FUJITSU THE POSSIBILITIES ARE INFINITE

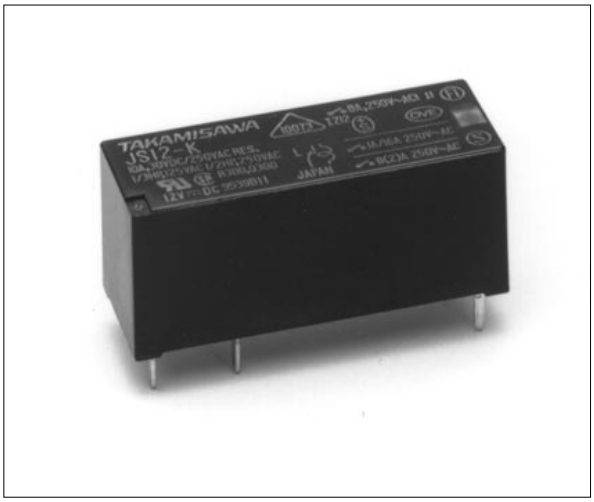
POWER RELAY

1 POLE—8 A (MEDIUM LOAD CONTROL)

JS SERIES

Lead Free / RoHS compliant*

■ FEATURES



- UL, CSA, VDE, SEV, SEMKO, FIMKO, ÖVE, BSI recognized
- UL class B (130°C) insulation
- 1 form A (SPST-NO) or 1 form C (SPDT) contact
- Low profile and space saving—Height: 12.5 mm
  —Mounting space: 290 mm^2
- High sensitivity in small package
  —Operating power ..... 0.11 to 0.14 W
  —Nominal power ..... 0.22 to 0.29 W
- High isolation in small package
  —Insulation distance : 8 mm
  —Dielectric strength : 5,000 VAC (between coil and contacts)
  —Surge strength : 10,000 V
- Plastic materials—UL 94 flame class V-0
  —UL CTI level class 2
- Plastic sealed type
- Lead Free since date code: 0438B9, 0434R
  Please see page 6 for more information

* some part numbers still contain cadmium and are not RoHS compliant

■ ORDERING INFORMATION

[Example] JS – 12 M E – K T – (V3)
(a) (∗) (b) (c) (d) (e) (f) (j)

(a)	Series Name	JS : JS Series
(b)	Nominal Voltage	Refer to the COIL DATA CHART
(c)	Contact Arrangement	Nil : 1 form C (SPDT) M : 1 form A (SPST-NO)
(d)	Contact Material	Nil : Gold plate (0.3μ) silver cadmium oxide D : Silver nickel E : Silver cadmium oxide F : Silver nickel gold overlay (with "-V3" only) N : Silver tin oxide gold overlay (0.3μ)
(e)	Enclosure	K : Plastic sealed type
(f)	Construction	Nil: 3.2 mm T : 5.0 mm (only JS-MN)
(j)	For low current application	V3 : For low current applications (3μ gold overlay) * not available with "D" and"E" contact material * not available with "T" construction

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

■ SAFETY STANDARD AND FILE NUMBERS

UL508, 873 (File No. E56140, E108658)
C22.2 No. 14 (File No. LR35579)
VDE 0435, 0631, 0700 (File No. 11039-4940-1010)

Nominal voltage	Contact rating
5 to 60 VDC	1/3 HP 125 VAC, 1/2 HP 250 VAC 10 A 30 VDC/250 VAC, resistive 3A 250 VAC inductive (PF = 0.4) Pilot duty B 300, C150

■ SPECIFICATIONS

Item			JS	
			Gold overlay silver alloy (standard) silver alloy	Gold overlay silver alloy (-V3)
Contact	Arrangement		1 form A (SPST-NO), 1 form C (SPDT)	
	Material		Nil:Gold plate silver cadmium oxide E: Silver cadmium oxide N: Silver tin oxide gold overlay D: Silver nickel	Nil: Gold overlay silver cadmium oxide N: Silver tin oxide gold overlay F: Silver nickel gold overlay
	Style		Single	
	Resistance (initial)		Maximum 100 mΩ (at 1 A 6 VDC)	maximum 30 mΩ
	Rating (resistive)		8 A 250 VAC or 8 A 24 VDC	
	Maximum Carrying Current		10 A	
	Maximum Switching Power		2,000 VA, 192 W	
	Maximum Switching Voltage		400VAC, 250 VDC	
	Maximum Switching Current		10 A	
	Minimum Switching Load*1		100 mA 5 VDC	10 mA 5 VDC
Coil	Nominal Power (at 20°C)		0.22 to 0.29 W	
	Operate Power (at 20°C)		0.11 to 0.14 W	
	Operating Temperature		–40°C to +85°C (no frost)	
Time Value	Operate (at nominal voltage)		Maximum 10 ms	
	Release (at nominal voltage)		Maximum 5 ms	
Insulation	Resistance (at 500 VDC)		Minimum 1,000 MΩ	
	Dielectric Strength	between open contacts	1,000 VAC 1 minute	
		between coil and contacts	5,000 VAC 1 minute	
	Surge Strength		10,000 V (at 1.2 × 50 μs)	
Life	Mechanical		2×10^7 operations minimum	
	Electrical		1×10^5 operations minimum (D, F contact: 20×10^3 ops. min.) (nominal load)	
Other	Vibration Resistance	Misoperation	10 to 55 Hz (double amplitude of 1.65 mm)	
		Endurance	10 to 55 Hz (double amplitude of 3.3 mm)	
	Shock Resistance	Misoperation	100 m/s^2 (11 ±1 ms)	
		Endurance	1,000 m/s^2 (6 ±1 ms)	
	Weight		Approximately 8 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.

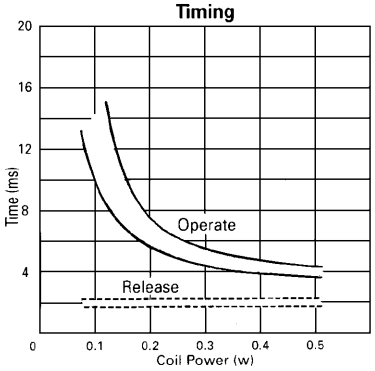
■ COIL DATA CHART

MODEL	Nominal voltage	Coil resistance (±10%)	Must operate voltage	Must release voltage	Nominal power
JS- 5 (M) (E, N) -K (T)	5 VDC	112Ω	3.5 VDC	0.5 VDC	225 mW
JS- 6 (M) (E, N) -K (T)	6 VDC	160Ω	4.2 VDC	0.6 VDC	225 mW
JS- 9 (M) (E, N) -K (T)	9 VDC	360Ω	6.3 VDC	0.9 VDC	225 mW
JS-12 (M) (E, N) -K (T)	12 VDC	660Ω	8.5 VDC	1.2 VDC	220 mW
JS-18 (M) (E, N) -K (T)	18 VDC	1,455Ω	12.7 VDC	1.8 VDC	225 mW
JS-24 (M) (E, N) -K (T)	24 VDC	2,350Ω	16.8 VDC	2.4 VDC	245 mW
JS-48 (M) (E, N) -K (T)	48 VDC	8,000Ω	33.4 VDC	4.8 VDC	290 mW
JS-60 (M) (E, N) -K (T)	60 VDC	12,500Ω	41.7 VDC	6.0 VDC	290 mW

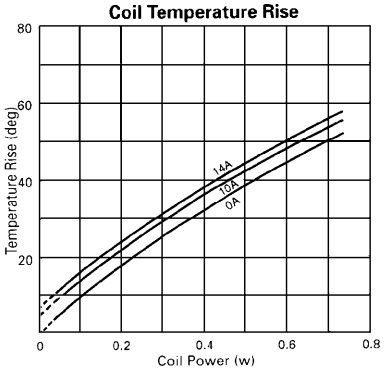
Note : All values in the table are measured at 20°C.

■ CHARACTERISTIC DATA

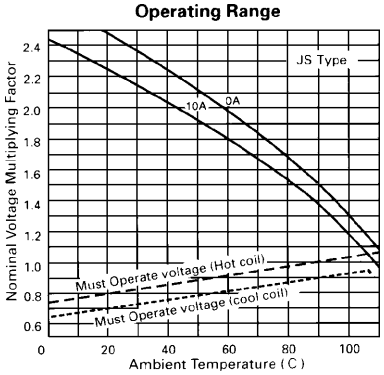
Timing



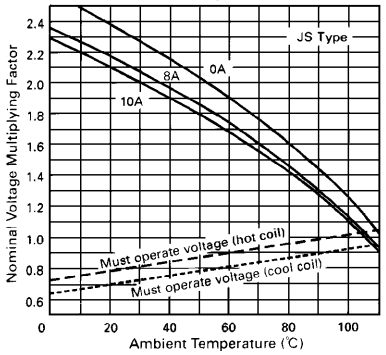
Coil Temperature Rise



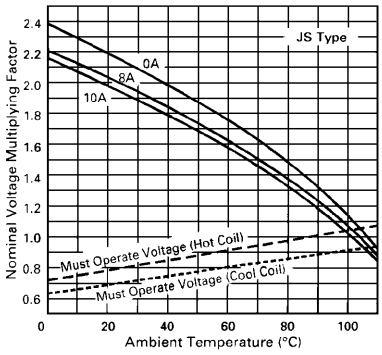
Operating Range



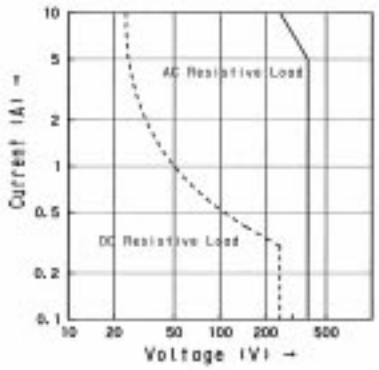
Operating Range (24VDC coil)



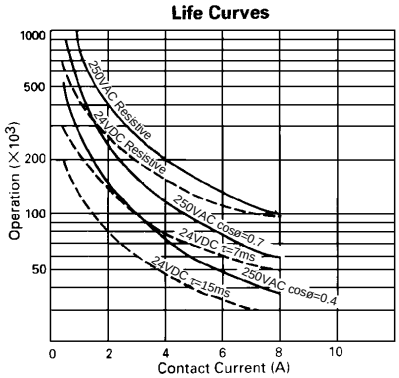
Operating Range (48～60VDC Coil)



Maximum Switching Power

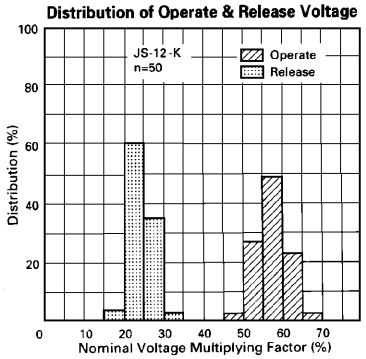


Life Curves

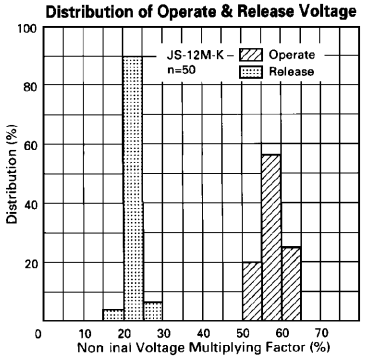


■ REFERENCE DATA

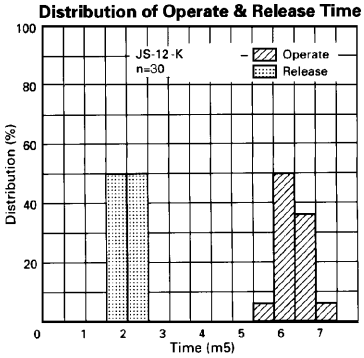
Distribution of Operate & Release Voltage



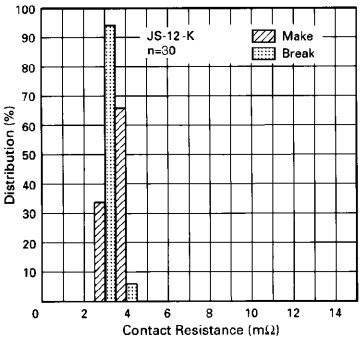
Distribution of Operate & Release Voltage



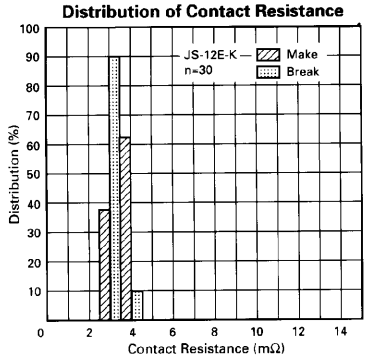
Distribution of Operate & Release Time



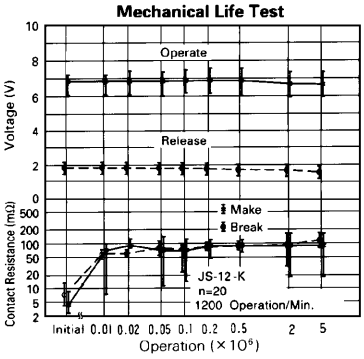
Distribution of Contact Resistance



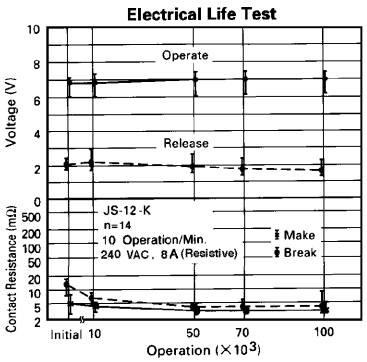
Distribution of Contact Resistance



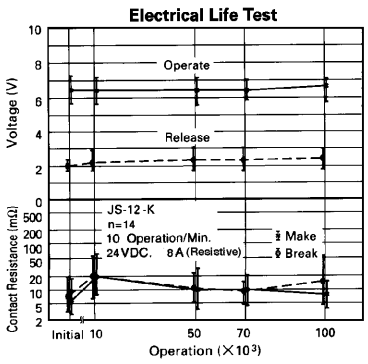
Mechanical Life Test



Electrical Life Test



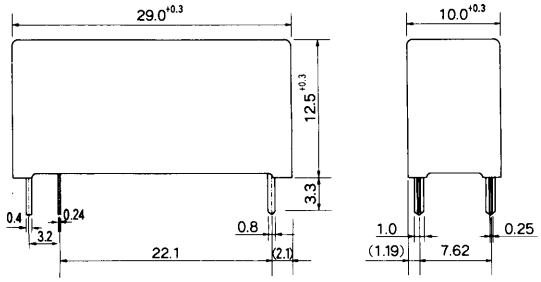
Electrical Life Test



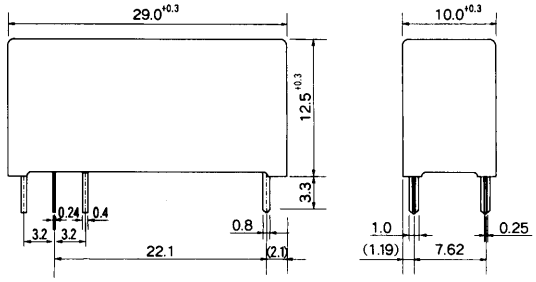
■ DIMENSIONS

● Dimensions

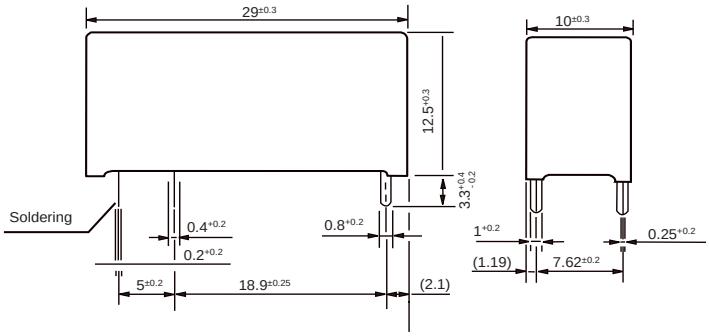
JS-MK type



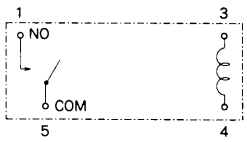
JS-K type

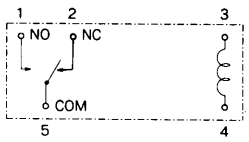


JS-MN-KT type

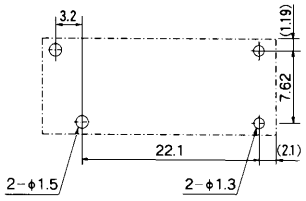


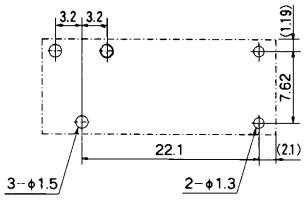
● Schematics
(BOTTOM VIEW)

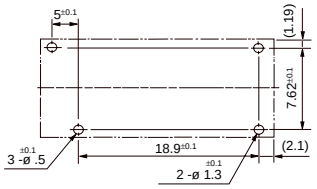




● PC board mounting hole layout
(BOTTOM VIEW)







Unit: mm

RoHS Compliance and Lead Free Relay Information

1. General Information

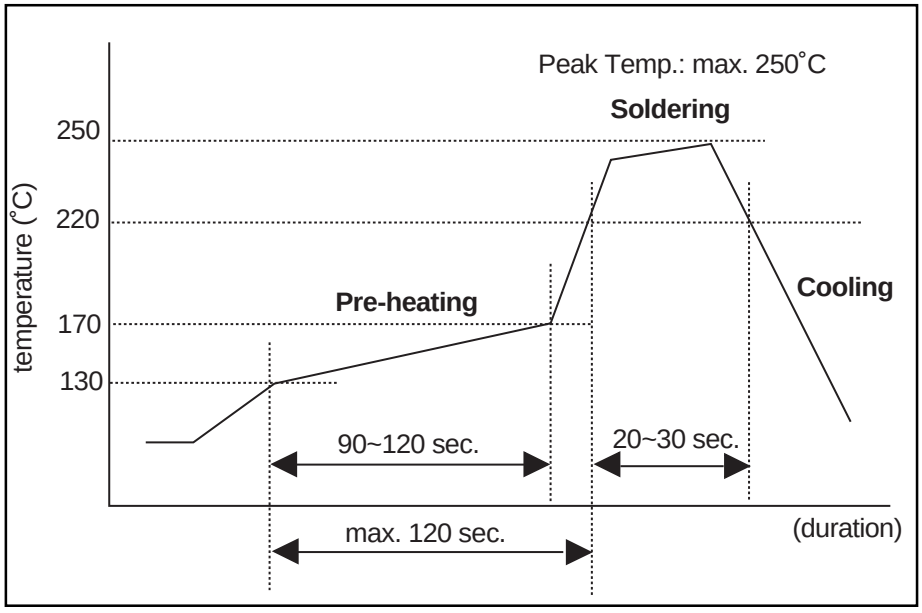
- Relays produced after the specific date code that is indicated on each data sheet are lead-free now. Most of our signal and power relays are lead-free. Please refer to Lead-Free Status Info. (http://www.fcai.fujitsu.com/pdf/LeadFreeLetter.pdf)
- Lead free solder paste currently used in relays is Sn-3.0Ag-0.5Cu. From February 2005 forward Sn-3.0Cu-Ni will be used for FTRB3 and FTR-B4 series relays.
- Most signal and some power relays also comply with RoHS. Please refer to individual data sheets. Relays that are RoHS compliant do not contain the 6 hazardous materials that are restricted by RoHS directive (lead, mercury, cadmium, chromium IV, PBB, PBDE).
- It has been verified that using lead-free relays in leaded assembly process will not cause any problems (compatible).
- "LF" is marked on each outer and inner carton. (No marking on individual relays).
- To avoid leaded relays (for lead-free sample, etc.) please consult with area sales office.

We will ship leaded relays as long as the leaded relay inventory exists.

2. Recommended Lead Free Solder Profile

- Recommended solder paste Sn-3.0Ag-0.5Cu and Sn-3.0 Cu-Ni (only FTR-B3 and FTR-B4 from February 2005)

Reflow Solder condtion



Flow Solder condtion:

Pre-heating:	maximum 120˚C
Soldering:	dip within 5 sec. at 260˚C soler bath

Solder by Soldering Iron:

Soldering Iron Temperature:	maximum 360˚C
Duration:	maximum 3 sec.

We highly recommend that you confirm your actual solder conditions

3. Moisture Sensitivity

- Moisture Sensitivity Level standard is not applicable to electromechanical realys.

4. Tin Whisker

- SnAgCu solder is known as low riskof tin whisker. No considerable length whisker was found by our in-house test.

5. Solid State Relays

- Each lead terminal will be changed from solder plating to Sn plating and Nickel plating. A layer of Nickel plating is between the terminal and the Sn plating to avoid whisker.

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