

## DC Power Relay – G9EA-1

### DC Power Relays Capable of Interrupting High-voltage, High-current Loads

- A compact relay (73 x 36 x 67.2 mm (L x W x H)) capable of switching 400-V 60-A/100-A DC loads. (Capable of interrupting 600 A at 300 VDC max.)
- The switching section and driving section are gas-injected and hermetically sealed, allowing these compact relays to interrupt high-capacity loads. The sealed construction also requires no arc space, saves space, and helps ensure safe applications.
- Downsizing and optimum design allow no restrictions on the mounting direction.
- Terminal Cover and DIN Track Adapters are also available for industrial applications.
- UL/CSA approval pending.



**NEW**

Power Relays

### Model Number Structure

#### Model Number Legend

G9EA-□-□-□-□  
1 2 3 4

1. **Number of Poles**  
1: 1 pole
2. **Contact Form**  
Blank: SPST-NO

3. **Coil Terminals**  
B: M3.5 screw terminals  
Blank: Lead Wire Output
4. **Special Functions**  
CA: High-current conduction (100 A)

**Note:** Power-saving Models (with auxiliary contacts function) are scheduled to be added to the lineup as special function models.

### Specifications

#### List of Models

Models	Terminals		Contact form	Rated coil voltage	Model
	Coil terminals	Contact terminals			
Switching / current conduction models	Screw terminals	Screw terminals	SPST-NO	12 VDC	G9EA-1-B
	Lead wires			24 VDC	G9EA-1
High-current conduction models	Screw terminals	Screw terminals	SPST-NO	48 VDC	G9EA-1-B-CA
	Lead wires			60 VDC	G9EA-1-CA
				100 VDC	

**Note:** 1. Relays come with two M5 screws for the main terminals (contacts).  
2. Relays with coil terminals and screw terminals come with two M3.5 screws.

## DC Power Relay – G9EA-1

### ■ Ratings

#### Coil

Rated voltage	Rated current	Coil resistance	Must-operate voltage	Must-release voltage	Max. Voltage (see note 3)	Power consumption
12 VDC	417 mA	28.8 Ω	75% max. of rated voltage	8% min. of rated voltage	130% of rated voltage	Approx. 5 W
24 VDC	208 mA	115.2 Ω				
48 VDC	102 mA	469.3 Ω				
60 VDC	86.2 mA	695.7 Ω				Approx. 5.2 W
100 VDC	53.6 mA	1,864 Ω				Approx. 5.4 W

**Note: 1.** The figures for the rated current and coil resistance are for a coil temperature of 23°C and have a tolerance of ±10%.

**2.** The figures for the operating characteristics are for a coil temperature of 23°C.

**3.** The figure for the maximum voltage is the maximum voltage that can be applied to the relay coil for period of 10 minutes at an ambient temperature of 23°C. It does not apply to continuous operation.

#### Contacts

Item	Rated current	
	G9EA-1(-B)	G9EA-1(-B)-CA
Rated load	60 A at 400 VDC, 100 A at 120 VDC	30 A at 400 VDC
Rated carry current	60 A	100 A
Maximum switching voltage	400 V	400 V
Maximum switching current	100 A	30 A

## DC Power Relay – G9EA-1

### ■ Characteristics

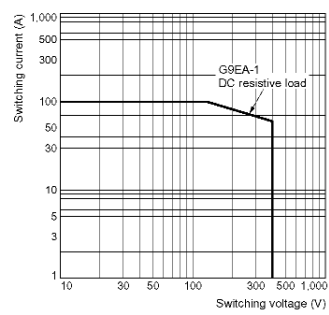
Item		G9EA-1(-B)	G9EA-1(-B)-CA
Contact resistance (see note 2)		30 mΩ max. (0.6 mΩ typical)	10 mΩ max. (0.3 mΩ typical)
Contact voltage drop		0.1 V max. (for a carry current of 60 A)	0.1 V max. (for a carry current of 100 A)
Operate time		50 ms max.	
Release time		30 ms max.	
Insulation resistance (see note 3.)	Between coil & contacts	1,000 MΩ min.	
	Between contacts of the same polarity	1,000 MΩ min.	
Dielectric strength	Between coil & contacts	2,500 VAC, 1 min	
	Between contacts of the same polarity	2,500 VAC, 1 min	
Impulse withstand voltage (See note 4.)		4,500 V	
Vibration resistance	Destruction	10 to 55 to 10 Hz, 0.75-mm single amplitude (Acceleration: 2.94 to 88.9 m/s <sup>2</sup> )	
	Malfunction	10 to 55 to 10 Hz, 0.75-mm single amplitude (Acceleration: 2.94 to 88.9 m/s <sup>2</sup> )	
Shock resistance	Destruction	490 m/s <sup>2</sup>	
	Malfunction	196 m/s <sup>2</sup>	
Mechanical endurance (See note 5.)		200,000 ops. min.	
Electrical endurance (See note 6.)		120 VDC, 100 A, 3,000 ops. min.	400 VDC, 30 A, 1,000 ops. min.
		400 VDC, 60 A, 3,000 ops. min.	120 VDC, 30 A, 2,500 ops. min.
		400 VDC, 30 A, 30,000 ops. min.	–
Short-time carry current		100 A (10 min)	150 A (10 min)
Maximum interruption current		600 A at 300 VDC (5 times)	–
Overload interruption		180 A at 400 VDC (100 times min.)	100 A at 120 VDC (150 times min.)
Reverse polarity interruption		-60 A at 200 VDC (1,000 times min.)	–
Ambient operating temperature		-40 to 70°C (with no icing or condensation)	
Ambient operating humidity		5% to 85%	
Weight Approx.		310 g	

- Note:** 1. The above values are initial values at an ambient temperature of 23°C unless otherwise specified.  
 2. The contact resistance was measured with 1 A at 5 VDC using the voltage drop method.  
 3. The insulation resistance was measured with a 500-VDC megohmmeter.  
 4. The impulse withstand voltage was measured with a JEC-212 (1981) standard impulse voltage waveform (1.2 x 50 μs).  
 5. The mechanical endurance was measured at a switching frequency of 3,600 operations/hr.  
 6. The electrical endurance was measured at a switching frequency of 60 operations/hr.

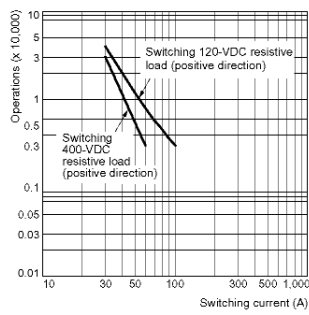
**DC Power Relay – G9EA-1**

**■ G9EA-1(-B) Switching/Current Conduction Models**

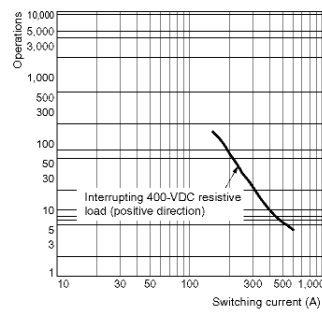
**Maximum Switching Capacity**



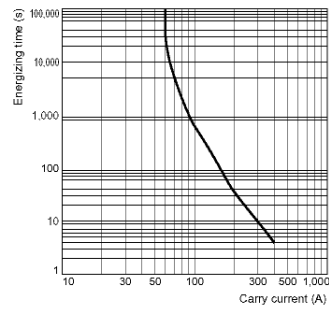
**Electrical Endurance (Switching Performance)**



**Electrical Endurance (Interruption Performance)**

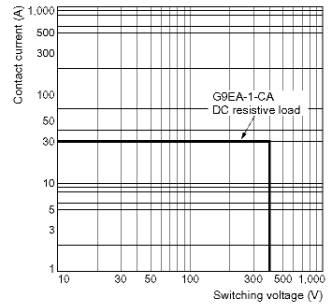


**Carry Current vs Energizing Time**

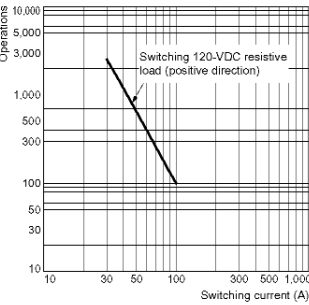


**■ G9EA-1(-B)-CA High-current Conduction Models**

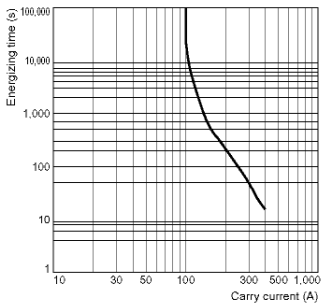
**Maximum Switching Capacity**



**Electrical Endurance (Switching Performance)**



**Carry Current vs Energizing Time**

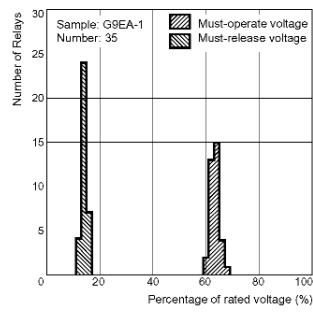


**DC Power Relay – G9EA-1**

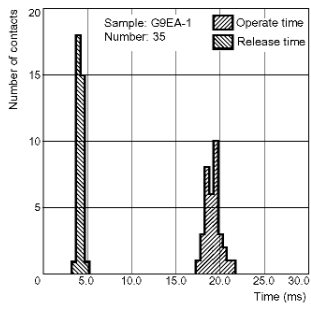
**■ All G9EA-1 Models**

Power Relays

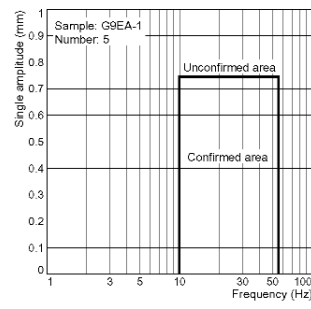
**Must-operate Voltage and Must-release Voltage Distributions**



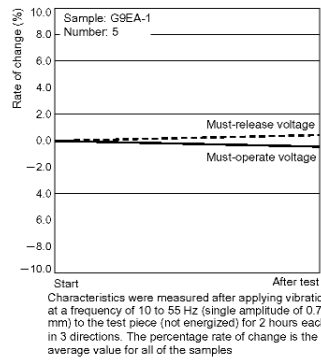
**Time Characteristic Distributions**



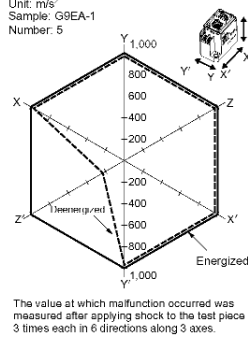
**Vibration Malfunction**



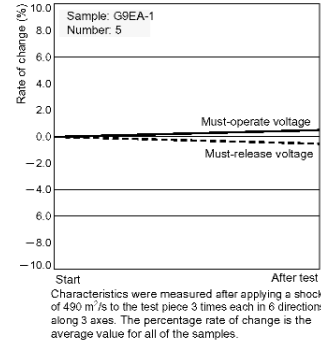
**Vibration Resistance**



**Shock Malfunction**



**Shock Resistance**



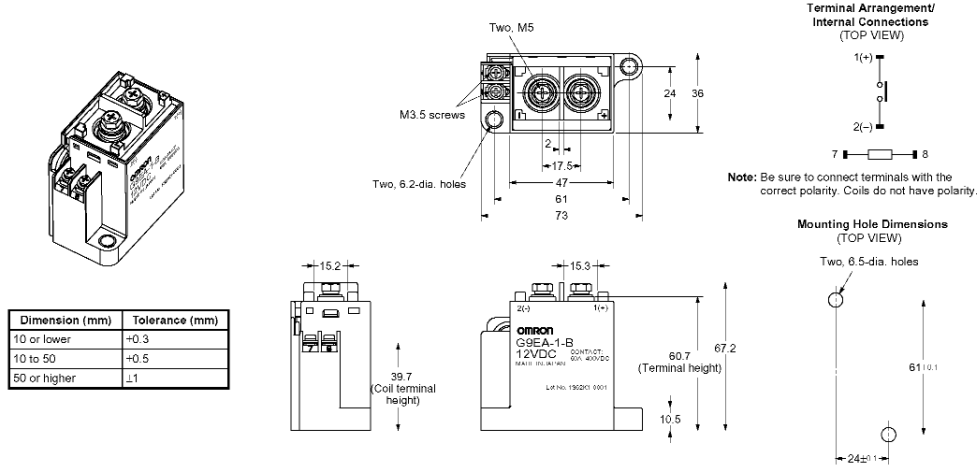
## DC Power Relay – G9EA-1

### Dimensions

Note: All units are in millimeters unless otherwise indicated.

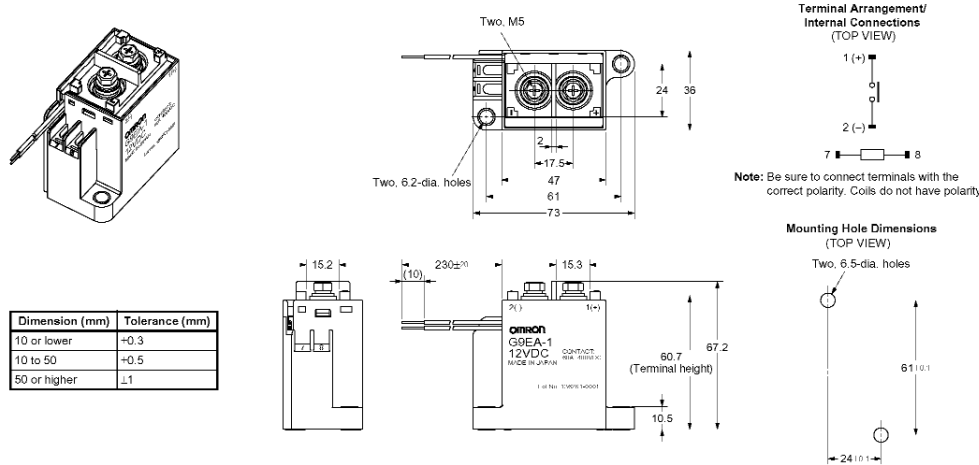
#### ■ Models with Screw Terminals

##### G9EA-1-B(-CA)



#### ■ Models with Lead Wires

##### G9EA-1(-CA)

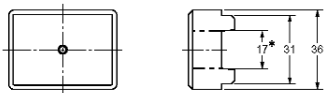
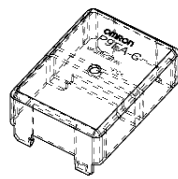


**DC Power Relay – G9EA-1**

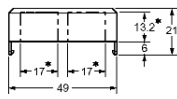
**Options**

■ **Terminal Cover**

P9EA-C



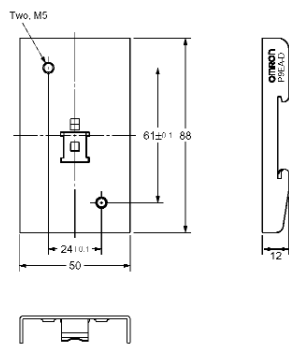
Dimension (mm)	Tolerance (mm)
10 or lower	+0.3
10 to 50	±0.5
50 or higher	±1



\* Dimensions of cutouts for wiring.

■ **DIN Track Adaptor**

P9EA-D



Dimension (mm)	Tolerance (mm)
10 or lower	±0.3
10 to 50	±0.5
50 or higher	±1

Power Relays

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