1 Form A 5A slim power relay complies with IEC61010 reinforced insulation

PA-N RELAYS

New

RoHS compliant

Protective construction: Sealed type (RTIII)

FEATURES

1. **High density mounting**
   5mm(W) × 20mm(L) × 12.5mm(H)
   .197inch(W) × .787inch(L) × .492inch(H)
2. **Low operating power**
   Nominal operating power: 110mW
3. **Complies with IEC61010 reinforced insulation standards**
4. **Long Insulation distance**
   - Clearance: 5.29mm .208inch
     Creepage distance: 5.35mm .211inch
     (Between contact and coil)
   - 3,000 V breakdown voltage and 6,000V surge breakdown voltage
5. **Complies with Standard for Hazardous Location (ANSI/ISA 12.12.01)**

TYPICAL APPLICATIONS

1. **Output relays for programmable controllers and temperature controllers**
2. **Industrial equipment, office equipment**
3. **Measuring devices and test equipment**

ORDERING INFORMATION

APAN 3 1 ☐☐

Contact arrangement
3: 1 Form A (Bifurcated)

Terminals and Nominal operating power
1: PC board terminal (110 mW)

Nominal coil voltage (DC)
03: 3V, 4H: 4.5V, 05: 5V, 06: 6V, 09: 9V, 12: 12V, 18: 18V, 24: 24V

Note: Certified by UL/C-UL and TÜV

TYPES

Contact arrangement	Nominal coil voltage	Part No.
1 Form A	3 V DC	APAN3103
	4.5 V DC	APAN314H
	5 V DC	APAN3105
	6 V DC	APAN3106
	9 V DC	APAN3109
	12 V DC	APAN3112
	18 V DC	APAN3118
	24 V DC	APAN3124

Standard packing: Tube: 25 pcs.; Case: 1,000 pcs.
* Terminal sockets available.

RATING

1. Coil data

Nominal coil voltage	Pick-up voltage (at 20°C 68°F)	Drop-out voltage (at 20°C 68°F)	Nominal operating current [±10%] (at 20°C 68°F)	Coil resistance [±10%] (at 20°C 68°F)	Nominal operating power	Max. applied voltage (at 20°C 68°F)
3 V DC	70%V or less of nominal voltage* (Initial)	5%V or more of nominal voltage* (Initial)	36.7 mA	82 Ω	110mW	120%V of nominal voltage
4.5 V DC			24.4 mA	184 Ω		
5 V DC			22.0 mA	227 Ω		
6 V DC			18.3 mA	327 Ω		
9 V DC			12.2 mA	736 Ω		
12 V DC			9.2 mA	1,309 Ω		
18 V DC			6.1 mA	2,945 Ω		
24 V DC			4.6 mA	5,236 Ω		

Note: *Pulse drive (JIS C 5442)

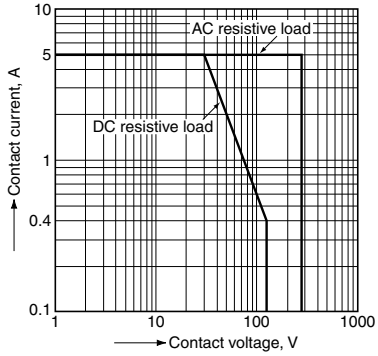
2. Specifications

Characteristics	Item		Specifications
Contact	Arrangement		1 Form A (Bifurcated)
	Contact resistance (Initial)		Max. 30 mΩ (By voltage drop 6 V DC 1A)
	Contact material		AgNi type + Au
Rating	Nominal switching capacity (resistive load)		5 A 250 V AC, 5 A 30 V DC
	Max. switching power (resistive load)		1,250 VA, 150 W
	Max. switching voltage		250 V (AC), 110 V (DC) (0.4 A)
	Max. switching current		5 A (AC, DC)
	Nominal operating power		110 mW
	Min. switching capacity (Reference value)*1		1 mA 5 V DC
Electrical characteristics	Insulation resistance (Initial)		Min. 1,000MΩ (at 500V DC) Measurement at same location as “Breakdown voltage” section.
	Breakdown voltage (Initial)	Between open contacts	1,000 Vrms for 1min. (Detection current: 10mA.)
		Between contact and coil	3,000 Vrms for 1min. (Detection current: 10mA.)
	Surge breakdown voltage (Initial) (Between contacts and coil)*2		6,000 V
	Operate time (at nominal voltage) (at 20°C 68°F) (Initial)		Max. 10 ms (excluding contact bounce time)
	Release time (at nominal voltage) (at 20°C 68°F) (Initial)		Max. 5 ms (excluding contact bounce time and without diode)
Mechanical characteristics	Shock resistance	Functional	Min. 147 m/s² (Half-wave pulse of sine wave: 11 ms; detection time: 10μs.)
		Destructive	Min. 980 m/s² (Half-wave pulse of sine wave: 6 ms.)
	Vibration resistance	Functional	10 to 55 Hz at double amplitude of 2.5 mm (Detection time: 10μs.)
		Destructive	10 to 55 Hz at double amplitude of 3.5 mm
Expected life	Mechanical		Min. 2×10^7 (at 180 times/min.)
	Electrical		Min. 10^5 (3 A 250 V AC, 30 V DC, resistive load) Min. 5×10^4 (5 A 250 V AC, 30 V DC, resistive load) (at 20 times/min.)*4
Conditions	Conditions for operation, transport and storage*3		Ambient temperature: –40°C to 90°C –40°F to 194°F; Humidity: 5 to 85% R.H. (Not freezing and condensing at low temperature)
	Max. operating speed		20 times/min. (at nominal switching capacity)*4
Unit weight			Approx. 3 g .15 oz

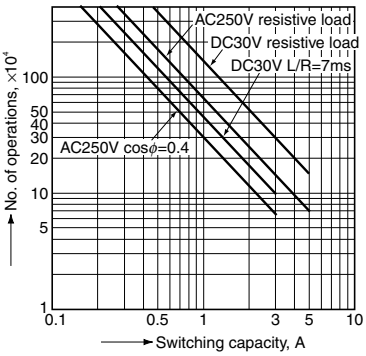
Notes: *1. This value can change due to the switching frequency, environmental conditions, and desired reliability level, therefore it is recommended to check this with the actual load.
*2. Wave is standard shock voltage of ±1.2×50μs according to JEC-212-1981
*3. The upper limit of the ambient temperature is the maximum temperature that can satisfy the coil temperature rise value. Refer to Usage, transport and storage conditions in NOTES.
*4. Operating frequency of 5 A 250 V AC is 6 times/min. (ON : OFF = 1 s : 9 s)

REFERENCE DATA

1. Max. switching capacity

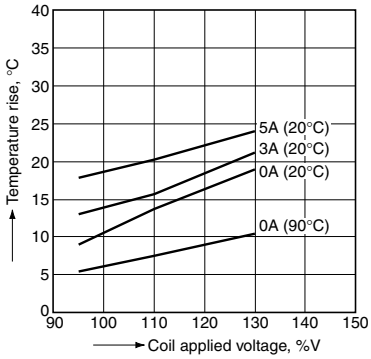


2. Life curve



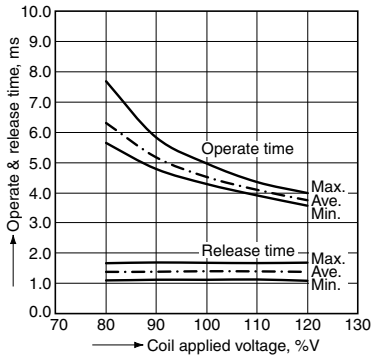
3. Coil temperature rise

Tested sample: APAN3124, 6 pcs.
Measured portion: Inside the coil
Ambient temperature: 20°C 68°F, 90°C 194°F (No contact current)



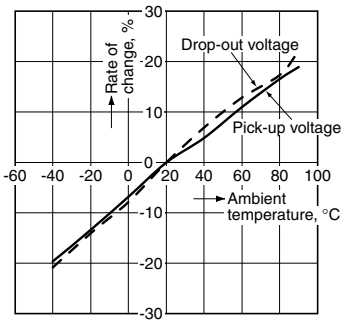
4. Operate & release time

Tested sample: APAN3124, 20 pcs.
Measured direction: Upright



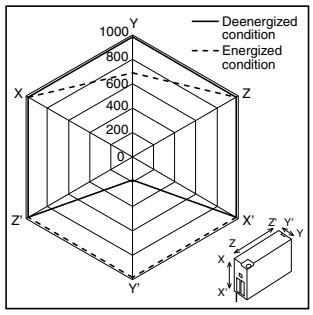
5. Ambient temperature characteristics

Tested sample: APAN3124, 6 pcs.



6. Malfunctional shock

Tested sample: APAN3124, 6 pcs.

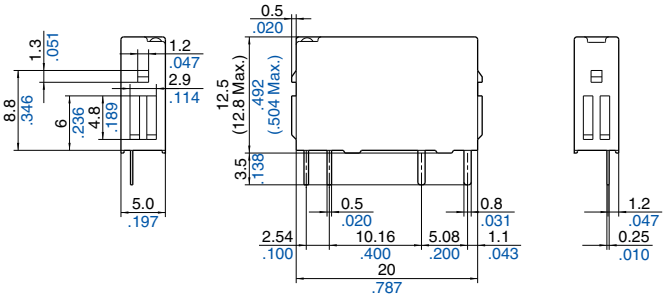


DIMENSIONS (mm inch)

The CAD data of the products with a **CAD Data** mark can be downloaded from: http://industrial.panasonic.com/ac/e/

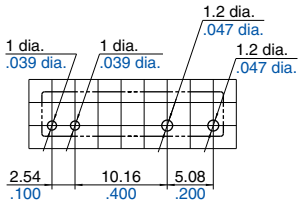
CAD Data

External dimensions



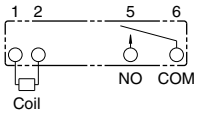
General tolerance: ±0.3 ±.012

PC board pattern (Bottom view)



Tolerance: ±0.1 ±.004

Schematic (Bottom view)



SAFETY STANDARDS

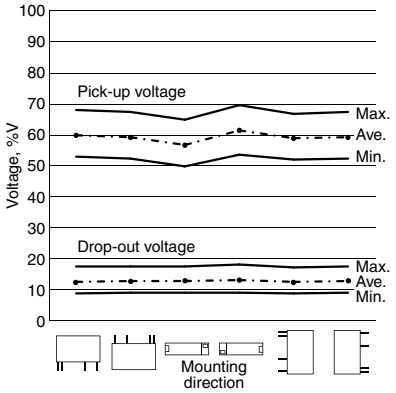
UL/C-UL (Recognized)				TÜV (Certified)			
File No.	Contact ratings	Temp.	Cycles	File No.	Contact ratings	Temp.	Cycles
E43149	5 A 250 V AC Resistive	40°C 104°F	5×10^4	B16 01 13461 348	5 A 250 V AC (cosϕ=1.0)	40°C 104°F	5×10^4
	5 A 250 V AC Resistive	90°C 194°F	10^4		5 A 250 V AC (cosϕ=1.0)	90°C 194°F	10^4
	5 A 30 V DC General use	40°C 104°F	5×10^4		5 A 30 V DC (0 ms)	40°C 104°F	5×10^4
	5 A 30V DC, 3 A 250 V AC General use	90°C 194°F	10^4		5 A 30 V DC (0 ms)	90°C 194°F	10^4
	3 A 250 V AC Resistive	40°C 104°F	10^5		3 A 250 V AC (cosϕ=1.0)	40°C 104°F	10^5
	3 A 30 V DC General use	40°C 104°F	10^5		3 A 30 V DC (0 ms)	40°C 104°F	10^5
	B300, R300 Pilot duty	40°C 104°F	—				
E479891	Class I, Division 2, Groups A, B, C, D Hazardous Location (ANSI/ISA 12.12.01-2015, CAN/CSA C22.2 No.213-15)						

Insulation distance (between contact and coil)
- UL/C-UL: Clearance distance: 5.29 mm .208 inch, Creepage distance: 5.35 mm .211 inch
- TÜV: Clearance distance: 5.29 mm .208 inch, Creepage distance: 5.35 mm .211 inch

NOTES

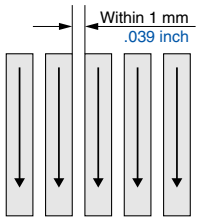
1. **For cautions for use, please read "GENERAL APPLICATION GUIDELINES".**
2. **If it includes ripple, the ripple factor should be less than 5%.**
3. **Specification values for pick-up and drop-out voltages are for the relay mounting with its terminals below.**

   Tested sample: APAN3124, 6 pcs.
   Ambient temperature: 20°C 68°F
   Measured direction: 6 direction

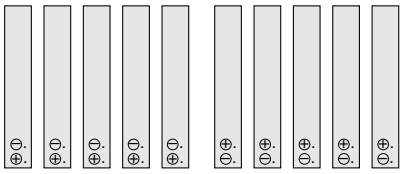


4. **When mounting the relays within 1 mm .039 inch, please notice the condition below.**

   1) Mount the relays in the same direction.



   2) Coil terminals (Terminal No. 1 & 2) polarity should be arranged in the same direction.



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