

mm inch

### FEATURES

- Miniature size with universal terminal footprint
- High contact capacity: 10 A
- Class B coil insulation type available
- TV-5 type available (Standard type)
  - 1 Form A type → TV-5
  - 1 Form C type → TV-5 (N.O. side only)
- VDE, TÜV also approved
- Sealed construction for automatic cleaning (Standard type)

### COMMENTS ABOUT Cd FREE

We have introduced Cadmium free type products to reduce the material which is not good for our environment. (The suffix "F" should be added to the part number.) If you are still using Cadmium containing parts, which don't have "F" on the suffix of the part number, please use Cadmium free parts from now on. The life of the Cadmium free parts may be shorter than the Cadmium containing parts based on the load condition, so please evaluate the Cadmium free parts with your actual application before use.

RoHS Directive compatibility information  
<http://www.nais-e.com/>

## SPECIFICATIONS

### Contact

Types		Standard type	High power type
Arrangement		1 Form A, 1 Form C	1 Form A
Initial contact resistance, max. (By voltage drop 6 V DC 1 A)		100 mΩ	
Contact material		AgSnO <sub>2</sub> type	
Rating (resistive load)	Nominal switching capacity	10 A 250 V AC 10 A 125 V AC 6 A 277 V AC	10 A 250 V AC 10 A 125 V AC 10 A 277 V AC
	Max. switching power	2,500 VA	
	Max. switching voltage	250 V AC, 100 V DC	
	Max. switching current	10 A (AC), 5 A (DC)	
	Min. switching capacity <sup>#1</sup>	100 mA, 5 V DC	
Mechanical (at 180 cpm)		10 <sup>7</sup>	
Expected life (min. ope.)	Electrical at 10 A 125 V AC, 6 A 277 V AC resistive (standard) 10 A 277 V AC resistive (High power)	10 <sup>5</sup>	2×10 <sup>5</sup>
	10 A 250 V AC resistive (Standard: at 20 cpm) (High power: at 20 cpm, 105°C 221°F)**	5 × 10 <sup>4</sup> (No contact only)	1.5 × 10 <sup>5</sup>

\*\* Holding voltage should be 60% V of nominal voltage

### Coil

Nominal operating power	360 mW
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#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 Detection current: 10mA

\*2 Excluding contact bounce time

\*3 Half-wave pulse of sine wave: 11ms; detection time: 10μs

### Characteristics

Max. operating speed		20 cpm	
Types		Standard type	High power type
Initial insulation resistance		Min. 100 MΩ (at 500 V DC)	
Initial breakdown voltage*1	Between open contacts	750 Vrms for 1 min.	
	Between contacts and coil	1,500 Vrms for 1 min.	
Operate time*2 (at nominal voltage)		Max. 10 ms	
Release time(without diode)*2 (at nominal voltage)		Max. 10 ms	
Temperature rise (at nominal voltage)		Max. 35°C, resistive, nominal voltage applied to coil. Contact carrying current: 10A, at 85°C 185°F	
Shock resistance	Functional*3	Min. 98 m/s <sup>2</sup> {10 G}	
	Destructive*4	Min. 980 m/s <sup>2</sup> {100 G}	
Vibration resistance	Functional*5	Approx. 98 m/s <sup>2</sup> {10 G}, 10 to 55 Hz at double amplitude of 1.6 mm	
	Destructive	Approx. 117.6 m/s <sup>2</sup> {12 G}, 10 to 55 Hz at double amplitude of 2 mm	
Conditions for operation, transport and storage*6 (Not freezing and condensing at low temperature)	Ambient temp.*7	-40°C to +85°C -40°F to +185°F	-40°C to +105°C -40°F to +221°F
	Humidity	5 to 85% R.H.	
Unit weight		Approx. 12 g .423 oz	

\*4 Half-wave pulse of sine wave: 6ms

\*5 Detection time: 10μs

\*6 Refer to 6. Conditions for operation, transport and storage mentioned in AMBIENT ENVIRONMENT.

\*7 When using relays in a high ambient temperature, consider the pick-up voltage rise due to the high temperature (a rise of approx. 0.4% V for each 1°C 33.8°F with 20°C 68°F as a reference) and use a coil impressed voltage that is within the maximum allowable voltage range.

## TYPICAL APPLICATIONS

1. Home appliances  
Air conditioner, heater, etc.
2. Automotive  
Power-window, car antenna, door-lock, etc.
3. Office machines  
PPC, facsimile, etc.
4. Vending machines

## ORDERING INFORMATION

Ex. JS 1a — F — B — 12V — F

Contact arrangement	Protective construction	Coil insulation class	Coil voltage (DC)	Contact material
1: 1 Form C (Standard) 1a: 1 Form A (Standard) 1aP: 1 Form A (High Power)	Nil: Sealed type F: Flux-resistant type	Nil: Class E insulation B: Class B insulation	5, 6, 9, 12, 18, 24, 48 V	F: AgSnO <sub>2</sub> type

UL/CSA, VDE, TÜV (Standard type only) approved type is standard.

Notes: 1. Standard packing: Carton: 100 pcs. Case: 500 pcs.

2. When ordering TV rated (TV-5) types, add suffix -TV.

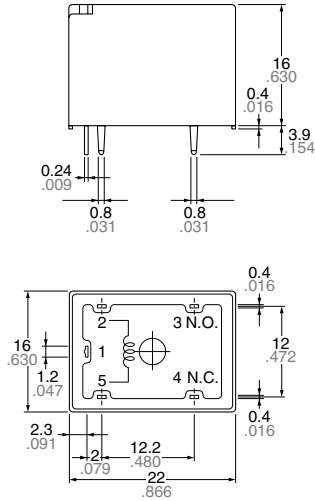
3. Contact arrangement 1aP type is Flux-resistant type only (class B or class F insulation). Please consult us for coil insulation class F.

4. Please inquire about the previous products (Cadmium containing parts).

## COIL DATA

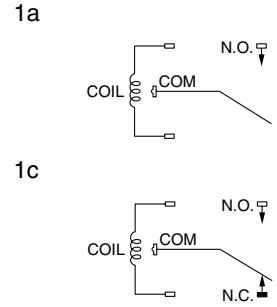
Part No.					Nominal voltage, V DC	Pick-up voltage, V DC (max.) (at 20°C 68°F)	Drop-out voltage, V DC (min.) (at 20°C 68°F)	Coil resistance, Ω (±10%) (at 20°C 68°F)	Nominal operating current, mA (±10%) (at 20°C 68°F)	Nominal operating power, mW (at 20°C 68°F)	Max. allowable voltage (at 85°C 185°F)
Standard type				High Power type							
Sealed type		Flux-resistant type		Flux-resistant type							
1 Form A	1 Form C	1 Form A	1 Form C	1 Form A							
JS1a-5V-F	JS1-5V-F	JS1aF-5V-F	JS1F-5V-F	JS1aPF-B-5V-F	5	3.5	0.5	69.4	72	360	130%V of nominal voltage
JS1a-6V-F	JS1-6V-F	JS1aF-6V-F	JS1F-6V-F	JS1aPF-B-6V-F	6	4.2	0.6	100	60		
JS1a-9V-F	JS1-9V-F	JS1aF-9V-F	JS1F-9V-F	JS1aPF-B-9V-F	9	6.3	0.9	225	40		
JS1a-12V-F	JS1-12V-F	JS1aF-12V-F	JS1F-12V-F	JS1aPF-B-12V-F	12	8.4	1.2	400	30		
JS1a-18V-F	JS1-18V-F	JS1aF-18V-F	JS1F-18V-F	JS1aPF-B-18V-F	18	12.6	1.8	900	20		
JS1a-24V-F	JS1-24V-F	JS1aF-24V-F	JS1F-24V-F	JS1aPF-B-24V-F	24	16.8	2.4	1,600	15		
JS1a-48V-F	JS1-48V-F	JS1aF-48V-F	JS1F-48V-F	JS1aPF-B-48V-F	48	33.6	4.8	6,400	7.5		

# DIMENSIONS

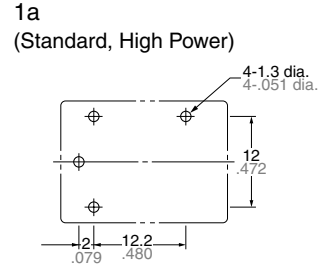


Note: Terminal No. 4 is only for Standard 1 Form C type  
 General tolerance:  $\pm 0.3 \pm .012$

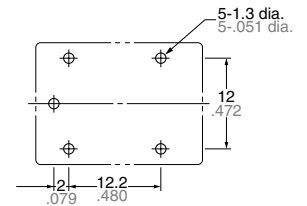
## Schematic (Bottom view)



## PC board pattern (Bottom view)



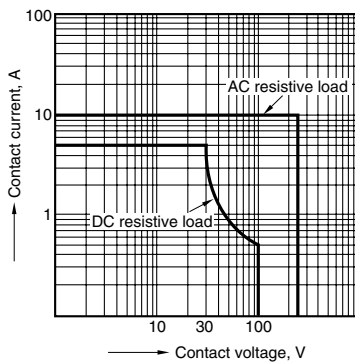
## 1c (Standard)



Tolerance:  $\pm 0.1 \pm .004$

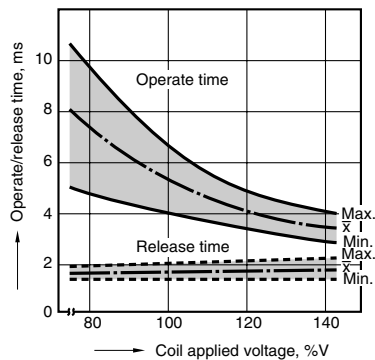
# REFERENCE DATA

## 1. Maximum value for switching capacity



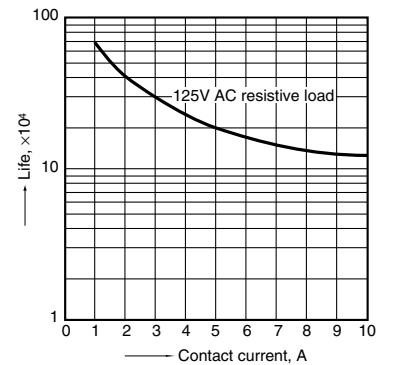
## 2. Operate/release time

Sample: 25 pcs., JS1-12V-F

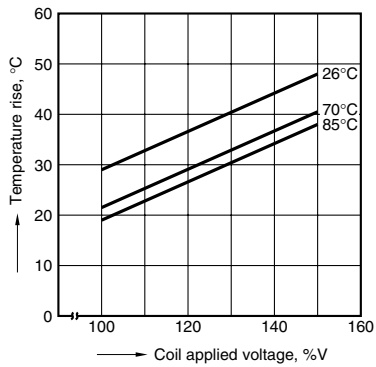


## 3. Life curve

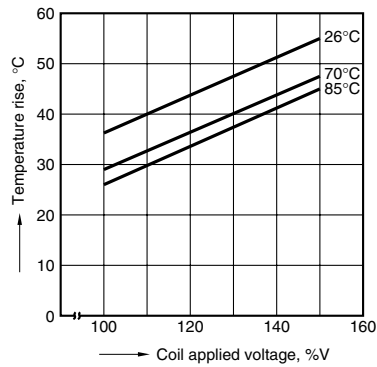
Ambient temperature: Room temperature



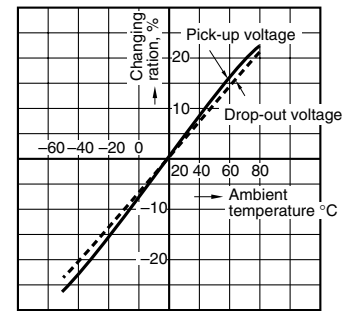
4-(1). Coil temperature rise  
 Sample: 5 pcs., JS1a-24V-F  
 Measured portion: Inside the coil  
 Contact current: 5 A



4-(2). Coil temperature rise  
 Sample: 5 pcs., JS1a-24V-F  
 Measured portion: Inside the coil  
 Contact current: 10 A



5. Ambient temperature characteristics  
 Sample: 6 pcs., JS1-12V-F



**For Cautions for Use, see Relay Technical Information .**