OMRON

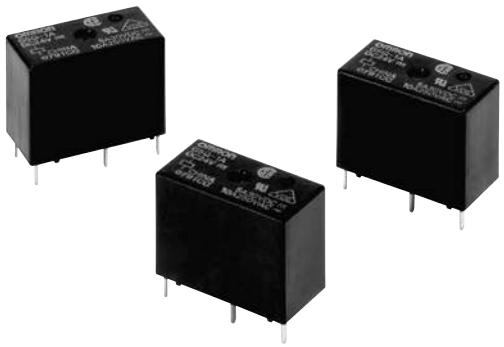
PCB Relay

G5Q

Compact, Single-pole, 10-A Switching PCB Relays

- Compact, SPST-NO and SPDT relays.
- Excellent switching performance for a variety of loads.
- Withstand impulse rating of 8,000 V between the coil and contacts.
- UL class F coil insulation on all models.
- UL, CSA, and VDE approved.

RoHS Compliant



Ordering Information

Classification / Enclosure rating / Contact form	Standard models			
	Flux protection		Fully sealed	
	Rated coil voltage	Model	Rated coil voltage	Model
SPST-NO	5 VDC	G5Q-1A	5 VDC	G5Q-1A4
	9 VDC		9 VDC	
	12 VDC		12 VDC	
	24 VDC		24 VDC	
SPDT	5 VDC	G5Q-1	5 VDC	G5Q-14
	9 VDC		9 VDC	
	12 VDC		12 VDC	
	24 VDC		24 VDC	

Model Number Legend:

G5Q-□□□

1 2 3

1. **Number of Poles**
   1: 1 pole
2. **Contact Form**
   None: SPDT
   A: SPST-NO
3. **Enclosure Rating**
   None: Flux protection
   4: Fully sealed

Specifications

■ Coil Ratings

Contact form	Item / Rated voltage (V)		Rated current (mA)	Coil resistance (Ω)	Must-operate voltage (V)	Must-release voltage (V)	Max. voltage (V)	Power consumption (mW)
SPST-NO	VDC	5	40	125	75% max. of rated voltage	5% min. of rated voltage	190% of rated voltage (at 23°C)	Approx. 200
		9	22.2	405				
		12	16.7	720				
		24	8.3	2880				
SPDT		5	80	63				Approx. 400
		9	44.4	202				
		12	33.3	360				
		24	16.7	1440				

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

2. The operating characteristics are given at a coil temperature of 23°C.

3. The maximum voltage is the maximum voltage that can be applied to the relay coil.

■ Contact Ratings

Load / Item	Resistive load	
	SPST-NO	SPDT
Contact mechanism	Single	
Contact material	Ag alloy (Cd free)	
Rated load	10 A at 125 VAC 3 A at 250 VAC 5 A at 30 VDC	10 A at 125 VAC (NO) 3 A at 250 VAC (NO) 5 A at 30 VDC (NO) 3 A at 125 VAC (NC) 3 A at 30 VDC (NC)
Rated carry current	10 A (NO)/3 A (NC)	
Max. switching voltage	277 VAC, 30 VDC	
Max. switching current	AC: 10 A (NO)/3 A (NC) DC: 5 A (NO)/3 A (NC)	

■ Characteristics

Item	Type	Standard models
Contact resistance (See note 2.)		100 mΩ max.
Operate time		10 ms max.
Release time		5 ms max.
Insulation resistance (See note 3.)		1,000 mΩ min.
Dielectric strength	Between coil and contacts	4,000 VAC, 50/60 Hz for 1 min
	Between contacts of same polarity	1,000 VAC, 50/60 Hz for 1 min
Impulse withstand voltage (between coil and contacts)		8 kV (1.2 × 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	1000 m/s^2
	Malfunction	100 m/s^2
Endurance	Mechanical	10,000,000 operations (18,000 operations per hour)
	Electrical	200,000 operations: 3 A (NO)/3 A (NC) at 125 VAC, resistive load 100,000 operations: 3 A (NO)/3 A (NC) at 250 VAC, 5 A (NO)/3 A (NC) at 30 VDC, resistive load 50,000 operations: 10 A at 125 VAC (900 operations per hour)
Failure rate (reference value) (See note 4.)		10 mA at 5 VDC
Ambient operating temperature range		−40°C to 85°C (with no icing or condensation)
Ambient operating humidity range		5% to 85%
Weight		Approx. 6.5 g

Note: **1.** The data shown above are initial values.

2. The contact resistance is measured with 1 A applied at 5 VDC using a fall-of-potential method.

3. The insulation resistance is measured at the same points as the dielectric strength using a 500-VDC ohmmeter.

4. P level: $\lambda_{60} = 0.1 \times 10^{-6}$/operation

■ Approved Standard

UL 508 (File No. E41515)

CSA C22.2 No. 14 (File No. LR31928)

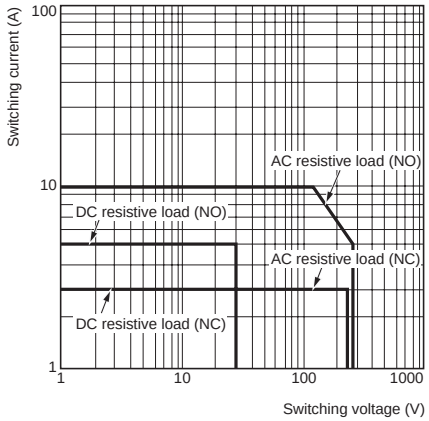
Model	Coil ratings	Contact ratings	Number of test operations
G5Q	5 to 24 VDC	10 A, 250 VAC, NO only (Resistive)	6,000
		10 A, 30 VDC, NO only (Resistive)	6,000
		4 A, 120 VAC, NO only (Resistive)	10,000
		3 A, 250 VAC, NC only (Resistive)	6,000
		10 A, 30 VDC, NC only (Resistive)	6,000

VDE (Reg. No. 125314) EN 61810-1

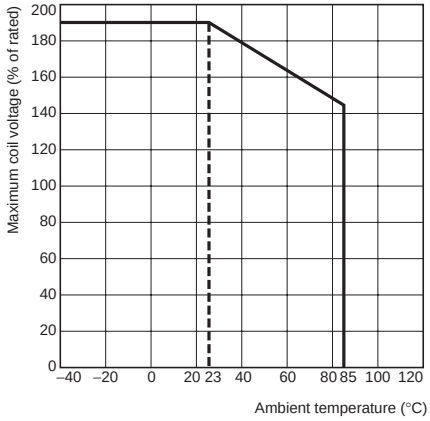
Model	Coil ratings	Contact ratings	Number of test operations
G5Q	5, 9, 12, 24 VDC	10 A, 250 VAC (cosϕ=1) (NO) 5 A, 30 VDC, 0 ms (NO) 3 A, 30 VDC, 0 ms (NC)	10,000

Engineering Data

■ Maximum Switching Capacity



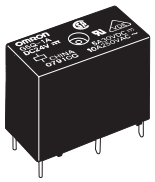
■ Ambient Temperature vs. Maximum Voltage

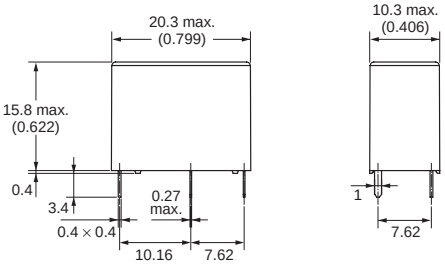


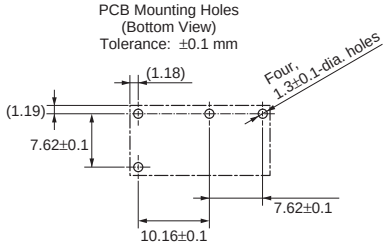
Dimensions

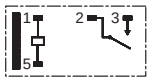
Note: All units are in millimeters unless otherwise indicated.

G5Q-1A
G5Q-1A4

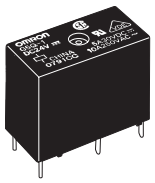


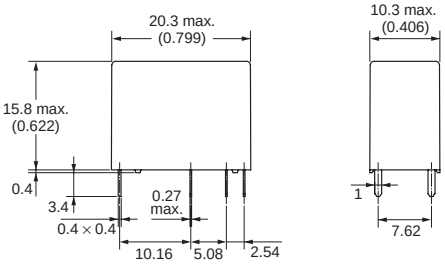


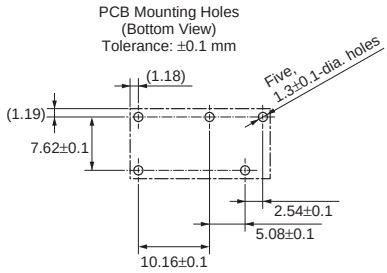


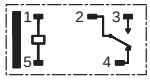


G5Q-1
G5Q-14









Precautions

Disclaimer:

All technical performance data applies to the product as such; specific conditions of individual applications are not considered. Always check the suitability of the product for your intended purpose. OMRON does not assume any responsibility or liability for noncompliance herein, and we recommend prior technical clarification for applications where requirements, loading, or ambient conditions differ from those applying to general electric applications. Any responsibility for the application of the product remains with the customer alone. THIS COMPONENT CAN NOT BE USED FOR AUTOMOTIVE APPLICATIONS.

■ Precautions for Correct Use

- Do not use the G5Q for applications in automotive vehicles (including motorcycles).
- Consult your OMRON sales representative when considering use of the G5Q in any of the following applications, and be sure to exchange specifications documents. Also, allow a margin of safety in ratings and performance, use safety circuits to minimize danger in the event of malfunction, and provide safety measures, such as redundant designs.
  a. Outdoor use or uses involving potential chemical contamination or electrical interference
  b. Nuclear energy control systems, combustion systems, railroad systems, aviation systems, medical equipment, safety equipment, and other applications that could present a risk to life or cause injury
  c. Gas, water, electrical, or other supply systems that require a high level of reliability

ALL DIMENSIONS SHOWN ARE IN MILLIMETERS.
To convert millimeters into inches, multiply by 0.03937. To convert grams into ounces, multiply by 0.03527.

Cat. No. J155-E1-02 **In the interest of product improvement, specifications are subject to change without notice.**

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