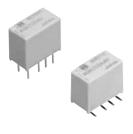
# **Panasonic**

c**M**us bsi.

High sensitivity, 100 mW Nominal operating power, 2 Form C and 1 A Slim body type relays

## **GN RELAYS (AGN)**



**RoHS** compliant

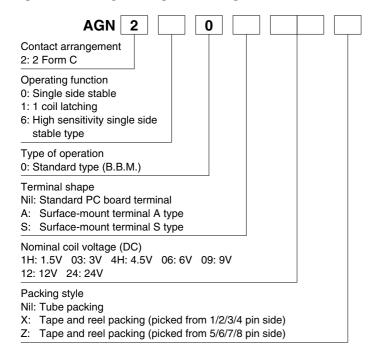
## **FEATURES**

- 1. Slim compact size 10.6 (L) × 5.7 (W) × 9.0 (H) mm .417 (L) × .224 (W) × .354 (H) inch
- 2. High sensitivity single side stable type (Nominal operating power: 100mW) is available
- 3. Outstanding surge resistance 1,500 V 10×160 μs (FCC part 68) (open contacts) 2,500 V 2×10 μs (Telcordia) (contact and coil)
- 4. The use of twin crossbar contacts ensures high contact reliability AgPd contact is used because of its good sulfide resistance. Adopting lowgas molding material. Coil assembly molding technology which avoids generating volatile gas from coil.

## TYPICAL APPLICATIONS

- 1. Telephonic equipment
- 2. Telecommunications equipment
- 3. Security equipment
- 4. Test and Measurement equipment
- 5. Electronic Consumer and Audio Visual equipment

## ORDERING INFORMATION



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## **TYPES**

#### 1. Standard PC board terminal

Nominal coil voltage	Single side stable	1 coil latching	High sensitivity single side stable	
Norminal con voltage	Part No.	Part No.	Part No.	
1.5 V DC	AGN2001H	AGN2101H	AGN2601H	
3 V DC	AGN20003	AGN21003	AGN26003	
4.5 V DC	AGN2004H	AGN2104H	AGN2604H	
6 V DC	AGN20006	AGN21006	AGN26006	
9 V DC	AGN20009	AGN21009	AGN26009	
12 V DC	AGN20012	AGN21012	AGN26012	
24 V DC	AGN20024	AGN21024	AGN26024	

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

#### 2. Surface-mount terminal

#### 1) Tube packing

Nominal coil voltage	Single side stable	1 coil latching	High sensitivity single side stable
Norminal con voltage	Part No.	Part No.	Part No.
1.5 V DC	AGN200□1H	AGN210□1H	AGN260□1H
3 V DC	AGN200□03	AGN210□03	AGN260□03
4.5 V DC	AGN200□4H	AGN210□4H	AGN260□4H
6 V DC	AGN200□06	AGN210□06	AGN260□06
9 V DC	AGN200□09	AGN210□09	AGN260□09
12 V DC	AGN200□12	AGN210□12	AGN260□12
24 V DC	AGN200□24	AGN210□24	AGN260□24

 $<sup>\</sup>square$ : For each surface-mounted terminal identification, input the following letter. A type:  $\underline{A}$ , S type:  $\underline{S}$  Standard packing: Tube: 50 pcs.; Case: 1,000 pcs.

#### 2) Tape and reel packing

Nominal coil voltage	Single side stable	1 coil latching	High sensitivity single side stable	
Nominal con voltage	Part No.	Part No.	Part No.	
1.5 V DC	AGN200□1HZ	AGN210□1HZ	AGN260□1HZ	
3 V DC	AGN200□03Z	AGN210□03Z	AGN260□03Z	
4.5 V DC	AGN200□4HZ	AGN210□4HZ	AGN260□4HZ	
6 V DC	AGN200□06Z	AGN210□06Z	AGN260□06Z	
9 V DC	AGN200□09Z	AGN210□09Z	AGN260□09Z	
12 V DC	AGN200□12Z	AGN210□12Z	AGN260□12Z	
24 V DC	AGN200□24Z	AGN210□24Z	AGN260□24Z	

## **RATING**

#### 1. Coil data

## 1) Single side stable type

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)
1.5 V DC				16 Ω		
3 V DC			46.7 mA	64.2 Ω		
4.5 V DC	75%V or less of 10%V or more of nominal voltage* (Initial) (Initial)	31 mA	145 Ω	140 mW	150%V of nominal voltage	
6 V DC		23.3 mA	257 Ω			
9 V DC			15.5 mA	579 Ω		
12 V DC		11.7 mA	1,028 Ω			
24 V DC			9.6 mA	2,504 Ω	230 mW	120%V of nominal voltage

## 2) 1 coil latching type

Nominal coil voltage	Set voltage (at 20°C 68°F)	Reset 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)
1.5 V DC			66.7 mA	22.5 Ω	100 mW	150%V of nominal voltage
3 V DC			33.3 mA	90 Ω		
4.5 V DC	75%V or less of		22.2 mA	202.5 Ω		
6 V DC	nominal voltage*		16.7 mA	360 Ω		
9 V DC	(Initial)		11.1 mA	810 Ω		
12 V DC			8.3 mA	1,440 Ω		
24 V DC			5.0 mA	4,800 Ω	120 mW	

<sup>\*</sup>Pulse drive (JIS C 5442-1996)

<sup>□:</sup> For each surface-mounted terminal identification, input the following letter. A type: A, S type: S
Standard packing: Tape and reel: 500 pcs.; Case: 1,000 pcs.

Notes: 1. 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.

2. Please inquire if you require a relay, between 1.5 and 24 V DC, with a voltage not listed.

## 3) High sensitivity single side stable type

Nominal coil voltage	Set voltage (at 20°C 68°F)	Reset 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)
1.5 V DC			66.7 mA	22.5 Ω		
3 V DC			33.3 mA	90 Ω		
4.5 V DC	80%V or less of 10%V or more of nominal voltage* (Initial) (Initial)	22.2 mA	202.5 Ω	100 mW	150%V of nominal voltage	
6 V DC		16.7 mA	360 Ω			
9 V DC			11.1 mA	810 Ω		
12 V DC		8.3 mA	1,440 Ω			
24 V DC			5.0 mA	4,800 Ω	120 mW	120%V of nominal voltage

<sup>\*</sup>Pulse drive (JIS C 5442-1996)

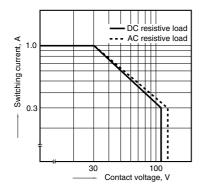
#### 2. Specifications

Characteristics	Item		Specifications	
	Arrangement		2 Form C	
Contact	Initial contact resistance, max.		Max. 100 mΩ (By voltage drop 6 V DC 1A)	
	Contact material		Stationary contact: AgPd+Au clad Movable contact: AgPd	
	Nominal switching ca	pacity	1 A 30 V DC, 0.3 A 125 V AC (resistive load)	
	Max. switching powe	r	30 W (DC), 37.5 V A (AC) (resistive load)	
	Max. switching voltage	je	110 V DC, 125 V AC	
	Max. switching curre	nt	1 A	
Rating	Min. switching capac	ity (Reference value)*1	10μA 10 mV DC	
		Single side stable	140mW (1.5 to 12 V DC), 230mW (24 V DC)	
	Nominal operating power	High sensitivity single side stable type	100mW (1.5 to 12 V DC), 120mW (24 V DC)	
		1 coil latching		
	Insulation resistance (Initial)		Min. 1,000M $\Omega$ (at 500V DC) Measurement at same location as "Initial breakdown voltage" section.	
		Between open contacts	750 Vrms for 1min. (Detection current: 10mA)	
	Breakdown voltage (Initial)	Between contact and coil	1,500 Vrms for 1min. (Detection current: 10mA)	
	(IIIIIai)	Between contact sets	1,000 Vrms for 1min. (Detection current: 10mA)	
Electrical	Surge breakdown	Between open contacts	1,500 V (10×160μs) (FCC Part 68)	
characteristics	voltage (Initial)	Between contacts and coil	2,500 V (2×10μs) (Telcordia)	
	Temperature rise (at 20°C 68°F)		Max. 50°C (By resistive method, nominal coil voltage applied to the coil; contact carrying current: 1A.)	
	Operate time [Set time] (at 20°C 68°F)		Max. 4 ms [Max. 4 ms] (Nominal coil voltage applied to the coil, excluding contact bounce time.)	
	Release time [Reset time] (at 20°C 68°F)		Max. 4 ms [Max. 4 ms] (Nominal coil voltage applied to the coil, excluding contact bounce time.) (without diode)	
	Ob a als manifesta man	Functional	Min. 750 m/s <sup>2</sup> (Half-wave pulse of sine wave: 6 ms; detection time: 10μs.)	
Mechanical	Shock resistance	Destructive	Min. 1,000 m/s <sup>2</sup> (Half-wave pulse of sine wave: 6 ms.)	
characteristics	Vibration registance	Functional	10 to 55 Hz at double amplitude of 3.3 mm (Detection time: 10μs.)	
	Vibration resistance Destructive		10 to 55 Hz at double amplitude of 5 mm	
Expected life	Mechanical		Min. 5 × 10 <sup>7</sup> (at 180 cpm)	
Expedied life	Electrical		Min. 10 <sup>5</sup> (1 A 30 V DC resistive), 10 <sup>5</sup> (0.3 A 125 V AC resistive) (at 20 cpm)	
Conditions	Conditions for operation, transport and storage*2		Ambient temperature: (Single side stable, 1 coil latching type) -40°C to +85°C -40°F to +185°F (High sensitivity single side stable type) -40°C to +70°C -40°F to +158°F Humidity: 5 to 85% R.H. (Not freezing and condensing at low temperature)	
	Max. operating speed	d (at rated load)	20 cpm	
Unit weight			Approx. 1 g .035 oz	

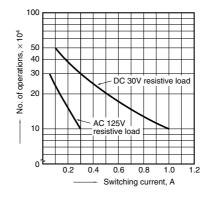
Notes: \*1 This value can change due to the switching frequency, environmental conditions, and desired reliability level, therefore it is recommended to check this with the \*2 Refer to "AMBIENT ENVIRONMENT" in GENERAL APPLICATION GUIDELINES.

## REFERENCE DATA

## 1. Max. switching capacity

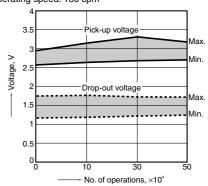


## 2. Life curve

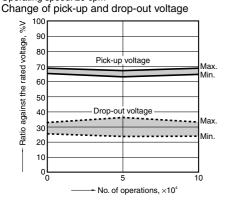


-3-

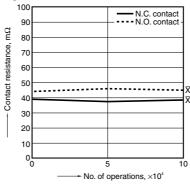
## 3. Mechanical life Tested sample: AGN2004H, 15 pcs. Operating speed: 180 cpm



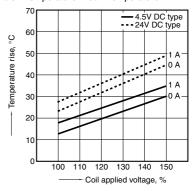
4. Electrical life (1A 30V DC resistive load) Tested sample: AGN2004H, 6 pcs. Operating speed: 20 cpm



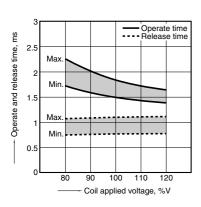
Change of contact resistance



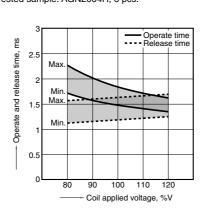
5. Coil temperature rise Tested sample: AGN2004H, AGN20024, 6 pcs. Point measured: Inside the coil Ambient temperature: Room temperature



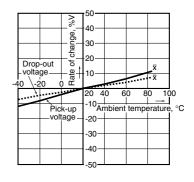
6-(1). Operate and release time (without diode) Tested sample: AGN2004H, 6 pcs.



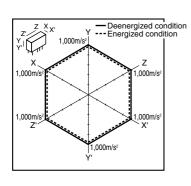
6-(2). Operate and release time (with diode) Tested sample: AGN2004H, 6 pcs.



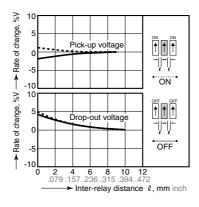
7. Ambient temperature characteristics Tested sample: AGN2004H, 6 pcs.



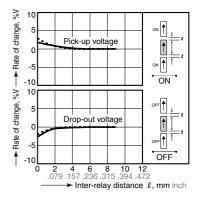
8. Malfunctional shock Tested sample: AGN2004H



9-(1). Influence of adjacent mounting Tested sample: AGN20012, 6 pcs.



9-(2). Influence of adjacent mounting Tested sample: AGN20012, 6 pcs.



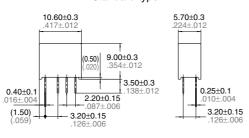
**DIMENSIONS** (mm inch)

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

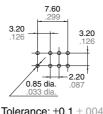
1. PC board terminal CAD Data



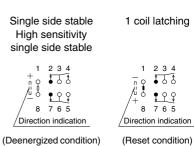
External dimensions Standard type



PC board pattern



## Schematic (Bottom view)



#### 2. Surface-mount terminal

#### CAD Data



Tuno	External dimensions	Suggested mounting pad (Tolerance: ±0.1 ±.004)	
Туре	Single side stable/1 coil latching/High sensitivity single side stable	Single side stable/1 coil latching/High sensitivity single side stable	
A type	0.25±0.1 .010±.004 0.40±0.1 .016±.004 (1.50) .020±0.15 .087±.006 (.059) .020±0.15 .087±.006 .087±.006 .087±.006 .087±.006 .087±.006 .087±.006	3.20	
S type	0.25±0.1 .010±.004 0.40±0.1 .016±.004 (0.50) 9.00±0.3 .020) .354±.012 0.40±0.1 .016±.004 (1.50) 9.00±0.3 .020 .354±.012 0.40±0.1 .087±.006 (1.50) 3.20±0.15 .087±.006 .087±.006 .087±.006 .087±.006 .087±.006	3.20 2.20 .126 .087 2.25 .089 4.45 .175 .031	

#### Schematic (Top view)

Single side stable High sensitivity single side stable



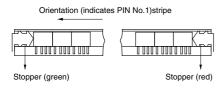
(Deenergized condition)

## 1 coil latching

## **NOTES**

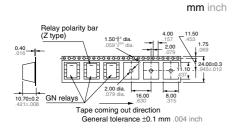
#### 1. Packing style

1) The relay is packed in a tube with the relay orientation mark on the left side, as shown in the figure below.



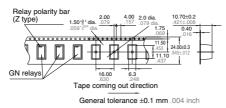
2) Tape and reel packing (A type)

(1)-1 Tape dimensions

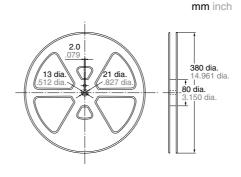


#### (S type)

## (1)-2 Tape dimensions



(2) Dimensions of plastic peel



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#### 2. Automatic insertion

To maintain the internal function of the relay, the chucking pressure should not exceed the values below.

Chucking pressure in the direction A: 4.9 N {500gf} or less

Chucking pressure in the direction B: 9.8 N {1 kgf} or less

Chucking pressure in the direction C:  $9.8 N \{1 \text{ kgf}\}$  or less



Please chuck the **mathematical** portion. Avoid chucking the center of the relay. In addition, excessive chucking pressure to the pinpoint of the relay should be avoided.

For general cautions for use, please refer to the "Cautions for use of Signal Relays" or "General Application Guidelines".