

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

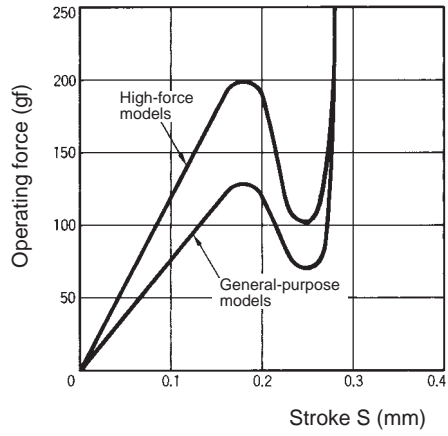
| | |
|-----------------------|--|
| Switching capacity | 5 to 24 VDC, 1 to 30 mA (resistive load) |
| Insulation voltage | 30 VDC |
| Contact configuration | SPST-NO |
| Contact resistance | 100 mΩ max. (initial value) (Rated 5 VDC, 1 mA) |
| Insulation resistance | 100 MΩ min. (at 250 VDC) |
| Dielectric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

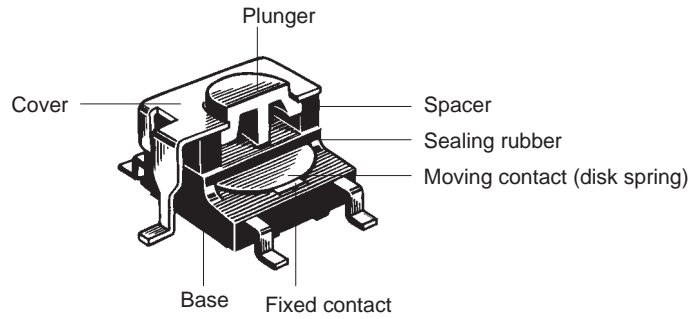
| Item | B3S-1000 Series | |
|---------------------------|---|----------------------|
| | General-purpose models | High-force models |
| Operating force (OF max.) | 1.57 N (160 gf) max. | 2.25 N (230 gf) max. |
| Reset force (RF min.) | 0.2 N (20 gf) min. | 0.49 N (50 gf) min. |
| Pretravel (PT) | 0.25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

Engineering Data

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



Nomenclature

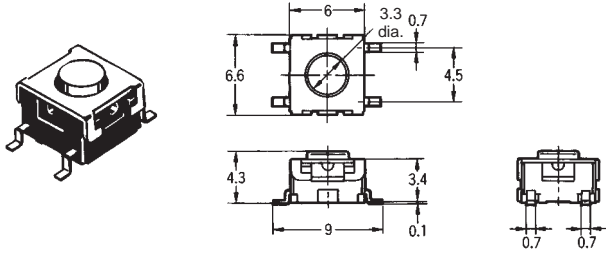


Dimensions

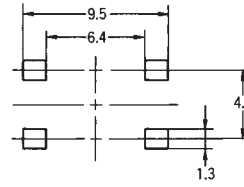
Note: All units are in millimeters unless otherwise indicated.

Without Ground Terminal

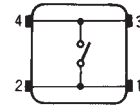
B3S-1000
B3S-1002



PCB Mounting
(Top View)

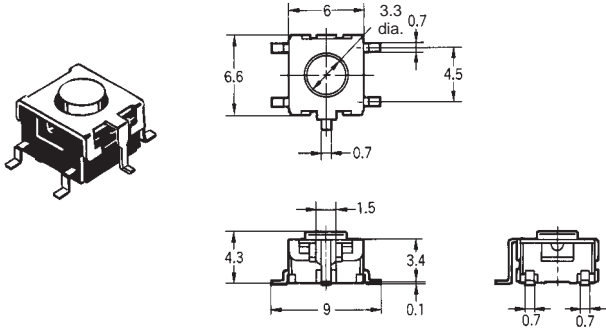


Terminal Arrangement
/Internal Connections
(Top View)

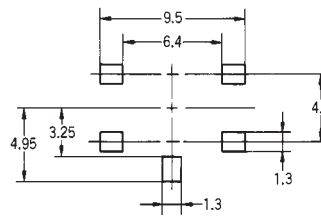


With Ground Terminal

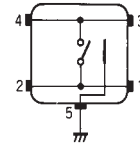
B3S-1100
B3S-1102



PCB Mounting
(Top View)



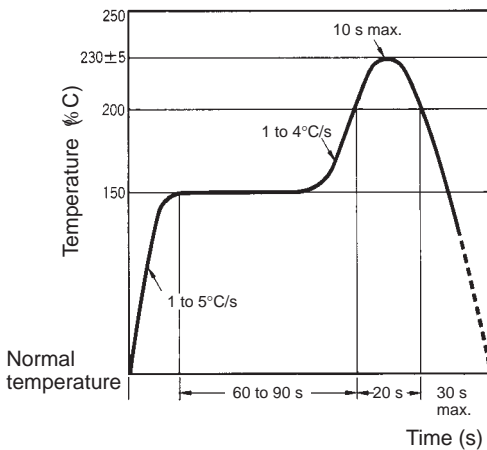
Terminal Arrangement
/Internal Connections
(Top View)



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.

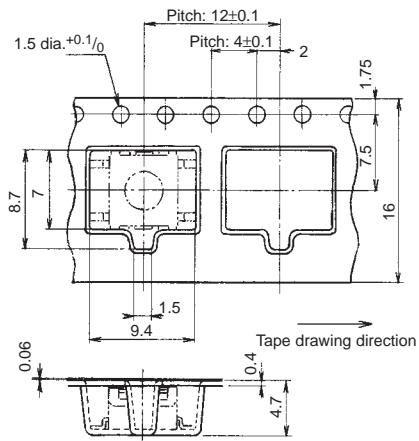
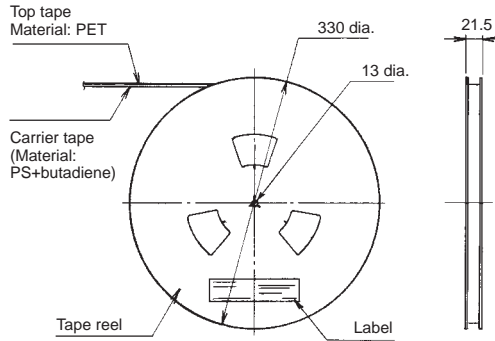
Do not repeatedly press the plunger off-center or from an acute angle.

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.



| | |
|------------------------|---|
| Standard | Conforms to EIAJ standards |
| Package | 1,000 Key Switches |
| Heat resistance | 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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