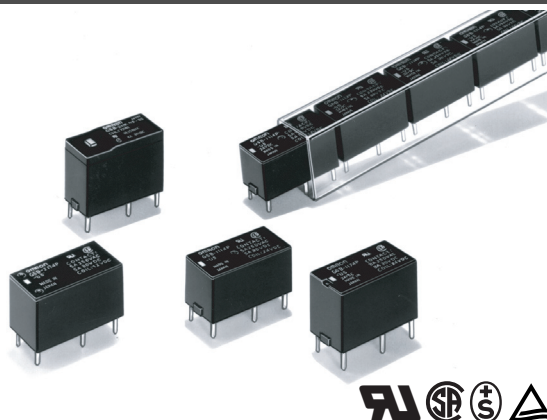


# Power PCB Relay G6B

## Subminiature Relay that Switches up to 5 A

- Subminiature: 20 x 10 x 10 mm (L x W x H).
- Low power consumption: 200 mW.
- Unique moving loop armature reduces relay size, magnetic interference, and contact bounce time.
- Fully sealed construction
- Single and Dual coil latching types also available.
- High Capacity versions available
- RoHS Compliant



## Ordering Information

| Classification              | Contact form    | Straight Through-hole PCB | Self-clinching Through-hole PCB |
|-----------------------------|-----------------|---------------------------|---------------------------------|
| Non-latching                | SPST-NO         | G6B-1114P-US              | G6B-1114C-US                    |
|                             | SPST-NO+SPST-NC | G6B-2114P-US              | G6B-2114C-US                    |
|                             | DPST-NO         | G6B-2214P-US              | G6B-2214C-US                    |
|                             | DPST-NC         | G6B-2014P-US              | G6B-2014C-US                    |
| Single coil latching        | SPST-NO         | G6BU-1114P-US             | G6BU-1114C-US                   |
| Dual coil latching          | SPST-NO         | G6BK-1114P-US             | G6BK-1114C-US                   |
| High-capacity, Non-latching | SPST-NO         | G6B-1174P-US              | G6B-1174C-US                    |

**Note:** When ordering, add the rated coil voltage to the model number.

Example: G6B-1114P-US DC12

Rated coil voltage

## Model Number Legend

G6B   -         -   -   DC  

1   2   3   4   5   6   7   8

### 1. Relay Function

None: Non-latching  
U: Single coil latching  
K: Dual coil latching

### 2. Contact Form

21: SPST-NO + SPST-NC  
22: DPST-NO  
20: DPST-NC  
11: SPST-NO

### 3. Contact Type

1: Standard  
7: High-capacity

### 4. Enclosure Ratings

4: Fully sealed

### 5. Terminals

P: Straight Through-hole PCB  
C: Self-clinching Through-hole PCB

### 6. Approved Standards

US: UL/CSA certified

### 7. Mounting Method

None: Mount directly to PCB  
P6B: Mount to Socket

### 8. Rated Coil Voltage

5, 6, 12, or 24 VDC

## ■ Accessories (Order Separately)

### Back Connecting Sockets

| Applicable Relay    | Back Connecting Socket (See note 1.) |
|---------------------|--------------------------------------|
| G6B(U)-1114P-US-P6B | P6B-04P                              |
| G6BK-1114P-US-P6B   | P6B-06P                              |
| G6B-2□□4P-US-P6B    | P6B-26P                              |
| G6B-1174P-US-P6B    | P6B-04P                              |

**Note:** 1. Not applicable to the self-clinching type.

2. Use the G6B-□□□□P-US-**P6B** if mounting relays in a P6B Socket.

|                 |        |
|-----------------|--------|
| Removal Tool    | P6B-Y1 |
| Hold-down Clips | P6B-C2 |

## Specifications

### ■ Contact Ratings

| Item                                                  | SPST-NO                              |                                                    | SPST-NO + SPST-NC, DPST-NO, DPST-NC  |                                                    |
|-------------------------------------------------------|--------------------------------------|----------------------------------------------------|--------------------------------------|----------------------------------------------------|
| Load                                                  | Resistive load<br>( $\cos\phi = 1$ ) | Inductive load<br>( $\cos\phi = 0.4$ ; L/R = 7 ms) | Resistive load<br>( $\cos\phi = 1$ ) | Inductive load<br>( $\cos\phi = 0.4$ ; L/R = 7 ms) |
| Rated load                                            | 5 A at 250 VAC;<br>5A at 30 VDC      | 2 A at 250 VAC;<br>2 A at 30 VDC                   | 5 A at 250 VAC;<br>5A at 30 VDC      | 1.5 A at 250 VAC;<br>1.5 A at 30 VDC               |
| Contact material                                      | Ag Alloy (Cd free)                   |                                                    |                                      |                                                    |
| Rated carry current                                   | 5 A                                  |                                                    |                                      |                                                    |
| Max. switching voltage                                | 380 VAC, 125 VDC                     |                                                    |                                      |                                                    |
| Max. switching current                                | 5 A                                  |                                                    |                                      |                                                    |
| Max. switching capacity                               | 1,250 VA, 150 W                      | 500 VA, 60 W                                       | 1,250 VA, 150 W                      | 375 VA, 80 W                                       |
| Min. permissible load<br>(reference value - see note) | 10 mA at 5 VDC                       |                                                    |                                      |                                                    |

| Item                                                  | SPST-NO (High-capacity)           |                                                 |
|-------------------------------------------------------|-----------------------------------|-------------------------------------------------|
| Load                                                  | Resistive load ( $\cos\phi = 1$ ) | Inductive load ( $\cos\phi = 0.4$ ; L/R = 7 ms) |
| Rated load                                            | 8 A at 250 VAC; 8 A at 30 VDC     | 2 A at 250 VAC; 2 A at 30 VDC                   |
| Contact material                                      | Ag Alloy (Cd free)                |                                                 |
| Rated carry current                                   | 8 A                               |                                                 |
| Max. switching voltage                                | 380 VAC, 125 VDC                  |                                                 |
| Max. switching current                                | 8 A                               |                                                 |
| Max. switching capacity                               | 2,000 VA, 150 W                   |                                                 |
| Min. permissible load<br>(reference value - see note) | 10 mA at 5 VDC                    |                                                 |

**Note:** P level:  $\lambda_{60} = 0.1 \times 10^{-6}$ /operation

### ■ Coil Ratings

#### Non-latching, Single Pole

| Rated voltage<br>(VDC) | Rated current<br>(mA) | Coil resistance<br>( $\Omega$ ) | Coil inductance<br>(ref. value)(H) |                | Pick-up<br>voltage | Dropout<br>voltage | Max.<br>voltage     | Power<br>consumption<br>(mW) |
|------------------------|-----------------------|---------------------------------|------------------------------------|----------------|--------------------|--------------------|---------------------|------------------------------|
|                        |                       |                                 | Armature<br>OFF                    | Armature<br>ON |                    |                    |                     |                              |
| 5                      | 40                    | 125                             | 0.28                               | 0.26           | 70% max.           | 10% min.           | 160% max. @<br>23°C | Approx. 200                  |
| 6                      | 33.30                 | 180                             | 0.31                               | 0.28           |                    |                    |                     |                              |
| 12                     | 16.70                 | 720                             | 1.2                                | 1.1            |                    |                    |                     |                              |
| 24                     | 8.30                  | 2,880                           | 4.9                                | 4.1            |                    |                    |                     |                              |

**Note:** 1. The rated current and coil resistance are measured at a coil temperature of 23°C with a tolerance of  $\pm 10\%$ .

2. Operating characteristics are measured at a coil temperature of 23°C.

## Non-latching, Double Pole

| Rated voltage (VDC) | Rated current (mA) | Coil resistance (Ω) | Pick-up voltage    | Dropout voltage | Max. voltage    | Power consumption (mW) |
|---------------------|--------------------|---------------------|--------------------|-----------------|-----------------|------------------------|
|                     |                    |                     | % of rated voltage |                 |                 |                        |
| 5                   | 60                 | 83.30               | 80% max.           | 10% min.        | 140% max.@ 23°C | Approx. 300            |
| 6                   | 50                 | 120                 |                    |                 |                 |                        |
| 12                  | 25                 | 480                 |                    |                 |                 |                        |
| 24                  | 12.50              | 1,920               |                    |                 |                 |                        |

## Single Coil Latching

| Rated voltage (VDC) | Rated current (mA) | Coil resistance (Ω) | Coil inductance (ref. value) (H) |             | Set pick-up voltage | Reset pick-up voltage | Maximum voltage   | Power consumption (mW) |
|---------------------|--------------------|---------------------|----------------------------------|-------------|---------------------|-----------------------|-------------------|------------------------|
|                     |                    |                     | Armature OFF                     | Armature ON |                     |                       |                   |                        |
| 5                   | 40                 | 125                 | 0.28                             | 0.26        | 70% max.            | 70% max.              | 160% max. at 23°C | Approx. 200            |
| 6                   | 33.30              | 180                 | 0.31                             | 0.28        |                     |                       |                   |                        |
| 12                  | 16.70              | 720                 | 1.2                              | 1.10        |                     |                       |                   |                        |
| 24                  | 8.30               | 2.880               | 4.9                              | 4.10        |                     |                       |                   |                        |

## Dual Coil Latching

| Rated voltage (VDC) | Rated current (mA) | Coil resistance (Ω) | Coil inductance (ref. value) (H) |             | Set pick-up voltage | Reset pick-up voltage | Maximum voltage   | Power consumption (mW) |
|---------------------|--------------------|---------------------|----------------------------------|-------------|---------------------|-----------------------|-------------------|------------------------|
|                     |                    |                     | Armature OFF                     | Armature ON |                     |                       |                   |                        |
| 5                   | 56                 | 89.20               | 0.15                             | 0.15        | 70% max.            | 70% max.              | 130% max. at 23°C | Approx. 280            |
| 6                   | 46.80              | 128.50              | 0.18                             | 0.18        |                     |                       |                   |                        |
| 12                  | 23.30              | 515                 | 0.52                             | 0.52        |                     |                       |                   |                        |
| 24                  | 11.70              | 2,060               | 1.20                             | 1.20        |                     |                       |                   |                        |

**Note:** 1. The rated current and coil resistance are measured at a coil temperature of 23°C with a tolerance of  $\pm 10\%$ .  
2. Operating characteristics are measured at a coil temperature of 23°C.

## Characteristics

|                                    |                               |                                                                                                                                                                                                                                                                                           |
|------------------------------------|-------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Contact resistance</b>          |                               | 30 m $\Omega$ max.                                                                                                                                                                                                                                                                        |
| <b>Operate (set) time</b>          |                               | 10 ms max. (mean value: 1-pole approx. 3 ms, 2-pole approx. 4 ms)                                                                                                                                                                                                                         |
| <b>Release (reset) time</b>        | <b>Non-latching</b>           | 10 ms max. (mean value: 1-pole approx. 1 ms, 2-pole approx. 2 ms)                                                                                                                                                                                                                         |
|                                    | <b>Latching</b>               | 10 ms max. (mean value: approx. 3 ms)                                                                                                                                                                                                                                                     |
| <b>Min. set/reset signal width</b> |                               | Latching type: 15 ms min. (at 23°C)                                                                                                                                                                                                                                                       |
| <b>Max. operating frequency</b>    | <b>Mechanical</b>             | 18,000 operations/hr                                                                                                                                                                                                                                                                      |
|                                    | <b>Electrical</b>             | 1,800 operations/hr (under rated load)                                                                                                                                                                                                                                                    |
| <b>Insulation resistance</b>       |                               | 1,000 M $\Omega$ min. (at 500 VDC, at 250 VDC between set coil and reset coil)                                                                                                                                                                                                            |
| <b>Dielectric strength</b>         |                               | 3,000 VAC (Latching types: 2,000 VAC), 50/60 Hz for 1 min between coil and contacts<br>1,000 VAC, 50/60 Hz for 1 min between contacts of same polarity<br>250 VAC, 50/60 Hz for 1 min between set and reset coils<br>2,000 VAC, 50/60 Hz for 1 min between contacts of different polarity |
| <b>Vibration resistance</b>        | <b>Mechanical durability</b>  | 10 to 55 Hz, 1.5-mm double amplitude                                                                                                                                                                                                                                                      |
|                                    | <b>Malfunction durability</b> | 10 to 55 Hz, 1.5-mm double amplitude                                                                                                                                                                                                                                                      |
| <b>Shock resistance</b>            | <b>Mechanical durability</b>  | 1,000 m/s <sup>2</sup> (Approx 100G)                                                                                                                                                                                                                                                      |
|                                    | <b>Malfunction durability</b> | Single-side stable: 100 m/s <sup>2</sup> (Approx 10G); Latching: 300 m/s <sup>2</sup> (Approx 30G)                                                                                                                                                                                        |
| <b>Service Life</b>                | <b>Mechanical</b>             | 50,000,000 operations min. (at 18,000 operations/hr)                                                                                                                                                                                                                                      |
|                                    | <b>Electrical</b>             | 100,000 operation min. (at 1,800 operations/hr)                                                                                                                                                                                                                                           |
| <b>Ambient temperature</b>         |                               | Operating: -25°C to 70°C (with no icing)                                                                                                                                                                                                                                                  |
| <b>Ambient humidity</b>            |                               | Operating: 5% to 85%                                                                                                                                                                                                                                                                      |
| <b>Weight</b>                      |                               | Double-winding latching: Approx. 3.7 g<br>High-capacity: Approx. 4.6 g<br>Double pole: Approx. 4.5 g<br>Other: Approx. 3.5 g                                                                                                                                                              |

**Note:** The data shown above are initial values.

## ■ Approved Standards

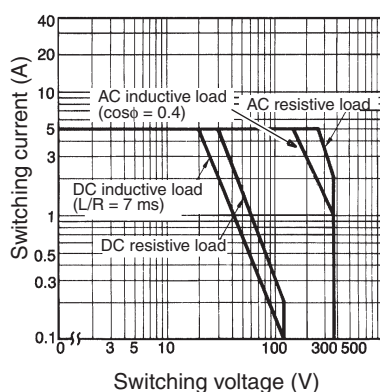
UL Recognized (File No. E41643) / CSA Certified (File No. LR31928)

| Model                                                                                            | Contact form                            | Coil rating | Contact rating                                                           |
|--------------------------------------------------------------------------------------------------|-----------------------------------------|-------------|--------------------------------------------------------------------------|
| G6B-1114P-US<br>G6B-1114C-US<br>G6BU-1114P-US<br>G6BU-1114C-US<br>G6BK-1114C-US<br>G6BK-1114C-US | SPST-NO                                 | 3 to 24 VDC | 5 A at 250 VAC (General Use) 80°C<br>5 A at 30 VDC (Resistive) 80°C      |
| G6B-1174P-US<br>G6B-1174C-US                                                                     |                                         |             | 8 A at 250 VAC (General Use) 80°C<br>8 A at 30 VDC (Resistive) 80°C      |
| G6B-2114P-US<br>G6B-2114C-US<br>G6B-2214P-US<br>G6B-2214C-US<br>G6B-2014P-US<br>G6B-2014C-US     | SPST-NO + SPST-NC<br>DPST-NO<br>DPST-NC |             | 5 A at 250 VAC (general use) 40°C<br>5 A at 30 VDC (resistive load) 40°C |

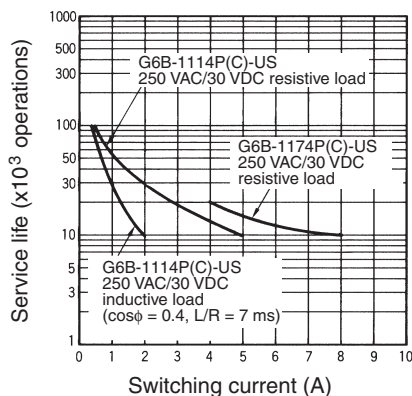
## Engineering Data

### G6B-1114P-US

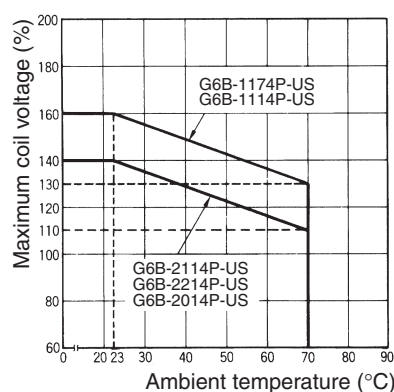
#### Maximum Switching Capacity



#### Electrical Service Life



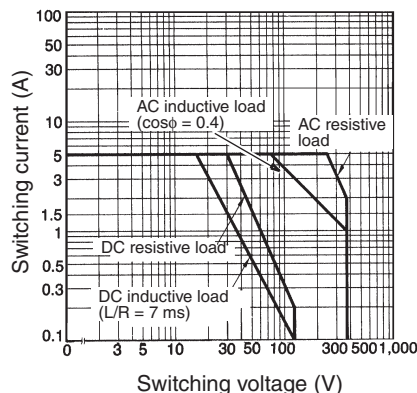
#### Ambient Temperature vs. Maximum Coil Voltage



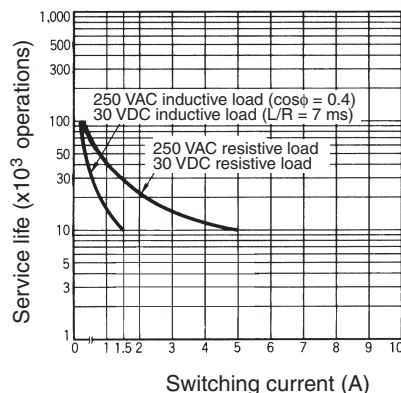
**Note:** The maximum coil voltage refers to the maximum value in a varying range of operating power voltage, not a continuous voltage.

### G6B-2114P-US, G6B-2214P-US, G6B-2014P-US

#### Maximum Switching Capacity



#### Electrical Service Life



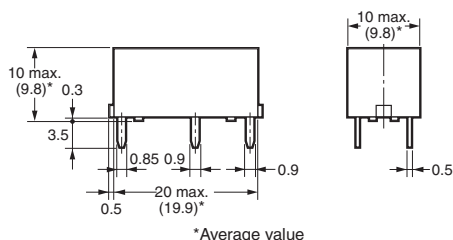
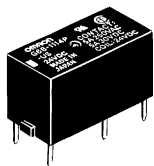
# Dimensions

Note: 1. All units are in millimeters unless otherwise indicated.

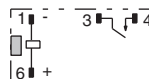
2. Orientation marks are indicated as follows:  

## Single Pole

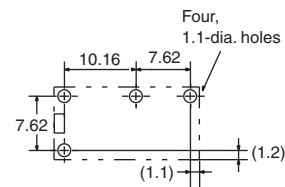
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G6BU-1114P-US



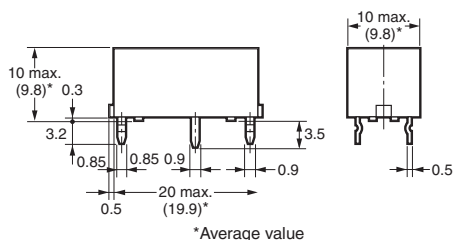
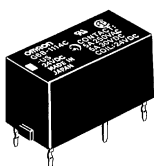
Terminal Arrangement/Internal Connections (Bottom View)  
G6B-1114P, -1114C



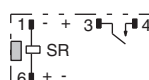
Mounting Holes (Bottom View)  
G6B-1114P, -1114C  
G6BU-1114P, -1114C



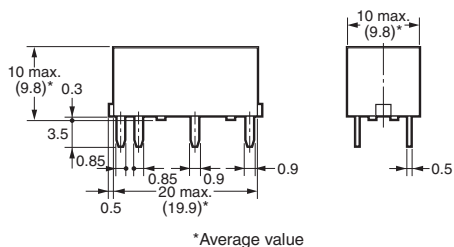
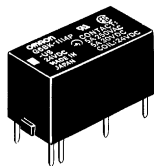
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G6BU-1114C-US



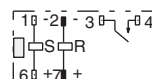
G6BU-1114P, -1114C



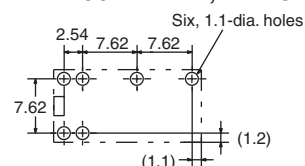
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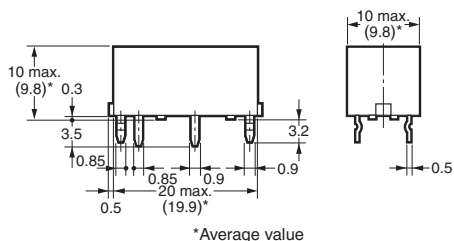
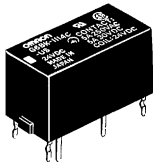
Terminal Arrangement/Internal Connections (Bottom View)  
G6BK-1114P, -1114C



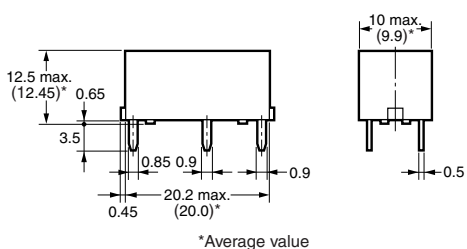
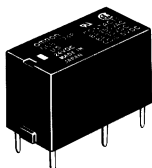
Mounting Holes (Bottom View)  
G6BK-1114P, -1114C



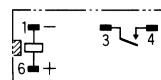
G6BK-1114C-US



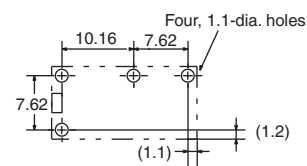
G6B-1174P-US



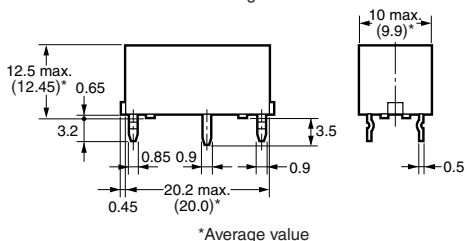
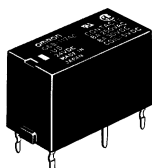
Terminal Arrangement/Internal Connections (Bottom View)  
G6B-1174P, -1174C



Mounting Holes (Bottom View)

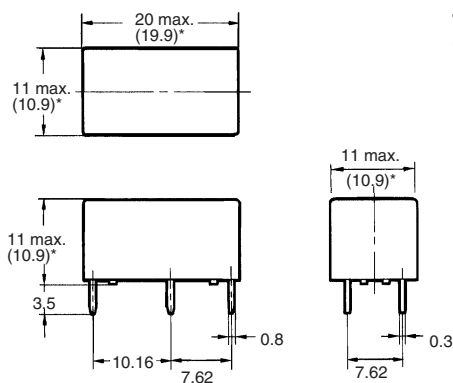
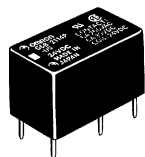


G6B-1174C-US



## ■ Double Pole

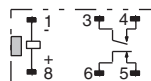
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G6B-2214P-US  
G6B-2014P-US



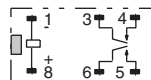
\*Average value

Terminal Arrangement/Internal Connections (Bottom View)

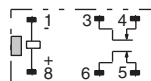
G6B-2114P-US



G6B-2214P-US

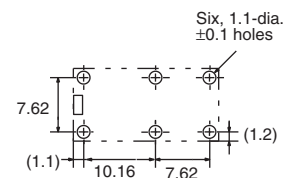


G6B-2014P-US

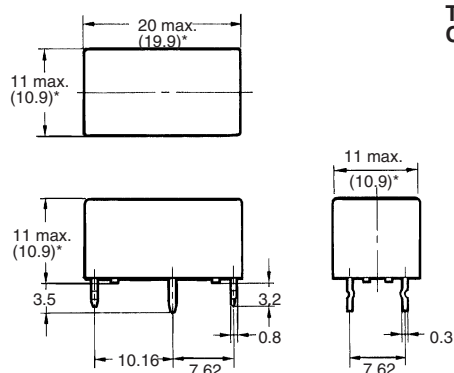
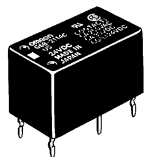


Mounting Holes (Bottom View)

Tolerance:  $\pm 0.1$



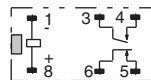
G6B-2114C-US  
G6B-2214C-US  
G6B-2014C-US



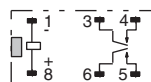
\*Average value

Terminal Arrangement/Internal Connections (Bottom View)

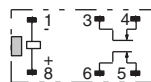
G6B-2114C-US



G6B-2214C-US

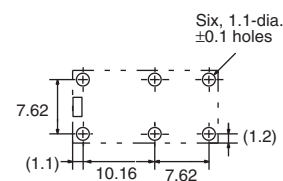


G6B-2014C-US



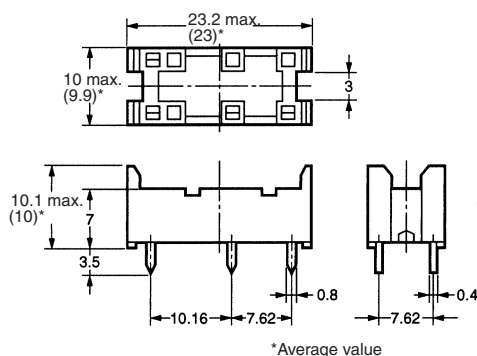
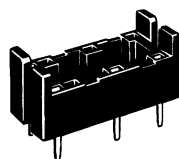
Mounting Holes (Bottom View)

Tolerance:  $\pm 0.1$



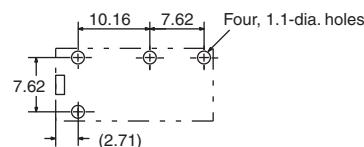
## Accessories

### Back Connecting Socket P6B-04P

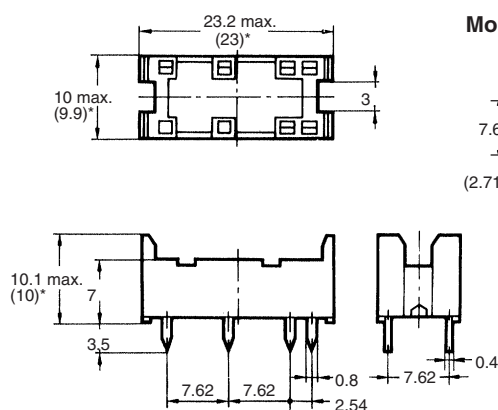
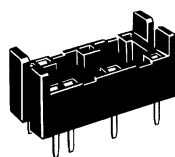


\*Average value

#### Mounting Holes (Bottom View)

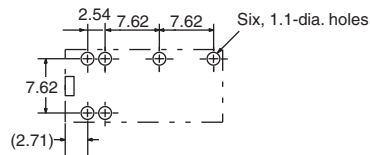


### P6B-06P

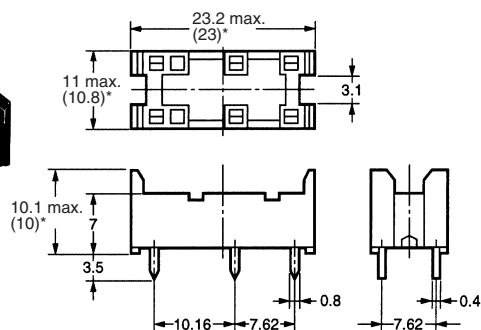
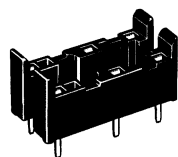


\*Average value

#### Mounting Holes (Bottom View)

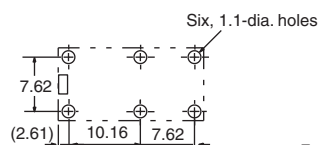


### P6B-26P



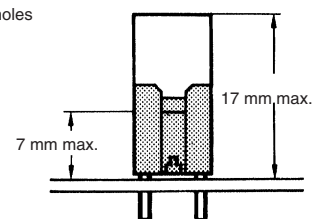
\*Average value

#### Mounting Holes (Bottom View)



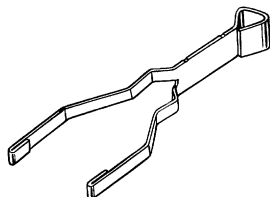
**Note:** Rated current of socket is 5 A max.

#### Mounting Height of Relay with Connecting Socket

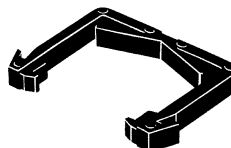


**Note:** Height of G6B-1174P-US is 19.5 mm max.

### Removal Tool P6B-Y1



### Hold-down Clips P6B-C2



**Note:** P6B-C2 Hold-down Clips cannot be used for G6B-1174P-US.

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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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