

- Low pick-up voltage for high ambient use
- Sealed construction
- Ultra-miniature size with universal footprint
- Usable at high temperature: 85°C 185°F

SPECIFICATIONS

Contact

	Standard	High capacity
Arrangement	1 Form A, 1 Form C	
Contact material	Silver alloy	
Initial contact resistance, max. (By voltage drop 6 V DC 1 A)	200 mΩ	100 mΩ
Initial voltage drop	Max. 0.2 V (at 10 A 12 V DC)	
Rating		
Nominal switching capacity	10 A 16 V DC (resistive) 5 A 16 V DC, Inrush 25 A (motor load)	15 A 16 V DC (resistive) 10 A 16 V DC, Inrush 50 A (motor load)
Max. switching power	160 W	240 W
Max. switching voltage	16 V DC	16 V DC
Max. switching current	10 A	15 A
Expected life (min. ops.) Mechanical: (at 180 cpm)	10 ⁷	
Electrical	Resistive	10 ⁵
	Motor load	N.O.: 10 ⁵ N.C.: 5×10 ⁴
	N.O.: 10 ⁵	N.O.: 10 ⁵

*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 C	Form A	Form C	Form C
Max. carry current	10 A	10 A	10 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.	
Operate time* ¹ (at nominal voltage)	Approx. 10 msec.	
Release time* ¹ (at nominal voltage)	Approx. 10 msec.	
Initial insulation resistance	Min. 100 MΩ (at 500 V DC)	
Initial breakdown voltage Between open contacts Between contacts and coil	750 Vrms for 1 min. 1,000 Vrms for 1 min.	
Ambient temperature	-40°C to +85°C -40°F to +185°F (Not freezing and condensing at low temperature)	
Shock resistance	Functional* ²	Min. 98 m/s ² (10 G)
	Destructive* ³	Min. 980 m/s ² (100 G)
Vibration resistance	Functional* ²	Approx. 98 m/s ² (10 G), 10 to 100 Hz at double amplitude of 1.6 mm
	Destructive* ³	Approx. 117.6 m/s ² (12 G), 10 to 500 Hz at double amplitude of 2 mm
Unit weight	Approx. 12 g .423 oz	

*¹ Excluding contact bounce time

*² Tolerated by relay during service without causing the closed to open for more than the specified time.

*³ Withstood by the relay during shipping, installation or use, without it suffering damage, and without causing a change in its operating characteristics.

TYPICAL APPLICATIONS

- Automotive:
Power-window, car antenna, door lock, intermittent wiper, interior lighting, power seat, power sunroof, car stereo power antenna, etc.

ORDERING INFORMATIONS

Ex. JSM **1a** **F** — **12V** — **4**

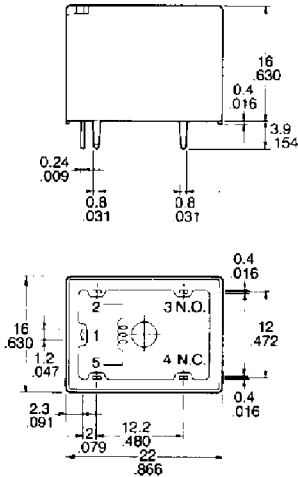
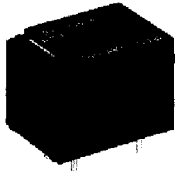
Contact arrangement	Protective construction	Coil voltage (DC)	Contact material
1a: 1 Form A 1: 1 Form C	Nil: Sealed construction F: Flux-resistant type	9, 12 V	4: Standard type (10 A) 5: High capacity type (15 A)

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

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 (max.)	Drop-out voltage, V DC (min.)	Coil resistance, Ω (±10%)	Nominal operating current, mA (±10%)	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	9	JSM1a-9V-4	JSM1aF-9V-4	JSM1a-9V-5	JSM1aF-9V-5	9	4.7	0.7	126	71.4	640	12
	12	JSM1a-12V-4	JSM1aF-12V-4	JSM1a-12V-5	JSM1aF-12V-5	12	6.3	0.9	225	53.3	640	16
1-Form C	9	JSM1-9V-4	JSM1F-9V-4	JSM1-9V-5	JSM1F-9V-5	9	4.7	0.7	126	71.4	640	12
	12	JSM1-12V-4	JSM1F-12V-4	JSM1-12V-5	JSM1F-12V-5	12	6.3	0.9	225	53.3	640	16

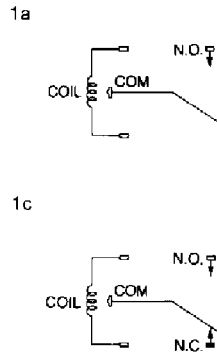
DIMENSIONS



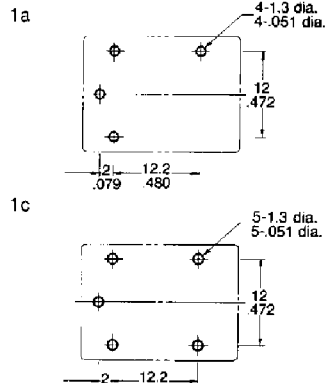
Note: Terminal No. 4 is only for 1-Form C type

General tolerance: ±0.3 ±.012

Schematic (Bottom view)



PC board pattern (Copper-side view)

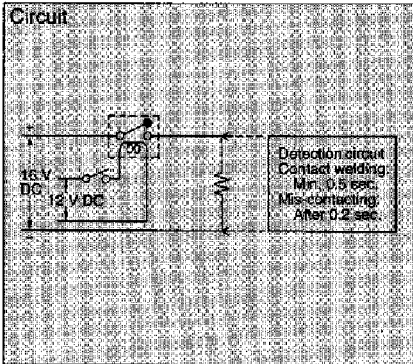


Tolerance: ±0.1 ±.004

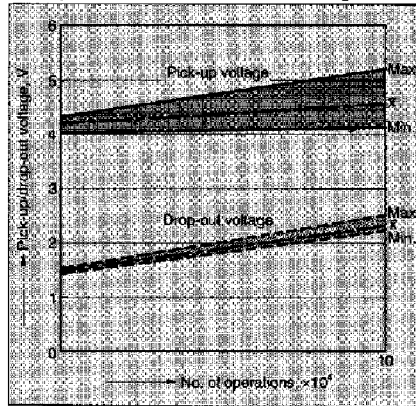
DATA

1-(1) Electrical life test (Resistive)

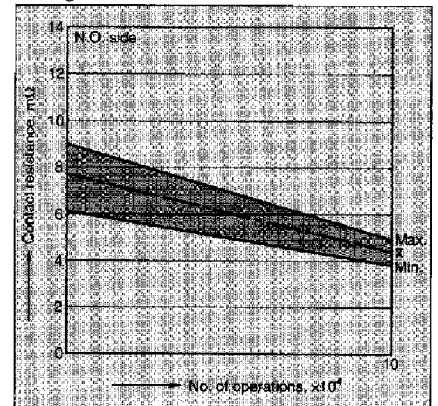
Tested sample: JSM1-12V-4, 3 pcs.
Condition: 10 A 16 V DC resistive load, 20 cpm
Ambient temperature: 25°C 77°F



Change of pick-up and drop-out voltage

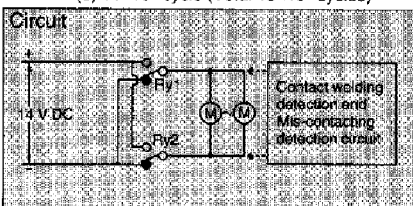


Change of contact resistance

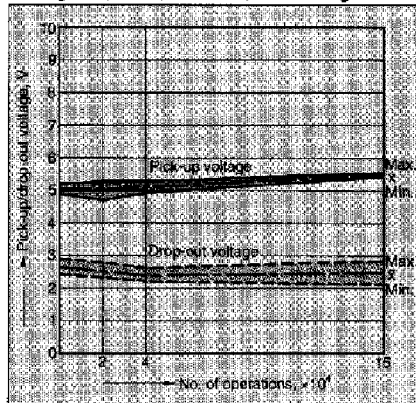


1-(2) Electrical life test (Power window motor load)

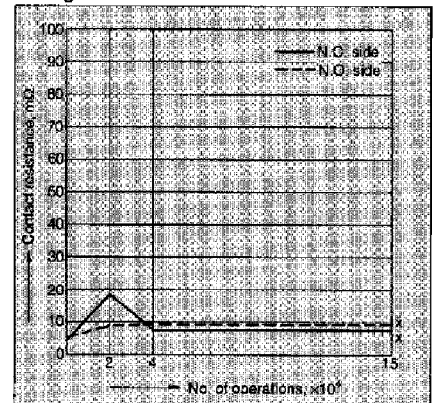
Tested sample: JSM1-12V-4, 4 pcs.
Load: DC 14 V
(1) Max. 14.8 A (Inrush) Max. 14.2 A (Break)
(2) Max. 20.3 A (Inrush) Max. 20.0 A (Break)
(3) Max. 16.2 A (Inrush) Max. 11.6 A (Break)
Switching frequency: 3 cycle/min. (ON:OFF = 1:9 sec.)
Ambient temperature: (1) 85°C 185°F;
(2) -40°C -40°F; (3) 35°C 95°F
Tested cycle: (1) 2x10⁴ cycle → (2) 2x10⁴ cycle → (3) 11x10⁴ cycle (Total 15x10⁴ cycles)



Change of pick-up and drop-out voltage

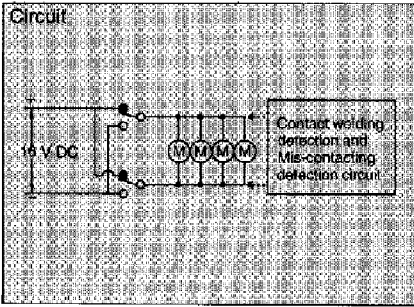


Change of contact resistance

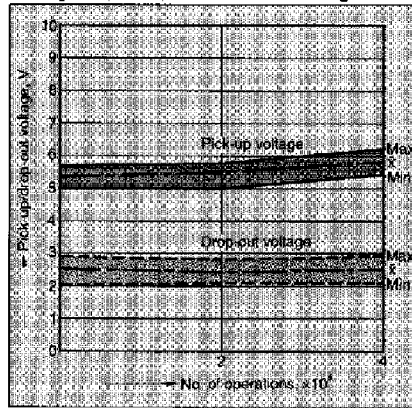


1-(3) Electrical life test (Door lock motor load)

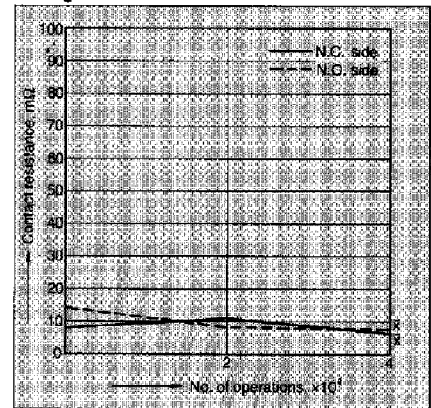
Tested sample: JSM1-12V-4, 10 pcs.
 Load: DC 16 V Max. 17.7 A, Min. 15.2 A
 Switching frequency: 6 cycles/min.
 (ON:OFF = 0.5:0.5 sec.)
 Ambient temperature: 30°C 86°F
 Tested cycle: 4×10^4 cycles



Change of pick-up and drop-out voltage

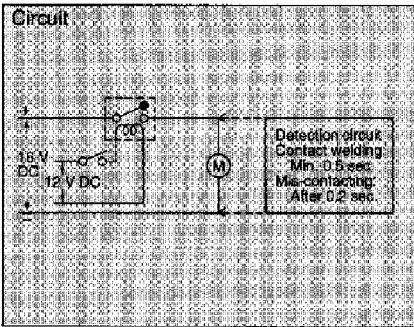


Change of contact resistance

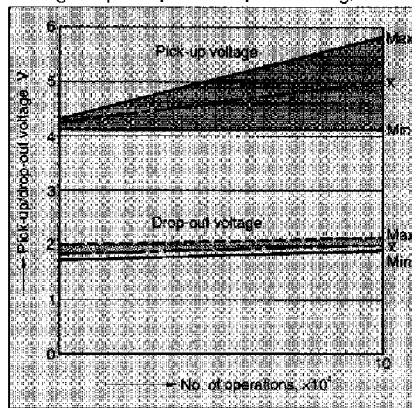


1-(4) Electrical life test

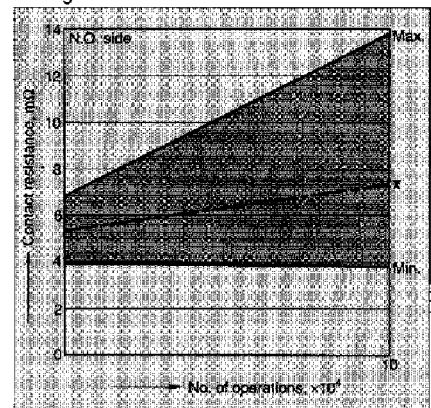
Tested sample: JSM1-12V-4, 3 pcs.
 Load: 16 V DC 25 A/5 A motor load
 Switching frequency: 6 cycles
 (ON:OFF = 1:9 sec.)
 Ambient temperature: 27°C 81°F



Change of pick-up and drop-out voltage

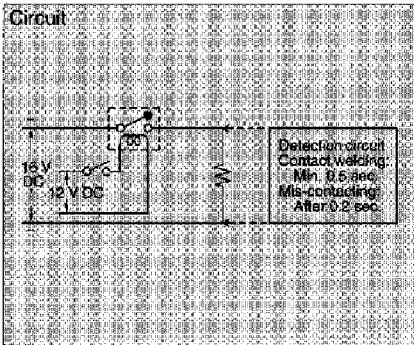


Change of contact resistance

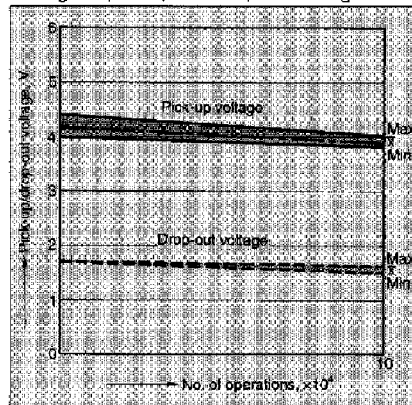


1-(5) Electrical life test

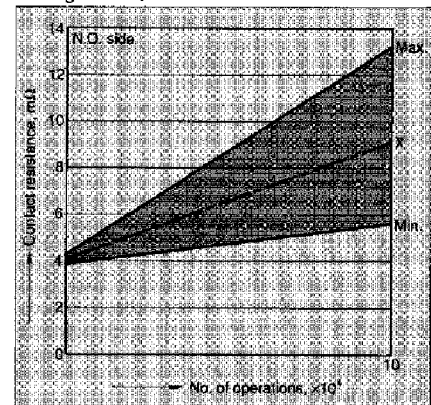
Tested sample: JSM1-12V-5, 4 pcs.
 Load: 16 V DC 15 A (resistive)
 Switching frequency: 20 cpm
 Ambient temperature: 25°C 77°F



Change of pick-up and drop-out voltage

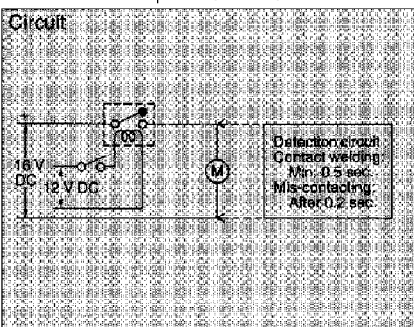


Change of contact resistance

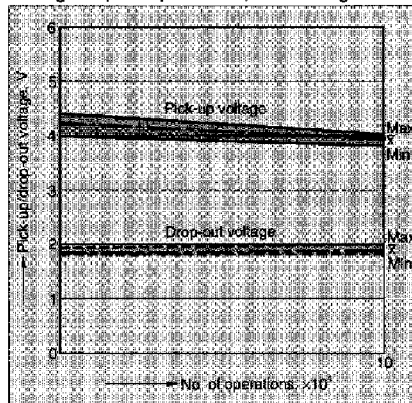


1-(6) Electrical life test

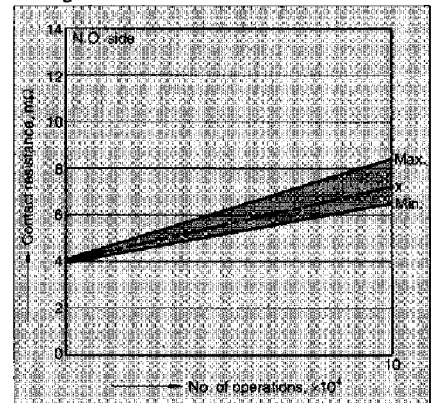
Tested sample: JSM1-12V-5, 3 pcs.
 Load: 16 V DC, 50 A/10 A motor load
 Switching frequency: 6 cycles
 (ON:OFF = 1:9 sec.)
 Ambient temperature: 27°C 81°F



Change of pick-up and drop-out voltage

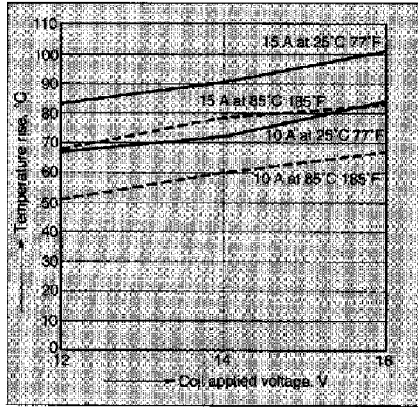


Change of contact resistance



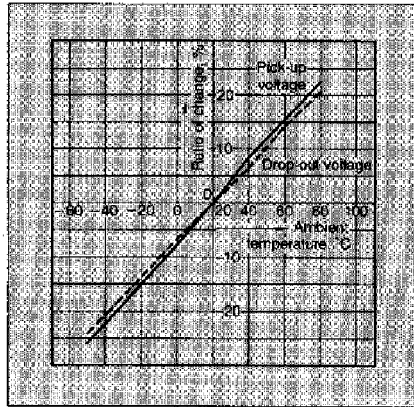
2. Temperature rise

Tested sample: JSM1-12V-4 & -5, 5 pcs.
Measured portion: Inside the coil



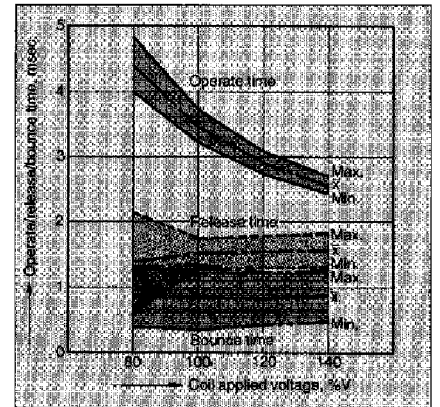
3. Ambient temperature characteristics

Tested sample: JSM1-12V-4 & -5, 6 pcs.

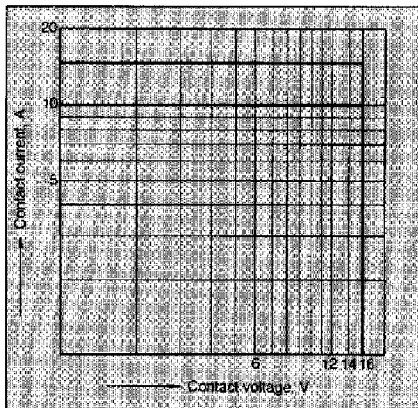


4. Operate/release/bounce time

Sample: JSM1a-12V-5, 25 pcs.



5. Maximum switching power



NOTES

1. Avoid using in the location where there is organic gas such as SO₂ gas and H₂S gas. Note that switching contact in the silicon atmosphere may result in contact failure.
2. The switching voltage and current to the contact should not exceed the rated value.
3. The rated contact capacity and life are typical values. Since contact conditions and life vary depending on kinds of loads and other conditions, please examine them in actual conditions.
4. Relays should be used only within the rated ambient temperature.