

# 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: 12.5mm - Mounting space: 290mm<sup>2</sup>
- High sensitivity in small package  
Operating power 110 to 140mW  
Nominal power 220 to 290mW
- High insulation in small package  
Insulation distance: 8.0mm (between coil and contacts)  
Dielectric strength: 5,000VAC  
Surge strength: 10,000V
- Plastic materials  
UL 94 flame class V-0 UL CTI level class 2
- Plastic sealed or flux free (reflow capable 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)	Coil 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 silver tin oxide
(e)	Enclosure	Nil : Flux free type (available for reflow capable type) K : Plastic sealed type
(f)	Construction	Nil : 3.2mm T : 5.0mm (only JS-MN)
(g)	Gold plating	Nil : Standard V3 : 3.0µm gold plating for lower current applications (available with N contact, not available for T, 5.0mm type) V1 : 1.0µm 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 d U g W U Y X m Y Z V1, V3)

Note: Actual marking omits the hyphen (-) or (\*)  
 \*: V3 is market 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	Au flash	-	1μm Au plated	3μm 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 current	400VAC / 300VDC (-RW: 400VAC / 150VDC)					
	Max. switching power	2000VA / 192W					
	Min. switching load *1	100mA, 5VDC		10mA, 5VDC			
Coil	Rated power (20°C)	220 to 290mW					
	Operate power (20°C)	110 to 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	10~55~10Hz single amplitude 0.825mm				
		Endurance	10~55~10Hz 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 (-RW: Flux free)				

\*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.

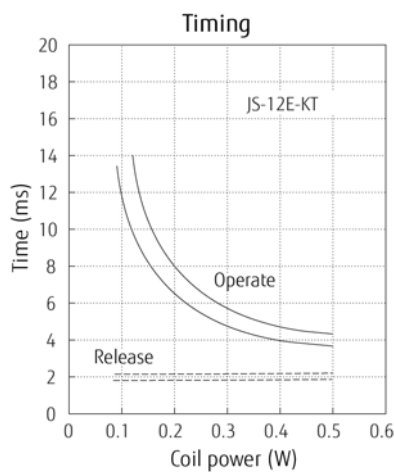
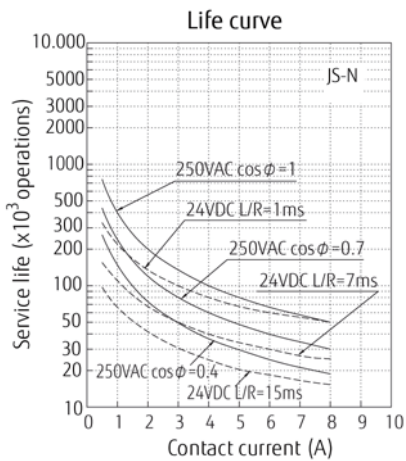
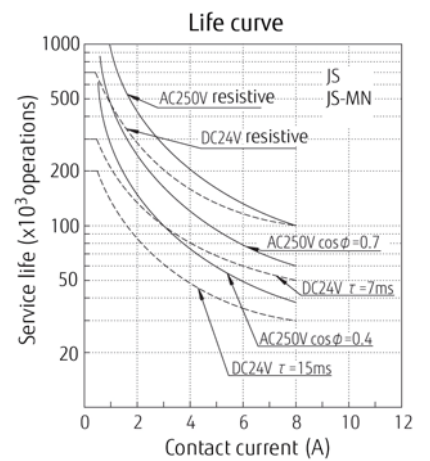
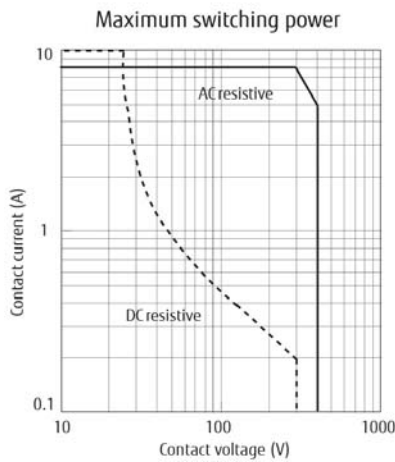
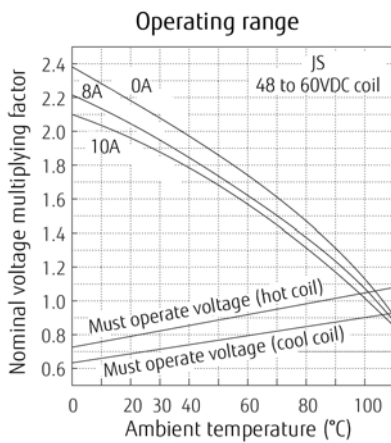
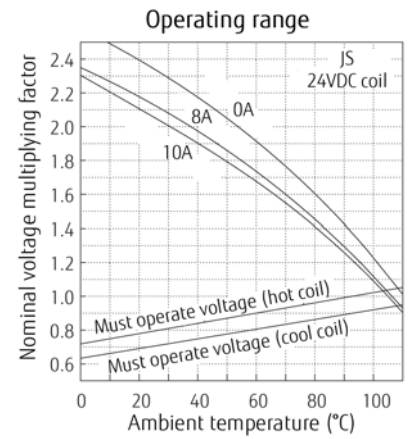
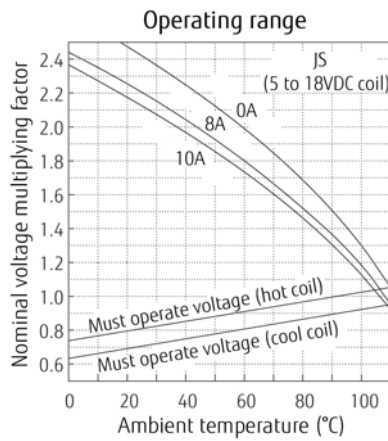
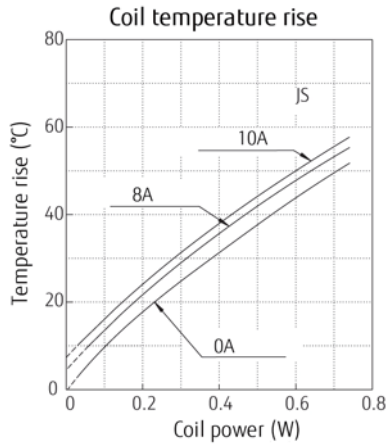
## ■ Safety Standards

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 $\phi$ =1) 8A 24VDC (L/R=0ms)		JS-( )D-K, JS-( )F-K: 6A, 250VAC, (cos $\phi$ =1) 8A, 24VDC (L/R=0ms) JS-( )MD-K, JS-( )MF-K: 8A, 240VAC (cos $\phi$ =1) 8A, 24VDC (L/R=0ms)
CQC	GB15092.1 17001162883	10A 30VDC/250VAC (except -V3 type)		

# JS Series

## ■ Characteristic Data (Reference)

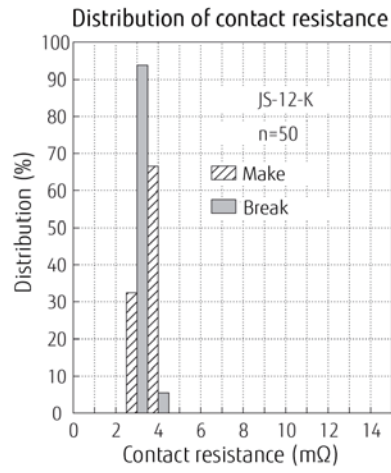
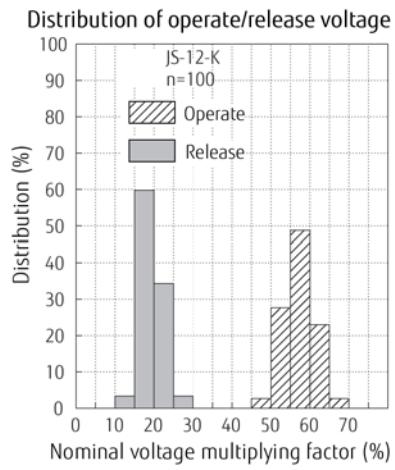
\* Characteristic data is not guaranteed value but measured values of samples from production line.



# JS Series

## ■ Characteristic Data (Reference)

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

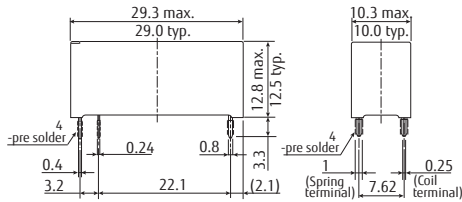


# JS Series

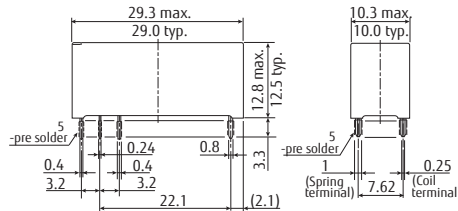
## ■ Dimensions

- Dimensions

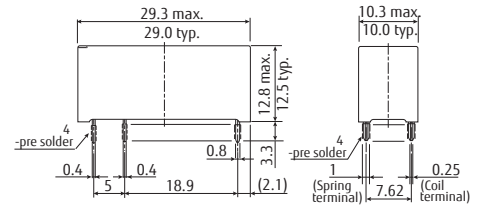
JS-M(-K)



JS(-K)



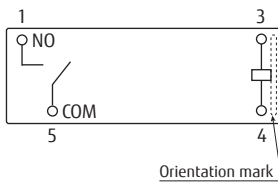
JS-MN-(K)T



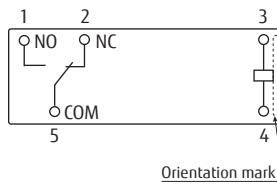
\* Dimensions of the terminals do not include thickness of pre-solder.

- Schematics  
(BOTTOM VIEW)

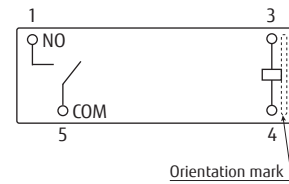
JS-M(-K)



JS(-K)

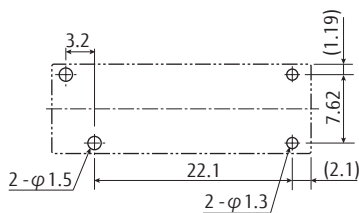


JS-MN-(K)T

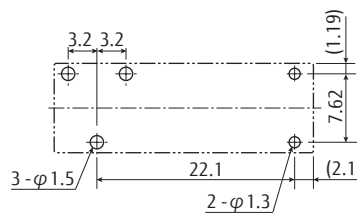


- PC Board Mounting Hole Layout  
(BOTTOM VIEW)

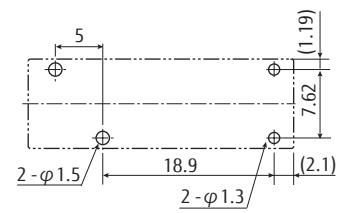
JS-M(-K)



JS(-K)



JS-MN-(K)T



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

( ): Reference value  
Unit: mm

## Cautions

- All values mentioned in this datasheet are provided under ideal conditions. Please perform the confirmation test before actual use.
- Do not use relays in the atmosphere with sulfide gas, chloride gas or nitric oxide. Contact resistance may increase.
- Do not use silicon or silicon-containing product or materials near relays. It may cause contact failure.

# JS Series

## 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

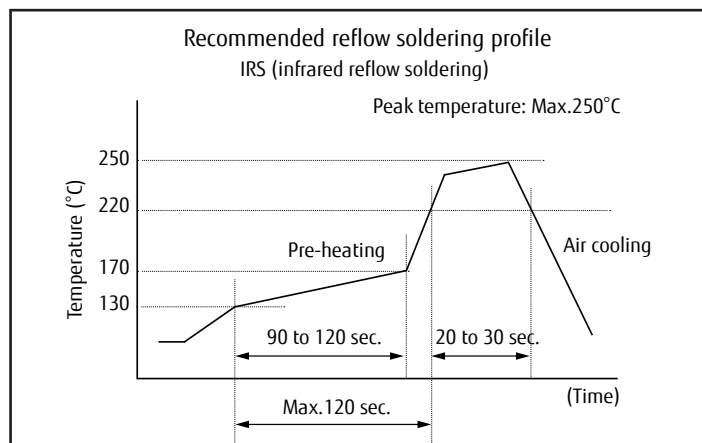
- Lead free solder plating on relay terminals is Sn-3.0Ag-0.5Cu, unless otherwise specified. This material has been verified to be compatible with PbSn assembly process.
- Recommended solder for assembly: Sn-3.0Ag-0.5Cu.

#### 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.

# JS Series

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