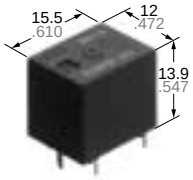
NAiS

HALF-SIZE AUTOMOTIVE RELAY

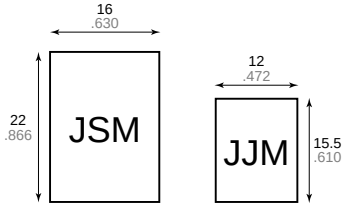
JJM-RELAYS



FEATURES

• 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

mm inch



• Perfect for automobile electrical systems.
Over 2 x 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 mOhm	
Rating (resistive load)	Nominal switching capacity		20 A 14 V DC	20 A 14 V DC (N.O.) 10 A 14 V DC (N.C.)
	Max. switching power		400 W	
	Max. switching voltage		16 V DC	
	Max. carrying current		35 A (12V, at 20°C 68°F for 2 minutes) 25 A (12V, at 20°C 68°F for 1 hour) 30 A (12V, at 85°C 185°F for 2 minutes) 20 A (12V, at 85°C 185°F for 1 hour)	
Expected life (min. operations)	Mechanical (at 120cpm)		10^7	
	Electrical (at rated load)	Resistive	10^5 *1	10^5 (N.O.)*2 10^5 (N.C.)*3
		Motor load	$2x10^5$ *4 $5x10^4$ *5	$2¥10^5$ (N.O.)*6 $5¥10^4$ (N.O.)*7 $2¥10^5$ (N.C.)*8

Coil

Nominal operating power	640 mW

Characteristics

Max. operating speed (at rated load)		20 cpm
Initial insulation resistance*9		Min. 100 mOhm (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)
Shock resistance	Functional*12	Min. 100 m/s² {10 G}
	Destructive*13	Min. 1,000 m/s² {100 G}
Vibration resistance	Functional*14	10 to 100 Hz, Min. 44.1 m/s² {4.5 G}
	Destructive	10 to 100 Hz, Min. 44.1 m/s² {4.5 G}
Conditions in case of operation, transport and storage*15 (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

Remarks
* Specifications will vary with foreign standards certification ratings.
*1 at 20 A 14 V DC, at 20 cpm
*2 at 20 A 14 V DC
*3 at 10 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
*9 Measurement at same location as "Initial break down voltage" section.
*10 Detection current: 10mA
*11 Excluding contact bounce time.
*12 Half-wave pulse of sine wave: 11 ms; detection time: 10 µs
*13 Half-wave pulse of sine wave: 6 ms
*14 Detection time: 10 µs
*15 Refer to 5. Conditions for operation, transport and storage mentioned in AMBIENT ENVIRONMENT (Page 61)

TYPICAL APPLICATIONS

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

ORDERING INFORMATION

Ex. JJM [1a] – [12 V]

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

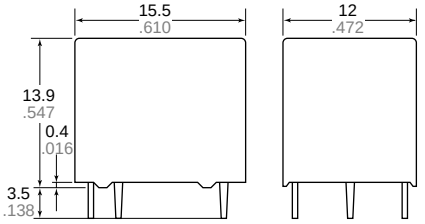
(Note) Standard packing: Carton: 50 pcs.; Case: 1,000 pcs.

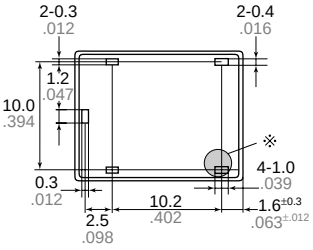
TYPES AND COIL DATA (at 20°C 68°F)

Contact arrangement	Part No.	Nominal voltage, V DC	Pick-up voltage, V DC (max.)	Drop-out voltage, V DC (min.)	Coil resistance Ohm (±10%)	Nominal operating current mA (±10%)	Nominal operating power mW	Usable voltage range, V DC
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

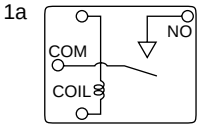
mm inch

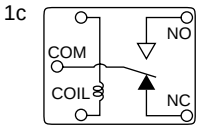




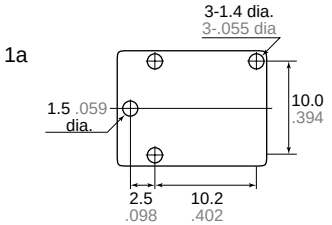
Note : ※Marked terminal is only for 1Form C type

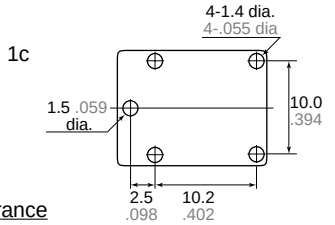
Schematic (Bottom view)





PC board pattern (Bottom view)





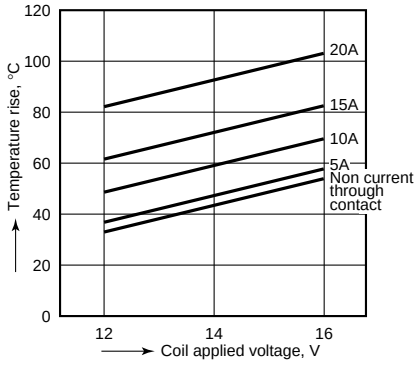
Dimension:	General tolerance
Max. 1mm .039 inch:	±0.1 ±.004
1 to 3mm .039 to .118 inch:	±0.2 ±.008
Min. 3mm .118 inch:	±0.3 ±.012

Tolerance: ±0.1 ±.004

REFERENCE DATA

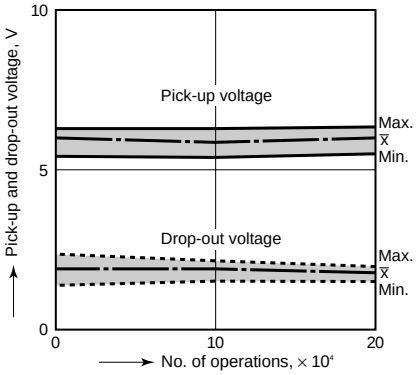
1. Coil temperature rise

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°F



2-(1). Electrical life test (at rated load)

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

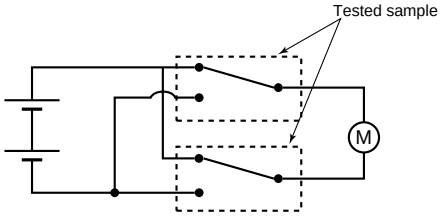


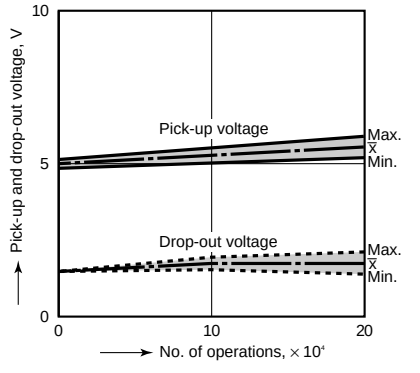
Contact welding: 0 time
Miscontact: 0 time

2-(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 :



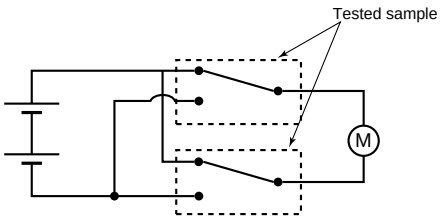


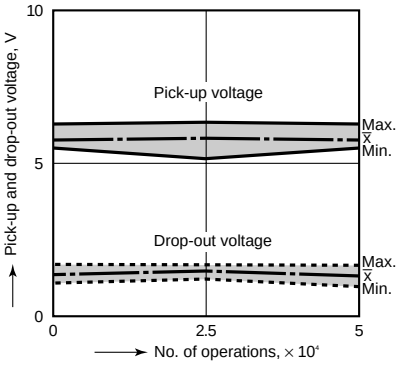
Contact welding: 0 time
Miscontact: 0 time

2-(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 :





Contact welding: 0 time
Miscontact: 0 time