

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 | 4. Classification |
| 1 : 1-pole | None : Standard |
| 2. Contact Form | EU : High-capacity |
| None : SPDT (1c) | 5. Market Code |
| A : SPST-NO (1a) | None : General purpose |
| 3. Enclosure rating | HA : Home Appliance according to IEC/EN60335-1 |
| None : Flux protection | |
| 4 : Sealed | |

Application Examples

- Ideal for output applications of control equipments.

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 | 100 pcs/tray |
| | | | | Sealed | G5Q-1A4 | 9VDC | |
| | | | SPDT (1c) | Flux protection | G5Q-1 | 12VDC | |
| | | Sealed | | G5Q-14 | 24VDC | | |
| | | High-capacity | SPST-NO (1a) | Flux protection | G5Q-1A-EU | 5VDC | |
| | | | | Sealed | G5Q-1A4-EU | 12VDC | |
| | SPDT (1c) | | | Flux protection | G5Q-1-EU | 24VDC | |
| | | | Sealed | G5Q-14-EU | 24VDC | | |
| | Home Appliance | | SPST-NO (1a) | Flux protection | G5Q-1A-EU-HA | 12VDC | |
| | | | | | G5Q-1-EU-HA | 24VDC | |

Note 1. When ordering, add the rated coil voltage to the model number.

Example: G5Q-1A DC5

Rated coil voltage

Note 2. Contact your OMRON sales representative for tube packing models.

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 | | | | |
| | 9 VDC | 44.4 | 202 | | | | |
| | 12 VDC | 33.3 | 360 | | | | |
| | 24 VDC | 16.7 | 1440 | | | | |
| | | | | | | | Approx. 400 |

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 | 10 A at 250 VAC | 10 A at 125 VAC (NO) 3 A at 125 VAC (NO) | 10 A at 250 VAC (NO) 3 A at 125 VAC (NO) | |
| | 3 A at 125 VAC | 3 A at 125 VAC | 5 A at 250 VAC (NO) | 5 A at 250 VAC (NO) | |
| | 5 A at 250 VAC | 5 A at 250 VAC | 3 A at 250 VAC (NO) | 3 A at 250 VAC (NO) | |
| | 3 A at 250 VAC | 3 A at 250 VAC | 5 A at 30 VDC (NO) | 5 A at 30 VDC (NO) | |
| | 5 A at 30 VDC | 5 A at 30 VDC | 3 A at 125 VAC (NC) 3 A at 250 VAC (NC) 3 A at 30 VDC (NC) | 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 | <ul style="list-style-type: none"> NO <ul style="list-style-type: none"> 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 <ul style="list-style-type: none"> 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.

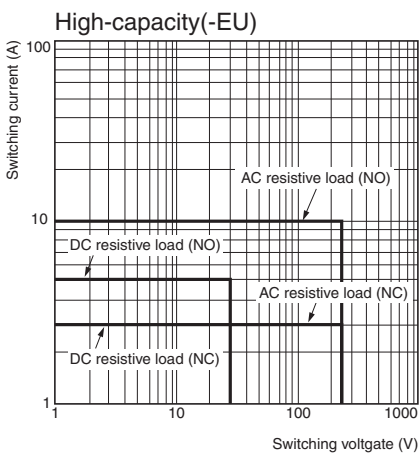
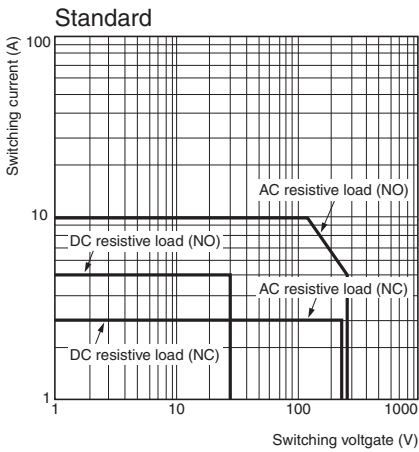
*1. The contact resistance is possible with 1 A applied at 5 VDC using a fall-of-potential method.

*2. Testing conditions: The insulation resistance was measured with a 500 VDC megohmmeter at the same locations as the dielectric strength was measured.

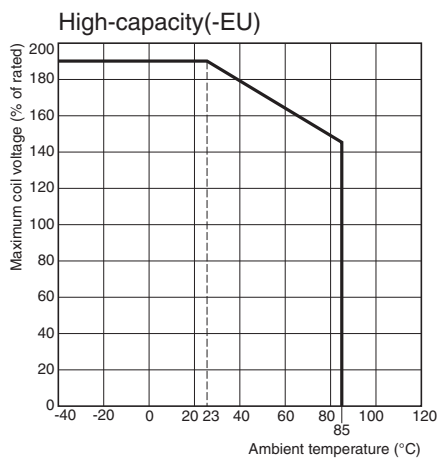
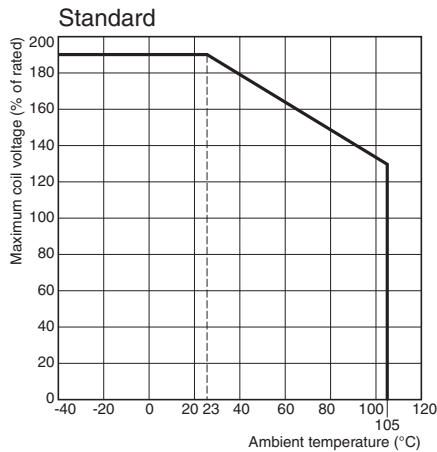
*3. This value was measured at a switching frequency of 120 operations/min.

Engineering Data

Maximum Switching Capacity

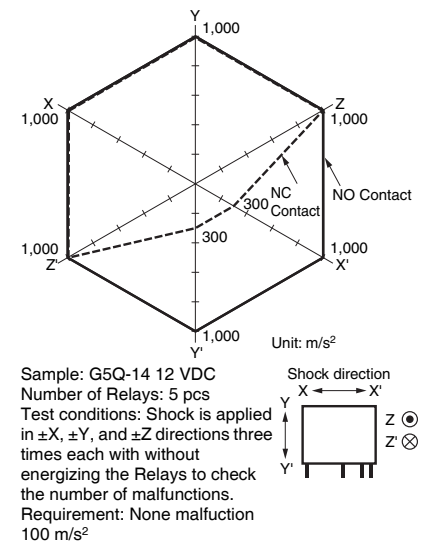


Ambient Temperature VS. Maximum Coil Voltage



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

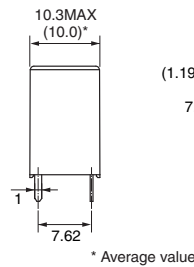
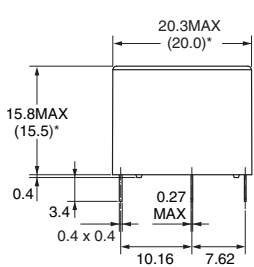
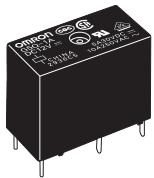
Shock Malfunction



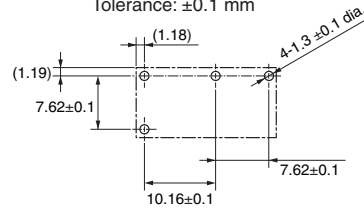
Dimensions

(Unit: mm)

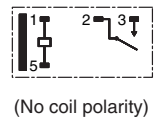
G5Q-1A
G5Q-1A4
G5Q-1A-EU (-HA)
G5Q-1A4-EU



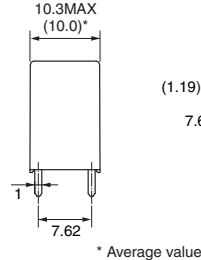
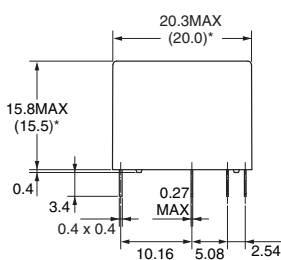
PCB Mounting Holes (Bottom View)
Tolerance: ±0.1 mm



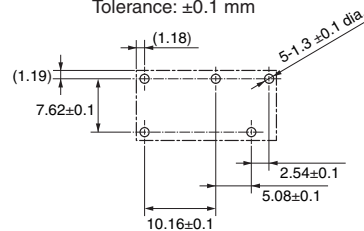
Terminal Arrangement/ Internal Connections (Bottom View)



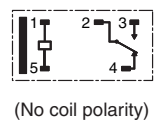
G5Q-1
G5Q-14
G5Q-1-EU (-HA)
G5Q-14-EU



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



Terminal Arrangement/ Internal Connections (Bottom View)



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 making 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) / GWF1 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.

• Application examples provided in this document are for reference only. In actual applications, confirm equipment functions and safety before using the product.
 • Consult your OMRON representative before using the product under conditions which are not described in the manual or applying the product to nuclear control systems, railroad systems, aviation systems, vehicles, combustion systems, medical equipment, amusement machines, safety equipment, and other systems or equipment that may have a serious influence on lives and property if used improperly. Make sure that the ratings and performance characteristics of the product provide a margin of safety for the system or equipment, and be sure to provide the system or equipment with double safety mechanisms.

Note: Do not use this document to operate the Unit.