



## RoHS compliant

## FEATURES

- 1. Space saving, Vertical size with a maximum thickness of 4.5 mm.**  
Mounting space has been reduced to 30% (compared to conventional SSR's) while meeting high density PC board mounting requirements.
- 2. Snubber circuit preventing malfunction**
- 3. Zero-cross type and Random type available**
- 4. High dielectric strength of 3,000V AC**

(between input and output)

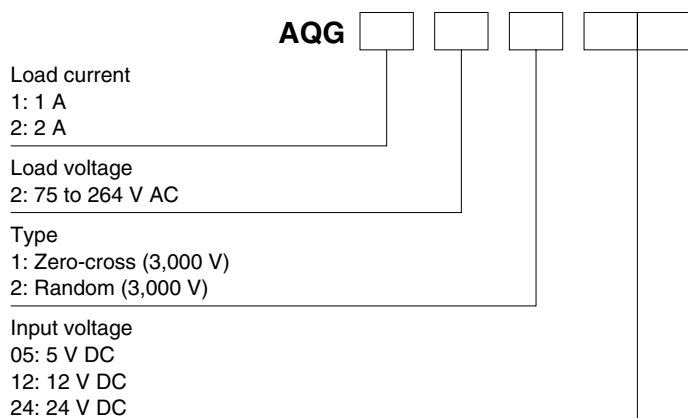
- ### 5. Snubber circuit integrated

The snubber circuit is integrated to prevent malfunction caused by the rapid rise of voltage on the output side, such as inductive load and current.

## TYPICAL APPLICATIONS

- Household appliances such as air conditioners, refrigerators and humidifiers
- Healthcare and medical equipment
- Industrial machinery such as NC machines, mounters, injection molders, and robots
- Microcomputer boards
- Amusement and amenity related equipment

## ORDERING INFORMATION



## TYPES

| Type       | Load current | Load voltage   | Input voltage | Part No. |
|------------|--------------|----------------|---------------|----------|
| Zero-cross | 1A           | 75 to 264 V AC | 5 V DC        | AQG12105 |
|            |              |                | 12 V DC       | AQG12112 |
|            |              |                | 24 V DC       | AQG12124 |
|            | 2A           | 75 to 264 V AC | 5 V DC        | AQG22105 |
|            |              |                | 12 V DC       | AQG22112 |
|            |              |                | 24 V DC       | AQG22124 |
| Random     | 1A           | 75 to 264 V AC | 5 V DC        | AQG12205 |
|            |              |                | 12 V DC       | AQG12212 |
|            |              |                | 24 V DC       | AQG12224 |
|            | 2A           | 75 to 264 V AC | 5 V DC        | AQG22205 |
|            |              |                | 12 V DC       | AQG22212 |
|            |              |                | 24 V DC       | AQG22224 |

Standard packing: Carton 20 pcs., Case 500 pcs.

## RATING

**1. Ratings** (Ambient temperature: 20°C 68°F, Input voltage ripple: 1% or less)

**1) Zero-cross type**

| Item       | Type                             | Part No.             |                  |                   |                      |                  |                   | Remarks                                                   |
|------------|----------------------------------|----------------------|------------------|-------------------|----------------------|------------------|-------------------|-----------------------------------------------------------|
|            |                                  | AQG12105             | AQG12112         | AQG12124          | AQG22105             | AQG22112         | AQG22124          |                                                           |
| Input side | Input voltage                    | 4 to 6 V DC          | 9.6 to 14.4 V DC | 19.2 to 28.8 V DC | 4 to 6 V DC          | 9.6 to 14.4 V DC | 19.2 to 28.8 V DC | * <sub>1</sub>                                            |
|            | Input impedance                  | Approx. 0.3k Ω       | Approx. 0.8k Ω   | Approx. 1.6k Ω    | Approx. 0.3k Ω       | Approx. 0.8k Ω   | Approx. 1.6k Ω    |                                                           |
|            | Drop-out voltage, min.           | 1 V                  |                  |                   |                      |                  |                   |                                                           |
|            | Reverse voltage                  | 3 V                  |                  |                   |                      |                  |                   |                                                           |
| Load side  | Max. load current                | 1 A AC* <sub>2</sub> |                  |                   | 2 A AC* <sub>2</sub> |                  |                   | 1A:<br>Ta = Max. 40°C 104°F<br>2A:<br>Ta = Max. 25°C 77°F |
|            | Load voltage                     | 75 to 264 V AC       |                  |                   |                      |                  |                   |                                                           |
|            | Frequency                        | 45 to 65 Hz          |                  |                   |                      |                  |                   |                                                           |
|            | Non-repetitive surge current     | 8 A* <sub>3</sub>    |                  |                   | 30 A* <sub>3</sub>   |                  |                   | In one cycle at 60 Hz                                     |
|            | Max. “OFF-state” leakage current | 1.5 mA               |                  |                   |                      |                  |                   | at 60 Hz at 200 V AC                                      |
|            | Max. “ON-state” voltage drop     | 1.6 V                |                  |                   |                      |                  |                   | at Max. carrying current                                  |
|            | Min. load current                | 20 mA* <sub>4</sub>  |                  |                   |                      |                  |                   |                                                           |

**2) Random type**

7. Parameter type

| Item       | Type                             | Part No.             |                  |                   |                      |                  |                   | Remarks                                                   |
|------------|----------------------------------|----------------------|------------------|-------------------|----------------------|------------------|-------------------|-----------------------------------------------------------|
|            |                                  | AQG12205             | AQG12212         | AQG12224          | AQG22205             | AQG22212         | AQG22224          |                                                           |
| Input side | Input voltage                    | 4 to 6 V DC          | 9.6 to 14.4 V DC | 19.2 to 28.8 V DC | 4 to 6 V DC          | 9.6 to 14.4 V DC | 19.2 to 28.8 V DC | * <sub>1</sub>                                            |
|            | Input impedance                  | Approx. 0.3k Ω       | Approx. 0.8k Ω   | Approx. 1.6k Ω    | Approx. 0.3k Ω       | Approx. 0.8k Ω   | Approx. 1.6k Ω    |                                                           |
|            | Drop-out voltage, min.           | 1 V                  |                  |                   |                      |                  |                   |                                                           |
|            | Reverse voltage                  | 3 V                  |                  |                   |                      |                  |                   |                                                           |
| Load side  | Max. load current                | 1 A AC* <sub>2</sub> |                  |                   | 2 A AC* <sub>2</sub> |                  |                   | 1A:<br>Ta = Max. 40°C 104°F<br>2A:<br>Ta = Max. 25°C 77°F |
|            | Load voltage                     | 75 to 264 V AC       |                  |                   |                      |                  |                   |                                                           |
|            | Frequency                        | 45 to 65 Hz          |                  |                   |                      |                  |                   |                                                           |
|            | Non-repetitive surge current     | 8 A* <sub>3</sub>    |                  |                   | 30 A* <sub>3</sub>   |                  |                   | In one cycle at 60 Hz                                     |
|            | Max. "OFF-state" leakage current | 1.5 mA               |                  |                   |                      |                  |                   | at 60 Hz at 200 V AC                                      |
|            | Max. "ON-state" voltage drop     | 1.6 V                |                  |                   |                      |                  |                   | at Max. carrying current                                  |
|            | Min. load current                | 20 mA* <sub>4</sub>  |                  |                   |                      |                  |                   |                                                           |

Notes: \*1. Refer to REFERENCE DATA "3. Input current vs. input voltage characteristics".

\*2. Refer to REFERENCE DATA "1. Load current vs. ambient temperature".

\*3. Refer to REFERENCE DATA "2. Non-repetitive surge current vs. carrying time".

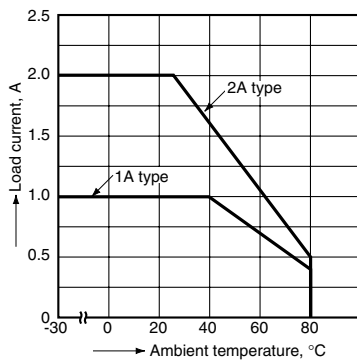
\*4. When the load current is less than the rated minimum load current, please refer to "Cautions for Use of SSR".

**2. Characteristics** (Ambient temperature: 20°C 68°F, Input voltage ripple: 1% or less)

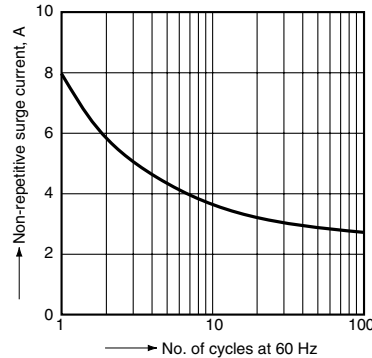
| Item                        | Zero-cross type                            | Random type                         | Remarks                            |
|-----------------------------|--------------------------------------------|-------------------------------------|------------------------------------|
| Operate time max.           | 1/2 cycle of voltage sine wave + 1 ms      | 1 ms                                |                                    |
| Release time, max.          | 1/2 cycle of voltage sine wave + 1 ms      |                                     |                                    |
| Insulation resistance, min. | 10 <sup>9</sup> Ω between input and output |                                     | at 500 V DC                        |
| Breakdown voltage           | 3,000 Vrms between input and output        |                                     | for 1 min.                         |
| Vibration resistance        | 10 to 55 Hz double amplitude of 0.75 mm    |                                     | X, Y, Z axes                       |
| Shock resistance            | Min. 1,000 m/s <sup>2</sup>                |                                     | X, Y, Z axes                       |
| Ambient temperature         | -30°C to +80°C -22°F to +176°F             |                                     | Non-condensing at low temperatures |
| Storage temperature         | -30°C to +100°C -22°F to +212°F            |                                     |                                    |
| Operational method          | Zero-cross (Turn-ON and Turn-OFF)          | Random turn ON, zero-cross turn OFF |                                    |

## REFERENCE DATA

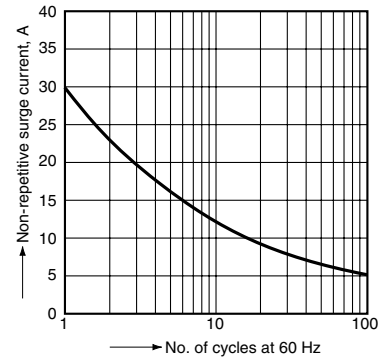
1. Load current vs. ambient temperature



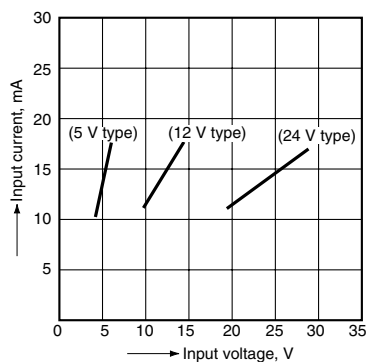
2.-(1) Non-repetitive surge current vs. carrying time (1A type)



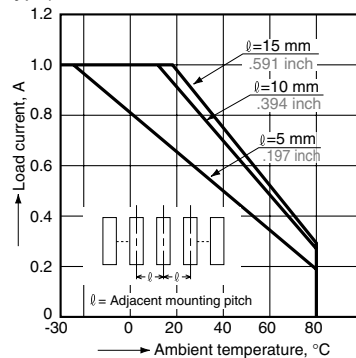
2.-(2) Non-repetitive surge current vs. carrying time (2A type)



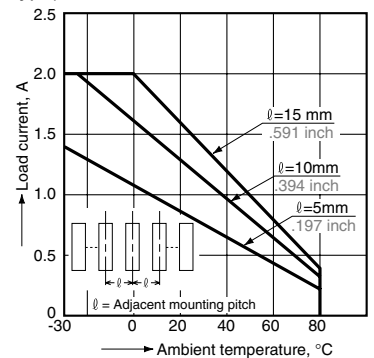
3. Input current vs. input voltage characteristics



4.-(1) Load current vs. ambient temperature characteristics for adjacent mounting (1A type)



4.-(2) Load current vs. ambient temperature characteristics for adjacent mounting (2A type)



## DIMENSIONS (mm inch)

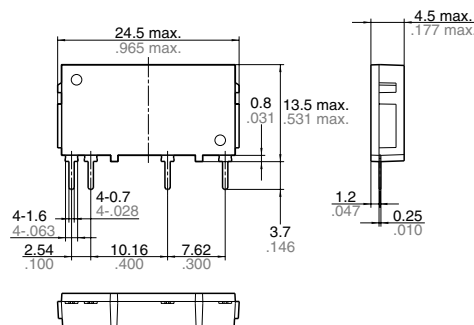
1. 1A type

**CAD Data**



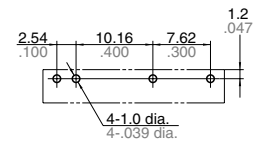
The CAD data of the products with a **CAD Data** mark can be downloaded from: <http://industrial.panasonic.com/ac/e/>

External dimensions



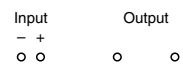
General tolerance:  $\pm 0.2 \pm 0.008$

PC board pattern (Bottom view)



Tolerance:  $\pm 0.1 \pm 0.004$

Schematic

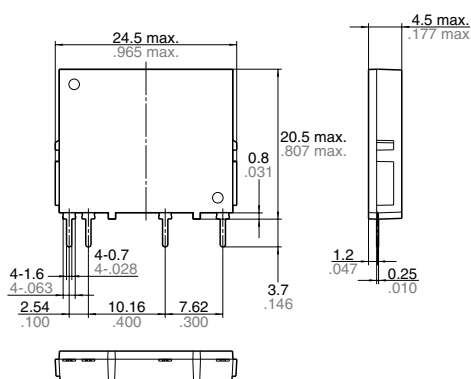


2. 2A type

**CAD Data**



External dimensions



General tolerance:  $\pm 0.2 \pm 0.008$

PC board pattern (Bottom view)



Tolerance:  $\pm 0.1 \pm 0.004$

Schematic



Recommended Temperature Controllers



<KT4H Temperature Controller>

Our temperature controller is recommended for use with our Solid State Relays.

Features

- Space saving requiring only a depth of 65 mm
- Data collection possible through a PLC using RS485 communication
- Tool port is standard for easy data setting
- Inverted LCD + backlight for good legibility with large characters
- Excellent operability and rich optional control functions

Substitute part numbers

| Power supply    | Control output             | Part No.    |
|-----------------|----------------------------|-------------|
| 100 to 240 V AC | Non-contact voltage output | AKT4H112100 |

\* For detailed product information about temperature controllers, please refer to our website:  
<http://industrial.panasonic.com/ac/e/>

# Mouser Electronics

Authorized Distributor

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[AQG22212](#) [AQG22224](#)