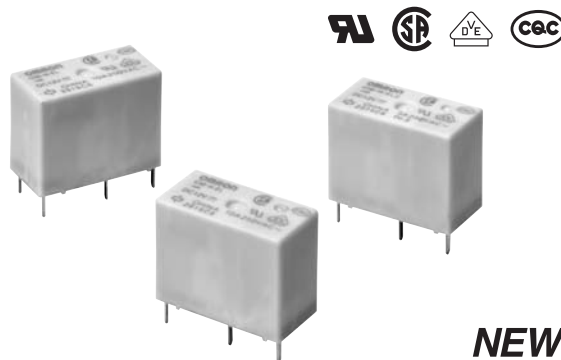


# G5Q-EL/-EL2/-EL3

PCB Power Relay

## A Miniature Power Relay with high performance

- IEC/EN 60335-1 conformed.
- Coil insulation system: class F (UL1446)
- [Type G5Q-EL]  
Higher performance compare with G5Q standard type.  
Minimum 100,000 operations durability at 10 A (250 VAC) switching.
- [Type G5Q-EL2]  
High inrush capacity performance (Inrush current 40 A).  
UL508 TV3 conformed.
- [Type G5Q-EL3]  
Ideal for motor switching 3 A with high inrush 30 A  
IEC/EN 60079-15 conformed.



RoHS Compliant

### Model Number Legend

G5Q-□□□-□□-□□  
1 2 3 4 5 6

#### 1. Number of Pole

1 : 1-pole

#### 2. Contact Form

A : SPST-NO (1a)

#### 3. Enclosure rating

None : Flux protection  
(-EL type only)

4 : Fully sealed  
(-EL2, -EL3)

#### 4. Classification

EL : For Resistive load

EL2 : For Inrush load

EL3 : For Motor load

#### 5. Market Code

HA : Home Appliance according  
to IEC/EN60335-1

#### 6. Case Vent Hole

None : No vent hole

VH : Vent hole (-EL type only)

### Application Examples

- Home appliances
- Building automation
- Lighting control
- Output of control system
- FA I/O module

### Ordering Information

| Classification                   | Contact form | Enclosure rating                    | Model           | Rated coil voltage        | Minimum packing unit |
|----------------------------------|--------------|-------------------------------------|-----------------|---------------------------|----------------------|
| -EL type<br>(For Resistive load) | SPST-NO (1a) | Flux protection<br>(Vent hole type) | G5Q-1A-EL-HA-VH | 5 VDC<br>12 VDC<br>24 VDC | 100 pcs/tray         |
| -EL2 type<br>(For Inrush load)   | SPST-NO (1a) | Sealed                              | G5Q-1A4-EL2-HA  | 5 VDC<br>12 VDC<br>24 VDC |                      |
| -EL3 type<br>(For Motor load)    | SPST-NO (1a) | Sealed                              | G5Q-1A4-EL3-HA  | 5 VDC<br>12 VDC<br>24 VDC |                      |

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

Example: G5Q-1A4-EL2-HA DC12

Rated coil voltage

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

### Ratings

#### Coil

| Rated voltage | Rated current<br>(mA) | Coil resistance<br>(Ω) | Must operate voltage (V) | Must release voltage (V) | Max. voltage (V)  | Power consumption<br>(mW) |
|---------------|-----------------------|------------------------|--------------------------|--------------------------|-------------------|---------------------------|
|               |                       |                        | % of rated voltage       |                          |                   |                           |
| 5 VDC         | 80.0                  | 63                     | 75% max.                 | 5% min.                  | 190%<br>(at 23°C) | Approx. 400               |
| 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.

Note 4. 5 VDC of coil rated voltage is available only for -EL3

G5Q-EL/-EL2/-EL3

●Contacts

| Item                | Load                            | -EL type (For Resistive load) | -EL2 type (For Inrush load)                                  | -EL3 type (For Motor load)                                       |
|---------------------|---------------------------------|-------------------------------|--------------------------------------------------------------|------------------------------------------------------------------|
|                     |                                 | SPST-NO (1a)                  |                                                              |                                                                  |
|                     |                                 | Flux protection               | Sealed                                                       | Sealed                                                           |
| Contact type        | Single                          |                               |                                                              |                                                                  |
| Contact material    | Ag-Alloy (Cd free)              |                               |                                                              |                                                                  |
| Rated load          | Resistive load: 10 A at 250 VAC |                               | Capacitive load: Inrush 40 A (100 μs) / 1 A break at 250 VAC | Motor load : Inrush 30 A (0.5 s) / 3 A break cosφ=0.5 at 250 VAC |
| Rated carry current | 10 A                            |                               |                                                              |                                                                  |
| Max. rated voltage  | 277 VAC                         |                               |                                                              |                                                                  |
| Max. rated current  | 10 A AC                         |                               |                                                              |                                                                  |

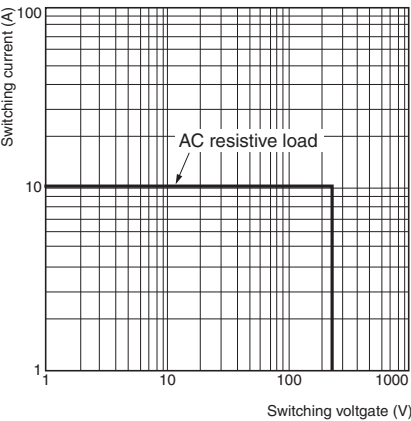
■Characteristics

| Item                                  |                                       | Classification | -EL type (For Resistive load)                                                             | -EL2 type (For Inrush load)                                                                | -EL3 type (For Motor load)                                                            |
|---------------------------------------|---------------------------------------|----------------|-------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------|
| Contact resistance *1                 |                                       |                | 100 mΩ max.                                                                               |                                                                                            |                                                                                       |
| Operate time                          |                                       |                | 10 ms max.                                                                                |                                                                                            |                                                                                       |
| Release time                          |                                       |                | 5 ms max.                                                                                 |                                                                                            |                                                                                       |
| Insulation resistance *2              |                                       |                | 1,000 MΩ min. (at 500 VDC)                                                                |                                                                                            |                                                                                       |
| 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/s²                                                                                |                                                                                            |                                                                                       |
|                                       | Malfunction                           |                | 100 m/s²                                                                                  |                                                                                            |                                                                                       |
| Durability                            | Mechanical                            |                | 10,000,000 operations (18,000 operations per hour)                                        |                                                                                            |                                                                                       |
|                                       | Electrical                            |                | Resistive load<br>100,000 operations at 23°C<br>(operation: ON for 1 sec. OFF for 9 sec.) | Capacitive load<br>100,000 operations at 23°C<br>(operation: ON for 1 sec. OFF for 3 sec.) | Motor load<br>300,000 operations at 23°C<br>(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 85°C (with no icing or condensation)                                             |                                                                                            |                                                                                       |
| Ambient operating humidity            |                                       |                | 5% to 85%                                                                                 |                                                                                            |                                                                                       |
| Weight                                |                                       |                | Approx. 6.5 g                                                                             |                                                                                            |                                                                                       |

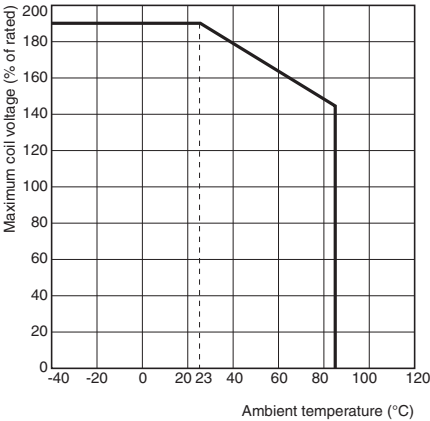
Note. Values in the above table are the initial values at 23°C.  
\*1. The contact resistance is possible with 1 A applied at 5 VDC using a fall-of-potential method.  
\*2. Testing conditions: The insulation resistance was measured with a 500 VDC megohmmeter at the same locations as the electric strength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

■Engineering Data

●Maximum Switching Capacity (AC)

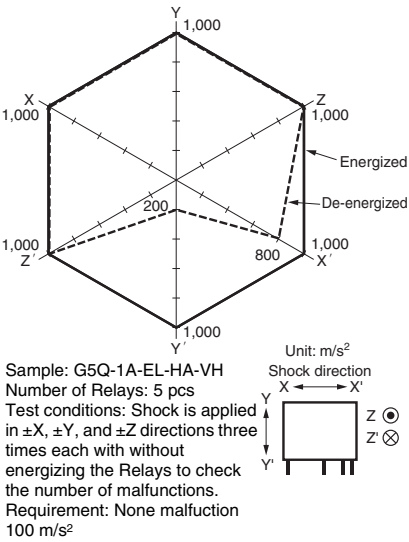


●Ambient Temperature VS. Maximum Coil Voltage



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

●Shock Malfunction



### Actual Load Life (Reference Values)

#### G5Q-1A4-EL2-HA

120 VAC Capacitive load

Inrush: 56 A (0-P), Break: 0.2 A (rms)

200,000 operations min. (Ambient temperature: 23°C)

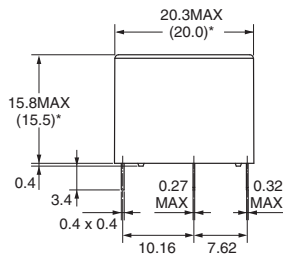
### Dimensions

(Unit: mm)

#### G5Q-1A-EL-HA-VH

#### G5Q-1A4-EL2-HA

#### G5Q-1A4-EL3-HA

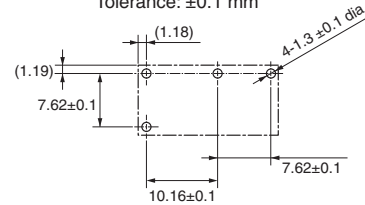


\* Average value

#### PCB Mounting Holes

(Bottom View)

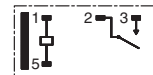
Tolerance:  $\pm 0.1$  mm



#### Terminal Arrangement/

Internal Connections

(Bottom View)



(No coil polarity)

### Approved Standards

UL Recognized: (File No. E41515)

CSA Certified: (File No. LR31928)

| Model           | Coil ratings  | Contact ratings                          | Number of test operations |
|-----------------|---------------|------------------------------------------|---------------------------|
| G5Q-1A-EL-HA-VH | 5, 12, 24 VDC | 10 A 250 VAC Resistive 40°C              | 6,000                     |
| G5Q-1A4-EL2-HA  | 5, 12, 24 VDC | 5 A 250 VAC Resistive 85°C               | 6,000                     |
|                 |               | TV-3 40°C                                | 25,000                    |
|                 |               | 1 A 120 VAC 30 A Inrush-max. 1 msec 85°C | 25,000                    |
| G5Q-1A4-EL3-HA  | 5, 12, 24 VDC | 10 A 250 VAC Resistive 40°C              | 50,000                    |
|                 |               | 1/2HP 250 VAC 40°C                       | 50,000                    |
|                 |               | 1/6HP 125 VAC 40°C                       | 50,000                    |

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

| Model           | Coil ratings  | Contact ratings                           | Number of test operations |
|-----------------|---------------|-------------------------------------------|---------------------------|
| G5Q-1A-EL-HA-VH | 5, 12, 24 VDC | 10 A 250 VAC ( $\cos\phi=1$ ) 105°C       | 10,000                    |
| G5Q-1A4-EL2-HA  | 5, 12, 24 VDC | 5 A 250 VAC ( $\cos\phi=1$ ) 85°C         | 10,000                    |
|                 |               | Peak inrush 30 A / Break 1 A 230 VAC 85°C | 25,000                    |
| G5Q-1A4-EL3-HA  | 5, 12, 24 VDC | 3 A 250 VAC ( $\cos\phi=0.4$ ) 85°C       | 50,000                    |

|                                                                 |                                                                    |
|-----------------------------------------------------------------|--------------------------------------------------------------------|
| Creepage distance                                               | 6.4 mm min.                                                        |
| Clearance distance                                              | 5.5 mm min.                                                        |
| Insulation material group                                       | IIIa                                                               |
| Type of insulation coil-contact circuit<br>open contact circuit | Reinforced<br>Micro disconnection                                  |
| Rated Insulation voltage                                        | 250 V                                                              |
| Pollution degree                                                | 2                                                                  |
| Rated voltage system                                            | 250 V                                                              |
| 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 ed.5                         | GWT 750°C min. (IEC 60695-2-11) / GWFI 850°C min. (IEC 60695-2-12) |
| Tracking resistance according to IEC 60112                      | 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.



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• 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.**