

# POWER RELAY

## 1 POLE - 8A Medium Load Control

### JS Series

#### ■ FEATURES

- UL class B (130°C) coil wire 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<sup>2</sup>
- High sensitivity in small package  
Operating power 110 to 140 mW  
Nominal power 220 to 290 mW
- High insulation in small package  
Insulation distance : 8.0 mm (between coil and contacts)  
Dielectric strength : 5,000 VAC  
Surge strength : 10,000 V
- Plastic materials  
UL 94 flame class V-0 UL CTI level class 2
- Plastic sealed type
- Various contact material options
- RoHS compliant (Please see page 6 for more information)



#### ■ Part Numbers

[Example]    JS    -    12    M    F    -    K    T    -    V3\*    -    RW  
                   (a)           (b)           (c)           (d)           (e)           (f)           (g)           (h)

(a)	Relay type	JS : JS series
(b)	Contact rated voltage	12 : 5...60VDC (Coil rating table at page 3)
(c)	Coil configuration	Nil : 1 form C (SPDT) M : 1 form A (SPST-NO)
(d)	Contact material	D : Silver nickel F : Gold flash silver nickel N : Gold flash
(e)	Enclosure	K : Plastic sealed type
(f)	Construction	Nil : 3.2mm T : 5.0mm (only JS-MN)
(g)	Gold plating	Nil : Standard (0.1micron gold flash with Nil, N and F contact) V3 : 3.0μ gold plating for lower current applications (available with Nil and N contact, not available for T, 5.0mm type) V1 : 1.0μ gold plating for lower current applications (available with N contact, not available for T, 5.0mm type)
(h)	Special type	Nil : Standard RW : Reflow capable (through hole reflow) (not available for V1, V3)

Note: Actual marking omits the hyphen (-) or (\*)

\*: V3 is marked at different position on the relay

E.g.: Ordering code: JS-12F Actual marking: JS12F-K

# JS Series

## ■ Specifications

Item			JS-( ) F/N-K	JS-( )D-K	JS-( ) N-K-V1	JS-( ) N-K-V3	Remarks / conditions	
Contact data	Configuration		1 form A (SPST-NO), 1 form C (SPDT)					
	Construction		Single					
	Plating		0.1 μ Au Plated	-	1 μ Au Plated	3 μ Au Plated		
	Material		See partnumber information					
	Resistance		Max.100mΩ		Max.30mΩ		6VDC, 1A	
	Contact rating		8A, 250VAC / 24VDC				Resistive	
	Max. carrying current		10A					
	Max. switching voltage		400VAC / 300VDC (-RW; 400VAC / 150VDC)					
	Max. switching power		2000VA / 192W					
	Min. switching load *1		100 mA, 5VDC		10 mA, 5VDC			
Coil	Rated power (20°C)		220 - 290mW					
	Operate power (20°C)		110 - 140mW					
	Operating temperature range		-40°C ~ +85°C (at rated voltage)				No frost	
Timing data	Operate		Max. 10ms				without bounce	
	Release		Max. 5ms				without bounce, no diode	
Life	Mechanical		Min. 20 x 10 <sup>6</sup> operations					
	Electrical (resistive)	AC contact rating	Min. 50 x 10 <sup>3</sup> operations (AgSnO <sub>2</sub> ) Min. 20 x 10 <sup>3</sup> operations (AgNi)				At rated load	
		DC contact rating	Min. 50 x 10 <sup>3</sup> operations (AgSnO <sub>2</sub> ) Min. 20 x 10 <sup>3</sup> operations (AgNi)				At rated load	
Insulation	Insulation resistance		Min. 1000MΩ at 500VDC					
	Dielectric strength	Open contacts	1000VAC (50/60Hz), 1 minute					
		Coil contact	5000VAC (50/60Hz), 1 minute					
	Surge strength	Coil to contacts	10000V / 1.2 x 50μs standard wave					
	Clearance		8mm					
	Creepage		8mm					
	EN61810-1, VDE0435	Voltage		250V				
		Pollution		3				
Material group		III a						
Category		C / 250V (reference voltage) (VDE 01106)						
Other	Vibration resistance	Misoperation	10Hz ~ 55Hz ~ 10Hz single amplitude 0.825mm					
		Endurance	10Hz ~ 55Hz ~ 10Hz single amplitude 1.65mm					
	Shock resistance	Misoperation	Min. 100m/s <sup>2</sup> (11 ± 1ms)			Direction X, Y, Z, contact ON/OFF total 36 times		
		Endurance	Min. 1,000m/s <sup>2</sup> (6 ± 1ms)			Direction X, Y, Z, contact OFF total 18 times		
	Dimensions / weight		10.0 x 29.0 x 12.5 mm / approx. 8.0g					
	Sealing		Plastic sealed					

\*1: Minimum switching loads mentioned above are reference values. Please perform the confirmation test with actual load before production since reference values may vary according to switching frequencies, environmental conditions and expected reliability levels.

# JS Series

## ■ Coil Data

Coil code	Rated Coil Voltage (VDC)	Coil Resistance +/-10% ( $\Omega$ )	Must Operate Voltage* (VDC)	Must Release Voltage* (VDC)	Rated Power (mW)
005	5	112	3.5	0.5	225
006	6	160	4.2	0.6	
009	9	360	6.3	0.9	
012	12	660	8.5	1.2	220
018	18	1,455	12.7	1.8	225
024	24	2,350	16.8	2.4	245
048	48	8,000	33.4	4.8	290
060	60	12,500	41.7	6.0	

Note: All values in the table are valid at 20°C and zero contact current, unless otherwise specified.

\*: Specified operated values are valid for pulse wave voltage.

Note: Please use at rated coil voltage. Please refer to characteristic data and set up adequate voltage in case of use at over voltage.

Care shall be taken on the heat generated on PC board when maximum carrying current exceeds 10A. Please perform the confirmation test with actual conditions.

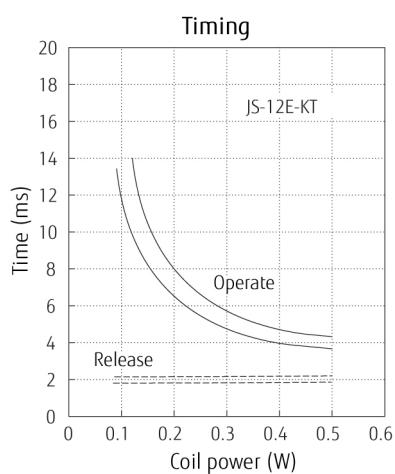
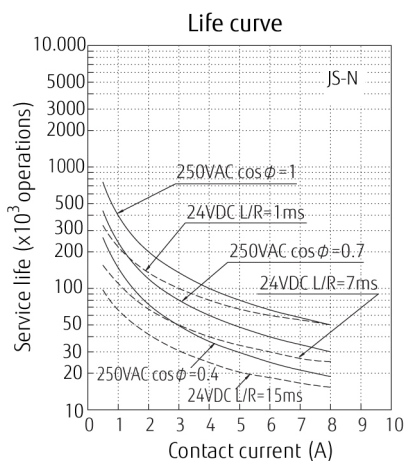
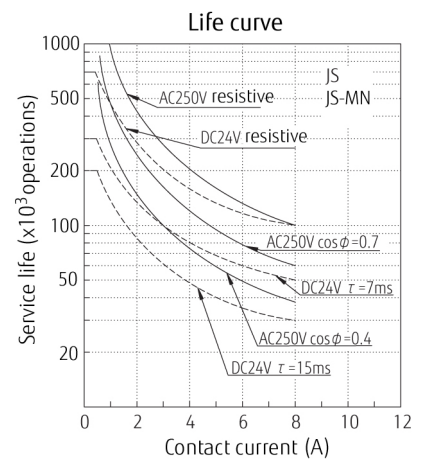
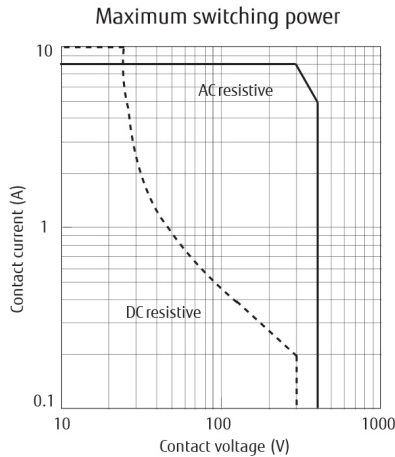
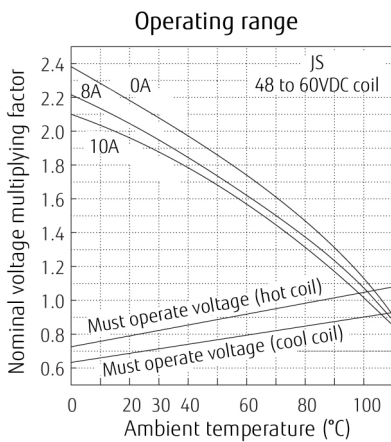
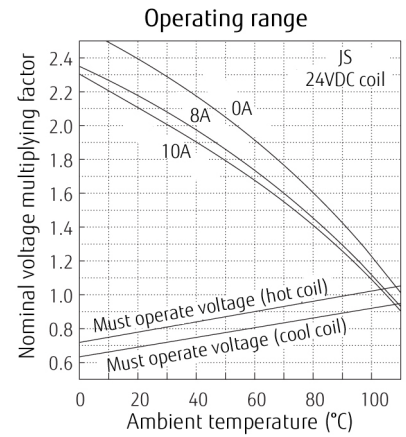
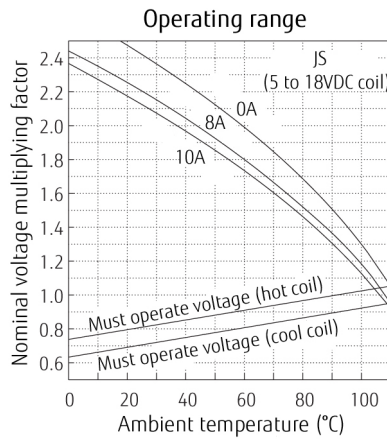
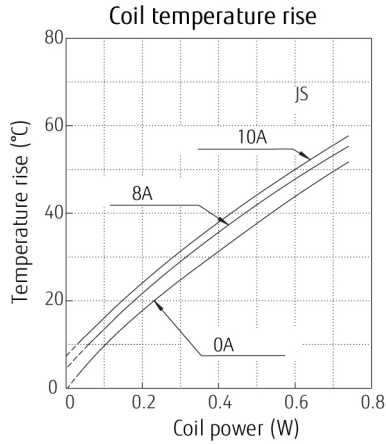
## ■ Safety Standards

Type	Compliance	Contact rating		
UL	UL 508  File No. E 56140	Flammability: UL 94-V-0 (plastics)		
		Contact material: Nil, E	N	D, F
CSA	C22.2 No. 14 File No. LR 35579	8A 24VDC (resistive) 100k 8A, 250VAC (resistive) 100k 10A, 30VDC (resistive) 10A, 250VAC (resistive) 1/4HP, 125VAC / 250VAC 1/3HP, 125VAC 1/2HP, 250VAC Pilot duty: C150, B300 Pilot duty: 0.27A, 250VDC	8A 24VDC (resistive) 100k 8A, 250VAC (resistive) 100k 10A, 30VDC (resistive) 10A, 250VAC (resistive) 1/4HP, 125VAC / 250VAC 1/3HP, 125VAC 1/2HP, 250VAC Pilot duty: A300, B300 C150, R300	8A, 24VDC resistive 8A, 250VAC resistive
VDE	IEC/EN61810-1 EN60335-1 clause 15.3; 16.3; 29.1; 29.2; 29.3 EN60730-1 clause 12.2; 13.2; 20.1; 20.2; 20.3  EN60947-5-1 Appendix C	8A 250VAC ( $\cos \varphi=1$ ) 8A 24VDC (L/R=0ms)		JS-( )D-K, JS-( )F-K: 6A, 250VAC, ( $\cos \varphi=1$ ) 8A, 24VDC (L/R=0ms) JS-( )MD-K, JS-( )MF-K: 8A, 240VAC ( $\cos \varphi=1$ ) 8A, 24VDC (L/R=0ms)
CQC	GB15092.1 CQC17001162883	10A 30VDC/250VAC (except -V3 type)		

# JS Series

## ■ Characteristic Data (Reference)

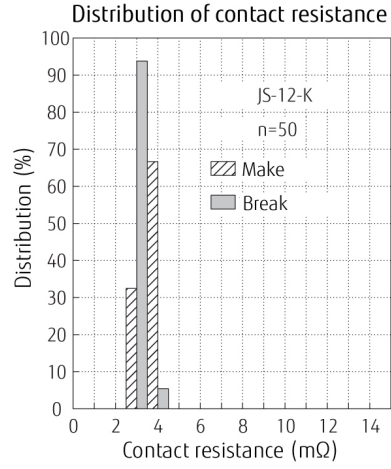
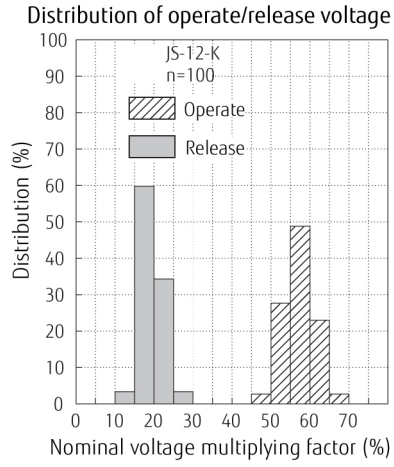
\* Characteristic data is not guaranteed value but measured values of samples from production line.



# JS Series

## ■ Characteristic Data (Reference)

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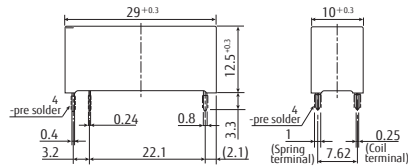


# JS Series

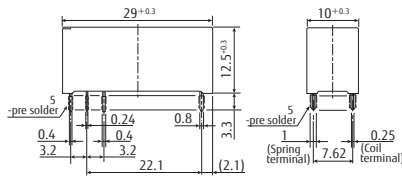
## ■ Dimensions

- Dimensions

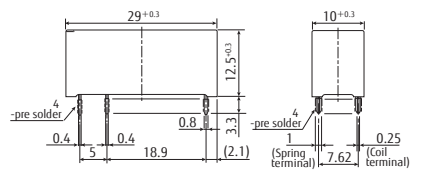
JS-M-K



JS-K



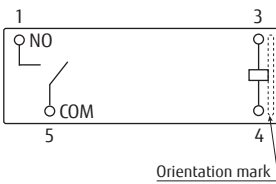
JS-MN-KT



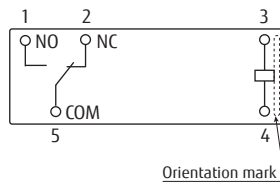
\* Dimensions of the terminals do not include thickness of pre-solder.

- Schematics  
(BOTTOM VIEW)

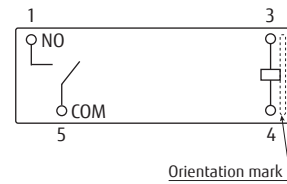
JS-M-K



JS-K

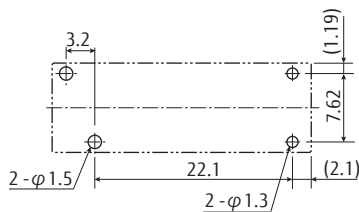


JS-MN-KT

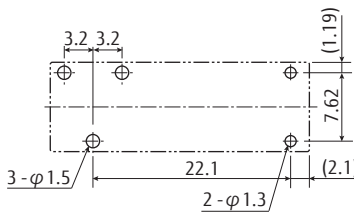


- PC Board Mounting Hole Layout  
(BOTTOM VIEW)

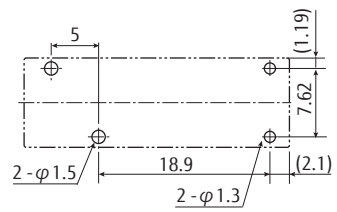
JS-M-K



JS-K



JS-MN-KT



( ): Reference value

Unit: mm

\* Tolerance of PC board mounting hole layout : ±0.1 unless otherwise specified.

## GENERAL INFORMATION

### 1. ROHS Compliance

- All relays produced by Fujitsu Components are compliant with RoHS directive 2011/65/EU including amendments.
- Use of Cadmium in electrical contacts is exempted as per Annex III of the RoHS directive 2011/65/EU. Please consider expiry date of exemption. Relays with Cadmium containing contacts are not to be used for new designs.
- All relays are lead-free. Please refer to Lead-Free Status Info for older date codes at: <http://www.fujitsu.com/downloads/MICRO/fcai/relays/lead-free-letter.pdf>
- Characteristic data is not guaranteed values, but measured values of samples from production line.

### 2. Recommended lead free solder condition

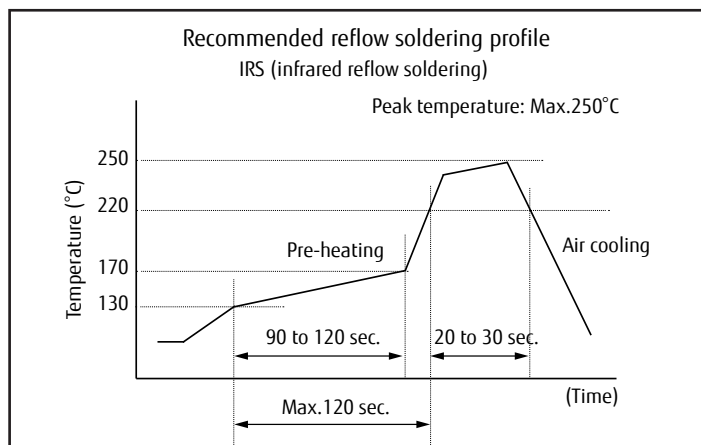
- Lead free solder plating on relay terminals is Sn-3.0Ag-0.5Cu, unless otherwise specified. This material has been verified to be compatible with PbSn assembly process.
- Recommended solder for assembly: Sn-3.0Ag-0.5Cu.

#### Flow Solder Condition:

Pre-Heating: maximum 120°C within 90 sec.  
Soldering: dip within 5 sec. at 255°C ± 5°C solder bath  
Relay must be cooled by air immediately after soldering

#### Solder by Soldering Iron:

Soldering Iron: 30-60W  
Temperature: maximum 350-360°C  
Duration: maximum 3 sec.



### IMPORTANT NOTES FOR REFLOW SOLDERING

- Temperature shall be measured at PC board upper surface.
- Temperature at PC board upper surface may be changed depending on size of PC board, components mounted on the PC board and/or heating method. Please perform the confirmation test with your actual PC boards.
- This reflow solder condition is applicable only for reflow-capable relays. Do not reflow reflow-incapable relays.
- Recommended solder for assembly: Sn-3.0 Ag-0.5 Cu.

**We highly recommend that you confirm your actual solder conditions**

### 3. Moisture Sensitivity

- Moisture Sensitivity Level standard is not applicable to electromechanical relays, unless otherwise indicated.

### 4. Tin Whiskers

- Dipped SnAgCu solder is known as presenting a low risk to tin whisker development. No considerable length whisker was found by our in house test.

## Fujitsu Components International Headquarter Offices

<b>Japan</b> FUJITSU COMPONENT LIMITED Shinagawa Seaside Park Tower 19F, 12-4, Higashi-shinagawa 4-chome, Shinagawa-ku, Tokyo, 140-0002, Japan Tel: (81-3) 3450-1682 Fax: (81-3) 3474-2385 Email: fcl-contact@cs.jp.fujitsu.com Web: www.fujitsu.com/jp/fcl/	<b>Asia Pacific</b> FUJITSU COMPONENTS ASIA, LTD. 102E Pasir Panjang Road #01-01 Citilink Warehouse Complex Singapore 118529 Tel: (65) 6375-8560 Fax: (65) 6273-3021 Email: fcal@sg.fujitsu.com Web: www.fujitsu.com/sg/products/devices/components	<b>Korea</b> FUJITSU COMPONENTS KOREA LIMITED Alpha Tower #403, 645 Samsyeong-dong, Bundang-gu, Seongnam-si, Gyeonggi-do, 13524 Korea Tel: (82) 31-708-7108 Fax: (82) 31-709-7108 Email: fcal@sg.fujitsu.com www.fujitsu.com/sg/products/devices/components/
<b>North and South America</b> FUJITSU COMPONENTS AMERICA, INC 2290 North First Street, Suite 212 San Jose, CA 95131, USA Tel: (1-408) 745-4900 Fax: (1-408) 745-4970 Email: components@us.fujitsu.com Web: us.fujitsu.com/components	<b>China</b> FUJITSU ELECTRONIC COMPONENTS (SHANGHAI) CO., LTD. Unit 4306, InterContinental Center 100 Yu Tong Road, Shanghai 200070, China Tel: (86-21) 3253 0998 Fax: (86-21) 3253 0997 Email: fcal@sg.fujitsu.com Web: www.fujitsu.com/sg/products/devices/components	
<b>Europe</b> FUJITSU COMPONENTS EUROPE B.V. Diamantlaan 25 2132 WV Hoofddorp Netherlands Tel: (31-23) 5560910 Fax: (31-23) 5560950 Email: info@fceu.fujitsu.com Web: www.fujitsu.com/uk/components	<b>Hong Kong</b> FUJITSU COMPONENTS HONG KONG CO., LTD Unit 506, Inter-Continental Plaza No.94 Granville Road, Tsim Sha Tsui, Kowloon, Hong Kong Tel: (852) 2881-8495 Tex: (852) 2894-9512 Email: fcal@sg.fujitsu.com Web: www.fujitsu.com/sg/products/devices/components/	

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