

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

- 19.6 × 15.6 × 15.2 mm (L × W × H)  
Subminiature “Sugar Cube” relay.
- Low coil power consumption (360 mW).
- UL class B and class F insulation available.
- Models with CTI >175 and CTI > 250 available.
- Withstands impulse of up to 4,500 V.

RoHS Compliant Refer to pages 16 to 17 for details.



## Ordering Information

Seal	Contact form	Contact material
		AgSnO <sub>2</sub>
No sealed (vent hole)	SPDT	G5LB-1
	SPST-NO	G5LB-1A
Plastic-sealed	SPDT	G5LB-14
	SPST-NO	G5LB-1A4

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

Example: G5LB-1 12 VDC  
└─┘ Rated coil voltage

### Model Number Legend:

**G5LB**       -  -  -  -   VDC  
 1 2 3 4 5 6 7 8

- |  |  |
|--|--|
| <p><b>1. Number of Poles</b><br/>1: 1 pole</p> <p><b>2. Contact Form/Contact Construction</b><br/>None: SPDT<br/>A: SPST-NO</p> <p><b>3. Sealing/Protective Construction</b><br/>None: No sealed (vent hole)<br/>4: Sealed</p> <p><b>4. Contact Type</b><br/>None: Standard<br/>(Silver Tin Oxide)</p> | <p><b>5. Coil Power Consumption</b><br/>None: 360 mW<br/>40: 400 mW<br/>60: 600 mW (UL and CSA only)</p> <p><b>6. Tracking Index, and Coil Insulation</b><br/>None: At least PTI 175 (CTI Index 3), and Class B<br/>25: At least PTI 250 (CTI Index 2), and Class F</p> <p><b>7. Optional Suffix(es)</b><br/>None: May include additional numbers and/or letters for sales purposes.</p> <p><b>8. Rated Coil Voltage</b></p> |
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## Specifications

### Coil Ratings

#### 360-mW Models

Rated voltage	3 VDC	5 VDC	6 VDC	9 VDC	12VDC	24 VDC	36 VDC	48 VDC
Rated current	123.3 mA	72.0mA	60.8 mA	40.8 mA	30.7 mA	15.2 mA	10.2 mA	7.6 mA
Coil resistance	24.3 Ω	69.4 Ω	98.7 Ω	220.4 Ω	390.6 Ω	1575.4 Ω	3533.7 Ω	6287.4 Ω
Must operate voltage	75% of rated voltage (max.)							
Must release voltage	10% of rated voltage (min.)							
Max. voltage	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%.

### 400-mW Models

Rated voltage	3 VDC	5 VDC	6 VDC	9 VDC	12 VDC	24 VDC	36 VDC	48 VDC
Rated current	136.4 mA	80.0 mA	67.8 mA	45.7 mA	32.8 mA	17.0 mA	11.3 mA	8.5 mA
Coil resistance	22.0 Ω	62.5 Ω	88.5 Ω	196.9 Ω	366.0 Ω	1,407.7 Ω	3,196.8 Ω	5,638.0 Ω
Must operate voltage	75% of rated voltage (max.)							
Must release voltage	10% 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%.

### 600-mW Models

Rated voltage	3 VDC	5 VDC	6 VDC	9 VDC	12 VDC	24 VDC	36 VDC	48 VDC
Rated current	200.2 mA	120.0 mA	100.7 mA	66.8 mA	50.4 mA	25.3 mA	16.6 mA	12.6 mA
Coil resistance	15.0 Ω	41.7 Ω	59.6 Ω	134.8 Ω	237.9 Ω	947.6 Ω	2,164.8 Ω	3,800.0 Ω
Must operate voltage	75% of rated voltage (max.)							
Must release voltage	10% of rated voltage (min.)							
Max. voltage	130% of rated voltage at 85°C, 170% of rated voltage at 23°C							
Power consumption	Approx. 600 mW							

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

## ■ Contact Ratings

Load	Resistive load (cos φ=1)
Rated load	10 A at 120 VAC, 8 A at 30 VDC, 10 A at 250 VAC
Rated carry current	10 A
Max. switching voltage	250 VAC, 125 VDC (30 VDC when UL/CSA standard is applied)
Max. switching current	AC: 10 A, DC: 8 A
Max. switching power	1,200 VA, 240 W, 2,500 VA
Failure rate (reference value)	100 mA at 5 VDC

Note: P level: λ<sub>60</sub> = 0.1 × 10<sup>-6</sup> operations

## ■ Approved Standards

UL325, UL873 (File No. E41643 Vol. 11 Sec. 6) and CSA C22.2 No. 14 (File No. LR31928)

Model	Coil rating	Contact rating
G5LB	3 to 48 VDC	10 A, 250 VAC (general use, 100,000 cycles) 10 A, 30 VDC (resistive load, 100,000 cycles)

EN61810-1 (2nd Ed) and EN60255-25 (VDE Reg. No. A662)

Model	Coil rating	Contact rating
G5LB	3, 5, 6, 9, 12, 24, 36, and 48 VDC	10 A 30 VDC (resistive load, 50,000 cycles) NO and Sealed: 10 A 250 VAC (general use, 25,000 cycles at 85°C) NO and Vent Hole: 10 A 250 VAC (general use, 50,000 cycles at 85°C) NC and Vent Hole: 10 A 250 VAC (general use, 25,000 cycles at 85°C)

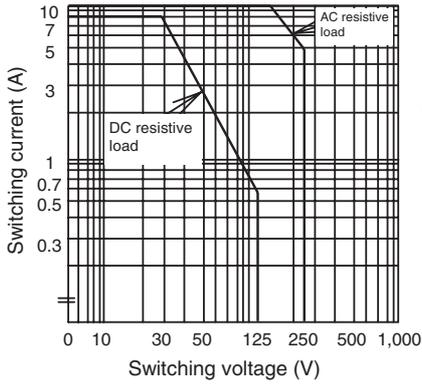
## ■ Characteristics

Contact resistance	100 mΩ max.
Operate time	10 ms max.
Release time	5 ms max.
Max. switching frequency	Mechanical: 18,000 operations/hr Electrical: 1,800 operations/hr (under rated load)
Insulation resistance	1,000 MΩ min. (at 500 VDC)
Dielectric strength	750 VAC, 50/60 Hz for 1 min. between contacts of same polarity 2,000 VAC, 50/60 Hz for 1 min. between coil and contacts
Impulse withstand voltage	4,500 V between coil and contacts, 1.2 × 50 μs
Vibration resistance	Destruction: 10 to 55 to 10 Hz, 1.5-mm double amplitude Malfunction: 10 to 55 to 10 Hz, 1.5-mm double amplitude
Shock resistance	Destruction: 1,000 m/s <sup>2</sup> (approx. 100 G) Malfunction: 100 m/s <sup>2</sup> (approx. 10 G)
Endurance	Mechanical: 10,000,000 operations min. (at 18,000 operations/hr) Electrical: *100,000 operations min. (at 1,800 operations/hr, 10 A, 120 VAC)
Ambient temperature	Operating: -40°C to 85°C
Ambient humidity	Operating: 35% to 85%
Weight	Approx.: 10 g

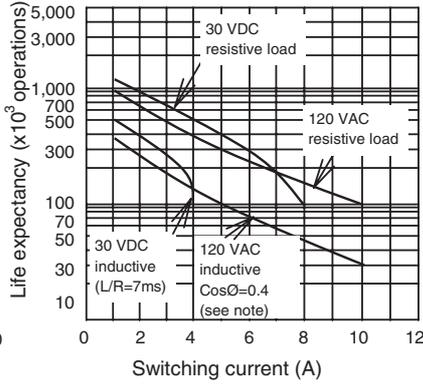
\* G5LB-1

# Engineering Data

Max. Switching Power, G5LB-1

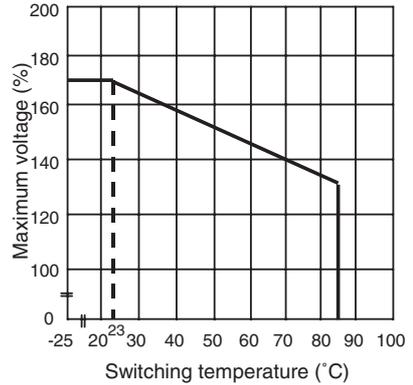


Endurance, G5LB-1



**Note:** Curve for 120 VAC, inductive load  $\text{Cos}\phi=0.4$  is the same for 250 VAC, resistive load.

Ambient Temp. Vs Max. Voltage



**Note:** The maximum coil voltage is the maximum value in a varying range of operating power voltages not a continuous voltage.

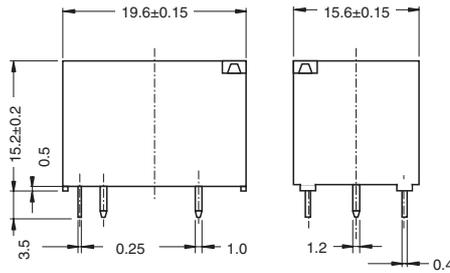
## Dimensions

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

2. Orientation marks are indicated as follows:

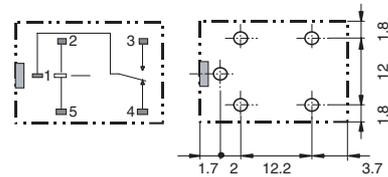
### SPDT Models

#### G5LB-1

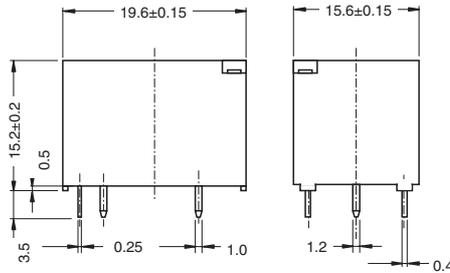


Terminal Arrangement/  
Internal Connections  
(Bottom View)

Mounting Holes  
(Bottom View)  
Tolerance:  $\pm 0.1\text{mm}$

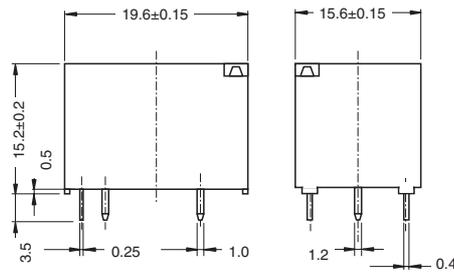


#### G5LB-14



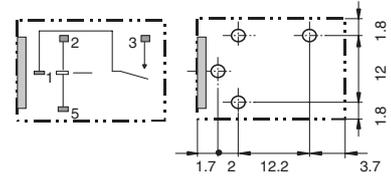
■ SPST Models

G5LB-1A

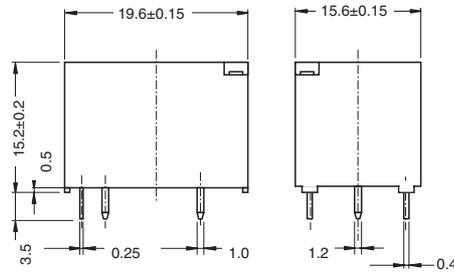


Terminal Arrangement/  
Internal Connections  
(Bottom View)

Mounting Holes  
(Bottom View)  
Tolerance:  $\pm 0.1$ mm



G5LB-1A4



**ALL DIMENSIONS SHOWN ARE IN MILLIMETERS.**  
To convert millimeters into inches, multiply by 0.03937. To convert grams into ounces, multiply by 0.03527.