

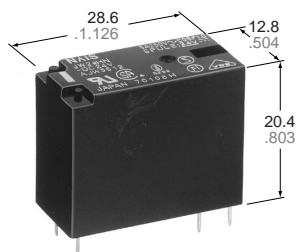
# NAIS

## COMPACT PC BOARD POWER RELAY

# JW-RELAYS

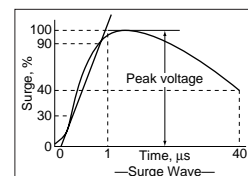
**UL File No.: E43028**

**CSA File No.: LR26550**



mm inch

- Miniature package with universal terminal footprint
- High dielectric withstanding for transient protection:  
**10,000 V surge in ms between coil and contact**
- Sealed construction
- Class B coil insulation types available
- TV rated types available (only for 1 Form A type)
- VDE application standards;



	VDE0435	VDE0631	VDE0700
1 Form A			
1 Form C	Approved	Approved	Approved
2 Form A			
2 Form C	Approved	—	—

## SPECIFICATIONS

Contact		Standard type	High capacity type
Arrangement		1 Form A, 1 Form C, 2 Form A, 2 Form C	1 Form A, 1 Form C
Initial contact resistance, max. (By voltage drop 6 V DC 1 A)		100 mΩ	
Contact material		Silver alloy	
Rating (resistive load)	Nominal switching capacity	5 A 250 V AC, 5 A 30 V DC	10 A 250 V AC, 10 A 30 V DC
	Max. switching power	1,250 VA, 150 W	2,500 VA, 300 W
	Max. switching voltage	250 V AC, 30 V DC	
	Max. switching current	5 A	10 A
UL/CSA rating		5 A 125, 277 V AC 5 A 30 V DC 1/8 HP 125, 250 V AC	10 A 125, 277 V AC 10 A 30 V DC 1/3 HP 125, 250 V AC
SEMKO rating		5 A 250 V AC (cosφ = 1.0) 3 A 250 V AC (cosφ = 0.4) 5 A 30 V DC	10 A 250 V AC (cosφ = 1.0) 7 A 250 V AC (cosφ = 0.4) 10 A 30 V DC
VDE rating		5 A 250 V ~ (cosφ = 1.0) 3 A 250 V ~ (cosφ = 0.4) 5 A 30 V DC	10 A 250 V ~ (cosφ = 1.0) 7 A 250 V ~ (cosφ = 0.4) 10 A 30 V DC
Expected life (min. ope.)	Mechanical (at 180 cpm)	5×10 <sup>6</sup>	
	Electrical (at 20 cpm) (Resistive load)	10 <sup>5</sup>	

Coil		Nominal operating power
		530 mW

### Remarks

- \*1 Detection current: 10mA
- \*2 Wave is standard shock voltage of ±1.2 × 50μs according to JEC-212-1981
- \*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 5. Conditions for operation, transport and storage mentioned in AMBIENT ENVIRONMENT (Page 49)

Characteristics		Standard type	High capacity type
Max. operating speed (at rated load)		20 cpm	
Initial insulation resistance		Min. 1,000 MΩ at 500 V DC	
Initial breakdown voltage*1	Between open contacts	1,000 Vrms for 1 min.	
	Between contacts and coil	5,000 Vrms for 1 min.	
	Between contact sets	3,000 Vrms for 1 min. (2 Form A, 2 Form C)	
Surge voltage between contacts and coil*2		Min. 10,000 V	
Operate time*3 (at nominal voltage)		Max. 15 ms	
Release time(without diode)*3 (at nominal voltage)		Max. 5 ms	
Temperature rise (at nominal voltage) (with nominal coil voltage and at nominal switching capacity)		1a: max. 39°C 1c, 2a, 2c: max. 55°C	1a: max. 45°C 1c: max. 55°C
Shock resistance	Functional*4	Min. 98 m/s <sup>2</sup> {10 G}	
	Destructive*5	Min. 980 m/s <sup>2</sup> {100 G}	
Vibration resistance	Functional*6	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 2.0 mm	
Conditions for operation, transport and storage*7 (Not freezing and condens- ing at low temperature)	Ambient temp.	-40°C to +60°C -40°F to +140°F	
	Humidity	5 to 85% R.H.	
Unit weight		Approx. 13 g .46 oz	

## TYPICAL APPLICATION

- |   |  |   |
|---|--|---|
| 1. Home appliances<br>TV sets, VCR, Microwave ovens | 2. Office machines<br>Photocopiers, Vending machines | 3. Industrial equipment<br>NC machines, Robots, Temperature controllers |
|---|--|---|

## ORDERING INFORMATION

Contact arrangement	Contact capacity	Protective construction	Pick-up voltage	Coil insulation class	Coil voltage
1: 1 Form C 1a: 1 Form A 2: 2 Form C 2a: 2 Form A	Nil: Standard (5 A) F: High capacity (10 A)*	S: Sealed type	N: 70% of nominal voltage	Nil: Class A insulation B: Class B insulation	DC 5, 6, 9, 12, 18, 24, 48 V

\*Only for 1 Form A and 1 Form C type

- Notes: 1. When ordering TV rated (TV-5) types, add suffix-TV (available only for 1 Form A type).  
2. Standard packing: Carton: 100 pcs. Case: 500 pcs.

**TYPES**

Standard (5A) types

Contact arrangement	Coil voltage, V DC	Part No.	Contact arrangement	Coil voltage, V DC	Part No.
1 Form A	5	JW1aSN-DC5V	2 Form A	5	JW2aSN-DC5V
	6	JW1aSN-DC6V		6	JW2aSN-DC6V
	9	JW1aSN-DC9V		9	JW2aSN-DC9V
	12	JW1aSN-DC12V		12	JW2aSN-DC12V
	18	JW1aSN-DC18V		18	JW2aSN-DC18V
	24	JW1aSN-DC24V		24	JW2aSN-DC24V
1 Form C	48	JW1aSN-DC48V	2 Form C	48	JW2aSN-DC48V
	5	JW1SN-DC5V		5	JW2SN-DC5V
	6	JW1SN-DC6V		6	JW2SN-DC6V
	9	JW1SN-DC9V		9	JW2SN-DC9V
	12	JW1SN-DC12V		12	JW2SN-DC12V
	18	JW1SN-DC18V		18	JW2SN-DC18V
24	JW1SN-DC24V	24	JW2SN-DC24V		
48	JW1SN-DC48V	48	JW2SN-DC48V		

High capacity (10 A) types

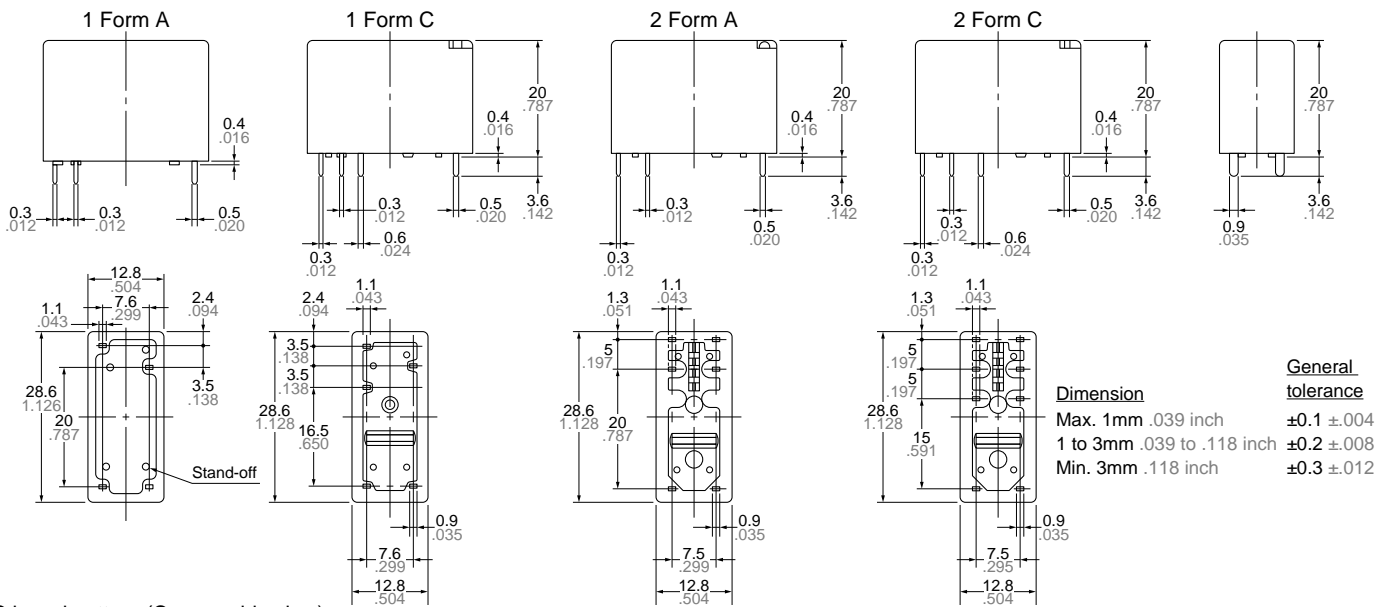
Contact arrangement	Coil voltage, V DC	Part No.	Contact arrangement	Coil voltage, V DC	Part No.
1 Form A	5	JW1aFSN-DC5V	1 Form C	5	JW1FSN-DC5V
	6	JW1aFSN-DC6V		6	JW1FSN-DC6V
	9	JW1aFSN-DC9V		9	JW1FSN-DC9V
	12	JW1aFSN-DC12V		12	JW1FSN-DC12V
	18	JW1aFSN-DC18V		18	JW1FSN-DC18V
	24	JW1aFSN-DC24V		24	JW1FSN-DC24V
48	JW1aFSN-DC48V	48	JW1FSN-DC48V		

**COIL DATA** (at 20°C 68°F)

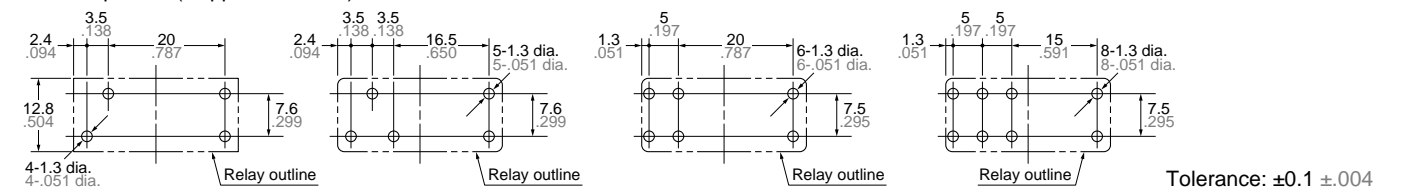
Nominal voltage, V DC	Pick-up voltage, V DC (max.)	Drop-out voltage, V DC (min.)	Nominal operating current, mA (±10%)	Coil resistance, Ω (±10%)	Nominal operating power, mW	Max. allowable voltage, (at 60°C 140°F)
5	3.5	0.5	106	47	530	6.5
6	4.2	0.6	88	68		7.8
9	6.3	0.9	58	155		11.7
12	8.4	1.2	44	270		15.6
18	12.6	1.8	29	611		23.4
24	16.8	2.4	22	1,100		31.2
48	33.6	4.8	11	4,400		62.4

**DIMENSIONS**

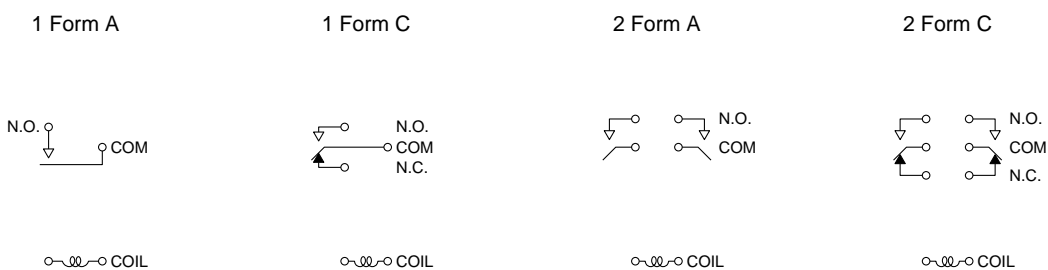
mm inch



PC board pattern (Copper-side view)

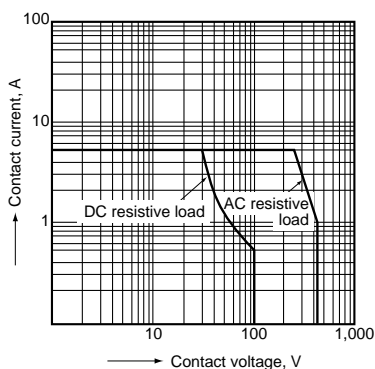


Wiring diagram (Bottom view)

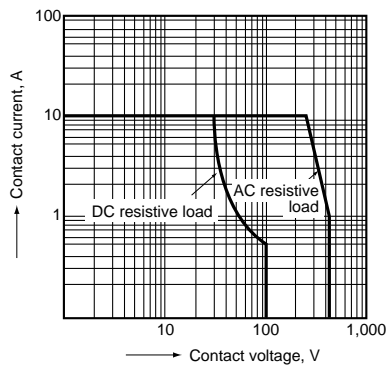


REFERENCE DATA

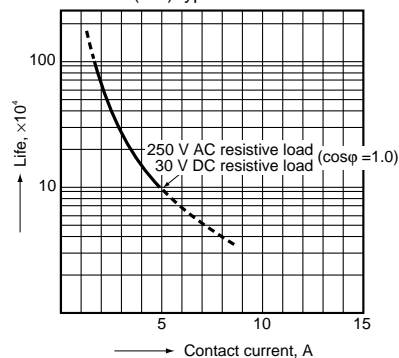
1-(1). Maximum operating power  
1 Form A Standard (5 A) type



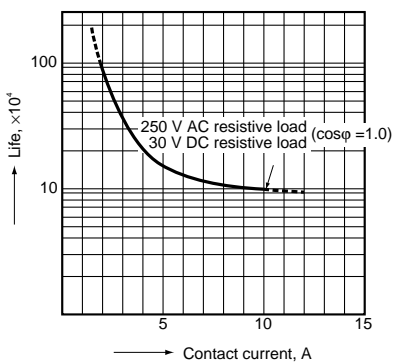
1-(2). Maximum operating power  
1 Form A High Capacity (10 A) type



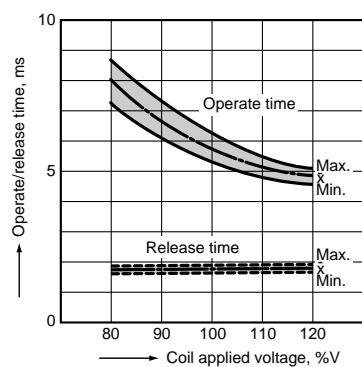
2-(1). Life curve  
1 Form A Standard (5 A) type



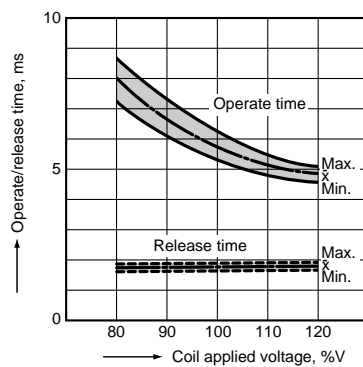
2-(2). Life curve  
1 Form A High Capacity (10 A) type



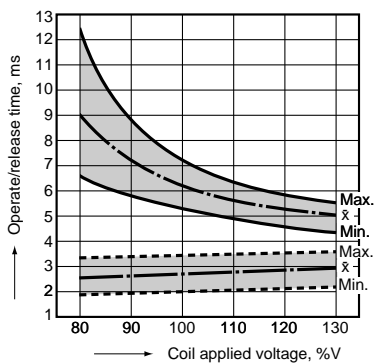
3-(1). Operate/release time  
Sample: JW1aSN-DC12V, 10 pcs.  
Ambient temperature: 20°C 68°F



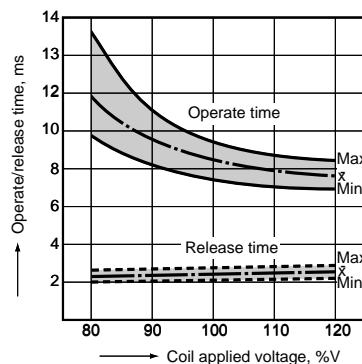
3-(2). Operate/release time  
Sample: JW1aFSN-DC12V, 10 pcs.  
Ambient temperature: 20°C 68°F



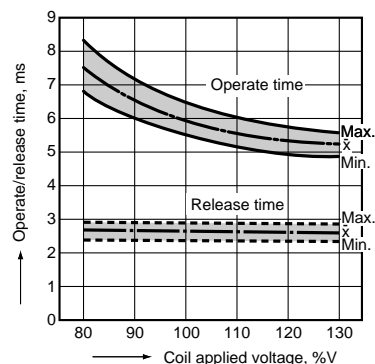
3-(3). Operate/release time  
Sample: JW1SN-DC12V, 6 pcs.  
Ambient temperature: 20°C 68°F



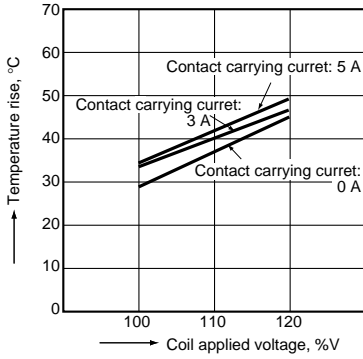
3-(4). Operate/release time  
Sample: JW2aSN-DC24V, 6 pcs.  
Ambient temperature: 20°C 68°F



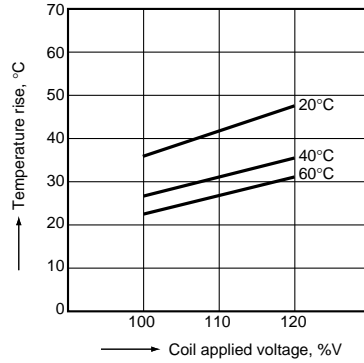
3-(5). Operate/release time  
Sample: JW2SN-DC12V, 6 pcs.  
Ambient temperature: 20°C 68°F



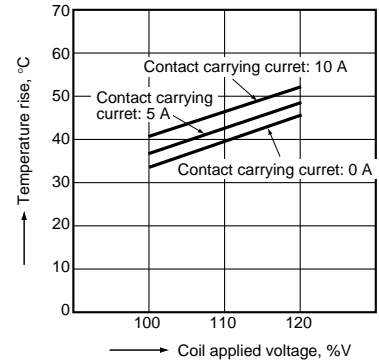
4-(1). Coil temperature rise (at 20°C 68°F)  
 Sample JW1aSN-DC12V, 6 pcs.  
 Point measured: Inside the coil



4-(2). Coil temperature rise (at 20°C 68°F)  
 (Contact carrying current: 5A)  
 Sample JW1aSN-DC12V, 6 pcs.  
 Point measured: Inside the coil



4-(3). Coil temperature rise (at 20°C 68°F)  
 Sample JW1aFSN-DC12V, 6 pcs.  
 Point measured: Inside the coil



4-(4). Coil temperature rise (at 20°C 68°F)  
 (Contact carrying current: 10 A)  
 Sample: JW1aFSN-DC12V, 6 pcs.  
 Point measured: Inside the coil

