Chipsmall Limited consists of a professional team with an average of over 10 year of expertise in the distribution of electronic components. Based in Hongkong, we have already established firm and mutual-benefit business relationships with customers from,Europe,America and south Asia,supplying obsolete and hard-to-find components to meet their specific needs.

With the principle of “Quality Parts,Customers Priority,Honest Operation,and Considerate Service”,our business mainly focus on the distribution of electronic components. Line cards we deal with include Microchip,ALPS,ROHM,Xilinx,Pulse,ON,Everlight and Freescale. Main products comprise IC,Modules,Potentiometer,IC Socket,Relay,Connector.Our parts cover such applications as commercial,industrial, and automotives areas.

We are looking forward to setting up business relationship with you and hope to provide you with the best service and solution. Let us make a better world for our industry!

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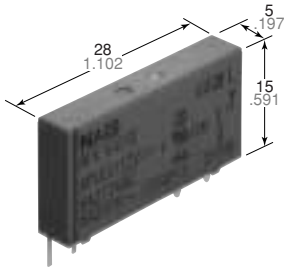
Panasonic
ideas for life

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 "Intial 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/s²{5 G} 1 Form A: Min. 98 m/s²{10 G}
	Destructive*6	Min. 980 m/s² {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.

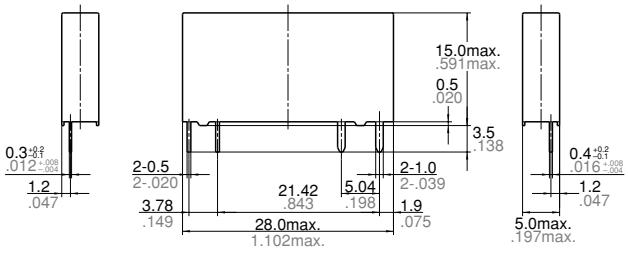
TYPES AND COIL DATA (at 20°C 68°F)

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 (±10%)	Nominal operating power, mW	Coil resistance, Ω (±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	217	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	217	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	217	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	217	10,618	57.6

DIMENSIONS

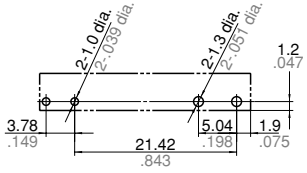
mm inch

1. 1 Form A type



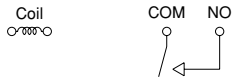
General tolerance: ±0.3 ±.012

PC board pattern (Bottom view)

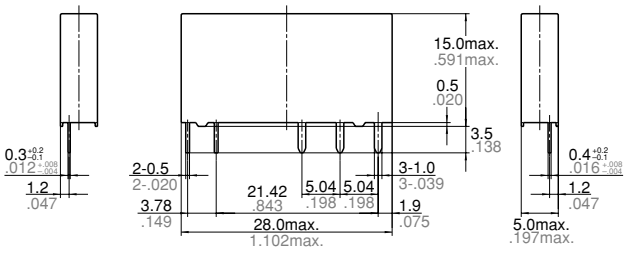


Tolerance: ±0.1 ±.004

Schematic (Bottom view)

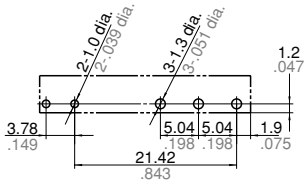


2. 1 Form C type



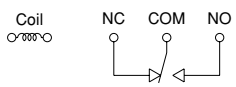
General tolerance: ±0.3 ±.012

PC board pattern (Bottom view)



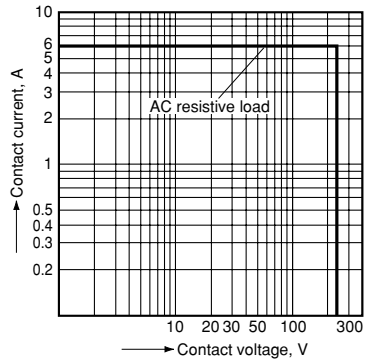
Tolerance: ±0.1 ±.004

Schematic (Bottom view)



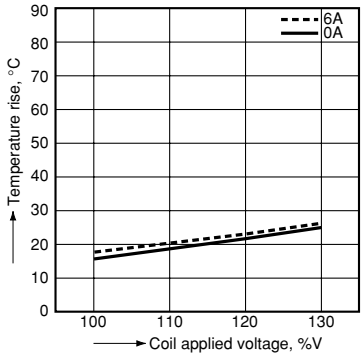
REFERENCE DATA

1. Max. switching capacity



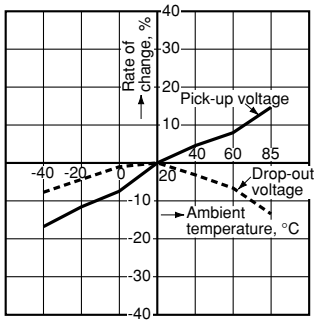
2. Coil temperature rise

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