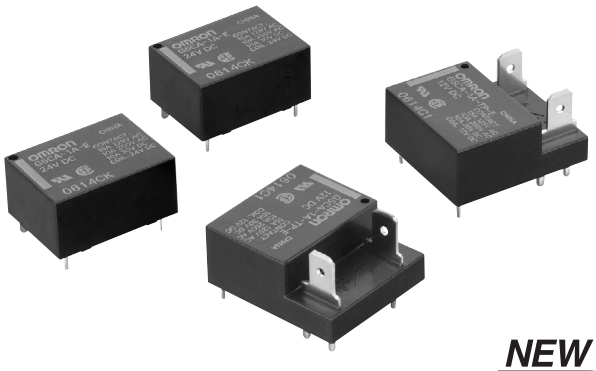
OMRON

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 × 22 × 11 mm (L × W × H).
- High-sensitivity models available with low power consumption (150 mW).
- UL and CSA approved.
- Fully sealed models and quick-connect terminal models available (#187 load contact terminals).
- Cadmium-free contacts.



NEW

Ordering Information

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

List of Models

Item		Standard		High-sensitivity		High-capacity		Quick-connect terminals (#187)	
Enclosure Ratings	Contact configuration	Rated coil voltage	Model	Rated coil voltage	Model	Rated coil voltage	Model	Rated coil voltage	Model
Flux protection	SPST-NO	5 VDC	G5CA-1A	5 VDC	G5CA-1A-H	5 VDC	G5CA-1A-E	5 VDC	G5CA-1A-TP-E
		12 VDC		12 VDC		12 VDC		12 VDC	
		24 VDC		24 VDC		24 VDC		24 VDC	
Fully sealed		5 VDC	G5CA-1A4	5 VDC	G5CA-1A4-H				
		12 VDC		12 VDC					
		24 VDC		24 VDC					

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.

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% max. of rated voltage			80% max. of rated voltage		
Must-release voltage	10% min. of rated voltage					
Max. voltage	150% (standard)/130% (high-capacity, quick-connect terminals) of rated voltage (at 23°C)			150% (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 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 (cadmium-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	
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

Contact resistance (See note 2.)	30 mΩ max. (Quick-connect terminals type: 100 mΩ max.)
Operate time (See note 3.)	10 ms max. (15 ms max.)
Release time	10 ms max.
Insulation resistance (See note 4.)	1,000 MΩ min.
Dielectric strength	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
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/s^2 Malfunction: 200 m/s^2
Endurance	Mechanical: 20,000,000 operations min. at 18,000 operations/hr Electrical: 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; 100,000 operations min. under resistive load of 15 A at 110 VAC for high-capacity models 100,000 operations min. at 1,200 operations/hr under resistive load of 10 A at 30 VDC
Failure rate P standard (Reference value: See note 5.)	5 VDC, 100 mA
Ambient temperature	Operating: –25°C to 70°C (with no icing or condensation)
Ambient humidity	Operating: 5% to 85%
Weight	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.

■ Approved Standards

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

UL Standard: UL508 (File No. E41515)

Model	No. of poles	Coil rating	Contact rating	No. of operations
G5CA	1	3 to 100 VDC	15 A, 125 VAC (General purpose) 10 A, 250 VAC (General purpose) 15 A, 250 VAC (Resistive) 10 A, 30 VDC (Resistive)	100,000

CSA Standard: CSA C22.2 No.14 (File No. LR31928)

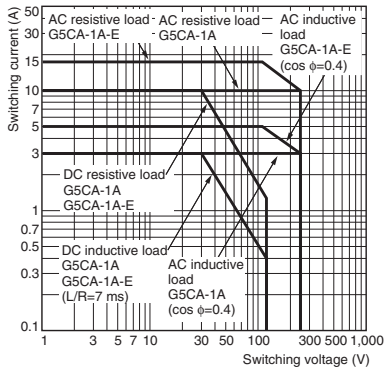
Model	No. of poles	Coil rating	Contact rating	No. of operations
G5CA	1	3 to 100 VDC	15 A, 125 VAC (General purpose) 10 A, 250 VAC (General purpose) 15 A, 250 VAC (Resistive) 10 A, 30 VDC (Resistive)	100,000

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

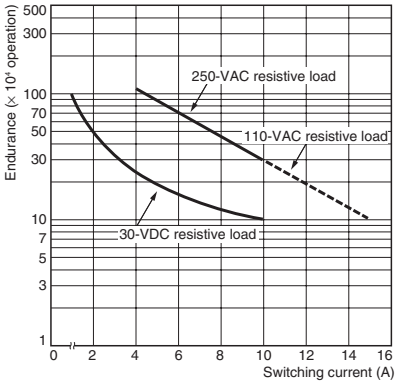
Model	No. of poles	Coil rating	Contact rating	No. of operations
G5CA	1	3, 5, 6, 12, 24, 48 VDC	15 A, 125 VAC (cosϕ = 1.0)	100,000
			15 A, 250 VAC (cosϕ = 1.0)	
			10 A, 30 VDC (0 ms)	

Engineering Data

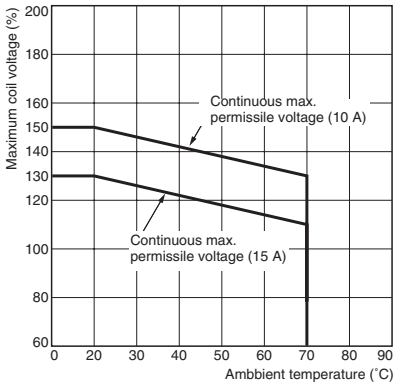
Maximum Switching Power



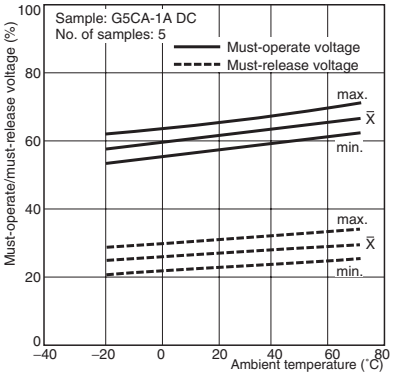
Endurance



Ambient Temperature vs. Maximum Coil Voltage

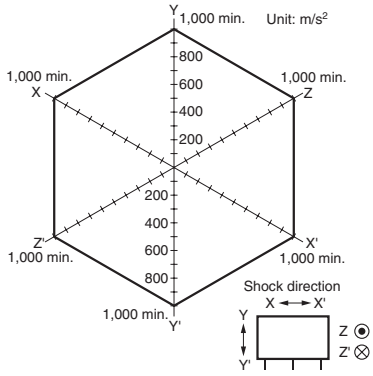


Operating Temperature vs. Must-operate/Must-release Voltage



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

Malfunction Shock

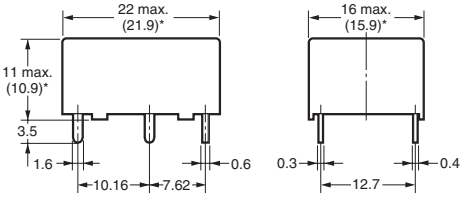


No. of samples: 10
Measured value: The value at which malfunction occurs in the contact when the contact is subjected to shock three times each in six directions for three axes.
Standard: 200 m/s²

Dimensions

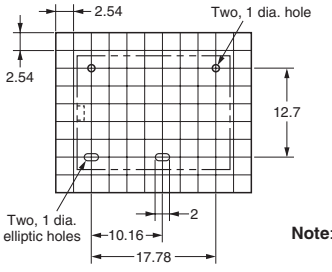
Note All units are in millimeters unless otherwise indicated.

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

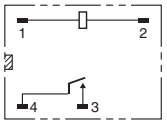


* Average value

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



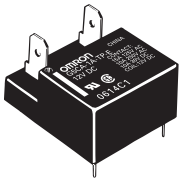
Terminal Arrangement/ Internal Connections
(BOTTOM VIEW)

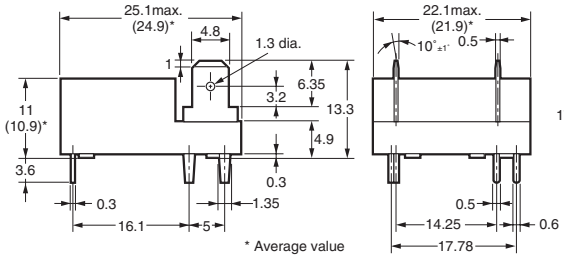


(No coil polarity)

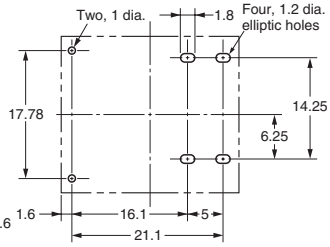
Note: Orientation marks are indicated as follows: ▨

G5CA-1A-TP-E

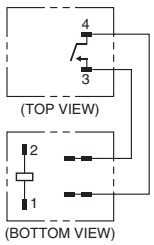




Mounting Holes
(BOTTOM VIEW)
Tolerance: ±0.1 mm



Terminal Arrangement/ Internal Connections
(BOTTOM VIEW)



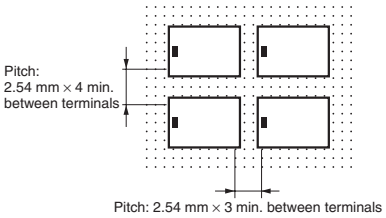
(No coil polarity)

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.



Quick-connect Terminal Connections

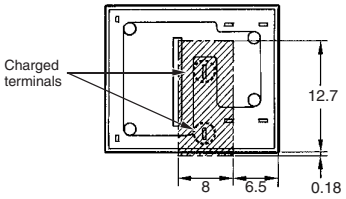
- Do not pass current through the PCB of the load contact terminals (quick-connect terminals).
- The terminals are compatible with Faston receptacle #187 and are suitable for positive-lock mounting.
  Use only Faston terminals with the specified numbers. Select leads for connecting Faston receptacles 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 (See note.)	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)

Note 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.

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

Cat. No. J151-E1-01 **In the interest of product improvement, specifications are subject to change without notice.**

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