



Chipsmall Limited consists of a professional team with an average of over 10 year of expertise in the distribution of electronic components. Based in Hongkong, we have already established firm and mutual-benefit business relationships with customers from,Europe,America and south Asia,supplying obsolete and hard-to-find components to meet their specific needs.

With the principle of “Quality Parts,Customers Priority,Honest Operation,and Considerate Service”,our business mainly focus on the distribution of electronic components. Line cards we deal with include Microchip,ALPS,ROHM,Xilinx,Pulse,ON,Everlight and Freescale. Main products comprise IC,Modules,Potentiometer,IC Socket,Relay,Connector.Our parts cover such applications as commercial,industrial, and automotives areas.

We are looking forward to setting up business relationship with you and hope to provide you with the best service and solution. Let us make a better world for our industry!



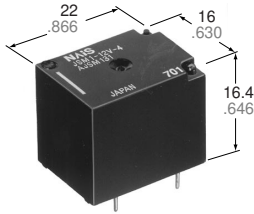
Contact us

Tel: +86-755-8981 8866 Fax: +86-755-8427 6832

Email & Skype: info@chipsmall.com Web: www.chipsmall.com

Address: A1208, Overseas Decoration Building, #122 Zhenhua RD., Futian, Shenzhen, China





mm inch

FEATURES

- 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 type		High capacity type			
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)	15 A 16 V DC (resistive)					
	Max. switching power		160 W						
	Max. switching voltage		16 V DC						
	Max. switching current		10 A	15 A (10 A max. at 85°C)					
Expected life (min. ope.)	Mechanical life (at 180 cpm)		10 ⁷						
	Electrical	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	
Contact rating				Standard type		High capacity type			
Load	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)						Approx. 10 ms			
Release time (without diode)* ³ (at nominal voltage)						Approx. 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				Approx. 98 m/s ² {10 G}, 10 to 55 Hz at double amplitude of 1.6 mm				
	Destructive				Approx. 117.6 m/s ² {12 G}, 10 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 to 85% R.H.			
Unit weight						Approx. 12 g .423 oz			

Remarks

- * Specifications will vary with foreign standards certification ratings.
- *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 5. Conditions for operation, transport and storage mentioned in AMBIENT ENVIRONMENT (Page 61)

TYPICAL APPLICATIONS

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

ORDERING INFORMATION

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)

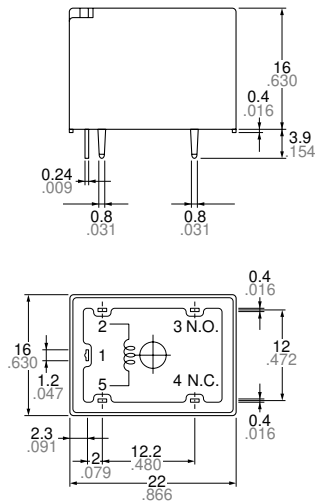
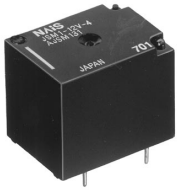
Note: Standard packing: Carton: 100 pcs. Case: 500 pcs.

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 ($\pm 10\%$)	Nominal operating current, mA ($\pm 10\%$)	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

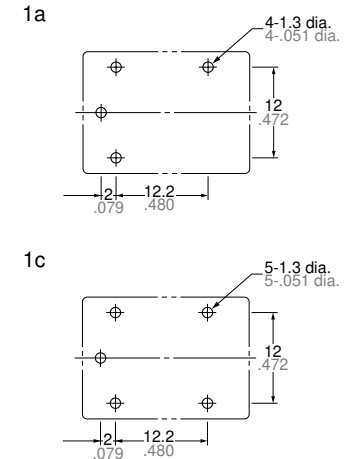
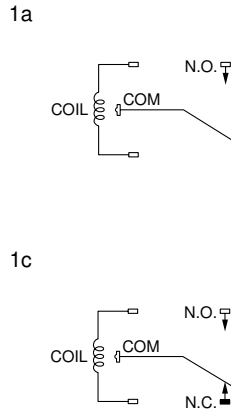
DIMENSIONS

mm inch



Schematic (Bottom view)

PC board pattern (Copper-side view)



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

General tolerance: $\pm 0.3 \pm 0.12$

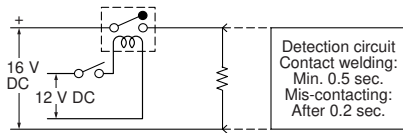
Tolerance: $\pm 0.1 \pm 0.04$

REFERENCE DATA

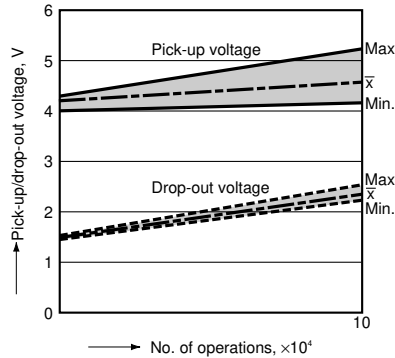
1-(1) Electrical life test (Resistive)

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

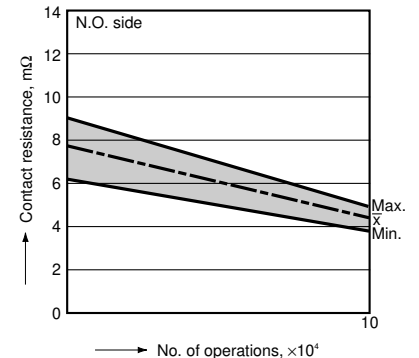
Circuit



Change of pick-up and drop-out voltage



Change of contact resistance

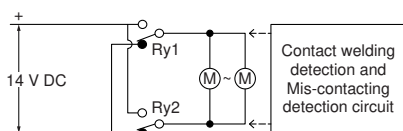


1-(2) Electrical life test

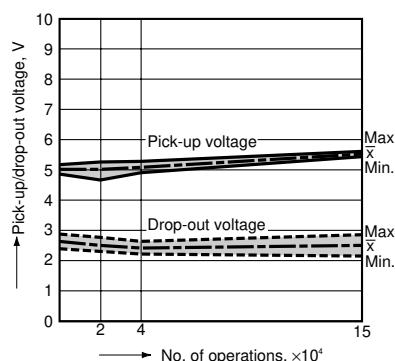
(Power window motor load)

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 s)
Ambient temperature: (1) 85°C 185°F;
(2) -40°C -40°F; (3) 35°C 95°F
Tested cycle: (1) 2×10^4 cycle \rightarrow (2) 2×10^4 cycle \rightarrow
(3) 11×10^4 cycle (Total 15×10^4 cycles)

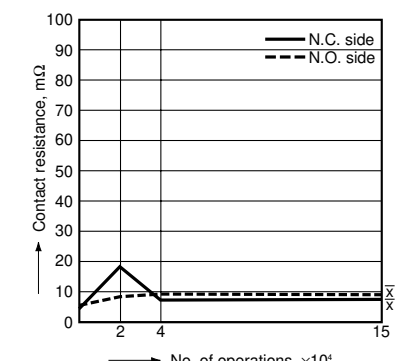
Circuit



Change of pick-up and drop-out voltage



Change of contact resistance

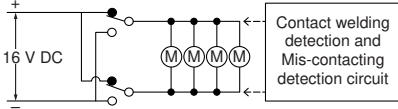


JS-M

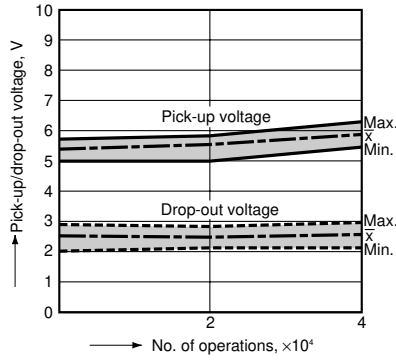
1-(3) Electrical life test (Door lock motor load)

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 s)
 Ambient temperature: 30°C 86°F
 Tested cycle: 4×10^4 cycles

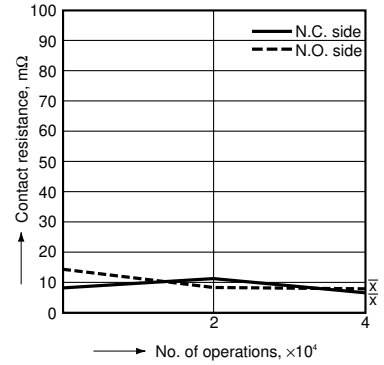
Circuit



Change of pick-up and drop-out voltage



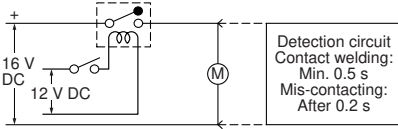
Change of contact resistance



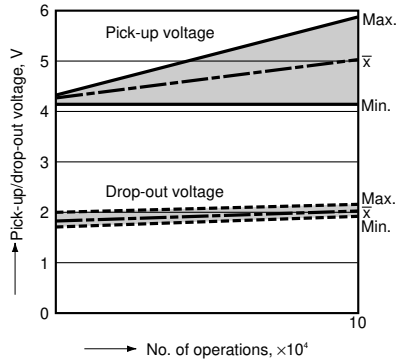
1-(4) Electrical life test

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 s)
 Ambient temperature: 27°C 81°F

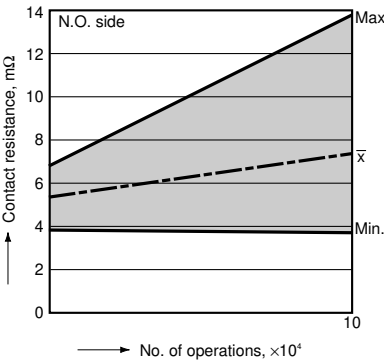
Circuit



Change of pick-up and drop-out voltage



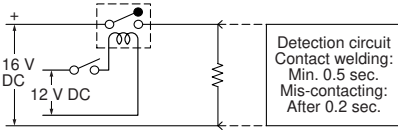
Change of contact resistance



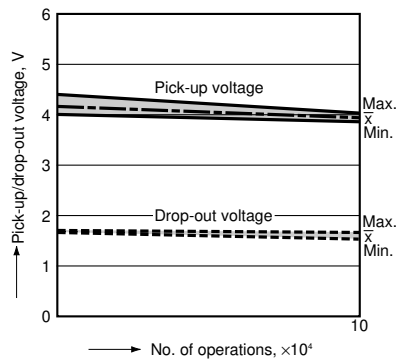
1-(5) Electrical life test

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

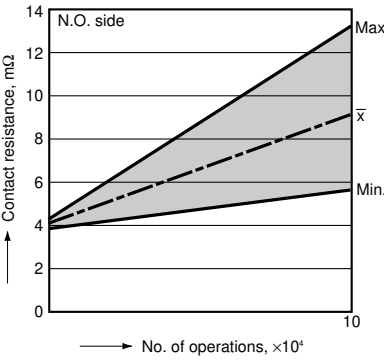
Circuit



Change of pick-up and drop-out voltage



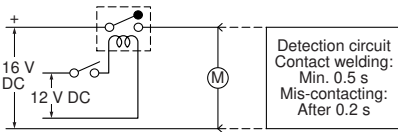
Change of contact resistance



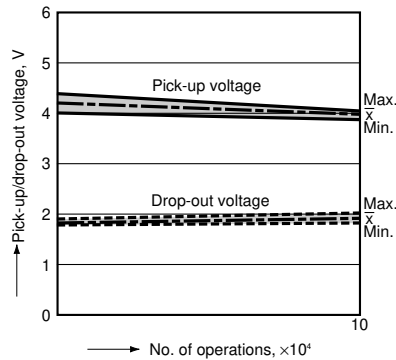
1-(6) Electrical life test

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 s)
 Ambient temperature: 27°C 81°F

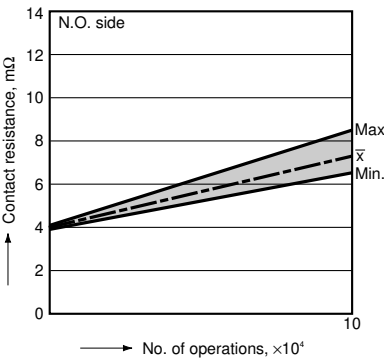
Circuit



Change of pick-up and drop-out voltage



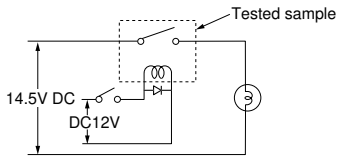
Change of contact resistance



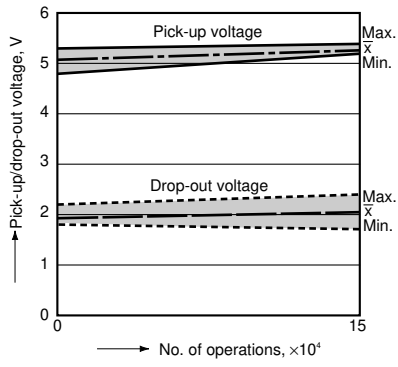
1-(7) Electrical life test (Lamp load)

Tested sample: JSM1a-12V-5, 4 pcs.
 Load: 9.6A Steady, Inrush 55.2A,
 14.5V DC (Lamp load)
 Operating frequency: ON 1s, OFF 2s

Circuit



Contact welding: 0 time
 Miscontact: 0 time



2. Temperature rise

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

