Panasonic
ideas for life

GLOBAL STANDARD TERMINAL PITCH AUTOMOTIVE POWER RELAY

JS-M RELAYS

RoHS compliant

FEATURES

- **Low pick-up voltage for high ambient use**
- **Sealed construction**
- **Global standard terminal pitch**
- **Usable at high temperature: 85°C 185°F**

TYPICAL APPLICATIONS

- **Power-window**
- **Car antenna**
- **Door lock**
- **Intermittent wiper**
- **Interior lighting**
- **Power seat**
- **Power sunroof**
- **Car stereo**
- **Horn**
- **Lift gate, etc.**

ORDERING INFORMATION

JSM ☐ ☐ - **12V** - ☐

Contact arrangement
1a: 1 Form A
1: 1 Form C

Protective construction
Nil: Sealed type
F: Flux-resistant type

Coil voltage (DC)
12 V

Contact capacity
4: Standard type
5: High capacity type

TYPES

Contact arrangement	Coil voltage	Standard type		High capacity type	
		Sealed type	Flux-resistant type	Sealed type	Flux-resistant type
		Part No.	Part No.	Part No.	Part No.
1 Form A	12 V DC	JSM1a-12V-4	JSM1aF-12V-4	JSM1a-12V-5	JSM1aF-12V-5
1 Form C	12 V DC	JSM1-12V-4	JSM1F-12V-4	JSM1-12V-5	JSM1F-12V-5

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

RATING

1. Coil data

Nominal coil voltage	Pick-up voltage (at 20°C 68°F) (Initial)	Drop-out voltage (at 20°C 68°F) (Initial)	Nominal operating current [±10%] (at 20°C 68°F)	Coil resistance [±10%] (at 20°C 68°F)	Nominal operating power	Usable voltage range
12V DC	Max. 6.3 V DC	Min. 0.9 V DC	53.3 mA	225Ω	640 mW	10 to 16V DC

Note: Other pick-up voltage types are also available. Please contact us for details.

2. Specifications

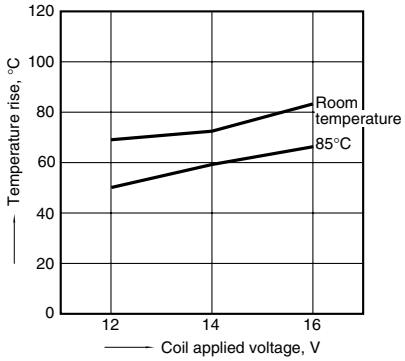
Characteristics	Item		Specifications			
			Standard type		High capacity type	
Contact	Arrangement		1 Form A	1 Form C	1 Form A	1 Form C
	Contact resistance (Initial)		Max. 200 mΩ (Measured after operating 5 times, 6V DC 1A)		Max. 100 mΩ (By voltage drop 6V DC 1A)	
	Contact voltage drop		Max. 0.2 V DC (at 10 A 12 VDC)			
	Contact material		Ag alloy (Cadmium free)			
Rating	Nominal switching capacity (resistive load)		10A 16V DC		15A 16V DC	
	Max. carrying current*3		25 A (at 20°C 68°F for 2 minutes), 15 A (at 20°C 68°F for 1 hour), 20 A (at 85°C 185°F for 2 minutes), 10 A (at 85°C 185°F for 1 hour)			
	Max. switching power (resistive load)		160 mW		240 W	
	Max. switching voltage		16V DC			
	Max. switching current		10 A		15 A (Max. 10 A at 85°C 185°F)	
	Nominal operating power		640 mW			
	Min. switching capacity (resistive load)*1		1 A 12 V DC			
Electrical characteristics	Insulation resistance (Initial)		Min. 100 MΩ (at 500V DC)			
	Breakdown voltage (Initial)	Between open contacts	750 Vrms for 1 min. (Detection current: 10mA)			
		Between contacts and coil	1,500 Vrms for 1 min. (Detection current: 10mA)			
	Operate time (at 20°C 68°F)		Max. 10ms (at nominal voltage) (excluding contact bounce time)			
	Release time (at 20°C 68°F)		Max. 10ms (at nominal voltage) (excluding contact bounce time, without diode)			
Mechanical characteristics	Shock resistance	Functional	Min. 98 m/s² {10G} (Half-wave pulse of sine wave: 11ms; detection time: 10μs)			
		Destructive	Min. 980 m/s² {100G} (Half-wave pulse of sine wave: 6ms)			
	Vibration resistance	Functional	10 Hz to 55 Hz, at double amplitude of 1.6 mm (Detection time: 10μs)			
		Destructive	10 Hz to 55 Hz, at double amplitude of 2.0 mm			
Expected life	Electrical (at nominal switching capacity)		Min. 10^5 (at 15 cpm)		N.O.: Min. 10^5 (at 15 cpm), N.C.: Min. 5×10^4 (at 15 cpm)	
	Mechanical		Min. 10^7 (at 180 cpm)			
Conditions	Conditions for operation, transport and storage*2		Ambient temperature: –40°C to +85°C –40°F to +185°F, Humidity: 5% R.H. to 85% R.H. (Not freezing and condensing at low temperature)			
	Max. operating speed		15 cps. (at nominal switching capacity)			

Notes: *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.
*2. The upper operation ambient temperature limit is the maximum temperature that can satisfy the coil temperature rise value. Please refer to “Usage ambient condition” in CAUTIONS FOR USE OF AUTOMOTIVE RELAYS.
*3. Depends on connection conditions. Also, this does not guarantee repeated switching. We recommend that you confirm operation under actual conditions.

REFERENCE DATA

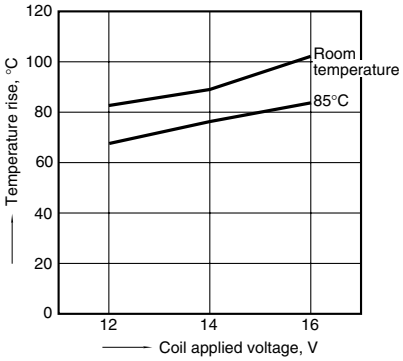
1-(1). Coil temperature rise (10A)

Measured portion: Inside the coil
Contact carrying current, 10A
Ambient temperature: Room temperature, 85°C 185°F

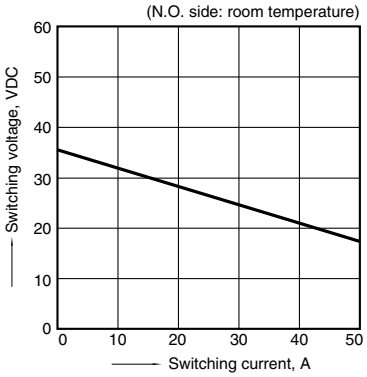


1-(2). Coil temperature rise (15A)

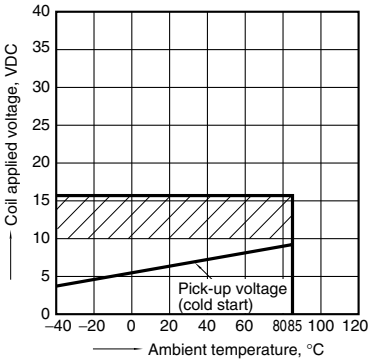
Measured portion: Inside the coil
Contact carrying current, 15A
Ambient temperature: Room temperature, 85°C 185°F



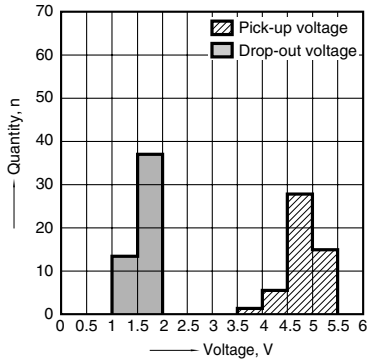
2. Max. switching capability (Resistive load, initial)



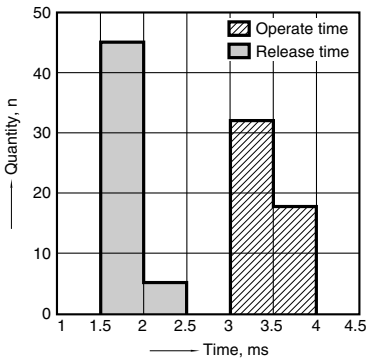
3. Ambient temperature and oprating voltage range



4. Distribution of pick-up and drop-out voltage
Sample: JSM1-12V-5, 50pcs.

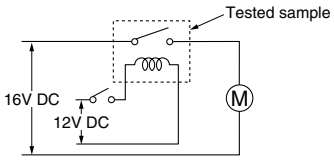


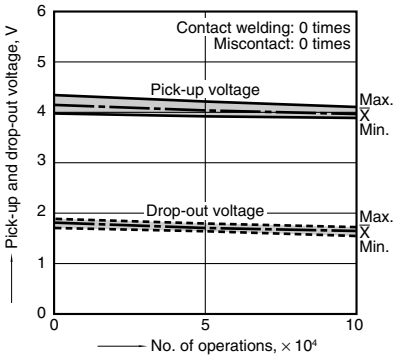
5. Distribution of operate and release time
Sample: JSM1-12V-5, 50pcs.
Coil both side without diode



6-(1). Electrical life test (Motor load)
Sample: JSM1-12V-5, 3pcs.
Load: 50A (Inrush), 10A 16V DC (Steady)
Switching frequency: (ON : OFF = 1s : 9s)

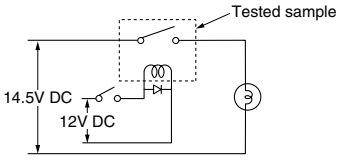
Circuit :

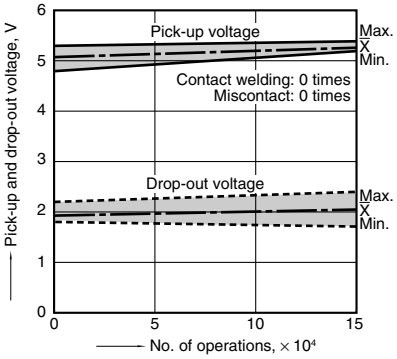




6-(2). Electrical life test (Lamp load)
Sample: JSM1a-12V-5, 4pcs.
Load: 55.2A (Inrush), 9.6A 14.5V DC (Steady)
Switching frequency: (ON : OFF = 1s : 3s)

Circuit :



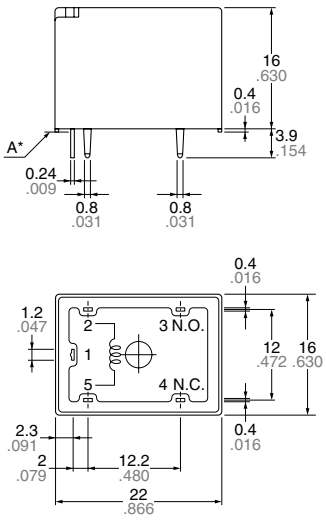


DIMENSIONS (mm inch)

The CAD data of the products with a **CAD Data** mark can be downloaded from: http://industrial.panasonic.com/ac/e

CAD Data

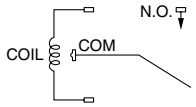
External dimensions



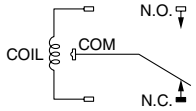
Dimension:	General tolerance
Max. 1mm .039 inch:	±0.1 ±.004
1 to 3mm .039 to .118 inch:	±0.2 ±.008
Min. 3mm .118 inch:	±0.3 ±.012

Schematic (Bottom view)

1a

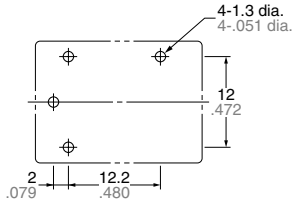


1c

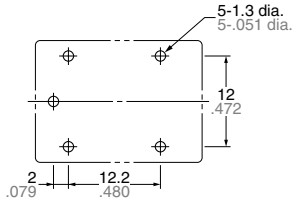


PC board pattern (Bottom view)

1a



1c



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.

For Cautions for Use, see Relay Technical Information.

Mouser Electronics

Authorized Distributor

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Panasonic:

JSM1-12V-4 JSM1-12V-5 JSM1a-12V-5 JSM1aF-12V-4 JSM1aF-12V-5 JSM1-9V-4 JSM1-9V-5 JSM1A-9V-4 JSM1A-9V-5 JSM1A-12V-4 JSM1F-12V-5 JSM1F-12V-4

LifeElectronics
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