

# OMRON ELECTRONICS

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### Single-key Type Added to Series of B3DA Ultra-low Profile Dome Arrays

- No soldering required. Attach directly to PCB to make an ultra-low profile tactile switch. Construction provides strong resistance to static electricity by having no soldered terminals.
- Matrix adhesive used to create highly dust-proof construction with good ventilation.
- Lower profile, lighter weight, and crisp clicking action.
- OMRON's unique circular contact action ensures a high level of resistance to foreign matter.

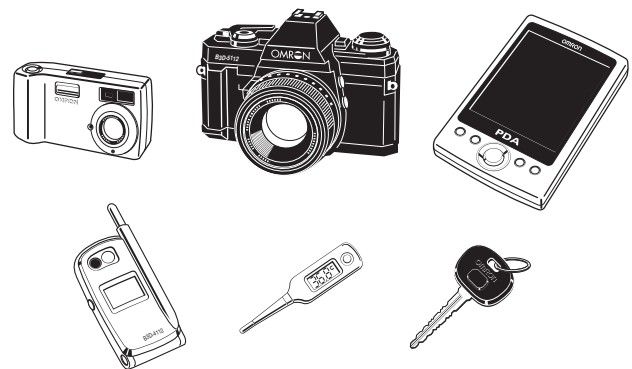


RoHS Compliant

### Application Examples

Use Dome Keys for the operating parts on various electronic devices that require low-profile controls, as follows:

- Operating switches with few mounted parts above PCBs. (Example: Camera operating buttons)
- Small orders, where initial investment in Dome Arrays is not feasible. (Example: Trial applications, commercial equipment, etc.)
- Applications requiring a single key only. (Example: Reset buttons)



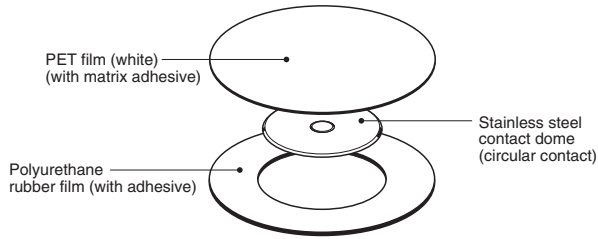
### Specifications

#### ■ List of Models/Ratings/Characteristics

| Item                          | Model | B3D-4112   | B3D-5112                  |
|-------------------------------|-------|--|---------------------------|
| Diameter of contact dome      |       | 4-mm dia.  | 5-mm dia.                 |
| Operating force (OF)          |       | 1.67±0.49 N {170±50 gf}  |                           |
| Releasing force (RF)          |       | 0.2 N {20 gf} min.   |                           |
| Pretravel (PT)                |       | 0.2±0.1 mm   |                           |
| Thickness                     |       | 0.3±0.1 mm   |                           |
| Durability                    |       | 500,000 operations min.  | 1,000,000 operations min. |
| Switching capacity            |       | 10 mA, 12 VDC (resistive load)<br>(recommended minimum load: 1 mA, 3 VDC (resistive load)) |                           |
| Ambient operating temperature |       | -40 to 80°C (60%RH) (with no icing or condensation)  |                           |
| Ambient storage humidity      |       | 10% to 90% (at 40°C max.)  |                           |
| Contact dome                  |       | Stainless steel  |                           |
| Plating                       |       | Silver   |                           |

**Note:** The Dome Keys are sold in units of 500 (20 sheets, with 25 Dome Keys per sheet). Order in multiples of 500 Dome Keys.

# Model Structure



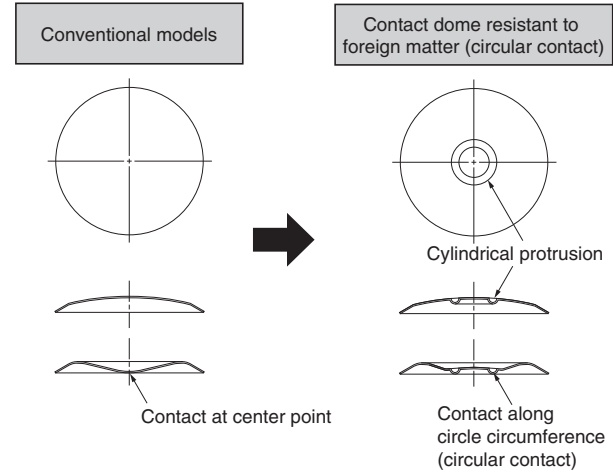
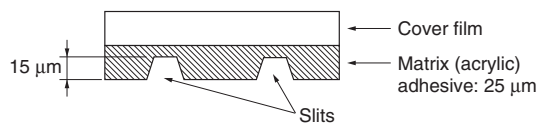
## Circular Contact

When contact dome keys are attached to the PCB, any PCB dust or foreign particles will tend to collect in the center of the key when it is pressed. Therefore, poor contact occurs easily in keys that provide contact at the center point only.

The circular contact construction provides contact along the circumference of a circle, thus preventing poor contact by avoiding the center point.

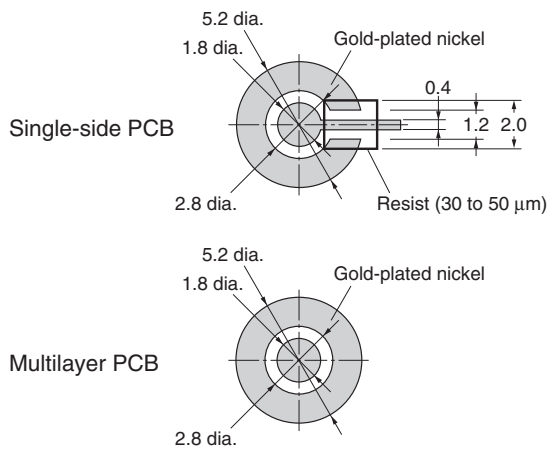
## Matrix Adhesive

The surface structure of this adhesive has grid-shaped slits, as shown in the following cross-sectional diagram. These slits provide both ventilation and dust-proofing, which is required for contact dome operation.

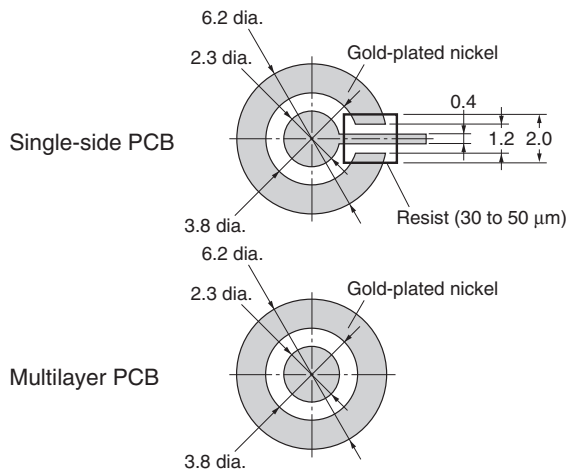


# Recommended Contact Form

## 4-mm Diameter Contact Dome (B3D-4112)

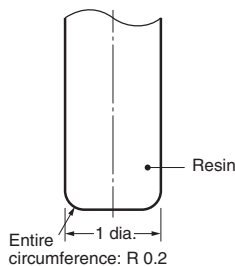


## 5-mm Diameter Contact Dome (B3D-5112)

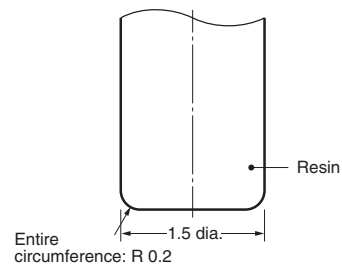


# Recommended Operating Part Form

## 4-mm Diameter Contact Dome (B3D-4112)



## 5-mm Diameter Contact Dome (B3D-5112)

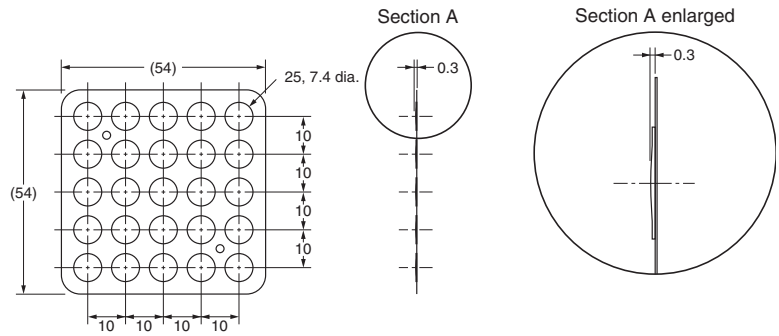
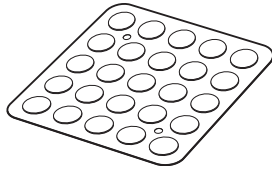


**Note:** All units are in millimeters unless otherwise indicated.

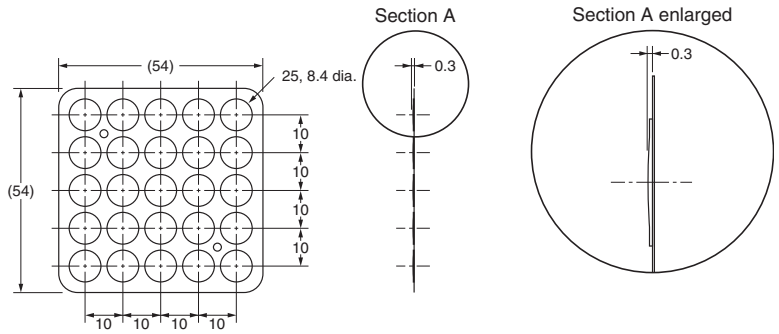
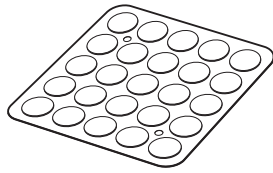
# Dimensions

**Note:** All units are in millimeters unless otherwise indicated. Unless otherwise specified a tolerance of  $\pm 0.4\text{mm}$  applies all dimensions.

**B3D-4112**

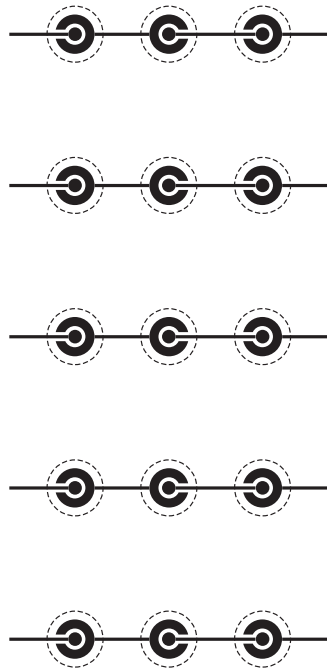


**B3D-5112**

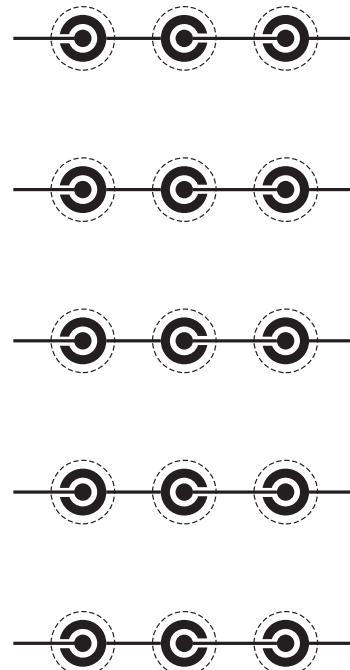


## PCB Pattern Diagrams (Full scale)

■ B3D-4112



■ B3D-5112



## Precautions

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### ■ Correct Use

**Note:** Be sure to read the safety precautions common to all Tactile Switches on pages for correct use.

### ■ Attaching to the PCB

Remove the Dome Key from the sheet using tweezers or a vacuum pick-up tool, and attach it above the contact on the PCB surface, which has been wiped clean in advance. Press down on the top surface using an elastic material, such as urethane rubber, and a force of 2.94 to 4.9 N {300 to 500 gf}. Place a positioning mark (circle) on the PCB for easy positioning.

Make sure that the position of the Dome Key is aligned correctly before use. Significant misalignment may result in short-circuits or reduced sensitivity.

**Note:** The recommended vacuum pick-up tool is the Hozan P-835 Vacuum Pick with an M suction pad (7-mm dia.).

Do not reuse a B3D Dome Key that has been detached from the PCB. Attach a new Dome Key to the PCB.

Do not touch the contact dome with bare hands, or with unclean gloves. Doing so may damage the contact dome, which is the part that comes in contact with the PCB.

### ■ Reflow Soldering

The Dome Key cannot withstand heat from reflow soldering. Always perform reflow soldering before attaching the Dome Key to the PCB.

### ■ Washing

Do not wash the Dome Key. The Dome Key is not water-resistant and must not be exposed to water or other liquids.

**ALL DIMENSIONS SHOWN ARE IN MILLIMETERS.**

To convert millimeters into inches, multiply by 0.03937. To convert grams into ounces, multiply by 0.03527.