G5Q
PCB Power Relay

A Miniature Power Relay with 1-pole 10A Switching Capacity

- Compact single pole relay.
- Excellent switching performance for a variety of loads.
- Small, yet provide 8-kV impulse withstand voltage (between coil and contacts).
- Low coil power consumption (SPST-NO: 200 mW, SPDT: 400 mW)
- Coil insulation system: Class F (UL1446).
- IEC/EN 60335-1 conformed. (-HA Model)

RoHS Compliant

■Model Number Legend

G5Q-□□□-□-□
1 2 3 4 5

1. Number of Poles
1 : 1-pole

2. Contact Form
None : SPDT (1c)
A : SPST-NO (1a)

3. Enclosure rating
None : Flux protection
4 : Sealed

4. Classification
None : Standard
EU : High-capacity

5. Market Code
None : General purpose
HA : Home Appliance according to IEC/EN60335-1

■Application Examples

- Ideal for output applications of control equipments.

G5Q

■Ordering Information

Terminal Shape	Market Code	Classification	Contact form	Enclosure rating	Model	Rated coil voltage	Minimum packing unit
PCB terminals	General purpose	Standard	SPST-NO (1a)	Flux protection	G5Q-1A	5VDC 9VDC 12VDC 24VDC	40 pcs/tube
				Sealed	G5Q-1A4		
			SPDT (1c)	Flux protection	G5Q-1		
				Sealed	G5Q-14		
		High-capacity	SPST-NO (1a)	Flux protection	G5Q-1A-EU	5VDC 12VDC 24VDC	
				Sealed	G5Q-1A4-EU		
			SPDT (1c)	Flux protection	G5Q-1-EU		
				Sealed	G5Q-14-EU		
	Home Appliance		SPST-NO (1a)	Flux protection	G5Q-1A-EU-HA	12VDC 24VDC	
			SPDT (1c)		G5Q-1-EU-HA		

Note. When ordering, add the rated coil voltage to the model number.
Example: G5Q-1A DC5
Rated coil voltage

■Ratings

●Coil

Contact form	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			
SPST-NO (1a)	5 VDC	40	125	75% max.	5% min.	190% (at 23°C)	Approx. 200
	9 VDC	22.2	405				
	12 VDC	16.7	720				
	24 VDC	8.3	2880				
SPDT (1c)	5 VDC	80	63				Approx. 400
	9 VDC	44.4	202				
	12 VDC	33.3	360				
	24 VDC	16.7	1440				

Note 1. The rated current and coil 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 “Max. voltage” is the maximum voltage that can be applied to the relay coil.

●Contacts

Item \ Load	Resistive load			
	SPST-NO (1a)		SPDT (1c)	
	Standard	High-capacity	Standard	High-capacity
Contact Type	Single			
Contact material	Ag-Alloy (Cd free)			
Rated load (resistive)	10 A at 125 VAC 3 A at 125 VAC 5 A at 250 VAC 3 A at 250 VAC 5 A at 30 VDC	10 A at 250 VAC 3 A at 125 VAC 5 A at 250 VAC 3 A at 250 VAC 5 A at 30 VDC	10 A at 125 VAC (NO) 3 A at 125 VAC (NO) 5 A at 250 VAC (NO) 3 A at 250 VAC (NO) 5 A at 30 VDC (NO) 3 A at 125 VAC (NC) 3 A at 250 VAC (NC) 3 A at 30 VDC (NC)	10 A at 250 VAC (NO) 3 A at 125 VAC (NO) 5 A at 250 VAC (NO) 3 A at 250 VAC (NO) 5 A at 30 VDC (NO) 3 A at 125 VAC (NC) 3 A at 250 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)			

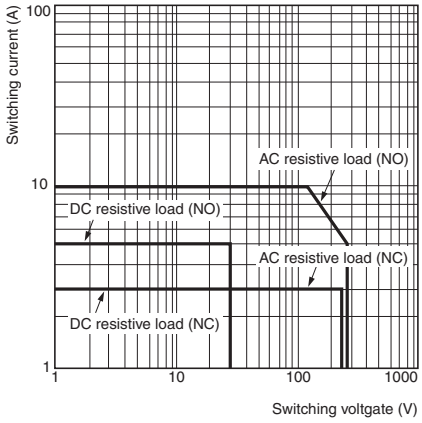
■Characteristics

Item	Classification	Standard model
Contact resistance *1		100 mΩ max.
Operate time		10 ms max.
Release time		5 ms max.
Insulation resistance *2		1,000 MΩ min.
Dielectric strength	Between coil and contacts	4,000 VAC, 50/60 Hz for 1 min
	Between contacts of the same polarity	1,000 VAC, 50/60 Hz for 1 min
Impulse withstand voltage (between coil and contacts)		8 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^2
	Malfunction	100 m/s^2
Durability	Mechanical	10,000,000 operations (18,000 operations per hour)
	Electrical	• NO 25,000 operations: 10 A at 250 VAC resistive load (operation: ON for 1 sec, OFF for 3 sec) <High-capacity type> 50,000 operations: 10 A at 125 VAC resistive load (operation: ON for 1 sec, OFF for 3 sec) 200,000 operations: 3 A at 125 VAC resistive load (operation: ON for 1 sec, OFF for 1 sec) 50,000 operations: 5 A at 250 VAC resistive load (operation: ON for 1 sec, OFF for 1 sec) 100,000 operations: 3 A at 250 VAC resistive load (operation: ON for 1 sec, OFF for 1 sec) 100,000 operations: 5 A at 30 VDC resistive load (operation: ON for 1 sec, OFF for 1 sec) • NC 200,000 operations: 3 A at 125 VAC resistive load (operation: ON for 1 sec, OFF for 1 sec) 100,000 operations: 3 A at 250 VAC resistive load (operation: ON for 1 sec, OFF for 1 sec) 100,000 operations: 3 A at 30 VDC resistive load (operation: ON for 1 sec, OFF for 1 sec)
Failure rate (P level) (reference *3)		10 mA at 5 VDC
Ambient operating temperature		-40°C to 105°C (with no icing or condensation) -40°C to 85°C (with no icing or condensation) <High-capacity type>
Ambient operating humidity		5% to 85%
Weight		Approx. 6.5 g

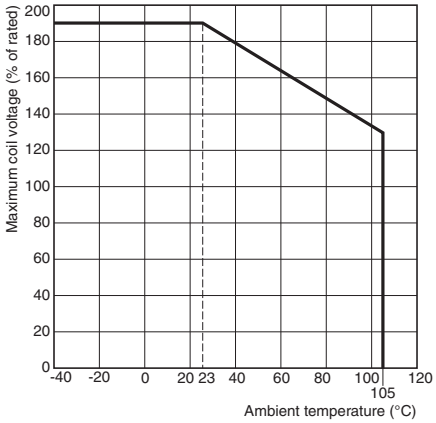
Note. Note. Values in the above table are the initial values at 23°C.
*1. The contact resistance is possible with 1 A applied at 5 VDC using a fall-of-potential method.
*2. Testing conditions: The insulation resistance was measured with a 500 VDC megohmmeter at the same locations as the dielectric strength was measured.
*3. This value was measured at a switching frequency of 120 operations/min.

■Engineering Data

●Maximum Switching Capacity

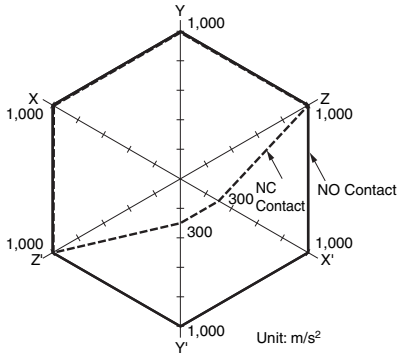


●Ambient Temperature VS. Maximum Coil Voltage

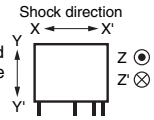


Note. The Maximum coil voltage refers to the maximum value in a varying range of operating power voltage, not a continuous voltage.

●Shock Malfunction



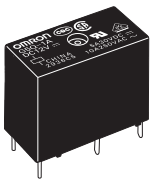
Sample: G5Q-14 12 VDC
Number of Relays: 5 pcs
Test conditions: Shock is applied in ±X, ±Y, and ±Z directions three times each with without energizing the Relays to check the number of malfunctions.
Requirement: None malfuction
100 m/s²

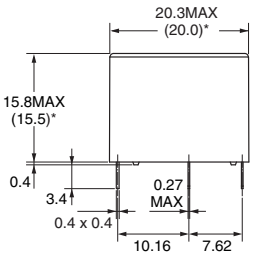


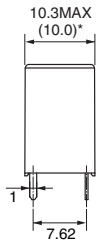
■Dimensions

(Unit: mm)

G5Q-1A
G5Q-1A4
G5Q-1A-EU (-HA)
G5Q-1A4-EU

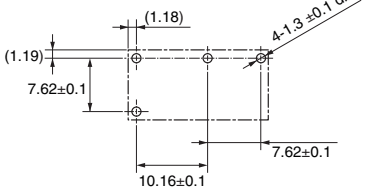




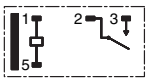


* Average value

PCB Mounting Holes
(Bottom View)
Tolerance: ±0.1 mm

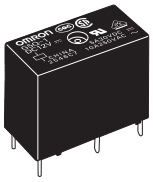


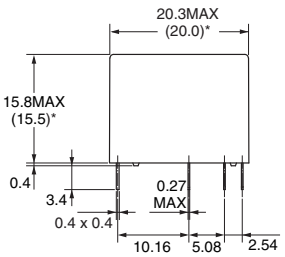
Terminal Arrangement/ Internal Connections
(Bottom View)

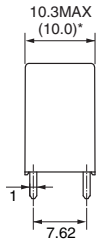


(No coil polarity)

G5Q-1
G5Q-14
G5Q-1-EU (-HA)
G5Q-14-EU

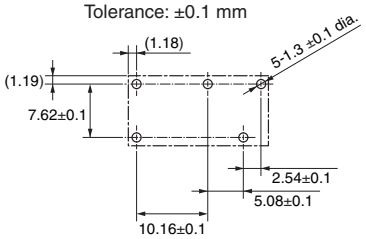




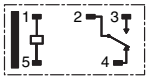


* Average value

PCB Mounting Holes
(Bottom View)
Tolerance: ±0.1 mm



Terminal Arrangement/ Internal Connections
(Bottom View)



(No coil polarity)

■Approved Standards

UL Recognized: (File No. E41515)

CSA Certified: (File No. LR31928)

Model	Contact form	Coil ratings	Contact ratings	Number of test operations
G5Q-1 G5Q-1-EU G5Q-1A G5Q-1A-EU	SPST-NO (1a) SPDT (1c)	5 to 48 VDC	10 A 250 VAC N.O. only (Resistive) 40°C	6,000
			10 A 30 VDC N.O. only (Resistive) 40°C	
			4 A 120 VAC N.O. only (Resistive) 40°C	100,000
			3 A 250 VAC N.C. only (Resistive) 40°C	6,000
			3 A 30 VDC N.C. only (Resistive) 40°C	

EN/IEC, VDE (Certified/No.40009467)

Model	Contact form	Coil ratings	Contact ratings	Number of test operations
G5Q-1 G5Q-1A	SPST-NO (1a) SPDT (1c)	5 to 48 VDC	10 A making and 0 A breaking, 250 VAC (cosϕ=1) 105°C 5 A marking and 3 A breaking, 30 VDC (0 ms) 105°C	10,000
			5 A 250 VAC (cosϕ=1) (N.O.) 105°C	75,000
G5Q-1-EU (-HA) G5Q-1A-EU (-HA)			10 A 250 VAC (cosϕ=1) (N.O.) 65°C 5 A 30 VDC (0 ms) (N.O.) 65°C 3 A 30 VDC (0 ms) (N.C.) 65°C	10,000
			4 A 250 VAC (cosϕ=1) (N.O.) 85°C	100,000

Creepage distance	6.4 mm min.
Clearance distance	5.5 mm min.
Insulation material group	IIIa
Type of insulation coil-contact circuit open contact circuit	Basic (Rated voltage 400 V) / Reinforced (Rated voltage 250 V) Micro disconnection
Rated Insulation voltage	250 V
Pollution degree	2
Rated voltage system	250 V / 400 V (EU flux type only)
Over voltage category	III
Category of protection according to IEC 61810-1	RT II (Flux protection) / RT III (Sealed)
Glow wire according to IEC 60335-1	<HA Models only> GWT 750°C min. (IEC 60695-2-11) / GWFI 850°C min. (IEC 60695-2-12)
Tracking Index of relay base	PTI 250 V min. (housing parts)
Flammability class according to UL94	V-0
Coil Insulation system	F Class (UL 1446)

■Precautions

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

OMRON Corporation
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