

# G6QG

## PCB Power Relays

### Small-Size and Low Height Power Relay for Switching 55 A



- Capable of high-capacity switching with a contact rating of 480 VAC, 55 A despite its small size (L 30.5 x W 16.0 x H 20.5 mm)
- Contact gap: 2 mm or more (Compliant with Solar Power Generation Standard IEC62109)
- Capable of 10 kV high withstand voltage (between coil and contact)
- Coil holding voltage (35% of rated coil voltage) reduces coil power consumption to approximately 12% of rated voltage



Refer to the *Precautions* on page 4.

### Model Number Legend

G6QG-□□□  
1 2 3

1. Number of Poles  
1: 1-pole

2. Contact Form  
A: SPST-NO (1a)

3. Enclosure rating  
None: Flux protection

### Application Examples

- Solar power generation system
- Inverter for Solar and Energy Storage
- EV Charging Station
- Industrial inverters
- Home appliances
- Various industrial equipment

### Ordering Information

| Contact type | Enclosure rating | Model   | Rated coil voltage (V) | Minimum packing unit |
|--------------|------------------|---------|------------------------|----------------------|
| SPST-NO (1a) | Flux protection  | G6QG-1A | 12, 24 VDC             | 50 pcs/box           |

**Note:** 1. When placing an order, please specify the number in package multiples.

**Note:** 2. When ordering, add the rated coil voltage to the model number.

Example: G6QG-1A DC12

□ Rated coil voltage

However, the notation of the coil voltage on the product case as well as on the packing will be marked as □□ VDC.

### Ratings

#### Coil

| Rated voltage (V) | Rated current (mA) | Coil resistance (Ω) | Must operate voltage (V) | Must release voltage (V) | Max. voltage (V) | Power consumption (mW)          |
|-------------------|--------------------|---------------------|--------------------------|--------------------------|------------------|---------------------------------|
|                   |                    |                     | % of rated voltage       |                          |                  |                                 |
| 12 VDC            | 117                | 103                 | 75% max.                 | 5% to 27%                | 110%             | Approx. 1,400<br>Approx. 172 *1 |
| 24 VDC            | 58                 | 411                 |                          |                          |                  |                                 |

**Note:** 1. The rated current and resistance are measured at a coil temperature of 23°C with a tolerance of ±10%.

**Note:** 2. The operation characteristic are measured at a coil temperature of 23°C.

**Note:** 3. The maximum permissible voltage is the maximum value of the fluctuation range of the relay coil operating power supply and was measured at an ambient temperature of 23°C.

**Note:** 4. Be sure to use this relay at holding voltage. For details, please refer to *Coil Voltage Reduction (Holding Voltage) during and after Relay Operation* on page 4.

\*1. Coil consumption when holding voltage is used is approximately 172 mW (at 35% holding voltage)

#### Contacts

|                        |                                                                   |
|------------------------|-------------------------------------------------------------------|
| Contact type           | Single                                                            |
| Contact material       | Ag alloy (Cd-free material)                                       |
| Rated load (resistive) | 480 VAC 55 A<br>480 VAC making 20 A, carrying 55 A, breaking 20 A |
| Rated carry current    | 55 A                                                              |
| Max. switching voltage | 480 VAC                                                           |
| Max. switching current | 55 A                                                              |

G6QG

Characteristics

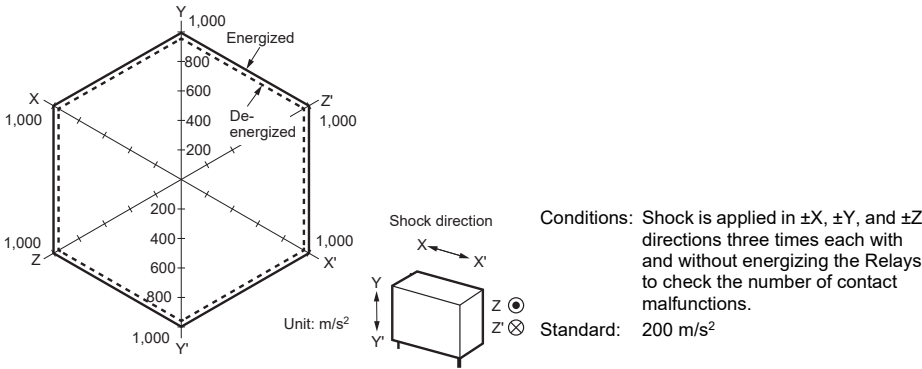
| Item                                                  |                                       | Model | G6QG-1A                                                                                                                                                              |
|-------------------------------------------------------|---------------------------------------|-------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Contact resistance *1                                 |                                       |       | 100 mΩ max.                                                                                                                                                          |
| Operate time                                          |                                       |       | 20 ms max.                                                                                                                                                           |
| Release time                                          |                                       |       | 10 ms max.                                                                                                                                                           |
| Insulation resistance *2                              |                                       |       | 1,000 MΩ min.                                                                                                                                                        |
| Dielectric strength                                   | Between coil and contacts             |       | 4,500 VAC, 50/60 Hz for 1 min                                                                                                                                        |
|                                                       | Between contacts of the same polarity |       | 2,500 VAC, 50/60 Hz for 1 min                                                                                                                                        |
| Impulse withstand voltage (Between coil and contacts) |                                       |       | 10 kV (1.2 x 50 μs)                                                                                                                                                  |
| Vibration resistance                                  | Destruction                           |       | 10 to 55 to 10 Hz, 0.75 mm single amplitude (1.5 mm double amplitude)                                                                                                |
|                                                       | Malfunction                           |       | 10 to 55 to 10 Hz, 0.75 mm single amplitude (1.5 mm double amplitude)                                                                                                |
| Shock resistance                                      | Destruction                           |       | 1,000 m/s <sup>2</sup>                                                                                                                                               |
|                                                       | Malfunction                           |       | 200 m/s <sup>2</sup>                                                                                                                                                 |
| Durability                                            | Mechanical                            |       | 100,000 operations min. (at 18,000 operations/h)                                                                                                                     |
|                                                       | Electrical (Resistive)                |       | 480 VAC, 55 A, 10 operations min.<br>480 VAC making 20 A, carrying 55 A, breaking 20 A, 30,000 operations min.<br>(Switching frequency: 1 second ON - 9 seconds OFF) |
| Failure rate (M level) (Reference value) *3           |                                       |       | 1 A at 5 VDC                                                                                                                                                         |
| Use conditions                                        | Coil holding voltage *4               |       | 35% to 50% of rated coil voltage                                                                                                                                     |
|                                                       | Ambient operating temperature         |       | -40°C to +85°C (with no icing or condensation)                                                                                                                       |
|                                                       | Ambient operating humidity            |       | 5% to 85% RH                                                                                                                                                         |
| Weight                                                |                                       |       | Approx. 18 g                                                                                                                                                         |

\*1. Measurement conditions: with 5 VDC, 1 A, voltage drop method.  
\*2. Measurement conditions: measured at the same point as the withstand voltage with a 500 VDC insulation resistance tester.  
\*3. The value was measured at a switching frequency of 120 operations/minute.  
\*4. For the detail regarding holding voltage usage, please refer to *Coil Voltage Reduction (Holding Voltage) during and after Relay Operation* on page 4.

Engineering Data

Shock Malfunction

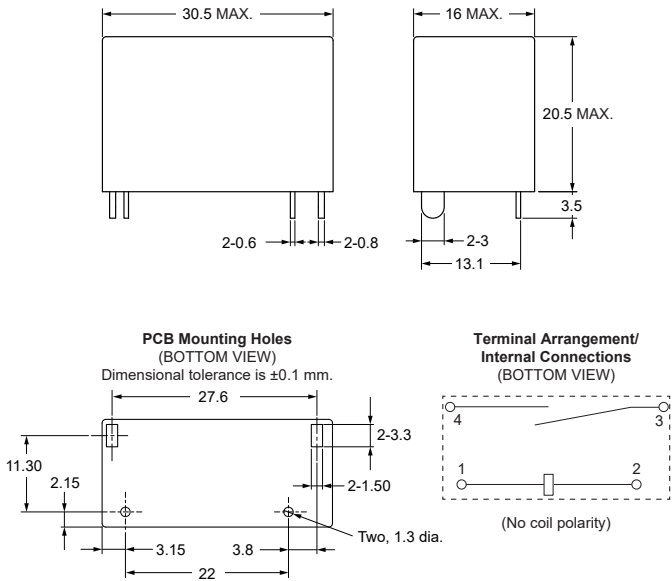
G6QG-1A



# Dimensions

CAD Data marked products, 2D drawings and 3D CAD models are available.  
For CAD information, please visit our website, which is noted on the last page.

## G6QG-1A External view



CAD Data

## Approval Standard

The approval rating values for overseas standards are different from the performance values determined individually confirm the values before use.

UL/C-UL (CSA) Recognized  (File No.E41515)

| Model   | Coil ratings   | Contact ratings                                                     | Number of test operations |
|---------|----------------|---------------------------------------------------------------------|---------------------------|
| G6QG-1A | 12 VDC, 24 VDC | 480 VAC 55 A (Resistive) 85°C                                       | 10                        |
|         |                | Making 20 A, carrying 55 A, breaking 20 A, 480 VAC (Resistive) 85°C | 30,000                    |

TÜV Certified for EN/IEC Standards  (EN61810-1) (Certification No.R50623877)

| Model   | Coil ratings   | Contact ratings                                                     | Number of test operations |
|---------|----------------|---------------------------------------------------------------------|---------------------------|
| G6QG-1A | 12 VDC, 24 VDC | 480 VAC 55 A (Resistive) 85°C                                       | 10                        |
|         |                | Making 20 A, carrying 55 A, breaking 20 A, 480 VAC (Resistive) 85°C | 30,000                    |

CQC Certified  (Certification No.CQC24002427192)

| Model   | Coil ratings   | Contact ratings                                                     | Number of test operations |
|---------|----------------|---------------------------------------------------------------------|---------------------------|
| G6QG-1A | 12 VDC, 24 VDC | 480 VAC 55 A (Resistive) 85°C                                       | 10                        |
|         |                | Making 20 A, carrying 55 A, breaking 20 A, 480 VAC (Resistive) 85°C | 30,000                    |

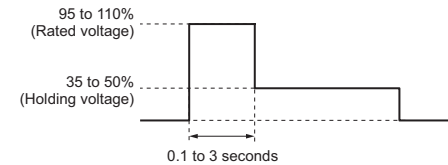
Precautions

Please refer to "Safety Precautions for All PCB Relays" for correct use.

Precautions for Correct Use

●Coil Voltage Reduction (Holding Voltage) during and after Relay Operation

- Use this relay with coil voltage reduction.
- Use in the applied voltage and time ranges indicated in the figure below.
- Do not exceed this range due to coil voltage change and so on.



|                 | Applied coil voltage | Coil resistance *                | Coil power consumption |
|-----------------|----------------------|----------------------------------|------------------------|
| Rated voltage   | 100%                 | 103 Ω (12 VDC)<br>411 Ω (24 VDC) | Approx. 1,400 mW       |
| Holding voltage | 35%                  |                                  | Approx. 172 mW         |

\* The coil resistances were measured at a coil temperature of 23°C with tolerances of ± 10%.

This image shows a full page of a blank sheet of white paper designed for writing. It features horizontal blue or grey ruling lines spaced evenly down the page. A single vertical red margin line runs along the left edge, creating a narrow left margin. The word "MEMO" is printed in bold, black, uppercase letters at the top center of the page, positioned between the top margin line and the first set of ruling lines.

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Device & Module Solutions Company

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