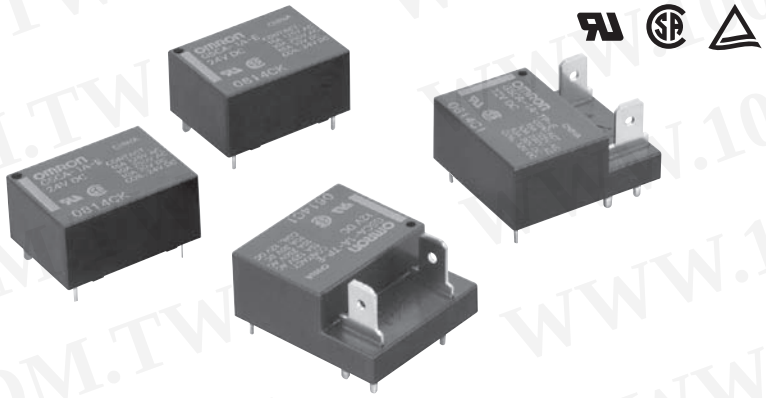
# G5CA

PCB Power Relay

## Flat Relays that Switch 10A/15A Loads Power

- Ideal for switching power in household appliances or for outputs from industrial devices.
- Subminiature dimensions: 16 × 22 × 11 mm (L × W × H).
- High-sensitivity models available with low power consumption (150 mW).
- Standard model conforms to UL/CSA standards.
- Fully sealed models are available
- Quick-connect terminal models are also available (#187 load contact terminals).

**RoHS Compliant**



## ■Model Number Legend

**G5CA-1A□-□-□-□**

1 2 3 4 5

1. **Number of Poles**
   1A: 1-pole/SPST-NO (1a)
2. **Enclosure rating**
   None: Flux protection
   4: Fully sealed
3. **Terminal Shape**
   None: PCB terminals
   TP: Quick-connect terminals (#187)
4. **Classification**
   None: Standard
   E: High-capacity
5. **Coil consumption**
   None: Standard
   H: High-sensitivity

## ■Application Examples

- Small home appliances

勝 特 力 材 料 886-3-5753170
胜特力电子(上海) 86-21-34970699
胜特力电子(深圳) 86-755-83298787
Http://www.100y.com.tw

## ■Ordering Information

| Enclosure rating | Item / Contact form | Standard: Model | Standard: Rated coil voltage | Standard: Minimum packing unit | High-sensitivity: Model | High-sensitivity: Rated coil voltage | High-sensitivity: Minimum packing unit | High-capacity: Model | High-capacity: Rated coil voltage | High-capacity: Minimum packing unit | Quick-connect terminals (#187): Model | Quick-connect terminals (#187): Rated coil voltage | Quick-connect terminals (#187): Minimum packing unit |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Flux protection | SPST-NO (1a) | **G5CA-1A** | 5 VDC | 20 pcs/tube | **G5CA-1A-H** | 5 VDC | 20 pcs/tube | **G5CA-1A-E** | 5 VDC | 20 pcs/tube | **G5CA-1A-TP-E** | 5 VDC | 20 pcs/tube |
| | | | 12 VDC | | | 12 VDC | | | 12 VDC | | | 12 VDC | |
| | | | 24 VDC | | | 24 VDC | | | 24 VDC | | | 24 VDC | |
| Fully sealed | | **G5CA-1A4** | 5 VDC | | **G5CA-1A4-H** | 5 VDC | | | | | | | |
| | | | 12 VDC | | | 12 VDC | | | | | | | |
| | | | 24 VDC | | | 24 VDC | | | | | | | |

Note 1. When ordering, add the rated coil voltage to the model number.
Example: G5CA-1A 5 VDC (Rated coil voltage)
Note 2. Contact your OMRON representative for details on other coil voltage specifications.
Note 3. High-capacity models with a fully sealed structure are not available.
Note 4. Standard or high-sensitivity models with quick-connect terminals are not available.

## ■Rarings

### ●Coil

| Classification / Item: 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 | | | |
| Standard, high-capacity, or quick-connect terminals: 5 VDC | 40 | 125 | 75% max. | 10% min. | 150% (standard)/ 130% (high-capacity, quick-connect terminals) (at 23°C) | Approx. 200 |
| 12 VDC | 16.7 | 720 | | | | |
| 24 VDC | 8.3 | 2,880 | | | | |
| High-sensitivity: 5 VDC | 30 | 167 | 80% max. | 10% min. | 150% (at 23°C) | Approx. 150 |
| 12 VDC | 12.5 | 960 | | | | |
| 24 VDC | 6.25 | 3,840 | | | | |

Note 1. The rated current and coil resistance are measured at a coil temperature of 23°C 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.

### ●Contacts

| Classification / Item / Load | Standard: Resistive load | Standard: Inductive load (cosϕ = 0.4, L/R = 7 ms) | High-sensitivity: Resistive load | High-sensitivity: Inductive load (cosϕ = 0.4, L/R = 7 ms) | High-capacity, or quick-connect terminals: Resistive load | High-capacity, or quick-connect terminals: Inductive load (cosϕ = 0.4, L/R = 7 ms) |
|---|---|---|---|---|---|---|
| Contact type | Single | | | | | |
| Contact material | Ag-alloy (Cd free) | | | | | |
| 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 | |

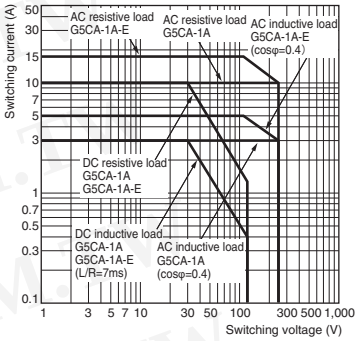
## ■Characteristics

| | | |
|---|---|---|
| Contact resistance *1 | | 30 mΩ max.<br>(Quick-connect terminals type: 100 mΩ max.) |
| Operate time | | 10 ms max. |
| Release time | | 10 ms max. |
| Insulation resistance *2 | | 1,000 MΩ min. |
| Dielectric strength | Between coil and contacts | 2,500 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 | | 4,500 V (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 | 200 m/s² |
| Durability | Mechanical | 20,000,000 operations min. at 18,000 operations/hr |
| | Electrical | Resistive load<br>• Standard model<br>250 VAC 10 A, 300,000 operations min.<br>(100,000 operations min. for plastic-sealed and high-sensitivity models)<br>• High capacity and quick-connect terminals<br>110 VAC 15A, 100,000 operations min.<br>• For all models<br>30 VDC 10 A, 100,000 operations<br>Inductive load<br>100,000 operations min. for all models (rated load)<br>[Switching frequency at 1,200 operations/h (for all models)] |
| Failure rate (P level) (Reference value *3) | | 5 VDC, 100 mA |
| Ambient Operating temperature | | -25°C to 70°C (with no icing or condensation) |
| Ambient Operating humidity | | 5% to 85% |
| Weight | | Approx. 8 g (for TP model: Approx. 9.6 g) |

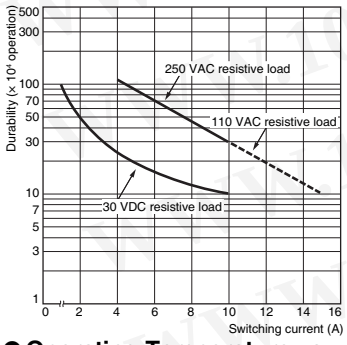
Note. The data shown above are initial values.
*1. Measurement conditions: 5 VDC, 1 A, voltage drop method.
*2. Measurement conditions: Measured at the same points as the dielectric strength using a 500 VDC ohmmeter.
*3. This value was measured at a switching frequency of 120 operations/min.

## ■Engineering Data

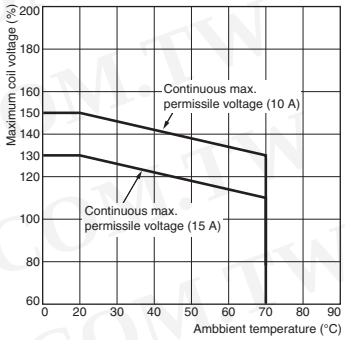
### ●Maximum Switching Capacity




### ●Durability

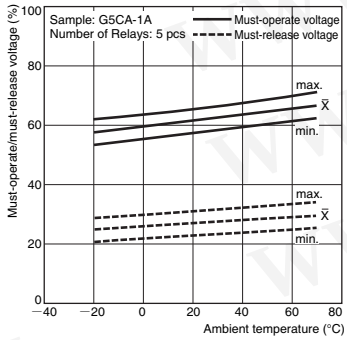



### ● Ambient Temperature vs. Maximum Coil Voltage

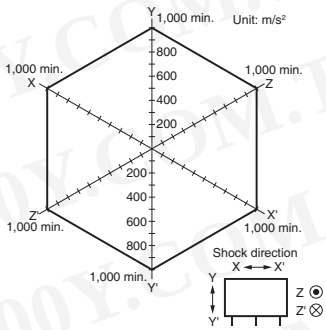



Note. The "maximum voltage" is the maximum voltage that can be applied to the relay coil.

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




### ●Shock Malfunction

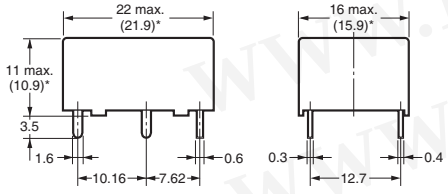



Sample: G5CA-1A
Number of Relays: 10 pcs
Measured value: The value at which malfunction occurs in the contact when the contact is subjected to shock three times each in six directions for three axes.
Standard: 200 m/s²

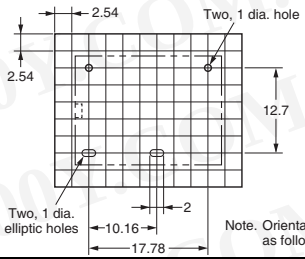
## ■Dimensions

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

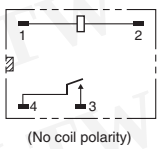




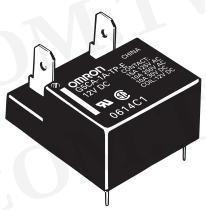

**PCB Mounting Holes**
(BOTTOM VIEW)
Tolerance: ±0.1 mm

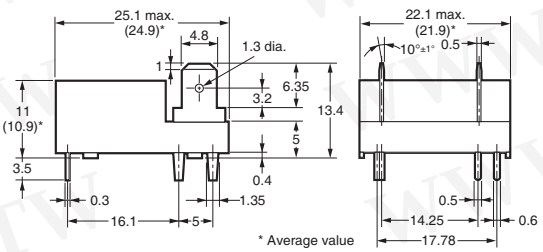



**Terminal Arrangement/ Internal Connections**
(BOTTOM VIEW)

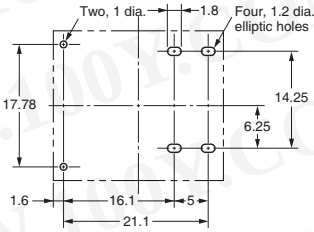



### G5CA-1A-TP-E

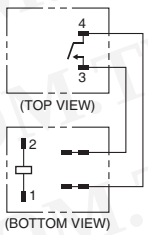





**PCB Mounting Holes**
(BOTTOM VIEW)
Tolerance: ±0.1 mm




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



## ■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)

| Model | Contact form | Coil ratings | Contact ratings | Number of test operations |
|---|---|---|---|---|
| G5CA | SPDT-NO (1a) | 5 to 100 VDC | 15 A, 125 VAC (General purpose) at 40°C | 100,000 |
| | | | 10 A, 250 VAC (General purpose) at 40°C | |
| | | | 10 A, 30 VDC (Resistive) at 40°C | |

**CSA Certified:** (File No. LR31928)

| Model | Contact form | Coil ratings | Contact ratings | Number of test operations |
|---|---|---|---|---|
| G5CA | SPDT-NO (1a) | 5 to 100 VDC | 15 A, 125 VAC (General purpose) at 40°C | 100,000 |
| | | | 10 A, 250 VAC (General purpose) at 40°C | |
| | | | 10 A, 30 VDC (Resistive) at 40°C | |

**EN Certified/TÜV** (Certification No. R50214486)

| Model | Contact form | Coil ratings | Contact ratings | Number of test operations |
|---|---|---|---|---|
| G5CA | SPDT-NO (1a) | 5, 6, 12, 24, 48 VDC | 15 A, 125 VAC (cosϕ = 1.0) at 85°C | 100,000 |
| | | | 10 A, 250 VAC (cosϕ = 1.0) at 85°C | |
| | | | 10 A, 30 VDC (0 ms) at 85°C | |

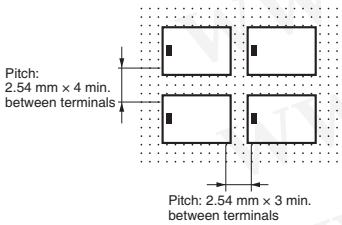
## ■Precautions

**●Please refer to "PCB Relays Common Precautions" for correct use.**

Correct Use

### ●Mounting

- 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.




### ●Quick-connect Terminal Connections

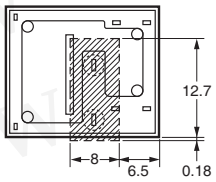
- Do not pass current through the PCB of the load contact terminals (quick-connect terminals).
- The terminals are compatible with Faston receptacle #187 and are suitable for positive-lock mounting. Use only Faston terminals with the specified numbers. Select leads for connecting Faston receptacles with wire diameters that are within the allowable range for the load current. Do not apply excessive force to the terminals when mounting or dismounting 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 * | Positive housing |
|---|---|---|
| #187 terminals (width: 4.75 mm) | AMP 170330-1 (170324-1)<br>AMP 170331-1 (170325-1)<br>AMP 170332-1 (170326-1) | AMP 172074-1 (natural color)<br>AMP 172074-4 (yellow)<br>AMP 172074-5 (green)<br>AMP 172074-6 (blue) |

* The numbers shown in parentheses are for air-feeding.

### ●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.




### ●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.

勝 特 力 材 料 886-3-5753170
胜特力电子(上海) 86-21-34970699
胜特力电子(深圳) 86-755-83298787
Http://www.100y.com.tw



- 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**

**Cat. No. J151-E1-03**
0812(0207)(O)