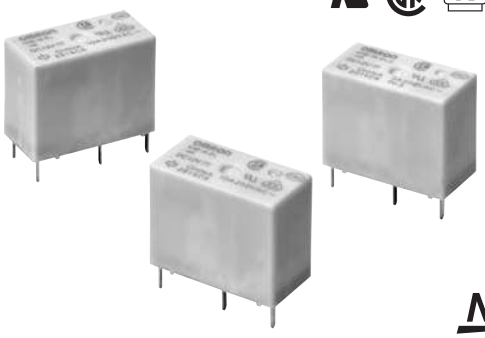
G5Q-EL/-EL2/-EL3

PCB Power Relay

A Miniature Power Relay with high performance



NEW

- 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 (For Resistive load)	SPST-NO (1a)	Flux protection (Vent hole type)	G5Q-1A-EL-HA-VH	5 VDC 12 VDC 24 VDC	100 pcs/tray
-EL2 type (For Inrush load)	SPST-NO (1a)	Sealed	G5Q-1A4-EL2-HA	5 VDC 12 VDC 24 VDC	
-EL3 type (For Motor load)	SPST-NO (1a)	Sealed	G5Q-1A4-EL3-HA	5 VDC 12 VDC 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 (mA)	Coil resistance (Ω)	Must operate voltage (V)	Must release voltage (V)	Max. voltage (V)	Power consumption (mW)
			% of rated voltage			
5 VDC	80.0	63	75% max.	5% min.	190% (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

●Contacts

Load / Item	-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		

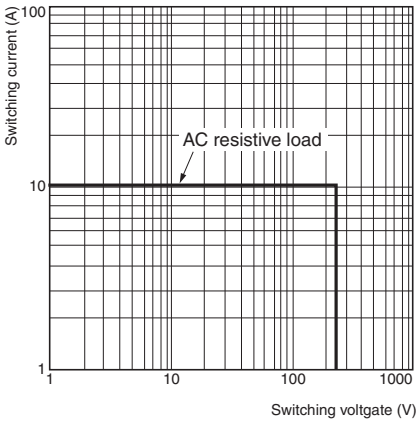
■Characteristics

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 100,000 operations at 23°C (operation: ON for 1 sec. OFF for 9 sec.)	Capacitive load 100,000 operations at 23°C (operation: ON for 1 sec. OFF for 3 sec.)	Motor load 300,000 operations at 23°C (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		

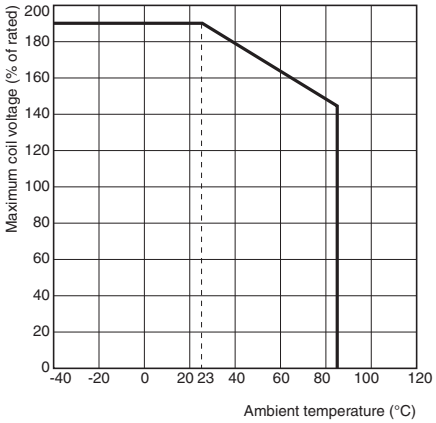
Note. Values in the above table are the initial values at 23°C.
*1. The contact resistance is possible with 1 A applied at 5 VDC using a fall-of-potential method.
*2. Testing conditions: The insulation resistance was measured with a 500 VDC megohmmeter at the same locations as the electric strength was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

■Engineering Data

●Maximum Switching Capacity (AC)

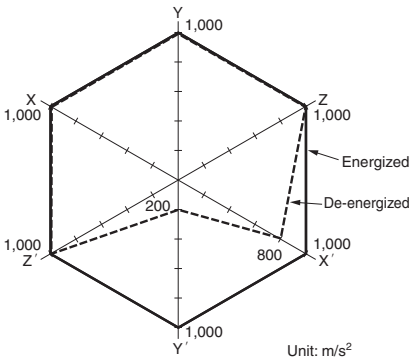


●Ambient Temperature VS. Maximum Coil Voltage

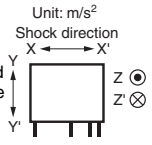


Note. The Maximum coil voltage refers to the maximum value in a varying of operating power voltage, not a continuous voltage.

●Shock Malfunction



Sample: G5Q-1A-EL-HA-VH
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



■Actual Load Life (Reference Values)

G5Q-1A4-EL2-HA

120 VAC Capacitive load

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

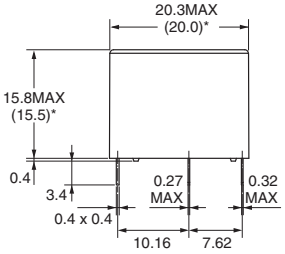
200,000 operations min. (Ambient temperature: 23°C)

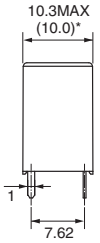
■Dimensions

(Unit: mm)

G5Q-1A-EL-HA-VH
G5Q-1A4-EL2-HA
G5Q-1A4-EL3-HA

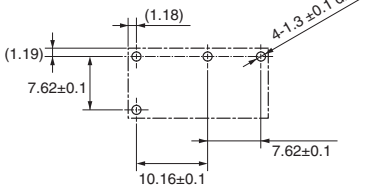






* Average value

PCB Mounting Holes
(Bottom View)
Tolerance: ±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 (cosϕ=1) 105°C	10,000
G5Q-1A4-EL2-HA	5, 12, 24 VDC	5 A 250 VAC (cosϕ=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 (cosϕ=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 open contact circuit	Reinforced 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.

- 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.

OMRON Corporation
Electronic and Mechanical Components Company **Contact: www.omron.com/ecb**
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