Panasonic
ideas for life

THE SLIM POWER RELAY

PA RELAYS

RoHS Directive compatibility information
http://www.mew.co.jp/ac/e/environment/

FEATURES

1. Slim size (width 5 mm .197 inch, height 12.5 mm .492 inch) permits higher density mounting
Despite the slim 5 mm width, the 20 mm length is still compact and the 12.5 mm profile is low. Even when a socket is used, the height is still only 18 mm. Suitable for high-density mounting, these relays enable device size smaller.

2. Nominal operating power: High sensitivity of 120mW
Enables smaller power supplies, facilitates energy saving applications, and contributes to device size smaller.

3. Control from low level loads to 5 A
Use of gold-clad twin contacts enables control of low level loads down to 100 mV 100 μA and up to 5 A 250 V AC and 30 V DC.

4. Reinforced according to IEC1131-2 (TÜV)

5. High surge breakdown voltage (4000 V) and high breakdown voltage (2000 V)
Between contacts and coil of 2,000 V and surge resistance of 4,000 V work to prevent controller malfunctions caused by noise and surges.

6. Outstanding vibration and shock resistance.
Functional shock resistance: 147 m/s²
Functional vibration resistance:
10 to 55 Hz (at double amplitude of 2.5 mm .098 inch)
Keeps equipment from miss-operation due to vibration and shock.
Can be used as mounted on control panel doors.

7. Sealed construction allows automatic washing.

8. SIL (single in line) terminal layout

9. Complies with safety standards
Complies with Japanese Electrical Appliance and Material Safety Law, and certified by UL, CSA, and TÜV.

10. Sockets are also available

TYPICAL APPLICATIONS

1. Industrial equipment, office equipment

2. Measuring devices and test equipment

3. Interface relays for programmable controllers

4. Output relays in small devices such as timers, counters, sensors, and temperature controllers.

ORDERING INFORMATION

PA 1a - ☐

Contact arrangement
1a: 1 Form A (Bifurcated)

Coil voltage (DC)
5, 6, 9, 12, 18, 24V

Note: UL/CSA, TÜV approved type is standard.

TYPES

Contact arrangement	Nominal coil voltage	Part No.
1 Form A	5V DC	PA1a-5V
	6V DC	PA1a-6V
	9V DC	PA1a-9V
	12V DC	PA1a-12V
	18V DC	PA1a-18V
	24V DC	PA1a-24V

Standard packing: Carton: 25 pcs.; Case: 1,000 pcs.

RATING

1. Coil data

Nominal coil voltage	Pick-up voltage (at 20°C 68°F)	Drop-out voltage (at 20°C 68°F)	Nominal operating current [±10%] (at 20°C 68°F)	Coil resistance [±10%] (at 20°C 68°F)	Nominal operating power	Max. allowable voltage (at 20°C 68°F)
5V DC	70%V or less of nominal voltage *1 (Initial)	5%V or more of nominal voltage*1 (Initial)	24mA	208Ω	120mW	120%V of nominal voltage
6V DC			20mA	300Ω		
9V DC			13.3mA	675Ω		
12V DC			10mA	1,200Ω		
18V DC			6.7mA	2,700Ω		
24V DC			7.5mA	3,200Ω	180mW*2	

Notes: *1 Pulse drive (JIS C 5442)
*2 24V DC, 120mW type are also available, please consult us.

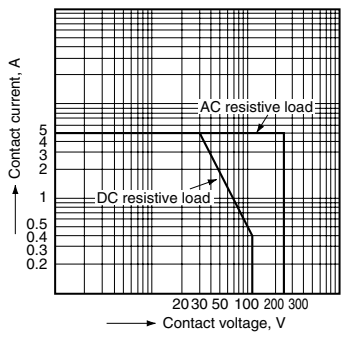
2. Specifications

Characteristics	Item		Specifications
Contact	Arrangement		1 Form A
	Initial contact resistance, max.		Max. 30 mΩ (By voltage drop 6 V DC 1A)
	Contact material		Au-clad AgNi type
Rating	Nominal switching capacity (resistive load)		5 A 250 V AC, 5 A 30 V DC
	Max. switching power (resistive load)		1,250 VA, 150 W
	Max. switching voltage		250 V (AC), 110 V (DC)
	Max. switching current		5 A
	Nominal operating power		120 mW (5 to 18 V DC), 180 mW (24 V DC)
	Min. switching capacity (Reference value)*1		100μA 100mV DC
Electrical characteristics	Insulation resistance (Initial)		Min. 1,000MΩ (at 500V DC) Measurement at same location as “Initial breakdown voltage” section.
	Breakdown voltage (Initial)	Between open contacts	1,000 Vrms for 1min. (Detection current: 10mA.)
		Between contact and coil	2,000 Vrms for 1min. (Detection current: 10mA.)
	Surge breakdown voltage (Initial)	Between contacts and coil*2	4,000 V
	Temperature rise (at 20°C 68°F)		Max. 45°C (By resistive method, nominal voltage applied to the coil, nominal switching capacity.)
	Operate time (at nominal voltage) (at 20°C 68°F)		Max. 10 ms
	Release time (at nominal voltage) (at 20°C 68°F)		Max. 5 ms
Mechanical characteristics	Shock resistance	Functional	Min. 147 m/s² (Half-wave pulse of sine wave: 11 ms; detection time: 10μs.)
		Destructive	Min. 980 m/s² (Half-wave pulse of sine wave: 6 ms.)
	Vibration resistance	Functional	10 to 55 Hz at double amplitude of 2.5 mm (Detection time: 10μs.)
		Destructive	10 to 55 Hz at double amplitude of 3.5 mm
Expected life	Mechanical		Min. 2×10^7 (at 180 cpm)
	Electrical		Min. 10^5 (3 A 250 V AC, 30 V DC, resistive load) Min. 5×10^4 (5 A 250 V AC, 30 V DC, resistive load) (at 20 cpm)
Conditions	Conditions for operation, transport and storage*3		Ambient temperature: –40°C to 70°C –40°F to 158°F; Humidity: 5 to 85% R.H. (Not freezing and condensing at low temperature)
	Max. operating speed (at rated load)		20 cpm
Unit weight			Approx. 3 g .15 oz

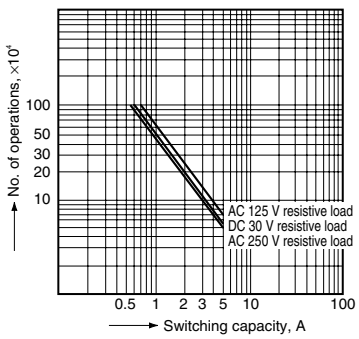
Notes: *1 This value can change due to the switching frequency, environmental conditions, and desired reliability level, therefore it is recommended to check this with the actual load.
*2 Wave is standard shock voltage of ±1.2×50μs according to JEC-212-1981
*3 Refer to 6. Conditions for operation, transport and storage mentioned in AMBIENT ENVIRONMENT.

REFERENCE DATA

1. Max. switching capacity

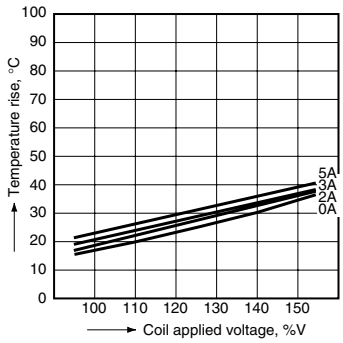


2. Life curve



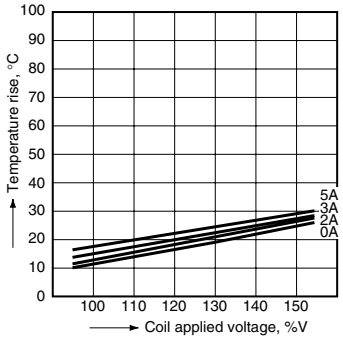
3.-(1) Coil temperature rise (120 mW)

Tested sample: PA1a-12V
Measured portion: Inside the coil
Ambient temperature: 20°C 68°F

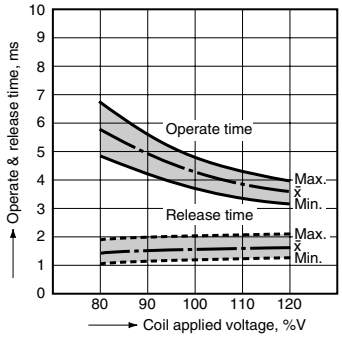


PA

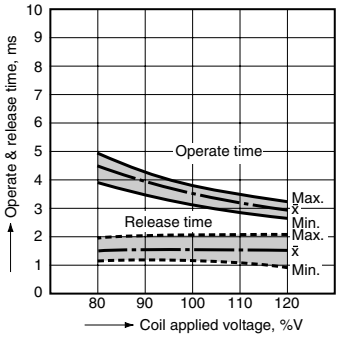
3.-(2) Coil temperature rise (180 mW)
Tested sample: PA1a-24V
Measured portion: Inside the coil
Ambient temperature: 20°C 68°F



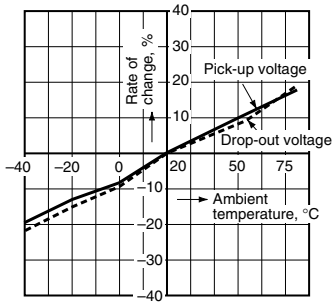
4.-(1) Operate & release time (120 mW)
Tested sample: PA1a-12V, 20 pcs.



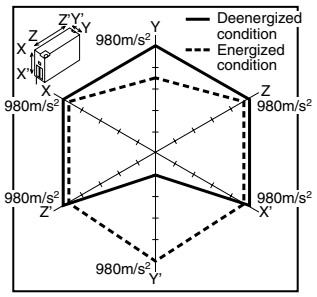
4.-(2) Operate & release time (180 mW)
Tested sample: PA1a-24V, 20 pcs.



5. Ambient temperature characteristics
Tested sample: PA1a-12V, 6 pcs.



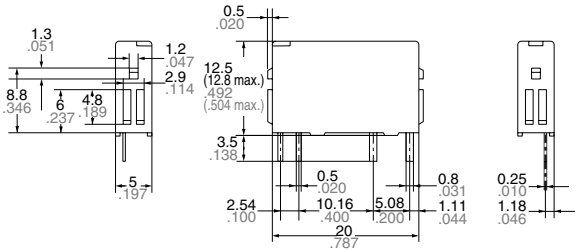
6. Malfunctional shock
Tested sample: PA1a-12V, 6 pcs.



DIMENSIONS (Unit: mm inch)

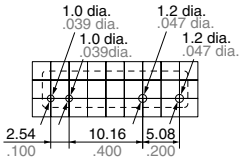
Relay

External dimensions



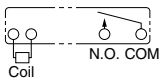
General tolerance: ±0.3 ±.012

PC board pattern (Bottom view)



Tolerance: ±0.1 ±.004

Schematic (Bottom view)

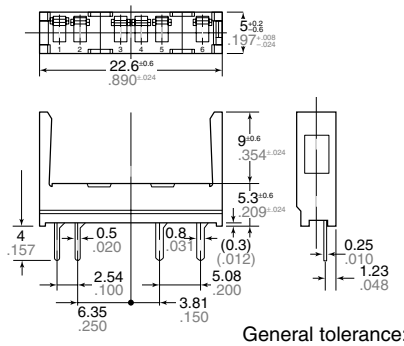


PA Socket

PA1a-PS

1. Standard type (PA1a-PS)

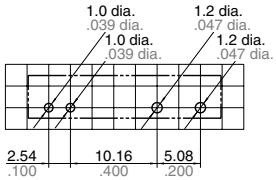
External dimensions



General tolerance: ±0.3 ±.012

PC board pattern (Bottom view)

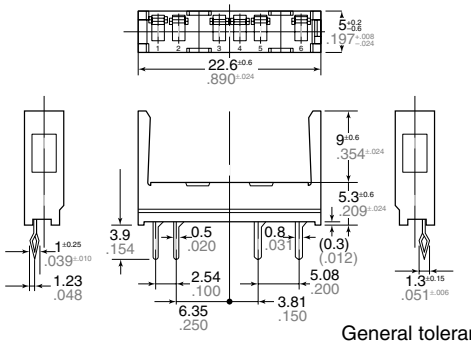
PA1a-PS



Tolerance: ±0.1 ±.004

2. Self clinching type (PA1a-PS-H)

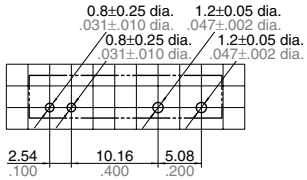
External dimensions



General tolerance: ±0.3 ±.012

PC board pattern (Bottom view)

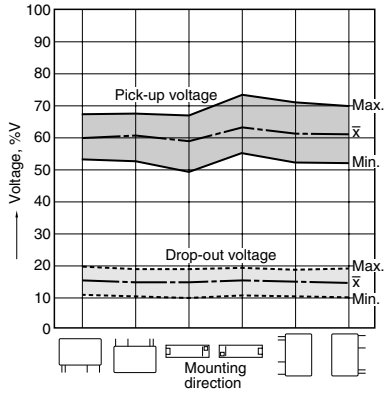
PA1a-PS-H



Tolerance: ±0.1 ±.004

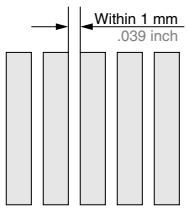
NOTES

1. If it includes ripple, the ripple factor should be less than 5%.
2. Specification values for pick-up and drop-out voltages are for the relay mounting with its terminals below.

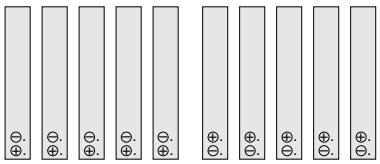


3. When mounting the relays within 1 mm .039 inch, please notice the condition below.

1) Mount the relays in the same direction.

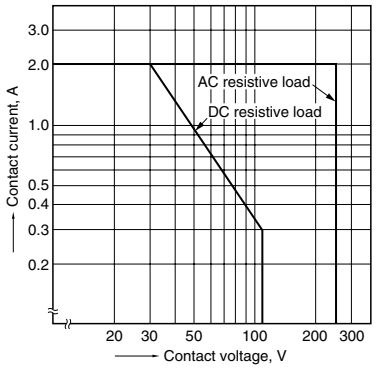


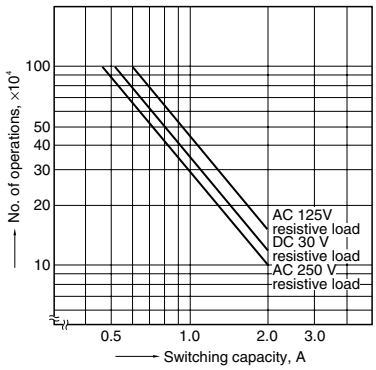
2) Coil terminals (Terminal No. 1 & 2) polarity should be arranged in the same direction.



3) Allowable contact current is 2 A.

4) About the electrical life for close mounting, please refer to data below.





For Cautions for Use, see Relay Technical Information.