

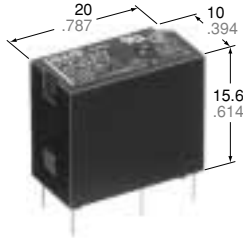
Panasonic
ideas for life

**HIGH ELECTRICAL &
MECHANICAL NOISE
IMMUNITY RELAY**

PQ RELAYS

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



mm inch

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, 100 mV 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 |
|-------------------------|--------|

^{#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 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 ² {30 G} |
| | Destructive ^{*6} | 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 |

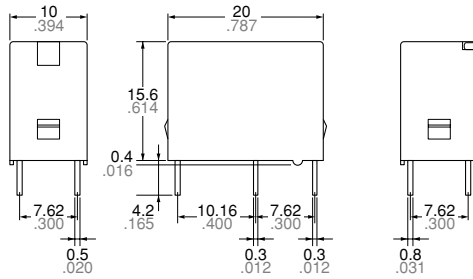
Note: Standard packing: Carton: 100 pcs.; Case: 500 pcs.
UL/CSA, VDE, SEMKO approved type is standard.

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

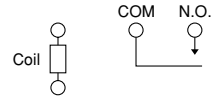
mm inch



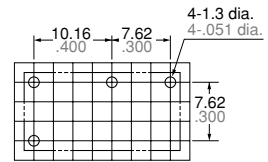
Dimension :
 Max. 1mm .039 inch
 1 to 5mm .039 to .118 inch
 Min. 5mm .118 inch

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

Schematic (Bottom view)



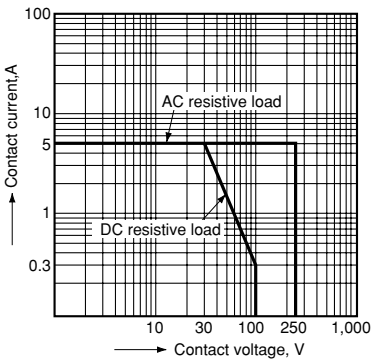
PC board pattern (Copper-side view)



Tolerance: ±0.1 ±.004

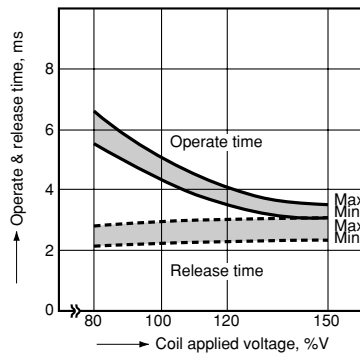
REFERENCE DATA

1. Max. switching capacity



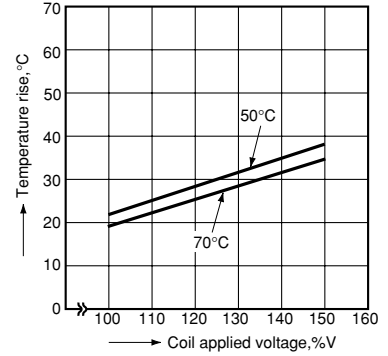
2. Operate & release time

Tested sample: PQ1a-24V, 25 pcs.



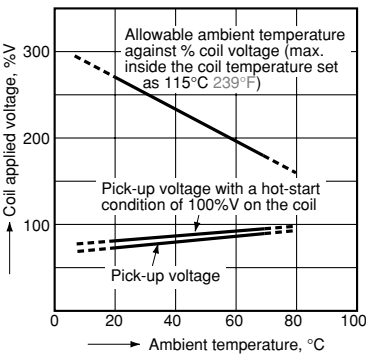
3. Coil temperature rise

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