

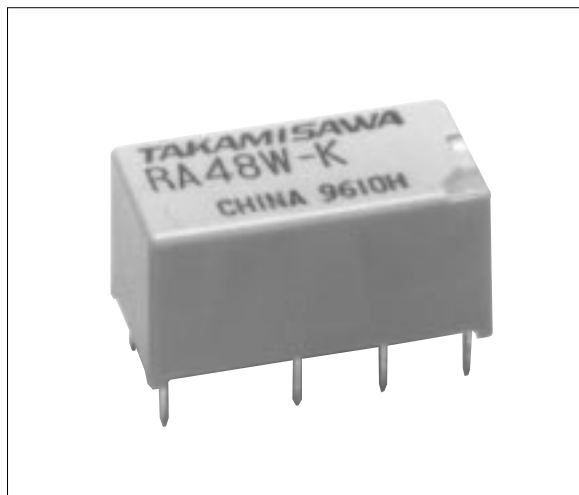
MINIATURE RELAY

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

RA SERIES

■ FEATURES

- Ultra high sensitivity
- High reliability-bifurcated contacts
- Conforms to FCC rules and regulations Part 68
 - Dielectric strength 1,500 VAC between coil and contacts
 - Surge strength 1,500 V
- UL, CSA recognized
- Wide operating range
- DIL pitch terminals
- Plastic sealed type
- Latching type available
- Dial-pulse relay available



■ ORDERING INFORMATION

[Example] RA L - D 12 W - K
 (a) (b) (*) (c) (d) (e) (f)

| | | |
|-----|--------------------|--|
| (a) | Series Name | RA : RA 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 (*)
 For movable and stationary contact with gold overlay type, add suffix “-OH”.

■ SAFETY STANDARD AND FILE NUMBERS

UL478, 508 (File No. E45026)

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

Please request when the approval markings are required on the cover.

| Nominal voltage | Contact rating | |
|-----------------|----------------|---------|
| 1.5 to 48 VDC | 0.5 A | 120 VAC |
| | 2 A | 30 VDC |
| | 0.5 A | 60 VDC |

— resistive

■ SPECIFICATIONS

| Item | | Standard Type | Single Winding Latching Type | Double Winding Latching Type |
|----------------|------------------------------|--|--|------------------------------|
| | | RA-() W-K | RAL-() W-K | RAL-D () W-K |
| Contact | Arrangement | 2 form C (DPDT) | | |
| | Material | Gold overlay silver alloy | | |
| | Style | Bifurcated | | |
| | Resistance (initial) | Maximum 100 mΩ (at 1 A 6 VDC) | | |
| | Rating (resistive) | 0.5 A 120 VAC or 1 A 24 VDC | | |
| | Maximum Carrying Current | 2 A | | |
| | Maximum Switching Power | 60 VA, 24 W | | |
| | Maximum Switching Voltage | 250 VAC, 220 VDC | | |
| | Maximum Switching Current | 2 A | | |
| | Minimum Switching Load*1 | 0.01 mA 10 mVDC | | |
| | Capacitance (10 MHz) | Approximately 1.5 pF (between open contacts), 1.0 pF (adjacent contacts) Approximately 1.7 pF (between coil and contacts) | | |
| Coil | Nominal Power (at 20°C) | 0.15 to 0.2 W | 0.075 to 0.2 W | 0.15 to 0.2 W |
| | Operate Power (at 20°C) | 0.07 to 0.09 W | 0.04 to 0.05 W | 0.07 to 0.09 W |
| | Operating Temperature | -40°C to +80°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 | 1,500 VAC 1 minute | |
| | | between coil and contacts | 1,500 VAC 1 minute | |
| Surge Strength | 1,500 V | | | |
| Life | Mechanical | 2 × 10 ⁷ operations minimum | | |
| | Electrical | 2 × 10 ⁵ ops. min. (0.5 A 120 VAC), 5 × 10 ⁵ ops. min. (1 A 24 VDC) | | |
| Other | Vibration Resistance | Misoperation | 10 to 55 Hz (double amplitude of 5.0 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 3.7 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.

RA SERIES

COIL DATA CHART

| MODEL | | Nominal voltage | Coil resistance ($\pm 10\%$) | Must operate voltage* ¹ | Must release voltage* ¹ | Nominal power |
|---------------|------------|-----------------|--------------------------------|------------------------------------|------------------------------------|---------------|
| Standard Type | RA-1.5 W-K | 1.5 VDC | 15 Ω | +1.0 VDC | +0.15 VDC | 150 mW |
| | RA- 3 W-K | 3 VDC | 60 Ω | +2.0 VDC | +0.3 VDC | 150 mW |
| | RA-4.5 W-K | 4.5 VDC | 135 Ω | +3.1 VDC | +0.45 VDC | 150 mW |
| | RA- 5 W-K | 5 VDC | 167 Ω | +3.4 VDC | +0.5 VDC | 150 mW |
| | RA- 6 W-K | 6 VDC | 240 Ω | +4.0 VDC | +0.6 VDC | 150 mW |
| | RA- 9 W-K | 9 VDC | 540 Ω | +6.1 VDC | +0.9 VDC | 150 mW |
| | RA- 12 W-K | 12 VDC | 960 Ω | +8.1 VDC | +1.2 VDC | 150 mW |
| | RA- 18 W-K | 18 VDC | 2,160 Ω | +12.3 VDC | +1.8 VDC | 150 mW |
| | RA- 24 W-K | 24 VDC | 2,880 Ω | +16.1 VDC | +2.4 VDC | 200 mW |
| | RA- 48 W-K | 48 VDC | 11,520 Ω | +32.2 VDC | +4.8 VDC | 200 mW |

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

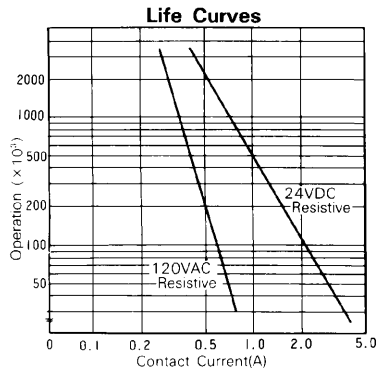
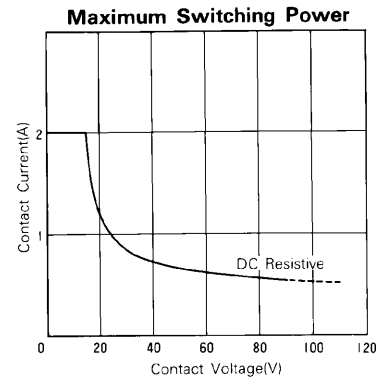
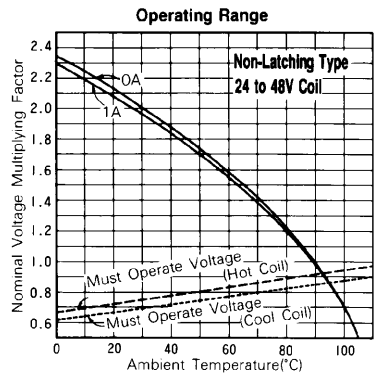
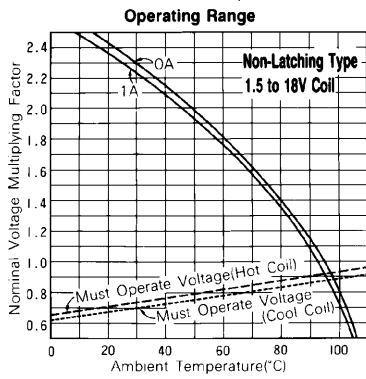
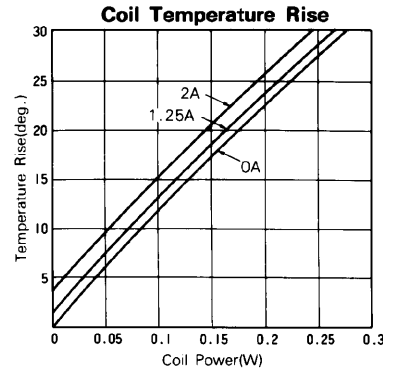
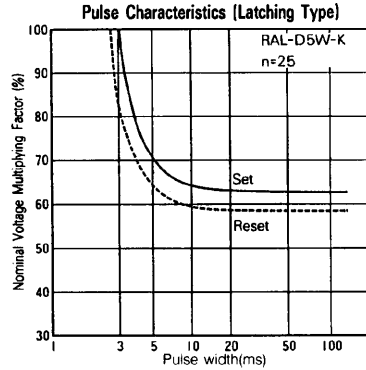
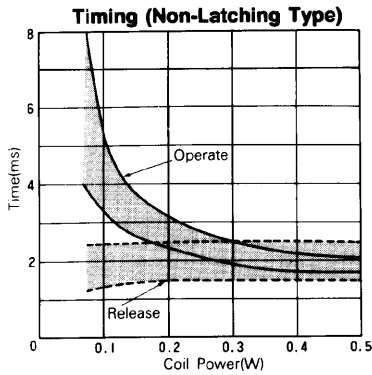
| MODEL | | Nominal voltage | Coil resistance ($\pm 10\%$) | Set voltage* ¹ | Reset voltage* ¹ | Nominal power |
|------------------------------|--------------|-------------------|--------------------------------|---------------------------|-----------------------------|---------------|
| Single Winding Latching Type | RAL-1.5 W-K | 1.5 VDC | 30 Ω | +1.0 VDC | -1.0 VDC | 75 mW |
| | RAL- 3 W-K | 3 VDC | 120 Ω | +2.1 VDC | -2.1 VDC | 75 mW |
| | RAL-4.5 W-K | 4.5 VDC | 270 Ω | +3.1 VDC | -3.1 VDC | 75 mW |
| | RAL- 5 W-K | 5 VDC | 335 Ω | +3.4 VDC | -3.4 VDC | 75 mW |
| | RAL- 6 W-K | 6 VDC | 480 Ω | +4.1 VDC | -4.1 VDC | 75 mW |
| | RAL- 9 W-K | 9 VDC | 1,080 Ω | +6.3 VDC | -6.3 VDC | 75 mW |
| | RAL- 12 W-K | 12 VDC | 1,920 Ω | +8.3 VDC | -8.3 VDC | 75 mW |
| | RAL- 18 W-K | 18 VDC | 4,320 Ω | +12.5 VDC | -12.5 VDC | 75 mW |
| | RAL- 24 W-K | 24 VDC | 5,760 Ω | +16.6 VDC | -16.6 VDC | 100 mW |
| | RAL- 48 W-K | 48 VDC | 11,520 Ω | +21.0 VDC | -21.0 VDC | 200 mW |
| Double Winding Latching Type | RAL-D1.5 W-K | 1.5 VDC | P 15 Ω | +1.0 VDC | | 150 mW |
| | | | S 15 Ω | | +1.0 VDC | |
| | RAL-D 3 W-K | 3 VDC | P 60 Ω | +2.0 VDC | | 150 mW |
| | | | S 60 Ω | | +2.0 VDC | |
| | RAL-D4.5 W-K | 4.5 VDC | P 135 Ω | +3.1 VDC | | 150 mW |
| | | | S 135 Ω | | +3.1 VDC | |
| | RAL-D 5 W-K | 5 VDC | P 167 Ω | +3.4 VDC | | 150 mW |
| | | | S 167 Ω | | +3.4 VDC | |
| | RAL-D 6 W-K | 6 VDC | P 240 Ω | +4.0 VDC | | 150 mW |
| | | | S 240 Ω | | +4.0 VDC | |
| | RAL-D 9 W-K | 9 VDC | P 540 Ω | +6.1 VDC | | 150 mW |
| | | | S 540 Ω | | +6.1 VDC | |
| RAL-D 12 W-K | 12 VDC | P 960 Ω | +8.1 VDC | | 150 mW | |
| | | S 960 Ω | | +8.1 VDC | | |
| RAL-D 18 W-K | 18 VDC | P 2,160 Ω | +12.3 VDC | | 150 mW | |
| | | S 2,160 Ω | | +12.3 VDC | | |
| RAL-D 24 W-K | 24 VDC | P 2,880 Ω | +16.1 VDC | | 200 mW | |
| | | S 2,880 Ω | | +16.1 VDC | | |
| RAL-D 48 W-K | 48 VDC | P 11,520 Ω | +32.2 VDC | | 200 mW | |
| | | S 11,520 Ω | | +32.2 VDC | | |

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

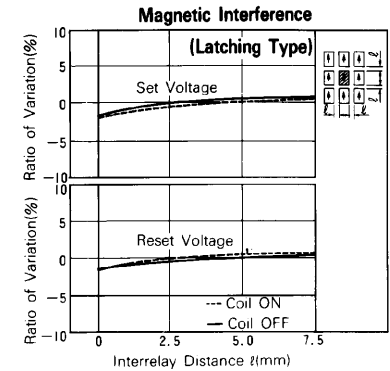
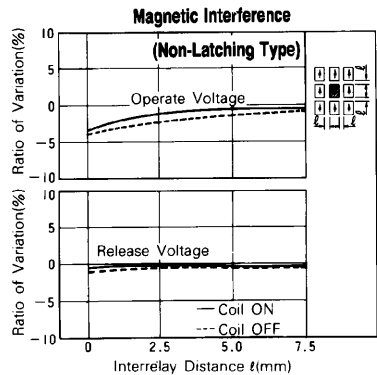
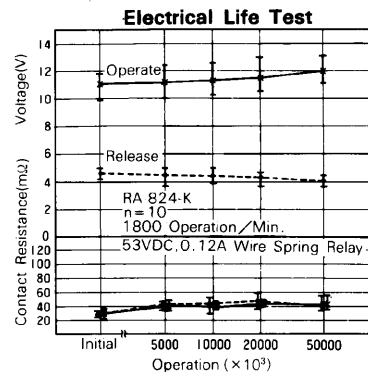
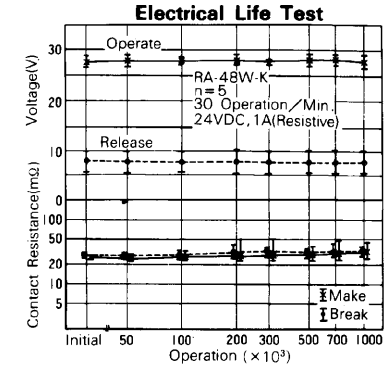
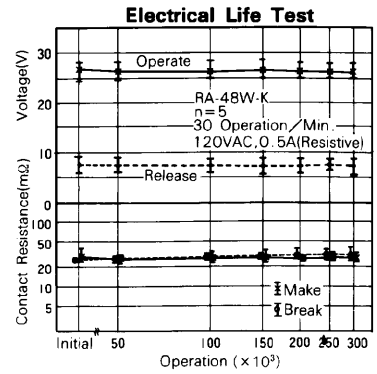
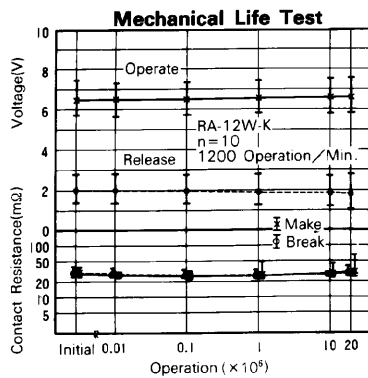
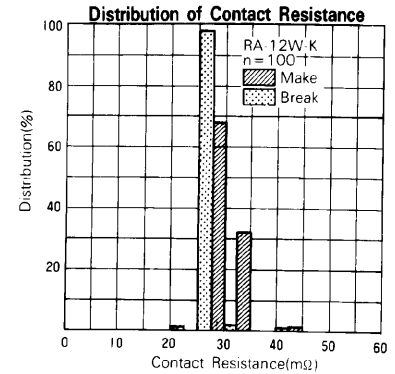
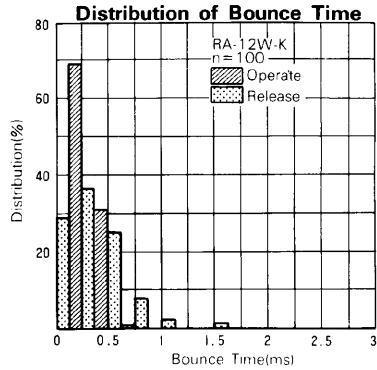
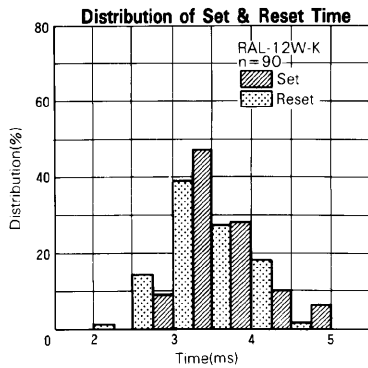
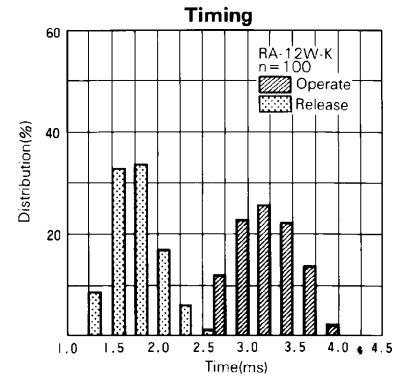
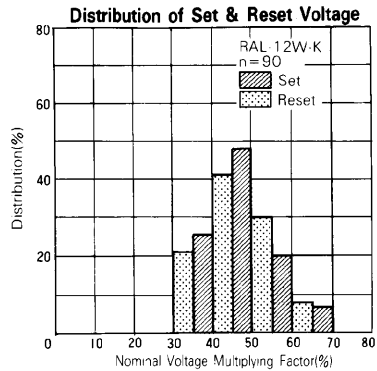
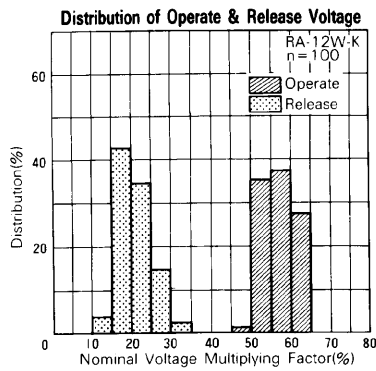
P: Primary coil S: Secondary coil

RA SERIES

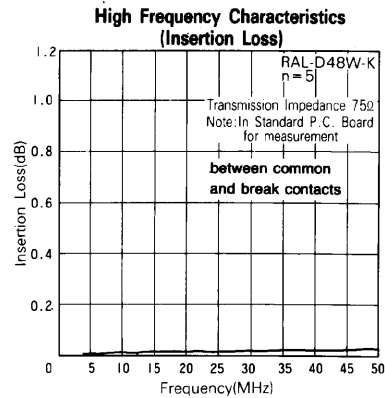
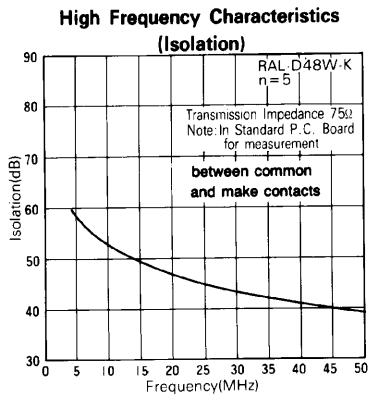
CHARACTERISTIC DATA



REFERENCE DATA



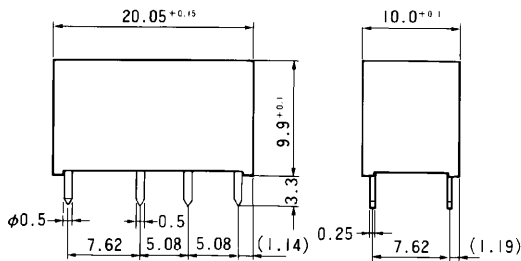
RA SERIES



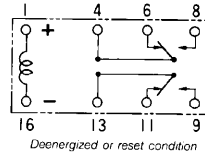
■ DIMENSIONS

● Dimensions

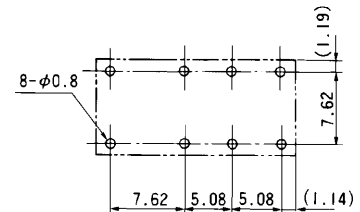
RA, RAL type (Non-latching type, single winding latching type)



● Schematics (Bottom View)



● PC board mounting hole layout (Bottom View)



RAL-D type (Double winding latching type)

Unit: mm

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