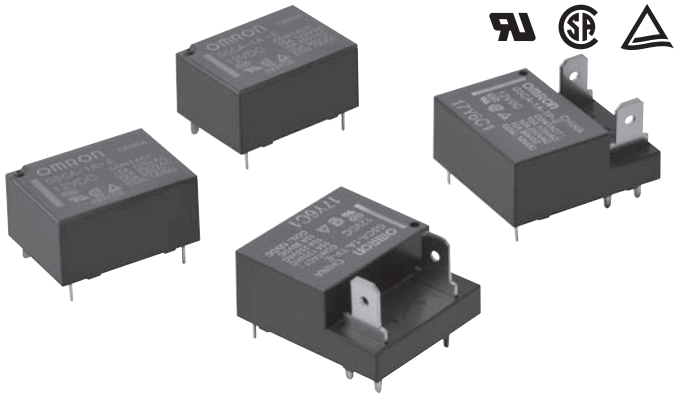
G5CA
PCB Power Relay

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.
- Sealed models are available
- Quick-connect terminal models are also available (#187 load contact terminals).
- IEC/EN 60335-1 conformed. (-HA Model)



■Model Number Legend

G5CA-1A□-□-□-□-□-□

1 2 3 4 5 6

1. **Number of Poles**
   1A: 1-pole/SPST-NO (1a)
2. **Enclosure rating**
   None: Flux protection
   4: 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
6. **Market Code**
   None: General purpose
   HA: Home Appliance according to IEC/EN60335-1

■Application Examples

- Small home appliances

■Ordering Information

Terminal Shape	Market Code	Classification	Contact form	Enclosure rating	Model	Rated coil voltage	Minimum packing unit
PCB terminals	General purpose	Standard	SPST-NO (1a)	Flux protection	G5CA-1A	5VDC 12VDC 24VDC	20 pcs/Tube
				Sealed	G5CA-1A4		
		High-sensitivity		Flux protection	G5CA-1A-H		
				Sealed	G5CA-1A4-H		
		High-capacity		Flux protection	G5CA-1A-E		
	Home Appliance				G5CA-1A-E-HA	12VDC 24VDC	
Quick-connect terminals (#187)	General purpose				G5CA-1A-TP-E	5VDC 12VDC 24VDC	

Note 1. When ordering, add the rated coil voltage to the model number.
Example: G5CA-1A DC5
└Rated coil voltage
However, the notation of the coil voltage on the product case as well as on the packing will be marked as □□ VDC.
Note 2. Contact your OMRON representative for details on other coil voltage specifications.
Note 3. High-capacity models with sealed structure are not available.
Note 4. Standard or high-sensitivity models with quick-connect terminals are not available.

■Ratings

●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%.
Note 2. The operating characteristics are measured at a coil temperature of 23°C.
Note 3. The "maximum voltage" is the maximum voltage that can be applied to the relay coil.

●Contacts

Classification / Item / Load	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 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	

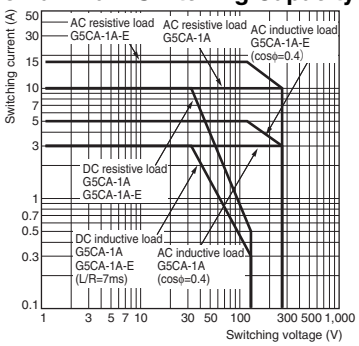
■Characteristics

Contact resistance *1		30 mΩ max. (Quick-connect terminals type: 100 mΩ max.)
Operate time		10 ms max. 15 ms max. (High-Sensitivity models)
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 • Standard model 250 VAC 10 A, 300,000 operations min. (100,000 operations min. for sealed and high-sensitivity models) • High capacity and quick-connect terminals 110 VAC 15A, 100,000 operations min. • For all models 30 VDC 10 A, 100,000 operations Inductive load 100,000 operations min. for all models (rated load) [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)

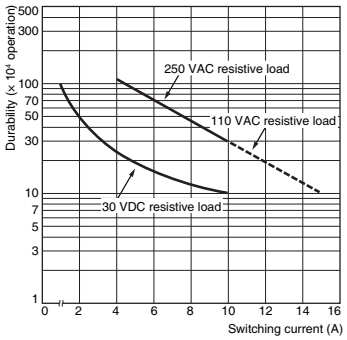
Note. Values in the above table are the initial values at 23•C.
*1. Measurement conditions: 5 VDC, 1 A, voltage drop method.
*2. Measurement conditions: Measured at the same points as the dielectric strength using a 500 VDC ohmmeter.
*3. This value was measured at a switching frequency of 120 operations/min.

■Engineering Data

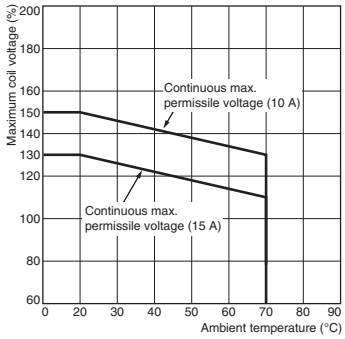
●Maximum Switching Capacity



●Durability

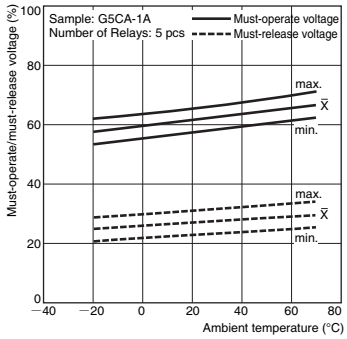


● Ambient Temperature vs. Maximum Coil Voltage

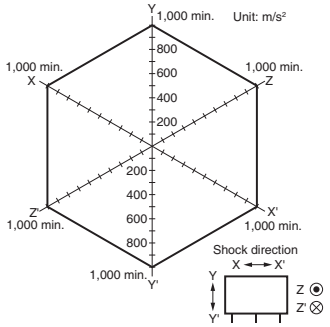


Note. The "maximum voltage" is the maximum voltage that can be applied to the relay coil.

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



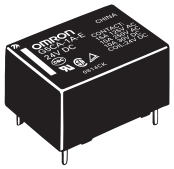
●Shock Malfunction

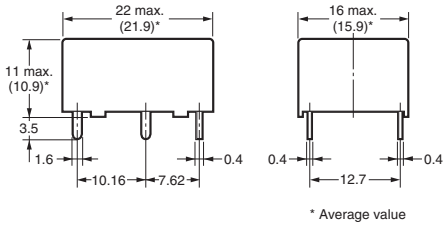


Sample: G5CA-1A
Number of Relays: 10 pcs
Measured value: The value at which malfunction occurs in the contact when the contact is subjected to shock three times each in six directions for three axes.
Standard: 200 m/s²

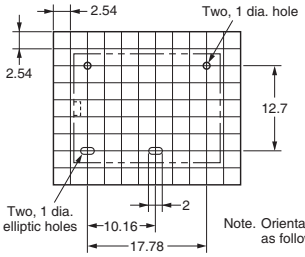
■Dimensions

G5CA-1A(4)
G5CA-1A(4)-H
G5CA-1A-E(-HA)

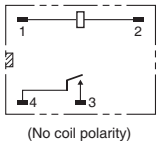




PCB Mounting Holes
(BOTTOM VIEW)
Tolerance: ±0.1 mm

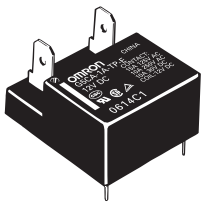


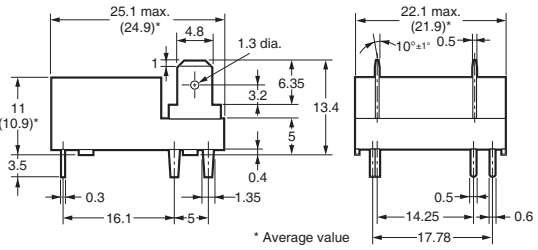
Terminal Arrangement/ Internal Connections
(BOTTOM VIEW)



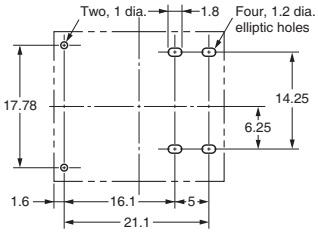
Note. Orientation marks are indicated as follows:

G5CA-1A-TP-E

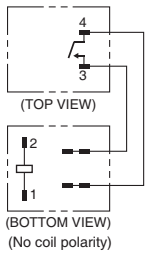




PCB Mounting Holes
(BOTTOM VIEW)
Tolerance: ±0.1 mm



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	SPST-NO (1a)	5 to 24 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	SPST-NO (1a)	5 to 24 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 (Certificate No. R50214486)

Model	Contact form	Coil ratings	Contact ratings	Number of test operations
G5CA	SPST-NO (1a)	5, 12, 24 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	

Clearance distance	1.6 mm min.
Creepage distance	3.2 mm min.
Insulation material group	IIIa
Type of insulationcoil-contact circuit	Basic
open contact circuit	Micro disconnection
Rated Insulation voltage	250 V
Pollution degree	2
Rated voltage system	250 V
Over voltage category	II
Category of protection according to IEC 61810-1	RT II (Flux protection) / RT III (Sealed)
Glow wire according to IEC 60335-1 ed.5	<HA Models only> 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)

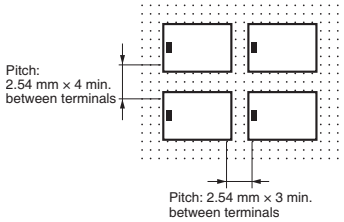
■Precautions

●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

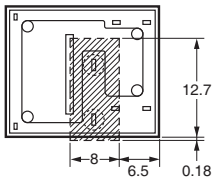
- Do not pass current through the PCB of the load contact terminals (quick-connect terminals).
- The terminals are compatible with Faston receptacle #187 and are suitable for positive-lock mounting. Use only Faston terminals with the specified numbers. Select leads for connecting Faston receptacles with 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) AMP 170331-1 (170325-1) AMP 170332-1 (170326-1)	AMP 172074-1 (natural color) AMP 172074-4 (yellow) AMP 172074-5 (green) 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.

OMRON Corporation
Device & Module Solutions Company

Regional Contact

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