

MINIATURE RELAY

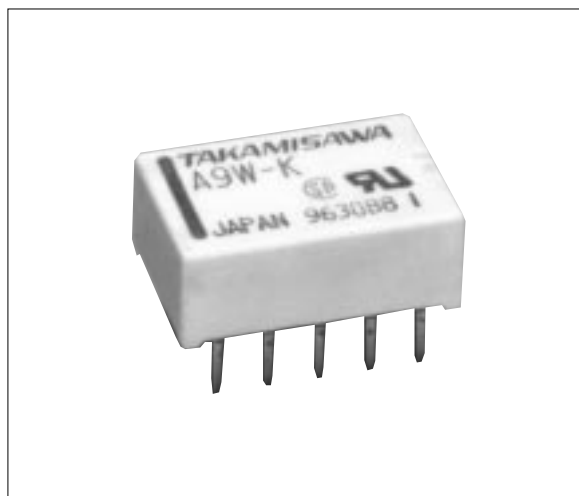
2 POLES—1 to 2 A (FOR SIGNAL SWITCHING)

A SERIES

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■ FEATURES

- Extremely low profile and light weight
 - Height: 5 mm
 - Weight: approximately 1.2 g
- UL, CSA recognized
- 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



■ ORDERING INFORMATION

[Example] $\frac{A}{(a)} \frac{L}{(b)} - \frac{D}{(*)} \frac{12}{(c)} \frac{W}{(d)} - \frac{K}{(e)}$

| | | |
|-----|--------------------|--|
| (a) | Series Name | A : A Series |
| (b) | Operation Function | Nil : Standard type L : Latching type |
| (c) | Number of Coil | Nil : Single winding type D : Double winding type |
| (d) | Nominal Voltage | Refer to the COIL DATA CHART |
| (e) | Contact | W : Bifurcated type |
| (f) | Enclosure | K : Plastic sealed type |

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

■ SAFETY STANDARD AND FILE NUMBERS

UL478, 508 (File No. E45026)

C22.2 No. 14 (File No. LR35579)

| Nominal voltage | Contact rating |
|-----------------|----------------|
| 1.5 to 48 VDC | 0.5 A 125 VAC |
| | 2 A 30 VDC |
| | 0.3 A 110 VDC |
| | — resistive |

Only UL/CSA approval markings are marked on the cover.

■ 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 | 250 VAC, 220 VDC | | |
| | Maximum Switching Current | 2 A | | |
| | Minimum Switching Load*1 | 0.01 mA 10 mVDC | | |
| | Capacitance | Approximately 0.5 pF (between open contacts, adjacent contacts) Approximately 1.0 pF (between coil and contacts) | | |
| Coil | Nominal Power (at 20°C) | 0.14 to 0.3 W | 0.1 to 0.15 W | 0.20 to 0.3 W |
| | Operate Power (at 20°C) | 0.08 to 0.17 W | 0.06 to 0.85 W | 0.15 to 0.17 W |
| | 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) | |
| Insulation | Resistance (at 500 VDC) | Minimum 1,000 MΩ | | |
| | Dielectric Strength | between open contacts | 1,000 VAC 1 minute | |
| | | between adjacent contacts | 1,000 VAC 1 minute | |
| | | between coil and contacts | 1,000 VAC 1 minute | |
| Surge Strength | 1,500 V (between coil and contacts) | | | |
| Life | Mechanical | 1 × 10 ⁸ operations minimum | 1 × 10 ⁷ operations minimum | |
| | Electrical | 2 × 10 ⁵ ops. min. (0.5 A 125 VAC), 5 × 10 ⁵ ops. min. (1 A 30 VDC) | | |
| Other | Vibration Resistance | Misoperation | 10 to 55 Hz (double amplitude of 3.3 mm) | |
| | | Endurance | 10 to 55 Hz (double amplitude of 5.0 mm) | |
| | Shock Resistance | Misoperation | 500 m/s ² (11 ±1 ms) | |
| | | Endurance | 1,000 m/s ² (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.

A SERIES

COIL DATA CHART

| MODEL | | Nominal voltage | Coil resistance ($\pm 10\%$) | Must operate voltage* ¹ | Must release voltage* ¹ | Nominal power |
|---------------|----------|-----------------|--------------------------------|------------------------------------|------------------------------------|---------------|
| Standard Type | A-1.5W-K | 1.5 VDC | 16.1 Ω | +1.05 VDC | +0.15 VDC | 140 mW |
| | A- 3 W-K | 3 VDC | 64.3 Ω | +2.1 VDC | +0.3 VDC | 140 mW |
| | A-4.5W-K | 4.5 VDC | 145 Ω | +3.15 VDC | +0.45 VDC | 140 mW |
| | A- 5 W-K | 5 VDC | 178 Ω | +3.5 VDC | +0.5 VDC | 140 mW |
| | A- 6 W-K | 6 VDC | 257 Ω | +4.2 VDC | +0.6 VDC | 140 mW |
| | A- 9 W-K | 9 VDC | 579 Ω | +6.3 VDC | +0.9 VDC | 140 mW |
| | A-12 W-K | 12 VDC | 1,028 Ω | +8.4 VDC | +1.2 VDC | 140 mW |
| | A-18 W-K | 18 VDC | 1,620 Ω | +12.6 VDC | +1.8 VDC | 200 mW |
| | A-24 W-K | 24 VDC | 2,880 Ω | +16.8 VDC | +2.4 VDC | 200 mW |
| | A-48 W-K | 48 VDC | 7,680 Ω | +33.6 VDC | +4.8 VDC | 300 mW |

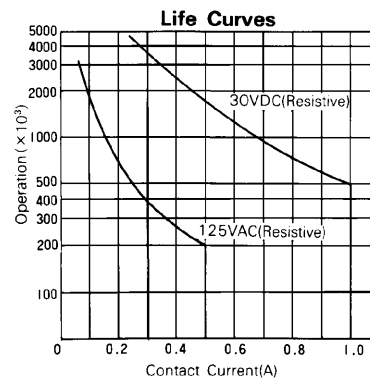
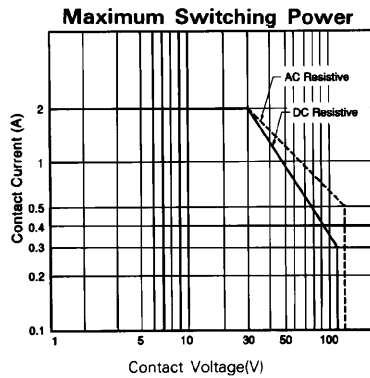
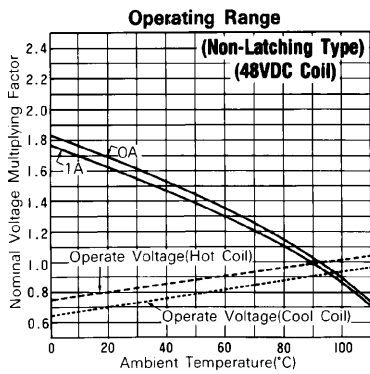
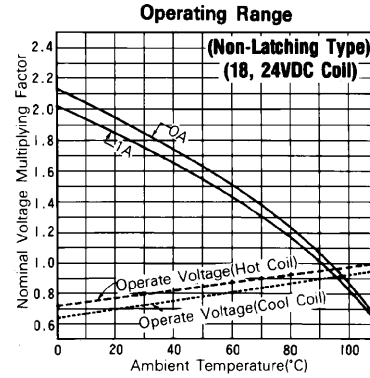
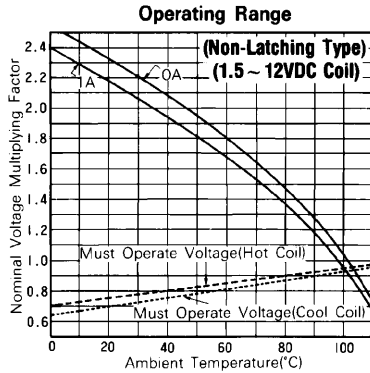
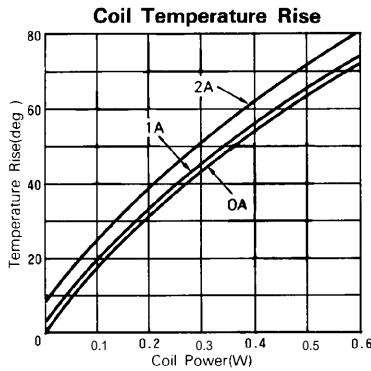
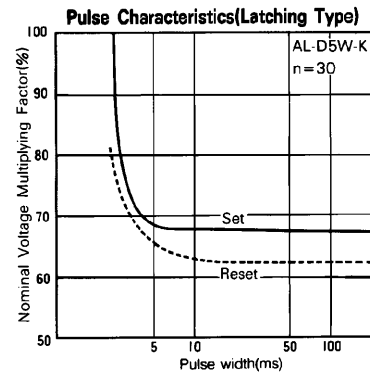
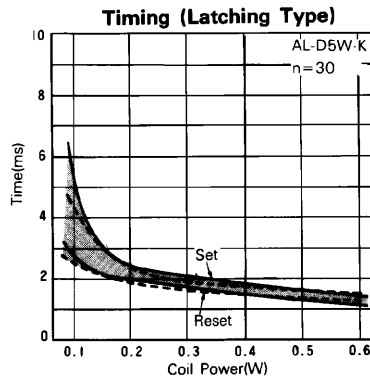
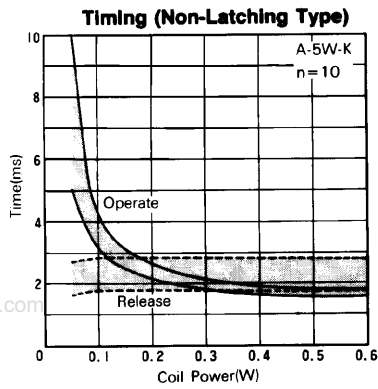
Note: *¹ Specified values are subject to pulse wave voltage.
All values in the table are measured at 20°C.

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

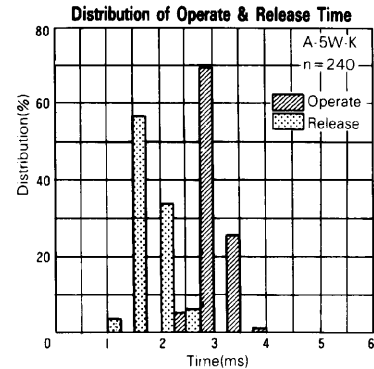
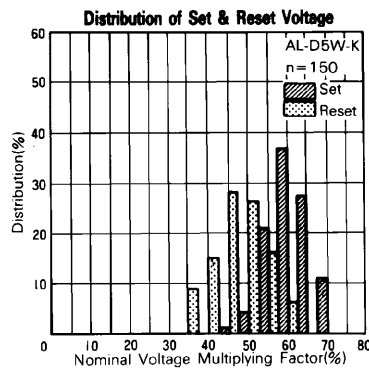
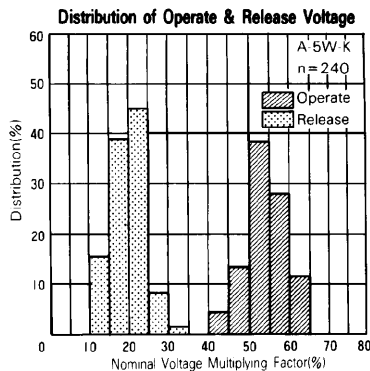
Note: *¹ Specified values are subject to pulse wave voltage.
All values in the table are measured at 20°C.

P: Primary coil S: Secondary coil

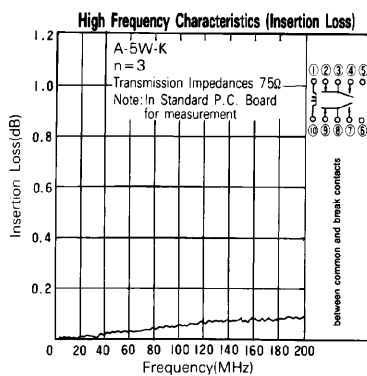
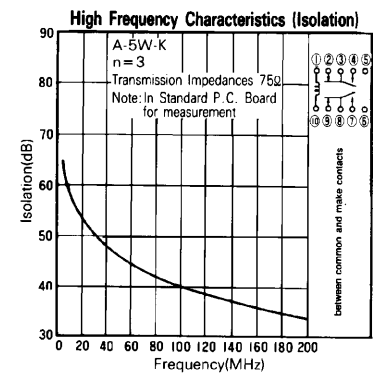
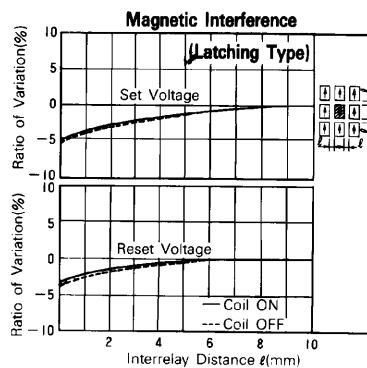
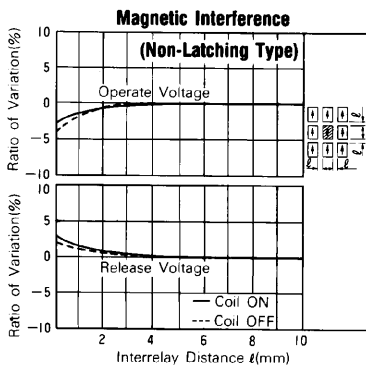
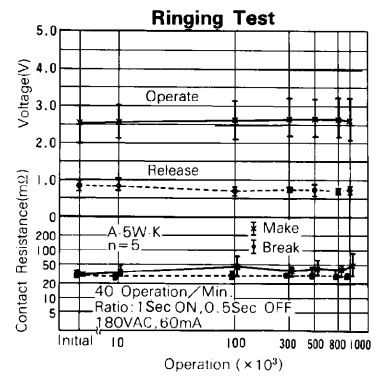
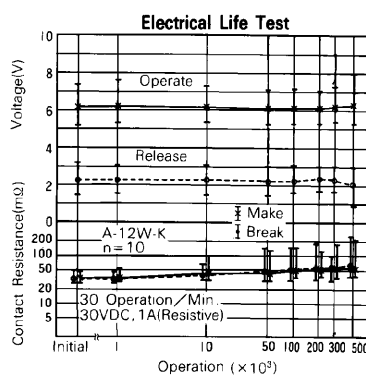
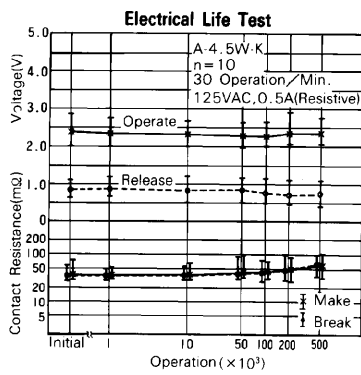
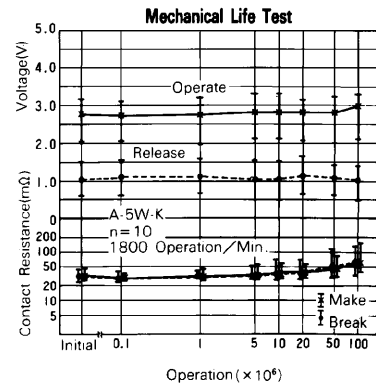
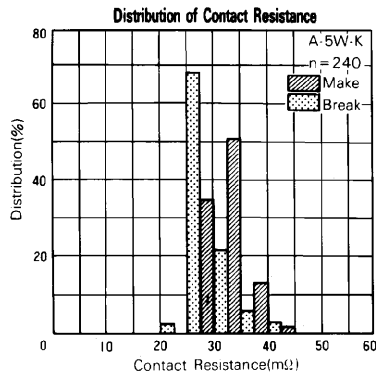
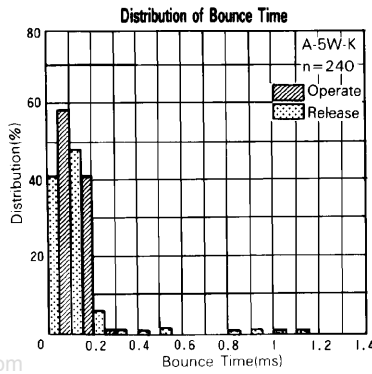
CHARACTERISTIC DATA



REFERENCE DATA



A SERIES



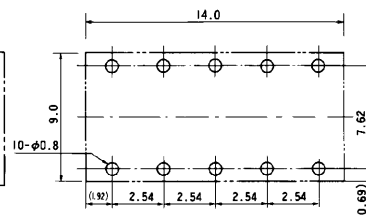
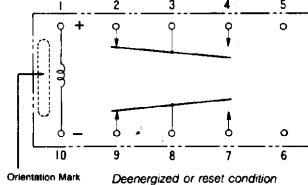
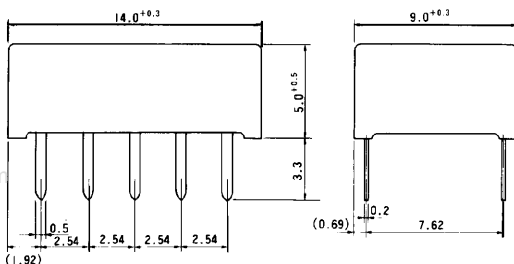
■ DIMENSIONS

● Dimensions

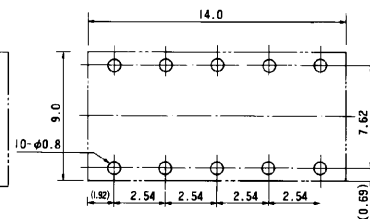
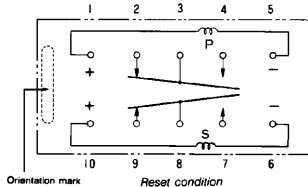
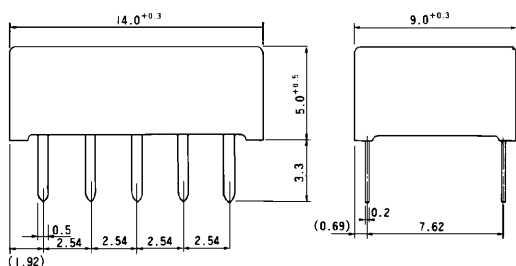
● Schematics (Bottom View)

● PC board mounting hole layout (Bottom View)

A, AL type (Non-latching type, single winding latching type)



AL-D type (Double winding latching type)



Unit: mm

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