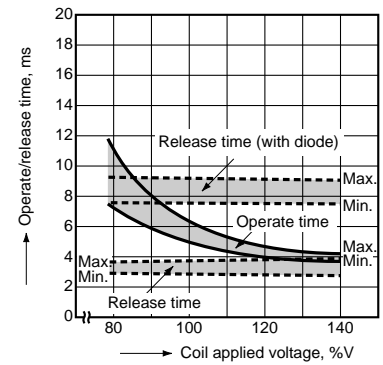
## 4.-(2) Coil temperature rise

Tested Sample: S4EB-24V, 4 Form A

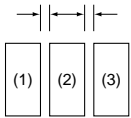


## 5. Operate and release time

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

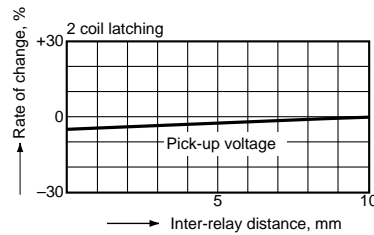
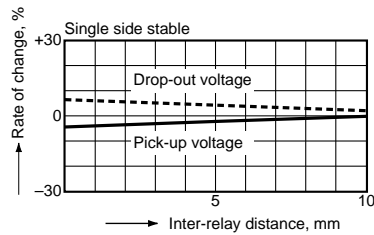


## 6. Influence of adjacent mounting

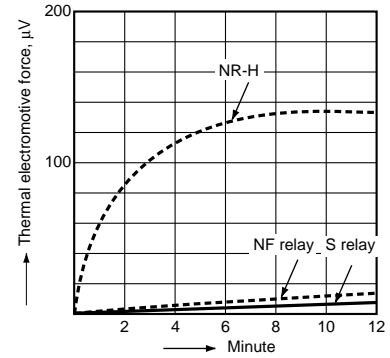


(1) & (3) relays are energized

Note: When installing an S-relay near another, and there is no effect from an external magnetic field, be sure to leave at least 10 mm .394 inch between relays in order to achieve the performance listed in the catalog.



## 7. Thermal electromotive force



## 8. Effect from an external magnetic field

