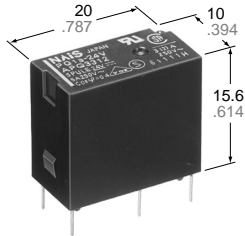


NAIS

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

SPECIFICATIONS

Contacts

Arrangement	1 Form A (Bifurcated)		
Contact material	Silver alloy		
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**1	100 μA 100mV DC	
Expected life (min. ope.)	Mechanical (at 180 cpm)	2×10^7	
	Electrical (at 20 cpm)	5 A 125 V AC	2×10^5
		5 A 250 V AC	10^5

Coil (at 20°C 68°F)

Nominal operating power	200 mW
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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.

Remarks

* Specifications will vary with foreign standards certification ratings.

*1 Measurement at same location as "Initial breakdown voltage" section

*2 Detection current: 10mA

*3 Wave is standard shock voltage of $\pm 1.2 \times 50\mu\text{s}$ according to JEC-212-1981

*4 Excluding contact bounce time

*5 Half-wave pulse of sine wave: 11ms; detection time: 10μs

*6 Half-wave pulse of sine wave: 6ms

*7 Detection time: 10μs

*8 Refer to 5. Conditions for operation, transport and storage mentioned in AMBIENT ENVIRONMENT (Page 61).

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	Min. 8,000 V	
Operate time*4 (at nominal voltage)	Approx. 4 ms	
Release time (without diode)*4 (at nominal voltage)	Approx. 2 ms	
Temperature rise (Resistive at nominal voltage, contact carrying current: 5 A, at 70°C)	Max. 65°C	
Shock resistance	Functional*5	Min. 294 m/s ² {30 G}
	Destructive*6	Min. 980 m/s ² {100 G}
Vibration resistance	Functional*7	117.6 m/s ² {12 G}, 10 to 55 Hz at double amplitude of 2.0 mm
	Destructive	205.8 m/s ² {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.

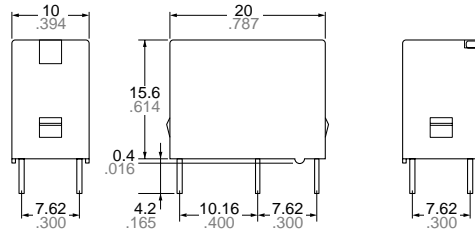
PQ

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

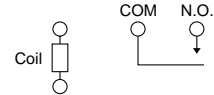
mm inch



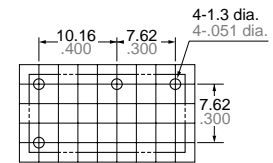
Dimension :
 Max. 1mm .039 inch
 1 to 5mm .039 to .118 inch
 Min. 5mm .118 inch

General tolerance
 ±0.2 ±.008
 ±0.3 ±.012
 ±0.4 ±.016

Schematic (Bottom view)



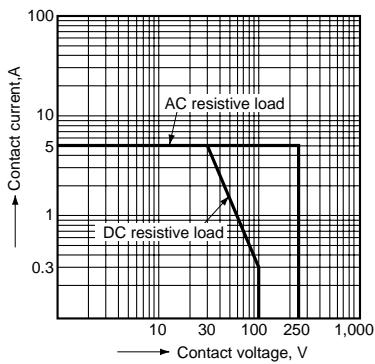
PC board pattern (Copper-side view)



Tolerance: ±0.1 ±.004

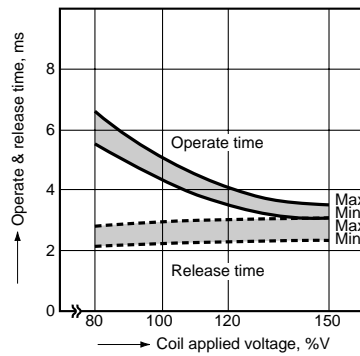
REFERENCE DATA

1. Max. switching capacity



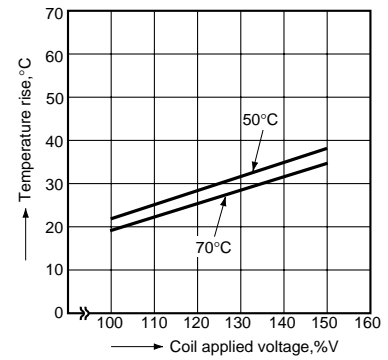
2. Operate & release time

Tested sample: PQ1a-24V, 25 pcs.



3. Coil temperature rise

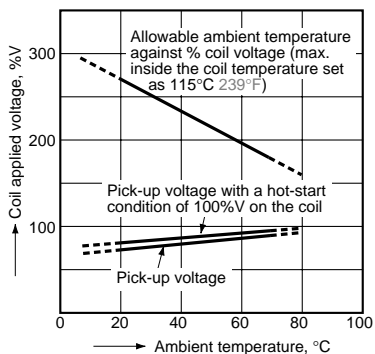
Measured portion: Inside the coil
 Contact carrying current: 5 A



4. Ambient temperature characteristics

Tested sample: PQ1a-24V

Contact carrying current: 5 A



For Cautions for Use, see Relay Technical Information (Page 48 to 76).