

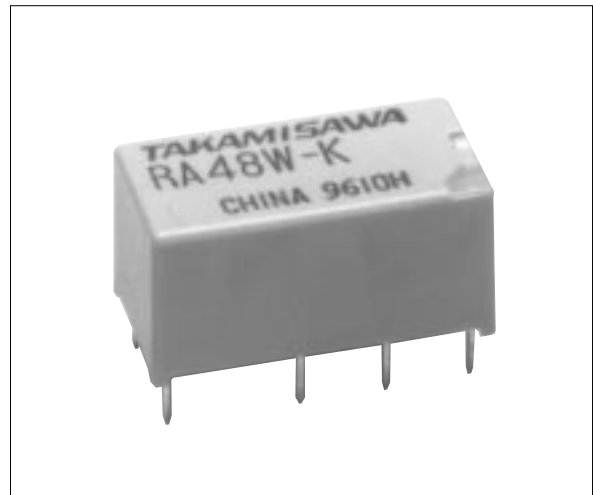
MINIATURE RELAY

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.

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

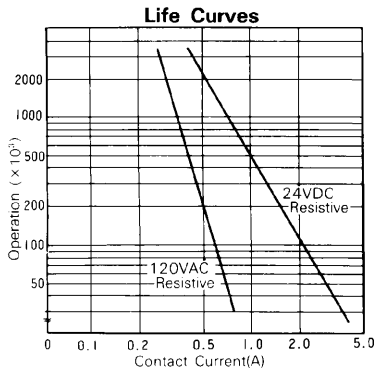
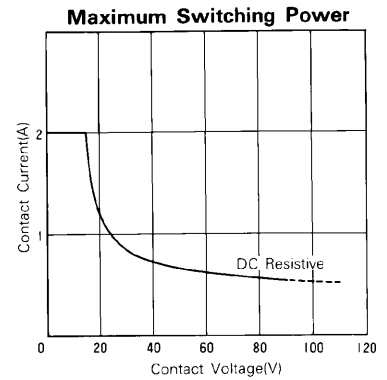
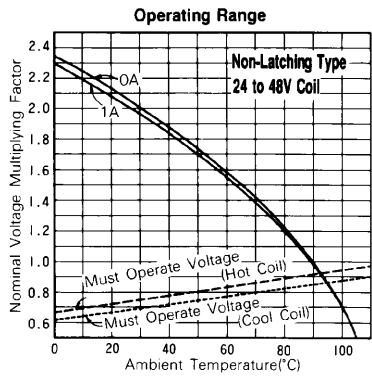
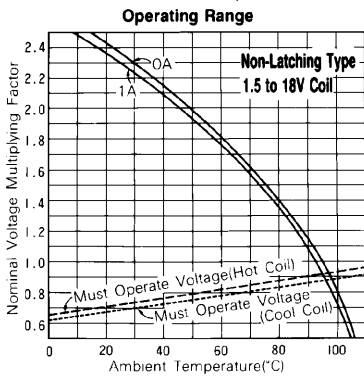
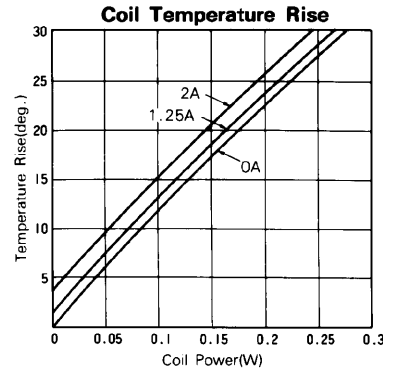
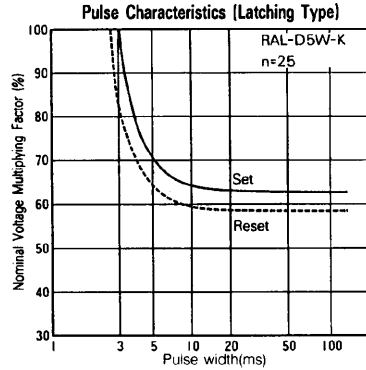
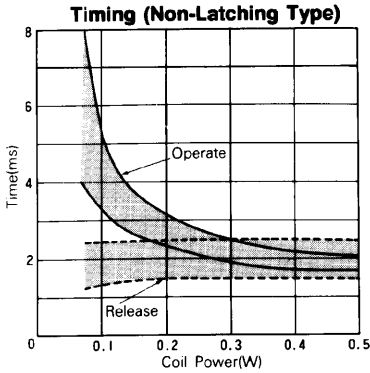
Note: *¹ Specified values are subject to pulse wave voltage.
All values in the table are measured at 20°C.

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	+1.0 VDC	150 mW
			S 15 Ω			
	RAL-D 3 W-K	3 VDC	P 60 Ω	+2.0 VDC	+2.0 VDC	150 mW
			S 60 Ω			
	RAL-D4.5 W-K	4.5 VDC	P 135 Ω	+3.1 VDC	+3.1 VDC	150 mW
			S 135 Ω			
	RAL-D 5 W-K	5 VDC	P 167 Ω	+3.4 VDC	+3.4 VDC	150 mW
			S 167 Ω			
	RAL-D 6 W-K	6 VDC	P 240 Ω	+4.0 VDC	+4.0 VDC	150 mW
			S 240 Ω			
	RAL-D 9 W-K	9 VDC	P 540 Ω	+6.1 VDC	+6.1 VDC	150 mW
			S 540 Ω			
	RAL-D 12 W-K	12 VDC	P 960 Ω	+8.1 VDC	+8.1 VDC	150 mW
			S 960 Ω			
RAL-D 18 W-K	18 VDC	P 2,160 Ω	+12.3 VDC	+12.3 VDC	150 mW	
		S 2,160 Ω				
RAL-D 24 W-K	24 VDC	P 2,880 Ω	+16.1 VDC	+16.1 VDC	200 mW	
		S 2,880 Ω				
RAL-D 48 W-K	48 VDC	P 11,520 Ω	+32.2 VDC	+32.2 VDC	200 mW	
		S 11,520 Ω				

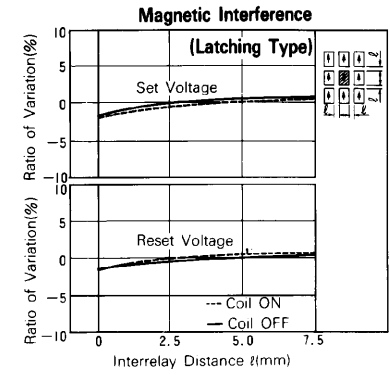
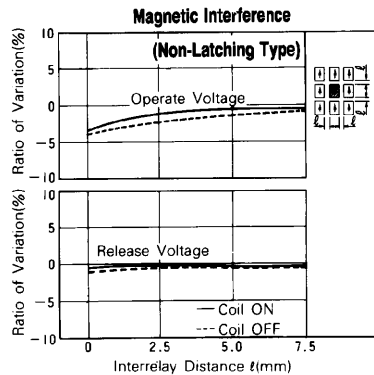
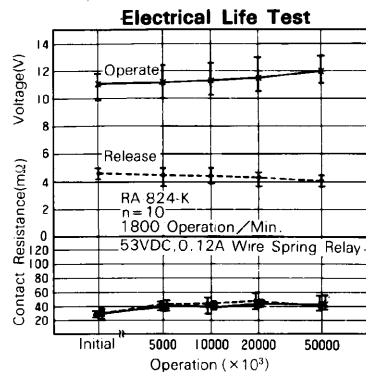
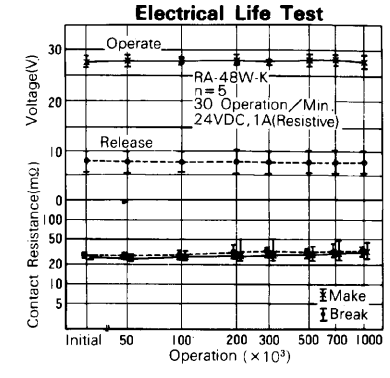
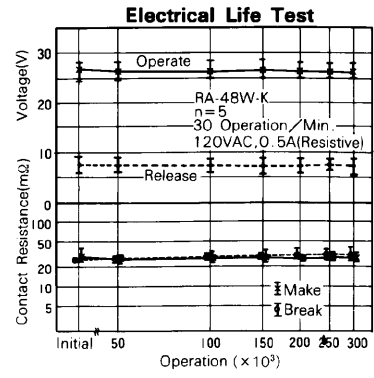
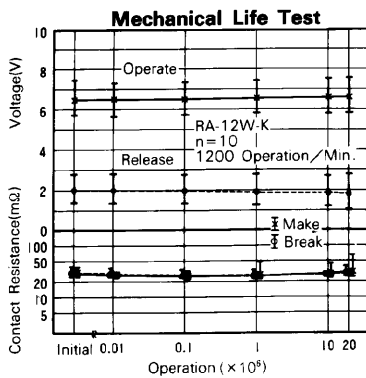
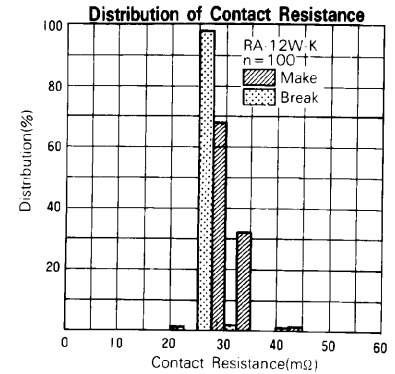
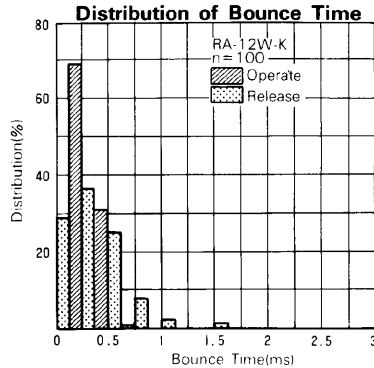
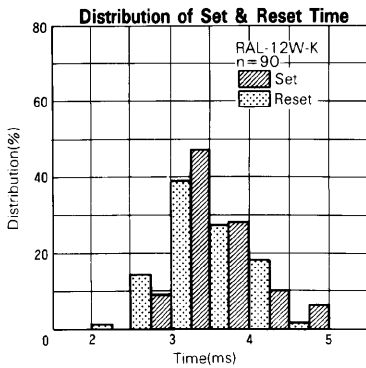
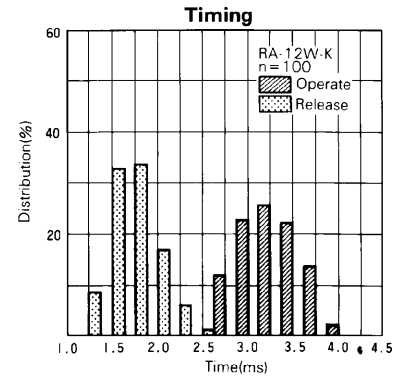
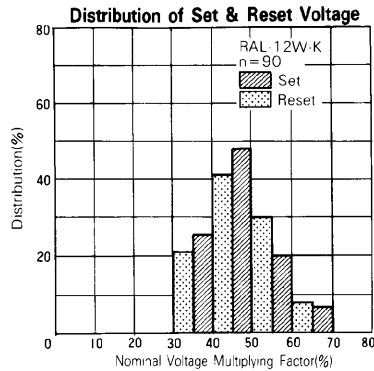
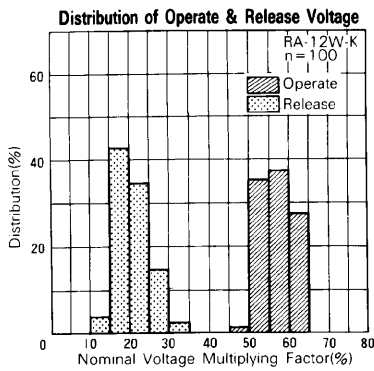
Note: *¹ Specified values are subject to pulse wave voltage.
All values in the table are measured at 20°C.

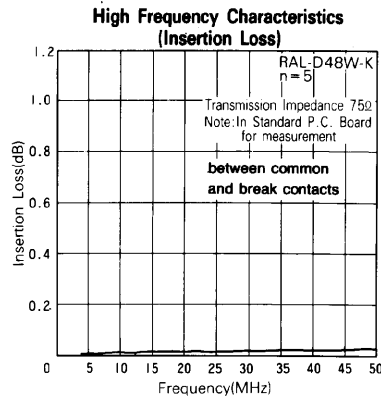
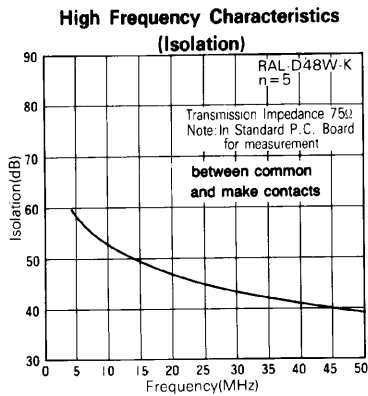
P: Primary coil S: Secondary coil

CHARACTERISTIC DATA



REFERENCE DATA





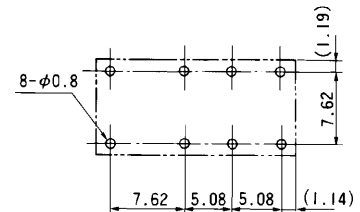
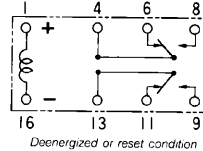
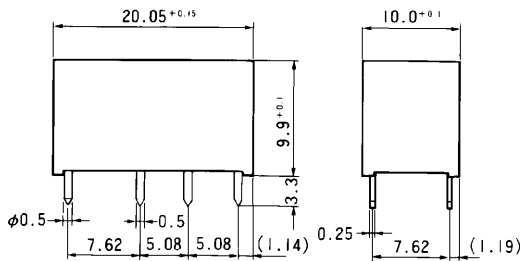
■ DIMENSIONS

● Dimensions

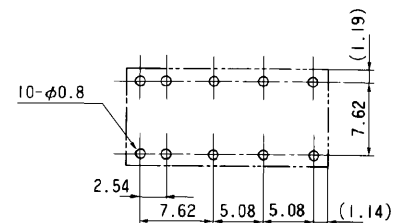
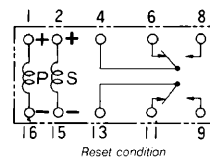
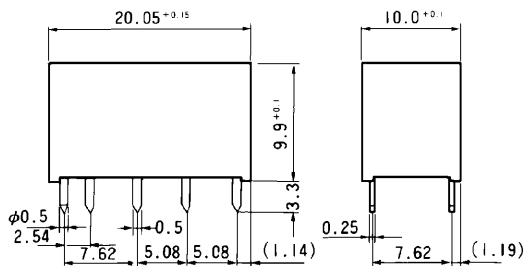
● Schematics (Bottom View)

● PC board mounting hole layout (Bottom View)

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



RAL-D type (Double winding latching type)



Unit: mm

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