Panasonic
ideas for life

1a 5A small size power relay for interface

PQ RELAYS

Compliance with RoHS Directive

FEATURES

1. Compact and slim
20 mm (L) × 10 mm (W) × 16 mm (H)
.787 inch (L) × .394 inch (W) × .630 inch (H) slim type
2. Twin contact structure
Gold-clad twin (bifurcated) contacts provide high reliability.
3. High capacity and small size
This small package can provide high 5 A capacity.
4. High sensitivity with 200 mW nominal operating power
5. 8,000 V surge breakdown voltage
Despite the compact size, between contact and coil surge resistance of 8,000 V has been achieved. The relay has low susceptibility to noise.
6. Outstanding shock resistance.
Functional shock resistance: 294 m/s^2
7. Most suitable for PLC output and internal device output relays.
8. Sealed type
9. Sockets are available.

TYPICAL APPLICATIONS

1. Programmable controllers
2. Interface relays for Factory Automation and Communication equipment
3. Output relays for measuring equipment, timers, counters and temperature controllers

ORDERING INFORMATION

PQ [1a] - [ ]

Contact arrangement
1a: 1 Form A (Bifurcated)

Nominal coil voltage (DC)
3, 5, 6, 9, 12, 18, 24 V

Notes: 1. Certified by UL, CSA, VDE and SEMKO
2. TÜV approved type is available.

TYPES

Contact arrangement	Nominal coil voltage	Part No.
1 Form A (Bifurcated)	3V DC	PQ1a-3V
	5V DC	PQ1a-5V
	6V DC	PQ1a-6V
	9V DC	PQ1a-9V
	12V DC	PQ1a-12V
	18V DC	PQ1a-18V
	24V DC	PQ1a-24V

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

* For sockets, see page 100.

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. applied voltage
3V DC	75%V or less of nominal voltage (Initial)	5%V or more of nominal voltage (Initial)	66.7mA	45Ω	200mW	180%V of nominal voltage (at 20°C 68°F) 130%V of nominal voltage (at 70°C 158°F)
5V DC			40mA	125Ω		
6V DC			33.3mA	180Ω		
9V DC			22.2mA	405Ω		
12V DC			16.7mA	720Ω		
18V DC			11.1mA	1,620Ω		
24V DC			8.3mA	2,880Ω		

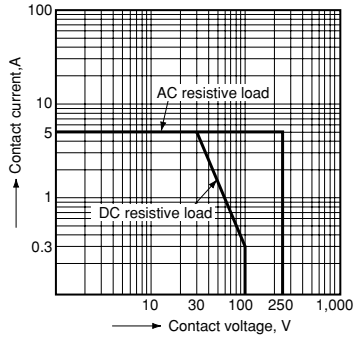
2. Specifications

Characteristics	Item		Specifications
Contact	Arrangement		1 Form A (Bifurcated)
	Contact resistance (Initial)		Max. 50 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 (0.3 A)
	Max. switching current		5 A
	Nominal operating power		200 mW
	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 "Breakdown voltage" section.
	Breakdown voltage (Initial)	Between open contacts	1,000 Vrms for 1min. (Detection current: 10mA.)
		Between contact and coil	4,000 Vrms for 1min. (Detection current: 10mA.)
	Surge breakdown voltage (Initial)*2	Between contacts and coil	8,000 V
	Temperature rise (coil)		Max. 45°C (By resistive method, nominal coil voltage applied to the coil, contact carrying current: 5 A, at 70°C)
	Operate time (at 20°C 68°F) (Initial)		Max. 20 ms (Nominal voltage applied to the coil, excluding contact bounce time.)
	Release time (at 20°C 68°F) (Initial)		Max. 10 ms (Nominal voltage applied to the coil, excluding contact bounce time.) (without diode)
Mechanical characteristics	Shock resistance	Functional	294 m/s² (Half-wave pulse of sine wave: 11 ms; detection time: 10μs.)
		Destructive	980 m/s² (Half-wave pulse of sine wave: 6 ms.)
	Vibration resistance	Functional	10 to 55 Hz at double amplitude of 2.0 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 times/min.)
	Electrical (at 20 times/min.)		Min. 2×10^5 (5 A 125 V AC), Min. 10^5 (5 A 250 V AC), Min. 10^5 (5 A 30 V DC)
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 times/min.
Unit weight			Approx. 7 g .25 oz

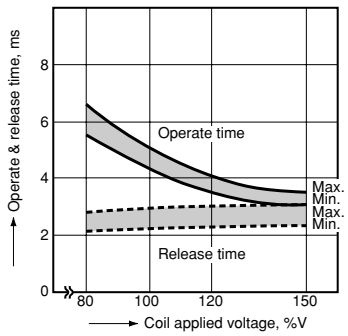
Notes: *1. This value can change due to the switching frequency, environmental conditions, and desired reliability level, therefore it is recommended to check this with the actual load.
*2. Wave is standard shock voltage of ±1.2×50μs according to JEC-212-1981
*3. The upper limit of the ambient temperature is the maximum temperature that can satisfy the coil temperature rise value. Refer to Usage, transport and storage conditions in NOTES.

REFERENCE DATA

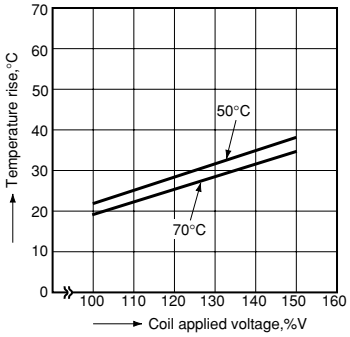
1. Max. switching capacity



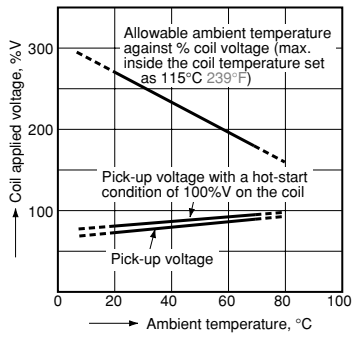
2. Operate & release time
Tested sample: PQ1a-24V, 25 pcs.



3. Coil temperature rise
Measured portion: Inside the coil
Contact carrying current: 5 A



4. Ambient temperature characteristics
Tested sample: PQ1a-24V
Contact carrying current: 5 A

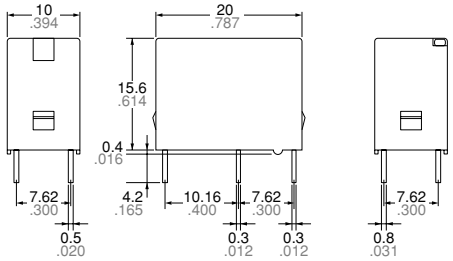


DIMENSIONS (mm inch)

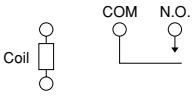
The CAD data of the products with a **CAD Data** mark can be downloaded from: http://panasonic-electric-works.net/ac

CAD Data

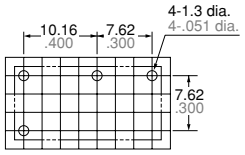
External dimensions



Schematic (Bottom view)



PC board pattern
(Bottom view)



Tolerance: ±0.1 ±.004

Dimension:	General tolerance
Less than 1mm .039inch:	±0.2 ±.008
Min. 1mm .039inch less than 5mm .197 inch:	±0.3 ±.012
Min. 5mm .197 inch:	±0.4 ±.016

SAFETY STANDARDS

UL/C-UL (Recognized)		CSA (Certified)		VDE (Certified)		TÜV (Certified)		SEMKO (Certified)	
File No.	Contact rating	File No.	Contact rating	File No.	Contact rating	File No.	Rating	File No.	Contact rating
E43028	5A 277V AC 1/6HP 277V AC 5A 30V DC 0.3A 110V DC	LR26550 etc.	5A 277V AC 1/6HP 277V AC 5A 30V DC 0.3A 110V DC	40013088	5A 250V AC (cosϕ=0.4) 5A 30V DC (0ms)	B 08 09 13461 253	5A 250V AC (cosϕ=0.4) 5A 30V DC (0ms)	817131	3(2)A 250V AC 5A 30V DC

For Cautions for Use.

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ACCESSORIES

PQ RELAYS SOCKET

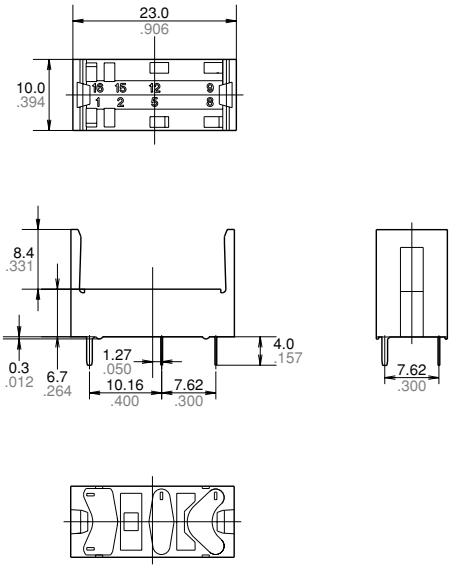
TYPE

Product name	Part No.
PC board socket	PC1a-PS

DIMENSIONS (mm inch)

The CAD data of the products with a **CAD Data** mark can be downloaded from: http://panasonic-electric-works.net/ac

CAD Data External dimensions



Tolerance: ±0.3 ±.012

RELATED INFORMATION

Interface terminal

An interface terminal (PC terminal) that can incorporate a PQ relay is also available.
For further information please visit our website.
URL http://panasonic-electric-works.net/ac