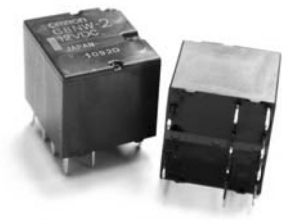
# Ultra-Miniature Automotive PCB Relay
# G8NW-2

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

# Characteristics

| | | |
|---|---|---|
| **Max. initial contact voltage drop/resistance** | | 250 mV @ 10 A/50 mΩ @ 1 A |
| **Operate time** | | 10 ms max. (2.5 ms typical) @ 12 VDC |
| **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, 44.1 $m/s^2$ |
| | **Malfunction durability** | 10-500 Hz, 44.1 $m/s^2$ |
| **Shock** | **Mechanical durability** | 1000 $m/s^2$ |
| | **Malfunction durability** | 100 $m/s^2$ min. |
| **Ambient operating temperature** | | -40°C to 85°C (105°C max. for -L and -H types) |
| **Humidity** | | 35% to 85% RH |
| **Service life** | **Mechanical** | 1,000,000 operations |
| | **Electrical** | 100,000 operations (load dependant) |
| **Weight** | | 8.0 g (approx.) |

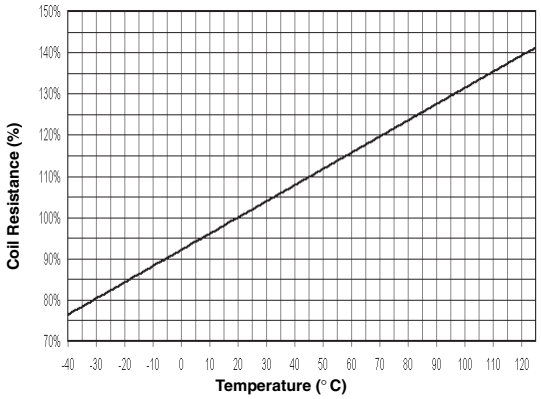
**Note:** External coil suppression will cause a measurable increase in release times and may cause the relay's characteristics to fall out of the specifications given here.

# Characteristics Reference Data

## ■ Durability Test Data

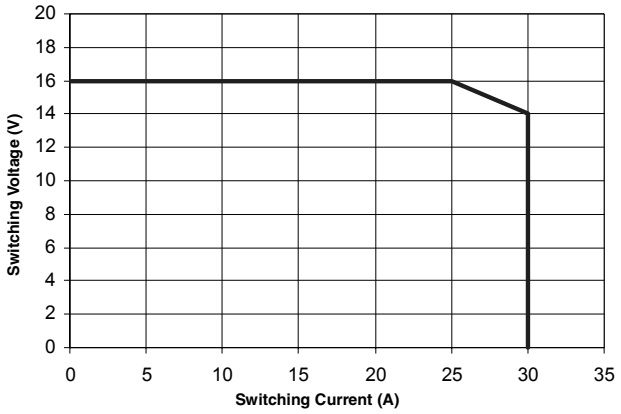
| Relay | Load type | Current | Cycles tested |
|---|---|---|---|
| **G8N / G8NW / G8ND** | Power window motor (locked) | 26 A | 200,000 |
| | Door lock motor | 27 A<br>8A Steady state | 130,000 |

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

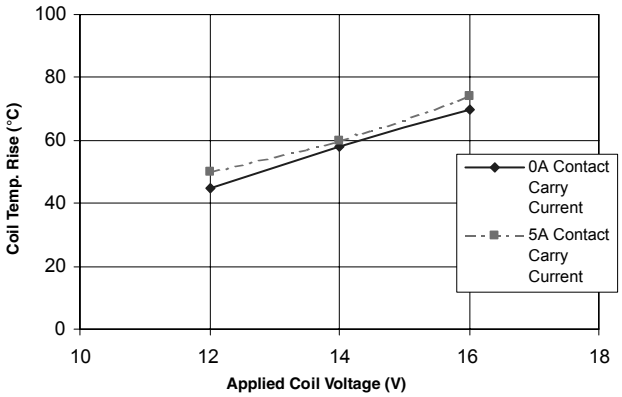



Example: Resistance of 225Ω coil
= 75% of 225Ω at -40° C, or 169Ω
= 100% of 225Ω at 20° C, or 225Ω
= 125% of 225Ω at 85° C, or 281Ω

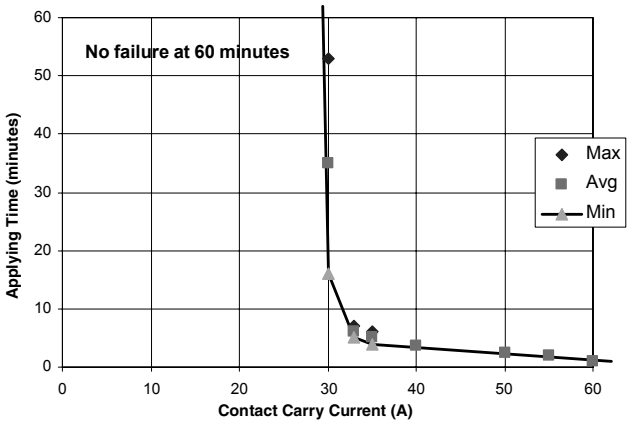
### Load Limit Curve



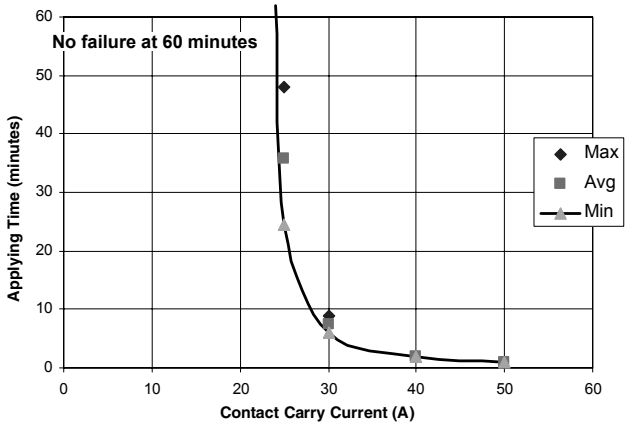

### Coil Temperature vs. Applied Voltage at 20°C (G8N-1, 225Ω coil)



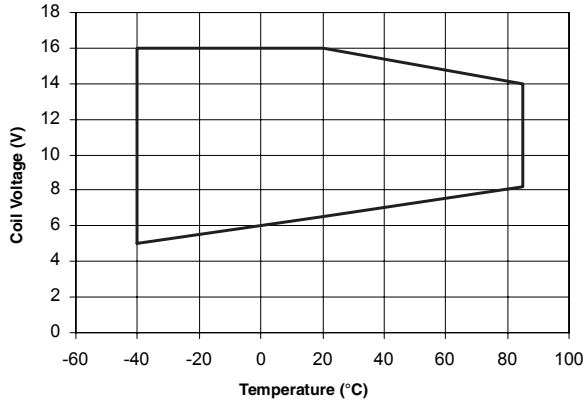

### Overcurrent Energization (20°C, G8N-1 225Ω coil, 4 samples)



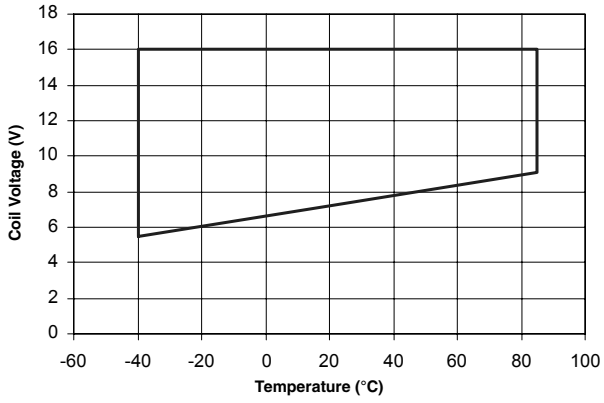

### Overcurrent Energization (85°C, G8N-1 225Ω coil, 4 samples)



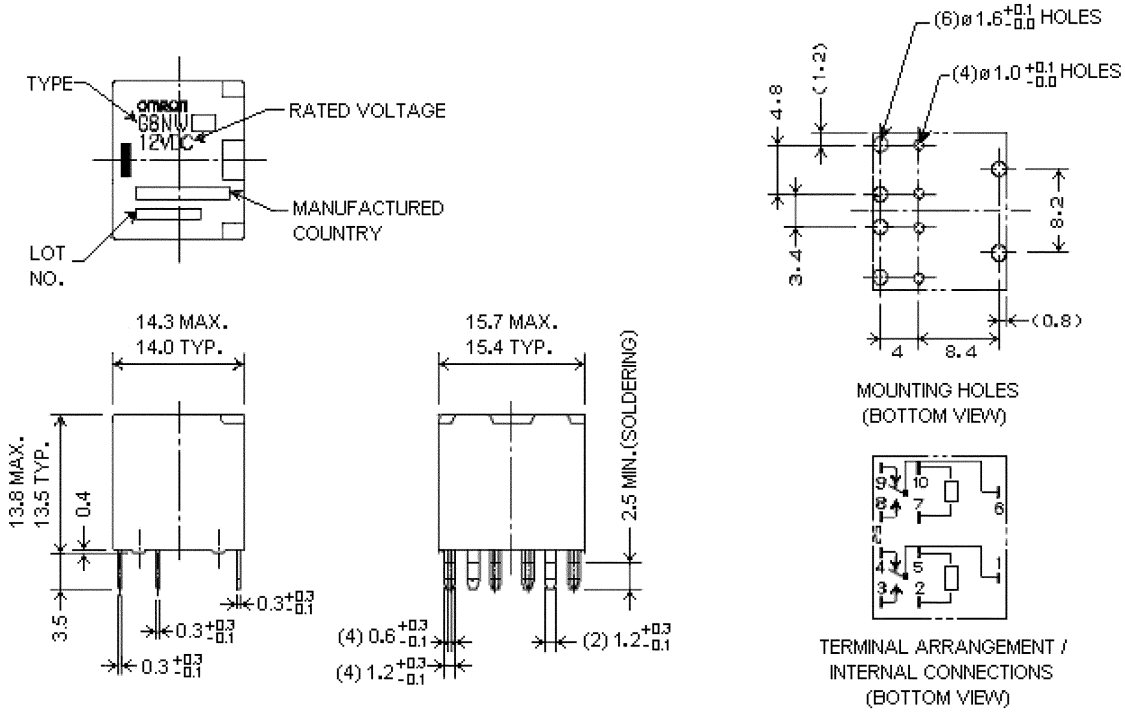

### Operating Voltage Range (G8N-1, 180Ω coil)




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

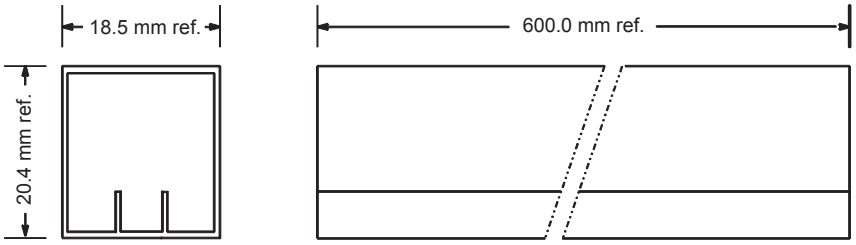


# Dimensions




**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.

**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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