



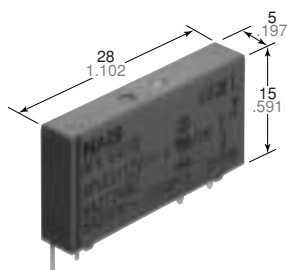
**THE DATASHEET OF
APE10006**



Panasonic
ideas for life

THE SLIM POWER RELAY

PE RELAYS
(APE)



FEATURES

- **Slim size**
28 mm (L)×5 mm (W)×15 mm (H)
1.102 inch (L)×.197 inch (W)×.591 inch (H)
permits high density mounting
- **Wide switching capacity:**
100 mA/12 V DC-6A/250 V AC
- **High sensitivity: 170mW**
- **High breakdown (4,000 V) and surge (6,000 V) voltage between contacts and coil**
- **Clearance/creepage distance:**
8/8 mm
- **1 Form A/1 Form C contact.**

Insulation complying to following standards:
EN 60255 General specification for electrical relays
EN 60335 For use in house-hold appliances
EN 60730 For use in temperature sensing appliances
EN 60950 For use in electrical business equipment
EN 60065 For use in entertainment electronics (radio, HiFi-sets)
EN 50178 For use in industrial range

SPECIFICATIONS

Contacts

| | | |
|---|---------------------------------------|--|
| Arrangement | 1 Form A, 1 Form C | |
| Contact material | Silver alloy | Au-plated silver alloy |
| Initial contact resistance, max. (By voltage drop 6 V DC 1 A) | 100 mΩ | 30 mΩ |
| Rating (resistive) | Nominal switching capacity | 6 A 250 V AC |
| | Maximum switching power | 1,500 VA |
| | Maximum switching voltage | 250V AC |
| | Max. switching current | 6 A (AC) |
| | Min. switching capacity ^{#1} | 100 mA, 5 V DC 1 mA, 1 V DC |
| Expected life (min. operations) | Mechanical (at 180 cpm) | 5×10 ⁶ |
| | Electrical (at 6 cpm) (at rated load) | N.O.: 5×10 ⁴ N.C.: 3×10 ⁴ |

Coil (at 25°C 77°F, 50% R.H.)

| | |
|-------------------------|---|
| Nominal operating power | 170 mW (4.5 to 24 V DC) 217 mW (48 V DC) |
|-------------------------|---|

^{#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 ±1.2×50μs according to JEC-212-1981
- *⁴ Excluding contact bounce time
- *⁵ Half-wave pulse of sine wave: 50ms; detection time: 10μs
- *⁶ Half-wave pulse of sine wave: 11ms
- *⁷ Detection time: 10μs
- *⁸ Refer to 6. Conditions for operation, transport and storage mentioned in AMBIENT ENVIRONMENT

Characteristics

| | | |
|--|---|---|
| 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. 6,000 V (Initial) | |
| Operate time ^{*4} (at nominal voltage) | Max. 8 ms (approx. 5 ms) | |
| Release time (without diode) ^{*4} (at nominal voltage) | Max. 4 ms (approx. 2.5 ms) | |
| Temperature rise | Max. 30°C with nominal coil voltage across coil and at nominal switching capacity | |
| Shock resistance | Functional ^{*5} | 1 Form C: Min. 49 m/s ² {5 G} 1 Form A: Min. 98 m/s ² {10 G} |
| | Destructive ^{*6} | Min. 980 m/s ² {100 G} |
| Vibration resistance | Functional ^{*7} | 10 to 55 Hz at double amplitude of 1.0 mm/6 G |
| | Destructive | 10 to 55 Hz at double amplitude of 1.5 mm/9 G |
| Conditions for operation, transport and storage ^{*8} (Not freezing and condensing at low temperature) | Ambient temp. | -40°C to +85°C -40°F to +185°F |
| | Humidity | 5 to 85%R.H. |
| Unit weight | Approx. 4 g .14 oz | |

TYPICAL APPLICATIONS

- Interface relays for programmable controllers
- Output relays for measuring equipment, timers, counters and temperature controllers
- Industrial equipment, office equipment
- House-hold appliances for Europe

ORDERING INFORMATION

Ex. APE 0

| Contact arrangement | Contact type | Contact material | Coil voltage (DC) |
|----------------------------|-------------------|--|---|
| 1: 1 Form A 3: 1 Form C | 0: Single contact | 0: Silver alloy 1: Au-plated silver alloy | 4H: 4.5 V 18: 18 V 06: 6 V 24: 24 V 12: 12 V 48: 48 V |

(Notes) 1. Standard packing: Tube: 20 pcs.; Case: 1,000 pcs.
2. 5 V, 60 V type is also available.

PE (APE)

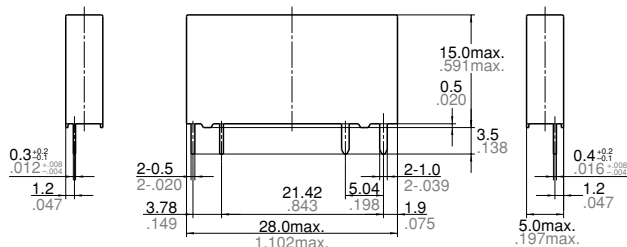
TYPES AND COIL DATA (at 20°C 68°F)

| Part No. | Contact arrangement | Nominal voltage, V DC | Pick-up voltage, (Initial) V DC (max.) | Drop-out voltage, (Initial) V DC (min.) | Nominal operating current, mA ($\pm 10\%$) | Nominal operating power, mW | Coil resistance, Ω ($\pm 10\%$) | Max. allowable voltage, V DC |
|----------|------------------------------|-----------------------|--|---|--|-----------------------------|--|------------------------------|
| APE1004H | 1 Form A (without Au-plated) | 4.5 | 2.97 | 0.225 | 38 | 170 | 119 | 5.4 |
| APE10006 | | 6 | 3.96 | 0.3 | 28 | | 212 | 7.2 |
| APE10012 | | 12 | 7.92 | 0.6 | 14 | | 847 | 14.4 |
| APE10018 | | 18 | 11.88 | 0.9 | 9 | | 1,906 | 21.6 |
| APE10024 | | 24 | 15.84 | 1.2 | 7 | | 3,388 | 28.8 |
| APE10048 | | 48 | 31.68 | 2.4 | 5 | | 10,618 | 57.6 |
| APE1014H | 1 Form A (with Au-plated) | 4.5 | 2.97 | 0.225 | 38 | 170 | 119 | 5.4 |
| APE10106 | | 6 | 3.96 | 0.3 | 28 | | 212 | 7.2 |
| APE10112 | | 12 | 7.92 | 0.6 | 14 | | 847 | 14.4 |
| APE10118 | | 18 | 11.88 | 0.9 | 9 | | 1,906 | 21.6 |
| APE10124 | | 24 | 15.84 | 1.2 | 7 | | 3,388 | 28.8 |
| APE10148 | | 48 | 31.68 | 2.4 | 5 | | 10,618 | 57.6 |
| APE3004H | 1 Form C (without Au-plated) | 4.5 | 2.97 | 0.225 | 38 | 170 | 119 | 5.4 |
| APE30006 | | 6 | 3.96 | 0.3 | 28 | | 212 | 7.2 |
| APE30012 | | 12 | 7.92 | 0.6 | 14 | | 847 | 14.4 |
| APE30018 | | 18 | 11.88 | 0.9 | 9 | | 1,906 | 21.6 |
| APE30024 | | 24 | 15.84 | 1.2 | 7 | | 3,388 | 28.8 |
| APE30048 | | 48 | 31.68 | 2.4 | 5 | | 10,618 | 57.6 |
| APE3014H | 1 Form C (with Au-plated) | 4.5 | 2.97 | 0.225 | 38 | 170 | 119 | 5.4 |
| APE30106 | | 6 | 3.96 | 0.3 | 28 | | 212 | 7.2 |
| APE30112 | | 12 | 7.92 | 0.6 | 14 | | 847 | 14.4 |
| APE30118 | | 18 | 11.88 | 0.9 | 9 | | 1,906 | 21.6 |
| APE30124 | | 24 | 15.84 | 1.2 | 7 | | 3,388 | 28.8 |
| APE30148 | | 48 | 31.68 | 2.4 | 5 | | 10,618 | 57.6 |

DIMENSIONS

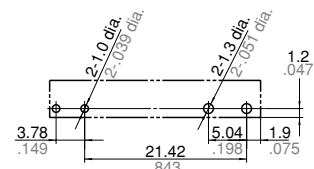
mm inch

1. 1 Form A type



General tolerance: $\pm 0.3 \pm 0.12$

PC board pattern (Bottom view)

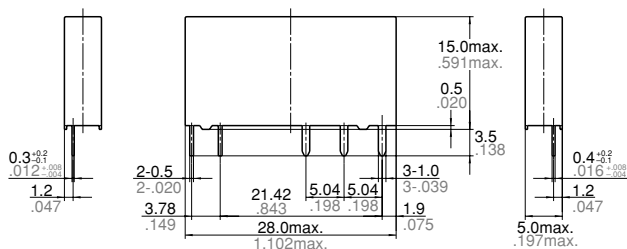


Tolerance: $\pm 0.1 \pm 0.04$

Schematic (Bottom view)

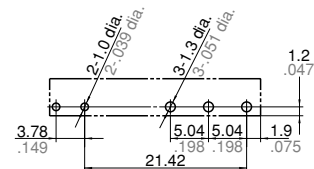


2. 1 Form C type



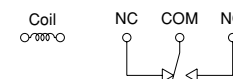
General tolerance: $\pm 0.3 \pm 0.12$

PC board pattern (Bottom view)



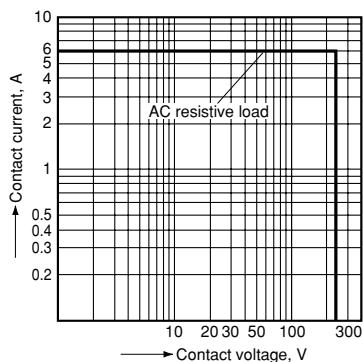
Tolerance: $\pm 0.1 \pm 0.04$

Schematic (Bottom view)



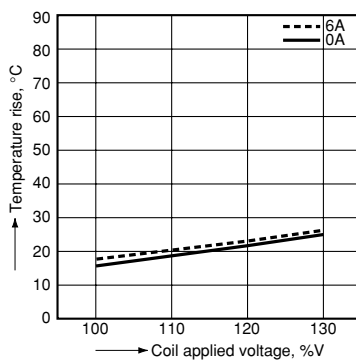
REFERENCE DATA

1. Max. switching capacity



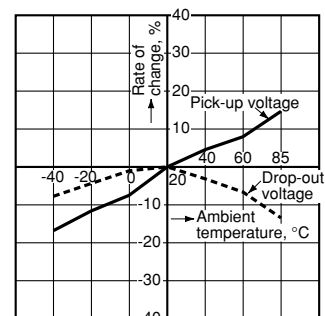
2. Coil temperature rise

Sample: APE30012
 Measured portion: Inside the coil
 Ambient temperature: 28°C 82°F



3. Ambient temperature characteristics

Sample: APE30012
 No. of samples: n = 6



NOTES



Rating

| Standard | File No. | Rating |
|----------|-------------------|--|
| UL | E43149 | 6 A 277 V AC |
| VDE | 122402ÜG | 6 A 250 V AC ($\cos\phi = 1$) 1 A 250 V AC ($\cos\phi = 0.4$) |
| SEV | CH-99.1 10483.2A1 | 6 A 250 V AC ($\cos\phi = 1$) |

For Cautions for Use, see Relay Technical Information

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