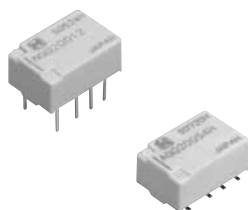


**High sensitivity, 100 mW  
Nominal operating power,  
2 Form C and 2 A Compact  
flat body type relays**

## GQ RELAYS (AGQ)



**RoHS compliant**

### FEATURES

- 1. High capacity: 2 A**
- 2. Flat compact size**  
10.6 (L) × 7.2 (W) × 5.2 (H) mm  
.417 (L) × .283 (W) × .205 (H) inch
- 3. High sensitivity single side stable type (Nominal operating power: 100mW) is available**
- 4. Outstanding surge resistance.**  
1,500 V 10×160 μs (FCC part 68)  
(open contacts)  
2,500 V 2×10 μs (Telcordia) (contact and coil)
- 5. 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.

### TYPICAL APPLICATIONS

- 1. Telephone switchboard**
- 2. Telecommunications equipment**
- 3. Security**
- 4. Measurement equipment**
- 5. Consumer electronic and audio visual equipment**

### ORDERING INFORMATION

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

TYPES

1. Standard PC board terminal

| Nominal coil voltage | Single side stable | 1 coil latching | High sensitivity single side stable |
|----------------------|--------------------|-----------------|-------------------------------------|
|                      | Part No.           | Part No.        | Part No.                            |
| 1.5 V DC             | AGQ2001H           | AGQ2101H        | AGQ2601H                            |
| 3 V DC               | AGQ20003           | AGQ21003        | AGQ26003                            |
| 4.5 V DC             | AGQ2004H           | AGQ2104H        | AGQ2604H                            |
| 6 V DC               | AGQ20006           | AGQ21006        | AGQ26006                            |
| 9 V DC               | AGQ20009           | AGQ21009        | AGQ26009                            |
| 12 V DC              | AGQ20012           | AGQ21012        | AGQ26012                            |
| 24 V DC              | AGQ20024           | AGQ21024        | AGQ26024                            |

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 |
|----------------------|--------------------|-----------------|-------------------------------------|
|                      | Part No.           | Part No.        | Part No.                            |
| 1.5 V DC             | AGQ200□1H          | AGQ210□1H       | AGQ260□1H                           |
| 3 V DC               | AGQ200□03          | AGQ210□03       | AGQ260□03                           |
| 4.5 V DC             | AGQ200□4H          | AGQ210□4H       | AGQ260□4H                           |
| 6 V DC               | AGQ200□06          | AGQ210□06       | AGQ260□06                           |
| 9 V DC               | AGQ200□09          | AGQ210□09       | AGQ260□09                           |
| 12 V DC              | AGQ200□12          | AGQ210□12       | AGQ260□12                           |
| 24 V DC              | AGQ200□24          | AGQ210□24       | AGQ260□24                           |

□: For each surface-mounted terminal identification, input the following letter. A type: A, S type: 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 |
|----------------------|--------------------|-----------------|-------------------------------------|
|                      | Part No.           | Part No.        | Part No.                            |
| 1.5 V DC             | AGQ200□1HZ         | AGQ210□1HZ      | AGQ260□1HZ                          |
| 3 V DC               | AGQ200□03Z         | AGQ210□03Z      | AGQ260□03Z                          |
| 4.5 V DC             | AGQ200□4HZ         | AGQ210□4HZ      | AGQ260□4HZ                          |
| 6 V DC               | AGQ200□06Z         | AGQ210□06Z      | AGQ260□06Z                          |
| 9 V DC               | AGQ200□09Z         | AGQ210□09Z      | AGQ260□09Z                          |
| 12 V DC              | AGQ200□12Z         | AGQ210□12Z      | AGQ260□12Z                          |
| 24 V DC              | AGQ200□24Z         | AGQ210□24Z      | AGQ260□24Z                          |

□: For each surface-mounted terminal identification, input the following letter. A type: A, S type: S  
Standard packing: Tape and reel: 900 pcs.; Case: 1,800 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.

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             | 75%V or less of nominal voltage* (Initial) | 10%V or more of nominal voltage* (Initial) | 93.8 mA                                         | 16 Ω                                  | 140 mW                  | 150%V of nominal voltage            |
| 3 V DC               |                                            |                                            | 46.7 mA                                         | 64.2 Ω                                |                         |                                     |
| 4.5 V DC             |                                            |                                            | 31 mA                                           | 145 Ω                                 |                         |                                     |
| 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             | 75%V or less of nominal voltage* (Initial) | 75%V or less of nominal voltage* (Initial) | 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             |                                            |                                            | 22.2 mA                                         | 202.5 Ω                               |                         |                                     |
| 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                  |                                     |

\*Pulse drive (JIS C 5442-1996)

## 3) High sensitivity single side stable type

| Nominal coil voltage | Set voltage<br>(at 20°C 68°F)                 | Reset voltage<br>(at 20°C 68°F)               | Nominal operating current<br>[±10%] (at 20°C 68°F) | Coil resistance<br>[±10%] (at 20°C 68°F) | Nominal operating power | Max. applied voltage<br>(at 20°C 68°F) |
|----------------------|-----------------------------------------------|-----------------------------------------------|----------------------------------------------------|------------------------------------------|-------------------------|----------------------------------------|
| 1.5 V DC             | 80%V or less of nominal voltage*<br>(Initial) | 10%V or more of nominal voltage*<br>(Initial) | 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             |                                               |                                               | 22.2 mA                                            | 202.5 Ω                                  |                         |                                        |
| 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               |

\*Pulse drive (JIS C 5442-1996)

## 2. Specifications

| Characteristics            | Item                                              |                                          | Specifications                                                                                                                                                                                                                                             |
|----------------------------|---------------------------------------------------|------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Contact                    | Arrangement                                       |                                          | 2 Form C                                                                                                                                                                                                                                                   |
|                            | Initial contact resistance, max.                  |                                          | Max. 100 mΩ (By voltage drop 6 V DC 1A)                                                                                                                                                                                                                    |
|                            | Contact material                                  |                                          | Stationary contact: AgPd+Au clad Movable contact: AgPd                                                                                                                                                                                                     |
| Rating                     | Nominal switching capacity                        |                                          | 2 A 30 V DC, 1 A 30 V DC, 0.3 A 125 V AC (resistive load)                                                                                                                                                                                                  |
|                            | Max. switching power                              |                                          | 60 W (DC), 30 W (DC), 37.5 V A (AC) (resistive load)                                                                                                                                                                                                       |
|                            | Max. switching voltage                            |                                          | 110 V DC, 125 V AC                                                                                                                                                                                                                                         |
|                            | Max. switching current                            |                                          | 2 A                                                                                                                                                                                                                                                        |
|                            | Min. switching capacity (Reference value)*1       |                                          | 10μA 10 mV DC                                                                                                                                                                                                                                              |
|                            | Nominal operating power                           | Single side stable                       | 140mW (1.5 to 12 V DC), 230mW (24 V DC)                                                                                                                                                                                                                    |
|                            |                                                   | High sensitivity single side stable type | 100mW (1.5 to 12 V DC), 120mW (24 V DC)                                                                                                                                                                                                                    |
|                            |                                                   | 1 coil latching                          |                                                                                                                                                                                                                                                            |
| Electrical characteristics | Insulation resistance (Initial)                   |                                          | Min. 1,000MΩ (at 500V DC)<br>Measurement at same location as "Initial breakdown voltage" section.                                                                                                                                                          |
|                            | Breakdown voltage (Initial)                       | Between open contacts                    | 750 Vrms for 1min. (Detection current: 10mA)                                                                                                                                                                                                               |
|                            |                                                   | Between contact and coil                 | 1,500 Vrms for 1min. (Detection current: 10mA)                                                                                                                                                                                                             |
|                            |                                                   | Between contact sets                     | 1,000 Vrms for 1min. (Detection current: 10mA)                                                                                                                                                                                                             |
|                            | Surge breakdown voltage (Initial)                 | Between open contacts                    | 1,500 V (10×160μs) (FCC Part 68)                                                                                                                                                                                                                           |
|                            |                                                   | Between contacts and coil                | 2,500 V (2×10μs) (Telcordia)                                                                                                                                                                                                                               |
|                            | Temperature rise (at 20°C 68°F)                   |                                          | Max. 50°C<br>(By resistive method, nominal coil voltage applied to the coil; contact carrying current: 1A.)                                                                                                                                                |
| Mechanical characteristics | 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.)<br>(without diode)                                                                                                                                        |
|                            | Shock resistance                                  | Functional                               | Min. 750 m/s <sup>2</sup> (Half-wave pulse of sine wave: 6 ms; detection time: 10μs.)                                                                                                                                                                      |
|                            |                                                   | Destructive                              | Min. 1,000 m/s <sup>2</sup> (Half-wave pulse of sine wave: 6 ms.)                                                                                                                                                                                          |
|                            | Vibration resistance                              | Functional                               | 10 to 55 Hz at double amplitude of 3.3 mm (Detection time: 10μs.)                                                                                                                                                                                          |
|                            |                                                   | Destructive                              | 10 to 55 Hz at double amplitude of 5 mm                                                                                                                                                                                                                    |
| Expected life              | Mechanical                                        |                                          | Min. 5 × 10 <sup>7</sup> (at 180 cpm)                                                                                                                                                                                                                      |
|                            | Electrical                                        |                                          | Min. 5 × 10 <sup>4</sup> (2 A 30 V DC resistive), Min. 10 <sup>5</sup> (1 A 30 V DC resistive),<br>Min. 10 <sup>5</sup> (0.3 A 125 V AC resistive) (at 20 cpm)                                                                                             |
| Conditions                 | Conditions for operation, transport and storage*2 |                                          | Ambient temperature:<br>(Single side stable, 1 coil latching type) -40°C to +85°C -40°F to +185°F<br>(High sensitivity single side stable type) -40°C to +70°C -40°F to +158°F<br>Humidity: 5 to 85% R.H. (Not freezing and condensing at low temperature) |
|                            | Max. operating speed (at rated load)              |                                          | 20 cpm                                                                                                                                                                                                                                                     |
| Unit weight                |                                                   |                                          | Approx. 1 g .035 oz                                                                                                                                                                                                                                        |

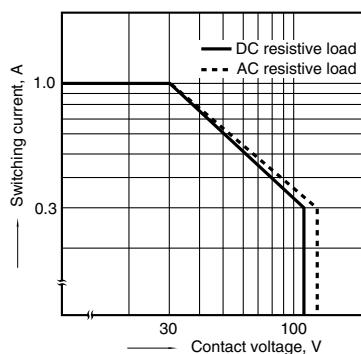
Notes: \*1 This value can change due to the switching frequency, environmental conditions, and desired reliability level, therefore it is recommended to check this with the actual load.

\*2 Refer to "AMBIENT ENVIRONMENT" in GENERAL APPLICATION GUIDELINES.

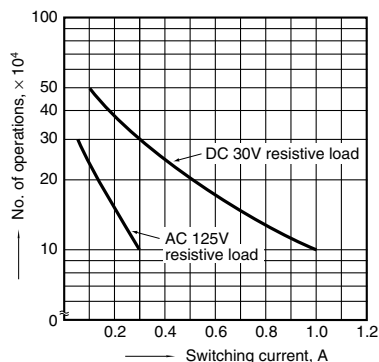
## REFERENCE DATA

## 1. Max. switching capacity

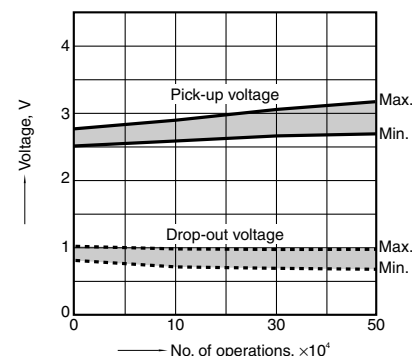
\* Max. switching capacity is 2A 30V DC.



## 2. Life curve



## 3. Mechanical life

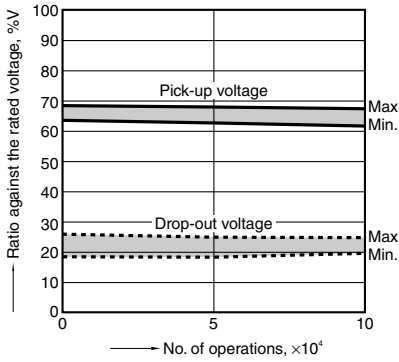
Tested sample: AGQ200A4H, 6 pcs.  
Operating speed: 180 cpm

4. Electrical life (1A 30V DC resistive load)

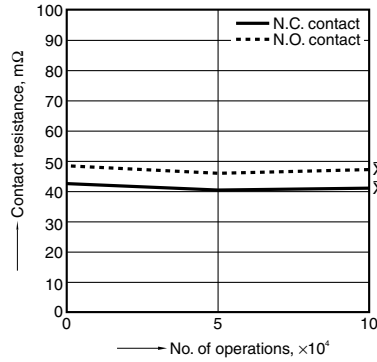
Tested sample: AGQ200A4H, 6 pcs.

Operating speed: 20 cpm

Change of pick-up and drop-out voltage



Change of contact resistance

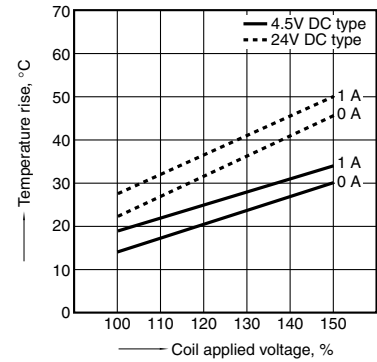


5. Coil temperature rise

Tested sample: AGQ200A4H, AGQ200A24, 6 pcs.

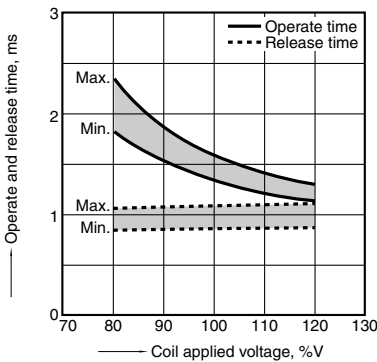
Point measured: Inside the coil

Ambient temperature: Room temperature



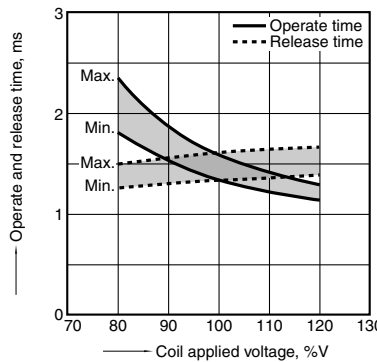
6-(1). Operate and release time (without diode)

Tested sample: AGQ200A4H, 10 pcs.



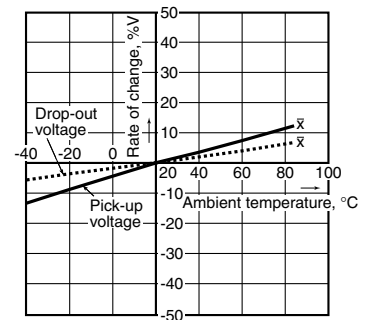
6-(2). Operate and release time (with diode)

Tested sample: AGQ200A4H, 10 pcs.



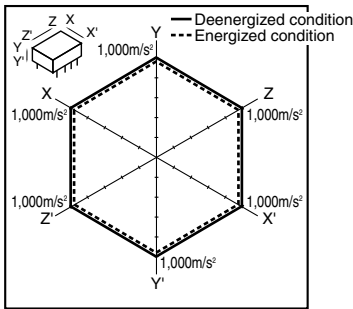
7. Ambient temperature characteristics

Tested sample: AGQ200A4H, 6 pcs.



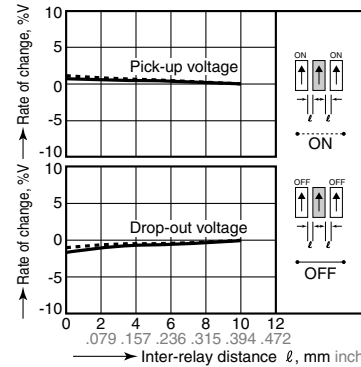
8. Malfunctional shock

Tested sample: AGQ200A4H, 6 pcs.



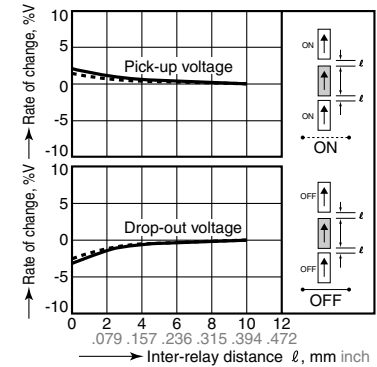
9-(1). Influence of adjacent mounting

Tested sample: AGQ20012, 6 pcs.



9-(2). Influence of adjacent mounting

Tested sample: AGQ20012, 6 pcs.

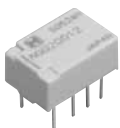


DIMENSIONS (mm inch)

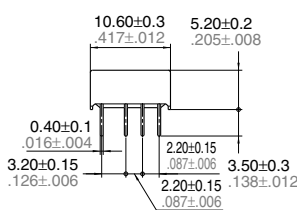
The CAD data of the products with a **CAD Data** mark can be downloaded from: <http://industrial.panasonic.com/ac/e/>

1. PC board terminal

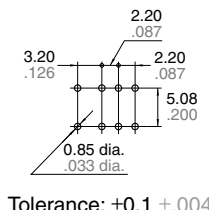
CAD Data



External dimensions



PC board pattern

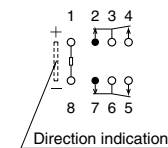


Tolerance: ±0.1 ±.004

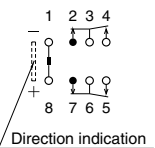
Schematic (Bottom view)

Single side stable  
High sensitivity  
single side stable

1 coil latching



(Deenergized condition)



(Reset condition)

## 2. Surface-mount terminal

## CAD Data



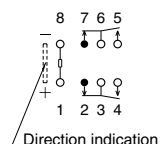
| Type   | External dimensions                                                    | Suggested mounting pad (Tolerance: $\pm 0.1 \pm .004$ )                |
|--------|------------------------------------------------------------------------|------------------------------------------------------------------------|
|        | Single side stable/1 coil latching/High sensitivity single side stable | Single side stable/1 coil latching/High sensitivity single side stable |
| A type |                                                                        |                                                                        |
| S type |                                                                        |                                                                        |

## Schematic (Top view)

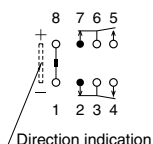
Single side stable

1 coil latching

High sensitivity single side stable



(Deenergized condition)

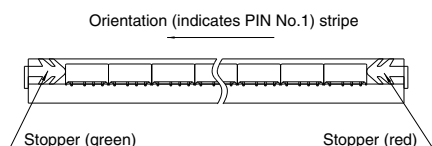
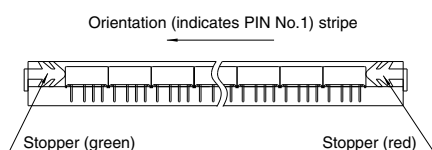


(Reset condition)

## NOTES

## 1. Packing style

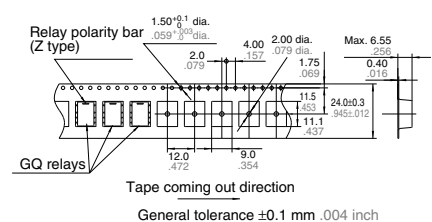
1) The relay is packed in a tube with the relay orientation mark on the left side, as shown in the figure below.



## 2) Tape and reel packing

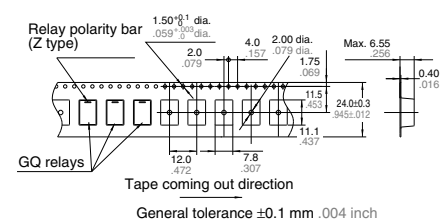
## (A type)

## (1)-1 Tape dimensions

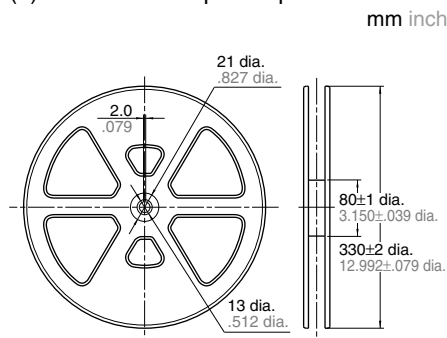


## (S type)

## (1)-2 Tape dimensions



## (2) Dimensions of plastic peel



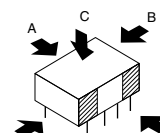
## 2. Automatic insertion

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

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



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

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

# Mouser Electronics

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[AGQ20006](#) [AGQ20009](#) [AGQ2001H](#) [AGQ200A06](#) [AGQ200A09](#) [AGQ200A09Z](#) [AGQ200A1H](#) [AGQ200A1HZ](#)  
[AGQ200A4HX](#) [AGQ200S06](#) [AGQ200S06Z](#) [AGQ200S09](#) [AGQ200S09Z](#) [AGQ200S1H](#) [AGQ200S1HZ](#) [AGQ200S4HZ](#)  
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[AGQ210S06](#) [AGQ210S06Z](#) [AGQ210S09](#) [AGQ210S09Z](#) [AGQ210S12](#) [AGQ210S12Z](#) [AGQ210S1H](#) [AGQ210S1HZ](#)  
[AGQ210S24](#) [AGQ210S24Z](#) [AGQ200S24Z](#) [AGQ200S12Z](#) [AGQ200A03](#) [AGQ200A03Z](#) [AGQ200S03](#) [AGQ200S03Z](#)  
[AGQ210A03Z](#) [AGQ210S03Z](#) [AGQ200A4HZ](#) [AGQ210A4HZ](#) [AGQ210S4HZ](#) [AGQ2104H](#) [AGQ200A12Z](#) [AGQ20012](#)  
[AGQ200A24](#) [AGQ210S4H](#) [AGQ210A4H](#) [AGQ20003](#) [AGQ200S24](#) [AGQ210A03](#) [AGQ2601H](#) [AGQ26003](#)  
[AGQ2604H](#) [AGQ26006](#) [AGQ26012](#) [AGQ26024](#) [AGQ260S1H](#) [AGQ260S03](#) [AGQ260S4H](#) [AGQ260S06](#)  
[AGQ260S09](#) [AGQ260S12](#) [AGQ260S24](#) [AGQ260A1H](#) [AGQ260A03](#) [AGQ260A06](#) [AGQ260A12](#) [AGQ260A24](#)  
[AGQ260S4HX](#) [AGQ260A09Z](#) [AGQ260A09](#) [AGQ260A4HZ](#) [AGQ200S24X](#) [AGQ260S4HZ](#) [AGQ200S03X](#)  
[AGQ210S03X](#) [AGQ200S12X](#)

## Данный компонент на территории Российской Федерации

**Вы можете приобрести в компании MosChip.**

Для оперативного оформления запроса Вам необходимо перейти по данной ссылке:

<http://moschip.ru/get-element>

Вы можете разместить у нас заказ для любого Вашего проекта, будь то серийное производство или разработка единичного прибора.

В нашем ассортименте представлены ведущие мировые производители активных и пассивных электронных компонентов.

Нашей специализацией является поставка электронной компонентной базы двойного назначения, продукции таких производителей как XILINX, Intel (ex.ALTERA), Vicor, Microchip, Texas Instruments, Analog Devices, Mini-Circuits, Amphenol, Glenair.

Сотрудничество с глобальными дистрибьюторами электронных компонентов, предоставляет возможность заказывать и получать с международных складов практически любой перечень компонентов в оптимальные для Вас сроки.

На всех этапах разработки и производства наши партнеры могут получить квалифицированную поддержку опытных инженеров.

Система менеджмента качества компании отвечает требованиям в соответствии с ГОСТ Р ИСО 9001, ГОСТ РВ 0015-002 и ЭС РД 009

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