G9EJH-1-E

DC Power Relays

Small size DC power relay for 800 VDC systems specialized for pre-charging applications

- Electrical endurance: C-Load 800 VDC 30 A (inrush) 100 k ops. Min.
- Insulation distance design in accordance with 800 VDC of IEC60664.

⚠ **Refer to the *Precautions* on page 4.**

Model Number Legend

G9EJH - □ - □ - □ - □

(1) (2) (3) (4)

(1)Number of Poles
1: 1 pole

(2)Contact Form
Blank: SPST-NO

(3)Terminal Form
P: PCB terminals

(4)Classification
E: High capacity

Ordering Information

Models	Terminals		Contact form	Rated coil voltage	Model
	Coil terminals	Contact terminals			
Switching/current conduction models	PCB terminals	PCB terminals	SPST-NO	12 VDC	**G9EJH-1-P-E**

Ratings

Coil

Rated voltage (V)	Rated current (A)	Coil resistance (Ω)	Must-operate voltage (V)	Must-release voltage (V)	Maximum voltage (V)	Power consumption (W)
12 VDC	100	120	60% max. of rated voltage	5% min. of rated voltage	130% of rated voltage (at 23°C within 10 minutes)	Approx. 1.2

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%.
Note: 2. The figures for the operating characteristics are for a coil temperature of 23°C.
Note: 3. The figure for the maximum voltage is the maximum voltage that can be applied to the relay coil.

Contacts

Item	Condenser load
Rated load	30 A at 800 VDC
Rated carry current	15A
Maximum switching voltage (inrush)	800 VDC
Maximum switching current (inrush)	30 A

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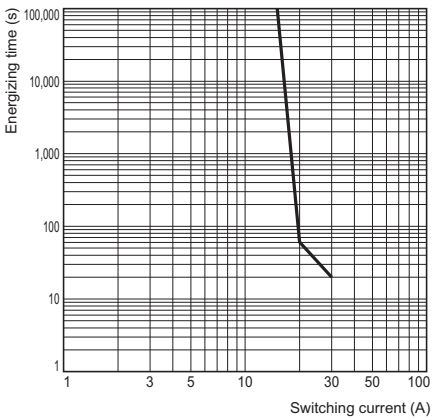
Characteristics

Item			G9EJH-1-E
Contact resistance ✻1			100 mΩ max.
Contact voltage drop			0.2 V max. (for a carry current of 15 A)
Operate time ✻2			30 ms max.
Release time ✻2			30 ms max.
Insulation resistance ✻3	Between coil and contacts		1,000 MΩ min.
	Between contacts of the same polarity		1,000 MΩ min.
Dielectric strength	Between coil and contacts		2,500 VAC 1 min
	Between contacts of the same polarity		2,500 VAC 1 min
Impulse withstand voltage ✻4			4,500 V
Vibration resistance	Destruction		10 to 55 to 10Hz, 0.75 mm single amplitude (Acceleration: 2.94 to 88.9 m/s^2)
	Malfunction		10 to 55 to 10Hz, 0.75 mm single amplitude (Acceleration: 2.94 to 88.9 m/s^2)
Shock resistance ✻7	Destruction		490 m/s^2
	Malfunction	Energized	490 m/s^2
		Deenergized	98 m/s^2
Mechanical endurance ✻5			200,000 ops. min.
Electrical endurance (condenser load) ✻6			800 VDC, 30 A (inrush only), 100,000 ops. min.
Short-time carry current			30 A (20 sec.)
Ambient operating temperature			–40 to 85°C (with no icing or condensation)
Ambient operating humidity			5% to 85%
Weight			Approx. 36 g

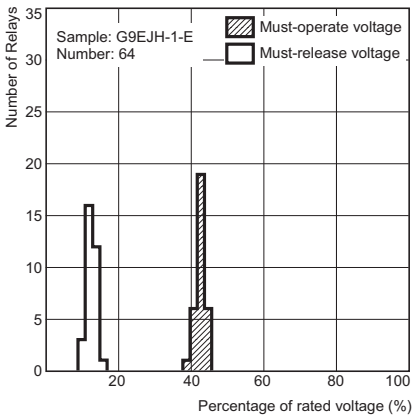
Note: The above values are initial values at an ambient temperature of 23°C unless otherwise specified.
✻**1.** The contact resistance was measured with 1 A at 5 VDC using the voltage drop method.
✻**2.** Measurement conditions: With rated operating voltage applied (without diode), not including contact bounce.
✻**3.** The insulation resistance was measured with a 1,000 VDC megohmmeter.
✻**4.** The impulse withstand voltage was measured with a JEC-212 (1981) standard impulse voltage waveform (1.2 × 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.
✻**7.** Refer the Shock Malfunction.

Engineering Data

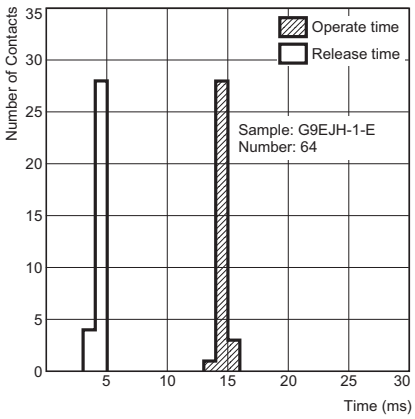
Carry Current vs. Energizing Time



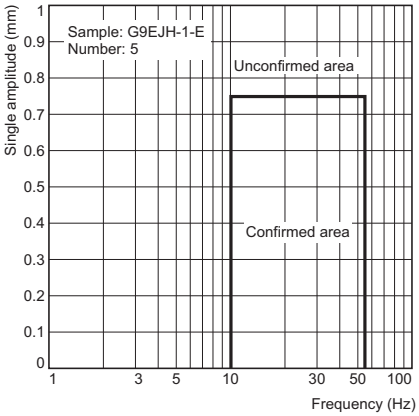
Must-operate Voltage and Must-release Voltage Distributions (Number of Relays × Percentage of Rated Voltage)



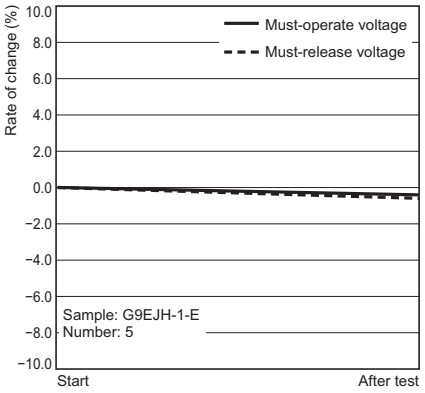
Time Characteristic Distributions (Number of Contacts × Time (ms))



Vibration Malfunction

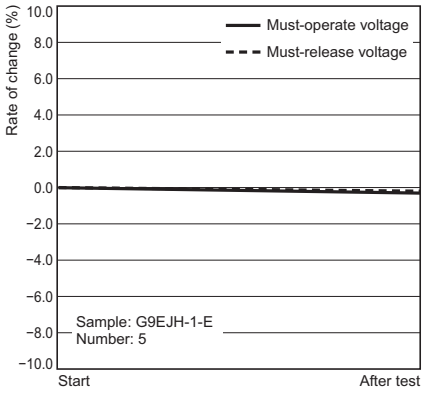


Vibration Resistance



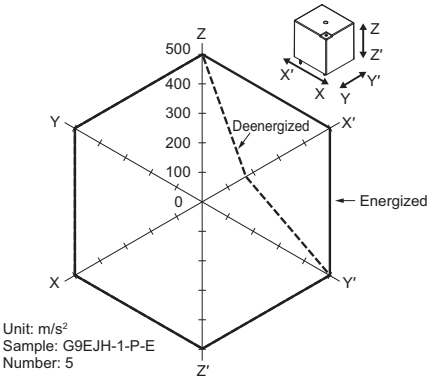
Characteristics were measured after applying vibration at a frequency of 10 to 55 Hz (single amplitude of 0.75 mm) to the test piece (not energized) for 2 hours each in 3 directions. The percentage rate of change is the average value for all of the samples

Shock Resistance



Characteristics were measured after applying a shock of 490 m/s² to the test piece 3 times each in 6 directions along 3 axes.
The percentage rate of change is the average value for all of the samples.

Shock Malfunction



The value at which malfunction occurred was measured after applying shock to the test piece 3 times each in 6 directions along 3 axes.

Dimensions

CAD Data marked products, 2D drawings and 3D CAD models are available.
For CAD information, please visit our website, which is noted on the last page.

(Unit:mm)

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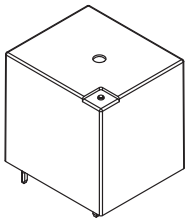
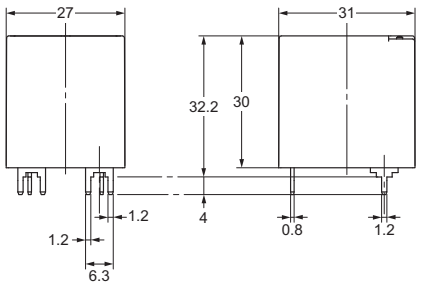
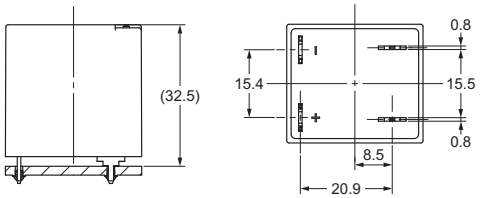


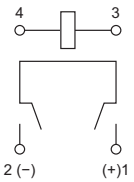
Dimension (mm)	Tolerance (mm)
10 or lower	±0.3
10 to 50	±0.5



Relay Mounted on PCB (Reference Information)

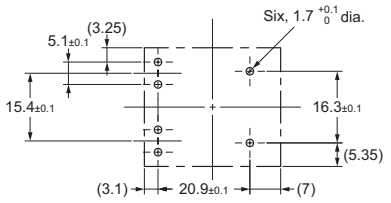


Mounting Hole Dimensions (TOP VIEW)



Note: Be sure to connect terminals with the correct polarity.
Coils do not have polarity.

Mounting Hole Dimensions



CAD Data

Precautions

Please refer to *Safety Precautions for DC Power Relays* for correct use.

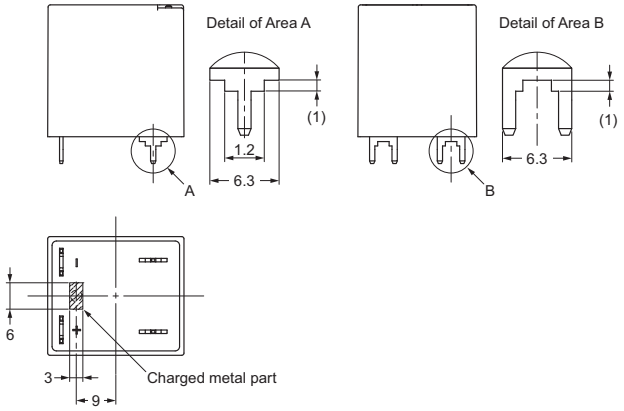
⚠WARNING

Take measures to prevent contact with charged parts when using the Relay for high voltages.

Precautions for Correct Use

Refer to the relevant catalog for common precautions.

- The G9EJH Relays' contacts have polarity.
  Be sure to perform connections with the correct polarity.
  If the contacts are connected with the reverse polarity, the switching characteristics specified in this document cannot be assured.
- Do not drop or disassemble this Relay. Not only may the Relay fail to meet the performance specifications, it may also result in damage, electric shock, or burning.
- Do not use these Relays in strong magnetic fields of 800 A/m or higher (e.g., near transformers or magnets). The arc discharge that occurs during switching may be bent by the magnetic field, resulting in flashover or insulation faults.
- This Relay is a device for switching high DC voltages. If it is used for voltages exceeding the specified range, it may not be possible to interrupt the load and burning may result. In order to prevent fire spreading, use a configuration in which the current load can be interrupted in the event of emergencies.
  In order to ensure safety of the system, replace the Relay on a regular basis.
- If the Relay is used for no-load and/or minute load switching, the contact resistance may increase and so confirm correct operation under the actual operating conditions.
- With this Relay, if the rated voltage (or current) is continuously applied to the coil and contacts, and then turned OFF and immediately ON again, the coil temperature, and consequently the coil resistance, will be higher than usual. This means that the must operate voltage will also be higher than usual, exceeding the rated value ("hot start"). In this case, take the appropriate countermeasures, such as reducing the load current or restricting the energizing time or ambient operating temperature.
- The ripple percentage for DC relays can cause fluctuations in the must-operate voltage or humming. For this reason, reduce the ripple percentage in full-wave rectified power supply circuits by adding a smoothing capacitor. Ensure that the ripple percentage is less than 5%.
- Ensure that a voltage exceeding the specified maximum voltage is not continuously applied to the coil. Abnormal heating in the coil may shorten the lifetime of the insulation coating.
- Do not use the Relay at a switching voltage or current greater than the specified maximum values. Doing so may result in arc discharge interruption failure or burning due to abnormal heating in the contacts.
- The contact ratings are for condenser loads. The electrical endurance with inductive loads is inferior to that of condenser loads. Confirm correct operation under the actual operating conditions.
- Do not use the Relay in locations where water, solvents, chemicals, or oil may come in contact with the case or terminals. Doing so may result in deterioration of the case resin or abnormal heating due to corrosion or contamination of the terminals. Also, if electrolyte adheres to the output terminals, electrolysis may occur between the output terminals, resulting in corrosion of the terminals or wiring disconnections.
- Be sure to turn OFF the power and confirm that there is no residual voltage before replacing the Relay or performing wiring.
- The distance between crimp terminals or other conductive parts will be reduced and insulation properties will be lowered if wires are laid in the same direction from the contact terminals. Use insulating coverings, do not wire in the same direction, and take other measures as required to maintain insulation properties.
- Use either a varistor, or a diode plus Zener diode as a protective circuit against reverse surge in the relay coil. (Each relay type uses a different voltage method such as Varistor voltage and Zener voltage, so please contact OMRON sales representative. Please perform adequate performance tests with your equipment.)
  Using a diode alone will reduce the switching characteristics.
- Manually mount Relays with PCB Terminals, Solder at 380±5°C for 5±1 seconds (max.) in soldering bath.
  Do not bend the terminals to secure the Relay to the PCB.
- It is not possible to wash relay.
- Be sure that the PCB is strong enough to support it.
- For the PCBs, we recommend dual-side through-hole PCBs to reduce solder cracking from heat stress.
- The coil terminals (A in the figure) and contact terminals (B in the figure) on Relays with PCB terminals have charged metal parts. Also, the shaded part in the following diagram may also be charged. When you use the Relay, make sure that there is no metal pattern on the corresponding part of the PCB.



<Recommended Wire Size>

Model	Size
G9EJH-1-E	3.5 to 5.5 mm^2

Note: Use flexible leads.

- Confirm acceptability for safety critical applications by appropriate testing or contact Omron.
- When a relay is used outside the recommended conditions, there is no way for Omron to predict the failure mode or results of the failure.
  Omron will remain blameless for the results of applying relays outside of the recommended parameters described in this catalog.

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