

## B3W



Features Sealed Construction for Automatic Soldering

- Available in two sizes: 6x6mm (B3W-1) and 12x12mm square (B3W-4)
- Ideal for applications such as audio, office and communications equipment, measuring instruments, industrial robots, VCRs, TVs, and vending machines Stick (magazine) packaging style available
- Sealed for CFC (Freon) cleaning
- Allows the use of radial-taping part insertion machines

| Part             | Rated Resistive Load - Switch | Actuator types                                   | Contact form | Operating Force | Seal type   | Termination Style           | Service Life - Electrical (Min. @ Rated Loads) |
|------------------|-------------------------------|--------------------------------------------------|--------------|-----------------|-------------|-----------------------------|------------------------------------------------|
| <b>B3W-1000</b>  | 50mA @ 24 VDC                 | Top Actuated plunger                             | SPST-NO      | 160g            | Semi-sealed | Through-Hole PCB - Straight | 1,000,000 ops                                  |
| <b>B3W-1002</b>  | 50mA @ 24 VDC                 | Top Actuated plunger                             | SPST-NO      | 230g            | Semi-sealed | Through-Hole PCB - Straight | 300,000 ops                                    |
| <b>B3W-1002S</b> | 50mA @ 24 VDC                 | Top Actuated plunger                             | SPST-NO      | 230g            | Semi-sealed | Through-Hole PCB - Straight | 300,000 ops                                    |
| <b>B3W-1050</b>  | 50mA @ 24 VDC                 | Top Actuated, projected plunger (for B32 Keycap) | SPST-NO      | 160g            | Semi-sealed | Through-Hole PCB - Straight | 1,000,000 ops                                  |
| <b>B3W-1052</b>  | 50mA @ 24 VDC                 | Top Actuated, projected plunger (for B32 Keycap) | SPST-NO      | 230g            | Semi-sealed | Through-Hole PCB - Straight | 300,000 ops                                    |
| <b>B3W-1100</b>  | 50mA @ 24 VDC                 | Top Actuated plunger                             | SPST-NO      | 160g            | Semi-sealed | Through-Hole PCB, w/Ground  | 1,000,000 ops                                  |
| <b>B3W-1100S</b> | 50mA @ 24 VDC                 | Top Actuated plunger                             | SPST-NO      | 160g            | Semi-sealed | Through-Hole PCB, w/Ground  | 1,000,000 ops                                  |
| <b>B3W-1102</b>  | 50mA @ 24 VDC                 | Top Actuated plunger                             | SPST-NO      | 230g            | Semi-sealed | Through-Hole PCB, w/Ground  | 300,000 ops                                    |
| <b>B3W-1150</b>  | 50mA @ 24 VDC                 | Top Actuated,                                    | SPST-NO      | 160g            | Semi-sealed | Through-Hole PCB,           | 1,000,000 ops                                  |

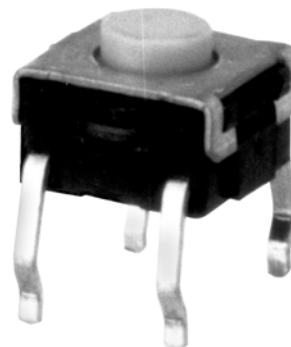
|                  |                  |                                                                 |             |      |                 |                                    |                  |
|------------------|------------------|-----------------------------------------------------------------|-------------|------|-----------------|------------------------------------|------------------|
|                  |                  | projected<br>plunger<br>(for B32<br>Keycap)                     |             |      |                 | w/Ground                           |                  |
| <b>B3W-1152</b>  | 50mA @<br>24 VDC | Top<br>Actuated,<br>projected<br>plunger<br>(for B32<br>Keycap) | SPST-<br>NO | 230g | Semi-<br>sealed | Through-<br>Hole PCB,<br>w/Ground  | 300,000<br>ops   |
| <b>B3W-4000</b>  | 50mA @<br>24 VDC | Top<br>Actuated<br>plunger                                      | SPST-<br>NO | 200g | Semi-<br>sealed | Through-<br>Hole PCB -<br>Straight | 3,000,000<br>ops |
| <b>B3W-4000S</b> | 50mA @<br>24 VDC | Top<br>Actuated<br>plunger                                      | SPST-<br>NO | 200g | Semi-<br>sealed | Through-<br>Hole PCB -<br>Straight | 3,000,000<br>ops |
| <b>B3W-4005</b>  | 50mA @<br>24 VDC | Top<br>Actuated<br>plunger                                      | SPST-<br>NO | 350g | Semi-<br>sealed | Through-<br>Hole PCB -<br>Straight | 1,000,000<br>ops |
| <b>B3W-4005S</b> | 50mA @<br>24 VDC | Top<br>Actuated<br>plunger                                      | SPST-<br>NO | 350g | Semi-<br>sealed | Through-<br>Hole PCB -<br>Straight | 1,000,000<br>ops |
| <b>B3W-4050</b>  | 50mA @<br>24 VDC | Top<br>Actuated,<br>projected<br>plunger<br>(for B32<br>Keycap) | SPST-<br>NO | 200g | Semi-<br>sealed | Through-<br>Hole PCB -<br>Straight | 3,000,000<br>ops |
| <b>B3W-4050S</b> | 50mA @<br>24 VDC | Top<br>Actuated,<br>projected<br>plunger<br>(for B32<br>Keycap) | SPST-<br>NO | 200g | Semi-<br>sealed | Through-<br>Hole PCB -<br>Straight | 3,000,000<br>ops |
| <b>B3W-4055</b>  | 50mA @<br>24 VDC | Top<br>Actuated,<br>projected<br>plunger<br>(for B32<br>Keycap) | SPST-<br>NO | 350g | Semi-<br>sealed | Through-<br>Hole PCB -<br>Straight | 1,000,000<br>ops |
| <b>B3W-4055S</b> | 50mA @<br>24 VDC | Top<br>Actuated,<br>projected<br>plunger<br>(for B32<br>Keycap) | SPST-<br>NO | 350g | Semi-<br>sealed | Through-<br>Hole PCB -<br>Straight | 1,000,000<br>ops |
| <b>B3W-4100</b>  | 50mA @<br>24 VDC | Top<br>Actuated<br>plunger                                      | SPST-<br>NO | 200g | Semi-<br>sealed | Through-<br>Hole PCB,<br>w/Ground  | 3,000,000<br>ops |
| <b>B3W-4100S</b> | 50mA @<br>24 VDC | Top<br>Actuated<br>plunger                                      | SPST-<br>NO | 200g | Semi-<br>sealed | Through-<br>Hole PCB,<br>w/Ground  | 3,000,000<br>ops |
| <b>B3W-4105</b>  | 50mA @<br>24 VDC | Top<br>Actuated<br>plunger                                      | SPST-<br>NO | 350g | Semi-<br>sealed | Through-<br>Hole PCB,<br>w/Ground  | 1,000,000<br>ops |
| <b>B3W-4150</b>  | 50mA @<br>24 VDC | Top<br>Actuated,<br>projected<br>plunger<br>(for B32<br>Keycap) | SPST-<br>NO | 200g | Semi-<br>sealed | Through-<br>Hole PCB,<br>w/Ground  | 3,000,000<br>ops |
| <b>B3W-</b>      | 50mA @           | Top                                                             | SPST-       | 200g | Semi-           | Through-                           | 3,000,000        |

|                      |                  |                                                                 |             |      |                 |                                   |                  |
|----------------------|------------------|-----------------------------------------------------------------|-------------|------|-----------------|-----------------------------------|------------------|
| <b>4150S</b>         | 24 VDC           | Actuated,<br>projected<br>plunger<br>(for B32<br>Keycap)        | NO          |      | sealed          | Hole PCB,<br>w/Ground             | ops              |
| <b>B3W-<br/>4155</b> | 50mA @<br>24 VDC | Top<br>Actuated,<br>projected<br>plunger<br>(for B32<br>Keycap) | SPST-<br>NO | 350g | Semi-<br>sealed | Through-<br>Hole PCB,<br>w/Ground | 1,000,000<br>ops |

# Tactile Switch B3W

## Tactile Switch with Sealed Construction for Automatic Soldering

- Available in two sizes:  
6 mm square and 12 mm square
- Dome-shaped contact mechanism assures short key stroke and a sharp click to confirm actuation
- Ground terminal available to protect against static electricity
- Ideal for applications such as audio, office and communications equipment, measuring instruments, industrial robots, VCRs, TVs, and vending machines
- Stick packaging style available
- Sealed for cleaning with alcohol based solutions
- RoHS Compliant



## Ordering Information

| Type             | Plunger                                                                                          | Switch height x pitch | Operating force        | Part number             |                      |
|------------------|--------------------------------------------------------------------------------------------------|-----------------------|------------------------|-------------------------|----------------------|
|                  |                                                                                                  |                       |                        | Without ground terminal | With ground terminal |
|                  |                                                                                                  |                       |                        | Bags                    | Bags                 |
| Standard 6x6 mm  | Flat<br>      | 4.3 x 6.5 mm          | General-purpose: 160 g | <b>B3W-1000</b>         | <b>B3W-1100</b>      |
|                  |                                                                                                  |                       | High-force: 230 g      | <b>B3W-1002</b>         | <b>B3W-1102</b>      |
|                  | Projected<br> | 7.3 x 6.5 mm          | General-purpose: 160 g | <b>B3W-1050</b>         | <b>B3W-1150</b>      |
|                  |                                                                                                  |                       | High-force: 230 g      | <b>B3W-1052</b>         | <b>B3W-1152</b>      |
| Standard 12x12mm | Flat<br>      | 4.3 x 6.5 mm          | General-purpose: 200 g | <b>B3W-4000</b>         | <b>B3W-4100</b>      |
|                  |                                                                                                  |                       | High-force: 350 g      | <b>B3W-4005</b>         | <b>B3W-4105</b>      |
|                  | Projected<br> | 7.3 x 6.5 mm          | General-purpose: 200 g | <b>B3W-4050</b>         | <b>B3W-4150</b>      |
|                  |                                                                                                  |                       | High-force: 350 g      | <b>B3W-4055</b>         | <b>B3W-4155</b>      |

\* Bulk Packaged, 100 switches per bag

**Important Note: Switches cannot be water-washed.**

## ■ Accessories

See “B32” Tactile Switch Key Top data sheet for keycaps that fit projected plunger B3W models.

### Plunger Identification Table

Use this table to determine keyswitch type by plunger color.

| Plunger color | Operating force | Type                              |
|---------------|-----------------|-----------------------------------|
| White         | 160 g           | <b>B3W-1000, 1050, 1100, 1150</b> |
| White         | 200 g           | <b>B3W-4000, 4050, 4100, 4150</b> |
| Yellow        | 230 g           | <b>B3W-1002, 1052, 1102, 1152</b> |
| Yellow        | 350 g           | <b>B3W-4005, 4055, 4105, 4155</b> |

## Specifications

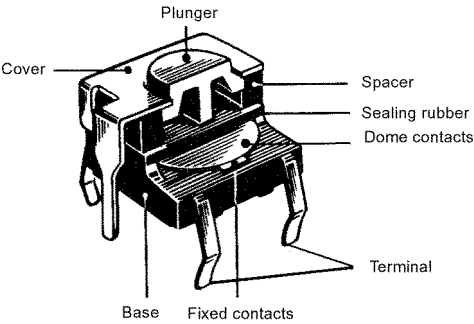
### ■ Characteristics

|                                                |                               |                                                         |                                      |
|------------------------------------------------|-------------------------------|---------------------------------------------------------|--------------------------------------|
| <b>Switching capacity</b>                      |                               | 50 mA 24 VDC (resistive load)                           |                                      |
| <b>Contact form</b>                            |                               | SPST-NO                                                 |                                      |
| <b>Minimum permissible load</b>                |                               | 1 mA 5 VDC min. (resistive load)                        |                                      |
| <b>Contact resistance</b>                      |                               | 100 M $\Omega$ max. (initial value, rated: 1 mA, 5 VDC) |                                      |
| <b>Insulation resistance</b>                   |                               | 100 M $\Omega$ min. (at 250 VDC)                        |                                      |
| <b>Dielectric strength</b>                     |                               | 500 VAC, 50/60 Hz for 1 min.                            |                                      |
| <b>Bounce time</b>                             |                               | 5 ms max.                                               |                                      |
| <b>Vibration</b>                               | <b>Malfunction durability</b> | 10 to 55 Hz, 1.5-mm double amplitude                    |                                      |
| <b>Shock</b>                                   | <b>Destruction durability</b> | 1,000 m/s <sup>2</sup> (approx. 100 G)                  |                                      |
|                                                | <b>Malfunction durability</b> | 100 m/s <sup>2</sup> (approx. 10 G)                     |                                      |
| <b>Ambient temperature</b>                     |                               | -25° to 70°C                                            |                                      |
| <b>Humidity</b>                                |                               | 35% to 85% RH                                           |                                      |
| <b>Service life</b><br>[mechanical/electrical] | <b>General-purpose type</b>   | B3W-1□□□ : 1,000,000 operations min.                    | B3W-4□□□ : 3,000,000 operations min. |
|                                                | <b>High-load type</b>         | 300,000 operations min.                                 | 1,000,000 operations min.            |
| <b>Weight</b>                                  |                               | B3W-1□□□ : Approx. 0.30 g                               | B3W-4□□□ : Approx. 1.00 g            |

■ Operating Characteristics

| Characteristics           | Part number                               |                                           |                                          |                                          |
|---------------------------|-------------------------------------------|-------------------------------------------|------------------------------------------|------------------------------------------|
|                           | B3W-1□□□                                  |                                           | B3W-4□□□                                 |                                          |
|                           | General-purpose                           | High-force                                | General-purpose                          | High-force                               |
| Operating force (OF) max. | 160 g                                     | 230 g                                     | 200 g                                    | 350 g                                    |
| Release force (RF) min.   | 20 g                                      | 50 g                                      | 30 g                                     | 50 g                                     |
| Pretravel (PT)            | 0.25 <sup>+0.2</sup> / <sub>-0.1</sub> mm | 0.25 <sup>+0.2</sup> / <sub>-0.1</sub> mm | 0.3 <sup>+0.2</sup> / <sub>-0.1</sub> mm | 0.3 <sup>+0.2</sup> / <sub>-0.1</sub> mm |

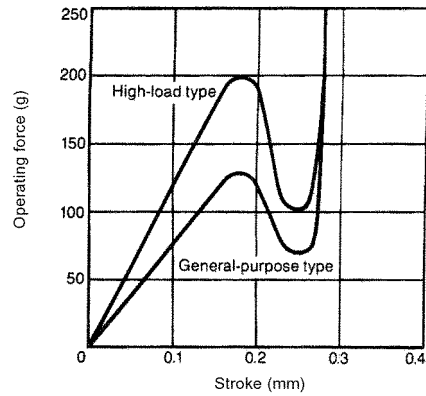
■ Construction



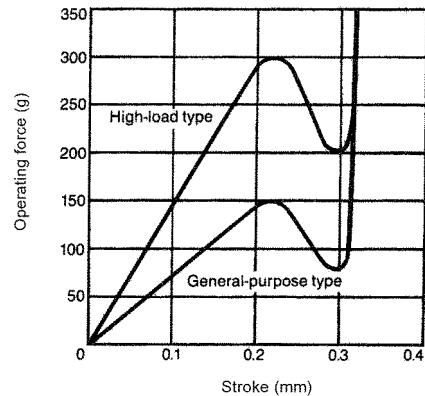
Engineering Data

■ Operating Force vs. Stroke (Typical Example)

B3W-1□□□ series



B3W-4□□□ series



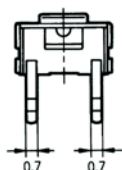
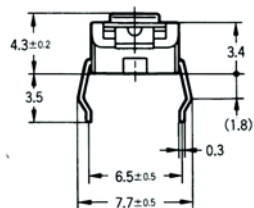
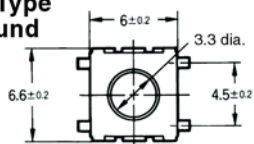
# Dimensions

Unit: mm

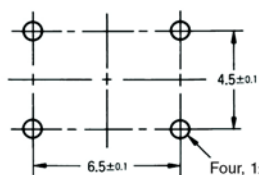
## ■ 6 mm Square Types

**Flat Plunger Type  
(without Ground  
Terminal)**

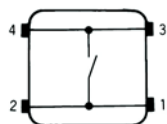
**B3W-1000  
B3W-1002**



**PCB Mounting (Top View)  
(Single-sided PCB, t=1.6)**

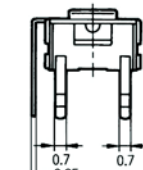
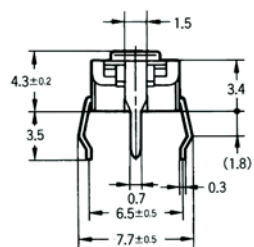
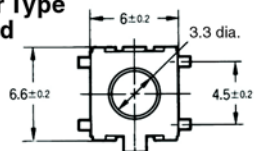


**Terminal Arrangement  
/Internal Connections  
(Top View)**

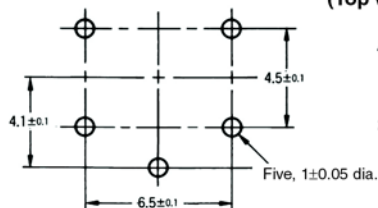


**Flat Plunger Type  
(with Ground  
Terminal)**

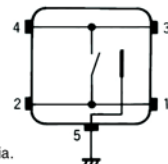
**B3W-1100  
B3W-1102**



**PCB Mounting (Top View)  
(Single-sided PCB, t=1.6)**



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

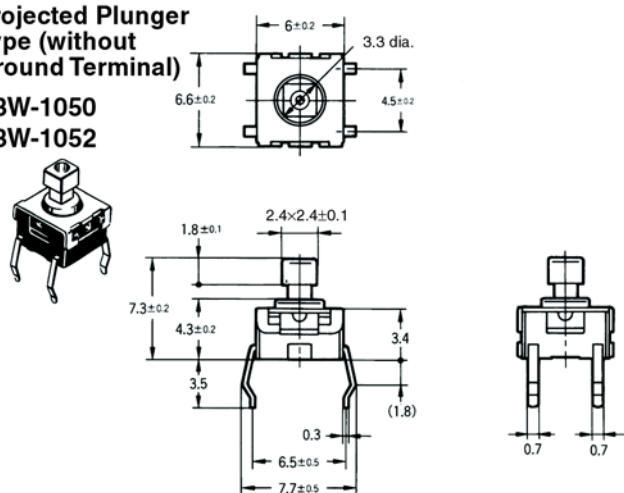


**Note:** Unless otherwise specified, a tolerance of  $\pm 0.4$  mm applies to all dimensions.

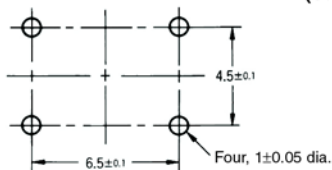
## ■ 6 mm Square Types

### Projected Plunger Type (without Ground Terminal)

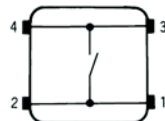
B3W-1050  
B3W-1052



PCB Mounting (Top View)  
(Single-sided PCB,  $t \approx 1.6$ )

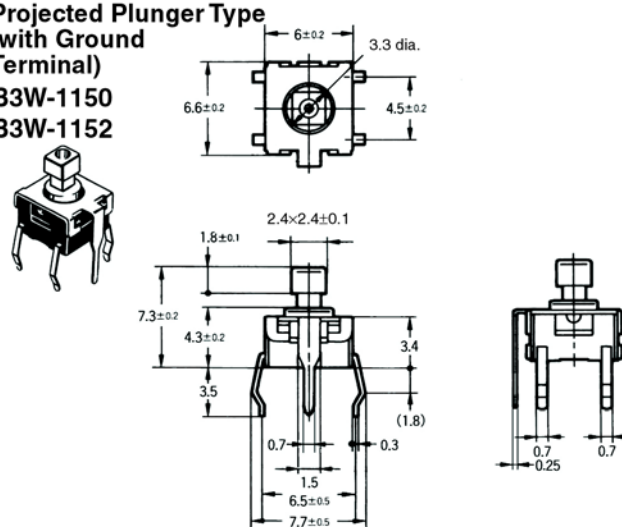


Terminal Arrangement  
/Internal Connections  
(Top View)

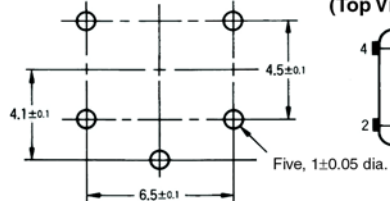


### Projected Plunger Type (with Ground Terminal)

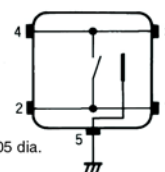
B3W-1150  
B3W-1152



PCB Mounting (Top View)  
(Single-sided PCB,  $t \approx 1.6$ )



Terminal Arrangement  
/Internal Connections  
(Top View)



**Note:** Unless otherwise specified, a tolerance of  $\pm 0.4$  mm applies to all dimensions.

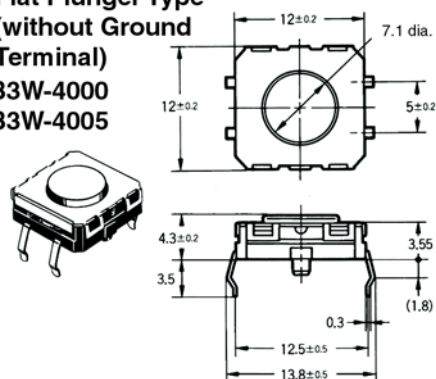


Unit: mm

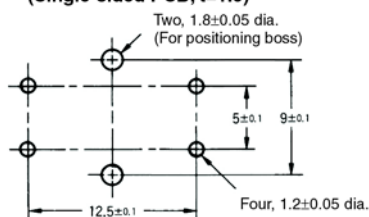
# 12 mm Square Types

## Flat Plunger Type (without Ground Terminal)

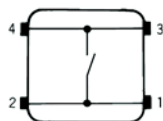
B3W-4000  
B3W-4005



### PCB Mounting (Top View) (Single-sided PCB, t=1.6)

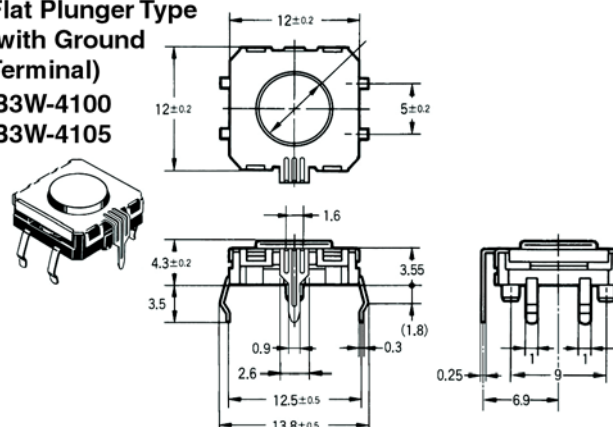


### Terminal Arrangement /Internal Connections (Top View)

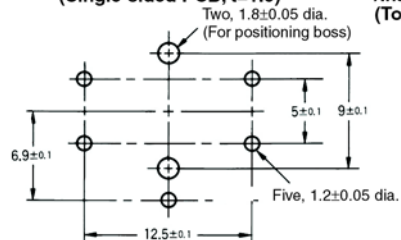


## Flat Plunger Type (with Ground Terminal)

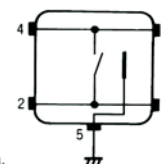
B3W-4100  
B3W-4105



### PCB Mounting (Top View) (Single-sided PCB, t=1.6)



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

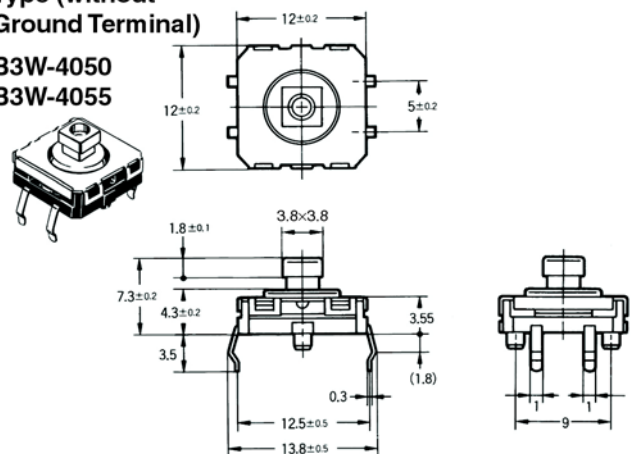


**Note:** Unless otherwise specified, a tolerance of  $\pm 0.4$  mm applies to all dimensions.

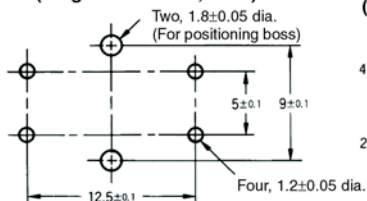
# ■ 12 mm Square Types

## Projected Plunger Type (without Ground Terminal)

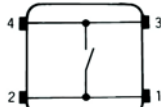
B3W-4050  
B3W-4055



PCB Mounting (Top View)  
(Single-sided PCB,  $t=1.6$ )

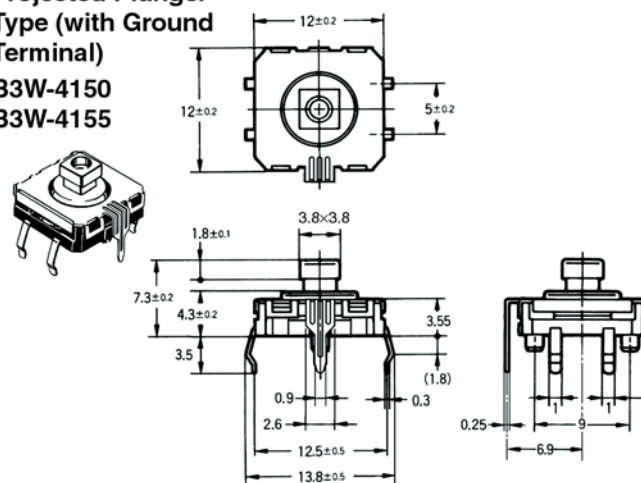


Terminal Arrangement  
/Internal Connections  
(Top View)

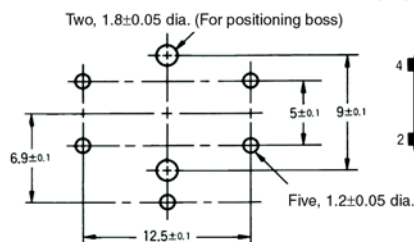


## Projected Plunger Type (with Ground Terminal)

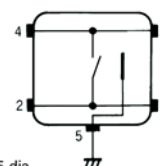
B3W-4150  
B3W-4155



PCB Mounting (Top View)  
(Single-sided PCB,  $t=1.6$ )



Terminal Arrangement  
/Internal Connections  
(Top View)



**Note:** Unless otherwise specified, a tolerance of  $\pm 0.4$  mm applies to all dimensions.