# Ultra-Miniature Automotive PCB Relay

- · Compact size.
- High performance PCB relay.
- Fully automated assembly.
- Fully sealed construction.
- SPDT contacts with internal H-bridge.





# **Ordering Information**

Description	Model
Standard type	G8ND-2
High sensitivity (low pull-in voltage)	G8ND-2S
Ultra-high sensitivity	G8ND-2U
Reflow solder type	G8ND-2R

### **■** Typical Applications

- Power windows/power door lock
- Smart junction box and module applications

- Seat adjustment
- Sunroof

# **Specifications**

### **■** Contact Data

Max. switching current	30 A
Max. switching voltage	16 V
Max. carry current	25 A (at 20° C for 1 hour)
Min. carry current	100 mA
Contact material	Silver-tin alloy – cadmium free

### ■ Coil Ratings (at 20° C)

Туре	Rated voltage	Coil resistance	Nominal power consumption	Pull in voltage	Dropout voltage
G8ND-2	12 VDC	225 Ω	640 mW	< 7.2 V	> 1.0 V
G8ND-2R					
G8ND-2S		180 Ω	800 mW	< 6.5 V	
G8ND-2U		130 Ω	1108 mW	< 5.5 V	

## **Characteristics**

Max. initial contact voltage drop/resistance		250 mV @ 10 A/50 mΩ @ 1 A		
Operate time		10 ms max. (2.5 ms typical) @ 12V		
Release time		10 ms max. (1.2 ms typical) (see Note)		
Bounce time	Operate	5 ms max. (0.5 ms typical)		
	Release	10 ms max. (4.0 ms typical)		
Switching frequency	Mechanical	18,000 operations per hour		
	Electrical	1,800 operations per hour (under rated loading)		
Insulation resistance		100 MΩ min. (@ 500 VDC)		
Dielectric strength		1.0 mA max leakage at 500 VAC, 50-60 Hz for 1 minute between coil & contacts and between contacts		
Vibration	Mechanical durability	10-500 Hz, 45 m/s <sup>2</sup>		
	Malfunction durability	10-500 Hz, 45 m/s <sup>2</sup>		
Shock	Mechanical durability	1000 m/s <sup>2</sup>		
Malfunction durability		100 m/s² min.		
Ambient operating tem	perature	-40°C to 85°C		
Humidity		35% to 85% RH		
Service life	Mechanical	1,000,000 operations min.		
	Electrical	100,000 operations (load dependant)		
Weight		7.5 g (approx.)		

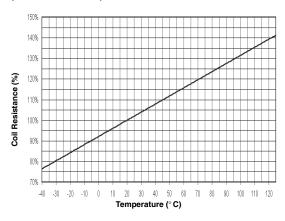
**Note:** External coil suppression will cause a measurable increase in release times and may cause the relay's characteristics to fall out of the specifications given here.

### **Characteristics Reference Data**

## **■** Durability Test Data

Relay	Load type	Current	Cycles tested
G8NW /	Power window motor (locked)	26 A	200,000
G8ND		27 A 8A Steady state	130,000

# Normalized Coil Resistance vs. Temperature (20° C reference)

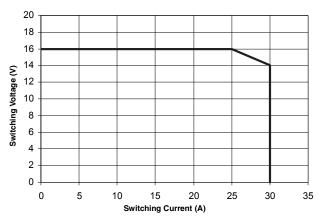


Example: Resistance of  $225\Omega$  coil

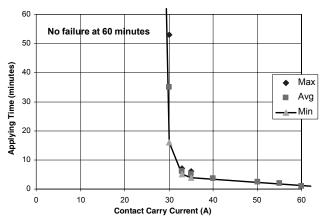
- = 75% of 225 $\Omega$  at -40° C, or 169 $\Omega$
- = 100% of  $225\Omega$  at  $20^{\circ}$  C, or  $225\Omega$
- = 125% of 225 $\Omega$  at 85°C, or 281 $\Omega$

### OMRON

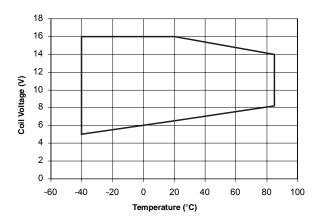
### **Load Limit Curve**



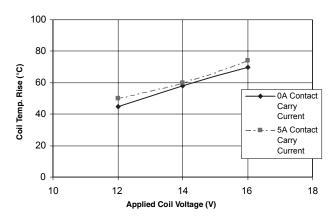
# Overcurrent Energization (20°C, G8N-1 225Ω coil, 4 samples)



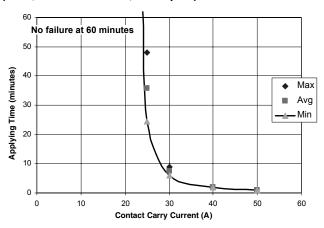
# Operating Voltage Range (G8N-1, $180\Omega$ coil)



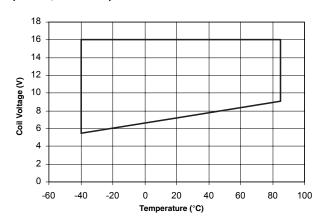
# Coil Temperature vs. Applied Voltage at 20°C (G8N-1, 225 $\Omega$ coil)



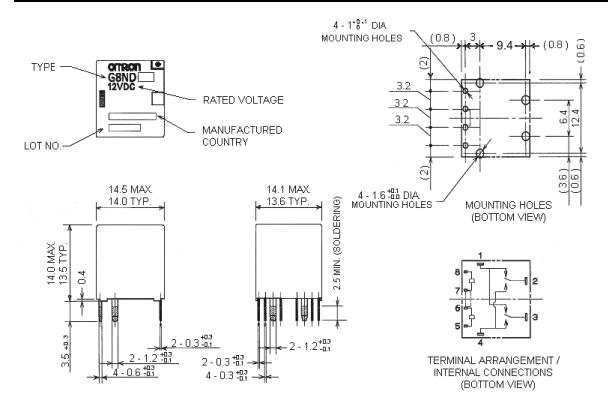
# Overcurrent Energization (85°C, G8N-1 225Ω coil, 4 samples)



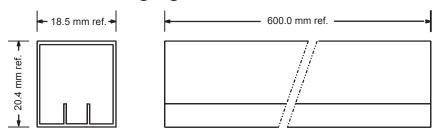
# Operating Voltage Range (G8N-1, $225\Omega$ coil)



### **Dimensions**



### **■** Tube Packaging



40 relays per tube, 30 tubes per box (1200 relays per box).

Note: 1. For additional information, please contact Omron.

- 2. Prior to receipt of order, specifications subject to change without notice.
- 3. This specification sheet is intended to be a guideline for application of this product. The information contained is believed to be correct. However, it is impossible for Omron to evaluate every possible use. It is the user's responsibility to determine product suitability in any application.
- 4. Omron can meet some special performance characteristics upon request.
- 5. All data at 20°C unless otherwise noted.
- 6. If several relays are to be mounted on a single PCB, they must be given at least 3 mm clearance on all sides.

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

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