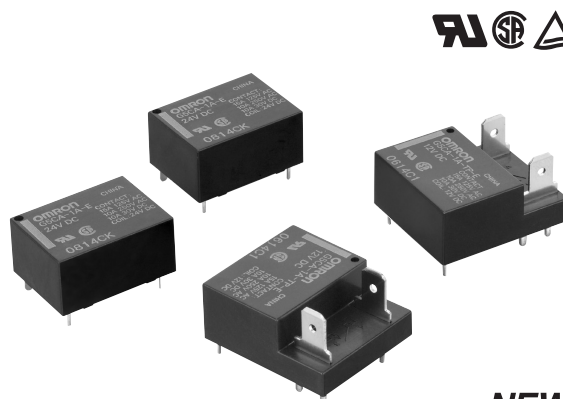


# PCB Relay G5CA

## Flat Relays that Switch 10-A/15-A Loads with New Quick-connect Terminals

- Ideal for switching power in household appliances or for outputs from industrial devices.
- Subminiature dimensions: 16 x 22 x 11 mm (L x W x H).
- High-sensitivity models available with low power consumption (150 mW).
- UL recognized / CSA certified.
- Fully sealed models and quick-connect terminal models available (#187 load contact terminals).
- RoHS Compliant.



**NEW**

## Ordering Information

To order: Select the part number and add the rated coil voltage to the part number. Example: G5CA-1A4-H DC12.

Item		Model			
Enclosure Ratings	Contact configuration	Standard	High-sensitivity	High-capacity	Quick-connect terminals (#187)
Flux protection	SPST-NO	G5CA-1A	G5CA-1A-H	G5CA-1A-E	G5CA-1A-TP-E
Fully sealed		G5CA-1A4	G5CA-1A4-H	---	---

- Note:**
1. Contact your OMRON representative for details on other coil voltage specifications.
  2. High-capacity models with a fully sealed structure are not available.
  3. Standard or high-sensitivity models with quick-connect terminals are not available.

## Model Number Legend

G5CA-1A □-□-□-□  
1 2 3 4 5

**1. Number of Poles**  
1A: 1 pole (SPST-NO)

**2. Enclosure Ratings**  
None: Flux protection  
4: Fully sealed

**3. Terminal form**  
None: PCB terminal  
TP: Quick-connect terminal (#187)

**4. Special functions**  
None: Standard  
E: High-capacity

**5. Coil consumption**  
None: Standard  
H: High-sensitivity

### Standard Specifications

Contact Configuration: SPST-NO  
Enclosure Ratings: Flux protection  
Terminal form: PCB terminal

# Specifications

## ■ Coil Ratings

Item	Standard, high-capacity, or quick-connect terminals			High-sensitivity		
	5 VDC	12 VDC	24 VDC	5 VDC	12 VDC	24 VDC
Rated current	40 mA	16.7 mA	8.3 mA	30 mA	12.5 mA	6.25 mA
Coil resistance	125 Ω	720 Ω	2,880 Ω	167 Ω	960 Ω	3,840 Ω
Must-operate voltage	75% of rated voltage (max.)			80% of rated voltage (max.)		
Must-release voltage	10% of rated voltage (min.)					
Max. voltage	150% (standard)/130% (high-capacity, quick-connect terminals) of rated voltage (at 23°C)			150% of rated voltage at 23°C		
Power consumption	Approx. 200 mW			Approx. 150 mW		

- Note:**
1. The rated current and coil resistance are measured at a coil temperature of 23°C (73°F) with a tolerance of ±10%.
  2. The operating characteristics are measured at a coil temperature of 23°C.
  3. The "maximum voltage" is the maximum voltage that can be applied to the relay coil.

## ■ Contact Ratings

Item	Standard		High-sensitivity		High-capacity, or quick-connect terminals	
	Resistive load	Inductive load (cosφ = 0.4, L/R = 7 ms)	Resistive load	Inductive load (cosφ = 0.4, L/R = 7 ms)	Resistive load	Inductive load (cosφ = 0.4, L/R = 7 ms)
Contact form	Single					
Contact material	Silver alloy					
Rated load	10 A at 250 VAC; 10 A at 30 VDC	3 A at 250 VAC; 3 A at 30 VDC	10 A at 250 VAC; 10 A at 30 VDC	3 A at 250 VAC; 3 A at 30 VDC	15 A at 110 VAC; 10 A at 30 VDC	5 A at 110 VAC; 3 A at 30 VDC
Rated carry current	10 A		10 A		15 A	
Max. switching voltage	250 VAC, 125 VDC					
Max. switching current	10 A		10 A		15 A	
Max. switching power (reference value)	2,500 VA, 300 W	750 VA, 90 W	2,500 VA, 300 W	750 VA, 90 W	2,500 VA, 300 W	750 VA, 90 W

## ■ Characteristics

<b>Contact resistance (see note 2)</b>	30 mΩ max. (quick-connect terminals type: 100 mΩ max.)
<b>Operate time (see note 3)</b>	10 ms max. (15 ms max.)
<b>Release time</b>	10 ms max.
<b>Insulation resistance (see note 4)</b>	1,000 MΩ min. (at 500 VDC)
<b>Dielectric strength</b>	2,500 VAC, 50/60 Hz for 1 min. between coil and contacts 1,000 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)
<b>Vibration resistance</b>	Destruction: 10 to 55Hz, 1.5-mm double amplitude Malfunction: 10 to 55 Hz, 1.5-mm double amplitude
<b>Shock resistance</b>	Destruction: 1,000 m/s <sup>2</sup> (Approx. 100 G) Malfunction: 200 m/s <sup>2</sup> (Approx. 20 G)
<b>Life expectancy</b>	Mechanical: 20,000,000 operations min. at 18,000 operations/hr Electrical: <ul style="list-style-type: none"> <li>• 300,000 operations min. (100,000 operations min. for Fully sealed Type) at 1,200 operations/hr under resistive load of 10 A at 250 VAC;</li> <li>• 100,000 operations min. under resistive load of 15 A at 110 VAC for high-capacity models</li> <li>• 100,000 operations min. at 1,200 operations/hr under resistive load of 10 A at 30 VDC</li> </ul>
<b>Minimum permissible load (reference value: see note 5)</b>	5 VDC, 100 mA
<b>Ambient temperature</b>	Operating: -25°C to 70°C (with no icing or condensation)
<b>Ambient humidity</b>	Operating: 5% to 85%
<b>Weight</b>	Approx. 8 g (for TP model: Approx. 9.6 g)

- Note:**
1. The data shown above are initial values.
  2. Measurement conditions: 5 VDC, 1 A, voltage drop method.
  3. Measurement conditions: The value in parentheses indicates the operate time for high-sensitivity types.
  4. Measurement conditions: Measured at the same points as the dielectric strength using a 500-VDC ohmmeter.
  5. This value is for a switching frequency of 120 operations/minute. (P level:  $\lambda_{60} = 0.1 \times 10^{-5}$  operations)

## ■ Approved Standards

- The following UL-, CSA-, and EN/TÜV-certifying ratings differ from the performance characteristics of the individual models.

### UL Recognized (File No. E41515) - - Ambient Temp. = 40°C

Model	No. of poles	Coil rating	Contact rating	No. of operations
G5CA	1	5 to 100 VDC	15 A, 125 VAC (General purpose) 10 A, 250 VAC (General purpose) 10 A, 30 VDC (Resistive)	100,000

### EN Standard/TÜV Certificated: EN61810-1 (Certification No. R50030053)

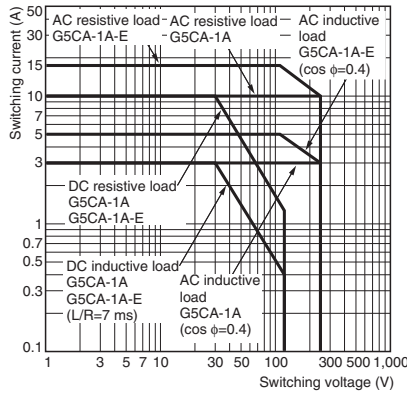
Model	No. of poles	Coil rating	Contact rating	No. of operations
G5CA	1	3, 5, 6, 12, 24, 48 VDC	15 A, 125 VAC (cosφ = 1.0) 15 A, 250 VAC (cosφ = 1.0) 10 A, 30 VDC ( $\frac{t}{t_0} = 0$ ms)	100,000

### CSA Certified (File No. LR31928)

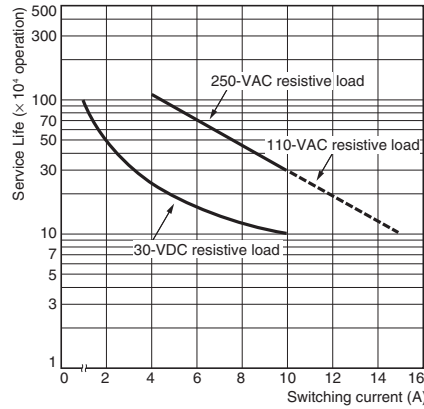
Model	No. of poles	Coil rating	Contact rating	No. of operations
G5CA	1	5 to 100 VDC	15 A, 125 VAC (General purpose) 10 A, 250 VAC (General purpose) 10 A, 30 VDC (Resistive)	100,000

# Engineering Data

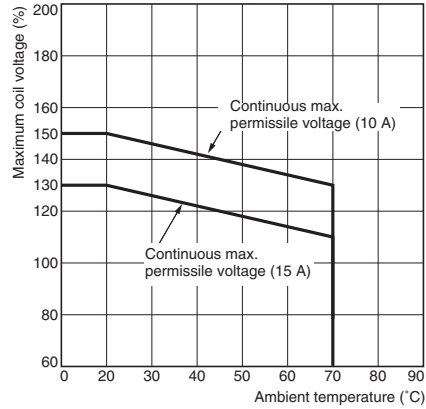
## Maximum Switching Capacity



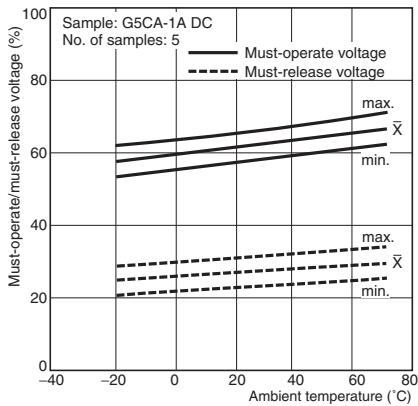
## Electrical Service Life



## Ambient Temperature vs. Maximum Coil Voltage

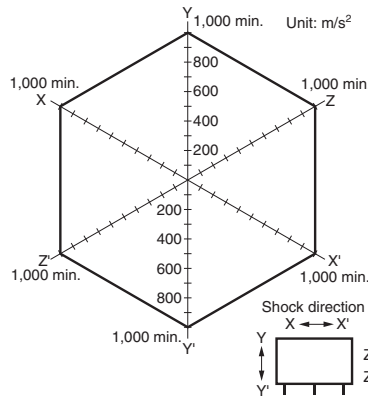


## Operating Temperature vs. Must-operate/Must-release Voltage



**Note:** The "maximum voltage" is the maximum voltage that can be applied to the relay coil, but, not continuously.

## Malfunction Shock

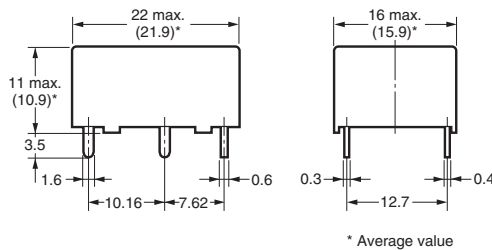
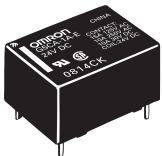


No. of samples: 10  
 Measured value: The value at which malfunction occurs in the contact when the contact is subjected to shock three times each in six directions for three axes.  
 Standard: 200 m/s<sup>2</sup>

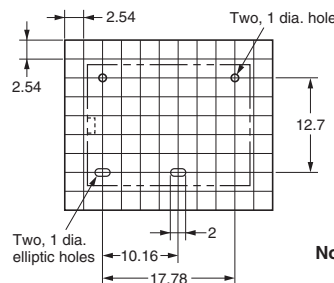
# Dimensions

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

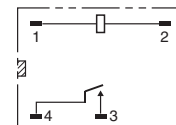
G5CA-1A(-E)  
 G5CA-1A4(-H)



**Mounting Holes (PCB)**  
 (BOTTOM VIEW)  
 Tolerance: ±0.1 mm



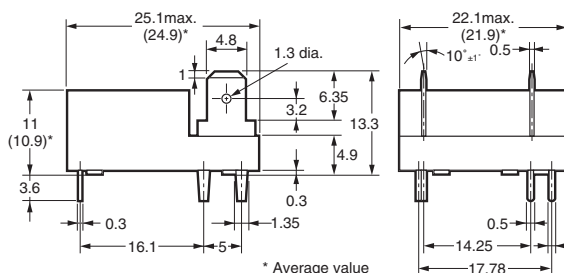
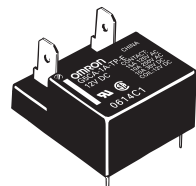
**Terminal Arrangement/ Internal Connections**  
 (BOTTOM VIEW)



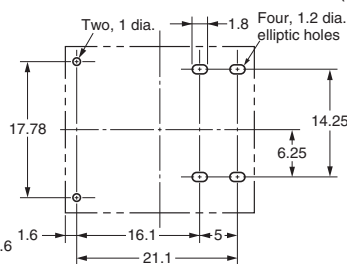
(No coil polarity)

**Note:** Orientation marks are indicated as follows:

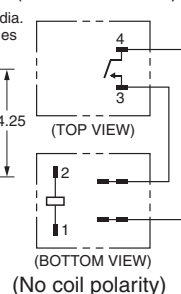
G5CA-1A-TP-E



Mounting Holes  
(BOTTOM VIEW)  
Tolerance: ±0.1 mm



Terminal Arrangement/  
Internal Connections  
(BOTTOM VIEW)

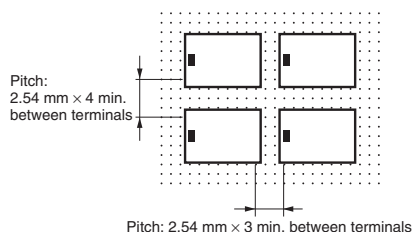


## Precautions

### Precautions for Correct Use

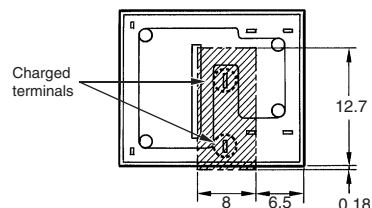
#### Installation

Make sure that sufficient space is provided between relays when installing two or more relays side by side to facilitate heat dissipation. Insufficient heat dissipation may result in the relay malfunctioning.



#### Charged Terminals

The section marked with dotted circles (indicated by arrows) in the following diagram includes the charged terminals of the relay. When the relay is mounted on a PCB, make sure that there are no metal patterns on the section of the PCB facing the portion of the relay shaded in the following diagram.



#### Quick-connect Terminal Connections

- Do not pass current through the PCB of the load contact terminals (quick-connect terminals).
- The terminals are compatible with Faston receptacle #187 and are suitable for positive-lock mounting. Use only Faston terminals with the specified numbers. Select leads for connecting Faston receptacles with wire diameters that are within the allowable range for the load current. Do not apply excessive force to the terminals when mounting or dismantling the Faston receptacle. Insert and remove terminals carefully one at a time. Do not insert terminals on an angle, or insert/remove multiple terminals at the same time. The following positive-lock connectors made by AMP are recommended. Contact the manufacturer directly for details on connectors including availability.

Type	Receptacle terminals (see note)	Positive housing
#187 terminals (width: 4.75 mm)	AMP 170330-1 (170324-1)	AMP 172074-1 (natural color)
	AMP 170331-1 (170325-1)	AMP 172074-4 (yellow)
	AMP 170332-1 (170326-1)	AMP 172074-5 (green)
		AMP 172074-6 (blue)

Note: The numbers shown in parentheses are for air-feeding.

#### Other Precautions

- The G5CA is a power relay designed for applications switching power loads such as heaters in electric household appliances. Do not use the G5CA to switch micro loads less than 100 mA, such as in signal applications.
- Use fully sealed models if the relays will require washing. Flux-protection models may malfunction or the relay's performance may be otherwise adversely affected if cleaning fluid enters the relay.

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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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