Panasonic ideas for life

COMPACT SIZE AUTOMOTIVE RELAY

JJ-M RELAYS



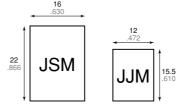
mm inch

FEATURES

· Compact (half-size).

The base area is approximately half the size of conventional (JS-M) relays. The controller unit can be made more compact.

Base area has been reduced by one half



· Perfect for automobile electrical systems.

Over 2 × 105 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)

Standard terminal pitch employed

The terminal array used is identical to that used in small automotive relays.

· Plastic sealed type.

Plastically sealed for automatic cleaning.

Line-up of 1 Form A and 1 Form C.

TYPICAL APPLICATIONS

- Power windows
- · Auto door lock
- · Electrically powered sun roof
- · Electrically powered mirror
- · Cornerring lamp, etc.

Compliance with RoHS Directive

SPECIFICATIONS

Contact

Arrangement			1 Form A	1 Form C	
Contact material			Ag alloy (Cadmium free)		
Initial contact (By voltage of			Typ. 5 mΩ		
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.)	
	Min. switching capacity#1		1 A 12 V DC		
	Max. carrying current		N.O.: 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)		
	Mechanical (at 120cpm)		107		
Expected life (min. operations)	Electrical (at rated load)	Resistive	105 *1	10 ⁵ (N.O.)* ² 10 ⁵ (N.C.)* ³	
		Motor load	2×10 ⁵ *4 5×10 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

^{#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

- at 20 A 14 V DC, at 20 cpm, operating frequency: 1s ON, 9s OFF
- *2 at 20 A 14 V DC, operating frequency: 1s ON, 9s OFF *3 at 10 A 14 V DC, at 20 cpm, operating frequency: 1s ON, 9s OFF
- *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
- at 5A (steady), 25 A (inrush) 14 V DC

Characteristics

Max. operating spe	6 cpm			
Initial insulation resistance*9			Min. 100 MΩ (at 500 V DC)	
Initial breakdown	Between open contacts		500 Vrms for 1min.	
voltage*10	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) (Initial)			Max. 10 ms (at 20°C 68°F)	
Shock resistance		Functional*12	Min. 100 m/s ² {10 G}	
		Destructive*13	Min. 1,000 m/s ² {100 G}	
Vibration resistance		Functional*14	10 Hz to 100 Hz, Min. 44.1 m/s² {4.5 G}	
		Destructive	10 Hz to 500 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°C to +85°C -40°F to +185°F	
		Humidity	5% R.H. to 85% R.H.	
Mass			Approx. 5 g .176 oz	

- at 20 A 14 V DC (Motor lock)
- at peak 20 A 14 V DC (Braking current) operating frequency: 0.5 s ON, 9.5 s OFF
- Measurement at same location as "Initial break down voltage" section.
- *10 Detection current: 10mA
- *11 Excluding contact bounce time.
- $^{\star 12}$ 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 Conditions for operation, transport and storage mentioned in AMBIENT **ENVIRONMENT**

Please inquire if you will be using the relay in a high temperature atmosphere (110°C 230°F).

ORDERING INFORMATION

Ex. JJM	-		
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)

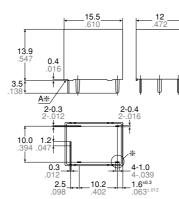
Contact arrangement	Part No.	Nominal voltage, V DC	Pick-up voltage, V DC (Initial)	Drop-out voltage, V DC (Initial)	Coil resistance Ω	Nominal operating current mA	Nominal operating power mW	Usable voltage range, V DC
1 Form A	JJM1a-12 V	12	Max. 7.2	Min. 1.0	225±10%	53.3±10%	640	10 to 16
1 Form C	JJM1-12 V	12	Max. 7.2	Min. 1.0	225±10%	53.3±10%	640	10 to 16

^{*} Other pick-up voltage types are also available. Please contact us for details.

DIMENSIONS

mm inch

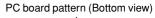


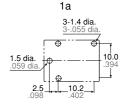


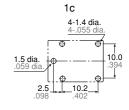
Note: #Marked terminal is only for 1Form C type

Schematic (Bottom view)









Tolerance: ±0.1 ±.004

* Dimensions (thickness and width) of terminal specified in this catalog is measured before pre-soldering. Intervals between terminals is measured at A surface level.

1 to 3mm .039 to .118 inch: ±0.2 ±.008 Min. 3mm .118 inch:

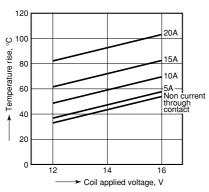
General tolerance

Max. 1mm .039 inch: ±0.1 ±.004 ±0.3 ±.012

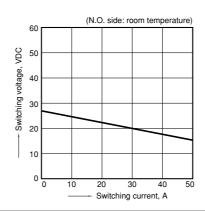
REFERENCE DATA

1. Coil temperature rise Sample: JJM1-12V, 6pcs Point measured: Inside the coil Contact current: Now current through contact, 5A, 10A, 15A, 20A

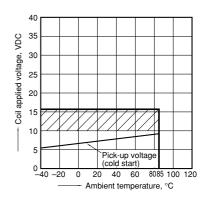
Resistance method, ambient temperature 85°C 185°F



2. Max. switching capability (Resistive load)

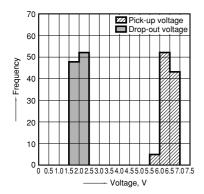


3. Ambient temperature and operating voltage

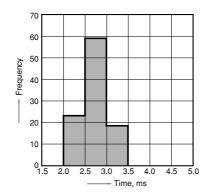


¹a coira

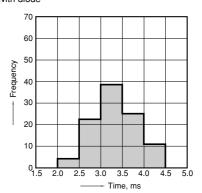
4. Distribution of pick-up and drop-out voltage Sample: JJM1-12V, 100pcs



5. Distribution of operate time Sample: JJM1-12V, 100pcs



6. Distribution of release time Sample: JJM1-12V, 100pcs * With diode

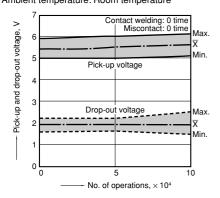


7-(1). Electrical life test (at rated load)

Sample: JJM1-12V

Quantity: n = 6 (NC = 3, NO = 3)

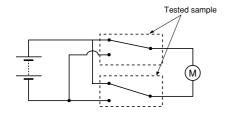
Load: Resisitive load (NC side: 10A 14 V DC, NO side: 20 A 14 V DC); Operating frequency: ON 1s, OFF 9s Ambient temperature: Room temperature



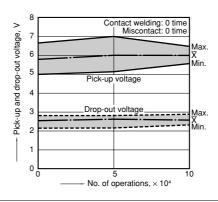
7-(2). Electrical life test (Motor free)

Sample: JJM1-12V, 6pcs. Load: 5A, Inrush 25A, Brake current 18A 14V DC, Power window motor load (Free condition). Operating frequency: (ON: OFF = 0.5s: 9.5s) Ambient temperature: Room temperature

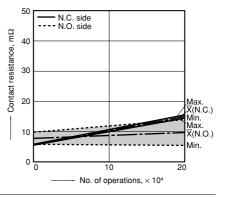
Circuit:



Change of pick-up and drop-out voltage



Change of contact resistance



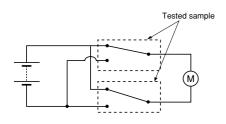
7-(3). Electrical life test (Motor lock) Sample: JJM1-12V, 6pcs.

Load: 20A, 14VDC,

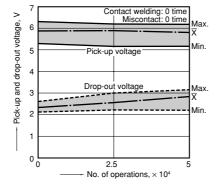
Power window motor actual load (lock condition). Operating frequency: (ON: OFF = 1s:5s)

Ambient temperature: Room temperature

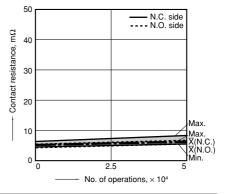
Circuit:



Change of pick-up and drop-out voltage



Change of contact resistance

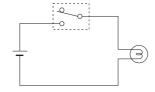


7-(4). Electrical life test (Lamp load)

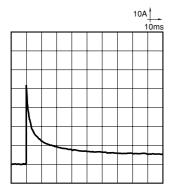
Sample: JJM1-12V, 6pcs. Load: 27W+21W, min. 4A (steady), Lamp actual load Operating frequency: ON 2s, OFF 13s

Ambient temperature: Room temperature

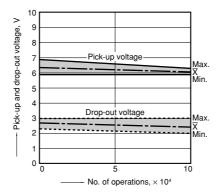
Circuit:



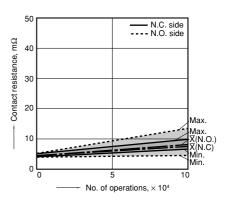
Inrush current: 42A, Steady current: 4.4A



Change of pick-up and drop-out voltage



Change of contact resistance



For Cautions for Use, see Relay Technical Information .