G2RG-X

PCB Power Relay

Power Relay with 500 VDC 10 A Switching Capacity (2-pole series wiring with 3.0 mm contact gap)



- Achieves 500 VDC 10 A switching capacity used with 2-pole series wiring
- 3.0 mm contact gap (2-pole series wiring)
- Offers high insulation with insulation distance above 8 mm and impulse withstand voltage of 10 kV between coil and contacts.
- UL and TÜV certified

■Model Number Legend

G2RG-2A□-X

1 2 3

1. Number of Poles
2: 2-pole

2. Contact Form
A: N.O. contact
DPST-NO (2a)

3. Enclosure rating
Blank: Flux protection

■Application Example

- Energy storage system

■Ordering Information

Contact form	Enclosure rating	Terminal type	Model	Rated coil voltage	Minimun packing unit
DPST-NO (2a)	Flux protection	PCB terminals	G2RG-2A-X	12 VDC 24 VDC	60 pcs/tray

Note. When ordering, add the rated coil voltage (V) to the model number.
Example: G2RG-2A-X DC12
└─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 Rated voltage	Rated current (mA)	Coil resistance (Ω)	Must-operate voltage (V)	Must-release voltage (V)	Maximum voltage (V)	Power consumption (mW)
			% of rated voltage			
12 VDC	66.6	180	80% max.	10% min.	110% (at 23°C)	Approx. 800
24 VDC	33.3	720				

Note 1. The rated current and coil resistance are for a coil temperature of 23°C and have a tolerance of ±10%.
Note 2. The operating characteristics given in the above table are for a coil temperature of 23°C.
Note 3. The maximum allowable voltage is the maximum possible value of the voltage that can be applied to the relay coil.

●Contacts

Item	1-pole	2-pole series wiring
Contact type	Single	
Contact material	Ag-alloy (Cd free)	
Rated load (Resistive load)	10 A at 300 VDC	10 A at 500 VDC
Rated carry current	8 A (85°C), 10 A (65°C)	
Maximum switching voltage	300 VDC	500 VDC
Maximum switching current	10 A	

■Characteristics

Contact resistance *1		100 mΩ max.
Operate time		15 ms max.
Release time		5 ms max.
Insulation resistance *2		1,000 MΩ min.
Dielectric strength	Between coil and contacts	5,000 VAC, 50/60 Hz for 1 min
	Between contacts of different polarity	3,000 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		10 kV (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 when energized
Durability	Mechanical	1,000,000 operations min. (at 18,000 operations/hr)
	Electrical *3 (Resistive load)	1-pole: 10,000 operations at 300 VDC 10 A 2-pole series wiring: 10,000 operations at 500 VDC 10 A 30,000 operations at 500 VDC 1 A (switching frequency 1 sec ON-9 sec OFF at 85 °C)
Ambient operating temperature		-40 to 85 °C (with no icing or condensation)
Ambient operating humidity		5% to 85%
Weight		Approx. 22 g

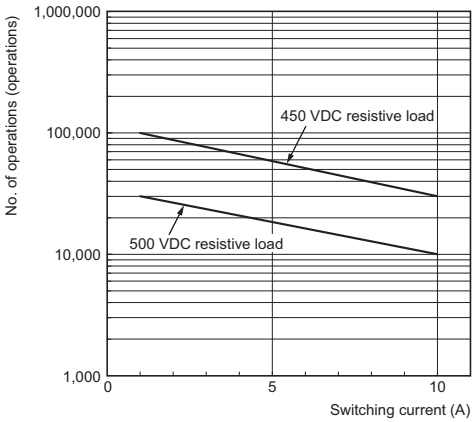
Note. The above values are initial values (at an ambient temperature of 23°C.)
*1. Measurement conditions: 5 VDC, 1 A, voltage-drop method. It is a value between each contact terminal.
*2. Measurement conditions: Measured with a 500 VDC megohmmeter at the same places as the dielectric strength.
*3. This is the case when diodes and Zener diodes are used. Connect the relay coil to the diode and the Zener diode.For details, please refer to "Connection of diodes to the operating coil" on page 4.

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■Engineering Data

●Durability

G2RG-2A-X (2-pole series wiring)

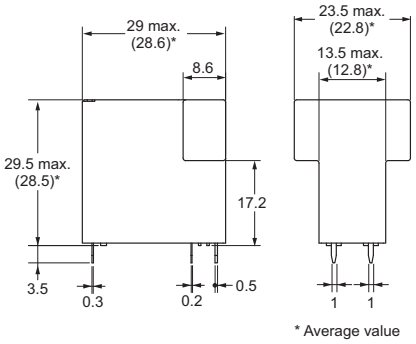


■Dimensions

CAD Data Please visit our website, which is noted on the last page. (Unit: mm)

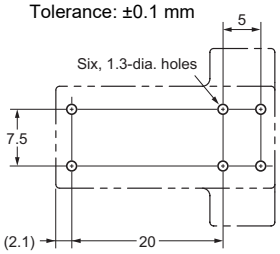
G2RG-2A-X





* Average value

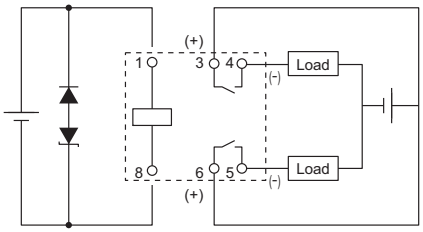
PCB Mounting Holes
(Bottom View)
Tolerance: ±0.1 mm



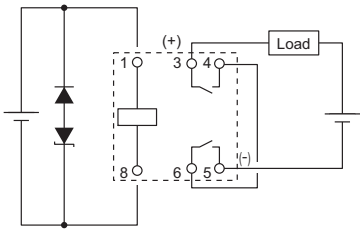
CAD Data

■Circuit Diagrams

●1-pole



●2-pole series wiring



Note. The contacts have polarity. Exercise caution.
The diode and zener diode are for coil surge absorption. (The coil has no polarity.)

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■Approved Standards

The approved rated values for international standards are different to the individually specified characteristic values. Be sure to confirm that required standards are satisfied before actual use.

UL Recognized: (File No. E41643)

Model	Contact form	Coil ratings	Contact ratings	Number of test operations
G2RG-2A-X	2a, 1-pole	12, 24 VDC	10 A, 300 VDC (Resistive) 85°C	10,000
	2a, 2-pole series wiring		10 A, 500 VDC (Resistive) 85°C	10,000
			1 A, 500 VDC (Resistive) 85°C	30,000

EN/IEC, TÜV Certified Model (Approval/No. R50468711)

Model	Contact form	Coil ratings	Contact ratings	Number of test operations
G2RG-2A-X	2a, 1-pole	12, 24 VDC	10 A, 300 VDC (Resistive) 85°C	10,000
	2a, 2-pole series wiring		10 A, 500 VDC (Resistive) 85°C	10,000
			1 A, 500 VDC (Resistive) 85°C	30,000

Creepage distance (required value)		8 mm min. (IEC/UL)
Clearance (required value)		5.5 mm min. (IEC/UL)
Insulation material group		IIIa
Type of insulation	coil-contact circuit	Basic (500 V, OV-cat.III, up to 2,000 m above sea level)
	open contact circuit	Micro disconnection
Rated insulation voltage		500 V
Pollution degree		3
Rated voltage system		500 V
Category of protection (IEC61810-1)		RTII
Flammability class (UL94)		V-0
Coil insulation system (UL)		Class F

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■Precautions

●Please refer to “PCB Relays Common Precautions” for correct use.

Correct Use

●Differences with the G2R

The G2RG-2A-X has the same terminal arrangement as the G2R-2A4 but the switching capacity and electrical endurance are different. Confirm that correct operation is possible in the actual operating conditions before using in applications.

●Handling

The enclosure rating of this product is flux protection. Therefore, do not wash with water or detergent.

●Mounting

The contacts of this product have polarity. Be sufficiently careful because incorrect wiring may result in a failure to break the circuit.

Install the product in a dry location with little dust and corrosive gas.

Use in high temperature and humidity or an atmosphere containing corrosive gas may lead to the relay itself failing or suffering burn damage caused by performance deterioration due to the influence of condensation or corrosive materials.

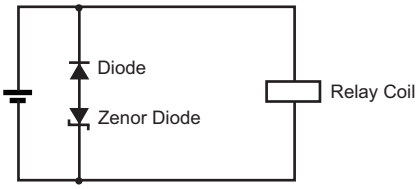
●Connection of diodes to the operating coil

Connect a diode and zener diode to the relay coil (refer to the following figure).

The diodes are for coil surge absorption. Switching performance may be affected if only a diode is used, so use in combination with a zener diode.

The coil has no polarity. Connect the diodes in the reverse polarity of the voltage applied to the coil.

The recommended zener voltage of the zener diode is three times the rated coil voltage.



●Dropping

Do not use this product if it has been dropped.

●Electrical endurance

Since this product is specifically for high DC voltages, the final failure mode is failure to break the circuit, and in a worse-case scenario, burning may extend to surrounding components.

Do not exceed the specified ratings or number of operations during use, or use the product for any application other than high DC voltages.

Implement a safety circuit and other safety measures to minimize the risk in the event of a failure.

The electrical endurance of this product is the number of load switching operations with a resistive load under the standard testing conditions specified by OMRON.

The coil drive circuit, ambient environment, switching frequency, or load condition (use under an inductive load or capacitor load) may reduce the endurance and lead to a failure to break the circuit. Always confirm operation with the actual equipment.

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