

# MINIATURE RELAY

## 2 POLES—1 to 2 A (FOR SIGNAL SWITCHING)

### A SERIES

RoHS compliant



#### ■ FEATURES

- Extremely low profile and light weight  
—Height: 5 mm  
—Weight: approximately 1.2 g
- Meet FCC (Part 68) standard
- Conforms to FCC rules and regulations part 68  
—Surge strength 1,500 V
- High reliability—bifurcated contacts
- Wide operating range
- DIL pitch terminals
- Plastic sealed type
- Latching version available
- RoHS compliant since date code: 0437B8  
Please see page 7 for more information



**大豪电子**  
 电话: 0755-83233025  
<http://www.szdahao.com>  
<http://www.very-tec.com>

#### ■ ORDERING INFORMATION

[Example]     A   L - D   12   W - K - HA  
 (a)   (b) (\*)   (c)   (d)   (e)   (f)   (g)

|     |                    |  |
|-----|--------------------|--|
| (a) | Series Name        | A : A Series   |
| (b) | Operation Function | Nil : Standard type<br>L : Latching type             |
| (c) | Number of Coil     | Nil : Single winding type<br>D : Double winding type |
| (d) | Nominal Voltage    | Refer to the COIL DATA CHART                         |
| (e) | Contact            | W : Bifurcated type                                  |
| (f) | Enclosure          | K : Plastic sealed type                              |
| (g) | Coil Sensitivity   | Nil : Standard<br>HA : 75% must voltage operate      |

Note: Actual marking omits the hyphen (-) of (\*)

# A SERIES

## ■ COIL DATA CHART

|               | MODEL    | Nominal voltage | Coil resistance ( $\pm 10\%$ ) | Must operate voltage* <sup>1</sup> | Must release voltage* <sup>1</sup> | Nominal power |
|---------------|----------|-----------------|--------------------------------|------------------------------------|------------------------------------|---------------|
| Standard Type | A-1.5W-K | 1.5 VDC         | 16.1 $\Omega$                  | +1.13 VDC                          | +0.15 VDC                          | 140 mW        |
|               | A- 3 W-K | 3 VDC           | 64.3 $\Omega$                  | +2.25 VDC                          | +0.3 VDC                           | 140 mW        |
|               | A-4.5W-K | 4.5 VDC         | 145 $\Omega$                   | +3.38 VDC                          | +0.45 VDC                          | 140 mW        |
|               | A- 5 W-K | 5 VDC           | 178 $\Omega$                   | +3.75 VDC                          | +0.5 VDC                           | 140 mW        |
|               | A- 6 W-K | 6 VDC           | 257 $\Omega$                   | +4.5 VDC                           | +0.6 VDC                           | 140 mW        |
|               | A- 9 W-K | 9 VDC           | 579 $\Omega$                   | +6.75 VDC                          | +0.9 VDC                           | 140 mW        |
|               | A-12 W-K | 12 VDC          | 1,028 $\Omega$                 | +9.0 VDC                           | +1.2 VDC                           | 140 mW        |
|               | A-18 W-K | 18 VDC          | 1,620 $\Omega$                 | +13.5 VDC                          | +1.8 VDC                           | 200 mW        |
|               | A-24 W-K | 24 VDC          | 2,880 $\Omega$                 | +18.0 VDC                          | +2.4 VDC                           | 200 mW        |
|               | A-48 W-K | 48 VDC          | 7,680 $\Omega$                 | +36.0 VDC                          | +4.8 VDC                           | 300 mW        |

Note: \*<sup>1</sup> Specified values are subject to pulse wave voltage.  
All values in the table are measured at 20°C.

|                              | MODEL      | Nominal voltage  | Coil resistance ( $\pm 10\%$ ) | Set voltage* <sup>1</sup> | Reset voltage* <sup>1</sup> | Nominal power |
|------------------------------|------------|------------------|--------------------------------|---------------------------|-----------------------------|---------------|
| Single Winding Latching Type | AL-1.5W-K  | 1.5 VDC          | 22.5 $\Omega$                  | +1.13 VDC                 | -1.05 VDC                   | 100 mW        |
|                              | AL- 3 W-K  | 3 VDC            | 90 $\Omega$                    | +2.25 VDC                 | -2.1 VDC                    | 100 mW        |
|                              | AL-4.5W-K  | 4.5 VDC          | 203 $\Omega$                   | +3.38 VDC                 | -3.15 VDC                   | 100 mW        |
|                              | AL- 5 W-K  | 5 VDC            | 250 $\Omega$                   | +3.75 VDC                 | -3.5 VDC                    | 100 mW        |
|                              | AL- 6 W-K  | 6 VDC            | 360 $\Omega$                   | +4.5 VDC                  | -4.2 VDC                    | 100 mW        |
|                              | AL- 9 W-K  | 9 VDC            | 810 $\Omega$                   | +6.75 VDC                 | -6.3 VDC                    | 100 mW        |
|                              | AL-12 W-K  | 12 VDC           | 1,440 $\Omega$                 | +9.0 VDC                  | -8.4 VDC                    | 100 mW        |
|                              | AL-18 W-K  | 18 VDC           | 2,160 $\Omega$                 | +13.5 VDC                 | -12.6 VDC                   | 150 mW        |
|                              | AL-24 W-K  | 24 VDC           | 3,840 $\Omega$                 | +18.0 VDC                 | -16.8 VDC                   | 150 mW        |
| Double Winding Latching Type | AL-D1.5W-K | 1.5 VDC          | P 11.25 $\Omega$               | +1.13 VDC                 |                             | 200 mW        |
|                              |            |                  | S 11.25 $\Omega$               |                           | +1.05 VDC                   |               |
|                              | AL-D 3 W-K | 3 VDC            | P 45 $\Omega$                  | +2.25 VDC                 |                             | 200 mW        |
|                              |            |                  | S 45 $\Omega$                  |                           | +2.1 VDC                    |               |
|                              | AL-D4.5W-K | 4.5 VDC          | P 101 $\Omega$                 | +3.38 VDC                 |                             | 200 mW        |
|                              |            |                  | S 101 $\Omega$                 |                           | +3.15 VDC                   |               |
|                              | AL-D 5 W-K | 5 VDC            | P 125 $\Omega$                 | +3.75 VDC                 |                             | 200 mW        |
|                              |            |                  | S 125 $\Omega$                 |                           | +3.5 VDC                    |               |
|                              | AL-D 6 W-K | 6 VDC            | P 180 $\Omega$                 | +4.50 VDC                 |                             | 200 mW        |
|                              |            |                  | S 180 $\Omega$                 |                           | +4.2 VDC                    |               |
|                              | AL-D 9 W-K | 9 VDC            | P 405 $\Omega$                 | +6.75 VDC                 |                             | 200 mW        |
|                              |            |                  | S 405 $\Omega$                 |                           | +6.3 VDC                    |               |
| AL-D12 W-K                   | 12 VDC     | P 720 $\Omega$   | +9.0 VDC                       |                           | 200 mW                      |               |
|                              |            | S 720 $\Omega$   |                                | +8.4 VDC                  |                             |               |
| AL-D18 W-K                   | 18 VDC     | P 1,080 $\Omega$ | +13.5 VDC                      |                           | 300 mW                      |               |
|                              |            | S 1,080 $\Omega$ |                                | +12.6 VDC                 |                             |               |
| AL-D24 W-K                   | 24 VDC     | P 1,920 $\Omega$ | +18.0 VDC                      |                           | 300 mW                      |               |
|                              |            | S 1,920 $\Omega$ |                                | +16.8 VDC                 |                             |               |

Note: \*<sup>1</sup> Specified values are subject to pulse wave voltage.  
All values in the table are measured at 20°C.

P: Primary coil S: Secondary coil

# A SERIES

## ■ SPECIFICATIONS

| Item       |                              | Standard Type   | Single Winding Latching Type             | Double Winding Latching Type |
|------------|------------------------------|---|--|------------------------------|
|            |                              | A-( ) W-K   | AL-( ) W-K                               | AL-D ( ) W-K                 |
| Contact    | Arrangement                  | 2 form C (DPDT)   |  |                              |
|            | Material                     | Gold overlay silver alloy   |  |                              |
|            | Resistance (initial)         | Maximum 50 mΩ (at 1 A 6 VDC)  |  |                              |
|            | Rating (resistive)           | 0.5 A 125 VAC or 1 A 30 VDC   |  |                              |
|            | Maximum Carrying Current     | 2 A   |  |                              |
|            | Maximum Switching Power      | 62.5 AV/30 W  |  |                              |
|            | Maximum Switching Voltage    | 125VAC, 110VDC  |  |                              |
|            | Maximum Switching Current    | 2 A   |  |                              |
|            | Minimum Switching Load*1     | 0.01 mA 10 mVDC   |  |                              |
|            | Capacitance                  | Approximately 0.5 pF (between open contacts, adjacent contacts)<br>Approximately 1.0 pF (between coil and contacts) |  |                              |
| Coil       | Nominal Power (at 20°C)      | 140 to 300 mW   | 100 to 150 mW                            | 200 to 300 mW                |
|            | Operate Power (at 20°C)      | 80 to 170 W   | 60 to 85 mW                              | 150 to 170 mW                |
|            | Operating Temperature        | -40°C to +85°C (no frost) (refer to the CHARACTERISTIC DATA)  |  |                              |
| Time Value | Operate (at nominal voltage) | Maximum 6 ms  | Maximum 6 ms (set)                       |                              |
|            | Release (at nominal voltage) | Maximum 4 ms  | Maximum 6 ms (reset)                     |                              |
| Life       | Mechanical                   | 1 × 10 <sup>8</sup> ops. minimum  | 1 × 10 <sup>7</sup> ops. minimum         |                              |
|            | Electrical                   | 2 × 10 <sup>5</sup> ops. min. (0.5 A 125 VAC), 5 × 10 <sup>5</sup> ops. min. (1 A 30 VDC)                           |  |                              |
| Other      | Vibration                    | Misoperation  | 10 to 55 Hz (double amplitude of 3.3 mm) |                              |
|            | Resistance                   | Endurance   | 10 to 55 Hz (double amplitude of 5.0 mm) |                              |
|            | Shock                        | Misoperation  | 500 m/s <sup>2</sup> (11 ±1 ms)          |                              |
|            | Resistance                   | Endurance   | 1,000 m/s <sup>2</sup> ( 6 ±1 ms)        |                              |
|            | Weight                       | Approximately 1.2 g   |  |                              |

\*1 Minimum switching loads mentioned above are reference values. Please perform the confirmation test with the actual load before production since reference values may vary according to switching frequencies, environmental conditions and expected reliability levels.

## ■ INSULATION

|                      |  |                  |
|----------------------|--|------------------|
| Item                 |  |                  |
| Resistance (initial) | Minimum 1,000 MΩ (500VDC)                      |                  |
| Dielectric Strength  | open contacts                                  | 1,000 VAC 1 min. |
|                      | coil and contacts adjacent contacts            | 1,000 VAC 1 min. |
| Surge Voltage        | 1500V (coil-contact) (10/160 μs standard wave) |                  |

## ■ SAFETY STANDARD AND FILE NUMBERS

| Type | Compliance                | Contact rating   |
|------|---------------------------|--|
| UL   | UL 478, UL 508<br>E 45026 | Flammability: UL 94-V0 (plastics)<br>0.5A, 125VAC (General use)<br>2A, 30VDC (resistive)<br>0.3A, 110VDC (resistive) |
| CSA  | C22.2 No. 14<br>LR 35579  |  |