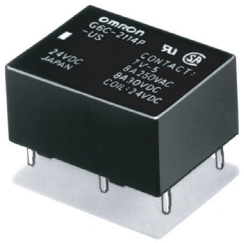
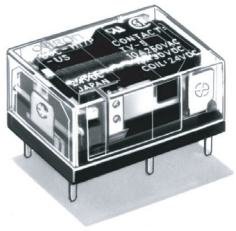
# Power PCB Relay
# G6C

## SPST-NO Type Breaks 10-A Loads; SPST-NO + SPST-NC Breaks 8-A Load

- Compact: 20 x 15 x 10 mm (L x W x H).
- Low power consumption: 200 mW.
- Semi-sealed or fully sealed construction available.
- Unique moving loop armature reduces relay size, magnetic interference, and contact bounce.
- Single and Dual coil latching types also available
- RoHS Compliant





# Ordering Information

| Classification | Contact form | Straight Through-hole PCB | | Self-clinching Through-hole PCB | |
|---|---|---|---|---|---|
| | | Semi-sealed | Fully sealed | Semi-sealed | Fully sealed |
| Non-latching | SPST-NO | **G6C-1117P-US** | **G6C-1114P-US** | **G6C-1117C-US** | **G6C-1114C-US** |
| | SPST-NO + SPST-NC | **G6C-2117P-US** | **G6C-2114P-US** | **G6C-2117C-US** | **G6C-2114C-US** |
| Single coil latching | SPST-NO | **G6CU-1117P-US** | **G6CU-1114P-US** | **G6CU-1117C-US** | **G6CU-1114C-US** |
| | SPST-NO + SPST-NC | **G6CU-2117P-US** | **G6CU-2114P-US** | **G6CU-2117C-US** | **G6CU-2114C-US** |
| Dual coil latching | SPST-NO | **G6CK-1117P-US** | **G6CK-1114P-US** | **G6CK-1117C-US** | **G6CK-1114C-US** |
| | SPST-NO + SPST-NC | **G6CK-2117P-US** | **G6CK-2114P-US** | **G6CK-2117C-US** | **G6CK-2114C-US** |

**Note:** When ordering, add the rated coil voltage to the model number.
Example: G6C-1117P-US DC12
Rated coil voltage

### Model Number Legend

**G6C □ - □ □ □ □ - □ - □ 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**
   11: SPST-NO
   21: SPST-NO + SPST-NC
3. **Contact Type**
   1: Standard
4. **Enclosure Ratings**
   4: Fully sealed
   7: Semi-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
   P6C: Mount to Socket
8. **Rated Coil Voltage**
   3, 5, 6, 12, or 24 VDC

## ■ Accessories (Order Separately)

### Back Connecting Sockets

| Applicable Relay | Back Connecting Socket (See note 1.) |
|---|---|
| G6C(U)-1114P-US-P6C<br>G6C(U)-1117P-US-P6C<br>G6C(U)-2114P-US-P6C<br>G6C(U)-2117P-US-P6C | **P6C-06P** |
| G6CK-1114P-US-P6C<br>G6CK-1117P-US-P6C<br>G6CK-2114P-US-P6C<br>G6CK-2117P-US-P6C | **P6C-08P** |

**Note: 1.** Not applicable to the self-clinching versions.
The operating current for the socket is 5 A max.

**2.** Use the G6C(U)-□□□□P-US-***P6C*** if mounting relays in a P6C Socket.

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

# Specifications

## ■ Contact Ratings

| Item | SPST-NO | | SPST-NO+SPST-NC | |
|---|---|---|---|---|
| **Load** | Resistive load (cosϕ = 1) | Inductive load (cosϕ = 0.4; L/R = 7 ms) | Resistive load (cosϕ = 1) | Inductive load (cosϕ = 0.4; L/R = 7 ms) |
| **Rated load** | 10 A at 250 VAC;<br>10A at 30 VDC | 5 A at 250 VAC;<br>5 A at 30 VDC | 8 A at 250 VAC;<br>8A at 30 VDC | 3.5 A at 250 VAC;<br>3.5 A at 30 VDC |
| **Contact material** | Ag Alloy (Cd free) | | | |
| **Rated carry current** | 10 A | | 8 A | |
| **Max. switching voltage** | 380 VAC, 125 VDC (the case of latching 250 VAC, 125 VDC) | | | |
| **Max. switching current** | 10 A | | 8 A | |
| **Max. switching capacity** | 2,500 VA, 300 W | 1,250 VA, 220 W | 2,000 VA, 240 W | 875 VA, 170 W |
| **Min. permissible load (reference value - see note)** | 10 mA at 5 VDC | | | |

**Note:** P level: $\lambda_{60}$ = 0.1 x $10^{-6}$ operations

## ■ Coil Data

### Non-latching

| Rated voltage (VDC) | Rated current (mA) | Coil resistance (Ω) | Coil inductance (ref. value) (H) | | Pick-up voltage | Dropout voltage | Maximum voltage | Power consumption (mW) |
|---|---|---|---|---|---|---|---|---|
| | | | Armature OFF | Armature ON | % of rated voltage | | | |
| 3 | 67 | 45 | 0.078 | 0.067 | 70% max. | 10% min. | 160% max. at 23°C | Approx. 200 |
| 5 | 40 | 125 | 0.22 | 0.18 | | | | |
| 6 | 33.30 | 180 | 0.36 | 0.29 | | | | |
| 12 | 16.70 | 720 | 1.32 | 1.13 | | | | |
| 24 | 8.30 | 2,880 | 4.96 | 4.19 | | | | |

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

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

### Single Coil Latching Type

| 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 | % of rated voltage | | | |
| 3 | 67 | 45 | 0.09 | 0.06 | 70% max. | 70% min. | 160% max. at 23°C | Approx. 200 |
| 5 | 40 | 125 | 0.25 | 0.20 | | | | |
| 6 | 33.30 | 180 | 0.36 | 0.24 | | | | |
| 12 | 16.70 | 720 | 1.75 | 1.17 | | | | |
| 24 | 8.30 | 2,880 | 5.83 | 3.84 | | | | |

### Dual Coil Latching Type

| 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) |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | Set Coil | | Reset Coil | | | | | |
| | | | Armature OFF | Armature ON | Armature OFF | Armature ON | % of rated voltage | | | |
| 3 | 93.50 | 32.10 | 0.03 | 0.02 | 0.03 | 0.02 | 70% max. | 70% max. | 130% max. at 23°C) | Approx. 280 |
| 5 | 56 | 89.30 | 0.07 | 0.06 | 0.08 | 0.07 | | | | |
| 6 | 46.70 | 129 | 0.10 | 0.08 | 0.12 | 0.10 | | | | |
| 12 | 23.30 | 514 | 0.37 | 0.32 | 0.47 | 0.38 | | | | |
| 24 | 11.70 | 2,056 | 1.56 | 1.18 | 1.46 | 1.13 | | | | |

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

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

**3.** The minimum pulse width of the set and reset voltage is 20 ms.

## ■ Characteristics

| | | |
|---|---|---|
| **Contact resistance** | | 30 mΩ max. |
| **Operate (set) time** | | 10 ms max. (mean value: approx. 5 ms) |
| **Release (reset) time** | | 10 ms max. (mean value: approx. 2 ms; latching types: mean value: approx. 5 ms) |
| **Bounce time** | | 5 ms max. (Approx. 3 ms typical) |
| **Min. set/reset signal width** | | Latching type: 20 ms (at 23°C) |
| **Max. switching frequency** | **Mechanical** | 18,000 operations/hr |
| | **Electrical** | 1,800 operations/hr (under rated load) |
| **Insulation resistance** | | 1,000 MΩ min. (at 500 VDC, at 250 VDC between set coil and reset coil) |
| **Dielectric strength** | | 2,000 VAC, 50/60 Hz for 1 min between coil and contacts<br>2,000 VAC, 50/60 Hz for 1 min between contacts of different polarity<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 (double winding latching type) |
| **Surge withstand voltage** | | 6.000 V (1.2 x 50 μs) between coil and contacts (latching types: 4,500 V, 1.2 x 50 μs) |
| **Vibration resistance** | **Mechanical durability** | 10 to 55 Hz, 1.5-mm double amplitude |
| | **Malfunction durability** | 10 to 55 Hz, 1.5-mm double amplitude |
| **Shock resistance** | **Mechanical durability** | 1,000 m/s$^2$ (Appox. 100G) |
| | **Malfunction durability** | 100 m/s$^2$ (Approx. 10G) |
| **Ambient temperature** | | Operating: –25°C to 70°C (with no icing) |
| **Ambient humidity** | | Operating: 5% to 85% |
| **Service Life** | **Mechanical:** | 50,000,000 operations min. (at 18,000 operations/hr) |
| | **Electrical:** | 100,000 operations min. (at 1,800 operations/hr) See “Characteristic Data” |
| **Weight** | | Approx. 5.6 g |

# ■ Approved Standards

**UL Recognized (File No. E41643) - - See note**

| Model | Contact form | Coil rating | Contact rating |
|---|---|---|---|
| G6C-1114P-US<br>G6C-1114C-US<br>G6C-1117P-US<br>G6C-1117C-US | SPST-NO | 3 to 60 VDC | 10 A, 250 VAC (general use)<br>10 A, 30 VDC (resistive load)<br>1/6 hp, 125 VAC<br>1/4 hp, 125 VAC<br>1/4 hp, 250 VAC<br>1/3 hp, 250 VAC<br>TV-5 (40°C, 25,000 operations)<br>600 W, 120 VAC (tungsten)<br>530 VA, 20 to 265 VAC, 2 A max. (pilot duty)<br>43.2 VA, 30 VDC (pilot duty)<br>12LRA, 2.2FLA, 30 VDC (30,000 operations) |
| G6C-2114P-US<br>G6C-2114C–US<br>G6C-2117P-US<br>G6C-2117C-US | SPST-NO + SPST-NC | | 8 A, 250 VAC (general use)<br>8 A, 30 VDC (resistive load)<br>1/6 hp, 125 VAC<br>1/4 hp, 125 VAC<br>1/4 hp, 250 VAC<br>1/3 hp, 250 VAC<br>TV-5 (40°C, 25,000 operations)<br>600 W, 120 VAC (tungsten)<br>530 VA, 20 to 265 VAC, 2 A max. (pilot duty)<br>43.2 VA, 30 VDC (pilot duty)<br>12LRA, 2.2FLA, 30 VDC (30,000 operations) |

**Note:** UL Recognition tests performed at 80°C for 6,000 operations unless otherwise specified.

**CSA Certified (File No. LR31928)**

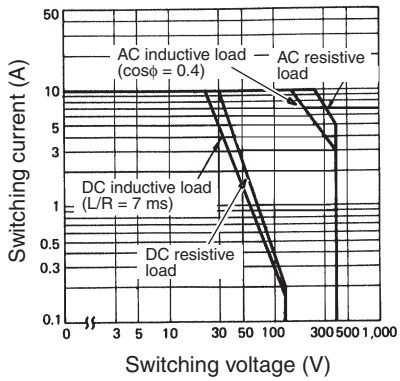
| Model | Contact form | Coil rating | Contact rating |
|---|---|---|---|
| G6C-1114P-US<br>G6C-1114C-US<br>G6C-1117P-US<br>G6C-1117C-US | SPST-NO | 3 to 60 VDC | 10 A, 250 VAC (general use)<br>10 A, 30 VDC (resistive load)<br>1/6 hp, 125 VAC<br>1/4 hp, 125 VAC<br>1/4 hp, 250 VAC<br>1/3 hp, 250 VAC<br>TV-5<br>600 W, 120 VAC (tungsten) |
| G6C-2114P-US<br>G6C-2114C-US<br>G6C-2117P-US<br>G6C-2117C-US | SPST-NO + SPST-NC | 3 to 60 VDC | 8 A, 250 VAC (general use)<br>8 A, 30 VDC (resistive load)<br>1/6 hp, 125 VAC<br>1/4 hp, 125 VAC<br>1/4 hp, 250 VAC<br>TV-5<br>600 W, 120 VAC (tungsten) |

**VDE (Approval No. 2413) EN61810-1**

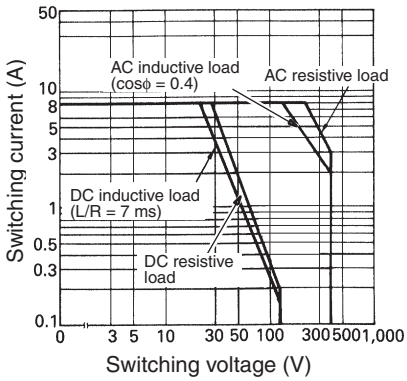
| Model | Contact form | Coil rating | Contact rating | Number of test operations |
|---|---|---|---|---|
| G6C-1114P-US<br>G6C-1114C-US<br>G6C-1117P-US<br>G6C-1117C-US | SPST-NO | 3, 12, 24 VDC | 10 A, 250 VAC ($\cos\phi$ = 1)<br>5 A, 250 VAC ($\cos\phi$ = 0.4) | 100,000 operations |
| G6C-2114P-US<br>G6C-2114C-US<br>G6C-2117P-US<br>G6C-2117C-US | SPST-NO + SPST-NC | Single-stable: 3, 5, 12, 24 VDC<br>Latching: 5 VDC<br>G6CU-2117P-VD: 3 VDC | 7 A, 250 VAC ($\cos\phi$ = 1)<br>3.5 A, 250 VAC ($\cos\phi$ = 0.4) | 100,000 operations |

# Engineering Data

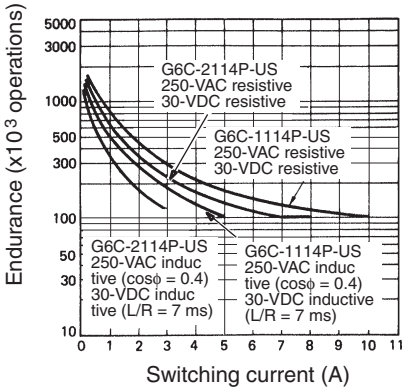
### Maximum Switching Capacity
**SPST-NO**



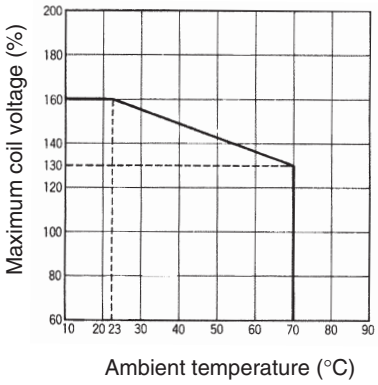

**SPST-NO + SPST-NC**




### Service Life




### Ambient Temperature vs. Maximum Coil Voltage



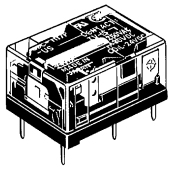

**Note:** The maximum coil voltage refers to the maximum value in a varying range of operating power voltage, not a continuous voltage.

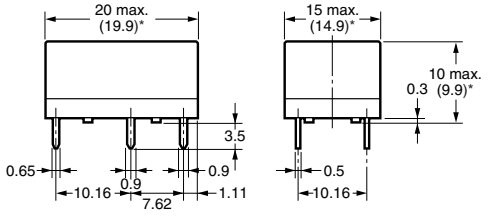
# Dimensions

**Note: 1.** All units are in millimeters unless otherwise indicated.
**2.** Orientation mark is indicated as follows: □

## ■ Non-latching

### G6C-□117P-US

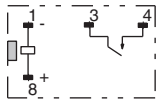





*Average value

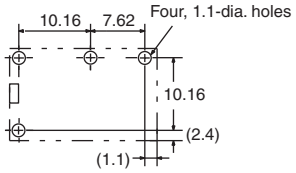
**G6C-1117P-US, G6C-1117C-US**
**G6C-1114P-US, G6C-1114C-US**

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

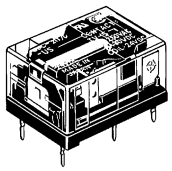


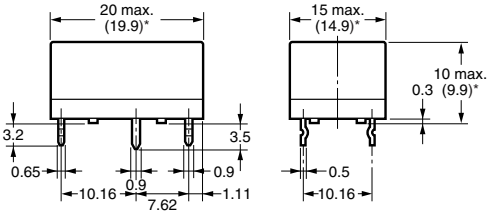

**Mounting Holes (Bottom View)**

Tolerance: ±0.1



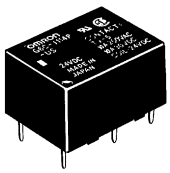

### G6C-□117C-US

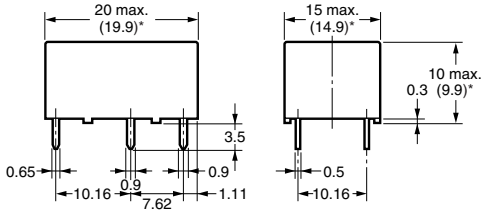





*Average value

### G6C-□114P-US

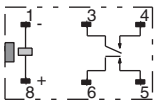





*Average value

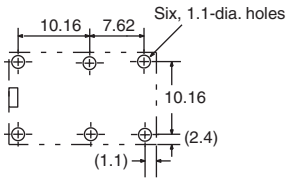
**G6C-2117P-US, G6C-2117C-US**
**G6C-2114P-US, G6C-2114C-US**

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

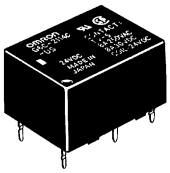


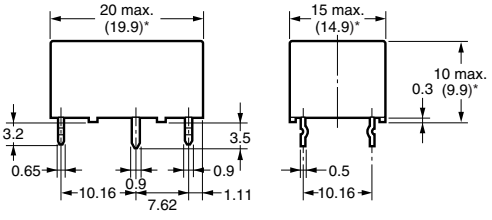

**Mounting Holes (Bottom View)**

Tolerance: ±0.1




### G6C-□114C-US

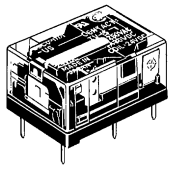


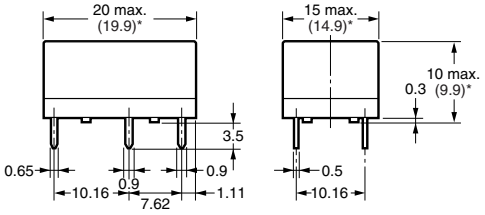



*Average value

# ■ Single Coil Latching

### G6CU-□117P-US

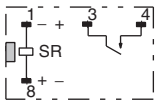




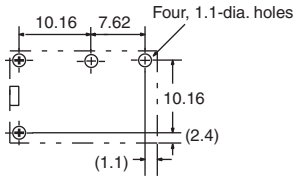

*Average value

**G6CU-1117P-US, G6CU-1117C-US**
**G6CU-1114P-US, G6CU-1114C-US**

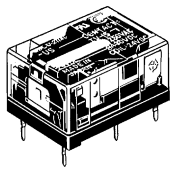
**Terminal Arrangement/Internal Connections (Bottom View)**

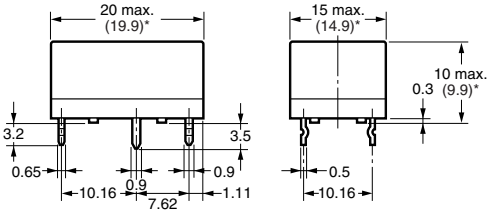



**Mounting Holes (Bottom View)**



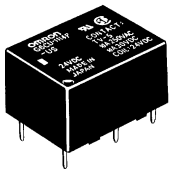

### G6CU-□117C-US

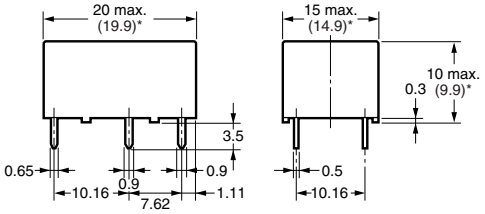





*Average value

### G6CU-□114P-US

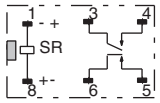




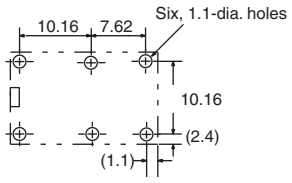

*Average value

**G6CU-2117P-US, G6CU-2117C-US**
**G6CU-2114P-US, G6CU-2114C-US**

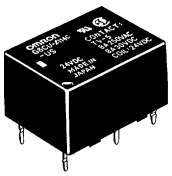
**Terminal Arrangement/Internal Connections (Bottom View)**

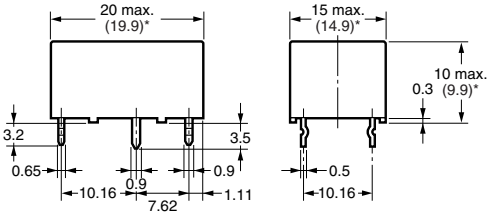



**Mounting Holes (Bottom View)**




### G6CU-□114C-US

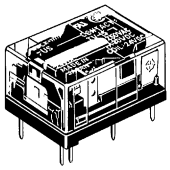


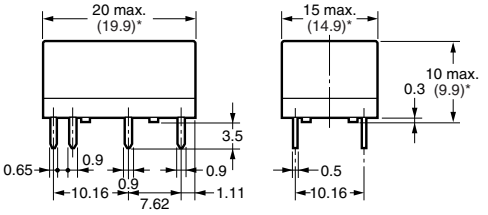



*Average value

# ■ Dual Coil Latching

### G6CK-□117P-US

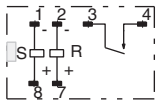




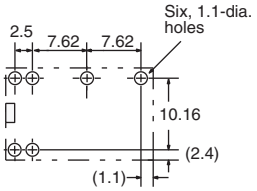

*Average value

**G6CK-1117P-US, G6CK-1117C-US**
**G6CK-1114P-US, G6CK-1114C-US**

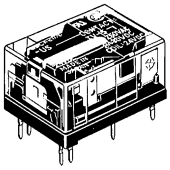
**Terminal Arrangement/Internal Connections (Bottom View)**

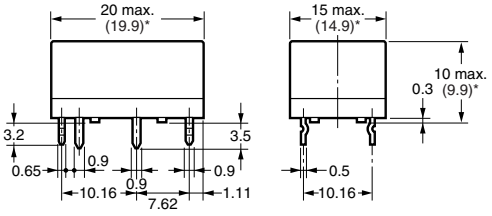



**Mounting Holes (Bottom View)**



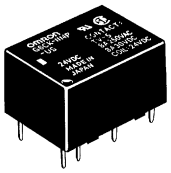

### G6CK-□117C-US

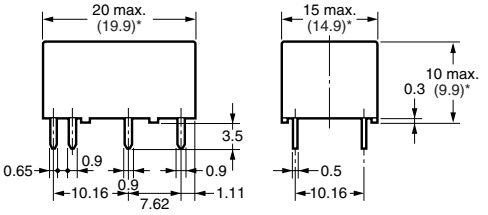





*Average value

### G6CK-□114P-US

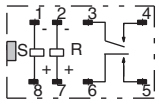




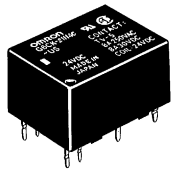

*Average value

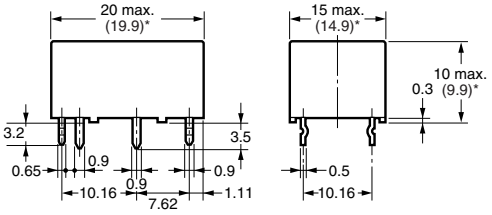
**G6CK-2117P-US, G6CK-2117C-US**
**G6CK-2114P-US, G6CK-2114C-US**

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



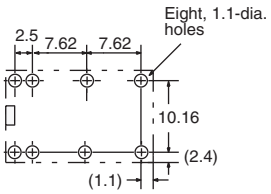

### G6CK-□114C-US





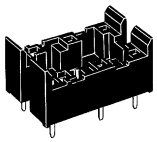

*Average value

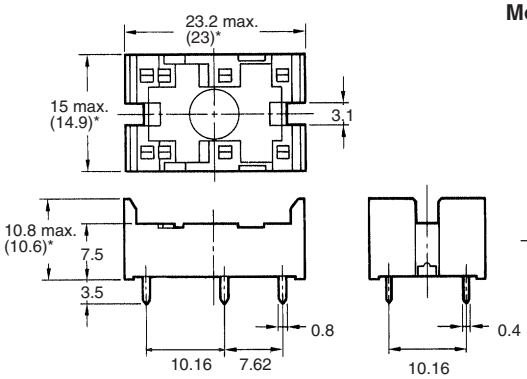
**Mounting Holes (Bottom View)**



# ■ Accessories

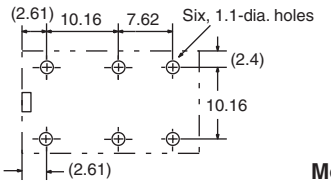
### Back Connecting Sockets
**P6C-06P**



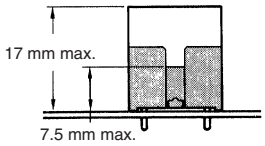



*Average value

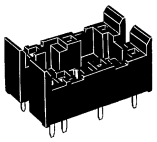
**Mounting Holes (Bottom View)**

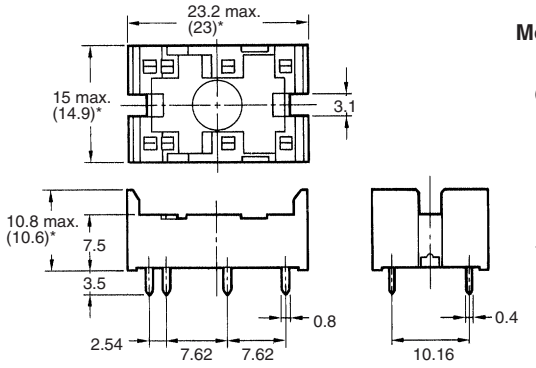



**Mounting Height of Relay with Connecting Socket**



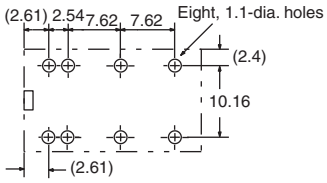

**P6C-08P**





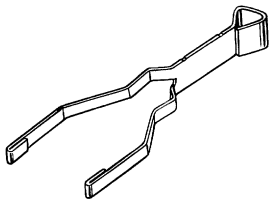

*Average value

**Mounting Holes (Bottom View)**

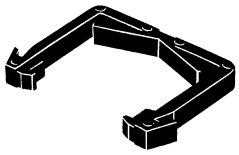



**Note:** Rated current of socket max. 5 A

### Removal Tool
**P6B-Y1**



### Hold-down Clips
**P6B-C2**



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