

# G6RN

PCB Power Relay

## Miniature Power Relay for 1-pole 10 A Switching



- Low-profile height of 15 mm (approx. 60% the height of the Omron G2R model).
- 10 A (N.O.) of high switching capacity (model G6RN-1 (A) 7-E-ASI-CF-HA type)
- High sensitivity with 220mW power consumption.
- Offers high insulation with insulation distance of 8 mm and impulse withstand voltage of 10kV between coil and contacts.
- Satisfies ambient operating temperature requirement of 85°C.
- Standard model conforms to VDE standards.
- Meets the international safety standard for resistance to ignition. (IEC/EN 60335-1) (model G6RN-1 (A) 7-E-ASI-CF-HA type)
- Meets the explosion-proof certification IEC60079-15. (G6RN-1(A)7-E-ASI-CF-HA type)



### Model Number Legend

G6RN-□□□-□-□-□-□  
1 2 3 4 5 6 7

**1. Number of Poles**  
 1: 1-pole

**2. Contact Form**  
 None: SPDT (1c)  
 A: SPST-NO (1a)

**3. Degree of Protection**  
 None: Plastic seal type  
 7: Flux-resistant type

**4. Special Functions**  
 None: Standard type  
 E: High-capacity type

**5. Contact Material**  
 None: Ag alloy  
 ASI: AgSnIn contact

**6. Coil Insulation Class**  
 None: Class B  
 CF: Class F

**7. Compliance Standard**  
 HA: Meets the international safety standard regarding resistance to ignition

### Application Examples

- Air conditioner/HVAC (heat pump, boiler, etc.)
- Industrial equipment (small FA controllers, inverters, servo amplifiers, temperature controllers, etc.)

### Ordering Information

Classification	Contact form	Degree of Protection	Model	Rated coil voltage	Minimum packing unit
Standard type	SPST-NO (1a)	Plastic seal type	G6RN-1A	5, 6, 12, 24 VDC	20 pcs/tube
	SPDT (1c)		G6RN-1		
High-capacity type	SPST-NO (1a)	Flux-resistant type	G6RN-1A7-E-ASI-CF-HA		
	SPDT (1c)		G6RN-17-E-ASI-CF-HA		

Note. When ordering, add the rated coil voltage to the model number.

Example: G6RN-1A DC5

Rated coil voltage

However, the notation of the coil voltage on the product case will be marked as □□VDC.

### Ratings

#### Coil

Item	Rated current (mA)	Coil resistance (Ω)	Must operate voltage (V)	Must release voltage (V)	Max. voltage (V)	Power consumption (mW)
5 VDC	43.9	114	70% max.	10% min.	150% (at 23°C)	Approx. 220
6 VDC	36.6	164				
12 VDC	18.3	655				
24 VDC	9.2	2,620				

Note1. 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 "Max. voltage" is the maximum voltage that can be applied to the relay coil.

#### Contacts

Item	Load	Standard type	High-capacity type
		Resistive load	
Contact type		Single	
Contact material		Ag-Alloy + gold plating (Cd free)	AgSnIn contact (Cd free)
Rated load		8 A at 250 VAC 5 A at 30 VDC	10 A at 250 VAC (N.O.) 8 A at 250 VAC (N.C.) 5 A at 30 VDC
Rated carry current		8 A	10 A
Max. switching voltage		250 VAC, 30 VDC	
Max. switching current		8 A	10 A

## Characteristics

		Standard type	High-capacity type
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	4,000 VAC, 50/60 Hz for 1 min	6,000 VAC 50/60Hz for 1 min
	Between contacts of the same polarity	1,000 VAC, 50/60 Hz for 1 min	
Impulse withstand voltage (between coil and contacts)		10,000 V (1.2 x 50 μs)	
Insulation distance	Between coil and contacts	Clearance: 8 mm, Creepage: 8 mm	
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 NO: 0.75 mm single amplitude (1.5 mm double amplitude) NC: 0.4 mm single amplitude (0.8 mm double amplitude)	
Shock resistance	Destruction	1,000 m/s <sup>2</sup>	
	Malfunction	NO: 100 m/s <sup>2</sup> NC: 50 m/s <sup>2</sup>	
Durability	Mechanical	10,000,000 operations min. (at 36,000 operations/hr)	
	Electrical *3	50,000 operations min. (8 A at 250 VAC, resistive load) 50,000 operations min. (5 A at 30 VDC, resistive load) (at 360 operations/hr under rated load)	100,000 operations min. (10 A at 250 VAC, resistive load) (N.O.) 100,000 operations min. (8 A at 250 VAC, resistive load) (N.C.) 50,000 operations min. (5 A at 30 VDC, resistive load) (at 1,800 operations/hr under rated load)
Failure rate (P level) (reference value) *4		10 mA at 5 VDC	
Ambient operating temperature		-40°C to 85°C (with no icing or condensation)	
Ambient operating humidity		5% to 85%	
Weight		Approx. 9 g	

Note. The data given above are initial values.

\*1. Measurement conditions: 5 VDC, 1 A, voltage drop method.

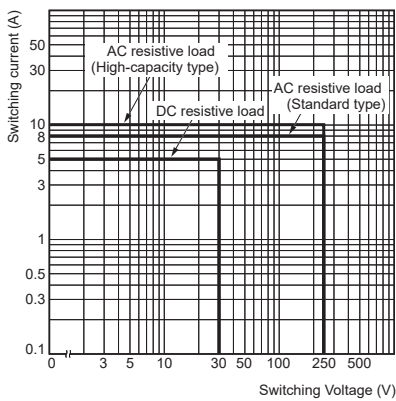
\*2. Measurement conditions: The insulation resistance was measured with a 500 VDC megohmmeter at the same locations as the dielectric strength was measured.

\*3. Test conditions: With diode

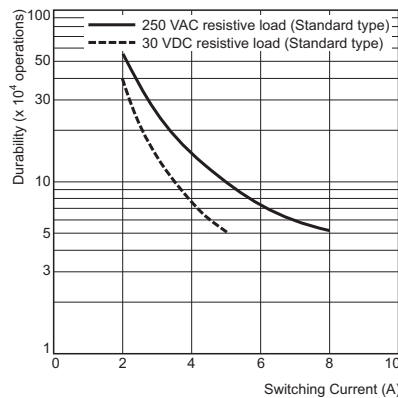
\*4. This value was measured at a switching frequency of 120 operations/min.

## Engineering Data

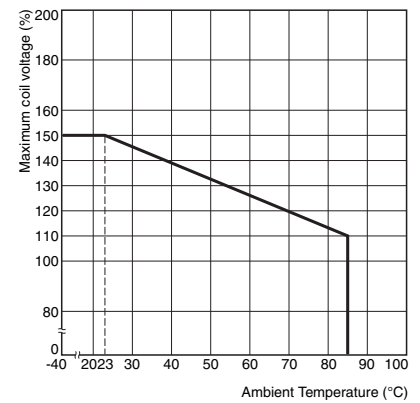
### Maximum Switching Capacity



### Durability

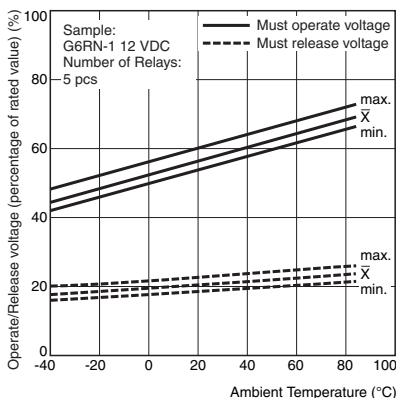


### Ambient Temperature vs. Maximum Coil Voltage

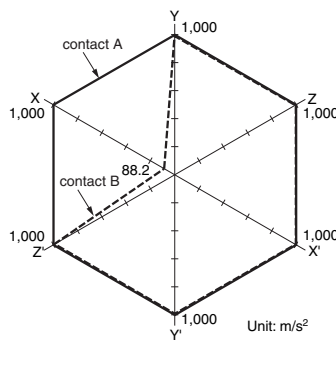


Note. The maximum coil voltage refers to the maximum value in a varying range of operating power voltage, not a continuous voltage.

### Ambient Temperature vs. Maximum Coil Voltage



### Shock Malfunction G6RN-1

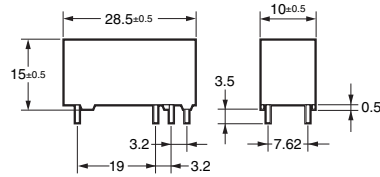
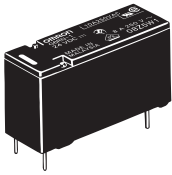


Sample: G6RN-1 24 VDC  
Number of Relays: 5 pcs  
Test conditions: The value at which malfunction occurred was measured after applying shock to the test piece 3 times each in 6 directions along 3 axes.  
Standard value: 100m/s<sup>2</sup> at contact A, 50m/s<sup>2</sup> at contact B

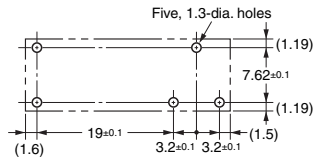
## ■ Dimensions

**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.

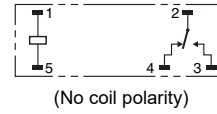
### G6RN-1



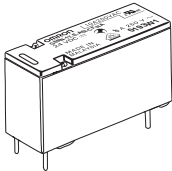
### PCB Mounting Holes (Bottom View)



### Terminal Arrangement/ Internal Connections (Bottom View)

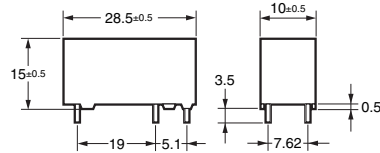
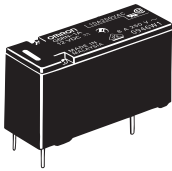


### G6RN-17-E-ASI-CF-HA

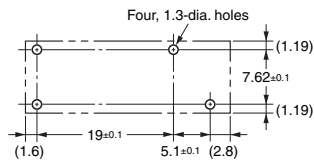


**CAD Data**

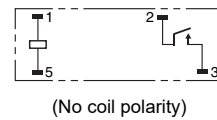
### G6RN-1A



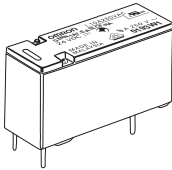
### PCB Mounting Holes (Bottom View)



### Terminal Arrangement/ Internal Connections (Bottom View)



### G6RN-1A7-E-ASI-CF-HA



**CAD Data**

G  
6  
R  
N

## ■ Approved Standards


● The rated values approved by each of the safety standards may be different from the performance characteristics individually defined in this catalog.

**UL Recognized**  (File No. E41515)

Model	Number of poles	Coil ratings	Contact ratings	Number of test operations
G6RN-1 G6RN-1A	1	5 to 24 VDC	8 A 250 VAC, 85°C	6,000

**UL/C-UL Recognized:**   (File No. E41515)


Model	Number of poles	Coil ratings	Contact ratings	Number of test operations
G6RN-17-E-ASI-CF-HA G6RN-1A7-E-AS-CF-HA	1	5 to 24 VDC	10 A 250 VAC (NO) Resistive 85°C	10,000
			8 A 250 VAC Resistive 85°C	10,000
			5 A 30 VDC Resistive 85°C	10,000

**VDE EN/IEC Certified:**  (EN61810-1) (Certificate No. 6135)

Model	Number of poles	Coil ratings	Contact ratings	Number of test operations
G6RN-1 G6RN-1A	1	5, 6, 12, 24 VDC	8 A 250 VAC (Resistive) 85°C	10,000
G6RN-17-E-ASI-CF-HA G6RN-1A7-E-ASI-CF-HA	1	5, 6, 12, 24 VDC	10 A 250 VAC (NO) Resistive 85°C	10,000
			8 A 250 VAC Resistive 85°C	30,000
			5 A 30 VDC Resistive 85°C	50,000

**TÜV EN/IEC Certified:**  (EN60947-5-1) (Certificate No. 6135)

Model	Contact ratings	Number of test operations
G6RN-17-E-ASI-CF-HA	AC15 (NO) 250 VAC, 3 A, cos 0.3 dia., room temperature	6,000
G6RN-1A7-E-ASI-CF-HA	DC13 125 VDC, 0.22 A, 165 ms, room temperature	6,000

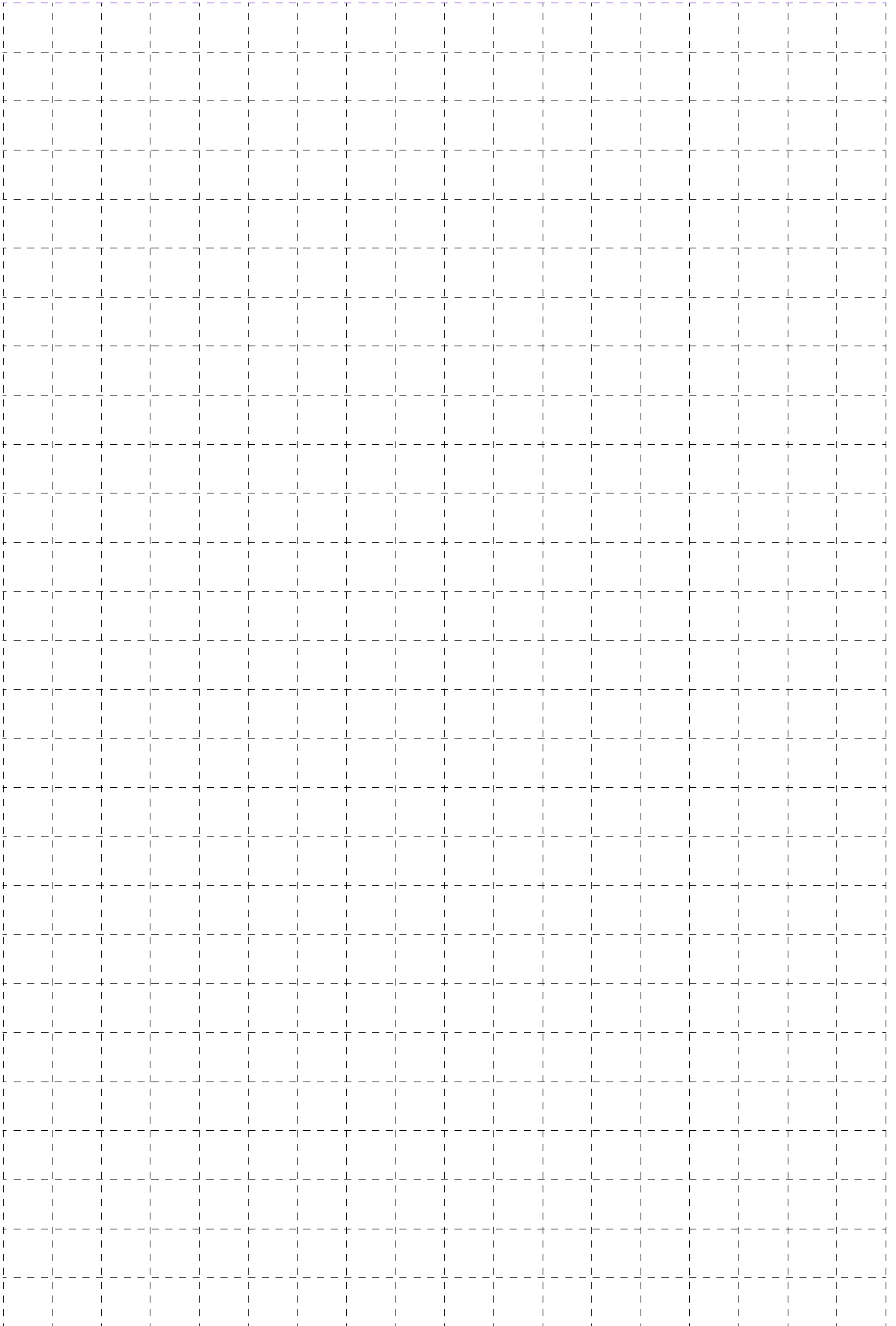
**TÜV EN/IEC Certified:**  (EN60947-4-1) (Certificate No. 6135)

Model	Contact ratings	Number of test operations
G6RN-17-E-ASI-CF-HA	AC1 250 VAC, 8 A, room temperature	6,000
G6RN-1A7-E-ASI-CF-HA	DC1 24 VDC, 5 A, room temperature	6,000

<b>Creepage distance</b>	8 mm
<b>Clearance distance</b>	8 mm
<b>Insulation material group</b>	IIIa
<b>Rated Insulation voltage</b>	250 V
<b>Pollution degree</b>	2
<b>Rated voltage system</b>	250 V
<b>Overvoltage category</b>	III
<b>Tracking Index of relay base</b>	PTI 250 V min. (housing parts)
<b>Flammability class according to UL94</b>	V-0
<b>Ball pressure test (IEC 60695-10-2)</b>	160°C 190°C (HA models only)

## ■ Precautions

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



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