

# PCB Relay

# G5LE

## A Cubic, Single-pole 10-A Power Relay

- High Capacity (-E) versions
- Subminiature “sugar cube” relay with universal footprint.
- Conforms to EN 61810-1. UL recognized/ CSA certified.
- UL class-F coil insulation model available (UL class-B coil insulation for standard model).
- Withstands impulse of up to 4,500 V.
- 400-mW and 360-mW coil power types available.
- RoHS Compliant



## Ordering Information

| Enclosure ratings | Contact form/Style | Contact material        |                                 |               |
|-------------------|--------------------|-------------------------|---------------------------------|---------------|
|                   |                    | AgSnO <sub>2</sub>      | AgSnIn                          |               |
|                   |                    | Standard                | Standard                        | High Capacity |
| Flux protection   | SPDT               | G5LE-1<br>G5LE-1-CF     | G5LE-1-ASI<br>G5LE-1-ASI-CF     | G5LE-1-E      |
|                   | SPST-NO            | G5LE-1A<br>G5LE-1A-CF   | G5LE-1A-ASI<br>G5LE-1A-ASI-CF   | G5LE-1A-E     |
| Fully sealed      | SPDT               | G5LE-14<br>G5LE-14-CF   | G5LE-14-ASI<br>G5LE-14-ASI-CF   | - - -         |
|                   | SPST-NO            | G5LE-1A4<br>G5LE-1A4-CF | G5LE-1A4-ASI<br>G5LE-1A4-ASI-CF | - - -         |

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

Example: G5LE-1 DC12  
 Rated coil voltage

## Model Number Legend

G5LE -    -  -  -  -  -  -  -  -DC 

1 2 3 4 5 6 7 8 9 10

### 1. Number of Poles

1: 1 pole

### 2. Contact Form

None: SPDT

A: SPST-NO

### 3. Enclosure Ratings

None: Flux protection

4: Fully sealed

(Not applicable with -E versions)

### 4. Contact Material

None: AgSnO<sub>2</sub> (AgSnIn for -E versions)

ASI: AgSnIn

### 5. Insulation System

None: Class B (Class F for -E versions)

CF: Class F (UL and CSA only)

### 6. Classification

E: High capacity type

### 7. Coil Power Consumption/Coil Characteristic

None: Approx. 400 mW (Approx. 700mW for -G versions)

36: Approx. 360 mW (Not applicable for -G versions)

### 8. Approved Standards

None: UL, CSA, and VDE

### 9. Packaging

None: Standard polystyrene tray

SP: Anti-static tube packaging

### 10. Rated Coil Voltage

5, 9, 12, 24, 48 VDC

# Specifications

## ■ Coil Ratings

### 400-mW Type

| Rated voltage        | 5 VDC                                                        | 9 VDC | 12 VDC  | 24 VDC  | 48 VDC  |
|----------------------|--------------------------------------------------------------|-------|---------|---------|---------|
| Rated current        | 79.4 mA                                                      | 45 mA | 33.3 mA | 16.7 mA | 8.33 mA |
| Coil resistance      | 63 Ω                                                         | 200 Ω | 360 Ω   | 1,440 Ω | 5,760 Ω |
| Must operate voltage | 75% max. of rated voltage (max.)                             |       |         |         |         |
| Must release voltage | 10% min. of rated voltage (min.)                             |       |         |         |         |
| Max. voltage         | 130% of rated voltage at 85°C, 170% of rated voltage at 23°C |       |         |         |         |
| Power consumption    | Approx. 400 mW                                               |       |         |         |         |

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

### 360-mW Type

| Rated voltage        | 5 VDC                                                        | 9 VDC | 12 VDC | 24 VDC  | 48 VDC  |
|----------------------|--------------------------------------------------------------|-------|--------|---------|---------|
| Rated current        | 72 mA                                                        | 40 mA | 30 mA  | 15 mA   | 7.5 mA  |
| Coil resistance      | 70 Ω                                                         | 225 Ω | 400 Ω  | 1,600 Ω | 6,400 Ω |
| Must operate voltage | 75% max. of rated voltage (max.)                             |       |        |         |         |
| Must release voltage | 10% min. of rated voltage (min.)                             |       |        |         |         |
| Max. voltage         | 130% of rated voltage at 85°C, 170% of rated voltage at 23°C |       |        |         |         |
| Power consumption    | Approx. 360 mW                                               |       |        |         |         |

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

## ■ Contact Ratings

|                                     | Standard                                                             | G5LE-E        |
|-------------------------------------|----------------------------------------------------------------------|---------------|
| Load                                | Resistive load ( $\cos\phi = 1$ )                                    |               |
| Rated load                          | 10 A at 120 VAC; 8 A at 30 VDC<br>10A at 240VAC (12 and 24 VDC coil) | 16A at 250VAC |
| Contact Material                    | AgSnO <sub>2</sub> (AgSnIn optional)                                 | AgSnIn        |
| Rated carry current                 | 10 A                                                                 | 16A           |
| Max. switching voltage              | 250 VAC, 125 VDC<br>(30 VDC when UL/CSA standard is applied)         | 250VAC        |
| Max. switching current              | AC: 10 A; DC: 8 A                                                    | AC: 16A       |
| Max. switching power                | 1,200 VA, 240 W                                                      | 4,000VA       |
| Minimum Permissible Load (See note) | 100 mA at 5 VDC                                                      |               |

**Note:** Reference value - P level:  $\lambda_{60} = 0.1 \times 10^{-6}$  operations

## ■ Characteristics

|                                  |                        |                                                                                                                                                                                                                                                                                                           |
|----------------------------------|------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Contact resistance</b>        |                        | 100 mΩ max.                                                                                                                                                                                                                                                                                               |
| <b>Operate time</b>              |                        | 10 ms max.                                                                                                                                                                                                                                                                                                |
| <b>Release time</b>              |                        | 5 ms max.                                                                                                                                                                                                                                                                                                 |
| <b>Bounce Time</b>               |                        | Operate: Approx. 0.6ms<br>Release: Approx. 7.2ms                                                                                                                                                                                                                                                          |
| <b>Max. switching frequency</b>  |                        | Mechanical: 18,000 operations/hr<br>Electrical: 1,800 operations/hr at rated load                                                                                                                                                                                                                         |
| <b>Insulation resistance</b>     |                        | 100 MΩ min. (at 500 VDC)                                                                                                                                                                                                                                                                                  |
| <b>Dielectric strength</b>       |                        | 2,000 VAC, 50/60 Hz for 1 min between coil and contacts<br>750 VAC, 50/60 Hz for 1 min between contacts of same polarity                                                                                                                                                                                  |
| <b>Impulse withstand voltage</b> |                        | 4,500 V (1.2 x 50 μs) between coil and contacts                                                                                                                                                                                                                                                           |
| <b>Insulation Distance</b>       | <b>Creepage (Typ)</b>  | 3.3 mm                                                                                                                                                                                                                                                                                                    |
|                                  | <b>Clearance (Typ)</b> | 2.7 mm                                                                                                                                                                                                                                                                                                    |
| <b>Tracking Resistance (CTI)</b> |                        | 250 V                                                                                                                                                                                                                                                                                                     |
| <b>Vibration resistance</b>      |                        | Destruction: 10 to 55 to 10 Hz, 0.75-mm single amplitude (1.5-mm double amplitude)<br>Malfunction: 10 to 55 to 10 Hz, 0.75-mm single amplitude (1.5-mm double amplitude)                                                                                                                                  |
| <b>Shock resistance</b>          |                        | Destruction: 1,000 m/s <sup>2</sup><br>Malfunction: 100 m/s <sup>2</sup>                                                                                                                                                                                                                                  |
| <b>Endurance</b>                 |                        | Mechanical: 10,000,000 operations min. (at 18,000 operations/hr)<br>Electrical: 100,000 operations min. (at 1,800 operations/hr) for standard type<br>36,000 operations min. (10A at 250VAC)<br>100,000 operations min. (at 1,800 operations/hr), 12A 250 VAC) - applicable for G5LE-1-E, NO contact only |
| <b>Ambient temperature</b>       |                        | Operating: -40°C to 85°C (with no icing)                                                                                                                                                                                                                                                                  |
| <b>Ambient humidity</b>          |                        | Operating: 5% to 85%                                                                                                                                                                                                                                                                                      |
| <b>Weight</b>                    |                        | Approx. 12 g                                                                                                                                                                                                                                                                                              |

## ■ Approved Standards

UL Recognized (File No. E41643)

CSA Certified (File No. LR34815)

| Model | Coil rating               | Contact rating                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
|-------|---------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| G5LE  | 3 to 48 VDC (Standard)    | 10 A, 250 VAC (general use), 6,000 cycles, 40°C (excluding -G type)<br>10 A, 125 VAC (general use), 100,000 cycles, 40°C (excluding -E, -G types)<br>8 A, 30 VDC (resistive load), 6,000 cycles, 40°C (excluding -E, -G types)<br>125 VA, 125 VAC, pilot duty, 100,000 cycles, 105°C (excluding -G type)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
|       | 5 to 24 VDC (-E versions) | NO:<br>13 A, 120 VAC, resistive, 100,000 cycles, 85°C (AgSnO <sub>2</sub> & -E types, only)<br>1/2 hp, 125 VAC, 100,000 cycles, 40°C (excluding -G type)<br>1/3 hp, 125 VAC, 30,000 cycles, 70°C (AgSnO <sub>2</sub> type only, excluding -E, -G types)<br>400W-T (3.3A), 120 VAC, tungsten, 100,000 cycles (AgSnO <sub>2</sub> type only, excluding -E, -G types)<br>TV-5, 120 VAC, 40°C (-ASI type only, excluding -E, -G types)<br>12 A, 250 VAC, general use, 100,000 cycles, 1s=on, 1s=off, 105°C (-E type only)<br>TV-8, 120 VAC, 25,000 cycles, 40°C (-E type only)<br>10 A, 35 VDC, resistive, 100,000 cycles, 1s=on, 1s=off, 40°C (-G type only)<br>NC:<br>12 A, 250 VAC, general use, 30,000 cycles, 1s=on, 9s=off, 40°C (-E type only)<br>10 A, 35 VDC, resistive, 50,000 cycles, 5s=on, 5s=off, 40°C (-G type only)<br>1/8 hp, 120 VAC, 50,000 cycles, 40°C (AgSnO <sub>2</sub> type only, excluding -E, -G types) |

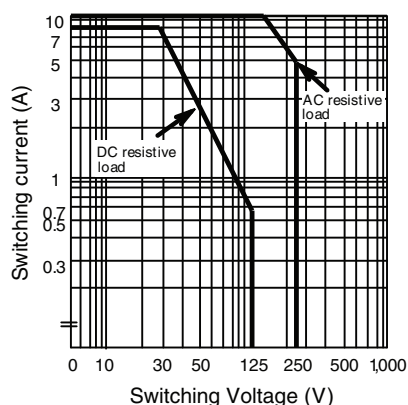
EN 61810-1, EN 60255, IEC (VDE TUV Reg No. R9151267, VDE Reg No. 6850UG)

| Model | Coil rating                                                                            | Contact rating                                                                                  |
|-------|----------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------|
| G5LE  | Approx. 400 mW<br>3, 5, 6, 9, 12, 24, 48 VDC<br>Approx. 360 mW<br>5, 6, 12, 24, 48 VDC | 10A, 250VAC (resistive load, 50,000 cycles at 85°C)<br>5A, 30VDC<br>2.5 A, 250 VAC (cosφ = 0.4) |

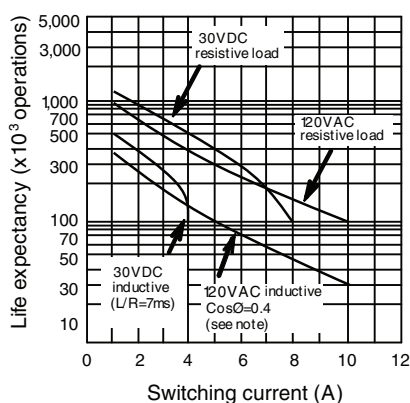
# Engineering Data

For standard type

Max. Switching Capacity

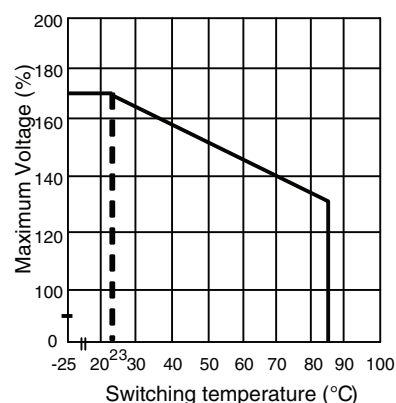


Life Expectancy



**Note:** Same curve as for 250-VAC resistive load

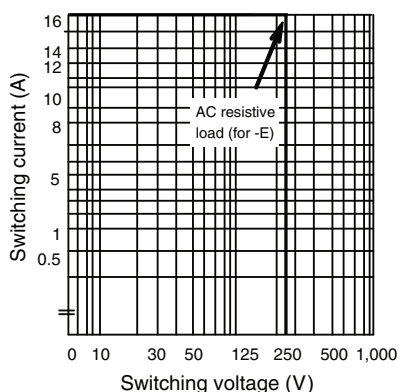
Ambient Temp. Vs. Max. Voltage



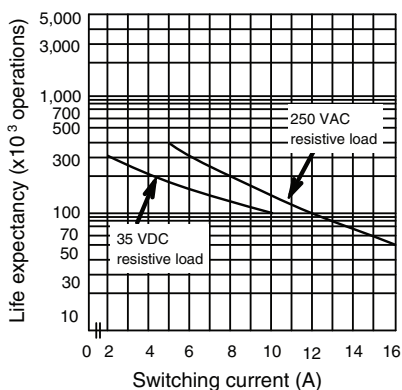
**Note:** The maximum coil voltage refers to the maximum value in a varying range of operating power voltage, not a continuous voltage.

For suffix -E

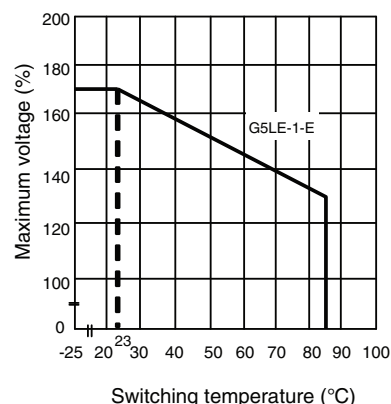
Max. Switching Capacity



Life Expectancy



Ambient Temp. Vs. Max. Voltage



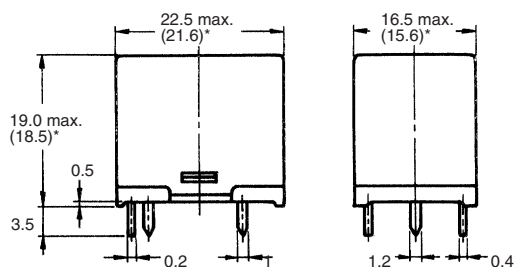
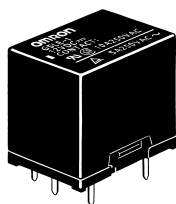
**Note:** The maximum coil voltage refers to the maximum value in a varying range of operating power voltage, not a continuous voltage.

# Dimensions

**Note:** 1. All units are in millimeters unless otherwise indicated.

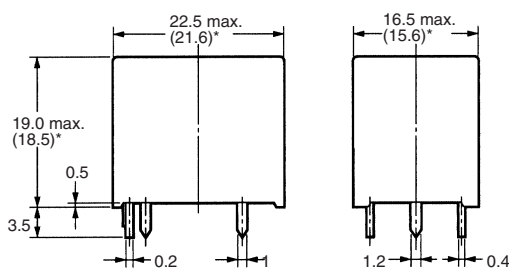
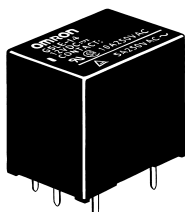
2. Orientation marks are indicated as follows:  

## G5LE-1 G5LE-1A



\*Average value

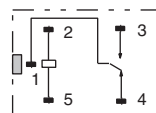
## G5LE-14 G5LE-1A4



\*Average value

### Terminal Arrangement/Internal Connections (Bottom View)

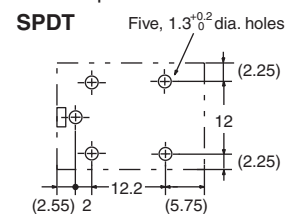
#### SPDT



### Mounting Holes (Bottom View)

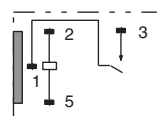
Tolerance:  $\pm 0.1$  mm unless specified

#### SPDT



### Terminal Arrangement/Internal Connections (Bottom View)

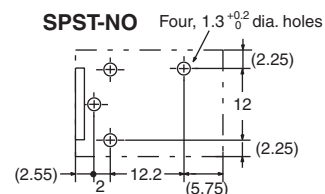
#### SPST-NO



### Mounting Holes (Bottom View)

Tolerance:  $\pm 0.1$  mm unless specified

#### SPST-NO



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**ALL DIMENSIONS SHOWN ARE IN MILLIMETERS.**

To convert millimeters into inches, multiply by 0.03937. To convert grams into ounces, multiply by 0.03527.

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