

# Ultra-Miniature Automotive PCB Relay

## G8NW-2

- Compact size.
- High performance PCB relay.
- Fully automated assembly.
- Fully sealed construction.
- Separate SPDT contacts.



## Ordering Information

| Description                            | Model   |
|--|---------|
| Standard type                          | G8NW-2  |
| High sensitivity (low pull-in voltage) | G8NW-2S |
| High temperature (150° C)              | G8NW-2L |
| High temperature / high sensitivity    | G8NW-2H |
| Flasher load switching                 | G8NW-2F |
| Ultra-high sensitivity                 | G8NW-2U |
| Reflow solder type                     | G8NW-2R |
| Pin in paste solder type               | G8NW-2C |

## 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 (PdRu for -F type) |

### Coil Ratings (at 20° C)

| Type    | Rated voltage | Coil resistance<br>(±10%) | Nominal power<br>consumption | Pull in voltage | Dropout voltage |
|---------|---------------|---------------------------|------------------------------|-----------------|-----------------|
| G8NW-2  | 12 VDC        | 225 Ω                     | 640 mW                       | < 7.2 V         | > 1.0 V         |
| G8NW-2L |               | 180 Ω                     | 800 mW                       | < 6.5 V         |                 |
| G8NW-2S |               |                           |                              | < 6.5 V         |                 |
| G8NW-2H |               | 130 Ω                     | 1108 mW                      | < 7.2 V         |                 |
| G8NW-2F |               |                           |                              | < 5.5 V         |                 |
| G8NW-2U |               | –                         | –                            | –               |                 |
| G8NW-2R |               |                           |                              |                 |                 |
| G8NW-2C |               |                           |                              |                 |                 |

# Characteristics

|   |                               |  |
|---|-------------------------------|--|
| <b>Max. initial contact voltage drop/resistance</b> |                               | 250 mV @ 10 A/50 mΩ @ 1 A  |
| <b>Operate time</b>                                 |                               | 10 ms max. (2.5 ms typical) @ 12 VDC   |
| <b>Release time</b>                                 |                               | 10 ms max. (1.2 ms typical) (see Note)   |
| <b>Bounce time</b>                                  | <b>Operate</b>                | 5 ms max. (0.5 ms typical)   |
|   | <b>Release</b>                | 10 ms max. (4.0 ms typical)  |
| <b>Switching frequency</b>                          | <b>Mechanical</b>             | 18,000 operations per hour   |
|   | <b>Electrical</b>             | 1,800 operations per hour (under rated loading)  |
| <b>Insulation resistance</b>                        |                               | 100 MΩ min. (@ 500 VDC)  |
| <b>Dielectric strength</b>                          |                               | 1.0 mA max. leakage at 500 VAC, 50-60 Hz for 1 minute between coil & contacts and between contacts |
| <b>Vibration</b>                                    | <b>Mechanical durability</b>  | 10-500 Hz, 44.1 m/s <sup>2</sup>   |
|   | <b>Malfunction durability</b> | 10-500 Hz, 44.1 m/s <sup>2</sup>   |
| <b>Shock</b>  | <b>Mechanical durability</b>  | 1000 m/s <sup>2</sup>  |
|   | <b>Malfunction durability</b> | 100 m/s <sup>2</sup> min.  |
| <b>Ambient operating temperature</b>                |                               | -40°C to 85°C (105°C max. for -L and -H types)   |
| <b>Humidity</b>                                     |                               | 35% to 85% RH  |
| <b>Service life</b>                                 | <b>Mechanical</b>             | 1,000,000 operations   |
|   | <b>Electrical</b>             | 100,000 operations (load dependant)  |
| <b>Weight</b>                                       |                               | 8.0 g (approx.)  |

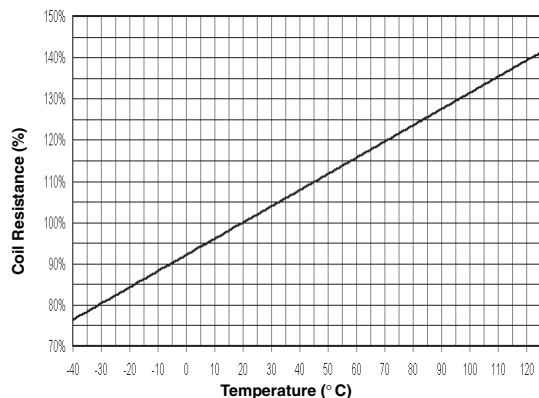
**Note:** External coil suppression will cause a measurable increase in release times and may cause the relay's characteristics to fall out of the specifications given here.

## Characteristics Reference Data

### ■ Durability Test Data

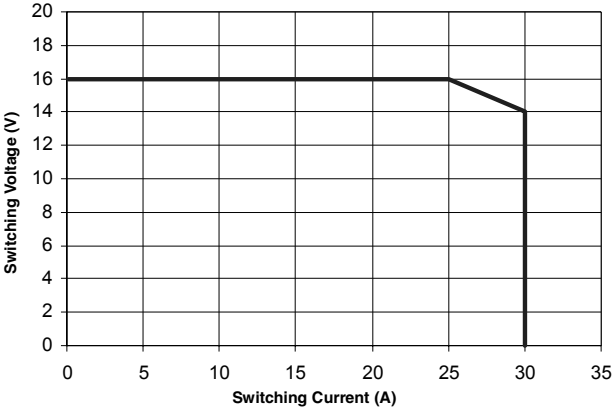
| Relay                   | Load type                   | Current                 | Cycles tested |
|-------------------------|-----------------------------|-------------------------|---------------|
| G8N /<br>G8NW /<br>G8ND | Power window motor (locked) | 26 A                    | 200,000       |
|                         | Door lock motor             | 27 A<br>8A Steady state | 130,000       |

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

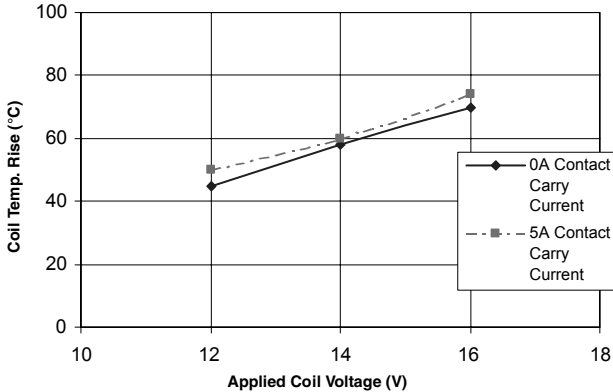


Example: Resistance of 225Ω coil  
 = 75% of 225Ω at -40° C, or 169Ω  
 = 100% of 225Ω at 20° C, or 225Ω  
 = 125% of 225Ω at 85° C, or 281Ω

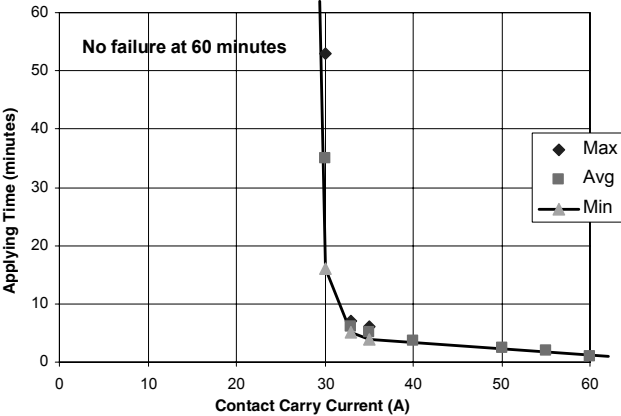
Load Limit Curve



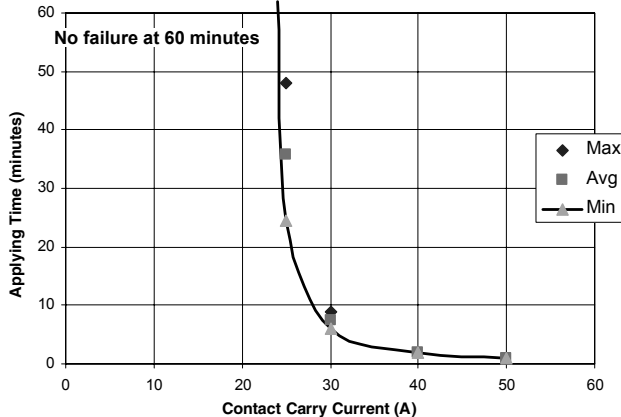
Coil Temperature vs. Applied Voltage at 20°C (G8N-1, 225Ω coil)



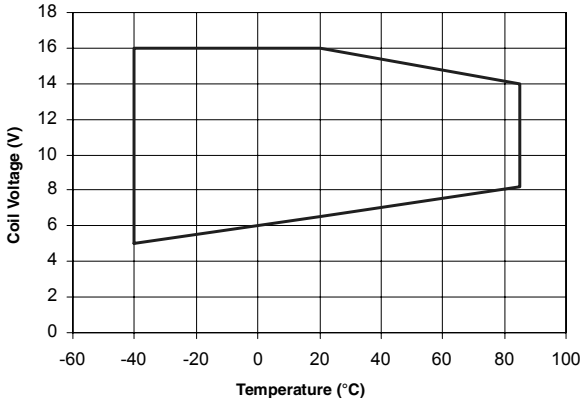
Overcurrent Energization (20°C, G8N-1 225Ω coil, 4 samples)



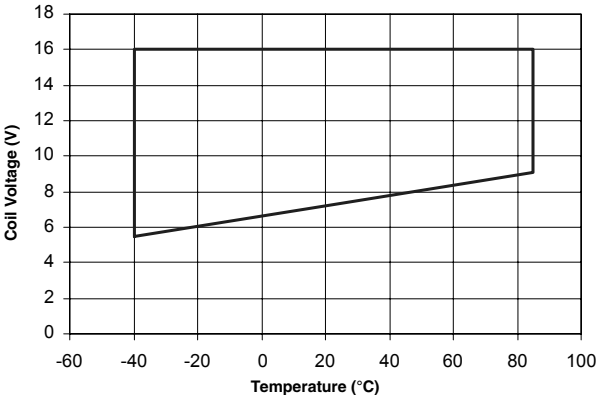
Overcurrent Energization (85°C, G8N-1 225Ω coil, 4 samples)



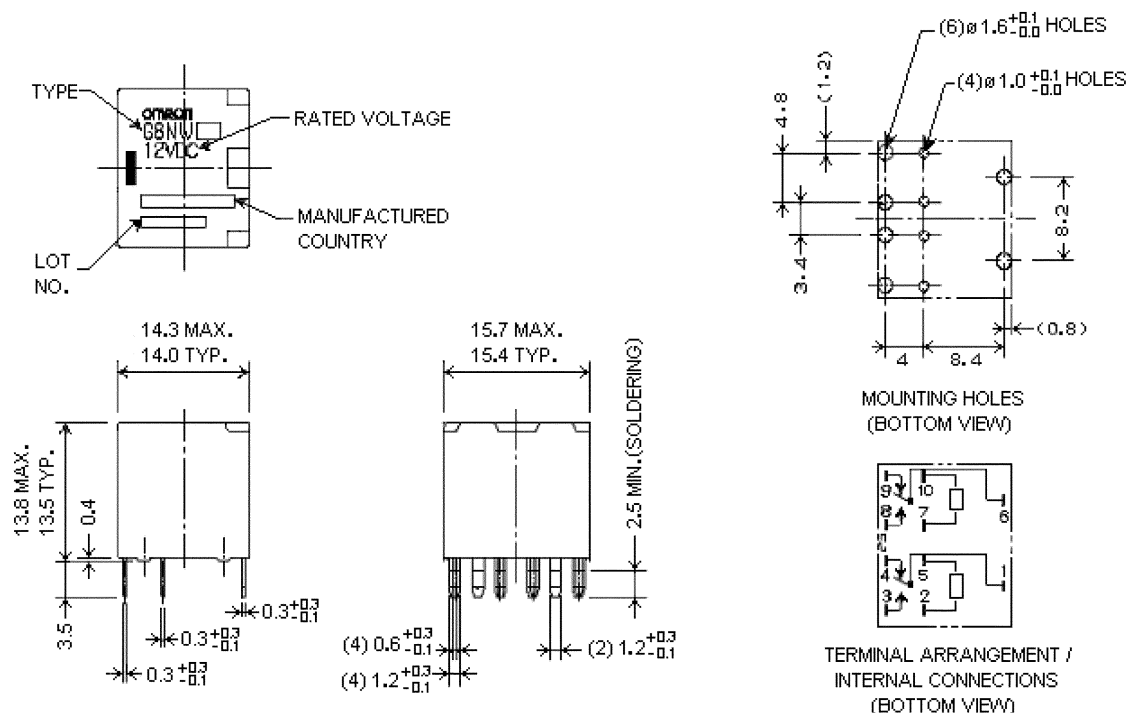
Operating Voltage Range (G8N-1, 180Ω coil)



Operating Voltage Range (G8N-1, 225Ω coil)

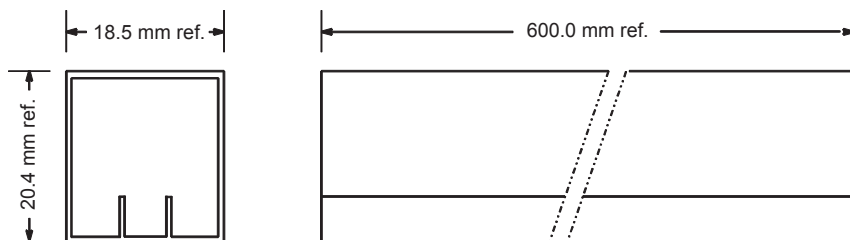


# Dimensions



**Note:** G8NW-2C type terminals are 1.9+0.3mm (not 3.5mm) for pin in paste solder process.

## ■ Tube Packaging



36 relays per tube, 30 tubes per box (1080 relays per box).

- Note:**
1. For additional information, please contact Omron.
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  5. All data at 20° C unless otherwise noted.
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Cat. No. J01C-E-01

01/07

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