# FUJITSU

# **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 mm2
- 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	Μ	F	- K	Т	- V3*	-	RW
	(a)	(b)	(c)	(d)	(e)	(f)	(g)		(h)

(a)	Relay type	JS : JS series
(b)	Contact rated voltage	12 : 560VDC (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	<ul> <li>Nil : Standard (0.3micron gold flash with Nil, N and F contact)</li> <li>V3 : 3.0µ gold plating for lower current applications (available with Nil and N contact, not available for T, 5.0mm type)</li> <li>V1 : 1.0µ gold plating for lower current applications (available with N contact, not available for T, 5,0mm type)</li> </ul>
(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



# Specifications

11							
ltem			JS-() F/N-K	JS-( )D-K	JS-() N-K-V1	JS-() N-K-V3	Remarks / conditions
Contact	Configuration		1 form A (SPST-NO), 1 form C (SPDT)				
data	Construction		Single				
	Plating		0.3µ Au Plated	-	1µ Au Plated	3µ 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 l		100 m	A, 5VDC	10 m/	4, 5VDC	
Coil	Rated power (20	1		220 - 2			
	Operate power	. ,		110 - 1			
	Operating temperature range		-40°C ~ +85°C (at rated voltage)			No frost	
Timing	Operate			Max.		-	without bounce
data	Release			Max.			without bounce, no diode
Life	Mechanical			Min. 20 x 10			
	Electrical (resistive)	AC contact rating	Min. 50 x 10 <sup>3</sup> operations (AgSnO <sup>2</sup> ) Min. 20 x 10 <sup>3</sup> operations (AgNi)			At rated load	
		DC contact rating	Min. 50 x 10 <sup>3</sup> operations (AgSnO <sup>2</sup> ) Min. 20 x 10 <sup>3</sup> operations (AgNi)			At rated load	
Insula-	Insulation resist	ance		Min. 1000M			
tion		Open contacts	10	1000VAC (50/60Hz), 1 m		nute	
		Coil contact	5000VAC (50/60Hz), 1 minute				
	Surge strength	Coil to contacts	10000V / 1.2 x 50µs standard wave				
	Clearance		8mm				
	Сгеераде		8mm				
	EN61810-1,	Voltage	250V				
	VDE0435	Pollution	3				
		Material group	III a				
		Category	C / 250V (reference voltage) (VDE 01106)				
Other	Vibration resis- tance	Misoperation	10Hz ~ 55Hz ~ 10Hz single amplitude 0.825mm				
		Endurance	10Hz ~ 55Hz ~ 10Hz single amplitude 1.65mm				
	Shock resis- tance	Misoperation	Min. 100m/s² (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 tota 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 contions and expected reliability levels.

#### Coil Data

Coil code				Must Release Voltage*	Rated Power
	(VDC)	(Ω)	(VDC)	(VDC)	(mW)
005	5	112	3.5	0.5	
006	6	160	4.2	0.6	225
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	290

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.

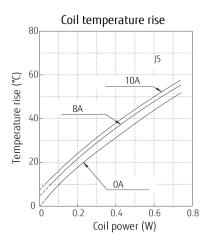
Care shall be taken on the heat generated on PC board when maximum carrying current exceeds 10A. Please perform the confirmation test with actual conditions.

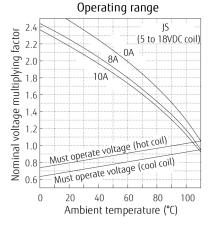
### Safety Standards

Туре	Compliance		Contact rating			
UL	UL 508	Flan	Flammability: UL 94-V-0 (plastics)			
		Contact material: Nil, E	N	D, F		
	File No. E 56140	8A 24VDC	8A 24VDC	8A, 24VDC resistive		
CSA	C22.2 No. 14 File No. LR 35579	(resistive) 100k 8A, 250VAC (resistive) 100k 10A, 30VDC (resistive) 10A, 250VAC (resistive)	(resistive) 100k 8A, 250VAC (resistive) 100k 10A, 30VDC (resistive) 10A, 250VAC ( resistive)	8A, 250VAC resistive		
		1/4HP, 125VAC / 250VAC 1/3HP, 125VAC 1/2HP, 250VAC Pilot duty: C150, B300 Pilot duty: 0.27A, 250VDC	1/4HP, 125VAC / 250VAC 1/3HP, 125VAC 1/2HP, 250VAC Pilot duty: A300, B300 C150, R300			
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 φ=1) 8A 24VDC (L/R=0ms)		JS-()D-K, JS-()F-K: 6A, 250VAC, (cos φ=1) 8A, 24VDC (L/R=0ms) JS-()MD-K, JS-() MF-K: 8A, 240VAC (cos φ=1) 8A, 24VDC (L/R=0ms)		
CQC	GB15092.1 CQC17001162883	10A 3	0VDC/250VAC (except	-V3 type)		

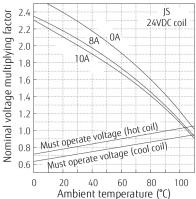
### ■ Characteristic Data (Reference)

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





### Operating range



Operating range JS 8A 0A 48 to 60VDC coil

Must operate voltage (hot coil)

20 30 40

Must operate voltage (cool coil)

60

Ambient temperature (°C)

80

100

2.4

2.2

2.0

1.8

1.6

1.4

1.2

1.0

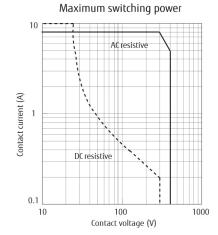
0.8

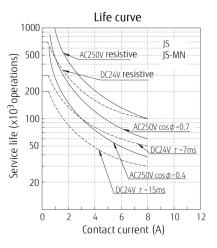
0.6

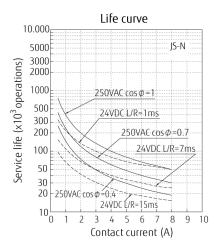
0

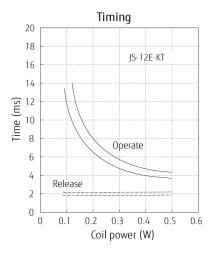
10A

Nominal voltage multiplying factor



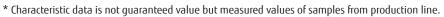


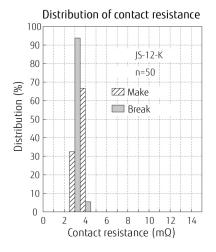




# Characteristic Data (Reference)

Distribution of operate/release voltage 100 JS-12-K n=100 90 0perate 80 70 Release Distribution (%) 60 50 40 30 20 10 0 10 20 30 40 50 60 70 0 Nominal voltage multiplying factor (%)





### Dimensions

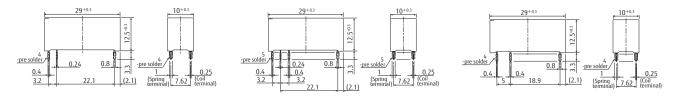
• Dimensions

JS-M-K

JS-K

JS-K

JS-MN-KT



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

• Schematics (BOTTOM VIEW)

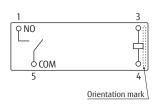
JS-M-K

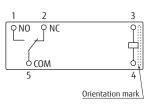
JS-M-K

3.2

Ð

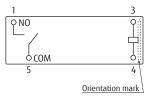
<u>2-φ1.5</u>





JS-MN-KT

JS-MN-KT



• PC Board Mounting Hole Layout (BOTTOM VIEW)

22.1

<u>2-φ1.3</u>

6

7.62

(2.1)

JS-K

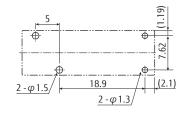
<u>3-φ1.5</u>



<u>2-φ1.3</u>

22.1

(2.1)



(): Reference value Unit: mm

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

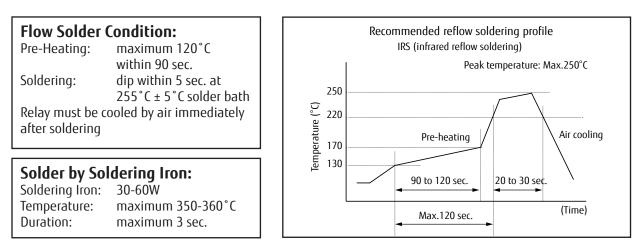
# **GENERAL INFORMATION**

### 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.



### 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.

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