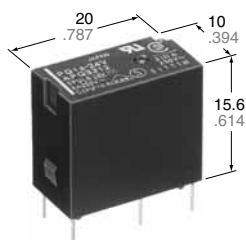


# Panasonic

ideas for life

## HIGH ELECTRICAL & MECHANICAL NOISE IMMUNITY RELAY

# PQ RELAYS



mm inch

## FEATURES

- High electrical noise immunity
- Bifurcated contact type with higher contact reliability
- High switching capacity: 5 A 250 V AC
- High sensitivity: 200 mW (Nominal)
- High surge voltage between contacts and coil: 8,000 V
- Compatible with DS-P relay terminal layout

RoHS Directive compatibility information

<http://www.nais-e.com/>

## SPECIFICATIONS

### Contacts

Arrangement			1 Form A (Bifurcated)
Contact material			Au-clad AgNi type
Initial contact resistance, max. (By voltage drop 6 V DC 1 A)			50 mΩ
Rating (resistive)	Nominal switching capacity		5 A 250 V AC, 5 A 30 V DC
	Max. switching power		1,250 VA, 150 W
	Max. switching voltage		250 V AC, 110 V (0.3 A)
	Min. switching capacity (Reference value) <sup>#1</sup>		100 μA, 100 mV DC
Expected life (min. ope.)	Mechanical (at 180 cpm)		2 × 10 <sup>7</sup>
	Electrical (at 20 cpm)	5 A 125 V AC	2 × 10 <sup>5</sup>
		5 A 250 V AC	10 <sup>5</sup>

### Coil (at 20°C 68°F)

Nominal operating power	200 mW
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<sup>#1</sup> 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

\* Specifications will vary with foreign standards certification ratings.

\*<sup>1</sup> Measurement at same location as "Initial breakdown voltage" section

\*<sup>2</sup> Detection current: 10mA

\*<sup>3</sup> Wave is standard shock voltage of  $\pm 1.2 \times 50\mu s$  according to JEC-212-1981

\*<sup>4</sup> Excluding contact bounce time

\*<sup>5</sup> Half-wave pulse of sine wave: 11ms; detection time: 10μs

\*<sup>6</sup> Half-wave pulse of sine wave: 6ms

\*<sup>7</sup> Detection time: 10μs

\*<sup>8</sup> Refer to 6. Conditions for operation, transport and storage mentioned in AMBIENT ENVIRONMENT

### Characteristics

Max. operating speed		20 cpm at rated load
Initial insulation resistance*1		Min. 1,000 MΩ at 500 V DC
Initial breakdown voltage*2	Between open contacts	1,000 Vrms
	Between contacts and coil	4,000 Vrms
Surge voltage between contacts and coil*3		8,000 V
Operate time*4 (at nominal voltage)		Max. 20 ms
Release time (without diode)*4 (at nominal voltage)		Max. 10 ms
Coil temperature rise (Resistive at nominal voltage, contact carrying current: 5 A, at 70°C)		Max. 45°C
Shock resistance	Functional*5	294 m/s <sup>2</sup> {30 G}
	Destructive*6	980 m/s <sup>2</sup> {100 G}
Vibration resistance	Functional*7	117.6 m/s <sup>2</sup> {12 G}, 10 to 55 Hz at double amplitude of 2.0 mm
	Destructive	205.8 m/s <sup>2</sup> {21 G}, 10 to 55 Hz at double amplitude of 3.5 mm
Conditions for operation, transport and storage*8 (Not freezing and condensing at low temperature)	Ambient temp.	−40°C to +70°C −40°F to +158°F
	Humidity	5 to 85%R.H.
Unit weight		Approx. 7 g .25 oz

## TYPICAL APPLICATIONS

- Programmable controllers
- Interface relays for Factory Automation and Communication equipment
- Output relays for measuring equipment, timers, counters and temperature controllers

## ORDERING INFORMATION

Ex. PQ 1a — 12V

Contact arrangement	Coil voltage (DC)
1a: 1 Form A (Bifurcated)	3, 5, 6, 9, 12, 18, 24 V

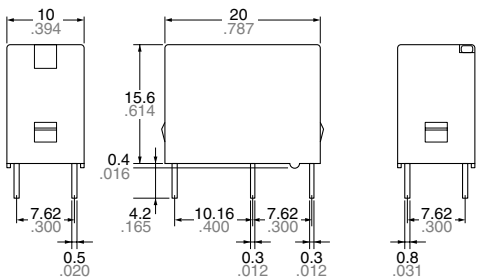
Note: Standard packing: Carton: 100 pcs.; Case: 500 pcs.  
UL/CSA, VDE, SEMKO approved type is standard.

TYPES AND COIL DATA (at 20°C 68°F)

Part No.	Nominal voltage, V DC	Pick-up voltage, (max.)	Drop-out voltage, (min.)	Nominal operating current, mA	Nominal operating power, mW	Coil resistance, Ω (±10%)	Max. allowable voltage, V DC
PQ1a-3V	3	2.25	0.15	66.7	200	45	180% V of nominal voltage (at 20°C 68°F) 130% V of the nominal voltage (at 70°C 158°F)
PQ1a-5V	5	3.75	0.25	40	200	125	
PQ1a-6V	6	4.5	0.3	33.3	200	180	
PQ1a-9V	9	6.75	0.45	22.2	200	405	
PQ1a-12V	12	9	0.6	16.7	200	720	
PQ1a-18V	18	13.5	0.9	11.1	200	1,620	
PQ1a-24V	24	18	1.2	8.3	200	2,880	

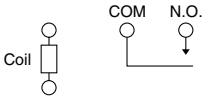
DIMENSIONS

mm inch

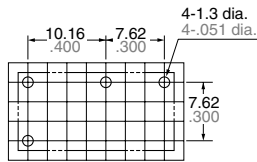


Dimension :	General tolerance
Max. 1mm .039 inch	±0.2 ±.008
1 to 5mm .039 to .118 inch	±0.3 ±.012
Min. 5mm .118 inch	±0.4 ±.016

Schematic (Bottom view)



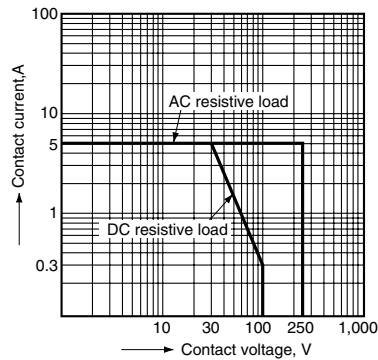
PC board pattern (Copper-side view)



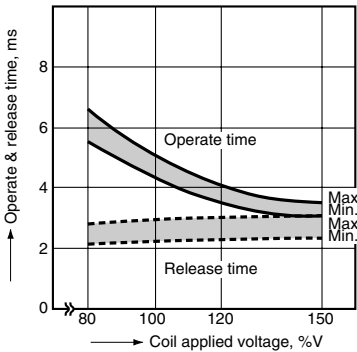
Tolerance: ±0.1 ±.004

REFERENCE DATA

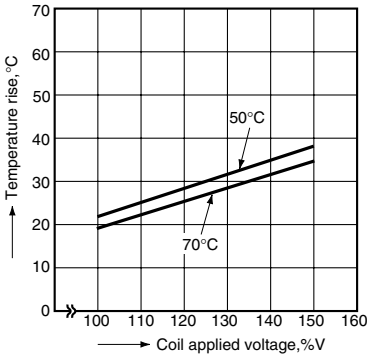
1. Max. switching capacity



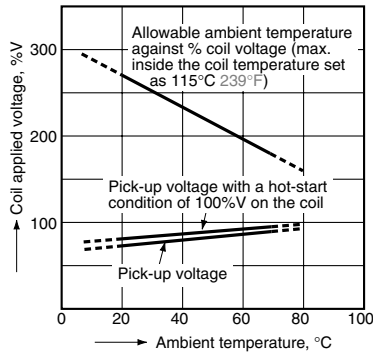
2. Operate & release time  
Tested sample: PQ1a-24V, 25 pcs.



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



For Cautions for Use, see Relay Technical Information .