PCB Power Relay - G5CA

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

- ROHS compliant.
- Ideal for switching power in household appliances or for outputs from industrial devices.
- Sub-miniature dimensions: 22 x 16 x 11 mm $(L \times W \times H).$
- 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



Ordering Information -

Contact form	Enclosure ratings	General purpose	High-sensitivity	High-capacity	Quick-connect terminals
SPST-NO	Flux protection	G5CA-1A	G5CA-1AH	G5CA-1AE	G5CA-1AE-TP-E
_	Fully sealed	G5CA-1A4	G5CA-1A4H	_	_

Note:	1.	When	ord	deri	ng,	ac	ld '	the	rated	coil	voltag	e to	the	model	number

Example: G5C-1 12 VDC

Rated coil voltage

- 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

1. Number of Poles

1 pole (SPST-NO)

4. Special functions

None: Standard

High capacity

Standard Specifications

Contact configuration: SPST-NO Enclosure ratings: Flux protection Terminal form: PCB terminal

2. 2. Enclosure Ratings

None: Flux protection

Fully sealed

5. Coil Consumption

None: Standard

High sensitivity

3. 3. Terminal Form

None: PCB Terminal

Quick-connect terminal (#187)

6. 6. Rated coil voltage

5, 12, 24 VDC

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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■ Coil Ratings

Item		Standard, high-c r quick-connect t		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. c	of rated voltage	,	80% max. of rated voltage		
Must release voltage	10% min. o	f rated voltage				
Max. voltage		dard)/130% (high- ect terminals) of ra	capacity, ted voltage (at 23°C)	150% (at 23	3°C)	
Power consumption	Approx. 200) mW		Approx. 150) mW	

■ Contact Ratings

Item	Stan	dard	High-se	nsitivity	High-capacity, or quick-connect terminals		
	Resistive load (cosø = 1)	Inductive load (cosø = 0.4, L/R = 7 ms)	Resistive load (cosø = 1)	Inductive load (cosø = 0.4, L/R = 7 ms)	Resistive load (cosø = 1)	Inductive load (cosø = 0.4, L/R = 7 ms)	
Contact Material	AgSnIn		AgSnIn		AgSnIn		
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 VD	С	250 VAC, 125 VDC		250 VAC, 125 VDC		
Max. switching current	10 A		10 A		15 A		
Max. switching	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	•	30 m Ω max. (Quick-connect terminals type: 100 m Ω max.)					
Operate time		10 ms max. (High-sensitivity type: 15 ms max.)					
Release time		10 ms max.					
Insulation resistance		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					
Insulation	Creepage (Typ)	3.5 mm					
Distance	Clearance (Typ)	2.8 mm					
Tracking Resistance	ce (CTI)	250 V					
Impulse withstand	voltage	4,500 V (1.2 x 50 μs) between coil and contacts					
Vibration resistance	е	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 rated load of 10 A at 250 VAC; 100,000 operations min. under load of 15 A at 110 VAC for high-capacity models 100,000 operations min. at 1,200 operations/hr under rated load of 10 A at 30 VDC					
Ambient temperature		Operating: -25°C to 70°C (with no icing)					
Ambient humidity		Operating: 5% to 85%					
Weight		Approx. 8 g (for TP model: Approx. 9.6 g)					

Note: 1. The rated current and coil resistance are measured at a coil temperature of 23°C with a tolerance of ±10%.

^{2.} Operating characteristics are measured at a coil temperature of 23°C.

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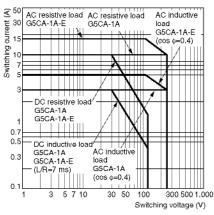
■ Approved Standards

UL508 (File No. E41515)/CSA C22.2 No.14 (File No. LR31928) IEC/VDE standard/TUV Certified: IEC255/VDE0435 (Certification No.R9351138)

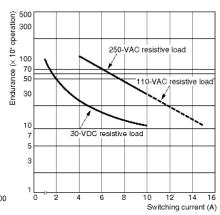
Model	Coil ratings
3 to 100 VDC	15 A, 125 VAC 10 A, 250 VAC 10 A, 30 VDC (resistive load only)

■ Engineering Data

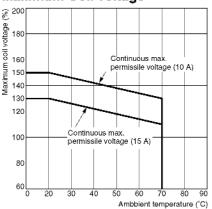
Maximum Switching Power



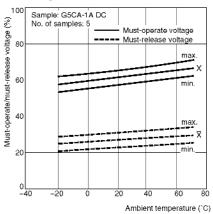
Endurance



Ambient Temperature vs. Maximum Coil Voltage

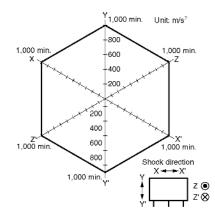


Operating Temperature vs. Must-operate/Must-release Voltage



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

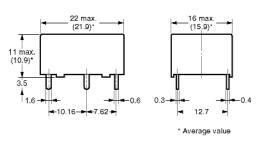
Dimensions -

Note: 1. All units are in millimeters unless otherwise indicated

2. Orientation marks are indicated as follows: G5CA-1A(-E)



G5CA-1A4(-H)



(BOTTOM VIEW) Inte
Tolerance: ±0.1 mm

(I

2.54 Two, 1 dia. hole

Two, 1 dia. hole

12.7

Two, dia.
elliptic holes 10.16 Note: 0

Mounting Holes (PCB)

Terminal Arrangement/ Internal Connections (BOTTOM VIEW)

(No coil polarity)

Note: Orientation marks are indicated as follows: []

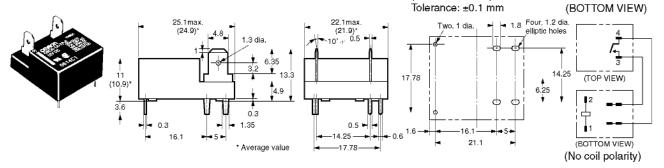
Terminal Arrangement/

Internal Connections

PCB Power Relay - G5CA

Dimensions (cont)

G5CA-1A-TP-E

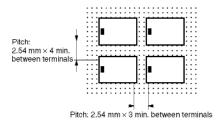


Precautions

■ 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 contactterminals (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.

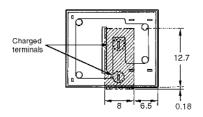
The following positive-lock connectors made by AMP are recommended. Contact the manufacturer directly for details on connectors including availability.

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.

Mounting Holes

(BOTTOM VIEW)



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. Fluxprotection models may malfunction or the relay's performance may be otherwise adversely affected if cleaning fluid enters the relay.

Туре	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

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