

RATING

1. Coil data

| Nominal coil voltage | Pick-up voltage<br>(at 20°C 68°F)               | Drop-out voltage<br>(at 20°C 68°F)            | Nominal operating current<br>[±10%] (at 20°C 68°F) | Coil resistance<br>[±10%] (at 20°C 68°F) | Nominal operating power | Max. applied voltage<br>(at 20°C 68°F) |
|----------------------|-------------------------------------------------|-----------------------------------------------|----------------------------------------------------|------------------------------------------|-------------------------|----------------------------------------|
| 5V DC                | 70%V or less of nominal voltage *1<br>(Initial) | 5%V or more of nominal voltage*1<br>(Initial) | 24mA                                               | 208Ω                                     | 120mW                   | 120%V of nominal voltage               |
| 6V DC                |                                                 |                                               | 20mA                                               | 300Ω                                     |                         |                                        |
| 9V DC                |                                                 |                                               | 13.3mA                                             | 675Ω                                     |                         |                                        |
| 12V DC               |                                                 |                                               | 10mA                                               | 1,200Ω                                   |                         |                                        |
| 18V DC               |                                                 |                                               | 6.7mA                                              | 2,700Ω                                   |                         |                                        |
| 24V DC               |                                                 |                                               | 7.5mA                                              | 3,200Ω                                   | 180mW*2                 |                                        |

Notes: \*1 Pulse drive (JIS C 5442)  
\*2 24V DC, 120mW type are also available, please consult us.

2. Specifications

| Characteristics            | Item                                              |                             | Specifications                                                                                                                                    |
|----------------------------|---------------------------------------------------|-----------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------|
| Contact                    | Arrangement                                       |                             | 1 Form A (Bifurcated)                                                                                                                             |
|                            | Contact resistance (Initial)                      |                             | Max. 30 mΩ (By voltage drop 6 V DC 1A)                                                                                                            |
|                            | Contact material                                  |                             | Au-clad AgNi type                                                                                                                                 |
| Rating                     | Nominal switching capacity (resistive load)       |                             | 5 A 250 V AC, 5 A 30 V DC                                                                                                                         |
|                            | Max. switching power (resistive load)             |                             | 1,250 VA, 150 W                                                                                                                                   |
|                            | Max. switching voltage                            |                             | 250 V (AC), 110 V (DC)                                                                                                                            |
|                            | Max. switching current                            |                             | 5 A                                                                                                                                               |
|                            | Nominal operating power                           |                             | 120 mW (5 to 18 V DC), 180 mW (24 V DC)                                                                                                           |
|                            | Min. switching capacity (Reference value)*1       |                             | 100μA 100mV 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 and coil    | 2,000 Vrms for 1min. (Detection current: 10mA.)                                                                                                   |
|                            | Surge breakdown voltage (Initial)                 | Between contacts and coil*2 | 4,000 V                                                                                                                                           |
|                            | Temperature rise (coil) (at 20°C 68°F)            |                             | Max. 45°C<br>(By resistive method, nominal coil voltage applied to the coil, nominal switching capacity.)                                         |
|                            | Operate time (at nominal voltage) (at 20°C 68°F)  |                             | Max. 10 ms                                                                                                                                        |
|                            | Release time (at nominal voltage) (at 20°C 68°F)  |                             | Max. 5 ms                                                                                                                                         |
| Mechanical characteristics | Shock resistance                                  | Functional                  | Min. 147 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 2.5 mm (Detection time: 10μs.)                                                                                 |
|                            |                                                   | Destructive                 | 10 to 55 Hz at double amplitude of 3.5 mm                                                                                                         |
| Expected life              | Mechanical                                        |                             | Min. 2×10 <sup>7</sup> (at 180 times/min.)                                                                                                        |
|                            | Electrical                                        |                             | Min. 10 <sup>5</sup> (3 A 250 V AC, 30 V DC, resistive load)<br>Min. 5×10 <sup>4</sup> (5 A 250 V AC, 30 V DC, resistive load) (at 20 times/min.) |
| Conditions                 | Conditions for operation, transport and storage*3 |                             | Ambient temperature: -40°C to 70°C -40°F to 158°F;<br>Humidity: 5 to 85% R.H. (Not freezing and condensing at low temperature)                    |
|                            | Max. operating speed                              |                             | 20 times/min. (at nominal switching capacity)                                                                                                     |
| Unit weight                |                                                   |                             | Approx. 3 g .15 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.

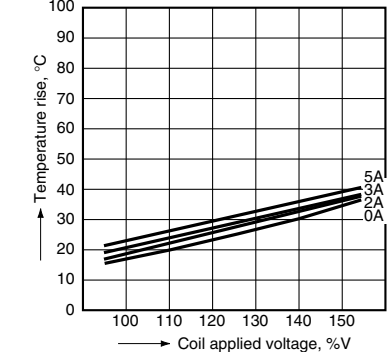
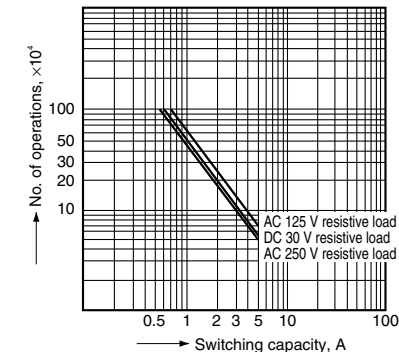
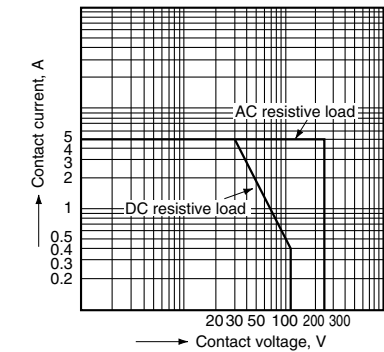
REFERENCE DATA

1. Max. switching capacity

2. Life curve

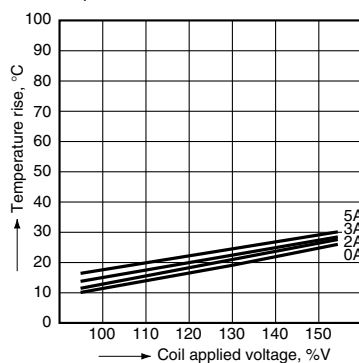
3.-(1) Coil temperature rise (180 mW)

Tested sample: PA1a-24V  
Measured portion: Inside the coil  
Ambient temperature: 20°C 68°F



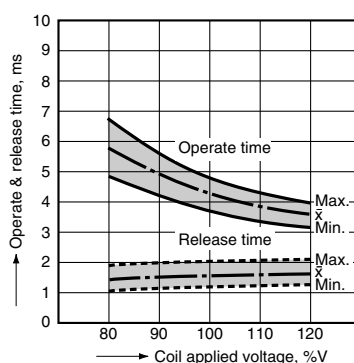
### 3.-(2) Coil temperature rise (120 mW)

Tested sample: PA1a-12V  
Measured portion: Inside the coil  
Ambient temperature: 20°C 68°F



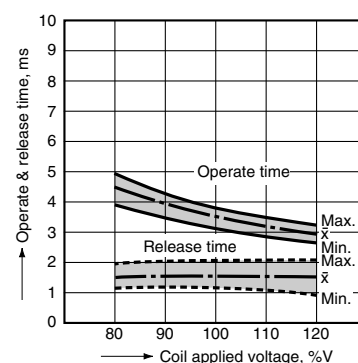
### 4.-(1) Operate & release time (120 mW)

Tested sample: PA1a-12V, 20 pcs.



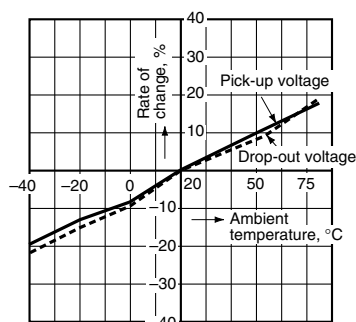
### 4.-(2) Operate & release time (180 mW)

Tested sample: PA1a-24V, 20 pcs.



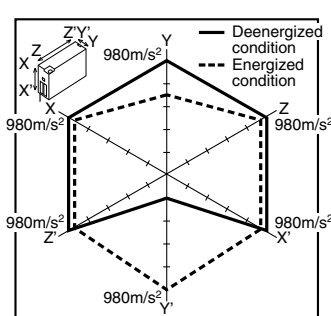
### 5. Ambient temperature characteristics

Tested sample: PA1a-12V, 6 pcs.



### 6. Malfunctional shock

Tested sample: PA1a-12V, 6 pcs.



## DIMENSIONS (mm inch)

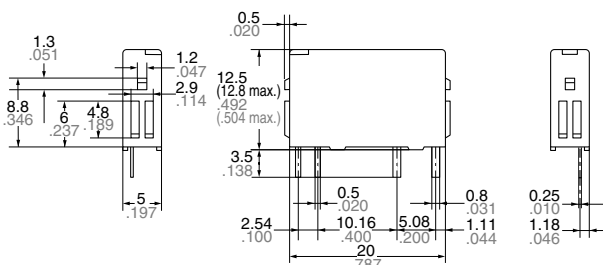
The CAD data of the products with a **CAD Data** mark can be downloaded from: <http://industrial.panasonic.com/ac/e/>

### Relay

#### CAD Data

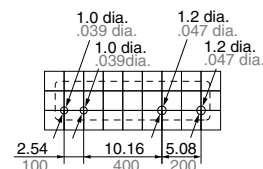


#### External dimensions



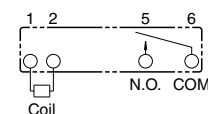
General tolerance:  $\pm 0.3 \pm 0.012$

#### PC board pattern (Bottom view)



Tolerance:  $\pm 0.1 \pm 0.004$

#### Schematic (Bottom view)

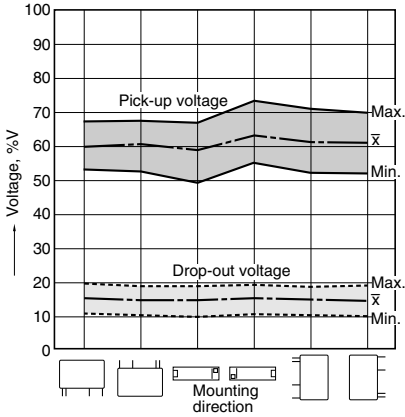


## SAFETY STANDARDS

| UL/C-UL (Recognized) |                                                                                                                  | CSA (Certified) |                                                                                                                  | TÜV (Certified)      |                         | Remarks                                                                                                                                                                          |
|----------------------|------------------------------------------------------------------------------------------------------------------|-----------------|------------------------------------------------------------------------------------------------------------------|----------------------|-------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| File No.             | Contact rating                                                                                                   | File No.        | Contact rating                                                                                                   | File No.             | Rating                  |                                                                                                                                                                                  |
| E43149               | 5A 250V AC ( $5 \times 10^4$ )<br>5A 30V DC ( $5 \times 10^4$ )<br>3A 250V AC ( $10^5$ )<br>3A 30V DC ( $10^5$ ) | LR26550<br>etc. | 5A 250V AC ( $5 \times 10^4$ )<br>5A 30V DC ( $5 \times 10^4$ )<br>3A 250V AC ( $10^5$ )<br>3A 30V DC ( $10^5$ ) | B 12 01<br>13461 316 | IEC1131-2<br>Reinforced | TÜV rating<br>5A 250V AC ( $\cos\phi=1.0$ ) ( $5 \times 10^4$ )<br>5A 30V DC (0ms) ( $5 \times 10^4$ )<br>3A 250V AC ( $\cos\phi=1.0$ ) ( $10^5$ )<br>3A 30V DC (0ms) ( $10^5$ ) |

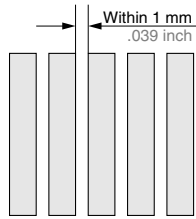
NOTES

- 1. For cautions for use, please read “GENERAL APPLICATION GUIDELINES” on page B-1.
- 2. If it includes ripple, the ripple factor should be less than 5%.
- 3. Specification values for pick-up and drop-out voltages are for the relay mounting with its terminals below.

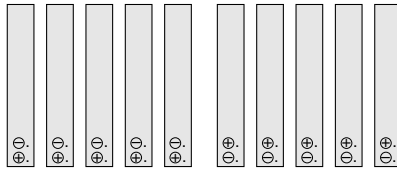


- 4. When mounting the relays within 1 mm .039 inch, please notice the condition below.

1) Mount the relays in the same direction.

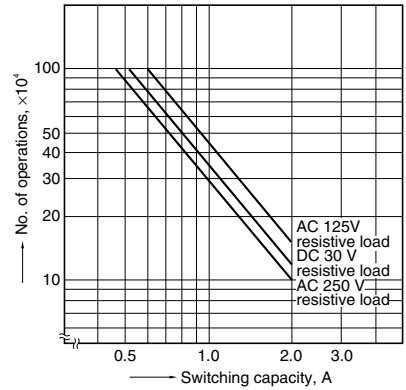
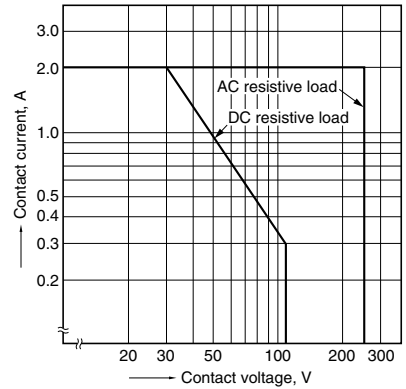


2) Coil terminals (Terminal No. 1 & 2) polarity should be arranged in the same direction.



3) Allowable contact current is 2 A.

4) About the electrical life for close mounting, please refer to data below.



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/)

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Specifications are subject to change without notice.