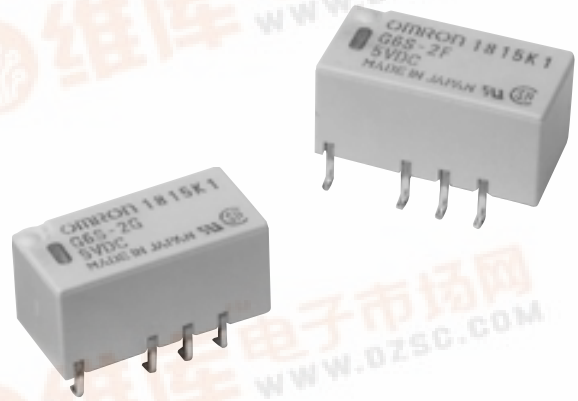




# Low Signal Relay

# G6S

- Third generation surface mount design
- Design is based on worldwide telecommunications, data communications, computer peripheral and office automation relay requirements
- High dielectric withstand voltage of 2,000 VAC between coil and contacts (standard type)
- Meets 2.5kV Bellcore surge requirement
- Offers significant board space savings
- European version certified for EN60950/EN41003 Supplementary Insulation at 250 V
- Available in PCB through-hole terminal configuration
- Tape and reel packaging option available



## Ordering Information

To Order: Select the part number and add the desired coil voltage rating, (e.g., G6S-2F-DC12).

### STANDARD VERSION

| Terminal         | Contact form | Part number   |                      |                    |                                     |
|------------------|--------------|---------------|----------------------|--------------------|-------------------------------------|
|                  |              | Non-latching  | Single coil latching | Dual coil latching | High-sensitivity dual coil latching |
| Gull-wing        | DPDT         | <b>G6S-2F</b> | <b>G6SU-2F</b>       | <b>G6SK-2F</b>     | <b>G6SK-2F-H</b>                    |
| Inside "L"       | DPDT         | <b>G6S-2G</b> | <b>G6SU-2G</b>       | <b>G6SK-2G</b>     | <b>G6SK-2G-H</b>                    |
| PCB through-hole | DPDT         | <b>G6S-2</b>  | <b>G6SU-2</b>        | <b>G6SK-2</b>      | <b>G6SK-2-H</b>                     |

### EUROPEAN VERSION

Certified for EN60950/EN41003 Supplementary Insulation at 250 V

| Terminal         | Contact form | Part number     |
|------------------|--------------|-----------------|
|                  |              | Non-latching    |
| Gull-wing        | DPDT         | <b>G6S-2F-Y</b> |
| Inside "L"       | DPDT         | <b>G6S-2G-Y</b> |
| PCB through-hole | DPDT         | <b>G6S-2-Y</b>  |

## Specifications

### ■ CONTACT DATA

|                         |                                   |
|-------------------------|-----------------------------------|
| Load                    | Resistive load (cos $\phi$ = 1)   |
| Rated load              | 0.5 A at 125 VAC<br>2 A at 30 VAC |
| Contact material        | Ag (Au clad)                      |
| Max. carry current      | 2 A                               |
| Max. operating voltage  | 250 VAC, 220 VDC                  |
| Max. operating current  | 2 A                               |
| Max. switching capacity | 62.5 VA, 60 W                     |
| Min. permissible load   | 10 mVDC, 10 $\mu$ A               |

### ■ COIL DATA

#### G6S – Standard non-latching (G6S-2F, G6S-2G, G6S-2)

| Rated voltage (VDC) | Rated current (mA) | Coil resistance ( $\Omega$ ) | Pick-up voltage    | Dropout voltage | Maximum voltage | Power consumption (mW) |
|---------------------|--------------------|------------------------------|--------------------|-----------------|-----------------|------------------------|
|                     |                    |                              | % of rated voltage |                 |                 |                        |
| 3                   | 46.7               | 64.3                         | 75% max.           | 10% min.        | 200% max.       | 140                    |
| 4.5                 | 31.0               | 145                          |                    |                 |                 |                        |
| 5                   | 28.1               | 178                          |                    |                 |                 |                        |
| 6                   | 23.3               | 257                          |                    |                 |                 |                        |
| 9                   | 15.5               | 579                          |                    |                 |                 |                        |
| 12                  | 11.7               | 1,028                        |                    |                 |                 |                        |
| 24                  | 8.3                | 2,880                        | 75% max.           | 10% min.        | 170% max.       | 200                    |

#### G6SU – Standard single coil latching (G6SU-2F, G6SU-2G, G6SU-2)

| Rated voltage (VDC) | Rated current (mA) | Coil resistance ( $\Omega$ ) | Set pick-up voltage | Reset pick-up voltage | Maximum voltage | Power consumption (mW) |
|---------------------|--------------------|------------------------------|---------------------|-----------------------|-----------------|------------------------|
|                     |                    |                              | % of rated voltage  |                       |                 |                        |
| 3                   | 33.3               | 90                           | 75% max.            | 75% max.              | 180% max.       | 100                    |
| 4.5                 | 22.2               | 203                          |                     |                       |                 |                        |
| 5                   | 20.0               | 250                          |                     |                       |                 |                        |
| 6                   | 16.7               | 360                          |                     |                       |                 |                        |
| 9                   | 11.1               | 810                          |                     |                       |                 |                        |
| 12                  | 8.3                | 1,440                        |                     |                       |                 |                        |
| 24                  | 6.3                | 3,840                        | 75% max.            | 75% max.              | 180% max.       | 150                    |

#### G6SK – Standard dual coil latching (G6SK-2F, G6SK-2G, G6SK-2)

| Set coil            |                    |                              | Reset coil         |                              | Set pick-up voltage | Reset pick-up voltage | Maximum voltage | Power consumption (mW) |
|---------------------|--------------------|------------------------------|--------------------|------------------------------|---------------------|-----------------------|-----------------|------------------------|
| Rated voltage (VDC) | Rated current (mA) | Coil resistance ( $\Omega$ ) | Rated current (mA) | Coil resistance ( $\Omega$ ) |                     |                       |                 |                        |
| 3                   | 66.6               | 45                           | 66.6               | 45                           | 75% max.            | 75% max.              | 170% max.       | 200                    |
| 4.5                 | 44.4               | 101                          | 44.4               | 101                          |                     |                       |                 |                        |
| 5                   | 40.0               | 125                          | 40.0               | 125                          |                     |                       |                 |                        |
| 6                   | 33.3               | 180                          | 33.3               | 180                          |                     |                       |                 |                        |
| 9                   | 22.2               | 405                          | 22.2               | 405                          |                     |                       |                 |                        |
| 12                  | 16.7               | 720                          | 16.7               | 720                          |                     |                       |                 |                        |
| 24                  | 12.5               | 1,920                        | 12.5               | 1,920                        | 75% max.            | 75% max.              | 140% max.       | 300                    |

## ■ COIL DATA (continued)

### G6SK – Standard high-sensitivity dual coil latching (G6SK-2F-H, G6SK-2G-H, G6SK-2-H)

| Set coil            |                    |                              | Reset coil         |                              | Set pick-up voltage | Reset pick-up voltage | Maximum voltage | Power consumption (mW) |
|---------------------|--------------------|------------------------------|--------------------|------------------------------|---------------------|-----------------------|-----------------|------------------------|
| Rated voltage (VDC) | Rated current (mA) | Coil resistance ( $\Omega$ ) | Rated current (mA) | Coil resistance ( $\Omega$ ) |                     |                       |                 |                        |
| 3                   | 46.7               | 64.3                         | 46.7               | 64.3                         | 75% max.            | 75% max.              | 130% max.       | 140                    |
| 4.5                 | 31.0               | 145                          | 31.0               | 145                          |                     |                       |                 |                        |
| 5                   | 28.1               | 178                          | 28.1               | 178                          |                     |                       |                 |                        |
| 6                   | 23.3               | 257                          | 23.3               | 257                          |                     |                       |                 |                        |
| 9                   | 15.6               | 579                          | 15.6               | 579                          |                     |                       |                 |                        |
| 12                  | 11.7               | 1,028                        | 11.7               | 1,028                        | 75% max.            | 75% max.              | 130% max.       | 200                    |
| 24                  | 8.33               | 2,880                        | 8.33               | 2,880                        |                     |                       |                 |                        |

### G6S – European version, non-latching (G6S-2F-Y, G6S-2G-Y, G6S-2-Y)

| Rated voltage (DC) | Rated current (mA) | Coil resistance ( $\Omega$ ) | Pick-up voltage    | Dropout voltage | Maximum voltage | Power consumption (mW) |
|--------------------|--------------------|------------------------------|--------------------|-----------------|-----------------|------------------------|
|                    |                    |                              | % of rated voltage |                 |                 |                        |
| 3                  | 66.7               | 45                           | 75% max.           | 10% min.        | 130% max.       | 200                    |
| 4.5                | 44.6               | 101                          |                    |                 |                 |                        |
| 5                  | 40.0               | 125                          |                    |                 |                 |                        |
| 6                  | 33.3               | 180                          |                    |                 |                 |                        |
| 9                  | 22.2               | 405                          |                    |                 |                 |                        |
| 12                 | 16.7               | 720                          | 75% max.           | 10% min.        | 110% max.       | 230                    |
| 24                 | 9.58               | 2,504                        |                    |                 |                 |                        |

- Note:
1. The rated current and coil resistance are measured at a coil temperature of 23°C (73°F) with a tolerance of  $\pm 10\%$ .
  2. The operating characteristics are measured at a coil temperature of 23°C (73°F) unless otherwise specified.
  3. Pick-up voltage is measured with no carry current across the contacts.
  4. Pick-up voltage will vary with temperature.

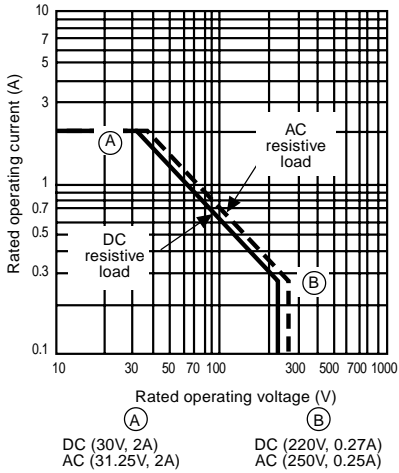
## ■ CHARACTERISTICS

|                         |                        |   |
|-------------------------|------------------------|---|
| Contact resistance      |                        | 75 m $\Omega$ max.  |
| Operate (set) time      |                        | 4 ms max. (mean value approx. 2.5 ms G6S; 2.0 ms G6SU, G6SK)  |
| Release (reset) time    |                        | 4 ms max. (mean value approx. 1.5 ms G6S; 2.0 ms G6SU, G6SK)  |
| Bounce time             |                        | Approx. 0.5 ms  |
| Insulation resistance   |                        | 1,000 M $\Omega$ min. (at 500 VDC)  |
| Dielectric strength     |                        | 2,000 VAC, 50/60 Hz for 1 minute (G6S, G6SU) between coil and contacts<br>1,000 VAC, 50/60 Hz for 1 minute (G6SK) between coil and contacts<br>1,500 VAC, 50/60 Hz for 1 minute between contacts of different poles<br>1,000 VAC, 50/60 Hz for 1 minute between contacts of same pole   |
| Surge withstand voltage |                        | 2,500 V, 2 x 10 $\mu$ S (conforms to Bellcore specifications) for G6S and G6SU;<br>1,500 V, 10 x 160 $\mu$ S (conforms to FCC part 68) for G6SK between coil and contacts<br>2,500 V, 2 x 10 $\mu$ S (conforms to Bellcore specs.) between contacts of different poles<br>1,500 V, 10 x 160 $\mu$ S (conforms to FCC part 68) between contacts of same pole |
| Vibration               | Mechanical durability  | 10 to 55 Hz; 5 mm (0.20 in) double amplitude  |
|                         | Malfunction durability | 10 to 55 Hz; 3.3 mm (0.13 in) double amplitude  |
| Shock                   | Mechanical durability  | 1,000 m/s <sup>2</sup> ; approx. 100 G  |
|                         | Malfunction durability | 750 m/s <sup>2</sup> ; approx. 75 G   |
| Ambient temperature     |                        | -40 to +85°C (-40°F + 185°F)  |
| Humidity                |                        | 35 to 85% RH  |
| Service life            | Mechanical             | 100,000,000 operations min. (at 36,000 operations/hour)   |
|                         | Electrical             | See "Characteristic Data"   |
| Weight                  |                        | Approx. 2g (0.07 oz)  |

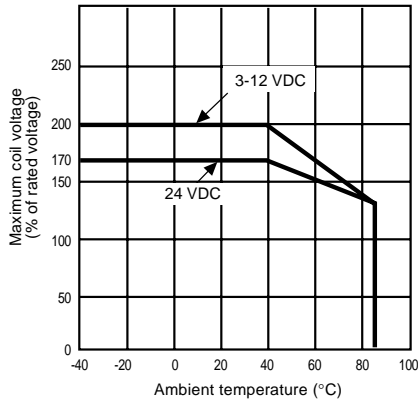
Note: Data shown are of initial value.

CHARACTERISTIC DATA

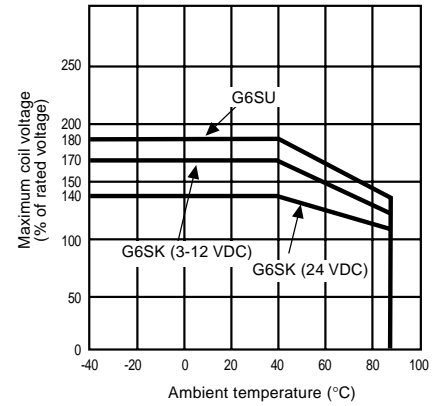
Maximum switching capacity



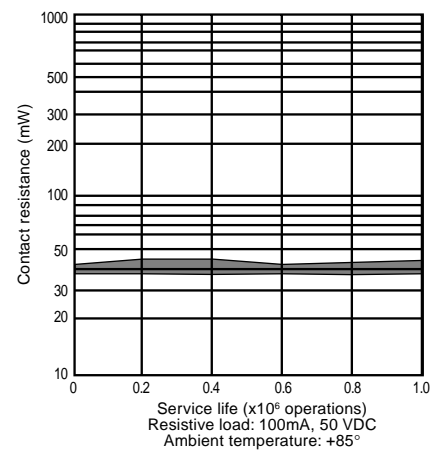
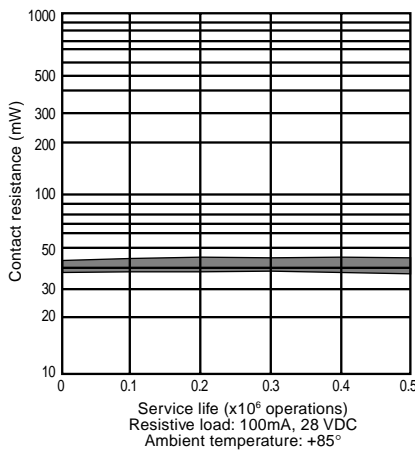
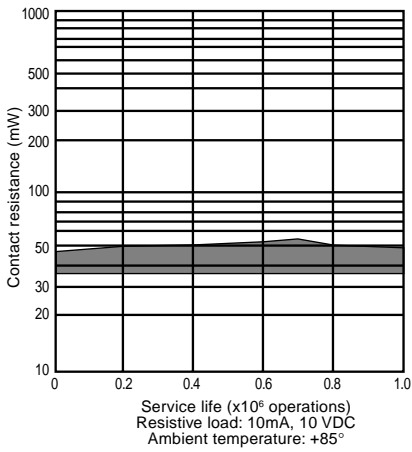
Ambient temperature vs. maximum coil voltage (G6S)



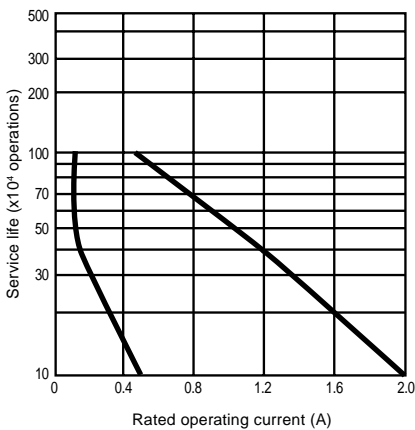
Ambient temperature vs. maximum coil voltage (G6SU, G6SK)



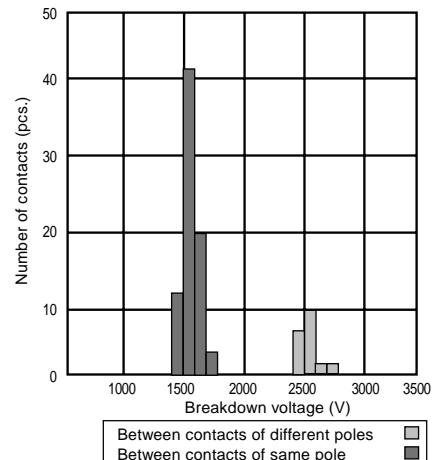
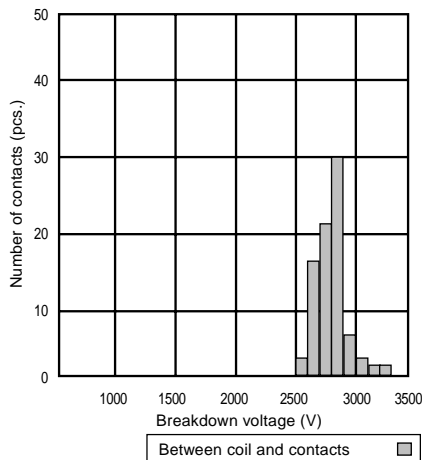
Service Life



Electrical service life

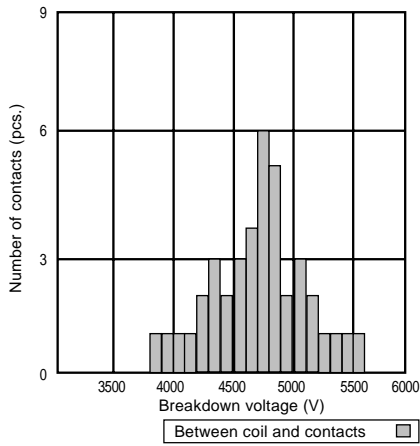


Dielectric strength (Standard version, non-latching)  
Detecting current: 1mA

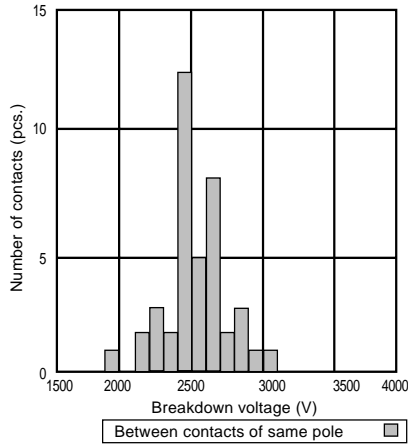


**Impulse withstand voltage (Standard version, non-latching)**

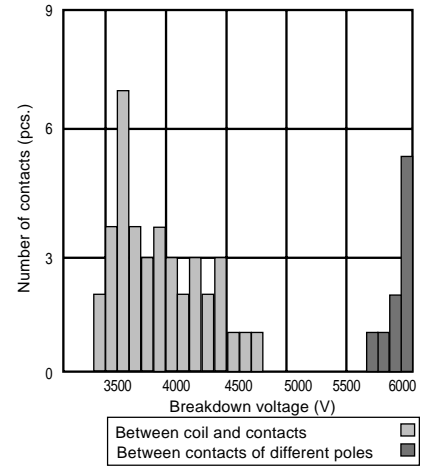
**(2 x 10 μs)**



**(10 x 160 μs)**

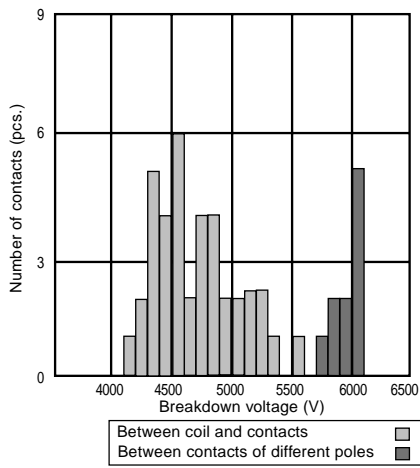


**(10 x 160 μs)**

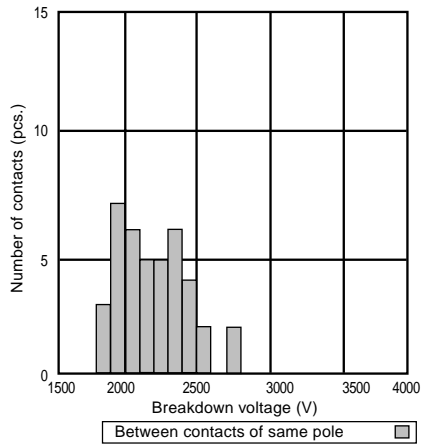


**Impulse withstand voltage (European version)**

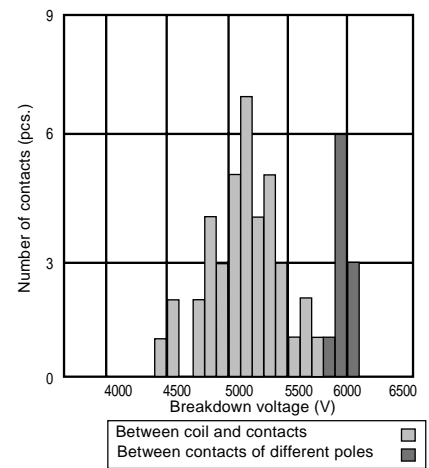
**(10 x 160 μs)**



**(10 x 160 μs)**

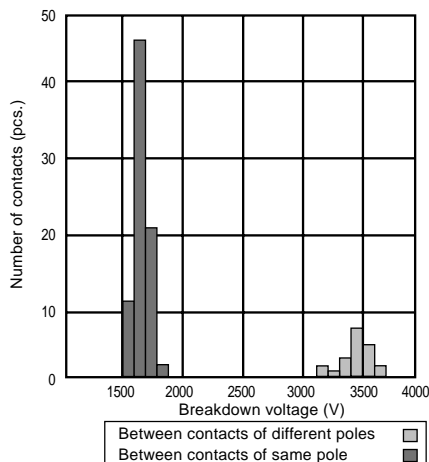
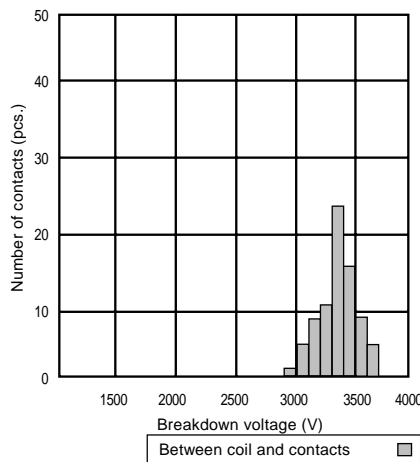


**(2 x 10 μs)**



**Dielectric strength (European version, non-latching)**

**Detecting current: 1mA**

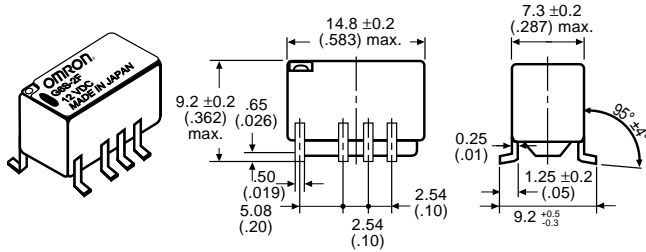


# Dimensions

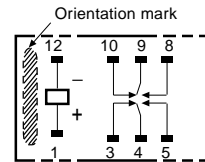
Unit: mm (inch)

## ■ STANDARD

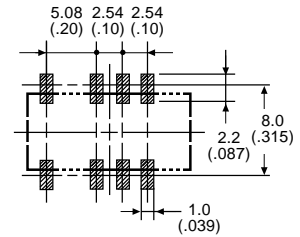
G6S-2F,  
G6S-2F-Y



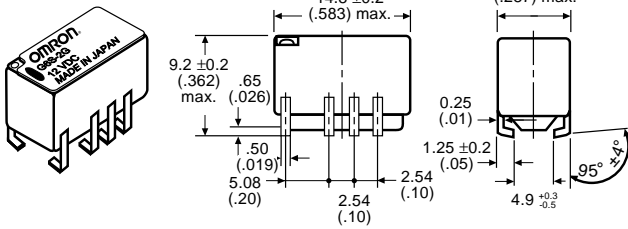
Terminal arrangement/  
Internal connections  
(Top view)



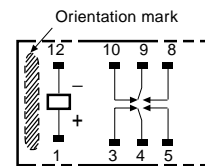
Mounting pads  
(Top view)



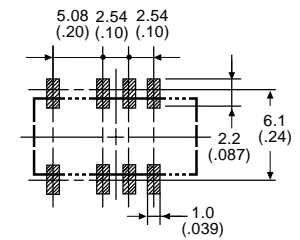
G6S-2G,  
G6S-2G-Y



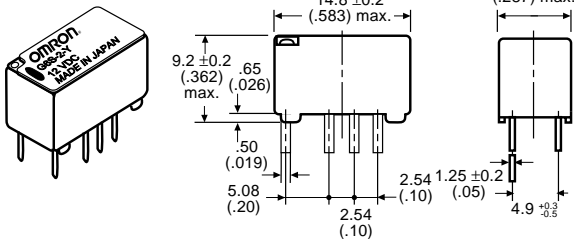
Terminal arrangement/  
Internal connections  
(Top view)



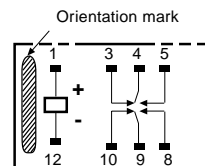
Mounting pads  
(Top view)



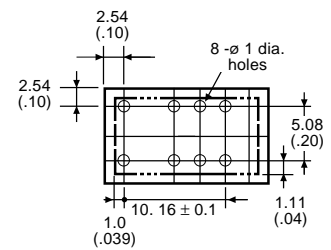
G6S-2,  
G6S-2-Y



Terminal arrangement/  
Internal connections  
(Bottom view)

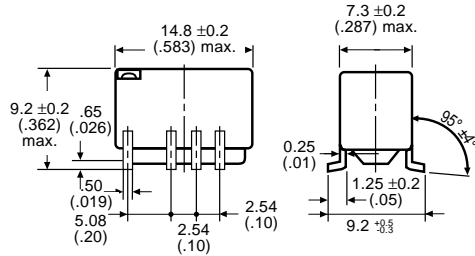
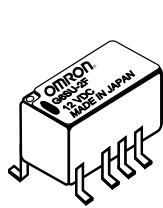


Mounting holes  
(Bottom view)

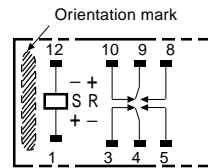


■ SINGLE COIL LATCHING

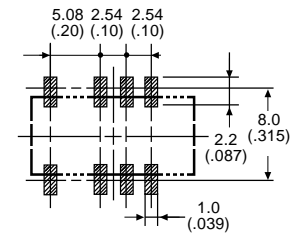
G6SU-2F



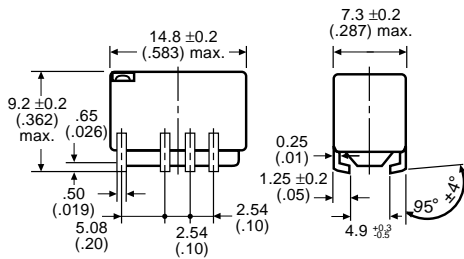
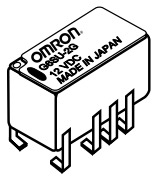
Terminal arrangement/  
Internal connections  
(Top view)



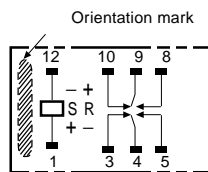
Mounting pads  
(Top view)



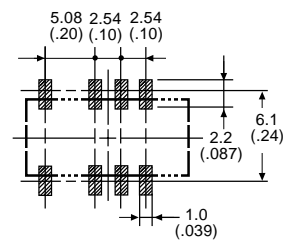
G6SU-2G



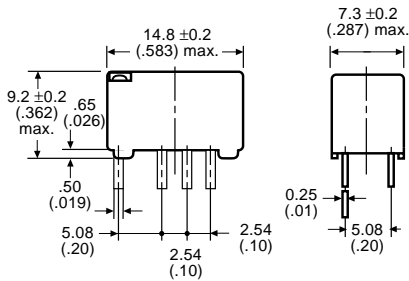
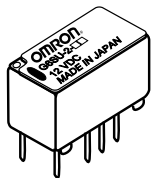
Terminal arrangement/  
Internal connections  
(Top view)



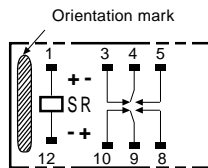
Mounting pads  
(Top view)



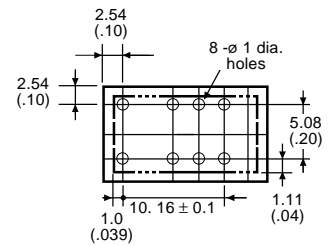
G6SU-2



Terminal arrangement/  
Internal connections  
(Bottom view)



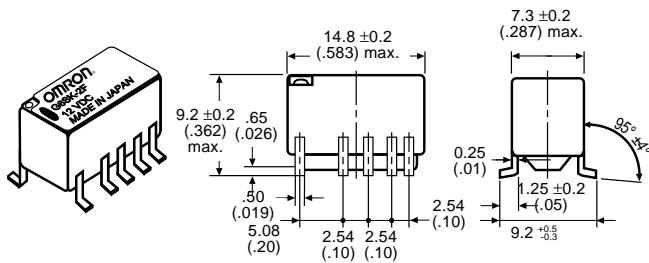
Mounting holes  
(Bottom view)



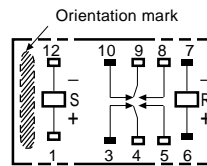
Unit: mm (inch)

## ■ DUAL COIL LATCHING

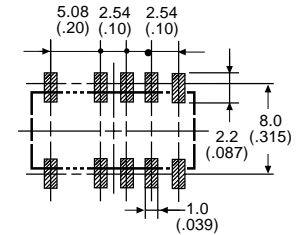
G6SK-2F,  
G6SK-2F-H



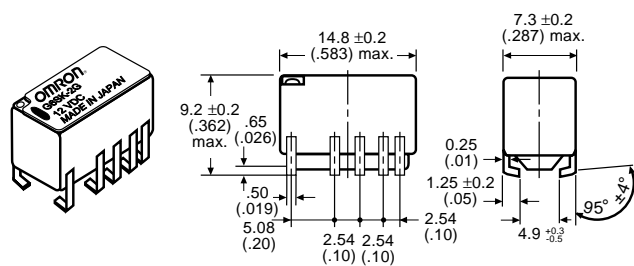
Terminal arrangement/  
Internal connections  
(Top view)



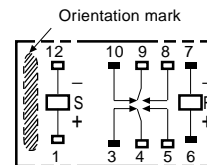
Mounting pads  
(Top view)



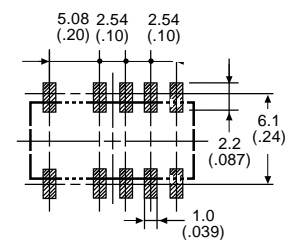
G6SK-2G,  
G6SK-2G-H



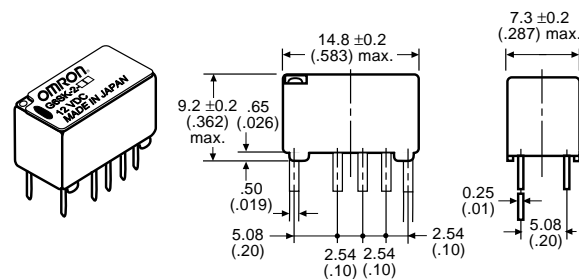
Terminal arrangement/  
Internal connections  
(Top view)



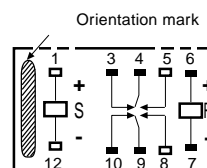
Mounting pads  
(Top view)



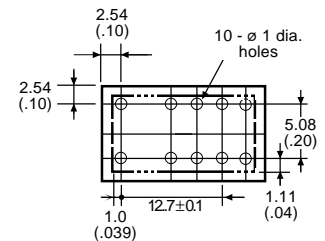
G6SK-2,  
G6SK-2-H





Terminal arrangement/  
Internal connections  
(Bottom view)



Mounting holes  
(Bottom view)



- Note: 1. Coplanarity is 0.1 mm max.  
2.  and  indicate mounting orientation marks.



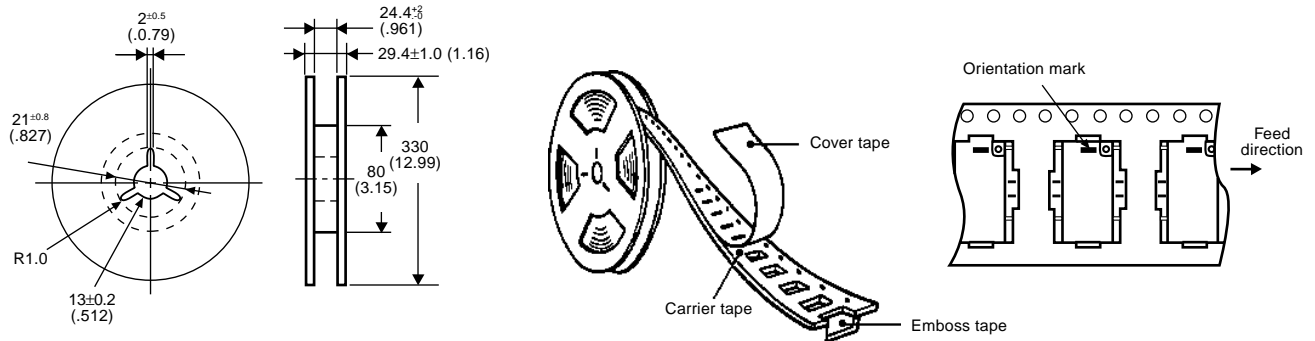
## ■ ACCESSORIES

|              |  |                             |
|--------------|--|-----------------------------|
| Tube packing | Standard nomenclature  | 50 pcs per anti-static tube |
| Tape packing | When ordering, add "TR" before the rated coil voltage (e.i., G6S-2F-TR-DC12)<br>Note: TR is not part of the relay model number and will not be marked on the relay |                             |

## ■ DIMENSIONS

Relays per reel: 400

Reels per packing carton: 2 (800 relays)



## ■ APPROVALS

UL (File No. E41515)/ CSA (File No. LR24825)

| Type      | Contact Form | Coil Rating   | Contact Ratings |
|-----------|--------------|---------------|-----------------|
| G6S-2F    | DPDT         | 1.5 to 48 VDC | 0.5 A, 125 VAC  |
| G6S-2F-Y  |              |               | 0.3 A, 110 VDC  |
| G6S-2G    |              |               | 2.0 A, 30 VDC   |
| G6S-2G-Y  |              |               |                 |
| G6S-2     |              |               |                 |
| G6S-2-Y   |              |               |                 |
| G6SU-2F   |              |               |                 |
| G6SU-2G   |              |               |                 |
| G6SU-2    |              |               |                 |
| G6SK-2F   |              |               |                 |
| G6SK-2G   |              |               |                 |
| G6SK-2    |              |               |                 |
| G6SK-2F-H |              |               |                 |
| G6SK-2G-H |              |               |                 |
| G6SK-2-H  |              |               |                 |

Note: 1. The rated values approved by each of the safety standards (e.g., UL and CSA) may be different from the performance characteristics individually defined in this catalog.

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