

Panasonic
ideas for life

**ULTRA-SMALL PACKAGE
SLIM POLARIZED RELAY**

**GN RELAYS
(AGN)**

FEATURES

• Compact slim body saves space

Thanks to the small surface area of 5.7 mm × 10.6 mm .224 inch × .417 inch and low height of 9.0 mm .354 inch, the packaging density can be increased to allow for much smaller designs.

• Outstanding surge resistance.

Surge withstand between open contacts:

1,500 V 10×160 μs (FCC part 68)

Surge withstand between contacts and coil:

2,500 V 2×10 μs (Telcordia)

• The use of twin crossbar contacts ensures high contact reliability.

AgPd contact is used because of its good sulfide resistance. Adopting low-gas molding material. Coil assembly molding technology which avoids generating volatile gas from coil.

• Increased packaging density

Due to highly efficient magnetic circuit design, leakage flux is reduced and changes in electrical characteristics from components being mounted close-together are minimized. This all means a packaging density higher than ever before.

• Nominal operating power: 140 mW

• Outstanding vibration and shock resistance.

Functional shock resistance:

750 m/s² {75G}

Destructive shock resistance:

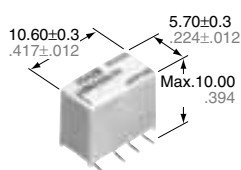
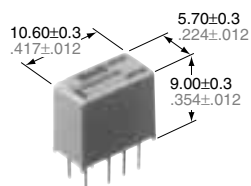
1,000 m/s² {100G}

Functional vibration resistance:

10 to 55 Hz (at double amplitude of 3.3 mm .130 inch)

Destructive vibration resistance:

10 to 55 Hz (at double amplitude of 5 mm .197 inch)



mm inch

SPECIFICATIONS

Contact

Arrangement	2 Form C	
Initial contact resistance, max. (By voltage drop 6 V DC 1A)	100 mΩ	
Contact material	Stationary: AgPd+Au clad Movable: AgPd	
Rating	Nominal switching capacity (resistive load)	1 A 30 V DC 0.3 A 125 V AC
	Max. switching power (resistive load)	30 W, 37.5 V A
	Max. switching voltage	110 V DC, 125 V AC
	Max. switching current	1 A
	Min. switching capacity *1	10 μA 10 mV DC
Nominal operating power	Single side stable	140mW (1.5 to 12 V DC) 230mW (24 V DC)
	1 coil latching	100mW (1.5 to 12 V DC) 120mW (24 V DC)
Expected life (min. operations)	Mechanical (at 180 cpm)	5 × 10 ⁷
	Electrical (at 20 cpm)	1 A 30 V DC resistive
		0.3 A 125 V AC resistive

Remarks:

* Specifications will vary with foreign standards certification ratings.

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

*2 Detection current: 10mA.

*3 Nominal voltage applied to the coil, excluding contact bounce time.

*4 By resistive method, nominal voltage applied to the coil; contact carrying current: 1 A.

*5 Half-wave pulse of sine wave: 6 ms; detection time: 10μs.

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

*7 Detection time: 10μs.

*8 Refer to 6. Conditions for operation, transport and storage mentioned in AMBIENT ENVIRONMENT

Characteristics

Initial insulation resistance*1		Min. 1,000MΩ (at 500V DC)
Initial breakdown voltage*2	Between open contacts	750 Vrms for 1min.
	Between contact sets	1,000 Vrms for 1min.
Initial surge voltage	Between contacts and coil	1,500 Vrms for 1min.
	Between open contacts (10×160 μs)	1,500 V (FCC Part 68)
	Between contacts and coil (2×10 μs)	2,500 V (Telcordia)
Operate time [Set time]*3 (at 20°C)		Max. 4 ms (Approx. 2 ms) [Max. 4 ms (Approx. 2 ms)]
Release time (without diode) [Reset time]*3 (at 20°C)		Max. 4 ms (Approx. 1 ms) [Max. 4 ms (Approx. 2 ms)]
Temperature rise*4 (at 20°C)		Max. 50°C
Shock resistance	Functional*5	Min. 750 m/s ² {75G}
	Destructive*6	Min. 1,000 m/s ² {100G}
Vibration resistance	Functional*7	10 to 55 Hz at double amplitude of 3.3 mm
	Destructive	10 to 55 Hz at double amplitude of 5 mm
Conditions for operation, transport and storage*8 (Not freezing and condensing at low temperature)	Ambient temperature *2	-40°C to 85°C -40°F to 185°F
	Humidity	5 to 85% R.H.
Unit weight		Approx. 1 g .035 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 The upper limit for the ambient temperature is the maximum temperature that can satisfy the coil temperature rise. Under the packing condition, allowable temperature range is from -40 to +70°C -40° to +158°F.

TYPICAL APPLICATIONS

- Communications (XDSL, Transmission)
- Measurement
- Security
- Home appliances, and audio/visual equipment
- Automotive equipment
- Medical equipment

ORDERING INFORMATION

Ex. AGN 2 0 0 A 1 H Z

Contact arrangement	Operating function	Type of operation	Terminal shape	Coil voltage (DC)	Packing style
2: 2 Form C	0: Single side stable 1: 1 coil latching	0: Standard type (B.B.M.)	Nil: Standard PC board terminal A: Surface-mount terminal A type S: Surface-mount terminal S type	1H: 1.5V 09: 9V 03: 3V 12: 12V 4H: 4.5V 24: 24V 06: 6V	Nil: Tube packing Z: Tape and reel packing (picked from 5/6/7/8 pin side)

Note: Tape and reel packing symbol "-Z" is not marked on the relay. "X" type tape and reel packing (picked from 1/2/3/4-pin side) is also available. Suffix "X" instead of "Z".

TYPES AND COIL DATA (at 20°C 68°F)

(1) Standard PC board terminal

Operating Function	Part No.	Coil Rating, V DC	Pick-up voltage, V DC (max.) (initial)	Drop-out voltage, V DC (min.) (initial)	Nominal operating current, mA (±10%)	Coil resistance, Ω (±10%)	Nominal operating power, mW	Max. allowable voltage, V DC
	Standard PC board terminal							
Single side stable	AGN2001H	1.5	1.13	0.15	93.8	16	140	2.25
	AGN20003	3	2.25	0.3	46.7	64.2	140	4.5
	AGN2004H	4.5	3.38	0.45	31	145	140	6.75
	AGN20006	6	4.5	0.6	23.3	257	140	9
	AGN20009	9	6.75	0.9	15.5	579	140	13.5
	AGN20012	12	9	1.2	11.7	1,028	140	18
	AGN20024	24	18	2.4	9.6	2,504	230	28.8
Operating Function	Part No.	Coil Rating, V DC	Set voltage, V DC (max.) (initial)	Reset voltage, V DC (max.) (initial)	Nominal operating current, mA (±10%)	Coil resistance, Ω (±10%)	Nominal operating power, mW	Max. allowable voltage, V DC
	Standard PC board terminal							
1 coil latching	AGN2101H	1.5	1.13	1.13	66.7	22.5	100	2.25
	AGN21003	3	2.25	2.25	33.3	90	100	4.5
	AGN2104H	4.5	3.38	3.38	22.2	202.5	100	6.75
	AGN21006	6	4.5	4.5	16.7	360	100	9
	AGN21009	9	6.75	6.75	11.1	810	100	13.5
	AGN21012	12	9	9	8.3	1,440	100	18
	AGN21024	24	18	18	5.0	4,800	120	36

1) Standard packing: Tube: 50 pcs.; Case: 1,000 pcs.

2) Specified value of pick-up, drop-out, set and reset voltage is with the condition of square wave coil pulse.

(2) Surface-mount terminal

Operating Function	Part No.		Coil Rating, V DC	Pick-up voltage, V DC (max.) (initial)	Drop-out voltage, V DC (min.) (initial)	Nominal operating current, mA (±10%)	Coil resistance, Ω (±10%)	Nominal operating power, mW	Max. allowable voltage, V DC
	Tube packing	Tape and reel packing							
Single side stable	AGN200○1H	AGN200○1HZ	1.5	1.13	0.15	93.8	16	140	2.25
	AGN200○03	AGN200○03Z	3	2.25	0.3	46.7	64.2	140	4.5
	AGN200○4H	AGN200○4HZ	4.5	3.38	0.45	31	145	140	6.75
	AGN200○06	AGN200○06Z	6	4.5	0.6	23.3	257	140	9
	AGN200○09	AGN200○09Z	9	6.75	0.9	15.5	579	140	13.5
	AGN200○12	AGN200○12Z	12	9	1.2	11.7	1,028	140	18
	AGN200○24	AGN200○24Z	24	18	2.4	9.6	2,504	230	28.8

○: For each surface-mounted terminal variation, input the following letter.

A type: A, S type: S

1) Standard packing: Tube: 50 pcs.; Case: 1,000 pcs.

Tape and reel: 500 pcs.; Case: 1,000 pcs.

2) Specified value of pick-up, drop-out, set and reset voltage is with the condition of square wave coil pulse.

GN (AGN)

Operating Function	Part No.		Coil Rating, V DC	Set voltage, V DC (max.) (initial)	Reset voltage, V DC (max.) (initial)	Nominal operating current, mA ($\pm 10\%$)	Coil resistance, Ω ($\pm 10\%$)	Nominal operating power, mW	Max. allowable voltage, V DC
	Tube packing	Tape and reel packing							
1 coil latching	AGN21001H	AGN21001HZ	1.5	1.13	1.13	66.7	22.5	100	2.25
	AGN210003	AGN210003Z	3	2.25	2.25	33.3	90	100	4.5
	AGN210004H	AGN210004HZ	4.5	3.38	3.38	22.2	202.5	100	6.75
	AGN210006	AGN210006Z	6	4.5	4.5	16.7	360	100	9
	AGN210009	AGN210009Z	9	6.75	6.75	11.1	810	100	13.5
	AGN210012	AGN210012Z	12	9	9	8.3	1,440	100	18
	AGN210024	AGN210024Z	24	18	18	5.0	4,800	120	36

○: For each surface-mounted terminal variation, input the following letter.

A type: A, S type: S

1) Standard packing: Tube: 50 pcs.; Case: 1,000 pcs.

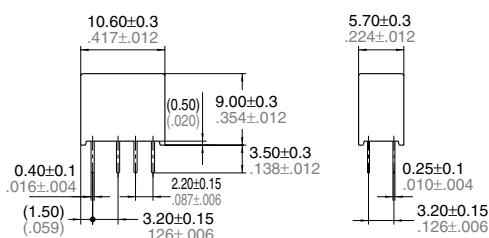
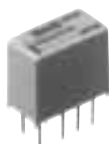
Tape and reel: 500 pcs.; Case: 1,000 pcs.

2) Specified value of pick-up, drop-out, set and reset voltage is with the condition of square wave coil pulse.

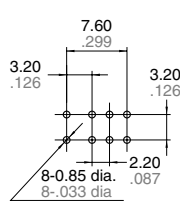
DIMENSIONS

mm inch

1. PC board terminal

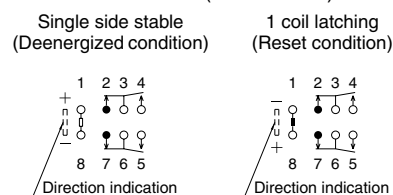


PC board pattern



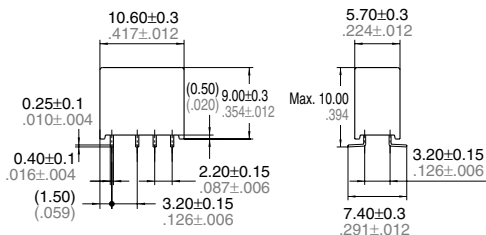
Tolerance: $\pm 0.1 \pm .004$

Schematic (Bottom view)

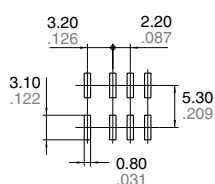


2. Surface-mount terminal

1) A type

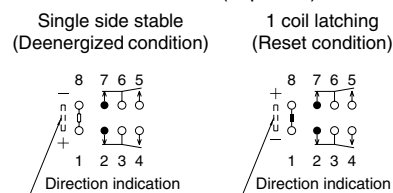


Suggested mounting pad

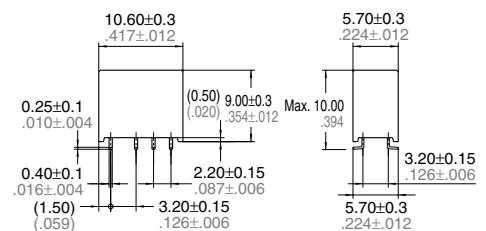


Tolerance: $\pm 0.1 \pm .004$

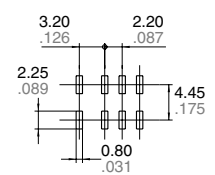
Schematic (Top view)



1) S type



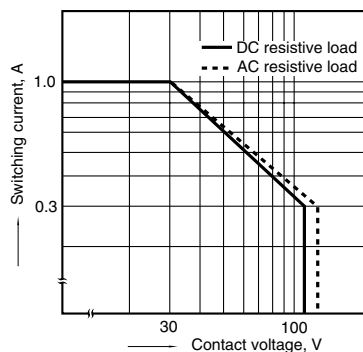
Suggested mounting pad



Tolerance: $\pm 0.1 \pm .004$

REFERENCE DATA

1. Max. switching capacity



2. Life curve

