OMRON

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
- IEC/EN 60335-1 conformed. (-HA Model)
- Conforms to Chinese safety standards GB/T 14536.1 and GB/T 21711.1.





■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: Sealed
3. **Classification**
   None: Standard
   E: High-capacity
4. **Coil consumption**
   None: Standard
   H: High-sensitivity
5. **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	

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.

■Ratings

●Coil

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

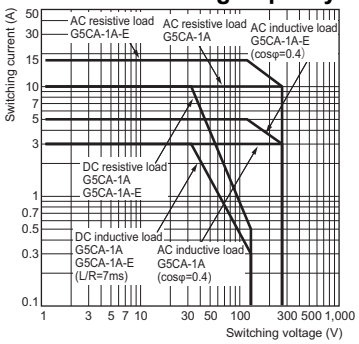
■Characteristics

Contact resistance *1		30 mΩ max.
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 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

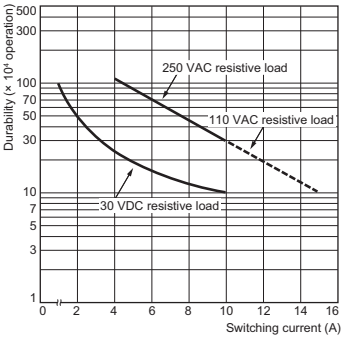
Note. Values in the above table are the initial values at 23°C.
*1. Measurement conditions: 5 VDC, 1 A, voltage drop method.
*2. Measurement conditions: Measured at the same points as the dielectric strength using a 500 VDC ohmmeter.
*3. This value was measured at a switching frequency of 120 operations/min.

■Engineering Data

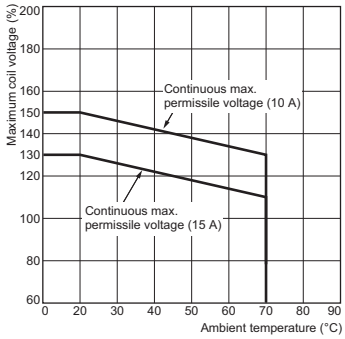
Maximum Switching Capacity



Durability

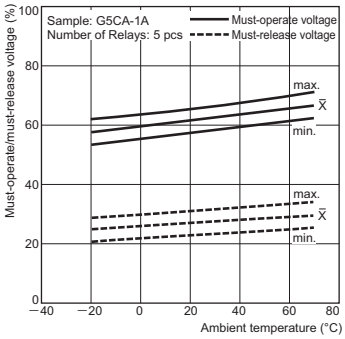


Ambient Temperature vs. Maximum Coil Voltage

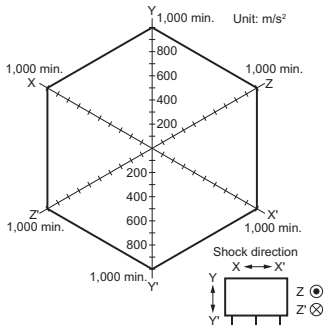


Note. The "maximum voltage" is the maximum voltage that can be applied to the relay coil.

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



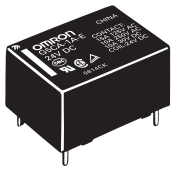
Shock Malfunction G5CA-1A

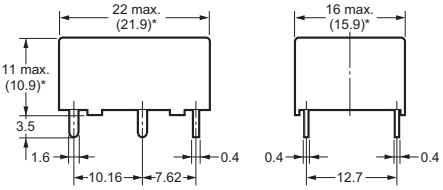


Number of Relays: 10 pcs
Measured value: The value at which malfunction occurs in the contact when the contact is subjected to shock three times each in six directions for three axes.
Standard: 200 m/s²

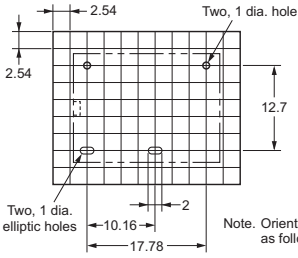
■Dimensions

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

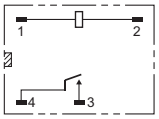




PCB Mounting Holes
(BOTTOM VIEW)
Tolerance: ±0.1 mm



Terminal Arrangement/ Internal Connections
(BOTTOM VIEW)



(No coil polarity)

Note. Orientation marks are indicated as follows:

■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	

GB, CQC Certified: GB/T 14536.1 GB/T 21711.1

Model	Contact form	Coil ratings	Contact ratings	Number of test operations
G5CA	SPST-NO (1a)	5, 12, 24 VDC	15 A, 125 VAC (Resistive) at 70°C	100,000
			10 A, 250 VAC (Resistive) at 70°C	

EN Certified/TÜV (Certificate No.R 50214486)

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 insulation coil-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)

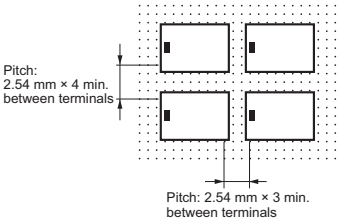
■Precautions

●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.



●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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