

mm inch

FEATURES

- Low pick-up voltage for high ambient use
- Sealed construction
- Global standard terminal pitch
- Usable at high temperature: 85°C 185°F

TYPICAL APPLICATIONS

- Power-window
- Car antenna
- Door lock
- Intermittent wiper
- Interior lighting
- Power seat
- Power sunroof
- Car stereo
- Horn
- Lift gate, etc.

Compliance with RoHS Directive

SPECIFICATIONS

Contact

		Standard type	High capacity type
Arrangement		1 Form A, 1 Form C	
Contact material		Ag alloy (Cadmium free)	
Initial contact resistance (By voltage drop 6 V DC 1 A)		*Max. 100 mΩ	*Max. 100 mΩ
Contact voltage drop		Max. 0.2 V DC (at 10 A 12 V DC)	
Rating	Nominal switching capacity	10 A 16 V DC (resistive)	15 A 16 V DC (resistive)
	Max. carrying current	25 A (at 20°C 68°F for 2 minutes) 15 A (at 20°C 68°F for 1 hour) 20 A (at 85°C 185°F for 2 minutes) 10 A (at 85°C 185°F for 1 hour)	
	Max. switching power	160 W	
	Max. switching voltage	16 V DC	
	Max. switching current	10 A	15 A (10 A max. at 85°C)
	Min. switching capacity#1	1 A 12 V DC	
Expected life (min. ope.)	Mechanical life (at 180 cpm)	10 ⁷	
	Electrical (at 15 cpm)	Resistive 10 ⁵	N.O.: 10 ⁵ N.C.: 5×10 ⁴

* Measured after operating 5 times at the rated load

Coil

Nominal operating power	640 mW
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Contact rating

Load	Standard type			High capacity type		
	Form A	Form C		Form A	Form C	
		N.O.	N.C.		N.O.	N.C.
Max. carry current	15 A	15 A	15 A	15 A	15 A	15 A
Max. make current	25 A	25 A	10 A	50 A	50 A	15 A
Max. break current	10 A	10 A	10 A	15 A	15 A	15 A

Characteristics

Max. operating speed (at rated load)		15 cps.	
Initial insulation resistance*1		Min. 100 MΩ (at 500 V DC)	
Initial breakdown voltage*2	Between open contacts	750 Vrms for 1 min.	
	Between contacts and coil	1,500 Vrms for 1 min.	
Operate time*3 (at nominal voltage)		Max. 10 ms	
Release time (without diode)*3 (at nominal voltage)		Max. 10 ms	
Shock resistance	Functional*4	Min. 98 m/s ² {10 G}	
	Destructive*5	Min. 980 m/s ² {100 G}	
Vibration resistance	Functional*6	10 Hz to 55 Hz at double amplitude of 1.6 mm	
	Destructive	10 Hz to 55 Hz at double amplitude of 2 mm	
Conditions for operation, transport and storage*7 (Not freezing and condensing at low temperature)		Ambient temp.	-40°C to +85°C -40°F to +185°F
		Humidity	5% R.H. to 85% R.H.
Mass		Approx. 12 g .423 oz	

#1 This value can change due to the switching frequency, environmental conditions, and desired reliability level, therefore it is recommended to check this with the actual load.

Remarks

*1 Measurement at same location as "Initial breakdown voltage" section

*2 Detection current: 10mA

*3 Excluding contact bounce time

*4 Half-wave pulse of sine wave: 11ms; detection time: 10μs

*5 Half-wave pulse of sine wave: 6ms

*6 Detection time: 10μs

*7 Refer to Conditions for operation, transport and storage mentioned in AMBIENT ENVIRONMENT

ORDERING INFORMATION

Ex. JSM — 12V —

Contact arrangement	Protective construction	Coil voltage (DC)	Contact material
1a: 1 Form A 1: 1 Form C	Nil: Sealed construction F: Flux-resistant type	12 V	4: Standard type (10 A) 5: High capacity type (15 A)

Note: Standard packing: Carton: 100 pcs. Case: 500 pcs.

JS-M

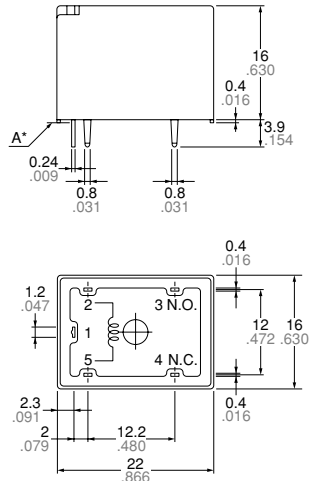
TYPES AND COIL DATA (at 20°C 68°F)

Contact arrangement	Coil voltage, V DC	Standard type (10 A)		High capacity type (15 A)		Nominal voltage, V DC	Pick-up voltage, V DC	Drop-out voltage, V DC	Coil resistance Ω	Nominal operating current, mA	Nominal operating power, mW	Max. allowable voltage, V DC (at 80°C 176°F)
		Sealed type	Flux-resistant type	Sealed type	Flux-resistant type							
1 Form A	12	JSM1a-12V-4	JSM1aF-12V-4	JSM1a-12V-5	JSM1aF-12V-5	12	Max. 6.3	Min. 0.9	225±10%	53.3±10%	640	10 to 16
1 Form C	12	JSM1-12V-4	JSM1F-12V-4	JSM1-12V-5	JSM1F-12V-5	12	Max. 6.3	Min. 0.9	225±10%	53.3±10%	640	10 to 16

* Other pick-up voltage types are also available. Please contact us for details.

DIMENSIONS

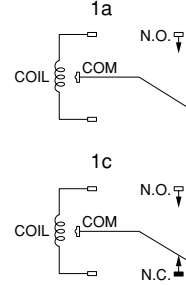
mm inch



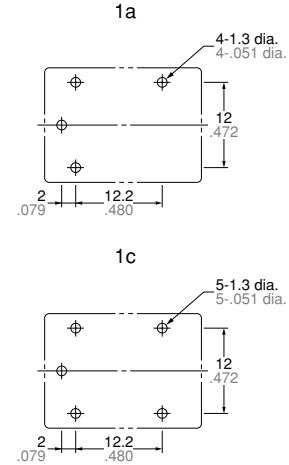
Dimension:
 Max. 1mm .039 inch: $\pm 0.1 \pm 0.04$
 1 to 3mm .039 to .118 inch: $\pm 0.2 \pm 0.08$
 Min. 3mm .118 inch: $\pm 0.3 \pm 0.12$

General tolerance
 $\pm 0.1 \pm 0.04$

Schematic (Bottom view)



PC board pattern (Bottom view)



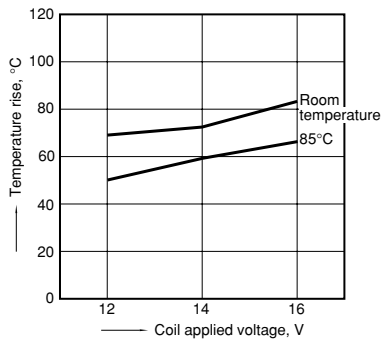
Tolerance: $\pm 0.1 \pm 0.04$

* Dimensions (thickness and width) of terminal specified in this catalog is measured before pre-soldering. Intervals between terminals is measured at A surface level.

REFERENCE DATA

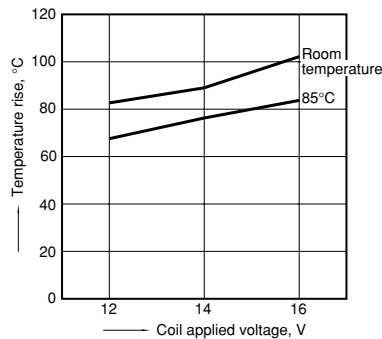
1-(1). Coil temperature rise (10A)

Measured portion: Inside the coil
 Contact carrying current, 10A
 Ambient temperature: Room temperature, 85°C
 185°F

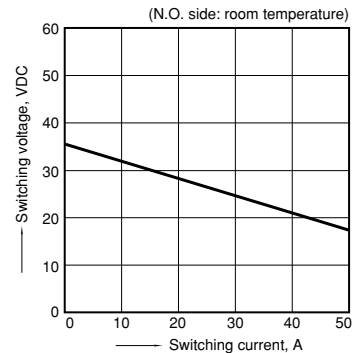


1-(2). Coil temperature rise (15A)

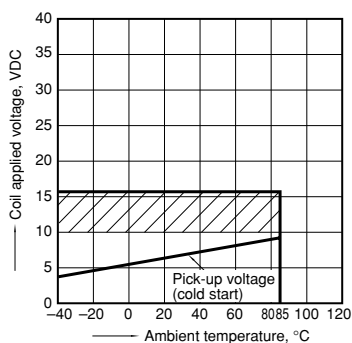
Measured portion: Inside the coil
 Contact carrying current, 15A
 Ambient temperature: Room temperature, 85°C
 185°F



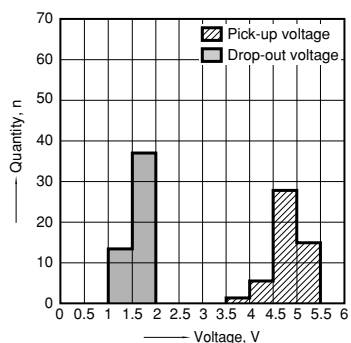
2. Max. switching capability (Resistive load, initial)



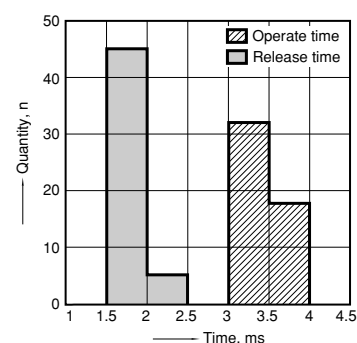
3. Ambient temperature and operating voltage range



4. Distribution of pick-up and drop-out voltage
Sample: JSM1-12V-5, 50pcs.



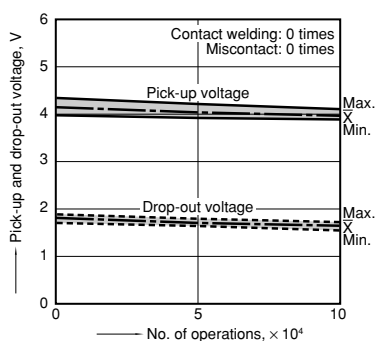
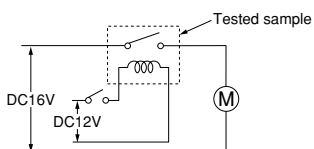
5. Distribution of operate and release time
Sample: JSM1-12V-5, 50pcs.
Coil both side without diode



6-(1). Electrical life test (Motor load)

Sample: JSM1-12V-5, 3pcs.
Load: 50A (Inrush), 10A 16V DC (Steady)
Switching frequency: (ON : OFF = 1s : 9s)

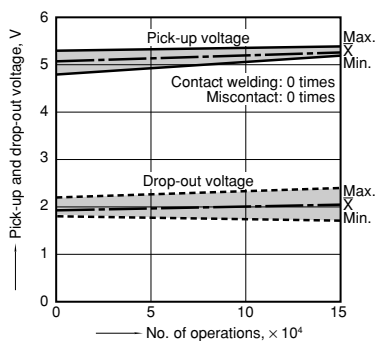
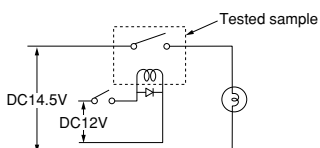
Circuit :



6-(2). Electrical life test (Lamp load)

Sample: JSM1-12V-5, 4pcs.
Load: 55.2A (Inrush), 9.6A 14.5V DC (Steady)
Switching frequency: (ON : OFF = 1s : 3s)

Circuit :



For Cautions for Use, see Relay Technical Information.