

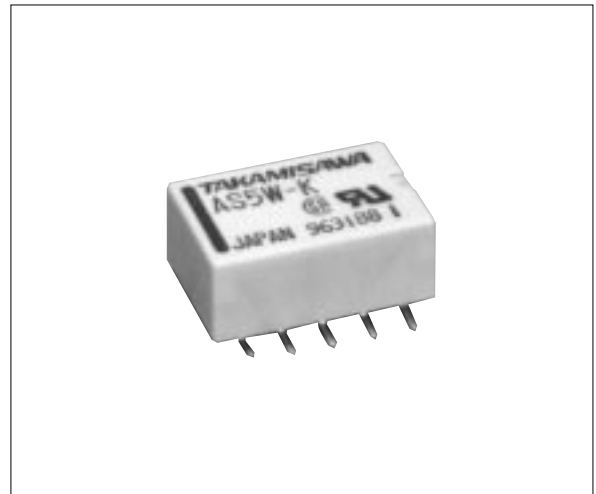
# MINIATURE RELAY

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

### AS SERIES

#### ■ FEATURES

- Flat type relay for surface mounting
- Super small and light weight  
—Height: 6.5 mm  
—Weight: approximately 1.5 g
- UL 504A recognized
- Conforms to JCC Part 68  
—Surge strength: 1,500 V
- High sensitivity and low power consumption
- High reliability—bifurcated contacts
- DIL pitch terminals
- Plastic sealed type



#### ■ ORDERING INFORMATION

[Example]  $\frac{AS}{(a)}$   $\frac{L}{(b)}$   $\frac{-}{(*)}$   $\frac{D}{(c)}$   $\frac{12}{(d)}$   $\frac{W}{(*)}$   $\frac{-}{(f)}$   $\frac{K}{(g)}$   $\frac{B}{(a)}$   $\frac{05}{(h)}$

(a)	Series Name	AS : AS 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
(g)	Packing Orientation	B : Standard type
(h)	Packing Quantity	05 : 500 pieces

Note: Actual marking omits the hyphen (-) of (\*) and "-B05"

(2005)

## ■ SAFETY STANDARD AND FILE NUMBERS

UL478, 508 (File No. E45026)

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

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

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

## ■ SPECIFICATIONS

Item		Standard Type	Single Winding Latching Type	Double Winding Latching Type
		AS-( ) W-K	ASL-( ) W-K	ASL-D ( ) W-K
Contact	Arrangement	2 Form C (DPDT)		
	Material	Gold overlay silver alloy		
	Style	Bifurcated		
	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 (at 1 kHz)	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 0.085 W	0.11 5 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	750 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 (at 10 × 160 μs) (between coil and contacts)			
Life	Mechanical	1 × 10 <sup>8</sup> operations minimum	1 × 10 <sup>7</sup> operations 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 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 <sup>2</sup> (11 ±1 ms)	
		Endurance	1,000 m/s <sup>2</sup> ( 6 ±1 ms)	
Weight	Approximately 1.5 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* <sup>1</sup>	Must release voltage* <sup>1</sup>	Nominal power
Standard Type	AS-1.5 W-K	1.5 VDC	16.1 $\Omega$	+1.13 VDC	+0.15 VDC	140 mW
	AS- 3 W-K	3 VDC	64.3 $\Omega$	+2.25 VDC	+0.3 VDC	140 mW
	AS-4.5 W-K	4.5 VDC	145 $\Omega$	+3.38 VDC	+0.45 VDC	140 mW
	AS- 5 W-K	5 VDC	178 $\Omega$	+3.75 VDC	+0.5 VDC	140 mW
	AS- 6 W-K	6 VDC	257 $\Omega$	+4.5 VDC	+0.6 VDC	140 mW
	AS- 9 W-K	9 VDC	579 $\Omega$	+6.75 VDC	+0.9 VDC	140 mW
	AS- 12 W-K	12 VDC	1,028 $\Omega$	+9.0 VDC	+1.2 VDC	140 mW
	AS- 18 W-K	18 VDC	1,620 $\Omega$	+13.5 VDC	+1.8 VDC	200 mW
	AS- 24 W-K	24 VDC	2,880 $\Omega$	+18.0 VDC	+2.4 VDC	200 mW
	AS- 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	ASL-1.5 W-K	1.5 VDC	22.5 $\Omega$	+1.13 VDC	-1.13 VDC	100 mW
	ASL- 3 W-K	3 VDC	90 $\Omega$	+2.25 VDC	-2.25 VDC	100 mW
	ASL-4.5 W-K	4.5 VDC	203 $\Omega$	+3.38 VDC	-3.38 VDC	100 mW
	ASL- 5 W-K	5 VDC	250 $\Omega$	+3.75 VDC	-3.75 VDC	100 mW
	ASL- 6 W-K	6 VDC	360 $\Omega$	+4.5 VDC	-4.5 VDC	100 mW
	ASL- 9 W-K	9 VDC	810 $\Omega$	+6.75 VDC	-6.75 VDC	100 mW
	ASL- 12 W-K	12 VDC	1,440 $\Omega$	+9.0 VDC	-9.0 VDC	100 mW
	ASL- 18 W-K	18 VDC	2,160 $\Omega$	+13.5 VDC	-13.5 VDC	150 mW
	ASL- 24 W-K	24 VDC	3,840 $\Omega$	+18.0 VDC	-18.0 VDC	150 mW
Double Winding Latching Type	ASL-D1.5 W-K	1.5 VDC	P 11.25 $\Omega$	+1.13 VDC		200 mW
			S 11.25 $\Omega$		+1.13 VDC	
	ASL-D 3 W-K	3 VDC	P 45 $\Omega$	+2.25 VDC		200 mW
			S 45 $\Omega$		+2.25 VDC	
	ASL-D4.5 W-K	4.5 VDC	P 101 $\Omega$	+3.38 VDC		200 mW
			S 101 $\Omega$		+3.38 VDC	
	ASL-D 5 W-K	5 VDC	P 125 $\Omega$	+3.75 VDC		200 mW
			S 125 $\Omega$		+3.75 VDC	
	ASL-D 6 W-K	6 VDC	P 180 $\Omega$	+4.5 VDC		200 mW
			S 180 $\Omega$		+4.5 VDC	
	ASL-D 9 W-K	9 VDC	P 405 $\Omega$	+6.75 VDC		200 mW
			S 405 $\Omega$		+6.75 VDC	
ASL-D 12 W-K	12 VDC	P 720 $\Omega$	+9.0 VDC		200 mW	
		S 720 $\Omega$		+9.0 VDC		
ASL-D 18 W-K	18 VDC	P 1,080 $\Omega$	+13.5 VDC		300 mW	
		S 1,080 $\Omega$		+13.5 VDC		
ASL-D 24 W-K	24 VDC	P 1,920 $\Omega$	+18.0 VDC		300 mW	
		S 1,920 $\Omega$		+18.0 VDC		

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

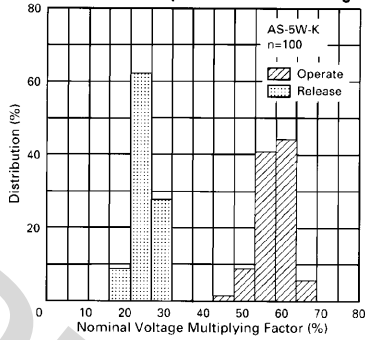
P: Primary coil S: Secondary coil

## CHARACTERISTIC DATA

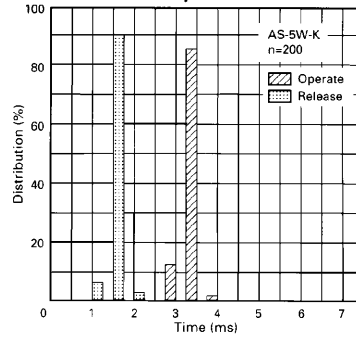
Please see A relays.

## REFERENCE DATA

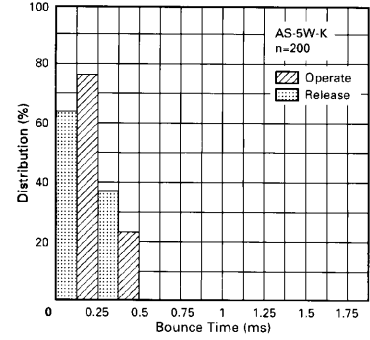
Distribution of Operate & Release Voltage



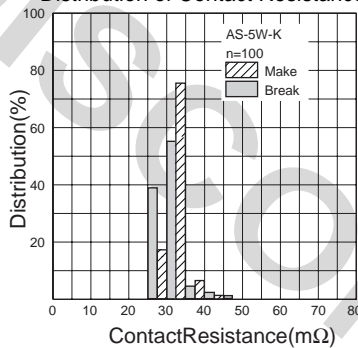
Distribution of Operate & Release Time



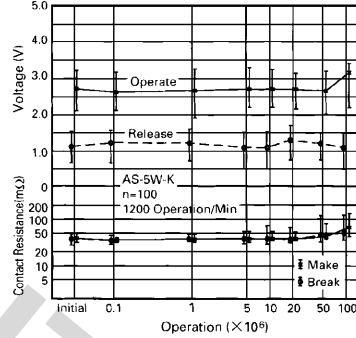
Distribution of Bounce Time



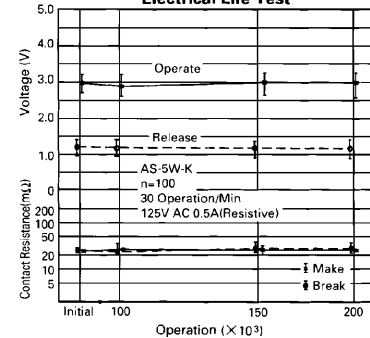
Distribution of Contact Resistance



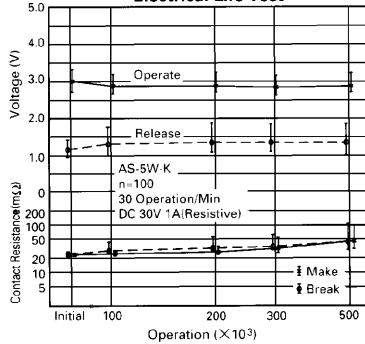
Mechanical Life Test



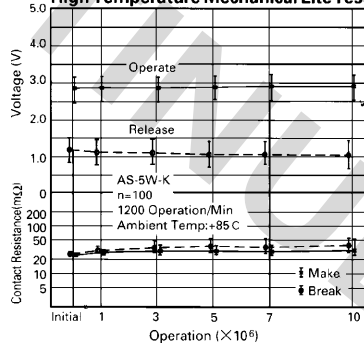
Electrical Life Test



Electrical Life Test



High Temperature Mechanical Life Test

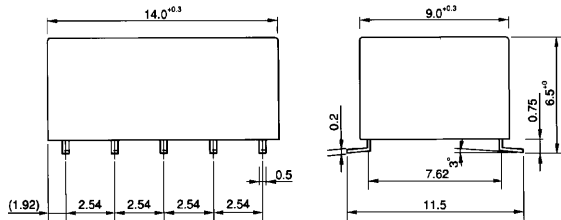


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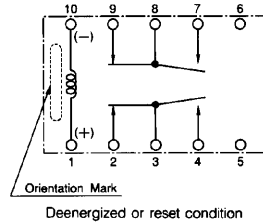
## ■ DIMENSIONS

### ● Dimensions

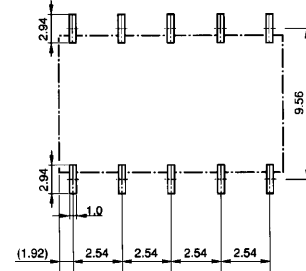
AS, ASL type (Non-latching type, single winding latching type)



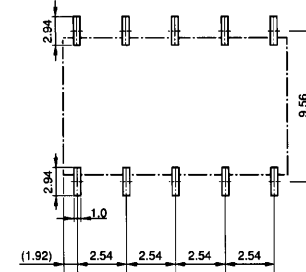
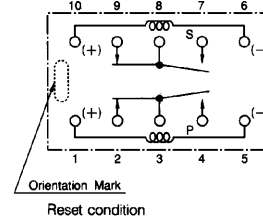
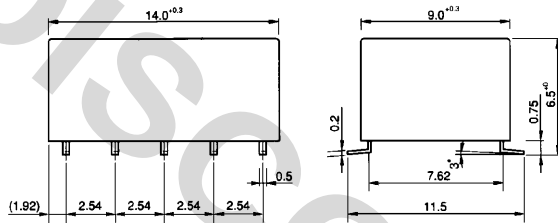
### ● Schematics (TOP VIEW)



### ● PC board mounting pad layout (TOP VIEW)



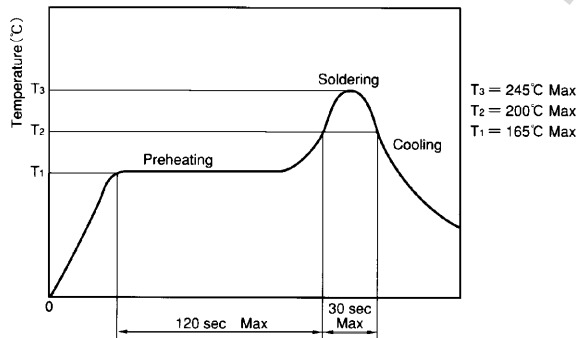
ASL-D type (Double winding latching type)



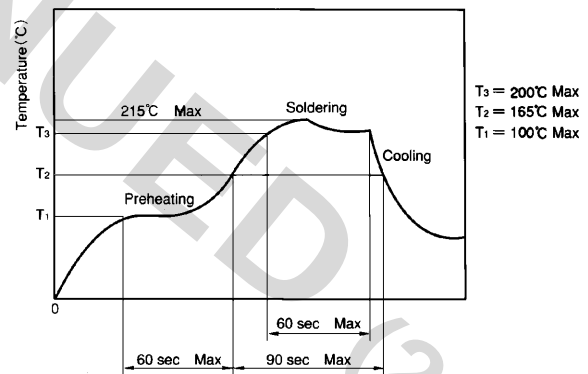
Unit: mm

## ■ RECOMMENDED SOLDERING CONDITIONS (TEMPERATURE PROFILE)

### IRS (Infrared Reflow Soldering)



### VPS (Vapor Phase Soldering)



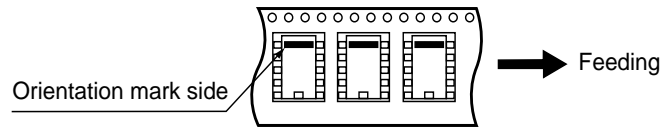
- Note:
1. Temperature profiles show the temperature of the PC board surface.
  2. Please perform soldering test with your actual PC board before mass production, since the temperatures of PC board surfaces vary according to the size of PC board, status of parts mounting and heating method.

## ■ PACKING

### (1) PACKING METHOD (ONLY TAPE PACKING IS AVAILABLE)

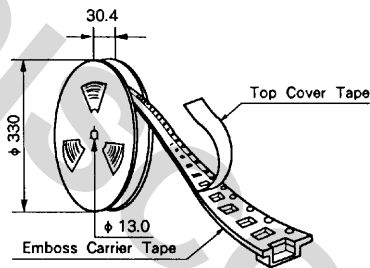
- Taping standards : JIS C 0806 and RC - 1009B (EIAJ)
- Tape type : TB2416 or TE2416
- Reel type : R24D
- Quantity of 1 reel : 500 pieces

- Packing orientation code : B

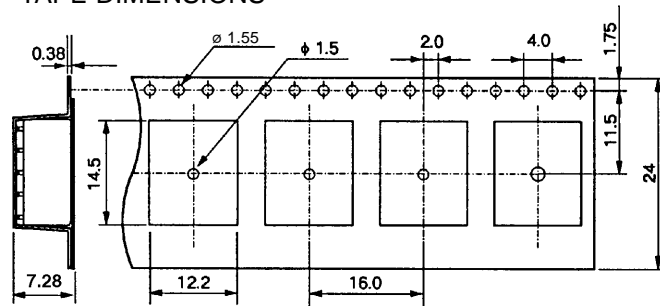


### (2) DIMENSIONS (in mm)

#### • REEL DIMENSIONS



#### • TAPE DIMENSIONS



Note: Relays are sold in packs of 500 pieces, please order 500 pieces as one unit.

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