

1a 5A small size power relay for interface

RELAYS

FEATURES

1. Compact and slim 20 mm (L) \times 10 mm (W) \times 16 mm (H) .787 inch (L) \times .394 inch (W) \times .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/s² 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

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.

ORDERING INFORMATION

TYPES

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

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

* For sockets, see page 88.

PQ 1a -

PQ RATING

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		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		75%V or less of nominal voltage (Initial) (Initial)	40mA	125Ω		
6V DC			33.3mA	180Ω		
9V DC			22.2mA	405Ω		
12V DC	(Initial)		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				
	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	je	250 V AC, 110 V DC (0.3 A)				
Rating	Max. switching currer	nt	5 A				
	Nominal operating po	ower	200 mW				
	Min. switching capacity (Reference value)*1		100µA 100mV DC				
	Insulation resistance (Initial)		Min. 1,000M Ω (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.)				
Electrical	Surge breakdown voltage (Initial)*2	Between contacts and coil	8,000 V				
characteristics	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)				
	Shock resistance	Functional	294 m/s ² (Half-wave pulse of sine wave: 11 ms; detection time: 10µs.)				
Mechanical		Destructive	980 m/s ² (Half-wave pulse of sine wave: 6 ms.)				
characteristics	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				

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







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)

CAD Data





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

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

Schematic (Bottom view)					
Coil	СОМ	N.O. •			

PC board pattern (Bottom view)



Tolerance: ±0.1 ±.004

SAFETY STANDARDS

Dimension:

Min. 5mm .197 inch:

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)		5A 250V AC (cosφ=0.4) 5A 30V DC (0ms)	817131	3(2)A 250V AC 5A 30V DC

For Cautions for Use.