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## Mechanical Key Switch (SMD)

## B3S

### Surface-mounted Device (SMD) Design Meets High-density Mounting Requirements

- The whole switch body can be washed after soldering due to its sealing property.
- Sealed construction provides high reliability in dusty environments.
- Available with ground terminal for protection against static electricity.
- Positive tactile feedback.
- Fully sealed.

### Ordering Information

#### 6 × 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)
General-purpose	1.57 N (160 gf)	B3S-1000	B3S-1000P	B3S-1100	B3S-1100P
High-force	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.

### Specifications

#### ■ Ratings/Characteristics

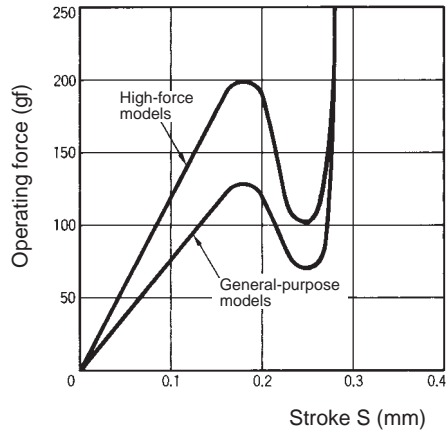
Switching capacity	5 to 24 VDC, 1 to 30 mA (resistive load)
Insulation voltage	30 VDC
Contact configuration	SPST-NO
Contact resistance	100 mΩ max. (initial value) (Rated 5 VDC, 1 mA)
Insulation resistance	100 MΩ min. (at 250 VDC)
Dielectric strength	500 VAC, 50/60 Hz for 1 min
Bounce time	5 ms max.
Vibration resistance	Malfunction: 10 to 55 Hz, 1.5-mm double amplitude
Shock resistance	Destruction: 1,000 m/s <sup>2</sup> min. (approx. 100G min.) Malfunction: 100 m/s <sup>2</sup> min. (approx. 10G min.)
Life expectancy	General-purpose models: 500,000 operations min. 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

## ■ Operating Characteristics

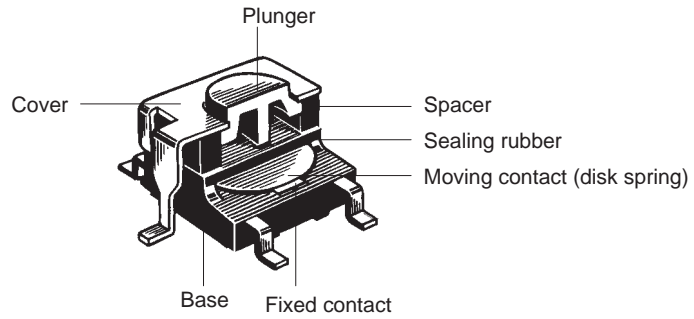
Item	B3S-1000 Series	
	General-purpose models	High-force models
Operating force (OF max.)	1.57 N (160 gf) max.	2.25 N (230 gf) max.
Reset force (RF min.)	0.2 N (20 gf) min.	0.49 N (50 gf) min.
Pretravel (PT)	0.25 <sup>+0.2</sup> / <sub>-0.1</sub> mm	

# Engineering Data

**Operating Force vs. Stroke  
(Typical)**



# Nomenclature

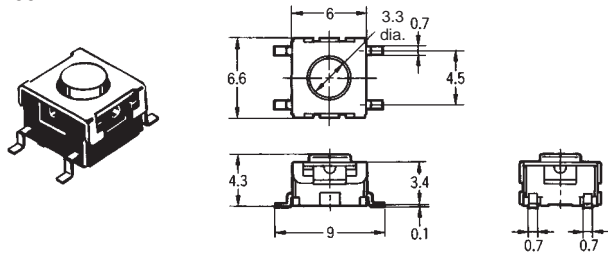


# Dimensions

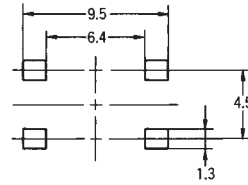
Note: All units are in millimeters unless otherwise indicated.

## Without Ground Terminal

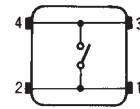
B3S-1000  
B3S-1002



PCB Mounting  
(Top View)

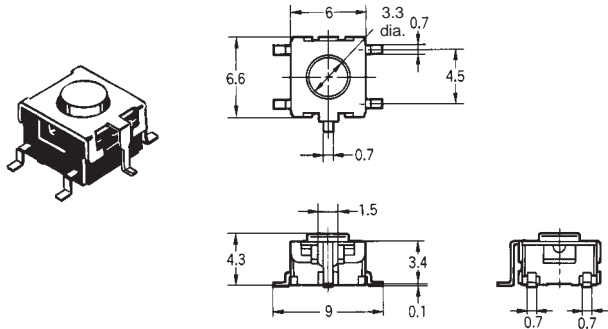


Terminal Arrangement  
/Internal Connections  
(Top View)

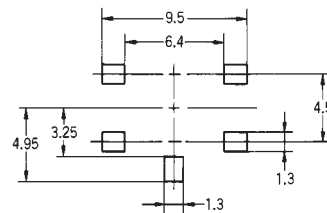


## With Ground Terminal

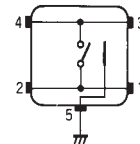
B3S-1100  
B3S-1102



PCB Mounting  
(Top View)



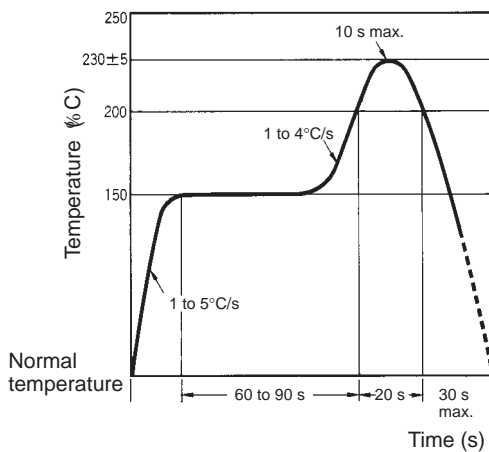
Terminal Arrangement  
/Internal Connections  
(Top View)



# 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  $230 \pm 5^\circ\text{C}$ . 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.

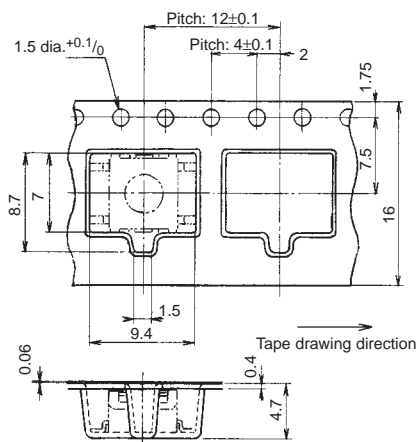
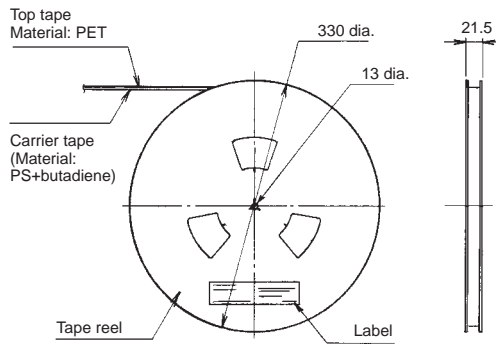
Do not repeatedly press the plunger off-center or from an acute angle.

B3S Switches are designed to allow submersed washing after soldering. When washing, 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 washing.
4. Do not wash immediately after soldering. If possible, allow components to stand for at least three minutes before washing.
5. The Switch cannot be used where subject to direct contact with water.

**Key Switch Packing**

Key Switches are packed on tape as shown below.



<b>Standard</b>	Conforms to EIAJ standards
<b>Package</b>	1,000 Key Switches
<b>Heat resistance</b>	60°C for 24 hours (without deformation)

**Note:** The ground terminals of the Key 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-E1-1 In the interest of product improvement, specifications are subject to change without notice.

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