

### Surface-mounting Tactile Switch for High-density Packaging

- Sealed construction allows immersion-cleaning of the PC board with the switches mounted and soldered.
- 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.
- Tape packaging style also available:



## Ordering Information

### Model Number Legend:

B3S-□□□□□  
1 2 3 4 5

- |   |  |
|---|--|
| <p><b>1. Size</b><br/>1: 6 mm x 6 mm</p> <p><b>2. Ground terminal</b><br/>0: Without ground terminal<br/>1: With ground terminal</p> <p><b>3. Plunger</b><br/>0: Flat</p> | <p><b>4. Operating force (OF)</b><br/>0: 1.57 N {160 gf}<br/>2: 2.25 N {230 gf}</p> <p><b>5. Shipment package</b><br/>None: Bag<br/>P: Embossed tape</p> |
|---|--|

### 6 x 6-mm-type B3S-1000 Series

| Operating force (OF)  |                 | Without ground terminal |                          | With ground terminal |                          |
|-----------------------|-----------------|-------------------------|--------------------------|----------------------|--------------------------|
|                       |                 | Bags                    | Embossed tape (see note) | Bags                 | Embossed tape (see note) |
| <b>Standard-force</b> | 1.57 N {160 gf} | B3S-1000                | B3S-1000P                | B3S-1100             | B3S-1100P                |
| <b>High-force</b>     | 2.25 N {230 gf} | B3S-1002                | B3S-1002P                | B3S-1102             | B3S-1102P                |

**Note:** Switches on embossed tape must be ordered in units of 1,000 pieces.

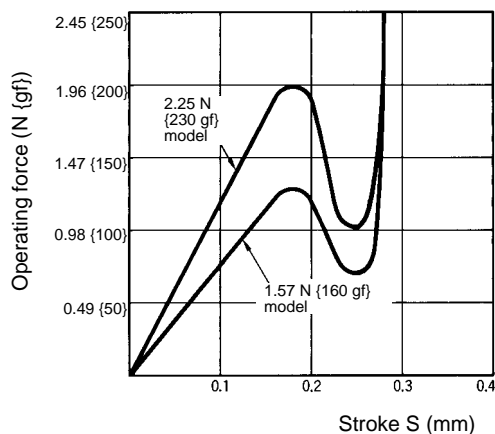
## Specifications

### ■ Ratings/Characteristics

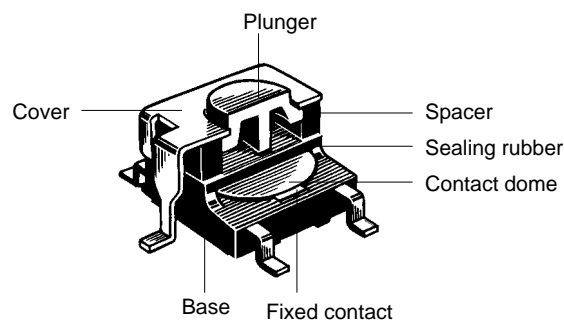
|                       |   |
|-----------------------|---|
| Switching capacity    | 5 to 24 VDC, 1 to 30 mA (resistive load)  |
| Insulation voltage    | 30 VDC  |
| Contact configuration | SPST-NO   |
| Contact resistance    | 100 mΩ max. (initial value) (rated: 1 mA, 5 VDC)  |
| Insulation resistance | 100 MΩ min. (at 250 VDC)  |
| Dielectric strength   | 500 VAC, 50/60 Hz for 1 min   |
| Bounce time           | 5 ms max.   |
| Vibration resistance  | Malfunction: 10 to 55 Hz, 1.5-mm double amplitude   |
| Shock resistance      | Destruction: 1,000 m/s <sup>2</sup> {approx. 100G} max.<br>Malfunction: 100 m/s <sup>2</sup> {approx. 10G} max. |
| Life expectancy       | Standard force models: 500,000 operations min.<br>High-force models: 300,000 operations min.                    |
| Ambient temperature   | Operating: -25°C to 70°C (with no icing)  |
| Ambient humidity      | Operating: 35% to 85%   |
| Weight                | Approx. 0.30 g  |

## Engineering Data

### Operating Force vs. Stroke (Typical)



## Nomenclature

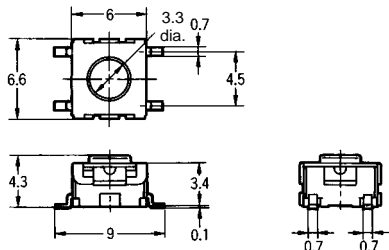
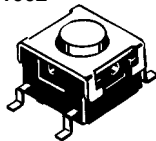


# Dimensions

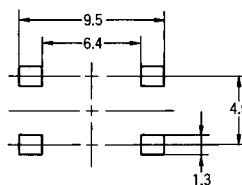
Note: All units are in millimeters unless otherwise indicated.

## Without Ground Terminal

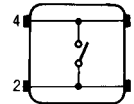
B3S-1000  
B3S-1002



## PCB Mounting (Top View)

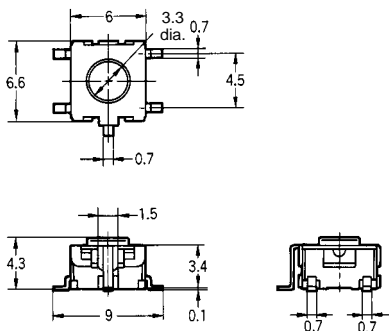
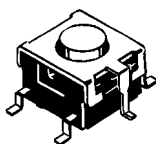


## Terminal Arrangement /Internal Connections (Top View)

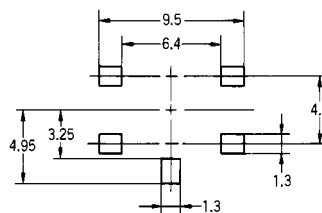


## With Ground Terminal

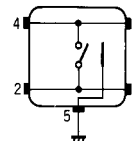
B3S-1100  
B3S-1102



## PCB Mounting (Top View)



## Terminal Arrangement /Internal Connections (Top View)



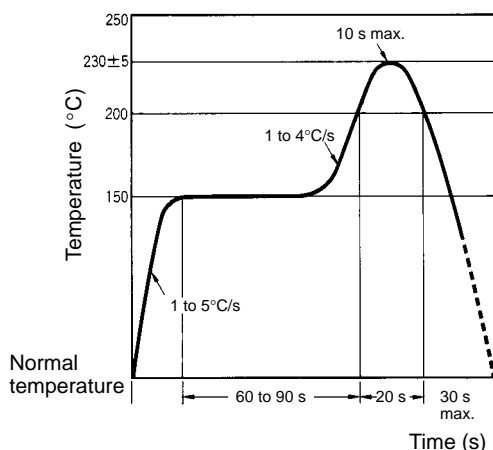
## Operating Characteristics

| Item                 | B3S-1□00                                  | B3S-1□02             |
|----------------------|---|----------------------|
| Operating force (OF) | 1.57 N {160 gf} max.                      | 2.25 N {230 gf} max. |
| Releasing force (RF) | 0.2 N {20 gf} min.                        | 0.49 N {50 gf} min.  |
| Pretravel (PT)       | 0.25 <sup>+0.2</sup> / <sub>-0.1</sub> mm |                      |

# Precautions

## Reflow Soldering

Attach a thermocouple to one side of the terminal with high-temperature solder and use the thermocouple to set the reflow oven to a peak terminal temperature of 230±5°C. The optimum heating curve is shown below.



Note: The above heating curve applies if the thickness of the circuit board is 1.6 mm.

Do not apply additional force to the plunger once it has stopped moving.

Do not repeatedly press the plunger off-center or from an acute angle.

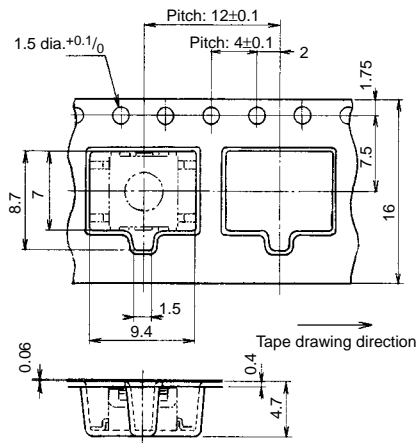
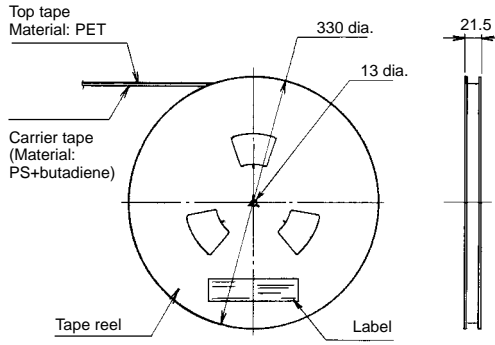
## Cleaning

B3S Switches are designed to allow submersed cleaning after soldering. When cleaning, follow the guidelines given below:

1. Clean with alcohol solvents. Do not use chlorine solvents or water.
2. When using ultrasonic cleaning in two- or three-tank systems and do not clean for more than one minute at a time or for more than three minutes total.
3. Do not apply external force to the Switch while cleaning.
4. Do not clean immediately after soldering. If possible, allow components to stand for at least three minutes before cleaning.
5. The Switch cannot be used where subject to direct contact with water.

**Switch Packing**

Switches are packed on tape as shown below.



|                        |   |
|------------------------|---|
| <b>Package</b>         | 1,000 Switches                          |
| <b>Heat resistance</b> | 60°C for 24 hours (without deformation) |

**Note:** The ground terminals of the Switches are on the guide-hole side of the package.

**ALL DIMENSIONS SHOWN ARE IN MILLIMETERS.**  
 To convert millimeters into inches, multiply by 0.03937. To convert grams into ounces, multiply by 0.03527.

Cat. No. C108-E1-1A