1 Form A 5A small size power relay for interface

PQ RELAYS

RoHS compliant

Protective construction: Sealed type

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. High 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. Sealed type
8. Sockets are 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

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.
* Sockets available.

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		

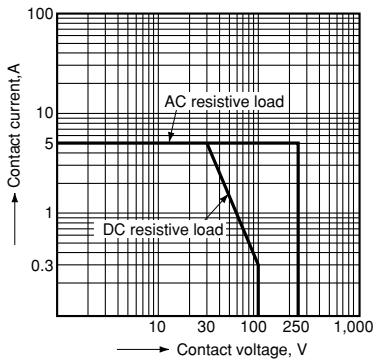
2. Specifications

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
	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

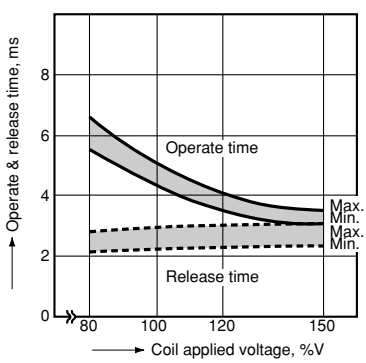
Notes: *1. This value can change due to the switching frequency, environmental conditions, and desired reliability level, therefore it is recommended to check this with the actual load.
*2. Wave is standard shock voltage of ±1.2×50μs according to JEC-212-1981
*3. The upper limit of the ambient temperature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

REFERENCE DATA

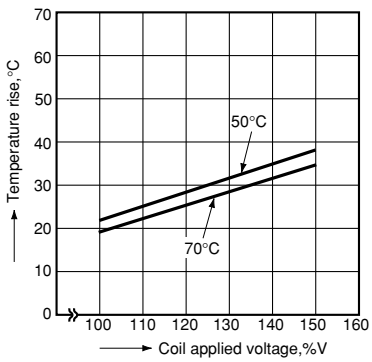
1. Max. switching capacity



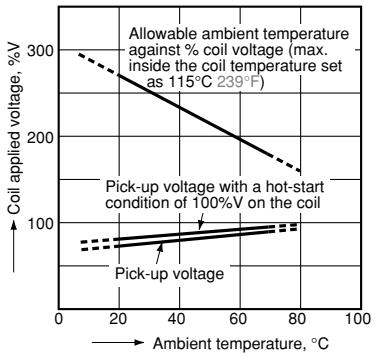
2. Operate & release time
Tested sample: PQ1a-24V, 25 pcs.



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

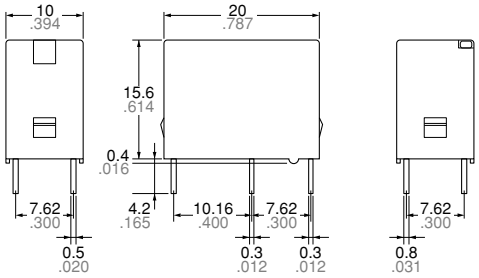


DIMENSIONS (mm inch)

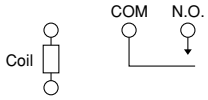
The CAD data of the products with a **CAD Data** mark can be downloaded from: http://industrial.panasonic.com/ac/e/

CAD Data

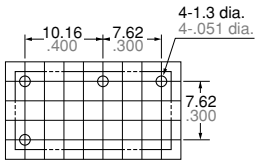
External dimensions



Schematic (Bottom view)



PC board pattern (Bottom view)



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

Tolerance: ±0.1 ±.004

SAFETY STANDARDS

UL (Recognized)		CSA (Certified)		VDE (Certified)			
File No.	Contact rating	File No.	Contact rating	File No.	Contact rating	Temp.	Cycles
E43028	5A 277V AC	LR26550	5A 277V AC	40013088	5A 250V AC (cosϕ=0.4)	70°C 158°F	10^4
	1/6HP 277V AC		1/6HP 277V AC		5A 30V DC (0ms)	70°C 158°F	10^4
	5A 30V DC		5A 30V DC		—	—	—
	0.3A 110V DC		0.3A 110V DC		—	—	—

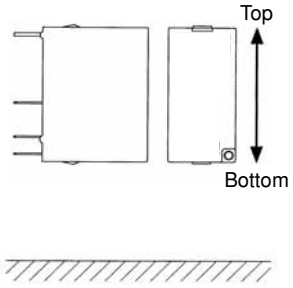
EN/IEC VDE Certified INSULATION CHARACTERISTIC (IEC61810-1)

Item	Characteristic
Clearance/Creepage distance (IEC61810-1)	Min. 3.0mm/4.0mm
Category of protection (IEC61810-1)	RT III
Tracking resistance (IEC60112)	PTI 175
Insulation material group	III a
Over voltage category	III
Rated voltage	250V
Pollution degree	3
Type of insulation (Between contact and coil)	Basic insulation
Type of insulation (Between open contacts)	Micro disconnection

NOTES

1. For cautions for use, please read "GENERAL APPLICATION GUIDELINES".

Note about relay installation orientation



When installing with the relay terminals parallel to the ground, the contact terminals at the bottom and the coil terminals at the top, component friction will occur after numerous switching actions or due to vibration in the non-excitation state.
Since this may cause the relay to stop functioning when the pick-up voltage increases even if the nominal voltage is applied, please do not install using this orientation.

Please contact .....

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