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)
- Conforms to IEC/EN60079-1. (G6RN-1(A)7-E-ASI-CF-HA model) (IEC/EN) 60079-1 clause 15.5 Enclosed-break devices (Group IIA) testing passed.

■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 voltage	Rated current (mA)	Coil resistance (Ω)	Must operate voltage (V) % of rated voltage	Must release voltage (V) % of rated voltage	Max. voltage (V) % of rated voltage	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

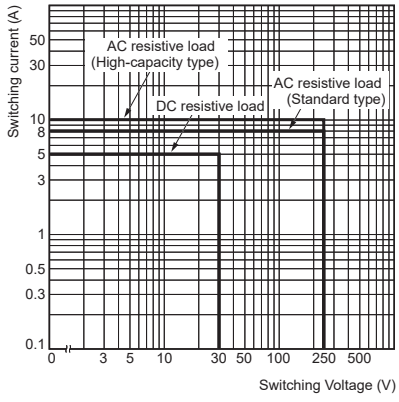
■Characteristics

		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/s²	
	Malfunction	NO: 100 m/s² NC:: 50 m/s²	
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	

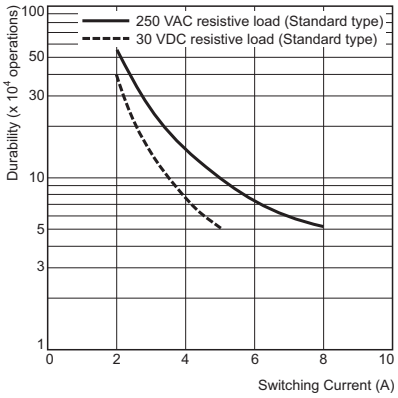
Note. The data given above are initial values.
*1. Measurement conditions: 5 VDC, 1 A, voltage drop method.
*2. Measurement conditions: The insulation resistance was measured with a 500 VDC megohmmeter at the same locations as the dielectric strength was measured.
*3. Test conditions: With diode
*4. This value was measured at a switching frequency of 120 operations/min.

■Engineering Data

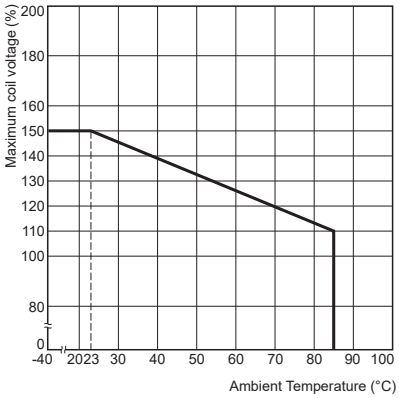
●Maximum Switching Capacity



●Durability

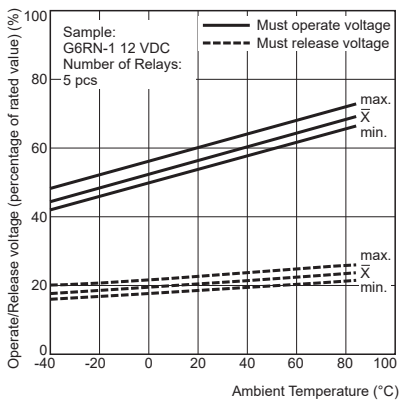


●Ambient Temperature vs. Maximum Coil Voltage

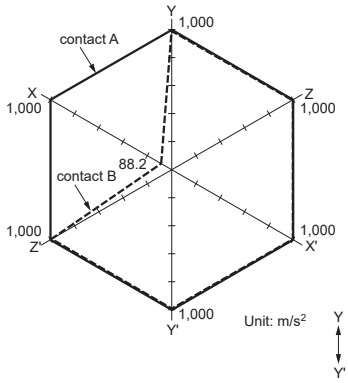


Note. The maximum coil voltage refers to the maximum value in a varying range of operating power voltage, not a continuous voltage.

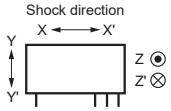
●Ambient Temperature vs. Maximum Coil Voltage



●Shock Malfunction G6RN-1



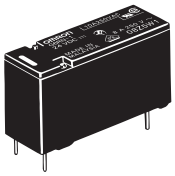
Sample: G6RN-1 24 VDC
Number of Relays: 5 pcs
Test conditions: The value at which malfunction occurred was measured after applying shock to the test piece 3 times each in 6 directions along 3 axes.
Standard value: 100m/s² at contact A, 50m/s² at contact B

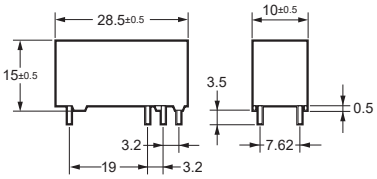


■Dimensions

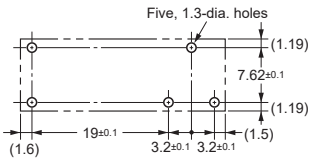
CAD Data marked products, 2D drawings and 3D CAD models are available.
For CAD information, please visit our website, which is noted on the last page.

G6RN-1

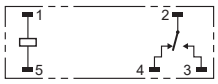




PCB Mounting Holes
(Bottom View)

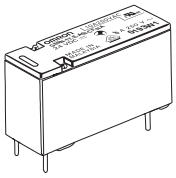


Terminal Arrangement/ Internal Connections
(Bottom View)



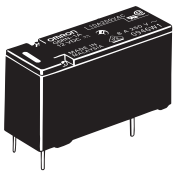
(No coil polarity)

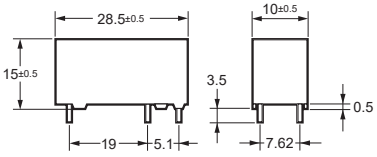
G6RN-17-E-ASI-CF-HA



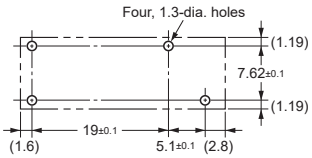
CAD Data

G6RN-1A

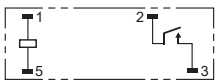




PCB Mounting Holes
(Bottom View)

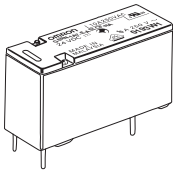


Terminal Arrangement/ Internal Connections
(Bottom View)



(No coil polarity)

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



CAD Data

■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

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

●Regarding IEC/EN60079-1

Type of protection: Enclosed-break devices (Group IIA*) (IEC/EN) 60079-1 clause 15.5 testing passed.

*Gas protection group definition:

– Group IIA: (55 ± 0.5) % hydrogen/air at atmospheric pressure;
– Group IIB: (37 ± 0.5) % hydrogen/air at atmospheric pressure;
– Group IIC: (40 ± 1) % hydrogen, (20 ± 1) % oxygen and the remainder nitrogen at atmospheric pressure or alternatively (27.5 ± 1.5) % hydrogen/air at an overpressure at a pressure equal to 1.5 times atmospheric pressure.

Please contact your local OMRON representative for more details on the standards.

■Precautions

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

Please check each region's Terms & Conditions by region website.

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Device & Module Solutions Company

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