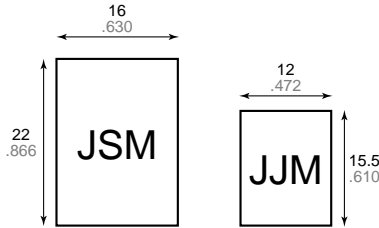


mm inch

• **Compact (half-size).**

The base area is approximately half the size of conventional (JSM) relays. The controller unit can be made more compact.



Base area has been reduced by one half

• **Perfect for automobile electrical systems.**

Over  $2 \times 10^5$  openings possible with a 14 V DC motor load, an inrush current of 25 A, and steady state current of 5 A. (N.O. side)

• **Plastic sealed type.**

Plastically sealed for automatic cleaning.

## SPECIFICATIONS

### Contact

Arrangement	1 Form A	1 Form C	
Contact material	Silver alloy		
Initial contact resistance, max. (By voltage drop 6V DC 1A)	100 mΩ		
Rating (resistive load)	Nominal switching capacity	5 A 14 V DC    5 A 14 V DC (N.O.) 2 A 14 V DC (N.C.)	
	Max. switching power	400 W	
	Max. switching voltage	16 V DC	
	Max. switching current	25 A *1	
Expected life (min. operations)	Mechanical (at 120cpm)	10 <sup>6</sup>	
	Electrical (at rated load)	Resistive	2×10 <sup>5</sup> *1    2×10 <sup>5</sup> (N.O.)*2 2×10 <sup>5</sup> (N.C.)*3
		Motor load	2×10 <sup>5</sup> *4 5×10 <sup>4</sup> *5    2×10 <sup>5</sup> (N.O.)*6 5×10 <sup>4</sup> (N.O.)*7 2×10 <sup>5</sup> (N.C.)*8
Coil			
Nominal operating power	640 mW		

\*1 For 1 minute, coil applied, voltage: 12V, at 20°C 68°F

**Remarks;**

- \*1 at 5 A 14 V DC, at 20 cpm
- \*2 at 5 A 14 V DC
- \*3 at 2 A 14 V DC, at 20 cpm
- \*4 at 5 A (steady), 25 A (inrush) 14 V DC
- \*5 at 20 A 14 V DC (Motor lock), operating frequency: 0.5 s ON, 9.5 s OFF
- \*6 at 5A (steady), 25 A (inrush) 14 V DC
- \*7 at 20 A 14 V DC (Motor lock)
- \*8 at peak 20 A 14 V DC (Braking current) operating frequency: 0.5 s ON, 9.5 s OFF

### Characteristics

Max. operating speed (at rated load)	20 cpm	
Initial insulation resistance*9	Min. 100 MΩ (at 500 V DC)	
Initial breakdown voltage*10	Between open contacts	500 Vrms for 1min.
	Between contact and coil	500 Vrms for 1min.
Operate time*11 (at nominal voltage)	Max. 10 ms (at 20°C 68°F)	
Release time (without diode)*11 (at nominal voltage)	Max. 10 ms (at 20°C 68°F)	
Temperature rise	Max. 70°C*12	
Shock resistance	Functional*13	Min. 100 m/s <sup>2</sup> {10 G}
	Destructive*14	Min. 1,000 m/s <sup>2</sup> {100 G}
Vibration resistance	Functional*15	10 to 100 Hz, Min. 44.1 m/s <sup>2</sup> {4.5 G}
	Destructive	10 to 100 Hz, Min. 44.1 m/s <sup>2</sup> {4.5 G}
Conditions in case of operation, transport and storage*16 (Not freezing and condensing at low temperature)	Ambient temp.	-40 to +85°C -40 to +185°F
	Humidity	5 to 85% R.H.
Unit weight	Approx. 5 g .176 oz	

\*9 Measurement at same location as "Initial break down voltage" section.

\*10 Detection current: 10mA

\*11 Excluding contact bounce time.

\*12 By resistive method; nominal voltage applied to the coil; contact carrying current: 5A at 85°C 185°F

\*13 Half-wave pulse of sine wave: 11 ms; detection time: 10 μs

\*14 Half-wave pulse of sine wave: 6 ms

\*15 Detection time: 10 μs

\*16 Refer to 5. Conditions for operation, transport and storage mentioned in AMBIENT ENVIRONMENT (Page 49)

## TYPICAL APPLICATIONS

• **Auto motive**

Power windows, auto door lock, electrically powered sun roof, electrically powered mirror, cornering lamp.

## ORDERING INFORMATIONS

Ex. JJM

1a

12 V

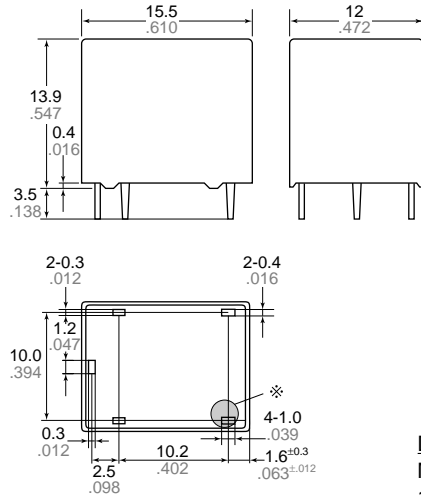
Contact arrangement	Coil voltage(DC)
1a: 1 Form A 1: 1 Form C	12 V

(Note) Standard packing: Carton: 50 pcs.; Case: 1,000 pcs.

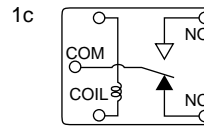
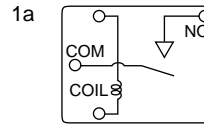
# TYPES AND COIL DATA

Contact arrangement	Part No.	Nominal voltage, V DC	Pick-up voltage, V DC (max.) (at 20°C 68°F)	Drop-out voltage, V DC (min.) (at 20°C 68°F)	Coil resistance $\Omega$ ( $\pm 10\%$ )	Nominal operating current mA ( $\pm 10\%$ ) (at 20°C 68°F)	Nominal operating power mW (at 20°C 68°F)	Max. allowable voltage V DC (at 85°C 185°F)
1 Form A	JJM1a-12 V	12	(Initial) 7.2	(Initial) 1.0	225	53.3	640	10 to 16
1 Form C	JJM1-12 V	12	(Initial) 7.2	(Initial) 1.0	225	53.3	640	10 to 16

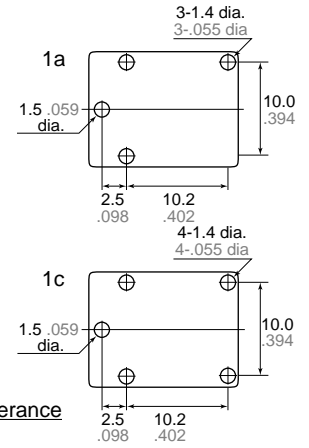
## DIMENSIONS



Schematic (Bottom view)



PC board pattern (Bottom view)



**Dimension**  
 Max. 1mm .039 inch:  
 1 to 3mm .039 to .118 inch:  
 Min. 3mm .118 inch:

**General tolerance**  
 $\pm 0.1 \pm 0.04$   
 $\pm 0.2 \pm 0.08$   
 $\pm 0.3 \pm 0.12$

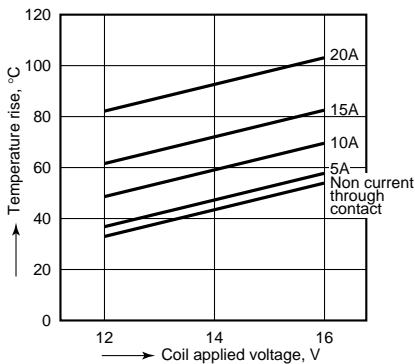
Note : \*Marked terminal is only for 1Form C type

Tolerance :  $\pm 0.1 \pm 0.04$

## REFERENCE DATA

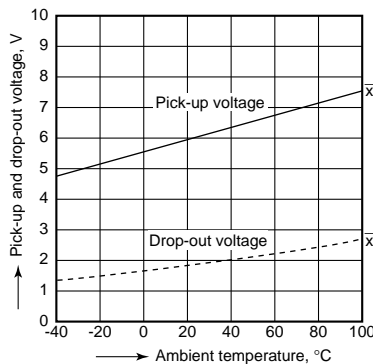
### 1. Coil temperature rise

Tested sample : JJM1-12V, 6pcs  
 Point measured : Inside the coil  
 Contact current : Now current through contact, 5A, 10A, 15A, 20A  
 Resistance method, ambient temperature 85°C  
 185°C



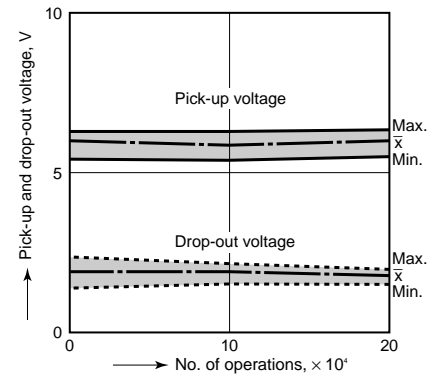
### 2. Ambient temperature characteristics

Tested sample : JJM1-12V, 5pcs



### 3-(1). Electrical life test (at rated load)

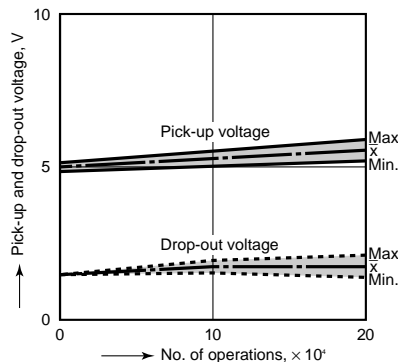
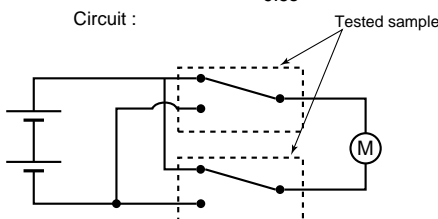
Tested Sample : JJM1-12V  
 Quantity : n = 6 (NC = 3, NO = 3)  
 Load : Resistive load (NC side : 2A 14 V DC, NO side : 5 A 14 V DC)  
 Operating frequency : ON 1.5s, OFF 1.5s  
 Contact welding : 0 time  
 Miscontact : 0 time



### 3-(2). Electrical life test (Motor free)

Tested Sample : JJM1-12V, 2pcs.  
 Load : 5A, Inrush 25A, Brake current 18A, Power window motor load (Free condition).  
 Operating frequency : ON 0.5s, OFF 9.5s

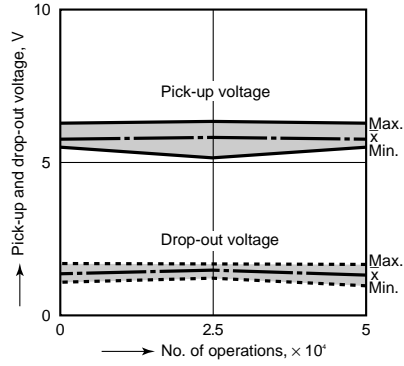
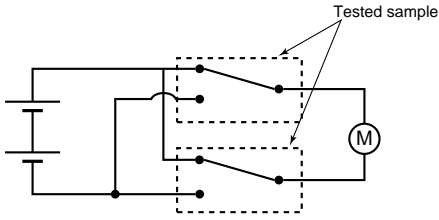
Circuit :



Contact welding : 0 time  
 Miscontact : 0 time

## 3-(3). Electrical life test (Motor lock)

Tested sample : JJM1-12V, 6pcs.  
 Load : 20A, 14VDC, Power window motor load (lock condition).  
 Operating frequency : ON 1s, OFF 5s  
 Circuit :



## NOTE

### Soldering

We recommend the following soldering conditions.

#### 1) Automatic soldering

- \* Preheating: 100°C 212°F, within 2 mins (PC board solder surface)
- \* Soldering: 260°C 500°F, within 5 secs

#### 2) Hand soldering

- \* Iron tip temperature: 280 to 300°C  
536 to 571°F
- \* Soldering iron: 30 to 60W
- \* Soldering time: Within 5 secs