## OmROn

## Mechanical Key Switch (SMD)

## Surface-mounted Device (SMD) Design <br> Meets High-density Mounting <br> 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

## $6 \times 6$-mm-type B3S-1000 Series

| Operating force (OF) |  | Without ground terminal |  | With ground terminal |  |
| :--- | :--- | :--- | :--- | :--- | :--- |
|  |  | Bags | Embossed tape <br> (see note) | Bags <br> (see note) |  |
| General-purpose | $1.57 \mathrm{~N}(160 \mathrm{gf})$ | B3S-1000 | B3S-1000P | B3S-1100 | B3S-1100P |
| High-force | $2.25 \mathrm{~N}(230 \mathrm{gf})$ | 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 $24 \mathrm{VDC}, 1$ to 30 mA (resistive load) |
| :--- | :--- |
| Insulation voltage | 30 VDC |
| Contact configuration | $\mathrm{SPST}-\mathrm{NO}$ |
| Contact resistance | $100 \mathrm{~m} \Omega \mathrm{max}$. (initial value) (Rated 5 VDC, 1 mA ) |
| Insulation resistance | $100 \mathrm{M} \Omega \mathrm{min}$. (at 250 VDC ) |
| Dielectric strength | $500 \mathrm{VAC}, 50 / 60 \mathrm{~Hz}$ for 1 min |
| Bounce time | 5 ms max. |
| Vibration resistance | Malfunction: 10 to $55 \mathrm{~Hz}, 1.5-\mathrm{mm}$ double amplitude |
| Shock resistance | Destruction: $1,000 \mathrm{~m} / \mathrm{s}^{2} \mathrm{~min}$. (approx. 100 G min.) <br> Malfunction: $100 \mathrm{~m} / \mathrm{s}^{2} \mathrm{~min}$. (approx. 10 G min.) |
| Life expectancy | General-purpose $\mathrm{models}:$ <br> High-force models: |
| Ambient temperature | Operating: $-25^{\circ} \mathrm{C}$ to $70^{\circ} \mathrm{C}$ (with no icing) 000 operations min. |
| 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.) | $1.57 \mathrm{~N}(160 \mathrm{gf}) \mathrm{max}$. | $2.25 \mathrm{~N}(230 \mathrm{gf}) \mathrm{max}$. |
| Reset force (RF min.) | $0.2 \mathrm{~N}(20 \mathrm{gf}) \mathrm{min}$. | $0.49 \mathrm{~N}(50 \mathrm{gf}) \mathrm{min}$. |
| Pretravel (PT) | $0.25+0.2 /-0.1 \mathrm{~mm}$ |  |

## 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


With Ground Terminal
B3S-1100
B3S-1102


## 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 $230^{\circ} \pm 5^{\circ} \mathrm{C}$. The optimum heating curve is shown below.


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

## PCB Mounting

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


PCB Mounting
(Top View)


Terminal Arrangement /Internal Connections (Top View)


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 | $60^{\circ} \mathrm{C}$ for 24 hours (without deformation) |

Note: The ground terminals of the Key Switches are on the guidehole side of the package.

Cat. No. C108-E1-1 In the interest of product improvement, specifications are subject to change without notice.

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