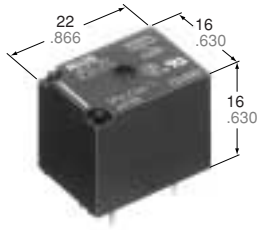
Panasonic
ideas for life

MINIATURE PC BOARD TYPE POWER RELAY

JS RELAYS



mm inch

FEATURES

- **Miniature size with universal terminal footprint**
- **High contact capacity: 10 A**
- **Class B coil insulation type available**
- **TV-5 type available (Standard type)**
  1 Form A type → TV-5
  1 Form C type → TV-5 (N.O. side only)
- **VDE, TÜV also approved**
- **Sealed construction for automatic cleaning (Standard type)**

SPECIFICATIONS

Contact

Types		Standard type	High power type
Arrangement		1 Form A, 1 Form C	1 Form A
Initial contact resistance, max. (By voltage drop 6 V DC 1 A)		100 mΩ	
Contact material		Silver alloy	
Rating (resistive load)	Nominal switching capacity	10 A 250 V AC 10 A 125 V AC 6 A 277 V AC	10 A 250 V AC 10 A 125 V AC 10 A 277 V AC
	Max. switching power	2,500 VA	
	Max. switching voltage	250 V AC, 100 V DC	
	Max. switching current	10 A (AC), 5 A (DC)	
	Min. switching capacity#1	100 mA, 5 V DC	
Expected life (min. ope.)	Mechanical (at 180 cpm)	10^7	
	Electrical at 10 A 125 V AC, 6 A 277 V AC resistive (standard) 10 A 277 V AC resistive (High power)	10^5	2×10^5
	10 A 250 V AC resistive (Standard: at 20 cpm) (High power: at 20 cpm, 105°C 221°F)**	5×10^4 (No contact only)	1.5×10^5

** Holding voltage should be 60% V of nominal voltage

Coil

Nominal operating power	360 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

*1 Detection current: 10mA
*2 Excluding contact bounce time
*3 Half-wave pulse of sine wave: 11ms; detection time: 10μs

Characteristics

		Standard type	High power type
Max. operating speed		20 cpm	
Types			
Initial insulation resistance		Min. 100 MΩ (at 500 V DC)	
Initial breakdown voltage*1	Between open contacts	750 Vrms for 1 min.	
	Between contacts and coil	1,500 Vrms for 1 min.	
Operate time*2 (at nominal voltage)		Approx. 10 ms	
Release time(without diode)*2 (at nominal voltage)		Approx. 10 ms	
Temperature rise (at nominal voltage)		Max. 35°C, resistive, nominal voltage applied to coil. Contact carrying current: 10A, at 85°C 185°F	
Shock resistance	Functional*3	Min. 98 m/s² {10 G}	
	Destructive*4	Min. 980 m/s² {100 G}	
Vibration resistance	Functional*5	Approx. 98 m/s² {10 G}, 10 to 55 Hz at double amplitude of 1.6 mm	
	Destructive	Approx. 117.6 m/s² {12 G}, 10 to 55 Hz at double amplitude of 2 mm	
Conditions for operation, transport and storage*6 (Not freezing and condensing at low temperature)	Ambient temp.*7	–40°C to +85°C –40°F to +185°F	–40°C to +105°C –40°F to +221°F
	Humidity	5 to 85% R.H.	
Unit weight		Approx.12 g .423 oz	

*4 Half-wave pulse of sine wave: 6ms
*5 Detection time: 10μs
*6 Refer to 6. Conditions for operation, transport and storage mentioned in AMBIENT ENVIRONMENT
*7 When using relays in a high ambient temperature, consider the pick-up voltage rise due to the high temperature (a rise of approx. 0.4% V for each 1°C 33.8°F with 20°C 68°F as a reference) and use a coil impressed voltage that is within the maximum allowable voltage range.

TYPICAL APPLICATIONS

1. Home appliances
   Air conditioner, heater, etc.
2. Automotive
   Power-window, car antenna, door-lock, etc.
3. Office machines
   PPC, facsimile, etc.
4. Vending machines

ORDERING INFORMATION

Ex. JS [1a] [F] — [B] — [12V] — [F]

Contact arrangement	Protective construction	Coil insulation class	Coil voltage (DC)	Environmental support
1: 1 Form C (Standard) 1a: 1 Form A (Standard) 1aP: 1 Form A (High Power)	Nil: Sealed type F: Flux-resistant type	Nil: Class E insulation B: Class B insulation	5, 6, 9, 12, 18, 24, 48 V	F: RoHS Directive conforming type ($AgSnO_2$ type) Nil: RoHS Directive non-conforming type (AgCdO type)

UL/CSA, VDE, TÜV (Standard type only) approved type is standard.

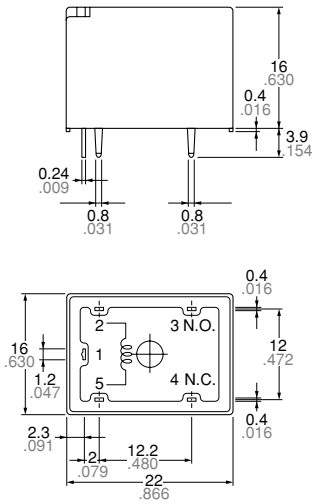
Notes: 1. Standard packing: Carton: 100 pcs. Case: 500 pcs.
2. When ordering TV rated (TV-5) types, add suffix -TV.
3. Contact arrangement 1aP type is Flux-resistant type only (class B or class F insulation). Please consult us for coil insulation class F.

COIL DATA

Part No.					Nominal voltage, V DC	Pick-up voltage, V DC (max.) (at 20°C 68°F)	Drop-out voltage, V DC (min.) (at 20°C 68°F)	Coil resistance, Ω (±10%) (at 20°C 68°F)	Nominal operating current, mA (±10%) (at 20°C 68°F)	Nominal operating power, mW (at 20°C 68°F)	Max. allowable voltage (at 85°C 185°F)
Standard type				High Power type							
Sealed type		Flux-resistant type		Flux-resistant type							
1 Form A	1 Form C	1 Form A	1 Form C	1 Form A							
JS1a-5V (-F)	JS1-5V (-F)	JS1aF-5V (-F)	JS1F-5V (-F)	JS1aPF-B-5V (-F)	5	3.5	0.5	69.4	72	360	130%V of nominal voltage
JS1a-6V (-F)	JS1-6V (-F)	JS1aF-6V (-F)	JS1F-6V (-F)	JS1aPF-B-6V (-F)	6	4.2	0.6	100	60		
JS1a-9V (-F)	JS1-9V (-F)	JS1aF-9V (-F)	JS1F-9V (-F)	JS1aPF-B-9V (-F)	9	6.3	0.9	225	40		
JS1a-12V (-F)	JS1-12V (-F)	JS1aF-12V (-F)	JS1F-12V (-F)	JS1aPF-B-12V (-F)	12	8.4	1.2	400	30		
JS1a-18V (-F)	JS1-18V (-F)	JS1aF-18V (-F)	JS1F-18V (-F)	JS1aPF-B-18V (-F)	18	12.6	1.8	900	20		
JS1a-24V (-F)	JS1-24V (-F)	JS1aF-24V (-F)	JS1F-24V (-F)	JS1aPF-B-24V (-F)	24	16.8	2.4	1,600	15		
JS1a-48V (-F)	JS1-48V (-F)	JS1aF-48V (-F)	JS1F-48V (-F)	JS1aPF-B-48V (-F)	48	33.6	4.8	6,400	7.5		

DIMENSIONS

mm inch

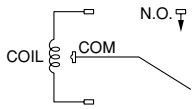


Note: Terminal No. 4 is only for Standard 1 Form C type

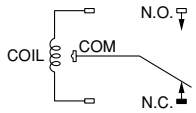
General tolerance: ±0.3 ±.012

Schematic (Bottom view)

1a



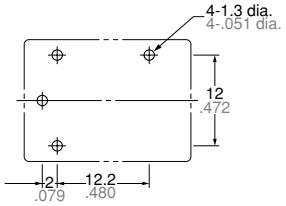
1c



PC board pattern (Bottom view)

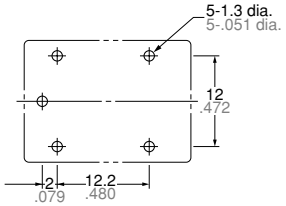
1a

(Standard, High Power)



1c

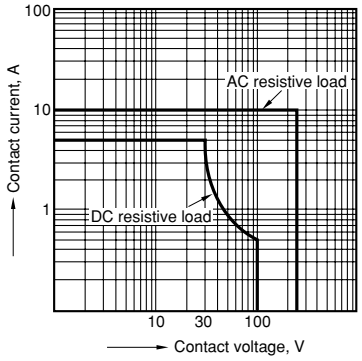
(Standard)



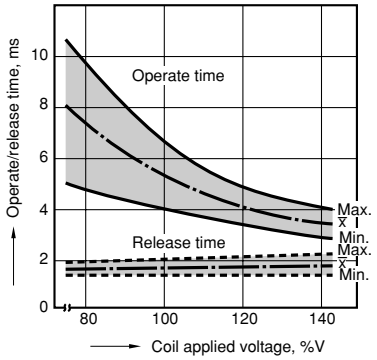
Tolerance: ±0.1 ±.004

REFERENCE DATA

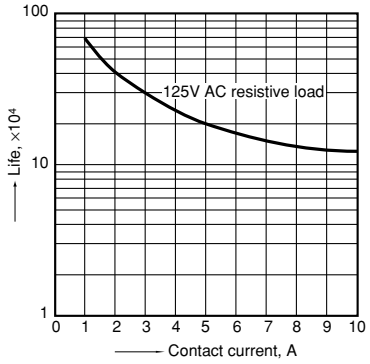
1. Maximum value for switching capacity



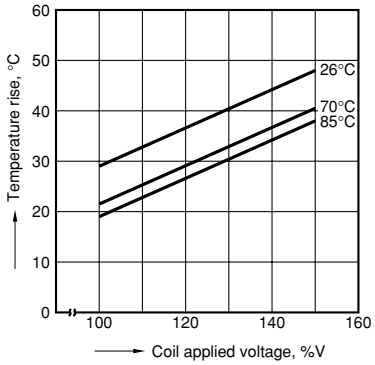
2. Operate/release time
Sample: 25 pcs., JS1-12V



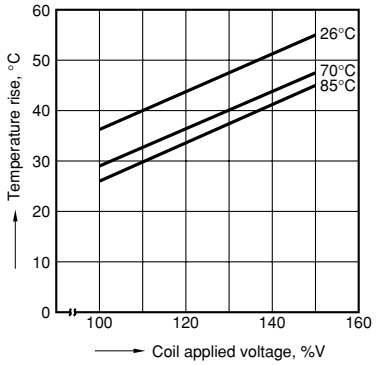
3. Life curve
Ambient temperature: Room temperature



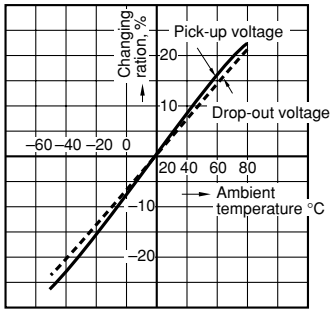
4-(1). Coil temperature rise
Sample: 5 pcs., JS1a-24V
Measured portion: Inside the coil
Contact current: 5 A



4-(2). Coil temperature rise
Sample: 5 pcs., JS1a-24V
Measured portion: Inside the coil
Contact current: 10 A

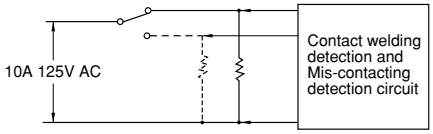


5. Ambient temperature characteristics
Sample: 6 pcs., JS1-12V

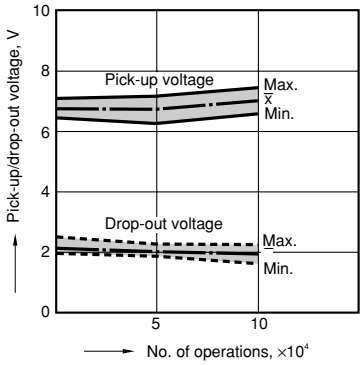


6. Electrical life test
(10 A 125 V AC, resistive load)
Sample: 6 pcs., JS1-12V
Operating speed: 20 cpm
Ambient temperature: room temperature

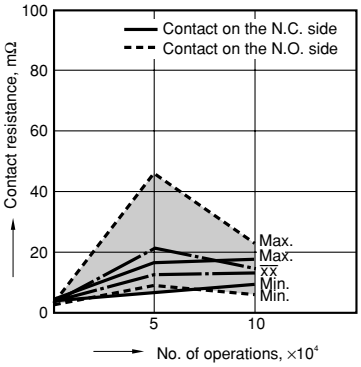
(Circuit)



Change of pick-up and drop-out voltage



Change of contact resistance



For Cautions for Use, see Relay Technical Information