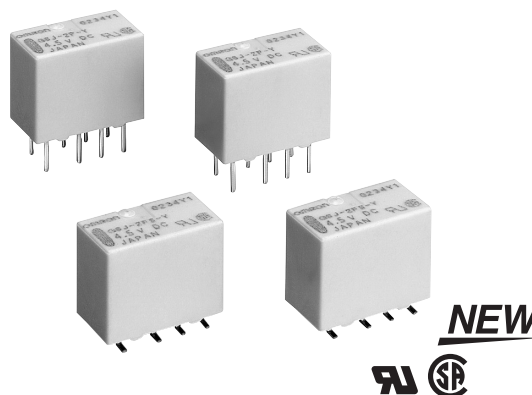


# Surface-mounting Relay

## G6J-Y

### Ultra-compact and Slim DPDT Relay

- Dimensions of  $5.7 \times 10.6 \times 9$  mm (W  $\times$  L  $\times$  H) represent a reduction of approximately 56% in mounting area compared with the OMRON G6S, for higher-density mounting.
- Dielectric strength of 1,500 VAC and an impulse withstand voltage of 2,500 V for  $2 \times 10 \mu\text{s}$  (conforms to North American Telcordia specifications (formerly Bellcore)).
- Conforms to FCC Part 68 (i.e., impulse withstand voltage of 1,500 V for  $10 \times 160 \mu\text{s}$  between coil and contacts and between contacts of the same polarity).
- Single-winding latching models to save energy.
- Conforms to UL60950 (File No. E41515)/CSA C22.2 No. 60950 (File No. LR31928).
- RoHS Compliant.



## Ordering Information

| Item                |              | Model        |                      |
|---------------------|--------------|--------------|----------------------|
| Terminal            | Contact form | Non-latching | Single coil latching |
| PCB through-hole    | DPDT         | G6J-2P-Y     | G6JU-2P-Y            |
| SMT Gull-wing       |              | G6J-2FL-Y    | G6JU-2FL-Y           |
| SMT Shortened leads |              | G6J-2FS-Y    | G6JU-2FS-Y           |

**Note:** 1. When ordering, add the rated coil voltage to the model number.  
Example: G6J-2P-Y DC12

Rated coil voltage

2. When ordering tape packing, add "-TR" to the model number.

Example: G6J-2P-Y-TR DC12

Tape packing

Be sure since "-TR" is not part of the relay model number, it is not marked on the relay case.

### Model Number Legend:

G6J       -Y-   DC  

1 2 3 4 5

#### 1. Relay function

None: Non-latching, standard

U: Single-coil latching relay

#### 2. Contact form

2: DPDT

#### 3. Terminal shape

P: PCB through-hole terminals

FL: SMT Gull-wing

FS: SMT shortened leads

#### 4. Packaging

None: Tube packaging

TR: Tape and reel packaging

#### 5. Rated Coil Voltage

3, 4.5, 5, 12, 24

## Application Examples

Communications equipment, measurement devices, computer peripheral devices, office automation equipment, and audio-visual products.

# Specifications

## ■ Contact Data

|                                    |                                 |
|------------------------------------|---------------------------------|
| Rated load                         | 0.3 A @ 125 VAC<br>1 A @ 30 VDC |
| Contact material                   | Ag (Au Clad)                    |
| Max. carry current                 | 1 A                             |
| Max. operating voltage             | 125 VAC, 110 VDC                |
| Max. operating current             | 1 A                             |
| Max. switching capacity            | 37.5 VA, 30 W                   |
| Min. permissible load (see note 1) | 10m VDC, 10μA                   |

**Note: 1.** This value was measured at a switching frequency of 120 operations/min and the criterion of contact resistance is 5% of the load impedance. This value may vary depending on the operating frequency, operating conditions, expected reliability level of the relay, etc. Always double-check relay suitability under actual load conditions.

## ■ Coil Data

### G6J-Y Standard, Non-latching (G6J-2P-Y, G6J-2FS-Y, G6J-2FL-Y)

| Rated voltage (VDC) | Rated current (mA) | Coil resistance (Ω) | Pick-up voltage    | Drop-out voltage | Max. voltage | Power consumption (mW) |
|---------------------|--------------------|---------------------|--------------------|------------------|--------------|------------------------|
|                     |                    |                     | % of rated voltage |                  |              |                        |
| 3                   | 48.0               | 62.5                | 75% max.           | 10% min.         | 150% max.    | 140                    |
| 4.5                 | 32.6               | 137.9               |                    |                  |              |                        |
| 5                   | 28.9               | 173.1               |                    |                  |              |                        |
| 12                  | 12.3               | 976.8               |                    |                  |              |                        |
| 24                  | 9.2                | 2,600.5             |                    |                  |              | 230                    |

- Note: 1.** 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 maximum voltage is the highest voltage that can be imposed on the Relay coil instantaneously.

### G6JU-Y Single coil, Latching (G6JU-2P-Y, G6JU-2FL-Y, G6JU-2FS-Y)

| Rated voltage (VDC) | Rated current (mA) | Coil resistance (Ω) | Set voltage        | Reset voltage | Max. voltage | Power consumption (mW) |
|---------------------|--------------------|---------------------|--------------------|---------------|--------------|------------------------|
|                     |                    |                     | % of rated voltage |               |              |                        |
| 3                   | 33.7               | 89.0                | 75% max.           | 75% max.      | 150% max.    | 100                    |
| 4.5                 | 22.0               | 204.3               |                    |               |              |                        |
| 5                   | 20.4               | 245.5               |                    |               |              |                        |
| 12                  | 9.0                | 1,329.2             |                    |               |              |                        |

- Note: 1.** 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 maximum voltage is the highest voltage that can be imposed on the Relay coil instantaneously.

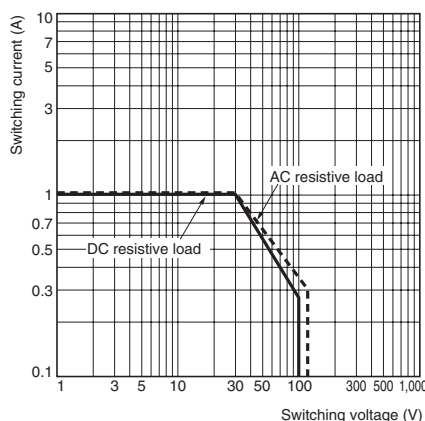
## ■ Characteristics

| Item                                         |                        | Standard non-latching relays                                               | Single coil latching relays             |
|----------------------------------------------|------------------------|----------------------------------------------------------------------------|-----------------------------------------|
|                                              |                        | G6J-2P-Y, G6J-2FS-Y, G6J-2FL-Y                                             | G6JU-2P-Y, G6JU-2FS-Y, G6JU-2FL-Y       |
| Contact resistance (initial)<br>(See note 1) |                        | 100 mΩ max.                                                                |                                         |
| Operating (set) time<br>(See note 2)         |                        | 3 ms max. (approx. 1.6 ms)                                                 | 3 ms max. (approx. 1.6 ms)              |
| Release (reset) time<br>(See note 2)         |                        | 3 ms max. (approx. 1.0 ms)                                                 | 3 ms max. (approx. 0.9 ms)              |
| Minimum set/reset pulse width                |                        | ---                                                                        | 10 ms min. (at 100% rated coil voltage) |
| Insulation resistance<br>(See note 3)        |                        | 1,000 MΩ min. (at 500 VDC)                                                 |                                         |
| Dielectric strength                          |                        | 1,500 VAC, 50/60 Hz for 1 min. between coil and contacts                   |                                         |
|                                              |                        | 1,000 VAC, 50/60 Hz for 1 min. between contacts of different polarity      |                                         |
|                                              |                        | 750 VAC, 50/60 Hz for 1 min. between contacts of the same polarity         |                                         |
| Surge withstand voltage                      |                        | 2,500 VAC, 2 x 10 μs between coil and contacts                             |                                         |
|                                              |                        | 1,500 VAC, 10 x 160 μs between contacts of the same and different polarity |                                         |
| Vibration resistance                         | Mechanical durability  | 10 to 55 Hz 2.5-mm single amplitude (5-mm double amplitude)                |                                         |
|                                              | Malfunction durability | 10 to 55 Hz 1.65-mm single amplitude (3.3-mm double amplitude)             |                                         |
| Shock resistance                             | Mechanical durability  | 1,000 m/s <sup>2</sup> (approx. 100G)                                      |                                         |
|                                              | Malfunction durability | 750 m/s <sup>2</sup> (approx. 75G)                                         |                                         |
| Service life                                 | Mechanical             | 50,000,000 operations min. (at 36,000 operations/hour)                     |                                         |
|                                              | Electrical             | 100,000 operations min. (with a rated load at 1,800 operations/hour)       |                                         |
| Ambient temperature                          |                        | -40 to 85°C (-40 to 185°F) with no icing or condensation                   |                                         |
| Humidity                                     |                        | 5% to 85% RH                                                               |                                         |
| Weight                                       |                        | Approx. 1.0 g                                                              |                                         |

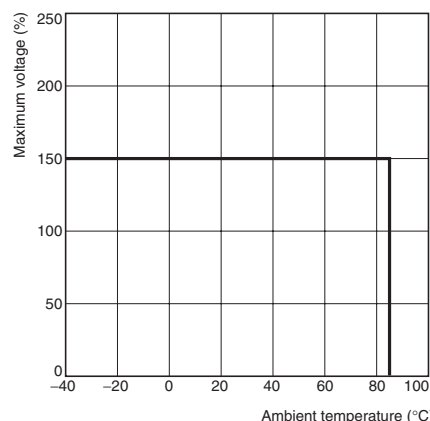
- Note:**
1. The contact resistance was measured with 10 mA at 1 VDC with a fall-of-potential method.
  2. Values in parentheses are typical values unless otherwise stated.
  3. The insulation resistance was measured with a 500-VDC Megger Tester applied to the same parts as those for checking the dielectric strength.
  4. The above values are initial values.

# Characteristic Data

## Maximum Switching Capacity

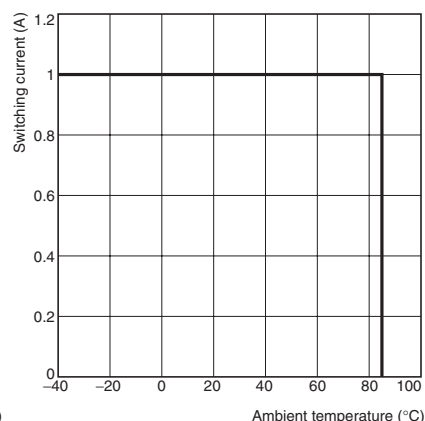


## Ambient Temperature vs. Maximum Voltage

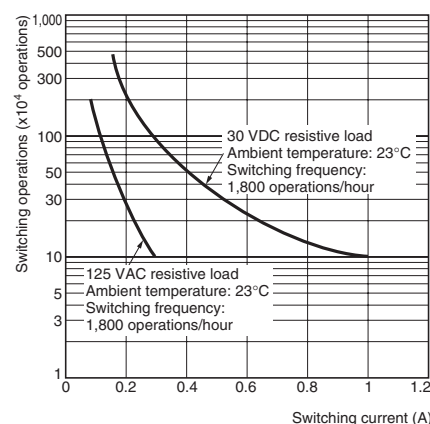


**Note:** "Maximum voltage" is the maximum voltage that can be applied to the Relay coil.

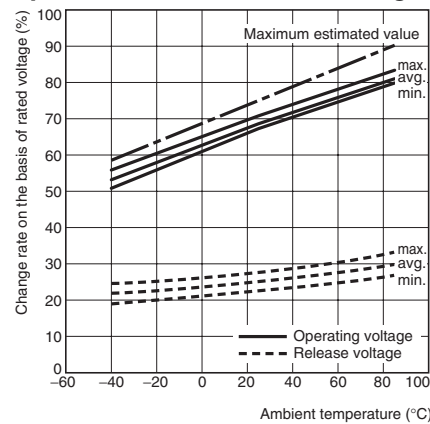
## Ambient Temperature vs. Switching Current



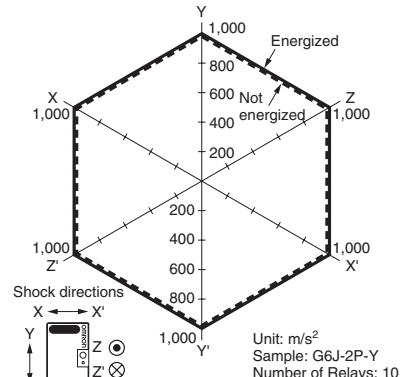
## Electrical Life Expectancy



## Ambient Temperature vs. Must Operate or Must Release Voltage

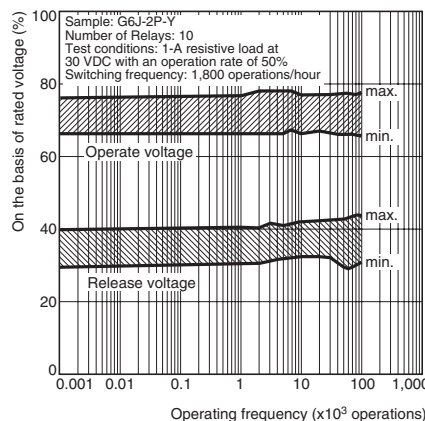


## Shock Malfunction

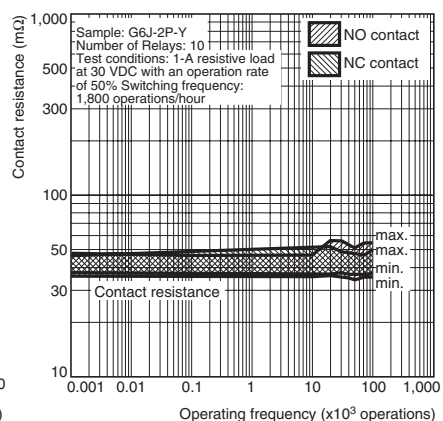


Conditions: Shock is applied in  $\pm X$ ,  $\pm Y$ , and  $\pm Z$  directions three times each with and without energizing the Relays to check the number of contact malfunctions.

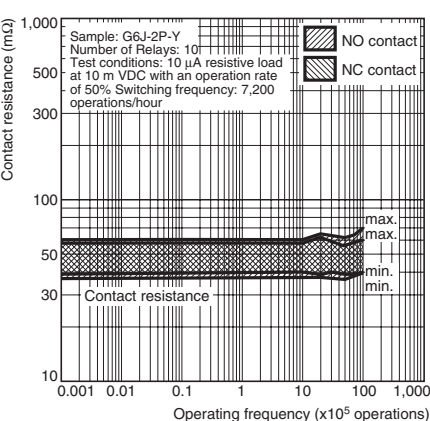
## Electrical Life Expectancy (with Must Operate and Must Release Voltage) (See note.)



## Electrical Life Expectancy (Contact resistance) (See note.)

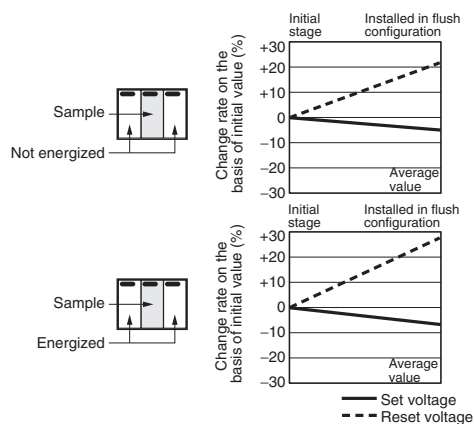


## Contact Reliability Test (See note.)

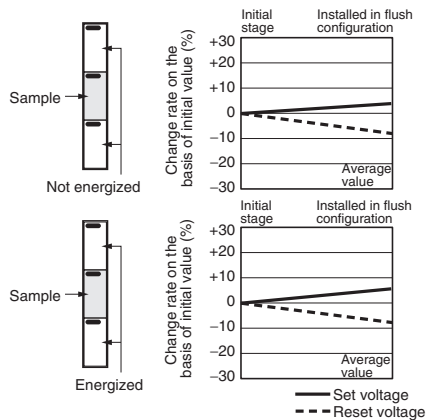


**Note:** The tests were conducted at an ambient temperature of 23°C.

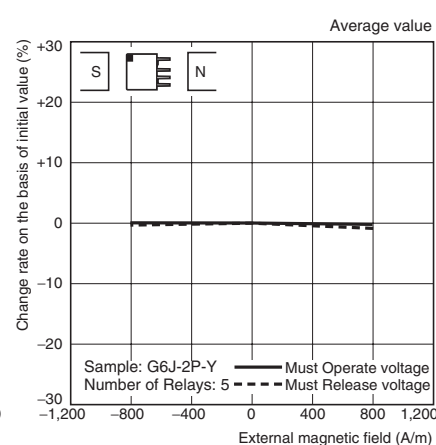
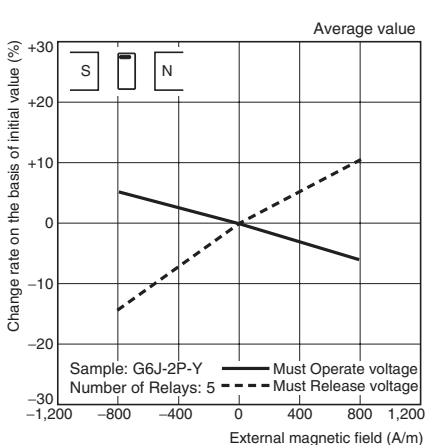
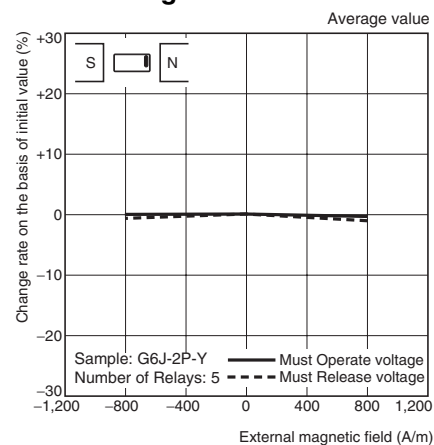
## Mutual Magnetic Interference



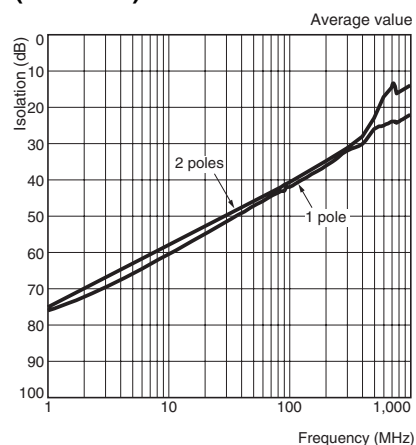
## Mutual Magnetic Interference



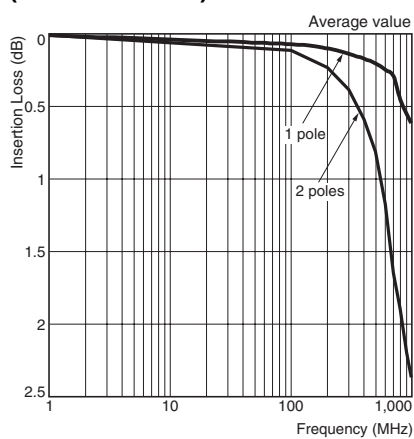
## External Magnetic Interference



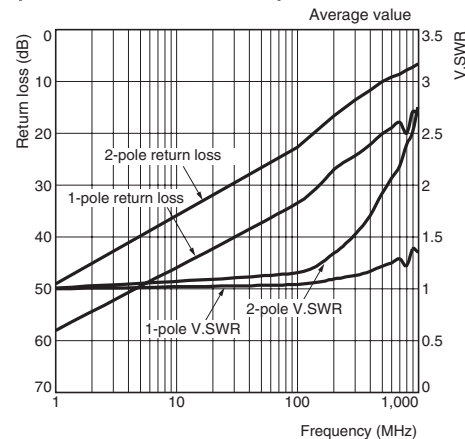
## High-frequency Characteristics (Isolation)



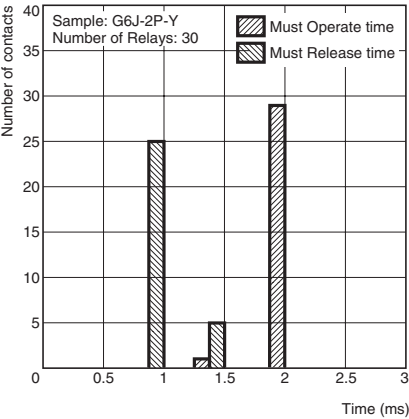
## High-frequency Characteristics (Insertion Loss)



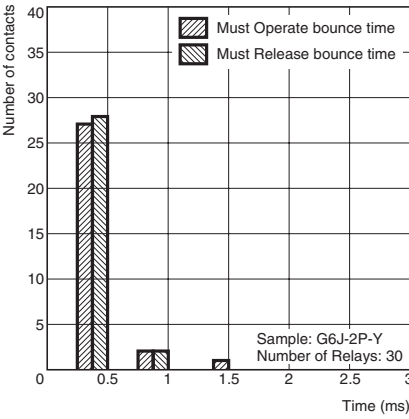
## High-frequency Characteristics (Return Loss, V.SWR)



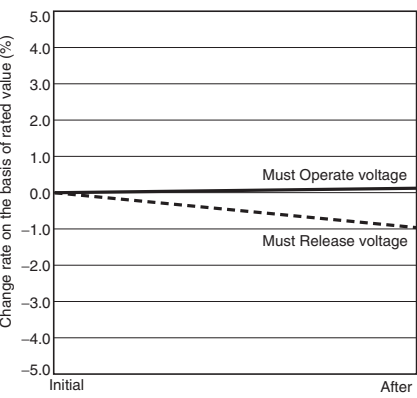
Must Operate and Must Release  
Time Distribution (See note.)



Must Operate and Must Release  
Bounce Time Distribution  
(See note.)



Vibration Resistance



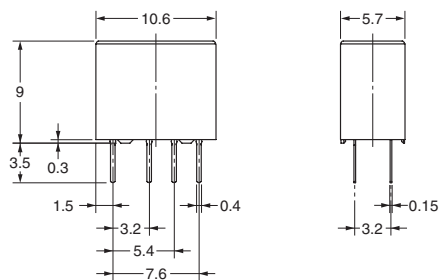
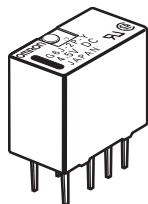
**Note:** The tests were conducted at an ambient temperature of 23°C.

# Dimensions

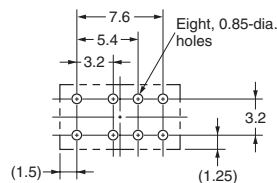
Unit: mm (inch)

**Note:** A tolerance of  $\pm 0.3$  ( $\pm 0.01$ ) applies to every dimension in the following drawings unless otherwise stated.

## G6J-2P-Y G6JU-2P-Y

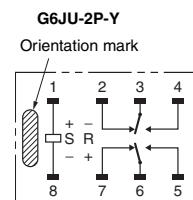
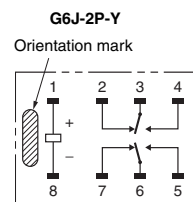


### Mounting Dimensions (Bottom View)\*

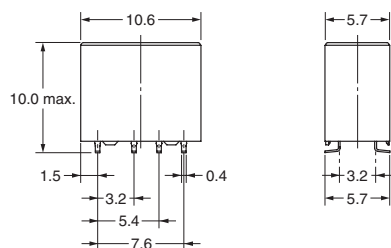
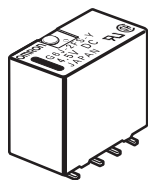


\*Tolerance  $\pm 0.1$  mm

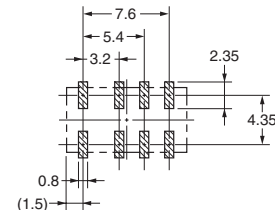
### Terminal Arrangement/ Internal Connections (Bottom View)



## G6J-2FS-Y G6JU-2FS-Y

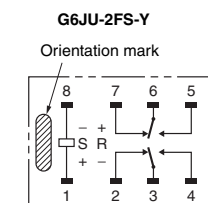
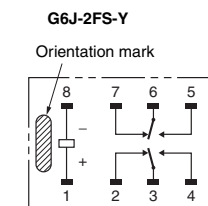


### Mounting Dimensions (Top View)\*

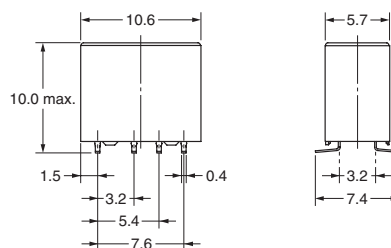
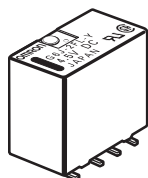


\*Tolerance  $\pm 0.1$  mm

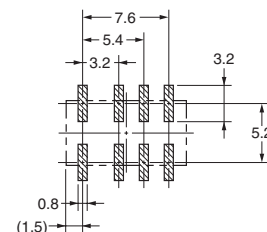
### Terminal Arrangement/ Internal Connections (Top View)



## G6J-2FL-Y G6JU-2FL-Y

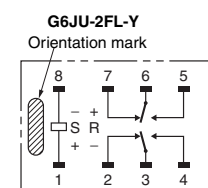
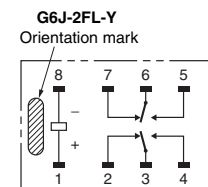


### Mounting Dimensions (Top View)\*



\*Tolerance  $\pm 0.1$  mm

### Terminal Arrangement/ Internal Connections (Top View)

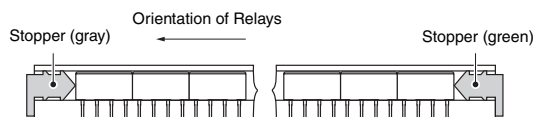


# Stick Packing and Tape Packing

## 1. Stick Packing

Relays in stick packing are arranged so that the orientation mark of each Relay is on the left side.

Always confirm that the Relays are in the correct orientation when mounting the Relays to the PCBs.



Stick length: 555 mm (stopper not included)

No. of Relays per stick: 50

## 2. Tape Packing (Surface-mounting Terminal Relays)

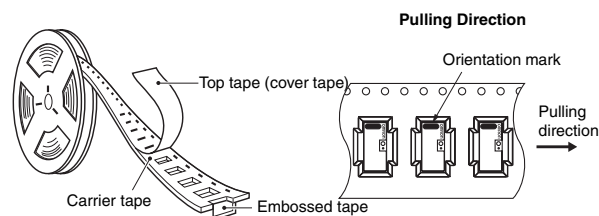
When ordering Relays in tape packing, add the prefix “-TR” to the model number, otherwise the Relays in stick packing will be provided.

Tape type: TB2412R (EIAJ (Electronic Industrial Association of Japan))

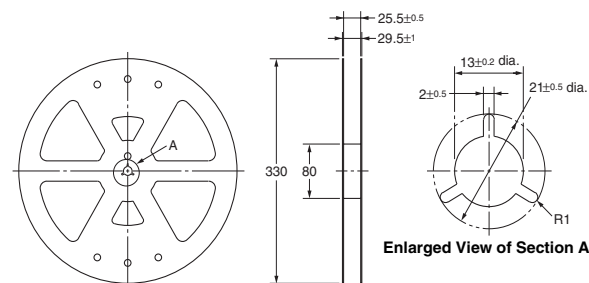
Reel type: R24D (EIAJ (Electronic Industrial Association of Japan))

Relays per reel: 400

### Direction of Relay Insertion

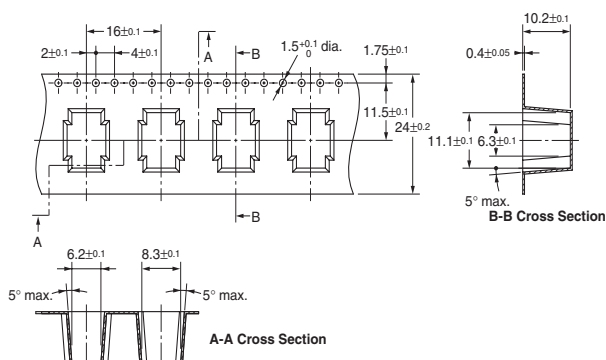


### Reel Dimensions

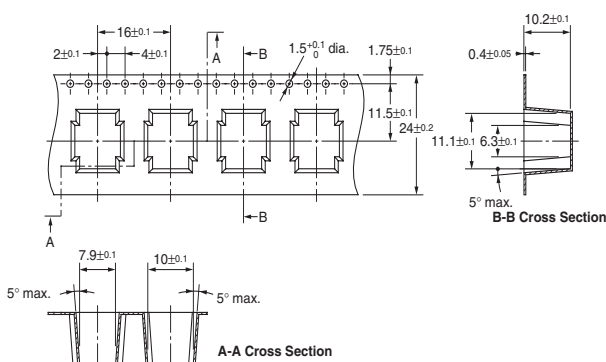


## Carrier Tape Dimensions

### G6J-2FS-Y, G6JU-2FS-Y

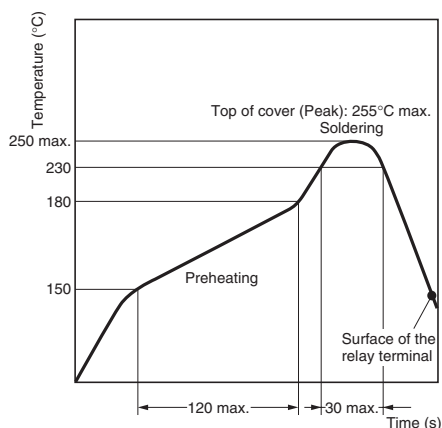


### G6J-2FL-Y, G6JU-2FL-Y



# Recommended Soldering Method

## IRS Method (for Surface-mounting Terminal Relays)



**Note:** Temperatures are given for the surface of the terminal.

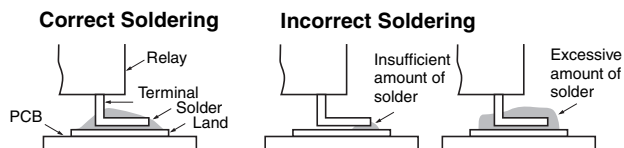
## Approved Standards

UL approval:UL60950 (File No. E41515)

CSA approval:C22.2 No. 60950 (File No. LR31928)

| Contact form | Coil rating                          | Contact rating   |
|--------------|--------------------------------------|------------------|
| DPDT         | G6J-2P-Y, 2FS-Y, 2FL-Y: 3 to 24 VDC  | 1 A at 30 VDC    |
|              | G6JU-2P-Y, 2FS-Y, 2FL-Y: 3 to 24 VDC | 0.5 A at 60 VDC  |
|              |                                      | 0.3 A at 125 VAC |

- The thickness of cream solder to be applied should be between 150 and 200  $\mu\text{m}$  on OMRON's recommended PCB pattern.
- In order to perform correct soldering, it is recommended that the correct soldering conditions be maintained as shown below on the left-hand side.



Visually check that the Relay is properly soldered.

# Precautions

## Correct Use

- **Long Term Current Carrying**  
Under a long-term current carrying without switching, the insulation resistance of the coil goes down gradually due to the heat generated by the coil itself. Furthermore, the contact resistance of the Relay will gradually become unstable due to the generation of film on the contact surfaces. A Latching Relay can be used to prevent these problems. When using a non-latching relay, the design of the fail-safe circuit provides protection against contact failure and open coils.

## Handling of Surface-mounting Relays

Use the Relay as soon as possible after opening the moisture-proof package. If the Relay is left for a long time after opening the moisture-proof package, the appearance may suffer and seal failure may occur after the solder mounting process. To store the Relay after opening the moisture-proof package, place it into the original package and seal the package with adhesive tape.

When washing the product after soldering the Relay to a PCB, use a water-based solvent or alcohol-based solvent, and keep the solvent temperature at less than 40°C. Do not put the relay in a cold cleaning bath immediately after soldering.

## Soldering

Solder: JIS Z3282, H63A

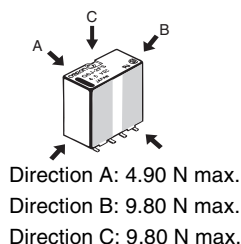
Soldering temperature: Approx. 250°C (At 260°C if the DWS method is used.)

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.



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

## Environmental Conditions During Operation, Storage, and Transportation

Protect the Relays from direct sunlight and keep the Relays under normal temperature, humidity, and pressure.

## Mounting Latching Relays

The Latching Relays are reset before shipping. If excessive vibration or shock is imposed, however, the Latching Relays may be set accidentally. Be sure to apply a reset signal before use. Make sure that the vibration or shock that is generated by other devices on the same panel does not exceed the rated value of the Latching Relays.

## Maximum Voltage

The maximum voltage of the coil can be obtained from the coil temperature increase and the heat-resisting temperature of coil insulating sheath material. (Exceeding the heat-resisting temperature may result in burning or short-circuiting.) The maximum voltage also involves important restrictions. Maximum voltage:

- must not cause thermal changes or deterioration of the insulating material.
- must not cause damage to other control devices.
- must not cause any harmful effect on people.
- must not cause fire.

Therefore, be sure not to exceed the maximum voltage specified in the catalog.

As a rule, the rated voltage must be applied to the coil. A voltage exceeding the rated value, however, can be applied to the coil provided that the voltage is less than the maximum voltage. It must be noted that continuous voltage application to the coil will cause a coil temperature increase which could deteriorate the coil insulation, shorten the relay's electrical life, or affect various characteristics of the relay.

## Coating

Relays mounted on PCBs may be coated or washed. Do not apply coatings or detergents containing silicone.

## Other Handling

Dropping the relay may impose excess shock that exceeds the specifications. Do not use any relay that has been dropped.

# Terms and Conditions of Sale

1. Offer; Acceptance. These terms and conditions (these "Terms") are deemed part of all quotations, acknowledgments, invoices, purchase orders and other documents, whether electronic or in writing, relating to the sale of products or services (collectively, the "Products") by Omron Electronic Components LLC ("Seller"). Seller hereby objects to any terms or conditions proposed in Buyer's purchase order or other documents which are inconsistent with, or in addition to, these Terms.
2. Prices; Payment. All prices stated are current, subject to change without notice by Seller. Buyer agrees to pay the price in effect at time of shipment. Payments for Products received are due net 30 days unless otherwise stated in the invoice.
3. Discounts. Cash discounts, if any, will apply only on the net amount of invoices sent to Buyer after deducting transportation charges, taxes and duties, and will be allowed only if (i) the invoice is paid according to Seller's payment terms and (ii) Buyer has no past due amounts owing to Seller.
4. Currencies. If the prices quoted herein are in a currency other than U.S. dollars, Buyer shall make remittance to Seller at the then current exchange rate most favorable to Seller and which is available on the due date; provided that if remittance is not made when due, Buyer will convert the amount to U.S. dollars at the then current exchange rate most favorable to Seller available during the period between the due date and the date remittance is actually made.
5. Governmental Approvals. Buyer shall be responsible for, and shall bear all costs involved in, obtaining any government approvals required for the importation or sale of the Products.
6. Taxes. All taxes, duties and other governmental charges (other than general real property and income taxes), including any interest or penalties thereon, imposed directly or indirectly on Seller or required to be collected directly or indirectly by Seller for the manufacture, production, sale, delivery, importation, consumption or use of the Products sold hereunder (including customs duties and sales, excise, use, turnover and license taxes) shall be charged to and remitted by Buyer to Seller.
7. Financial. If the financial position of Buyer at any time becomes unsatisfactory to Seller, Seller reserves the right to stop shipments or require satisfactory security or payment in advance. If Buyer fails to make payment or otherwise comply with these Terms or any related agreement, Seller may (without liability and in addition to other remedies) cancel any unshipped portion of Products sold hereunder and stop any Products in transit until Buyer pays all amounts, including amounts payable hereunder, whether or not then due, which are owing to it by Buyer. Buyer shall in any event remain liable for all unpaid accounts.
8. Cancellation; Etc. Orders are not subject to rescheduling or cancellation unless Buyer indemnifies Seller fully against all costs or expenses arising in connection therewith.
9. Force Majeure. Seller shall not be liable for any delay or failure in delivery resulting from causes beyond its control, including earthquakes, fires, floods, strikes or other labor disputes, shortage of labor or materials, accidents to machinery, acts of sabotage, riots, delay in or lack of transportation or the requirements of any government authority.
10. Shipping; Delivery. Unless otherwise expressly agreed in writing by Seller:
  1. Shipments shall be by a carrier selected by Seller;
  2. Such carrier shall act as the agent of Buyer and delivery to such carrier shall constitute delivery to Buyer;
  3. All sales and shipments of Products shall be FOB shipping point (unless otherwise stated in writing by Seller), at which point title to and all risk of loss of the Products shall pass from Seller to Buyer, provided that Seller shall retain a security interest in the Products until the full purchase price is paid by Buyer;
  4. Delivery and shipping dates are estimates only.
  5. Seller will package Products as it deems proper for protection against normal handling and extra charges apply to special conditions.
11. Claims. Any claim by Buyer against Seller for shortage or damage to the Products occurring before delivery to the carrier must be presented in writing to Seller within 30 days of receipt of shipment and include the original transportation bill signed by the carrier noting that the carrier received the Products from Seller in the condition claimed.
12. Warranties. (a) Exclusive Warranty. Seller's exclusive warranty is that the Products will be free from defects in materials and workmanship for a period of twelve months from the date of sale by Seller (or such other period expressed in writing by Seller). Seller disclaims all other warranties, express or implied. (b) Limitations. SELLER MAKES NO WARRANTY OR REPRESENTATION, EXPRESS OR IMPLIED, ABOUT NON-INFRINGEMENT, MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE OF THE PRODUCTS. BUYER ACKNOWLEDGES THAT IT ALONE HAS DETERMINED THAT THE PRODUCTS WILL SUITABLY MEET THE REQUIREMENTS OF THEIR INTENDED USE. Seller further disclaims all warranties and responsibility of any type for claims or expenses based on infringement by the Products or otherwise of any intellectual property right. (c) Buyer Remedy. Seller's sole obligation hereunder shall be to replace (in the form originally shipped with Buyer responsible for labor charges for removal or replacement thereof) the non-complying Product or, at Seller's election, to repay or credit Buyer an amount equal to the purchase price of the Product; provided that in no event shall Seller be responsible for warranty, repair, indemnity or any other claims or expenses regarding the Products unless Seller's analysis confirms that the Products were properly handled, stored, installed and maintained and not subject to contamination, abuse, misuse or inappropriate modification. Return of any Products by Buyer must be approved in writing by Seller before shipment. Seller shall not be liable for the suitability or unsuitability or the results from the use of Products in combination with any electrical or electronic components, circuits, system assemblies, or any other materials or substances or environments. Any advice, recommendations or information given orally or in writing are not to be construed as an amendment or addition to the above warranty.
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16. Miscellaneous. (a) Waiver. No failure or delay by Seller in exercising any right and no course of dealing between Buyer and Seller shall operate as a waiver of rights by Seller. (b) Assignment. Buyer may not assign its rights hereunder without Seller's written consent. (c) Law. These Terms are governed by Illinois law (without regard to conflict of law principles). Federal and state courts in Illinois shall have exclusive jurisdiction for any dispute hereunder. (d) Amendment. These Terms constitute the entire agreement between Buyer and Seller relating to the Products, and no provision may be changed or waived unless in writing signed by the parties. (e) Severability. If any provision hereof is rendered ineffective or invalid, such provision shall not invalidate any other provision. (f) Setoff. Buyer shall have no right to set off any amounts against the amount owing in respect of this invoice. (g) Definitions. As used herein, "including" means "including without limitation".

# Certain Precautions on Specifications and Use

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  - (ii) Energy control systems, combustion systems, railroad systems, aviation systems, medical equipment, amusement machines, vehicles, safety equipment, and installations subject to separate industry or government regulations.
  - (iii) Use in consumer products or any use in significant quantities.
  - (iv) Systems, machines and equipment that could present a risk to life or property. Please know and observe all prohibitions of use applicable to this product.

NEVER USE THE PRODUCT FOR AN APPLICATION INVOLVING SERIOUS RISK TO LIFE OR PROPERTY WITHOUT ENSURING THAT THE SYSTEM AS A WHOLE HAS BEEN DESIGNED TO ADDRESS THE RISKS, AND THAT THE OMRON PRODUCT IS PROPERLY RATED AND INSTALLED FOR THE INTENDED USE WITHIN THE OVERALL EQUIPMENT OR SYSTEM.
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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.



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