

OMRON



Components Catalogue



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Welcome to the Omron Components Catalogue

Omron Components is a world-class business delivering a wide range of high quality, high performance components utilising latest technologies and backed by full technical, applications and logistical support.

We offer the widest range of relays for power, signal and automotive applications as well as solid-state and MOSFET relays. Our G3VM MOSFETS combine

the advantages of mechanical and solid-state technologies allowing design flexibility with either AC or DC load able to be connected in either direction. We are also developing our range of microsensors, and currently offer photomicrosensors and a new range of D8M-D8 micro pressure-sensors which meet stringent safety standards such as working reliably with low pressure, metal casing and flange fitting. Our broad range of switches includes micro, DIP, and tactile options, and you will find a wide selection of connectors to meet

industry-standard data interconnect, power transmission and signalling. Omron Double Reflection LEDs feature built-in optical light guide technology that more than doubles effective light output compared with conventional bullet-type LEDs.



Environmental research and experience enabled us to formulate a policy to remove recognised hazardous substances from our products well within the timescales of European Directives. We have identified suitable alternative materials and agreed the changes we need to make to our production processes in order to maintain quality levels. All of our manufacturing sites have achieved ISO14001 certification for the management of environmental protection in our organisation.



Using our website alongside this catalogue, you can be kept fully up-to-date with our range of products, technical capabilities and environmental policy.

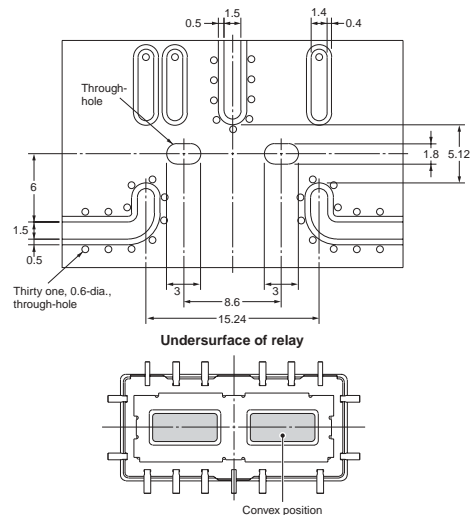
www.eu.omron.com/ocb

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Although we do strive for perfection, Omron Electronic Components Europe B.V. does not warrant or make any representations regarding the correctness or accuracy of the specifications, technical information and data of the components as described in this catalogue.

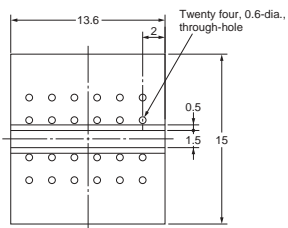
SMD-type substrate

Substrate: t-0.8 BT resin (Dielectric constant at 2 GHz: 3.37)



Note: To obtain high-frequency characteristics close to the charts shown on page 7, solder the convex point on the undersurface of the relay to the ground pattern of the substrate.

Base plate for high-frequency characteristic compensation



Note: The above compensation plate is used to measure the loss by the relay.

The relay loss is determined by subtracting the data measured for a compensation base plate from those for a high-frequency characteristics measuring substrate mounted with a relay.

Handling

Leave the Relays packed until just prior to mounting them.

Dropping the relay may cause damage to its functional capability. Never use the relay if it is dropped.

Protect the relays from direct sunlight during operation, storage, and transportation and keep the relays under normal temperature, humidity, and pressure.

Soldering

Solder: JIS Z3282, H63A

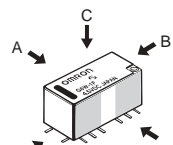
Soldering temperature: Approx. 250°C (At 260°C if the DWS method is used.)

Soldering time: Approx. 5 s max. (approx. 2 s for the first time and approx. 3 s for the second time if the DWS method is used.)

Be sure to adjust the level of the molten solder so that the solder will not overflow onto the PCB.

Claw Securing Force During Automatic Insertion

During automatic insertion of Relays, make sure to set the securing force of the claws to the following values so that the Relay characteristics will be maintained.



Direction A: 4.90 N max.
Direction B: 9.80 N max.
Direction C: 9.80 N max.

Secure the claws to the area indicated by shading. Do not attach them to the center area or to only part of the Relay.

Latching Relay Mounting

Make sure that the vibration or shock that is generated from other devices, such as relays in operation, on the same panel and imposed on the Latching Relay does not exceed the rated value, otherwise the Latching Relay that has been set may be reset or vice versa. The Latching Relay is reset before shipping. If excessive vibration or shock is imposed, however, the Latching Relay may be set accidentally. Be sure to apply a reset signal before use.

Coating

Relays mounted on PCBs may be coated or washed. Do not apply silicone coating or detergent containing silicone, otherwise the silicone coating or detergent may remain on the surface of the Relays.

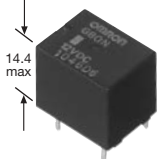
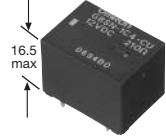
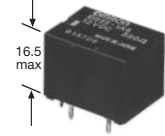
ALL DIMENSIONS SHOWN ARE IN MILLIMETERS.

To convert millimeters into inches, multiply by 0.03937. To convert grams into ounces, multiply by 0.03527.

Classification	Ultra-Miniature PCB Relay			
Model	G8N1	G8ND2	G8NW	
Features	Fully sealed construction Fully automated assembly 25A motor lock load		Twin automotive relay suitable for polarity reversal control	
Appearance				
Dimensions (LxW)	14.3 x 7.5 max	14.5 x 14.1 max	15.7 x 14.3 max	
Contact Ratings	Contact Form	SPDT	Dual Contact	SPDT x 2
	Contact Type	Single	Single	Twin Contact
	Max switching current (motor lock condition)	30 A	30 A	30 A
	Max switching current (under resistive load)	–	–	–
Coil ratings	Rated Voltage	12VDC	12VDC	12VDC
Endurance	Electrical (under rated load)	100,000 operations		
	Mechanical	1,000,000 operations		
Ambient temperature (operating)	-40°C to 85°C		-40°C to 85°C	
Variations	<ul style="list-style-type: none"> High sensitivity High temperature 	<ul style="list-style-type: none"> Suppression resistor Suppression diode Mounting bracket with resistor Weatherproof with Resistor 	<ul style="list-style-type: none"> High sensitivity High temperature 	
Magazine Packaging	80	40	36	
Weight	4.1g	7.5g	8.0g	
Page	278	283	288	

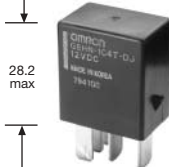
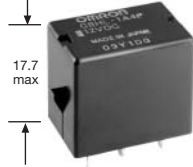
Selection Guide – Automotive Relays



OMRON

Classification		Sub-miniature Automotive PCB Relay		
Model	G8QN	G8SN	G8SE	
Features	Fully sealed construction Fully automated assembly		High capacity, high heat resistance relay	
Appearance				
Dimensions (LxW)	16 x 12.5 max	22.5 x 16.5 max	22.5 x 16.5 max	
Contact Ratings	Contact Form	SPDT	SPDT	SPST
	Contact Type	Single	Single	Single
	Max Switching Current (A) (under resistive load)	5A	10A	20A
Coil ratings	Rated Voltage	12VDC	12VDC	12VDC
Endurance	Electrical (under rated load)	100,000 operations (14V; continuous carry current)		
	Mechanical	10,000,000 operations (at frequency of 18,000 operations/hour)		
Ambient temperature (operating)	-40°C to 85°C		-40°C to 110°C	
Variations	–	–	–	
Magazine Packaging	100	100	25	
Weight	5.5 g	13 g	16	
Page	293	295	297	

Selection Guide – Automotive Relays

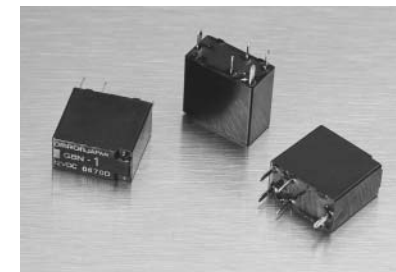
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Classification		Micro ISO Automotive PCB relay	
Model	G8HN-J	G8HL	
Features	Sealed and unsealed 20 A / 35 A relay Handles heavy loads Micro ISO	Low height micro ISO 20 A relay	
Appearance			
Dimensions (LxW)	23 x 15.5 max	22.5 x 15	
Contact Ratings	Contact Form	SPST / SPDT	SPST
	Contact Type	Single	Single
	Max switching current (motor lock condition)	–	–
	Max switching current (under resistive load)	20 A (35 A version available)	20 A
Coil ratings	Rated Voltage	12 & 24 VDC	12 VDC
Endurance	Electrical (under rated load)	100,000 operations	
	Mechanical	1,000,000 operations	
Ambient temperature (operating)	-40°C to 125°C		-40°C to 100°C
Variations	• Sealed & unsealed	• PCB terminals • Solder terminals	
Magazine Packaging	100	20	
Weight	20g	13g	
Page	299	305	

Classification		General Purpose	Special Purpose
Model		G8JN	G8JR
Features		Standard ISO terminal footprint Handles heavy load High current path Fully welded	Standard ISO terminal footprint. High power (70A)
Appearance			
Dimensions (LxW)		25 x 25 max	25 x 25 max
Contact Ratings	Contact Form	SPDT	SPST
	Contact Type	Single	Single
	Max switching current (motor lock condition)	–	–
	Max switching current (under resistive load)	35A	70A
Coil ratings	Rated Voltage	12VDC	12VDC
Endurance	Electrical (under rated load)	100,000 operations	
	Mechanical	1,000,000 operations	
Ambient temperature (operating)		-40°C to 125°C-	-40°C to 135°C
Variations		<ul style="list-style-type: none"> • Suppression resistor • Suppression diode • Mounting bracket with resistor • Weatherproof with resistor 	<ul style="list-style-type: none"> • Suppression resistor • Mounting bracket with resistor
Magazine Packaging		48	48
Weight		40g	40g
Page		310	312

Features

- Compact size
- High performance PCB relay
- 25A motor lock load
- Fully sealed construction
- Fully automated assembly
- SPDT contracts
- Pre-solder as for all terminal
- PWB pattern design is easy
- ISO9001/QS9000 series approval



Available Types

	Type
G8N-1 12VDC	Standard
G8N-1S 12VDC	High Sensitivity
G8N-1L 12VDC	High Temperature (105°C)
G8N-1H 12VDC	High Temperature/High Sensitivity

Contact Data

Max Switching Current	30A
Rated Current	25A Motor load
Max Switching Voltage	16V
Contact Material	Silver tin alloy (Cadmium Free)

Coil Ratings

Type	Coil Resistance	Pull in Voltage
G8N-1 12VDC	225Ω	<7.2
G8N-1S 12VDC	180Ω	<6.5
G8N-1L 12VDC	225Ω	<7.2
G8N-1H 12VDC	180Ω	<6.5

Specifications

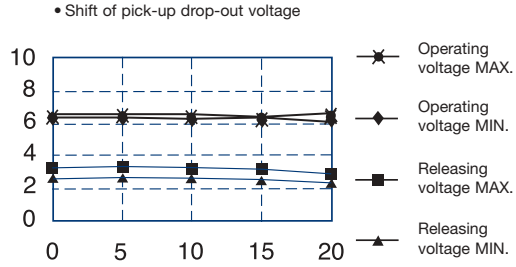
Temperature Range	-40 to +85°C (-1L, -1H: -40 to +105°C)
Mechanical Life	1,000,000 Operations
Electrical Life	100,000 Operations
Weight	4.1g

Application Examples

- Power windows
- Power door lock
- Seat adjustment
- Sunroof
- Wiper controls

LIFE TEST I (Power window motor: G8N-1 12VDC)

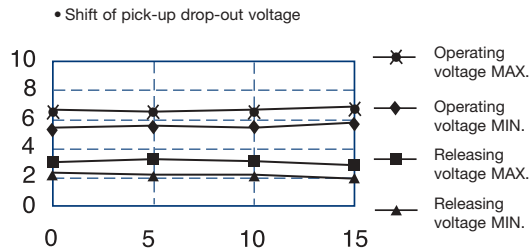
- Test item
- 14VDC-26A
- Motor Lock 200,000
- Operations minimum



Characteristics	Specification	Before the Test	After the Test	
Contact Resistance	N.O. Contact	100(mΩ) or lower		
		MAX	4.1	7.2
		MIN	2.8	3.5
	N.C. Contact	100(mΩ) or lower		
		MAX	5.6	11.8
		MIN	3.9	5.0
Insulation Resistance	100(mΩ) or higher	1000 or higher	1000 or higher	
Structure	No abnormal condition	Good	Good	

LIFE TEST II (Door lock motor: G8N-1 12VDC)

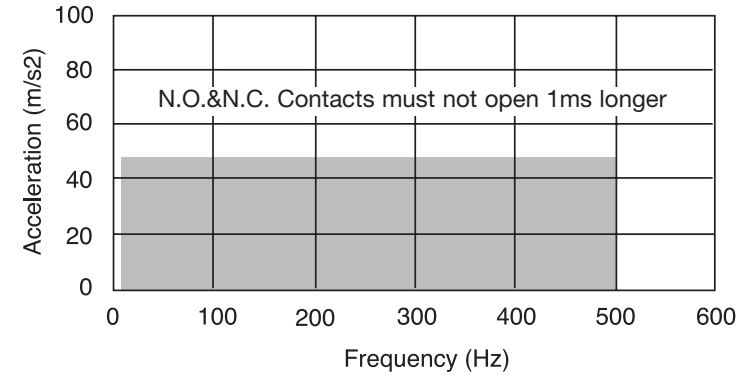
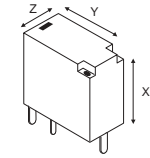
- Test item
- 16VDC-22A
- 200,000
- Operations minimum



Characteristics	Specification	Before the Test	After the Test	
Contact Resistance	N.O. Contact	100(mΩ) or lower		
		MAX	4.7	6.8
		MIN	3.2	3.5
	N.C. Contact	100(mΩ) or lower		
		MAX	5.3	7.2
		MIN	3.7	4.0
Insulation Resistance	100(mΩ) or higher	1000 or higher	1000 or higher	
Structure	No abnormal condition	Good	Good	

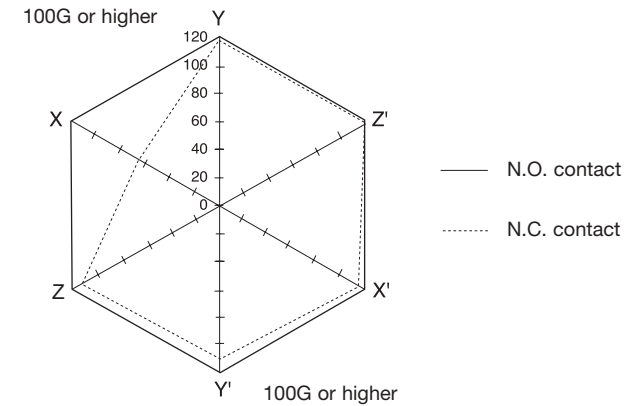
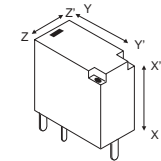
VIBRATION RESISTANCE CHARACTERISTICS

- Test condition
- Frequency: 10Hz-500Hz-10Hz
- Acceleration: 43.1m/s²
- Direction of vibration: see right diagram
- Detection level: Contacts must not open 1ms or longer



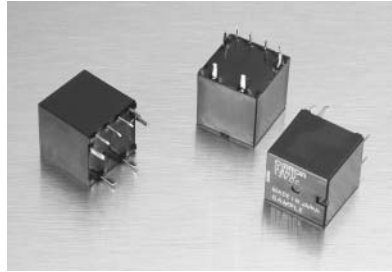
SHOCK RESISTANCE CHARACTERISTICS

- Test condition
- Shock application time: 11ms, half-sine wave
- Shock direction: see right diagram
- Detection level: Contacts must not open 1ms or longer



Features

- Compact size
- High performance PCB relay
- 25A motor lock load
- Fully sealed construction
- Fully automated assembly
- DPDT (“H” Bridge) contracts
- Pre-solder as for all terminal
- PWB pattern design is easy
- ISO9001/QS9000 series approval



Specifications

Available Types

	Type
G8ND-2 12VDC	Standard
G8ND-2S 12VDC	High Sensitivity

Contact Data

Max Switching Current	30A
Rated Current	25A Motor load
Max Switching Voltage	16V
Contact Material	Silver tin alloy (Cadmium Free)

Coil Ratings

Type	Coil Resistance	Pull in Voltage
G8ND-2 12VDC	225Ω	<7.2
G8ND-2S 12VDC	180Ω	<6.5

Specifications

Temperature Range	-40 to +85°C
Mechanical Life	1,000,000 Operations
Electrical Life	100,000 Operations
Weight	7.5g

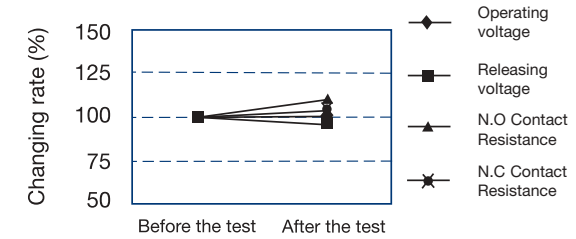
Application Examples

- Power windows
- Power door lock
- Seat adjustment
- Sunroof
- Wiper controls

LIFE TEST I (Power window motor: G8ND-2 12VDC)

- Test item
- 14VDC-24A/2.6A
- 130,000
- Operations minimum

- Shift of pick-up drop-out voltage

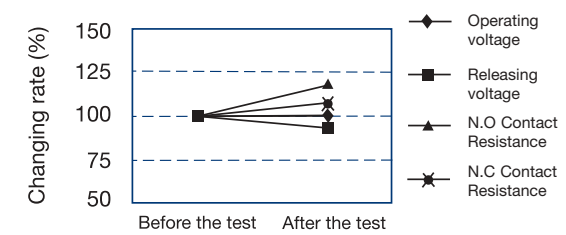


Characteristics		Specification		Before the Test	After the Test
Contact Resistance (milliohm)	N.O. Contact	100 or lower	MAX	4.20	5.62
			MIN	3.30	3.80
			AVE	3.850	4.230
	N.C. Contact	100 or lower	MAX	5.00	5.10
			MIN	3.20	4.10
			AVE	4.320	4.490
Structure		No abnormal condition		Good	Good

LIFE TEST II (Door lock motor: G8ND-2 12VDC)

- Test item
- 14VDC-27A
- 130,000
- Operations minimum

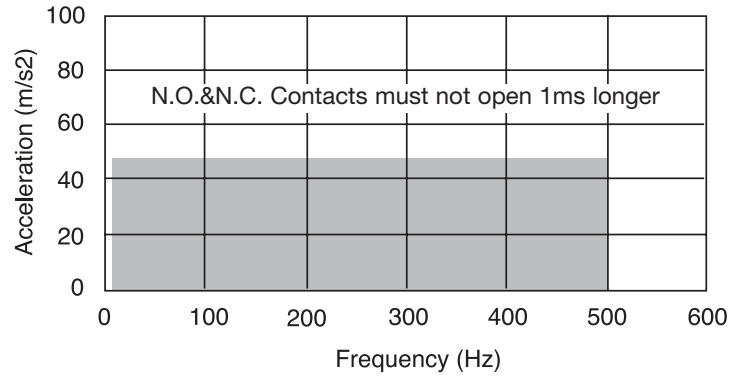
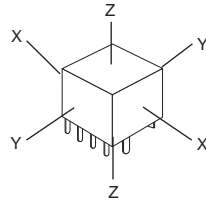
- Shift of pick-up drop-out voltage



Characteristics		Specification		Before the Test	After the Test
Contact Resistance (milliohm)	N.O. Contact	100 or lower	MAX	4.20	5.60
			MIN	3.50	3.60
			AVE	3.669	4.290
	N.C. Contact	100 or lower	MAX	4.30	5.90
			MIN	3.90	4.10
			AVE	4.120	4.360
Structure		No abnormal condition		Good	Good

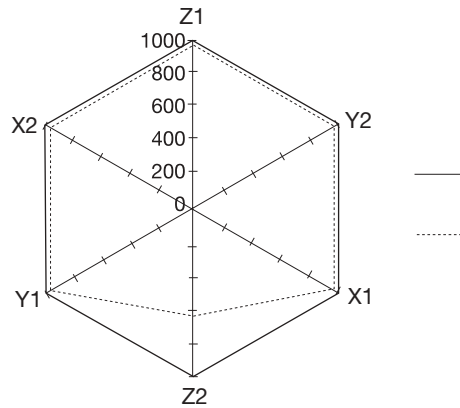
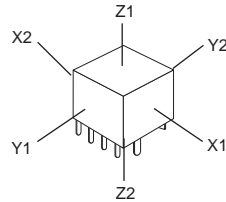
VIBRATION RESISTANCE CHARACTERISTICS

- Test condition
- Frequency: 10Hz-500Hz-10Hz
- Acceleration: 45m/s²
- Direction of vibration: see right diagram
- Detection level: Contacts must not open 1ms or longer



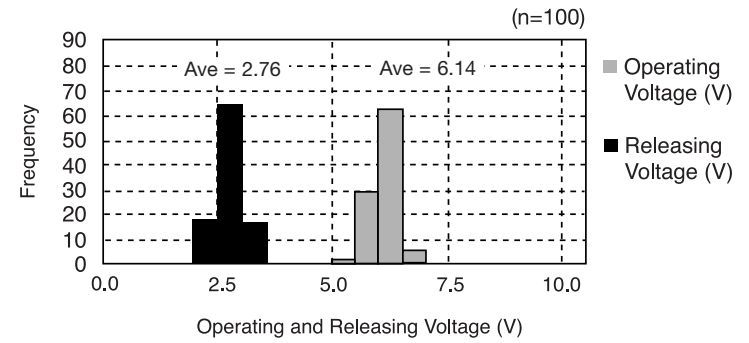
SHOCK RESISTANCE CHARACTERISTICS

- Test condition
- Shock application time: 11ms, half-sine wave
- Shock direction: see right diagram
- Detection level: Contacts must not open 1ms or longer

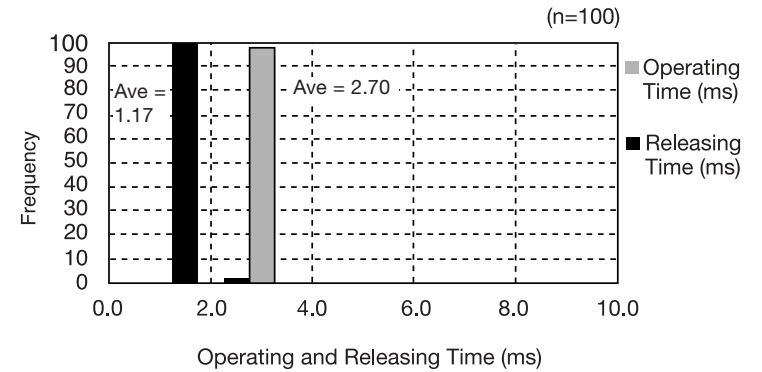


REFERENCE DATA (G8ND-2 12VDC)

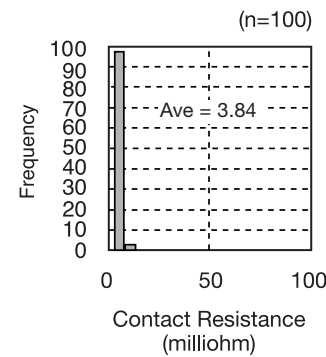
Distribution of operating voltage and releasing voltage



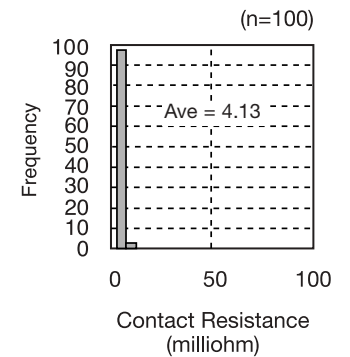
Distribution of operating time



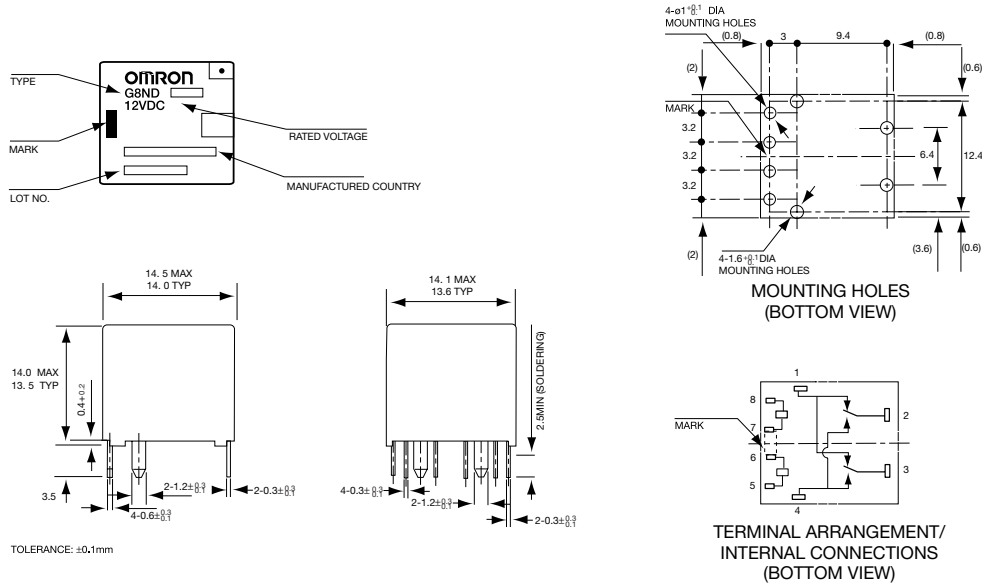
N.O. contact – Distribution of contact resistance



N.C. contact – Distribution of contact resistance

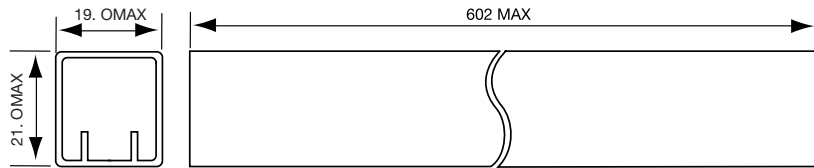


Dimensions



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- Omron PCB relays may be oriented in any desired direction. Whenever possible, however, care should be taken that they are not subjected to vibration along the direction of contact movement.

Tube Carrier



- **Remarks**
 For use on any of the products, please contact your sales representative and confirm with spec sheet and actual usage condition.
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ALL DIMENSIONS SHOWN ARE IN MILLIMETERS.
 To convert millimeters into inches, multiply by 0.03937. To convert grams into ounces, multiply by 0.03527.

Features

- Compact size
- High performance PCB relay
- 25A motor lock load
- Fully sealed construction
- Fully automated assembly
- DPDT (separate) contacts
- Pre-solder as for all terminal
- ISO9001/QS9000 series approval



Specifications

■ Available Types

G8NW-2 12VDC	Standard
G8NW-2S 12VDC	High Sensitivity
G8NW-2L 12VDC	High Temperature (105°C)
G8NW-2H 12VDC	High Temper

■ Contact Data

Max Switching Current	30A
Rated Current	25A Motor load
Max Switching Voltage	16V
Contact Material	Silver tin alloy (Cadmium Free)

■ Coil Ratings

Type	Coil Resistance	Pull in Voltage
G8NW-2 12VDC	225Ω	<7.2
G8NW-2S 12VDC	180Ω	<6.5
G8NW-2L 12VDC	225Ω	<7.2
G8NW-2H 12VDC	180Ω	<6.5

■ Specifications

Temperature Range	-40 to +85°C (-2L, -2H: -40 to +105°C)
Mechanical Life	1,000,000 Operations
Electrical Life	100,000 Operations
Weight	7.8g

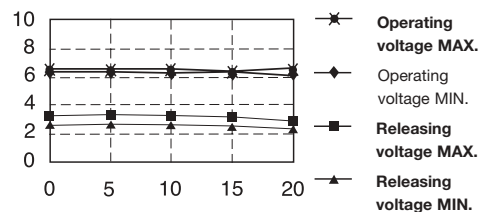
Application Examples

- Power windows
- Power door lock
- Seat adjustment
- Sunroof
- Wiper controls

■ LIFE TEST I (Power window motor: G8NW-2 12VDC)

• Test item
14VDC-26A
Motor Lock 200,000
Operations minimum

• Shift of pick-up drop-out voltage

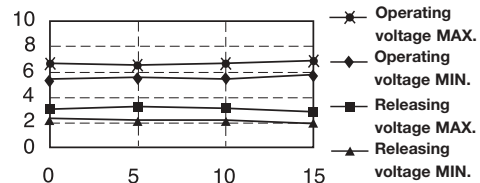


Characteristics	Specification	Before the test	After the test	
Contact Resistance	N.O. Contact	100(mΩ) or lower	MAX. 4.1	7.2
			MIN. 2.8	3.5
			AVE. 3.36	5.00
	N.C. Contact	100(mΩ) or lower	MAX. 5.6	11.8
			MIN. 3.9	5.0
			AVE. 4.44	8.00
Insulation Resistance	100(mΩ) or higher	More than 1000	More than 1000	
Structure	No abnormal condition	Good	Good	

■ LIFE TEST II (Power window motor: G8NW-2 12VDC)

• Test item
16VDC-22A
200,000
Operations minimum

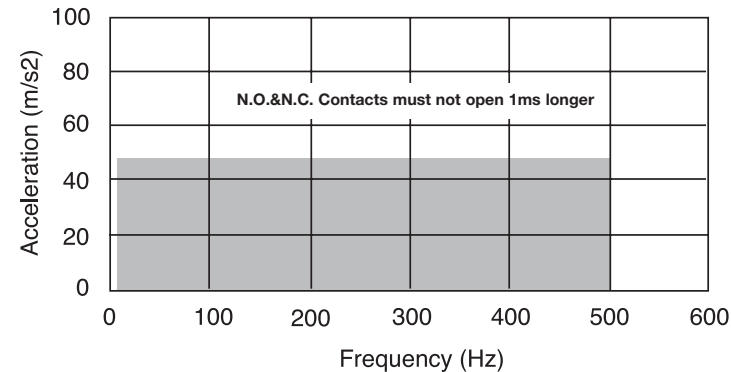
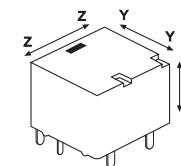
• Shift of pick-up drop-out voltage



Characteristics	Specification	Before the test	After the test	
Contact Resistance	N.O. Contact	100(mΩ) or lower	MAX. 4.7	6.8
			MIN. 3.2	3.5
			AVE. 3.89	4.50
	N.C. Contact	100(mΩ) or lower	MAX. 5.3	7.2
			MIN. 3.7	4.0
			AVE. 4.46	6.20
Insulation Resistance	100(mΩ) or higher	More than 1000	More than 1000	
Structure	No abnormal condition	Good	Good	

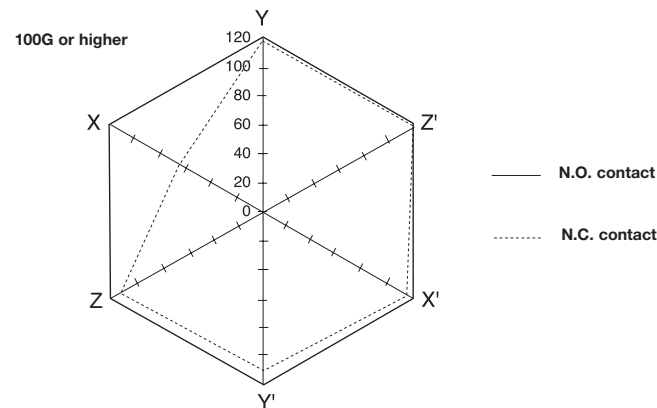
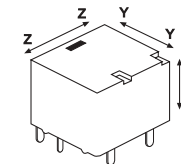
VIBRATION RESISTANCE CHARACTERISTICS

Test condition:
Frequency: 10Hz-500Hz-10Hz
Acceleration: 43.1m/s²
Direction of vibration: see right diagram
Detection level: Contacts must not open 1ms or longer

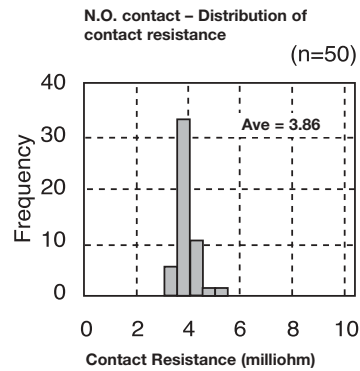
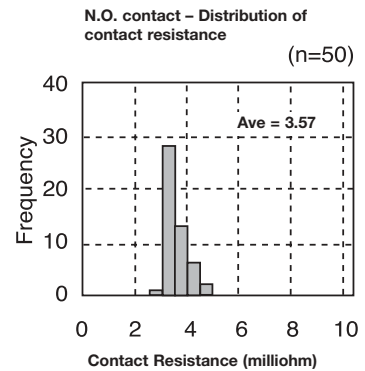
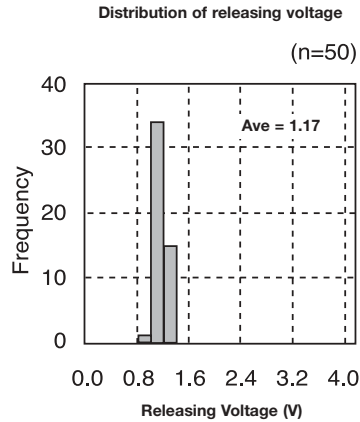
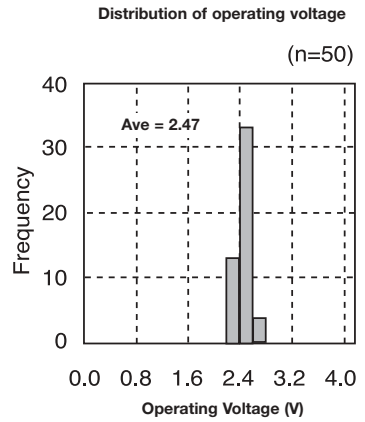
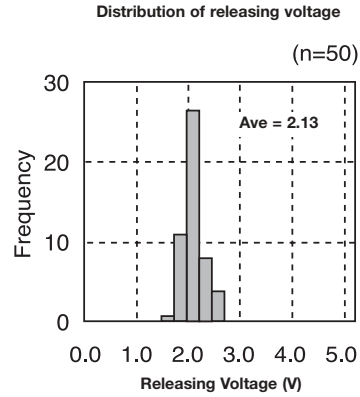
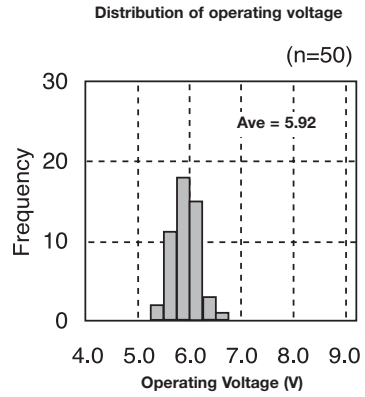


SHOCK RESISTANCE CHARACTERISTICS

Test condition:
Shock acceleration: 11ms, half-sine wave
Shock direction: see right diagram
Detection level: Contacts must not open 1ms or longer

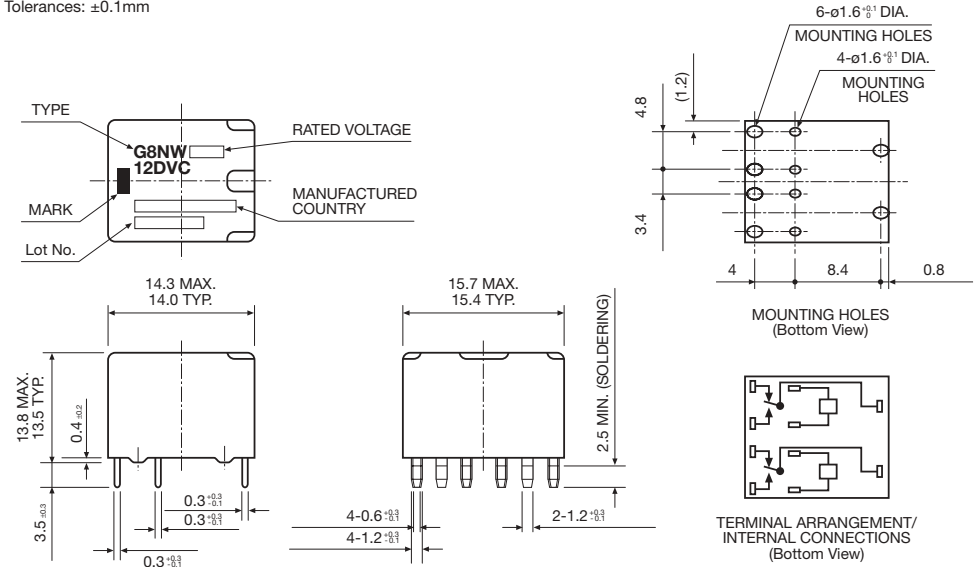


■ Reference Data (G8NW-2 12VDC)



Dimensions

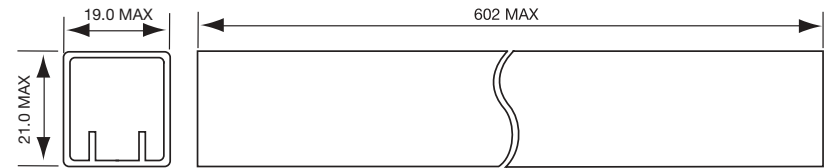
Tolerances: ±0.1mm



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■ Tube Carrier



• Remarks

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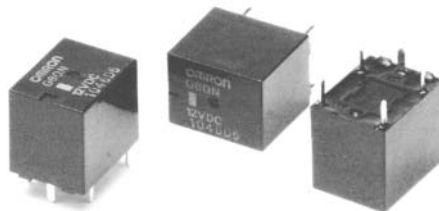
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ALL DIMENSIONS SHOWN ARE IN MILLIMETERS.

To convert millimeters into inches, multiply by 0.03937. To convert grams into ounces, multiply by 0.03527.

Features

- Compact size
- High performance PCB relay
- Fully sealed construction
- Next generation general purpose automotive PCB relay
- Fully automated assembly



Specifications

■ Available Types

Type	Contact Form	Recommended Loads
G8QN-1C4 12DC	SPDT	Motor, Resistive

■ Contact Type

Continuous carry current (max.)	5A
Inrush current (L/R=7ms; 15ms max.)	20A
Contact voltage drop (Initial value at 23°C) (max.)	100mΩ

■ Ratings/Specifications

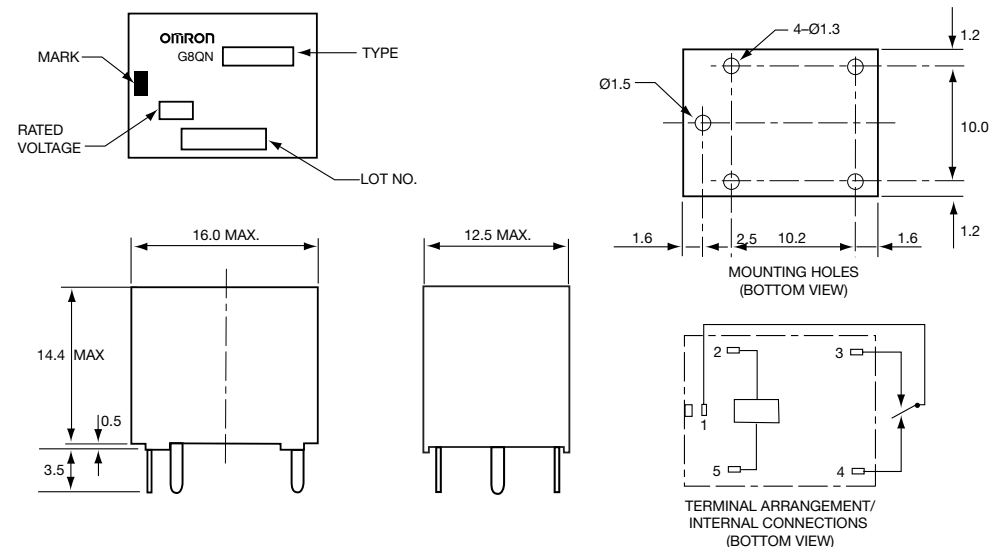
Rated voltage	12VDC	
Operating voltage (max)	16VDC	
Coil Resistance	210Ω ± 10%	
Pull in voltage (cold start)	at +20°C (max)	7.3VDC
	at +80°C (max)	9.0VDC
Drop-out voltage at +20°C (min)	0.9VDC	
Max. Continuous carry current flow time (16V at 80°C) (max.)	15 min	
Operating time (max)	10 ms	
Release time (max)	5 ms	
Operating ambient temperature	-40°C to +85°C	
Mechanical life (min)	10,000,000 cycles (at frequency of 18,000 operations/hour)	
Electrical life (resistive load) (min)	100,000 cycles (14V; Continuous carry current)	
Weight	5.5g	

Application Examples

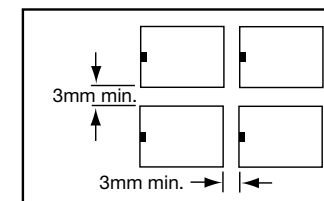
- Power window
- Electric sunroof
- Intermittent Windshield wiper
- Power door lock
- Power seat
- Electric wing mirror
- Power radio aerial
- Washer pump

Dimensions

(All dimensions in mm.)



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- If several relays are to be mounted on a single printed circuit board, they should be given at least 3mm clearance on all sides as shown in the diagram below.

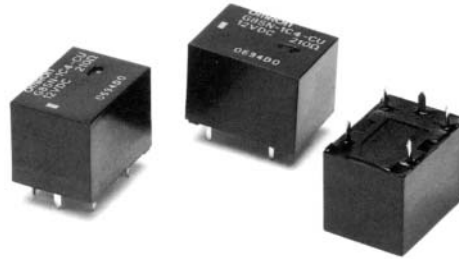


Note: Proper spacing is necessary to dissipate heat build-up from individual relays. Other than this, there are normally no restrictions depending on application. Please contact Omron for details.

ALL DIMENSIONS SHOWN ARE IN MILLIMETERS.
To convert millimeters into inches, multiply by 0.03937. To convert grams into ounces, multiply by 0.03527.

Features

- General purpose automotive PCB relay
- Compact size
- Fully sealed construction
- Fully automated process



Specifications

Available Types

Type	Contact Form	Note
G8SN-1C7-CUK 12DC (320Ω)	SPDT	Motor, Resistive
G8SN-1C4-CU 12DC (210Ω)	SPDT	Lamp, Capacitive

Contact Type

Continuous carry current (max.)	10A
Inrush current (L/R=7ms; 15ms max.)	30A
Contact voltage drop (Initial value)	100 mV

Ratings/Specifications

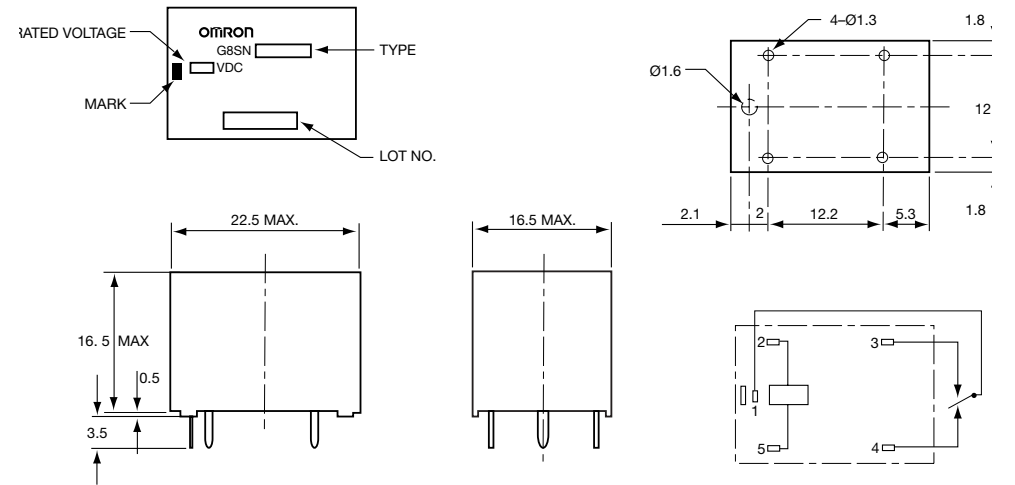
Rated voltage	12VDC	
Operating voltage (max)	16VDC	
Coil Resistance	320Ω	210Ω
Pull in voltage (cold start)	at +20°C (max)	7.3VDC / 6.5VDC
	at +80°C (max)	9.0VDC / 8.0VDC
Drop-out voltage at +20°C (min)	1.0VDC	0.9VDC
Max. Continuous carry current flow time (16VDC at 80°C) (max.)	Unlimited	15 min.
Operating time (max)	10 ms	
Release time (max)	5 ms	
Operating ambient temperature	-40°C to +85°C	
Mechanical life (min)	10,000,000 cycles (at frequency of 18,000 operations/hour)	
Electrical life (resistive load) (min)	100,000 cycles (14V; Continuous carry current)	
Weight	13g	

Application Examples

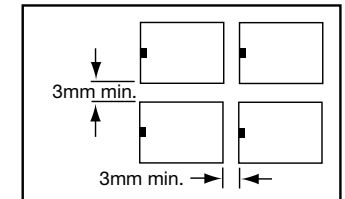
- Electric wing mirror
- Car audio
- Power radio aerial
- Air-conditioning
- Courtesy lamp
- Power window
- Electric sunroof
- Intermittent windshield wiper
- Passive restraint seatbelt
- Power door lock
- Power seat

Dimensions

(All dimensions in mm.)



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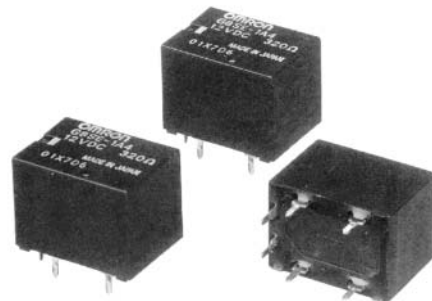


Note: Proper spacing is necessary to dissipate heat build-up from individual relays. Other than this, there are normally no restrictions depending on application. Please contact Omron for details.

ALL DIMENSIONS SHOWN ARE IN MILLIMETERS.
To convert millimeters into inches, multiply by 0.03937. To convert grams into ounces, multiply by 0.03527.

Features

- General purpose automotive PCB relay.
- High capacity relay.
- High heat resistance.



Specifications

Available Types

Type	Contact Form	Recommended Loads
G8SE-1A4-SK 12DC (320Ω)	SPST	Motor, Resistive

Contact Type

Continuous carry current (max.)	20A
Inrush current (L/R = 7ms; 15ms max.)	60A
Contact value drop (Initial value)	50 mΩ

Ratings/Specifications

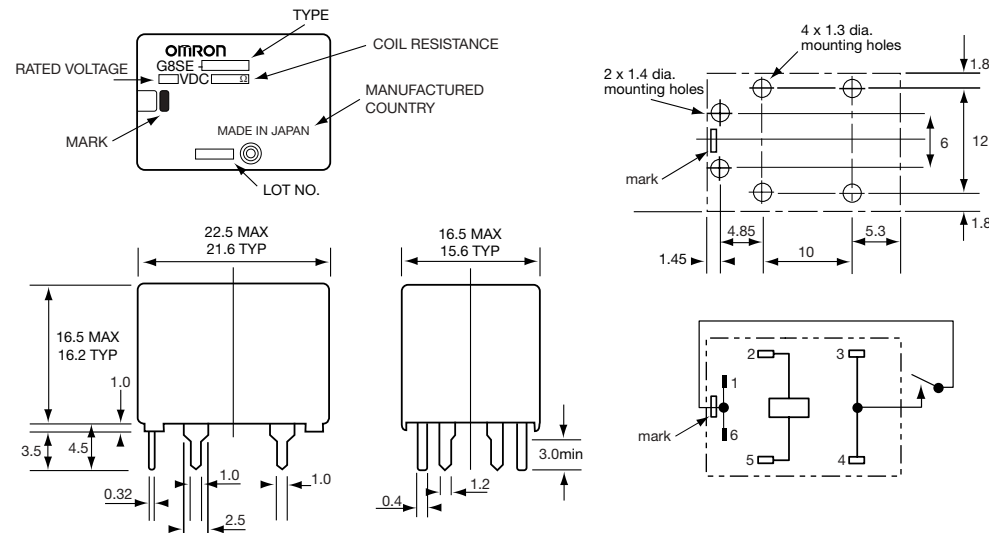
Rated voltage	12VDC
Operating voltage (max)	16VDC
Coil Resistance	320Ω
Pull in voltage (cold start) at 20°C (max)	7.3VDC
Drop-out voltage at +20°C (min)	1.2VDC
Max. Continuous carry current flow time (16VDC at 80°C max.)	Unlimited
Operate time (max)	10 ms
Release time (max)	5 ms
Operating ambient temperature	-40°C to +110°C
Mechanical life (min)	10,000,000 cycles (at frequency of 18,000 operations/hour)
Electrical life (resistive load) (max)	100,000 cycles
Weight	16.0g

Application Examples

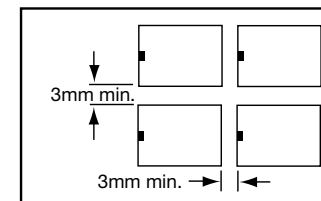
- Electric wing mirror
- Car audio
- Power radio aerial
- Air-conditioning
- Courtesy lamp
- Power window
- Electric sunroof
- Intermittent windshield wiper
- Passive restraint seatbelt
- Power door lock
- Power seat

Dimensions

(All dimensions in mm.)



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- If several relays are to be mounted on a single printed circuit board, they should be given at least 3mm clearance on all sides as shown in the diagram below.



Note: Proper spacing is necessary to dissipate heat build-up from individual relays. Other than this, there are normally no restrictions depending on application. Please contact Omron for details.

ALL DIMENSIONS SHOWN ARE IN MILLIMETERS.
To convert millimeters into inches, multiply by 0.03937. To convert grams into ounces, multiply by 0.03527.

Features

- DC 24V specification.
- High capacity specification (35A).
- Covered MINI ISO by high capacity type.
- Achieve low heat generation and improve connection confidence to the connector.
- SPST and SPDT arrangements.



Specifications

■ Type

Part Number		Contact Type
Unsealed	Sealed	
G8HN-1A2T-RJ/DJ (DC12V/DC24V)	G8HN-1A4T-RJ/DJ (DC12V/DC24V)	SPST Standard
G8HN-1C2T-RJ/DJ (DC12V/DC24V)	G8HN-1C4T-RJ/DJ (DC12V/DC24V)	SPDT Standard
G8HN-1A2T-RH/DH (DC12V)	G8HN-1A4T-RH/DH (DC12V)	SPST High capacity
G8HN-1C2T-RH/DH (DC12V)	G8HN-1C4T-RH/DH (DC12V)	SPDT High capacity

■ Contact Data

Arrangement		SPST,SPDT	
Contact material		Silver tin oxide (cadmium free)	
Contact voltage drop	Standard	Less than 200 mV at 20A	
	High capacity	Less than 200 mV at 35A	
Max. Switching Current	Standard	12VDC	N.O. side: Inrush 100A, Steady 20A N.C. side: Inrush 50A, Steady 10A
		24VDC	N.O. side: Inrush 30A, Steady 10A N.C. side: Inrush 15A, Steady 5A
	High capacity	12VDC	N.O. side : Inrush 120A, Steady 35A N.C. side : Inrush 40A, Steady 20A
		24VDC	N.O. side : Inrush 35A, Steady 10A N.C. side : Inrush 15A, Steady 5A

■ Coil Data

With Surge Absorber Resistor

Part Number	G8HN-1A2T-RJ G8HN-1C2T-RJ		G8HN-1A2T-RH G8HN-1C2T-RH
	G8HN-1A4T-RJ G8HN-1C4T-RJ		G8HN-1A4T-RH G8HN-1C4T-RH
	12VDC	24VDC	12VDC
Rated coil resistance at 20°C	95.9+/-10%Ω	315.1+/-10%Ω	124.2+/-10%Ω
Rated coil current at 20°C	125.1mA+/-10%	76.2mA+/-10%	96.6mA+/-10%

With Surge Absorber Diode

Part Number	G8HN-1A2T-DJ G8HN-1C2T-DJ		G8HN-1A2T-DH G8HN-1C2T-DH
	G8HN-1A4T-DJ G8HN-1C4T-DJ		G8HN-1A4T-DH G8HN-1C4T-DH
	12VDC	24VDC	12VDC
Rated coil resistance at 20°C	105.0±10%Ω	340.0+/-10%Ω	140.0+/-10%Ω
Rated coil current at 20°C	114.3mA+/-10%	70.6mA+/-10%	85.7mA+/-10%

■ Characteristics

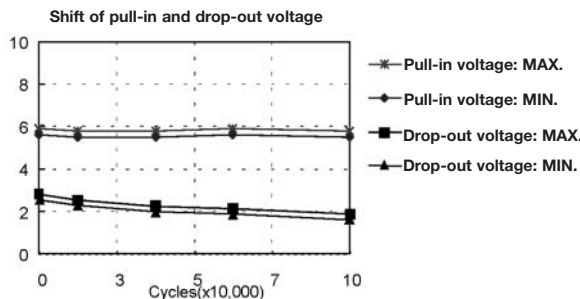
Part Number		G8HN-1A2T-DJ/RJ G8HN-1C2T-DJ/RJ		G8HN-1A2T-DH/RH G8HN-1C2T-DH/RH
		G8HN-1A4T-DJ/RJ G8HN-1C4T-DJ/RJ		G8HN-1A4T-DH/RH G8HN-1C4T-DH/RH
		12VDC	24VDC	12VDC
Pull-in voltage at 20°C		8V max.	16V max.	8.0V max.
Drop-out voltage at 20°C		1.2V min.	2.4V min.	1.2V min.
Operating time		10ms max.		
Releasing time		10ms max.		
Insulation resistance		10MΩ min (at 500 VDC)		
Dielectric strength		500VAC, 50 / 60 Hz for 1 minute between coil and contacts 500VAC, 50 / 60 Hz for 1 minute between contacts of different polarity 500VAC, 50 / 60 Hz for 1 minute between contacts of same polarity		
Vibration	Mechanical durability	10 ~ 500 Hz, 44.1 m/s ² mm double amplitude		
	Malfunction durability	10 ~ 2,000 Hz, 44.1 m/s ²		
Shock	Mechanical durability	100 m/s ² min		
	Malfunction durability	1000 m/s ² min		
Ambient temp.	Operating/storage	-40 to 125°C		
Humidity		5 to 85%RH		
Service life	Mechanical	1,000,000 operations (Frequency: 18,000 operations/hour)		
	Electrical	100,000 operations (Frequency: 1,800 operations/hour)		
Weight		Approx. 20.0g		

Application Example

- Head-light lamp
- Blower fan
- Defogger

■ LIFE TEST I (Blower motor: G8HN-1C2T-DJ 12VDC)

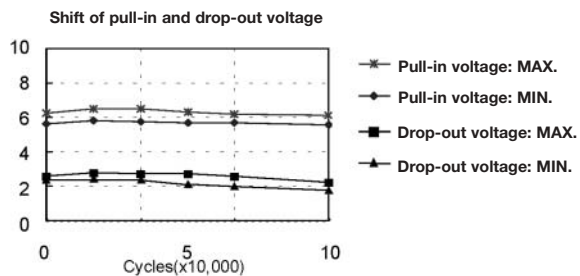
Test item
 14VDC
 Inrush 64A Steady 22A
 Frequency: 1sec ON/ 4sec OFF
 Cycle: 500,000



Characteristics	Specification		Before the test	After the test
N.O. Voltage drop between terminals	50mV at 20A MAX.	MAX.	37.0	65.2
		MIN.	31.0	35.1
		AVE.	33.06	45.84
Insulation Resistance	10MΩ MIN.		1000 MIN.	1000 MIN.
Structure	No abnormal condition		Good	Good

■ LIFE TEST II (Halogen lamp: G8HN-1C2T-DJ 12VDC)

Test item
 164VDC
 Inrush 135A Steady 21A
 Frequency: 2sec ON/ 13sec OFF
 Cycle: 200,000

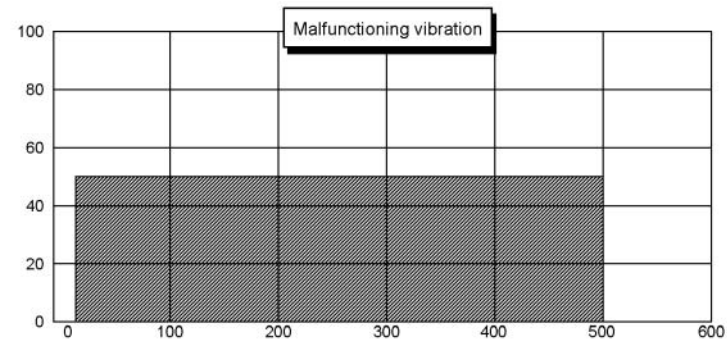
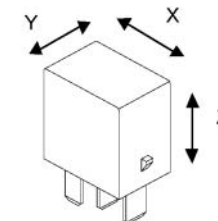


Characteristics	Specification		Before the test	After the test
N.O. Voltage drop between terminals	50mV at 20A MAX.	MAX.	34.5	54.2
		MIN.	27.5	35.7
		AVE.	32.06	44.38
Insulation Resistance	10MΩ MIN.		1000 MIN.	1000 MIN.
Structure	No abnormal condition		Good	Good

Engineering Data

Malfunctioning vibration

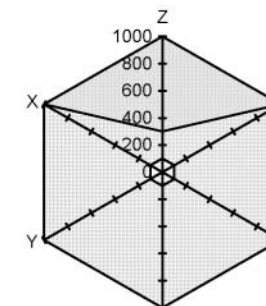
Test condition
 Frequency: 10Hz-500Hz-10Hz
 Acceleration: 43.1m/s²
 Direction of vibration: see right diagram
 Detection level: Contacts must not open 1ms or longer



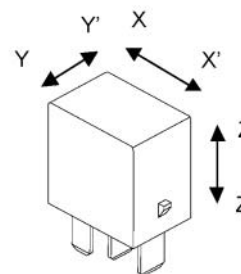
Malfunctioning Shock

Test condition
 Shock acceleration: 100m/s² to 1000 m/s²
 Detection level: Contact must not open 1ms or more with 100m/s²
 N.O. Contact – must not open with rated coil voltage
 N.C. Contact – must not open without energizing

MALFUNCTIONING SHOCK



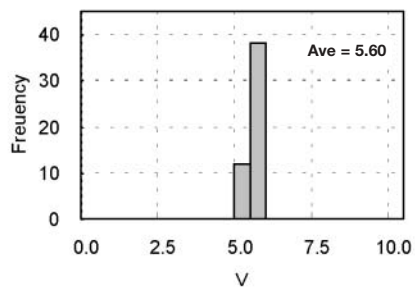
□ N.O.side contact □ N.C.side contact □ Standard



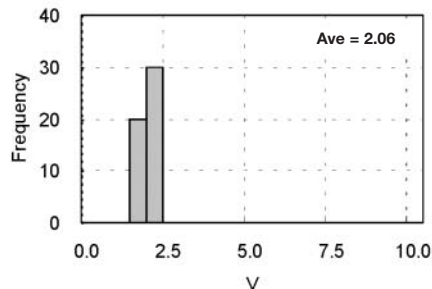
General Characteristic Data

Sample: G8HN-1C2T-DJ 50pcs.

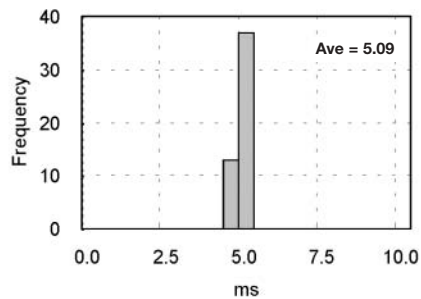
Distribution of pull-in voltage



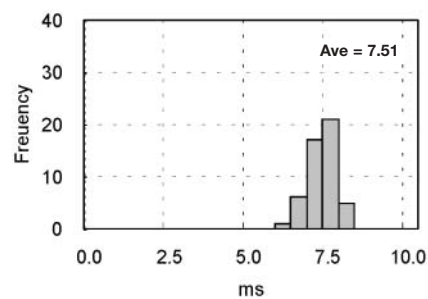
Distribution of drop-out voltage



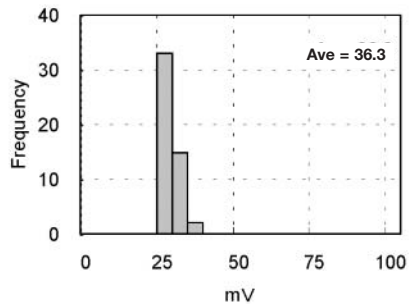
Distribution of operating time



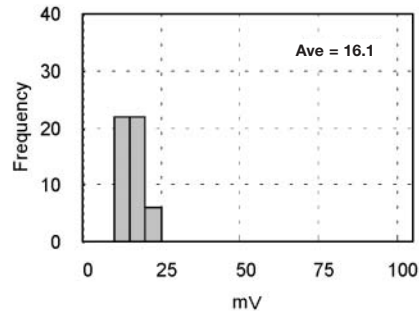
Distribution of releasing time



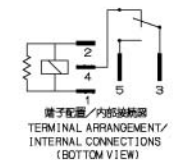
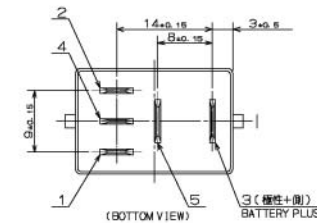
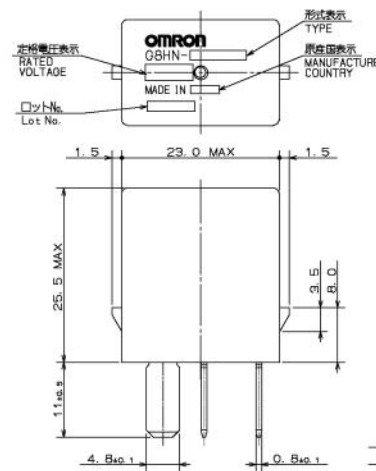
Distribution of N.O. voltage drop between terminals



Distribution of N.C. voltage drop between terminals



Dimensions



サージ吸収抵抗またはダイオード付
WITH SURGE ABSORBER
RESISTOR OR DIODE

■指定公差は、すべて±0.1mmとする。
■ALL TOLERANCE ARE ±0.1mm
UNLESS OTHERWISE INDICATED.

Features

- Low height PCB relay based on Micro ISO
- Height: MAX 17mm
- Environment-friendly by light weight and space saving
- Low heat generation and high capacity switching
- Fully sealed construction
- SPST contacts
- All terminals pre-soldered
- ISO9001/QS9000 series approval



Available Types

Part Number	Contact Form
G8HL-1A4P 12VDC	Standard

Contact Data

Max Switching Current	Inrush 100A Steady 20A
Rated Current	20A
Max Switching Voltage	16VDC
Contact Material	Silver tin alloy (Cadmium Free)

Characteristics

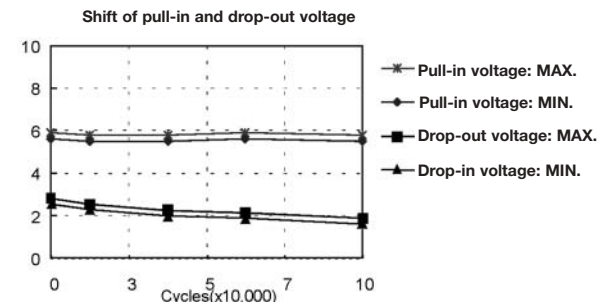
Type		G8HL-1A4P
Rated coil resistance at 20°C		135ohm ± 10%
Rated coil current at 20°C		88.9mA
Pull-in voltage at 20°C		7.0V MAX.
Drop-out voltage at 20°C		0.7 to 4.0V
Operating time		10ms max.
Releasing time		10ms max.
Insulation resistance		10MΩ min (at 500 VDC)
Dielectric strength		500VAC, 50 / 60 Hz for 1 minute between coil and contacts 500VAC, 50 / 60 Hz for 1 minute between contacts of different polarity 500VAC, 50 / 60 Hz for 1 minute between contacts of same polarity
Vibration	Mechanical durability	20-500 Hz, 45m/s ² mm
	Malfunction durability	20-500 Hz, 45m/s ² mm
Shock	Mechanical durability	1000 m/s ² min
	Malfunction durability	100 m/s ² min
Ambient temp.	Operating/storage	-40 to 100°C
Humidity		5 to 85%RH
Service life	Mechanical	1,000,000 operations
	Electrical	100,000 operations
Weight		Approx. 13.0g

Application Example

- Head light lamp
- Blower fan
- Defogger
- Electrical power steering assist system

LIFE TEST I (Head Lamp 240W)

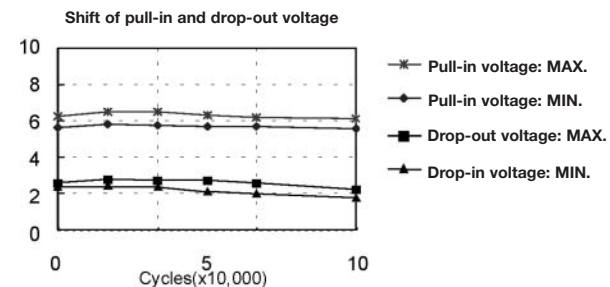
Test item
14VDC
In-rush current 120A, Rated current 20A
Frequency; 1sec ON/29s OFF
Cycle; 100,000



Characteristics	Specification	Before the test	After the test
Voltage Drop (mV) at 20 A	200 Max.		
	MAX.	40	48
	MIN.	24	30
	AVE.	30.0	36
Insulation Resistance (Mega ohm)	10 Min.	More than 1000	More than 1000
Structure	No abnormal condition	Good	Good

LIFE TEST I (Head Lamp 240W)

Test item
14VDC
Frequency; 1sec ON/5s OFF
Cycle; 100,000



Characteristics	Specification	Before the test	After the test
Voltage Drop (mV) at 20 A	200 Max.		
	MAX.	24	44
	MIN.	18	29
	AVE.	20.0	38
Insulation Resistance (Mega ohm)	10 Min.	More than 1000	More than 1000
Structure	No abnormal condition	Good	Good

Engineering Data

Malfunctioning vibration

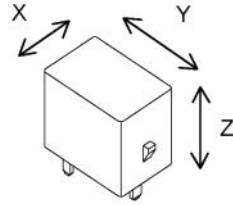
Test condition

Frequency: 10Hz-500Hz-10Hz

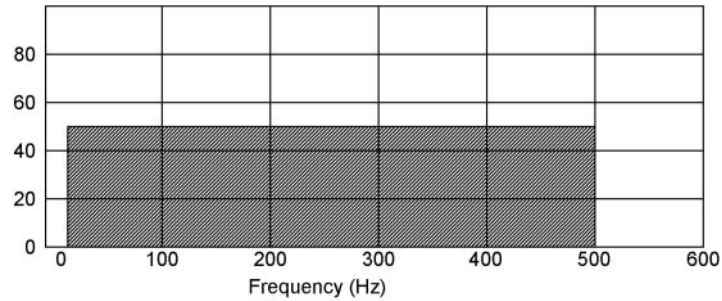
Acceleration: 43.1m/s²

Direction of vibration: see right diagram

Detection level: Contacts must not open 1ms or longer



MALFUNCTIONING VIBRATION



Malfunctioning Shock

Test condition

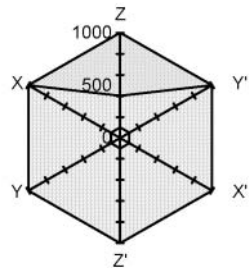
Shock acceleration: 100m/s² to 1000 m/s²

Detection level: Contact must not open 1ms or more with 100m/s²

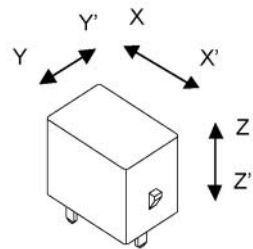
N.O. Contact – must not open with rated coil voltage

N.C. Contact – must not open without energizing

MALFUNCTIONING SHOCK

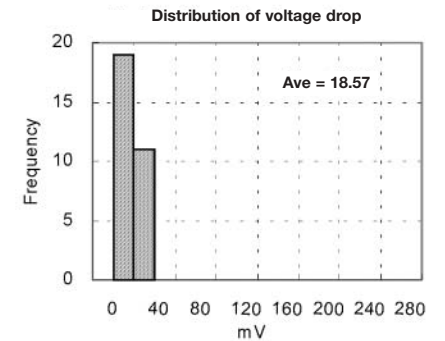
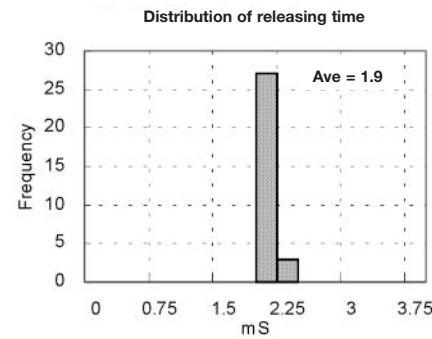
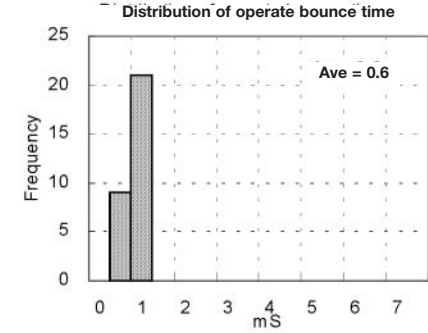
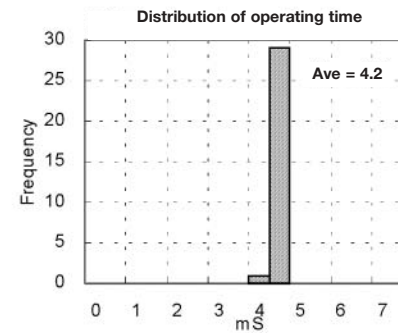
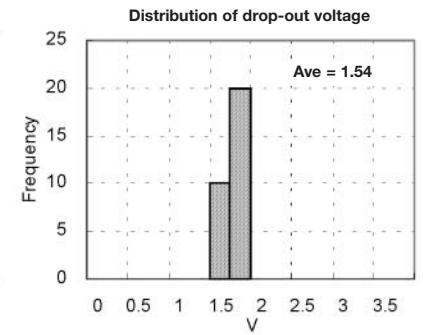
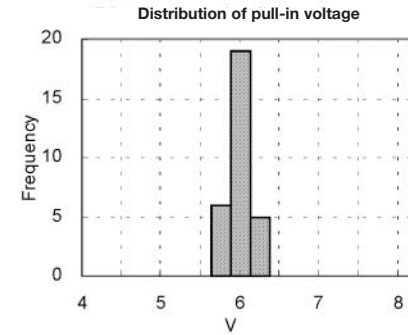


N.O.side contact
 N.C.side contact
 Standard

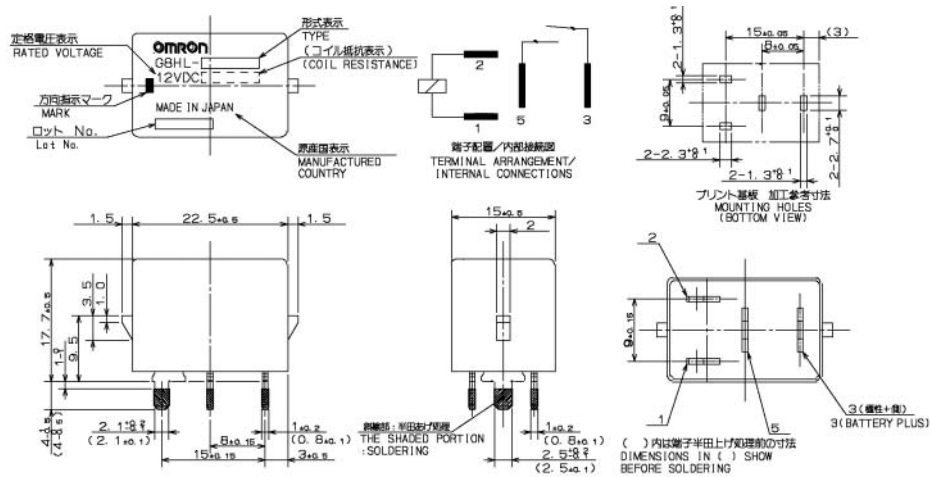


General Characteristic Data

Sample: G8HL-1A4P 50pcs.



Dimensions



ALL DIMENSIONS SHOWN ARE IN MILLIMETERS.
To convert millimeters into inches, multiply by 0.03937. To convert grams into ounces, multiply by 0.03527.

Features

- General purpose automotive relay.
- Wide temperature range -40°C to +125°C.
- Standard ISO terminal foot print.
- Handle heavy automotive load:
Inrush current 100A
- High current path fully welded – Reduces heat build up at full load.
- Made in North America.



Available Types

Type	Contact Form	Note
G8JN 1C7T R 12DC	SPDT	With Supression Resistor
G8JN 1C7T D 12DC	SPDT	With Supression Diode
G8JN 1C7T MF R 12DC	SPDT	With Mounting Bracket and Resistor
G8JN 1C7T F R 12DC	SPDT	Weatherproof with Resistor

Contact Data

Resistive load (max.)	35A(NO)/20A(NC)
Inrush current (max.)	100A
Contact resistance	5 m Ohm

Ratings/Specifications

Rated voltage	12VDC	
Operating voltage (max)	16VDC	
Coil Resistance	72Ω± 15%	
Pull in voltage (cold start)	at +23°C (max)	8.0 VDC
	at +125°C (max)	11.0 VDC
Drop-out voltage at +23°C (min)	1.0 VDC	
Duty cycle at rated load (16V at 80°C)	Up to 100%	
Operate time (at 23°C)(max)	10 ms	
Release time (at 23°C)(max)	4.0 ms	
Operating ambient temperature	-40°C to +125°C	
Mechanical life (min)	1,000,000 cycles	
Electrical life (resistive load) (min)	100,000 cycles	
Weight	40g	

Application Examples

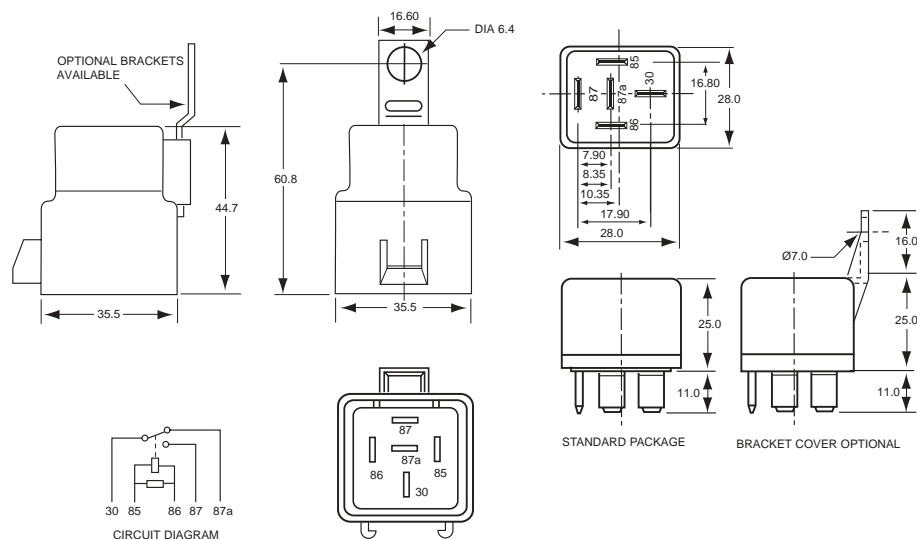
- Heated rear window
- ABS
- Head lamp
- Cooling fan
- HVAC blower motor
- Compressor coil
- Fuel pump
- Starter solenoid
- Horn

Dimensions

(All dimensions in mm.)

WEATHERPROOF

STANDARD



Features

- Special purpose high power automotive relay. (70 Amp)
- Wide temperature range -40°C to +135°C.
- High current path fully welded – Reduces heat built up at full load.
- Insert moulded terminals – mechanical stability.
- Standard ISO terminal foot print.
- Made in North America.



Available Types

Type	Contact Form	Note
G8JR 1A7T R 12DC	SPST	With Supression Resistor
G8JR 1A5T R 12DC	SPST	Mounting Bracket with Resistor

Contact Data

Resistive load (max.)	70A
Inrush current (max.)	150A
Contact resistance	5 m Ohm

Ratings/Specifications

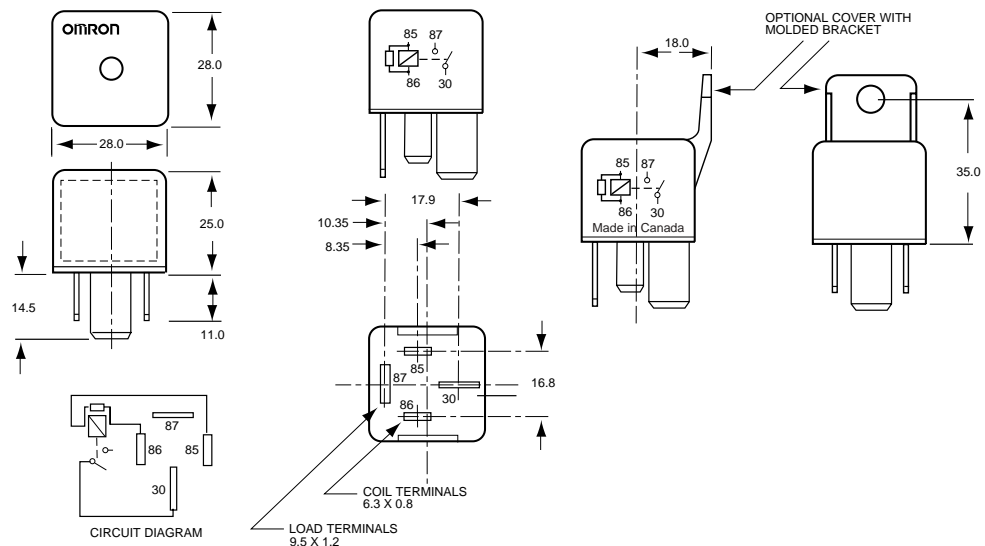
Rated voltage	12VDC	
Operating voltage (max)	16VDC	
Coil Resistance	65 Ohm ± 15%	
Pull in voltage	at +23°C (max)	9.0 VDC
	at +125°C (max)	11.0 VDC
Drop-out voltage at +23°C (min)	1.0 VDC	
Duty cycle at rated load (16VDC at 25°C)	100%	
Operate time (at 23°C)(max)	8.0 ms	
Release time (at 23°C)(max)	4.0 ms	
Operating ambient temperature	-40°C to +135°C	
Mechanical life (min)	1,000,000 cycles	
Electrical life (resistive load) (min)	100,000 cycles	
Weight	40g	

Application Examples

- Engine cooling fan(s)
- Starter motor
- Glow plug

Dimensions

(All dimensions in mm.)



ALL DIMENSIONS SHOWN ARE IN MILLIMETERS.

To convert millimeters into inches, multiply by 0.03937. To convert grams into ounces, multiply by 0.03527.

■ Glossary

Terms		Meaning
Circuit functions	Photocoupler Photo triac coupler	Transfers the input signal and insulates inputs and outputs as well.
	Zero cross circuit	A circuit which starts operation with the AC load voltage at close to zero-phase.
	Trigger circuit	A circuit for controlling the triac trigger signal, which turns the load current ON and OFF.
	Snubber circuit	A circuit consisting of a resistor R and capacitor C, which prevents faulty ignition from occurring in the SSR triac by suppressing a sudden rise in the voltage applied to the triac.
Input	Input impedance	The impedance of the input circuit and the resistance of current-limiting resistors used. Impedance varies with the input signal voltage in case of the constant current input method.
	Operating voltage	Minimum input voltage when the output status changes from OFF to ON.
	Reset voltage	Maximum input voltage when the output status changes from ON to OFF.
	Operating voltage	The permissible voltage range within which the voltage of an input signal voltage may fluctuate.
	Rated voltage	The voltage that serves as the standard value of an input signal voltage.
	Input current	The current value when the rated voltage is applied.
Output	Leakage current	The effective value of the current that can flow into the output terminals when a specified load voltage is applied to the SSR with the output turned OFF.
	Load voltage	The effective supply voltage at which the SSR can be continuously energized with the output terminals connected to a load and power supply in series.
	Maximum load current	The effective value of the maximum current that can continuously flow into the output terminals under specified cooling conditions (i.e., the size, materials, thickness of the heat sink, and an ambient temperature radiating condition).
	Minimum load current	The minimum load current at which the SSR can operate normally.
	Output ON voltage drop	The effective value of the AC voltage that appears across the output terminals when the maximum load current flows through the SSR under specified cooling conditions (such as the size, material, and thickness of heat sink, ambient temperature radiation conditions, etc.)
	Characteristics	Dielectric strength
Insulation resistance		The resistance between the input and output terminals or I/O terminals and metal housing (heat sink) when DC voltage is imposed.
Operating time		A time lag between the moment a specified signal voltage is imposed to the input terminals and the output is turned ON.
Release time		A time lag between the moment the imposed signal input is turned OFF and the output is turned OFF.
Ambient temperature and humidity (operating)		The ranges of temperature and humidity in which the SSR can operate normally under specified cooling, input/output voltage, and current conditions.
Storage temperature		The temperature range in which the SSR can be stored without voltage imposition.
Others	Inrush current resistance	A current which can be applied for short periods of time to the electrical element.
	Counter-electromotive force	Extremely steep voltage rise which occurs when the load is turned ON or OFF.
	Recommended applicable load	The recommended load capacity which takes into account the safety factors of ambient temperature and inrush current.
	Bleeder resistance	The resistance connected in parallel to the load in order to increase apparently small load currents, so that the ON/OFF of minute currents functions normally.