

# G6QE

## PCB Power Relays

### Miniature and Low Height Single-pole Power Relay with 36A Switching Current



- Delivers high capacity switching up to 480 VAC, 36 A (G6QE-1A4 type) in a compact form
- Achieved 10-kV impulse withstand voltage (between coil and contacts)
- Power consumption reduced to 12% compared with rated coil consumption by lowering the applied voltage to the coil after applying nominal voltage for 100 ms relay operation (Reduced to 35% from rated coil voltage)
- Lineup features models with C-UL, TUV, and CQC certification as standard, and models compliant with the Electrical Appliance.
- (IEC/EN) 60079-15 explosion proofing approval obtained (Model G6QE-1A4 type)



### Model Number Legend

G6QE-□□□  
1 2 3

**1. Number of Poles**  
1: 1-pole

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

**3. Enclosure rating**  
None: Flux protection  
4: Sealed  
\* C-UL certification is excluded for 480 VAC rating

### Application Examples

- Home appliances
- FA equipment
- Industrial machinery

### Ordering Information

Terminal Shape	Classification	Contact Form	Enclosure rating	Model	Rated coil voltage	Minimum packing unit
PCB terminals	Standard	SPST-NO (1a)	Flux protection	<b>G6QE-1A</b>	5 VDC 12 VDC 24 VDC	50pcs/tray
			Sealed	<b>G6QE-1A4</b>	12 VDC	

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

Example: G6QE-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	Rated current (mA)	Coil resistance (Ω)	Must operate voltage (V)	Must release voltage (V)	Max. voltage (V)	Power consumption (mW)
			% of rated voltage			
5 VDC	280	17.9	70% max.	5 to 23%	140% (at 23°C)	Approx. 1400 Approx. 172 *
12 VDC	116.7	102.9				
24 VDC	58.3	411.4				

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

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

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

\* Power consumption with Holding Voltage is approx. 172 mW (when applying Holding Voltage at 35%). Please confirm the detail in page 5 Coil Voltage Reduction (Holding Voltage) after Relay Operation.

### ●Contacts

Enclosure rating	Flux protection	Sealed
Model	G6QE-1A	G6QE-1A4
Contact type	Single	
Contact material	Ag Alloy (Cd free)	
Rated load	Resistive load 36 A at 250 VAC 32 A at 250 VAC 30 A at 250 VAC	Resistive load 20 A at 250 VAC 36 A at 480 VAC
		Inverter load 480 VAC/Inrush: 240 A (0-P, rise time: 3 ms or longer), Carrying: 36 A, Breaking: 0 A
Rated carry current	36 A	
Max. switching voltage	277 VAC	480 VAC
Max. switching current	36 A	

## Characteristics

Enclosure rating		Flux protection	Sealed
Item	Model	G6QE-1A	G6QE-1A4
Contact resistance *1		100 mΩ max.	
Operate time		20 ms max.	
Release time		10 ms max.	
Insulation resistance *2		1000 MΩ min.	
Dielectric strength	Between coil and contacts	4,500 VAC, 50/60 Hz for 1 min	
	Between contacts of the same polarity	2,000 VAC, 50/60 Hz for 1 min	
Insulation distance	Between coil and contacts	Clearance: 3.2 mm, Creepage: 6.4 mm	
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	1,000,000 operations min. (at 18,000 operations/h)	
	Electrical	100,000 operations min. (30 A, 250 VAC, resistive load) 50,000 operations min. (32 A, 250 VAC, resistive load) 10,000 operations min. (36 A, 250 VAC, resistive load) (ON for 1 s and OFF for 9 s)	1,000 operations min. (20 A, 250 VAC, resistive load) 100 operations min. (36 A, 480 VAC, resistive load) 480 VAC/Inrush: 240 A (0-P, rise time: 3 ms or longer), Carrying: 36 A, Breaking: 0 A (inverter load) 100,000 times or more (ON for 1 s and OFF for 9 s)
Failure rate (P level) (reference value) *3		100 mA at 5 VDC	
Coil holding voltage *4		35% to 80% of rated coil voltage (contact carrying current 32 A, at 85 °C) 35% to 50% of rated coil voltage (contact carrying current 36 A, at 85 °C)	
Ambient operating temperature		-40°C to +60°C (when applying Rated Coil Voltage) -40°C to +85°C (contact carrying current 32 A, when applying Holding Voltage at 35% to 80%) (contact carrying current 36 A, when applying Holding Voltage at 35% to 50%) (with no icing or condensation)	
Ambient operating humidity		5% to 85%	
Weight		Approx. 17 g	

**Note:** The values given above are initial values.

\*1. Measurement conditions:

5 VDC, 1 A, voltage drop method.

\*2. Measurement conditions:

The insulation resistance was measured with a 500 VDC megohmmeter at the same locations as the dielectric strength was measured.

\*3. This value was measured at a switching frequency of 120 operations/min.

\*4. Power consumption with Holding Voltage is approx. 172 mW (when applying Holding Voltage at 35%). Please confirm the detail in page 5 Coil Voltage Reduction (Holding Voltage) after Relay Operation.

## Actual Load Life (Reference Values)

### 250 VAC Capacitive load (Flux protection)

Inrush: 42 A (0-p), Carrying: 30A, Breaking: 2.5 A

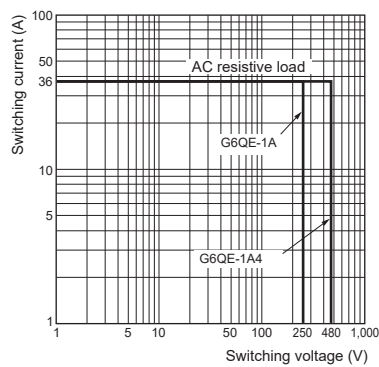
150,000 operations min. (Ambient temperature: 23°C)

# G6QE

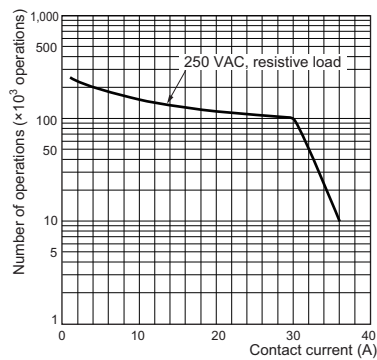
## Engineering Data

### ●Maximum Switching Capacity ●Durability

G6QE-1A, G6QE-1A4

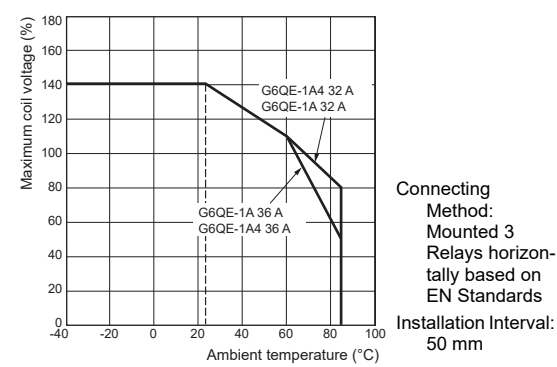


G6QE-1A



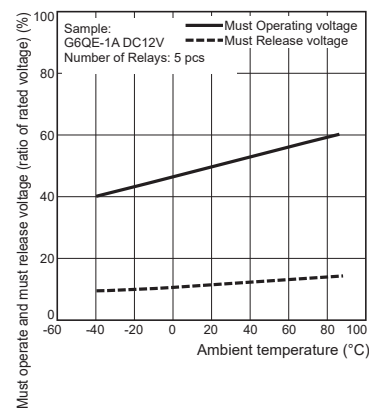
### ●Ambient Temperature vs. Maximum Coil Voltage

G6QE-1A, G6QE-1A4

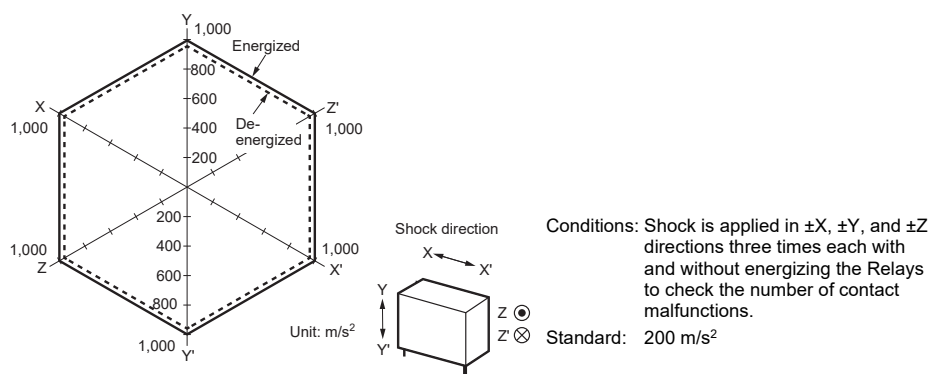


### ●Ambient Temperature vs. Maximum Operate or Must Release Voltage ●Shock Malfunction

G6QE-1A, G6QE-1A4



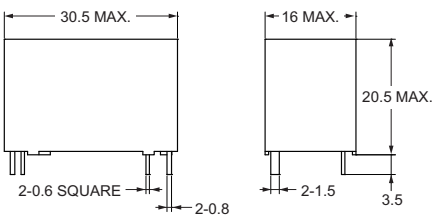
G6QE-1A, G6QE-1A4



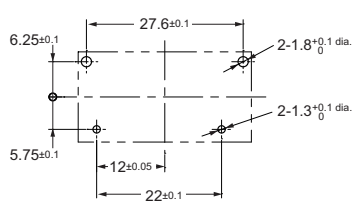
## Dimensions

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.

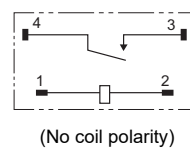
G6QE-1A, G6QE-1A4



PCB Mounting Holes (BOTTOM VIEW)



Terminal Arrangement/ Internal Connections (BOTTOM VIEW)



CAD Data

## Approved Standards

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
G6QE-1A	5 to 24 VDC	36 A 277 VAC (Resistive) 85°C	10,000
G6QE-1A	5 to 24 VDC	32 A 277 VAC (Resistive) 40°C	50,000
G6QE-1A	5 to 24 VDC	30 A 277 VAC (Resistive) 40°C	100,000
G6QE-1A4	12 VDC	10 A 277 VAC (Resistive) 40°C	6,000
G6QE-1A4	12 VDC	Making: 36 A, Carrying: 36 A, Breaking: 0 A 277 VAC 85°C	10,000
G6QE-1A4	12 VDC	36 A 277 VAC (Resistive) 85°C	100

UL Recognized  (File No. E41515)

Model	Coil ratings	Contact ratings	Number of test operations
G6QE-1A4	12 VDC	36 A 480 VAC (Resistive) 85°C	100

EN/IEC, TÜV Certified:  (Certificate No.R50407379)

Model	Coil ratings	Contact ratings	Number of test operations
G6QE-1A	5, 12, 24 VDC	36 A 277 VAC ( $\cos\phi=1$ ) 85°C	10,000
G6QE-1A	5, 12, 24 VDC	32 A 277 VAC ( $\cos\phi=1$ ) 40°C	50,000
G6QE-1A	5, 12, 24 VDC	30 A 277 VAC ( $\cos\phi=1$ ) 40°C	100,000
G6QE-1A4	12 VDC	36 A 480 VAC ( $\cos\phi=1$ ) 85°C	100

CQC certified:  (Certificate No.CQC18002192007)

Model	Coil ratings	Contact ratings	Number of test operations
G6QE-1A	5, 12, 24 VDC	36 A 277 VAC (Resistive) 85°C	10,000
G6QE-1A	5, 12, 24 VDC	32 A 277 VAC (Resistive) 40°C	50,000
G6QE-1A	5, 12, 24 VDC	30 A 277 VAC (Resistive) 40°C	100,000
G6QE-1A4	12 VDC	36 A 480 VAC (Resistive) 85°C	100

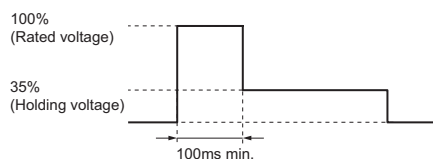
## Precautions

●Please refer to "PCB Relays Common Precautions" for correct use.

### Correct Use

#### ●Coil Voltage Reduction (Holding Voltage) after Relay Operation

- If the coil voltage is reduced to the holding voltage after Relay operation, first apply the rated voltage to the coil for at least 100 ms, as shown below.
- A voltage of at least 35% of the rated voltage is required for the coil holding voltage. Do not allow voltage fluctuations to cause the coil holding voltage to fall below this level.



	Applied coil voltage	Coil resistance *	Power consumption
<b>Rated voltage</b>	100%	17.9Ω (5 VDC) 102.9Ω (12 VDC) 411.4Ω (24 VDC)	Approx. 1400 mW
<b>Holding voltage</b>	35%		Approx. 172 mW

\* The coil resistance were measured at a coil temperature of 23°C with tolerances of  $\pm 10\%$ .

#### ●Other Precautions

- This Relay is suitable for power load switching of air-conditioning compressors and power supplies, etc. Do not use this Relay to switch micro loads less than 100 mA, such as in signal applications.

Please check each region's Terms & Conditions by region website.

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Device & Module Solutions Company

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