OMRON

Tactile Switches

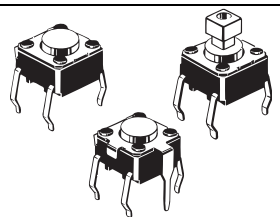
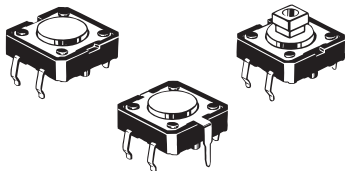
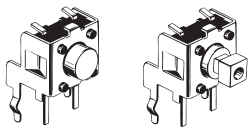
B3F	Standard Tactile Switches
B3W	Sealed Tactile Switches
B3WN	Double-sealed Tactile Switches
B3FS	Surface-mounting Tactile Switches
B3SN	Surface-mounting Tactile Switches (Sealed Type)
B3S	Surface-mounting Tactile Switches (Sealed Type)

B3J	Hinged Tactile Switches
B3M	Long-stroke Tactile Switches
B3DA	Dome Arrays
B3D	Dome Keys
B32	Key Tops

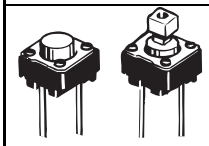
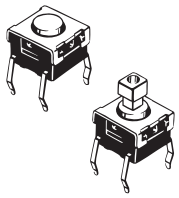
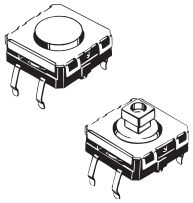
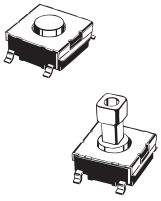
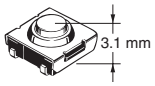
Touch it! Switch it!

Manual Switches by OMRON

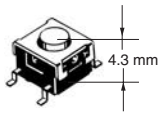
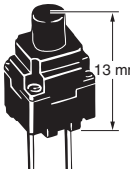
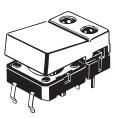
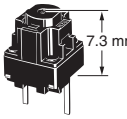
Selection Guide

Item			Standard Switches											
Model			B3F											
Size			6 × 6 mm				12 × 12 mm				6 × 6 mm			
Appearance														
			Standard			High reliability	Standard		Long life expectancy	High reliability	Side-operated type			
Features			• Wide range of models, including 6 × 6 mm, 12 × 12 mm, side-operated, high-force, and gold-plated types.											
Contact			Silver-plated			Gold-plated	Silver-plated		Silver-plated	Gold-plated	Silver-plated			Gold-plated
Plunger		Operating force	0.98 N {100 gf}	1.47 N {150 gf}	2.55 N {260 gf}	1.76 N {180 gf}	1.27 N {130 gf}	2.55 N {260 gf}	1.27 N {130 gf}	1.27 N {130 gf}	0.98 N {100 gf}	1.47 N {150 gf}	2.55 N {260 gf}	1.76 N {180 gf}
Type	Flat type (height: 3.1 mm)	Without ground	---	---	---	---	---	---	---	---	---	---	---	---
		With ground	---	---	---	---	---	---	---	---	---	---	---	---
	Flat type (height 4.3 mm) (side-operated model: 3.15 mm)	Without ground	B3F-1000	B3F-1002	B3F-1005	B3F-1002-G	B3F-4000	B3F-4005	B3F-5000	B3F-5001	---	---	---	---
		With ground	B3F-1100	B3F-1102	B3F-1105	B3F-1102-G	B3F-4100	B3F-4105	B3F-5100	B3F-5101	B3F-3100	B3F-3102	B3F-3105	---
	Flat type (height 5.0 mm) (side-operated model: 3.85 mm)	Without ground	B3F-1020	B3F-1022	B3F-1025	B3F-1022-G	---	---	---	---	---	---	---	---
		With ground	B3F-1120	B3F-1122	B3F-1125	B3F-1122-G	---	---	---	---	B3F-3120	B3F-3122	B3F-3125	B3F-3122-G
	Flat type and others	Without ground	---	---	---	---	---	---	---	---	---	---	---	---
		With ground	B3F-1110	---	---	---	---	---	---	---	---	---	---	---
	Projected type (height 7.3 mm) (side-operated model: 6.15 mm)	Without ground	B3F-1050	B3F-1052	B3F-1055	B3F-1052-G	B3F-4050	B3F-4055	B3F-5050	B3F-5051	---	---	---	---
		With ground	B3F-1150	B3F-1152	B3F-1155	---	B3F-4150	B3F-4155	B3F-5150	B3F-5151	B3F-3150	B3F-3152	B3F-3155	---
Life expectancy (operations)			1,000,000	300,000	100,000	300,000	3,000,000	1,000,000	10,000,000	10,000,000	1,000,000	300,000	100,000	300,000
Enclosure rating			None (IP00)											
Cleaning			Not possible											
Packaging	Bag (standard)		100				100				100			
	Box (standard)		1,500				500				1,000			
	Embossed taping (model number: P suffix)		---				---				---			
Key top (for projected type)	4 × 4 mm		B32-10□0				---				B32-10□0			
	9 × 9 mm		---				B32-12□0				---			
	12 × 12 mm		---				B32-13□0				---			
	Diameter: 9.5 mm		---				B32-16□0				---			
	Diameter: 6 mm		B32-20□0				---				B32-20□0			
	D-shaped		B32-21□0				---				B32-21□0			
RoHS compliance			Compliant											
Page			9											

Note The color is indicated in □ models for key tops. (Refer to page 42 for details.)

Item			Standard Switches		Sealed Switches				Surface-mounting Switches		
Model			B3F		B3W				B3FS		B3SN
Size			6 × 6 mm		6 × 6 mm		12 × 12 mm		6 × 6 mm		
Appearance			 Radial taped type								
Features			• Can be used with general-purpose radial taping parts insertion machines		• Sealed construction for highly reliable operation in locations exposed to dust or water.				• Surface-mounting Switches ideal for high-density mounting.		• Sealed construction conforming to IP67.
Contact			Silver-plated		Silver-plated		Silver-plated		Silver-plated		Silver-plated
Plunger	Operating force		0.98 N {100 gf}	1.47 N {150 gf}	1.57 N {160 gf} max.	2.26 N {230 gf} max.	1.96 N {200 gf} max.	3.43 N {350 gf} max.	0.98 N {100 gf}	1.47 N {150 gf}	1.57 N {160 gf}
Type	Flat type (height: 3.1 mm)	Without ground	---	---	---	---	---	---	B3FS-1000	B3FS-1002	B3SN-3012
		With ground	---	---	---	---	---	---	---	---	B3SN-3112
	Flat type (height 4.3 mm) (side-operated model: 3.15 mm)	Without ground	B3F-6000	B3F-6002	B3W-1000	B3W-1002	B3W-4000	B3W-4005	B3FS-1010	B3FS-1012	---
		With ground	B3F-6100	B3F-6102	B3W-1100	B3W-1102	B3W-4100	B3W-4105	---	---	---
	Flat type (height 5.0 mm) (side-operated model: 3.85 mm)	Without ground	B3F-6020	B3F-6022	---	---	---	---	---	---	---
		With ground	B3F-6120	B3F-6122	---	---	---	---	---	---	---
	Flat type and others	Without ground	---	---	---	---	---	---	---	---	---
		With ground	---	---	---	---	---	---	---	---	---
	Projected type (height 7.3 mm) (side-operated model: 6.15 mm)	Without ground	B3F-6050	B3F-6052	B3W-1050	B3W-1052	B3W-4050	B3W-4055	B3FS-1050	B3FS-1052	---
		With ground	B3F-6150	B3F-6152	B3W-1150	B3W-1152	B3W-4150	B3W-4155	---	---	---
Life expectancy (operations)			1,000,000	300,000	1,000,000	300,000	3,000,000	1,000,000	1,000,000	300,000	100,000
Enclosure rating			None (IP00)		Equivalent to IP67				None (IP00)		Equivalent to IP67
Cleaning			Not possible		Possible				Not possible		Possible
Packaging	Bag (standard)		---		100		100		100		100
	Box (standard)		1,000 (radial taped)		1,500		500		1,500		1,500
	Embossed taping (model number: P suffix)		---		---		---		Refer to page 6		3,000 per reel
Key top (for projected type)	4 × 4 mm		B32-10□0		B32-10□0		---		B32-10□0		---
	9 × 9 mm		---		---		B32-12□0		---		---
	12 × 12 mm		---		---		B32-13□0		---		---
	Diameter: 9.5 mm		---		---		B32-16□0		---		---
	Diameter: 6 mm		B32-20□0		B32-20□0		---		B32-20□0		---
	D-shaped		B32-21□0		B32-21□0		---		B32-21□0		---
RoHS compliance			Compliant		Compliant				Compliant		Compliant
Page			9		18				25		28

Selection Guide

Item				Surface-mounting Switches		Double-sealed Switches	Hinge Switches	Long Stroke Switches	Dome Arrays	Ultra-low Profile Dome Keys
Model				B3S		B3WN	B3J	B3M	B3DA	B3D
Size				6 × 6 mm		8 × 8 mm	12 × 18 mm	6 × 6 mm	---	---
Appearance										
Features				• Surface-mounting Tactile Switch for high-density packaging.		• Double-sealed construction ensures water-tight and dust-tight performance. Conforms to IP67.	• Hinged Tactile Switch	• 0.85-mm long stroke	• Excellent dust resistance	• Adhesive type for attaching to PCB.
Contact				Silver-plated		Silver-plated	Silver-plated	Silver-plated	Silver-plated	Silver-plated
Plunger	Operating force			1.57 N {160 gf} max.	2.26 N {230 gf} max.	1.96 N {200 gf} max.	1.27 N {130 gf} max.	0.69 N {70 gf} max.	1.57 N {160 gf} max.	1.67 N {170 gf} max.
Type	Non-illuminated type	Flat type (height 4.3 mm)	Without ground	B3S-1000	B3S-1002	---	---	---	---	---
			With ground	B3S-1100	B3S-1102	---	---	---	---	---
		Flat type and others	Without ground	---	---	B3WN-6002(S)	B3F-1□00	B3M-6009	---	B3D-□112
			With ground	---	---	---	---	---	---	---
	Illuminated type	Red LED	Without ground	---	---	---	B3J-2□00	---	---	---
		Green LED	Without ground	---	---	---	B3J-4□00	---	---	---
		Yellow LED	Without ground	---	---	---	B3J-3□00	---	---	---
Durability				500,000	300,000	100,000	3,000,000	2,000,000	500,000 to 1,000,000	500,000 to 1,000,000
Enclosure rating				Equivalent to IP67		Equivalent to IP67	None (IP00)			
Cleaning				Possible			Not possible			
Packaging		Bag (standard)		100		---	---	100	---	---
		Box (standard)		1,500		1,000 (radial taped)	300	---	---	500
		Embossed taping (model number: P suffix)		1,000 per reel		---	---	---	---	---
Key top (projected type)		4 × 4 mm		---		---	---	---	---	---
		9 × 9 mm		---		---	---	---	---	---
		12 × 12 mm		---		---	---	---	---	---
RoHS compliance		Compliant		Compliant		Compliant	Compliant	Compliant	Compliant	Compliant
Page				30		23	32	35	37	39

Note: **1.** The color is indicated in □ models for key tops. (Refer to page 42 for details.)
2. The "□" in B3J models contains the number indicating the color of the hinged button. (Refer to page 32 for details.)

Safety Precautions

■ Precautions for Safe Use

Use the Switch within the rated voltage and current ranges, otherwise the Switch may have a shortened life expectancy, radiate heat, or burn out. This particularly applies to the instantaneous voltages and currents when switching.

■ Precautions for Correct Use

Storage

To prevent degradation, such as discoloration, in the terminals during storage, do not store the Switch in locations that are subject to the following conditions.

1. High temperature or humidity
2. Corrosive gases
3. Direct sunlight

Handling

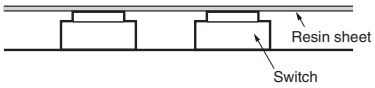
1. Operation

Do not repeatedly operate the Switch with excessive force. Applying excessive pressure or applying additional force after the plunger has stopped may deform the disc spring of the Switch, resulting in malfunction. In particular, applying excessive force to Side-operated Switches may damage the caulking, which in turn may damage the Switch. Do not apply force exceeding the maximum (29.4 N for 1 minute, one time) when installing or operating Side-operated Switches.

Be sure to set up the Switch so that the plunger will operate in a straight vertical line. A decrease in the life of the Switch may result if the plunger is pressed off-center or from an angle.

2. Dust Protection

Do not use Switches that are not sealed in dust-prone environments. Doing so may cause dust to penetrate inside the Switch and cause faulty contact. If a Switch that is not sealed must be used in this kind of environment, use a sheet or other measure to protect it against dust.



PCBs

The Switch is designed for a 1.6-mm thick, single-side PCB.

Using PCBs with a different thickness or using double-sided, through-hole PCBs may result in loose mounting, improper insertion, or poor heat resistance in soldering. These effects will occur, depending on the type of holes and patterns of the PCB. Therefore, it is recommended that a verification test is conducted before use.

If the PCBs are separated after mounting the Switch, particles from the PCBs may enter the Switch. If PCB particles or foreign particles from the surrounding environment, workbench, containers, or stacked PCBs become attached to the Switch, faulty contact may result.

Soldering

1. General Precautions

Before soldering the Switch on a multilayer PCB, test to confirm that soldering can be performed properly. Otherwise the Switch may be deformed by the soldering heat on the pattern or lands of the multilayer PCB.

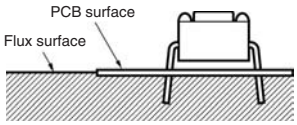
Do not solder the Switch more than twice, including rectification soldering. An interval of five minutes is required between the first and second soldering.

2. Automatic Soldering Baths (B3F, B3W, B3WN, B3M, B3J)

Soldering temperature: 260°C max.
Soldering time: 5 s max. for a 1.6-mm thick single-side PCB

Preheating temperature: 100°C max. (ambient temperature)
Preheating time: Within 60 s

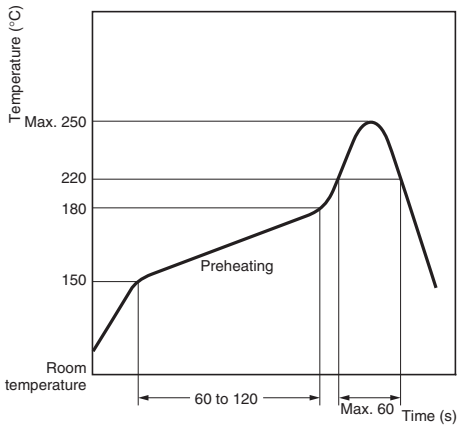
Make sure that no flux will rise above the level of the PCB. If flux overflows onto the mounting surface of the PCB, it may enter the Switch and cause a malfunction.



3. Reflow Soldering (Surface Mounting)

Solder the terminals within the heating curve shown in the following diagram.

B3S, B3SN, B3FS



Note: The above heating curve applies if the PCB thickness is 1.6 mm.

The peak temperature may vary depending on the reflow bath used. Confirm the conditions beforehand.

Do not use an automatic soldering bath for surface-mounted Switches. The soldering gas or flux may enter the Switch and damage the Switch's push-button operation.

4. Manual Soldering (All Models)

Soldering temperature: 350°C max. at the tip of the soldering iron
Soldering time: 3 s max. for a 1.6-mm thick, single-side PCB

Before soldering the Switch on a PCB, make sure that there is no unnecessary space between the Switch and the PCB.

Washing

1. Washable and Non-washable Models

Washable (sealed types)	B3W, B3WN, B3S, B3SN
Non-washable (standard types)	B3F, B3FS, B3M, B3J, B3DA, B3D

Standard Switches are not sealed, and cannot be washed. Doing so will cause the washing agent, together with flux or dust particles on the PCB, to enter the Switch, resulting in malfunction.

2. Washing Methods

Washing equipment incorporating more than one washing bath can be used to clean washable models, provided that the washable models are cleaned for one minute maximum per bath and the total cleaning time does not exceed three minutes.

3. Washing Agents

Apply alcohol-based solvents to clean washable models. Do not apply any other agents or water to clean any washable model, as such agents may degrade the materials or performance of the Switch.

4. Washing Precautions

Do not impose any external force on washable models while washing.

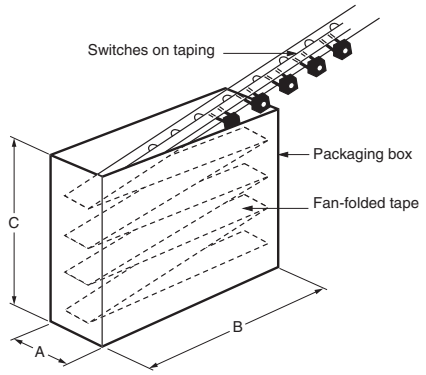
Do not clean washable models immediately after soldering. The cleaning agent may be absorbed into the Switch through respiration as the Switch cools. Wait for at least three minutes after soldering before cleaning washable models.

Do not use Sealed Switches while submersed in water or in locations exposed to water.

Switch Packaging (Taping Specification Models)

1. Radial Types

The tape is packaged by fan-folding into the box, as shown in the following diagram.



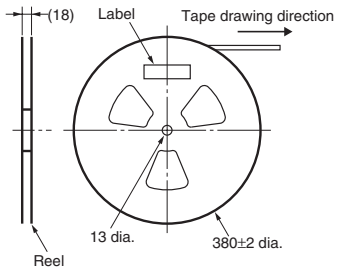
Model	A	B	C
B3F	50 mm	325 mm	275 mm
B3WN	53 mm	326 mm	350 mm

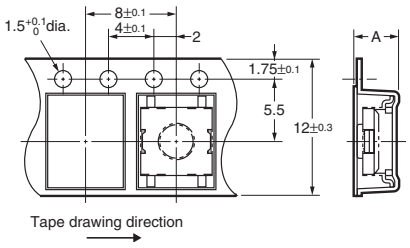
Do not apply any external force to the packaging box, or subject it to vibration. Doing so may deform the Switch terminals.

Remove the tape slowly, making sure that the Switches are not entangled or caught. Otherwise the terminals may be deformed.

Do not store the packaged Switches in locations subject to high temperatures or high humidity. The packaging boxes are sealed with paper tape and are not airtight. Storing the packaged Switches in locations with high temperature or high humidity may result in deterioration of the tape and Switches, and long-term storage under such conditions may cause discoloration of the Switch terminals.

2. Packaging Specifications for Embossed Taping (B3FS-1000P/-1002P, B3SN)



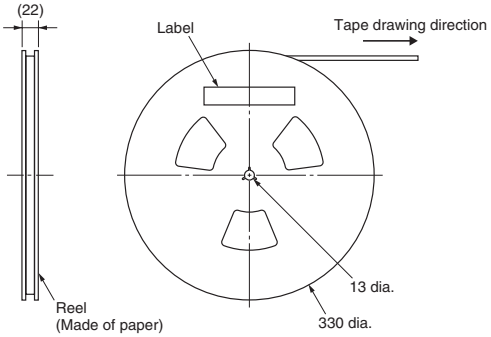


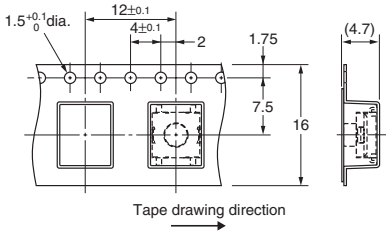
Model	A
B3FS-1000P B3FS-1002P	3.9 mm
B3SN	3.6 mm

Standards	Conforms to JEITA.
Package	3,000 Switches
Heat resistance	50°C for 24 hours (without deformation)

Note: Switches with ground terminals are packaged with the ground terminal on the opposite side of the guide hole.

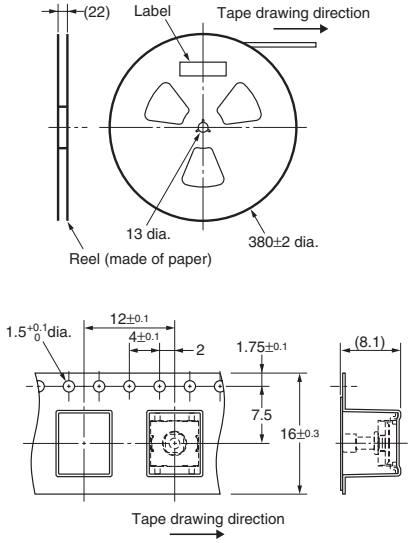
B3FS-1010P





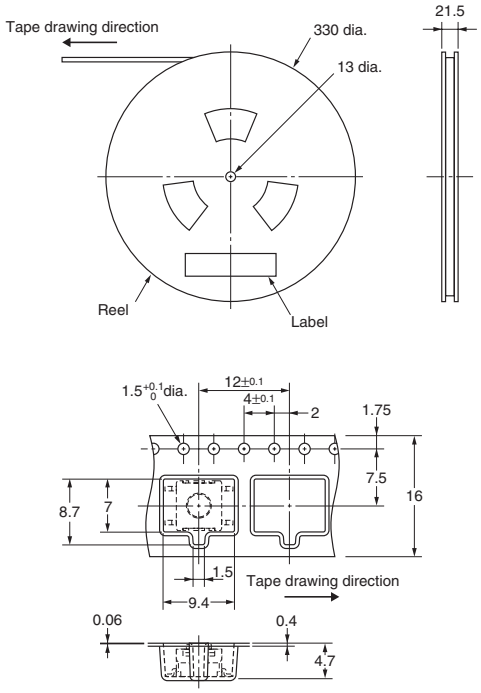
Standards	Conforms to JEITA.
Package	1,000 Switches
Heat resistance	60°C for 24 hours (without deformation)

B3FS-1050P



Standards	Conforms to JEITA.
Package	1,000 Switches
Heat resistance	60°C for 24 hours (without deformation)

B3S



Standards	Conforms to JEITA.
Package	1,000 Switches
Heat resistance	50°C for 24 hours (without deformation)

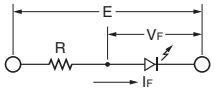
Note: Switches with ground terminals are packaged with the ground terminal on the opposite side of the guide hole.

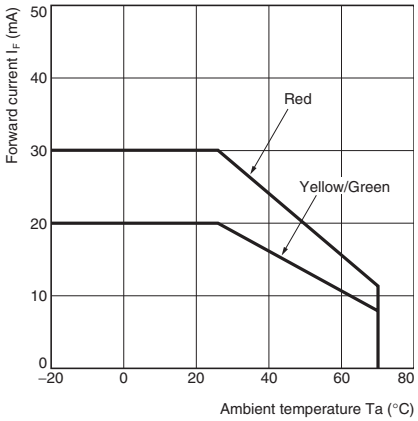
LEDs (B3J)

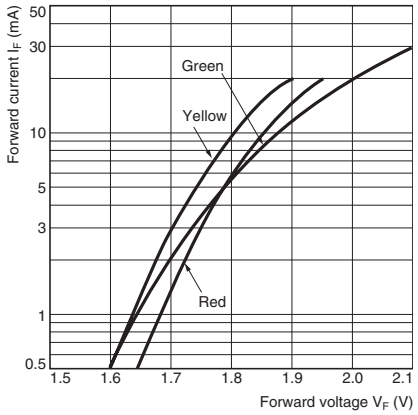
Make sure that the polarity of the LEDs is correct. The polarity is not indicated on the Switch, but the positive pole is located on the back surface of the Switch on the side without the OMRON mark.

Connect limiting resistors to the LEDs. The Switch does not have built-in limiting resistors, so satisfy the LED characteristics by obtaining the limiting resistance according to the following formula based on the voltage to be used.

$$\text{Limiting resistance (R)} = \frac{\text{(Voltage used (E) – LED forward voltage (VF))}}{\text{LED forward current (IF)}}\ (\Omega)$$







RoHS Compliant

RoHS Compliant

The "RoHS Compliant" designation indicates that the listed models do not contain the six hazardous substances covered by the RoHS Directive.

Reference: The following standards are used to determine compliance for the six substances.

- Lead: 1,000 ppm max.
- Mercury: 1,000 ppm max.
- Cadmium: 100 ppm max.
- Hexavelant chromium: 1,000 ppm max.
- PBB: 1,000 ppm max.
- PBDE: 1,000 ppm max.

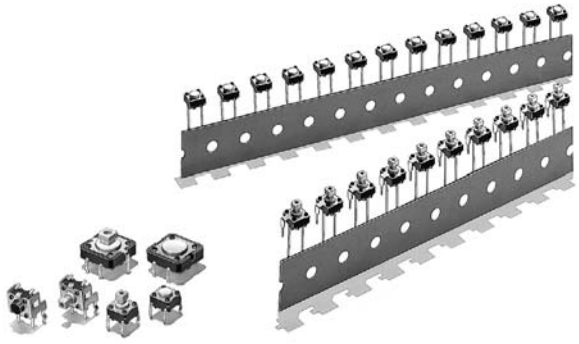
OMRON

Tactile Switch

B3F

A Wide Range of Models:
6 × 6 mm, 12 × 12 mm, Side-operated, High-force, and Gold-plated.

- A positive click action plus a long life equal to that of a no-contact switch.
- Radial models (taping specifications) that allow the use of general-purpose radial taping parts insertion machines have been added to the series.
- Series also includes gold-plated models delivering long-term contact and insulation reliability.
- Projected plunger types that allow the installation of B32-series Special Key Tops are available.

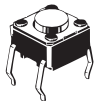
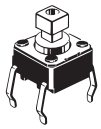


RoHS Compliant (Refer to page 8 for details.)

Ordering Information

6 × 6 mm Models

Type	Plunger	Height	Operating force (OF)	Bags (in units of 100 Switches)	
				Without ground terminal	With ground terminal
Standard (B3F-1000)	Flat type 	4.3 mm	0.98 N {100 gf}	B3F-1000	B3F-1100
			1.47 N {150 gf}	B3F-1002	B3F-1102
			2.55 N {260 gf}	B3F-1005	B3F-1105
			4.9 N {50 gf}	B3F-1006	---
		5.0 mm	0.98 N {100 gf}	B3F-1020	B3F-1120
			1.47 N {150 gf}	B3F-1022	B3F-1122
			2.55 N {260 gf}	B3F-1025	B3F-1125
			4.9 N {50 gf}	B3F-1026	---
		5.0 mm (7.5-mm pitch)	0.98 N {100 gf}	---	B3F-1110
		7.0 mm	0.98 N {100 gf}	B3F-1060	---
			1.47 N {150 gf}	B3F-1062	---
		9.5 mm	0.98 N {100 gf}	B3F-1070	---
			1.47 N {150 gf}	B3F-1072	---
			2.55 N {260 gf}	B3F-1075	---
	Projected type 	7.3 mm	0.98 N {100 gf}	B3F-1050	B3F-1150
			1.47 N {150 gf}	B3F-1052	B3F-1152
			2.55 N {260 gf}	B3F-1055	B3F-1155
			4.9 N {50 gf}	B3F-1056	---

Type	Plunger	Height	Operating force (OF)	Bags (in units of 100 Switches)	
				Without ground terminal	With ground terminal
Side-operated (B3F-3000)	Flat type 	3.15 mm	0.98 N {100 gf}	---	B3F-3100
			1.47 N {150 gf}	---	B3F-3102
			2.55 N {260 gf}	---	B3F-3105
		3.85 mm	0.98 N {100 gf}	---	B3F-3120
			1.47 N {150 gf}	---	B3F-3122
			2.55 N {260 gf}	---	B3F-3125
	Projected type 	6.15 mm	0.98 N {100 gf}	---	B3F-3150
			1.47 N {150 gf}	---	B3F-3152
			2.55 N {260 gf}	---	B3F-3155
Gold-plated (B3F-G)	Flat type 	4.3 mm	1.76 N {179 gf}	B3F-1002-G	B3F-1102-G
		5.0 mm		B3F-1022-G	B3F-1122-G
		7.0 mm		B3F-1062-G	---
		9.5 mm		B3F-1072-G	---
	Projected type 	7.3 mm		B3F-1052-G	---
	Flat type 	3.85 mm		---	B3F-3122-G

Note: Orders must be made in multiples of 100 (the quantity per bag).

12 × 12 mm Models

Type	Plunger (or LED color)	Height	Operating force (OF)	Bags (in units of 100 Switches)	
				Without ground terminal	With ground terminal
Standard (B3F-4000)	Flat type	4.3 mm	1.27 N {130 gf}	B3F-4000	B3F-4100
			2.55 N {260 gf}	B3F-4005	B3F-4105
	Projected type	7.3 mm	1.27 N {130 gf}	B3F-4050	B3F-4150
			2.55 N {260 gf}	B3F-4055	B3F-4155
Long life expectancy (B3F-5000)	Flat type	4.3 mm	1.27 N {130 gf}	B3F-5000	B3F-5100
	Projected type	7.3 mm		B3F-5050	B3F-5150
High reliability gold-plated (B3F-5001)	Flat type	4.3 mm	1.27 N {130 gf}	B3F-5001	B3F-5101
	Projected type	7.3 mm		B3F-5051	B3F-5151

Note: Orders must be made in multiples of 100 (the quantity per bag).

6 × 6 mm Radial Models (Taping Specifications)

Type	Plunger	Height	Operating force: 0.98 N {100 gf}		Operating force: 1.47 N {150 gf}	
			Without ground terminal	With ground terminal	Without ground terminal	With ground terminal
Radial models (B3F-6000)	Flat type	4.3 mm	B3F-6000	B3F-6100	B3F-6002	B3F-6102
		5.0 mm	B3F-6020	B3F-6120	B3F-6022	B3F-6122
	Projected type	7.3 mm	B3F-6050	B3F-6150	B3F-6052	B3F-6152

Note: Orders must be made in multiples of 1,000. Switches are not sold individually.

Specifications

■ Ratings/Characteristics

Switching capacity	1 to 50 mA, 5 to 24 VDC (resistive load) B3F-G: 100 μA to 50 mA, 5 to 24 VDC
Ambient operating temperature	–25°C to 70°C at 60% max. humidity (with no icing or condensation)
Ambient operating humidity	35% to 85% (at 5 to 35°C)
Contact form	SPST-NO
Contact resistance	100 mΩ max. (initial value) (rated: 1 mA, 5 VDC) B3F-G: (rated: 100 μA, 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^2 {approx. 100G} max. Malfunction: 100 m/s^2 {approx. 10G} max.
Life expectancy	B3F-1000, B3F-3000, B3F-6000: 1,000,000 operations min (OF: 0.98 N {100 gf}) (B3F-1070: 500,000 operations min) 300,000 operations min (OF: 1.47 N {150 gf}) 100,000 operations min (OF: 2.55 N {260 gf}) 50,000 operations min (OF: 4.9 N {500 gf}) B3F-4000: 3,000,000 operations min (OF: 1.27 N {131 gf}) 1,000,000 operations min (OF: 2.55 N {260 gf}) B3F-5000: 10,000,000 operations min. B3F-G: 300,000 operations min.
Weight	6 × 6 mm models: approx. 0.25 g 12 × 12 mm models (standard types): approx. 0.85 g Radial models: approx. 0.25 g

■ Operating Characteristics

	B3F-1000, B3F-3000, B3F-6000				B3F-4000, B3F-5000		B3F-G
Operating force (OF)	**0.98 N**	**1.47 N**	**2.55 N**	**4.9 N**	**1.27 N**	**2.55 N**	**1.76 N**
Item	**B3F-1□□0 B3F-3□□0 B3F-6□□0**	**B3F-1□□2 B3F-3□□2 B3F-6□□2**	**B3F-1□□5 B3F-3□□5**	**B3F-10□6**	**B3F-4□□0 B3F-5□□0**	**B3F-4□□5**	**B3F-1□□2-G B3F-3□□2-G**
Operating force (OF)	0.98±0.29 N {100±30 gf}	1.47±0.49 N {150±50 gf}	2.55±0.69 N {260±70 gf}	4.9±1.47 N {500±150 gf}	1.27±0.49 N {130±50 gf}	2.55±0.69 N {260±70 gf}	1.76±0.49 N {180±50 gf}
Releasing force (RF)	0.2 N {20 gf} min.	0.49 N {50 gf} min.	0.49 N {50 gf} min.	0.7 N {70 gf} min.	0.29 N {30 gf} min.	0.49 N {50 gf} min.	0.49 N {50 gf} min.
Pretravel (PT)	$0.25^{+0.2}/_{-0.1}$ mm				$0.3^{+0.2}/_{-0.1}$ mm		$0.25^{+0.2}/_{-0.1}$ mm

Dimensions

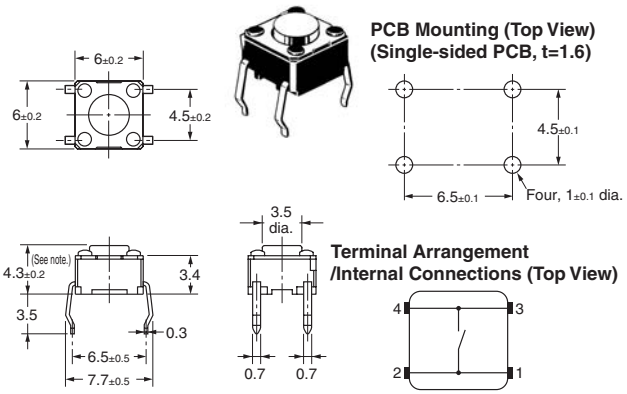
Note: **1.** All units are in millimeters unless otherwise indicated. Unless otherwise specified, a tolerance of ±0.4 mm applies to all dimensions.

2. No terminal numbers are indicated on the Switches. The numbers used for terminals in the following graphics are indicated in the "Bottom View" diagram below. In this diagram, the Switch is rotated so that the terminals are on the right and left-hand sides, and the OMRON logo appears the right way up. (Except Side-operated and Radial Models)

6 × 6 mm Models

Standard, Flat Plunger Type (without Ground Terminal)

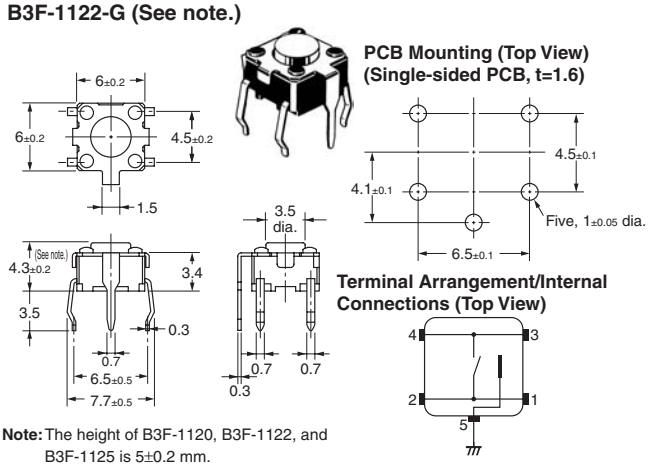
B3F-1000, B3F-1002, B3F-1005, B3F-1006
B3F-1020 (See note.), B3F-1022 (See note.),
B3F-1025 (See note.), B3F-1026 (See note.)
B3F-1002-G
B3F-1022-G (See note.)



Note: The height of B3F-1020, B3F-1022, B3F-1025, and B3F-1026 is 5±0.2 mm.

Standard, Flat Plunger Type (with Ground Terminal, Pitch: 6.5 mm)

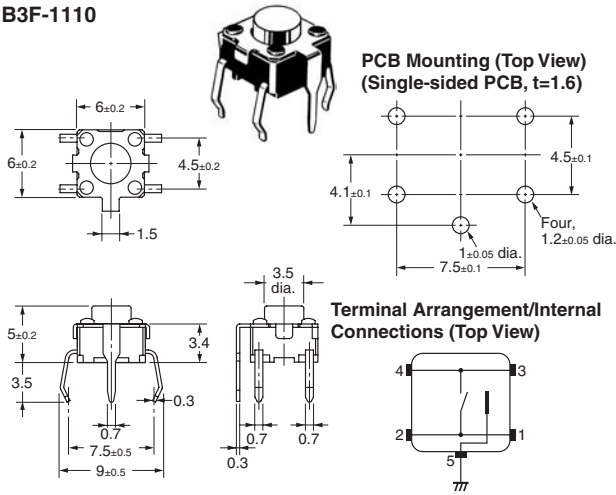
B3F-1100, B3F-1102, B3F-1105
B3F-1120 (See note.), B3F-1122 (See note.)
B3F-1125 (See note.)
B3F-1102-G
B3F-1122-G (See note.)



Note: The height of B3F-1120, B3F-1122, and B3F-1125 is 5±0.2 mm.

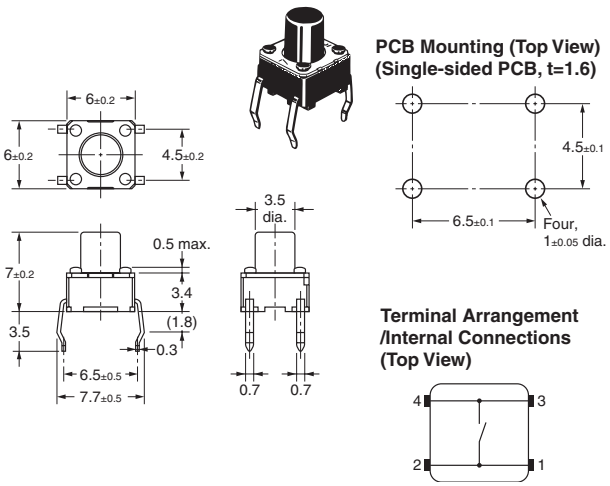
Standard, Flat Plunger Type (with Ground Terminal, Pitch: 7.5 mm)

B3F-1110



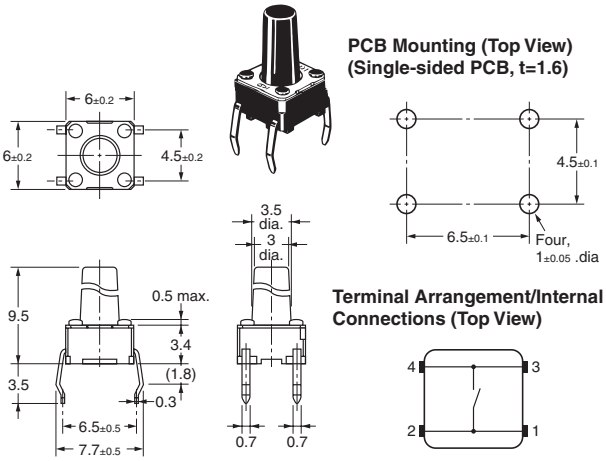
Standard, Flat Plunger Type (without Ground Terminal)

B3F-1060, B3F-1062, B3F-1062-G



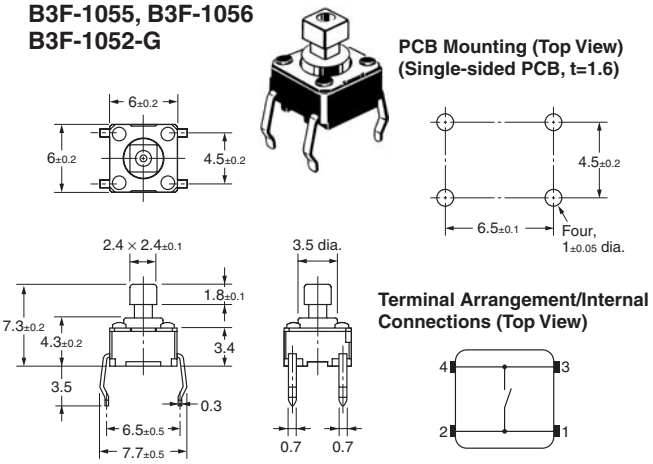
Standard, Flat Plunger Type (without Ground Terminal)

B3F-1070, B3F-1072-N, B3F-1075, B3F-1072-G



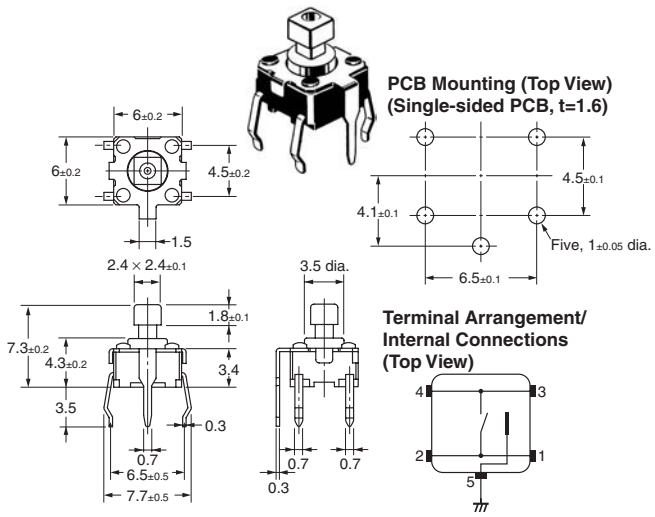
Standard, Projected Plunger Type (without Ground Terminal)

B3F-1050, B3F-1052
B3F-1055, B3F-1056
B3F-1052-G



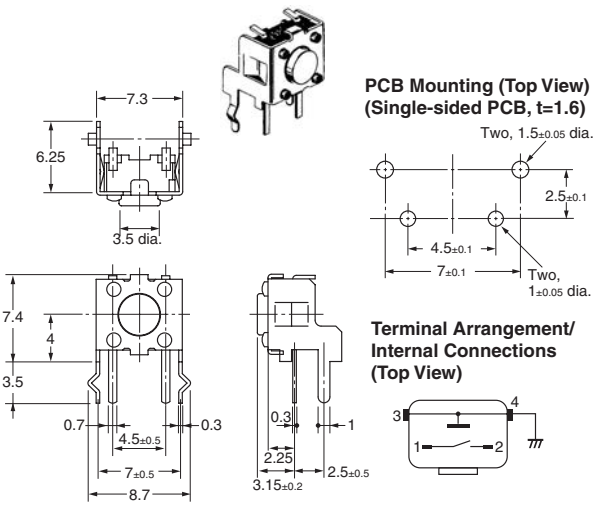
Standard, Projected Plunger Type (with Ground Terminal)

B3F-1150, B3F-1152, B3F-1155



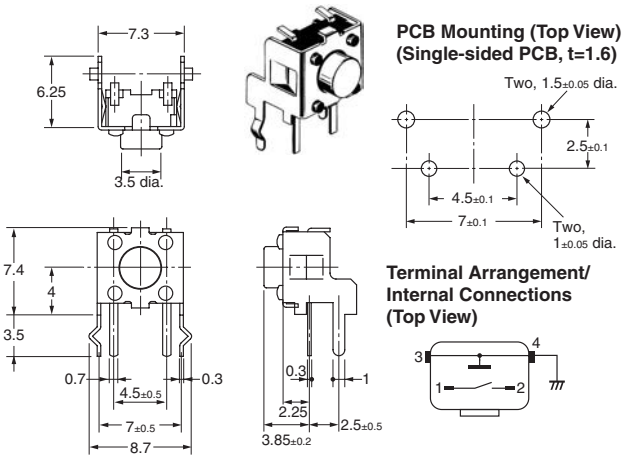
Side-operated, Flat Plunger Type

B3F-3100, B3F-3102, B3F-3105



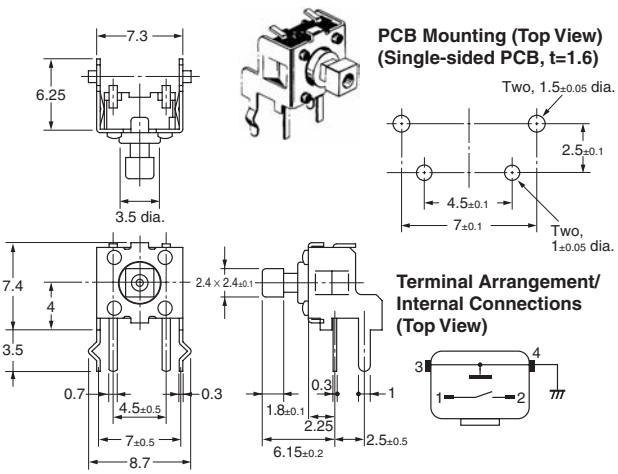
Side-operated, Flat Plunger Type (Height: 3.85 mm)

B3F-3120, B3F-3122, B3F-3125, B3F-3122-G



Side-operated, Projected Plunger Type

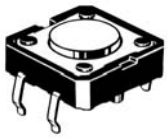
B3F-3150, B3F-3152, B3F-3155



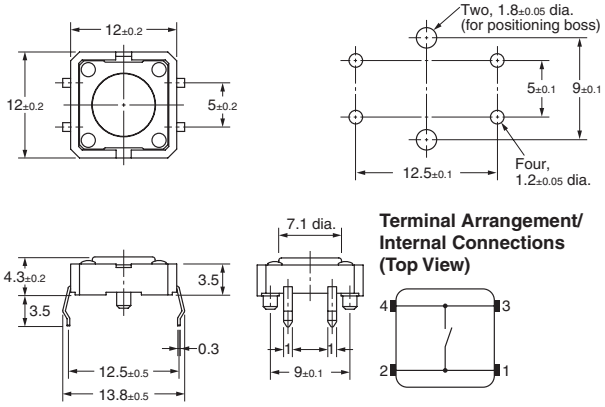
12 × 12 mm Models

Standard, Long-life, and High-reliability Models Flat Plunger Type (without Ground Terminal)

B3F-4000, B3F-4005, B3F-5000, B3F-5001



PCB Mounting (Top View) (Single-sided PCB, t=1.6)

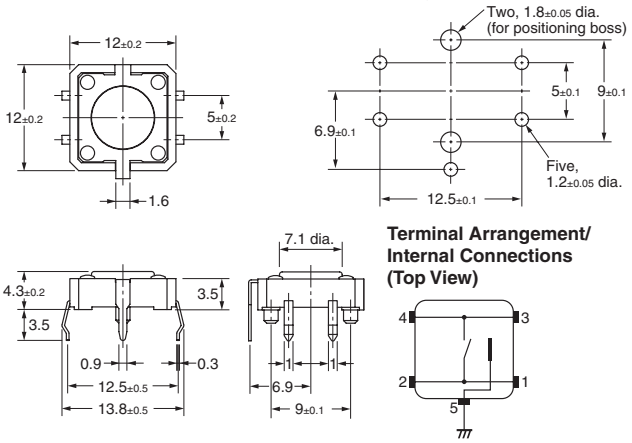


Terminal Arrangement/ Internal Connections (Top View)

Standard, Long-life, and High-reliability Models Flat Plunger Type (with Ground Terminal)

B3F-4100, B3F-4105, B3F-5100, B3F-5101

PCB Mounting (Top View) (Single-sided PCB, t=1.6)

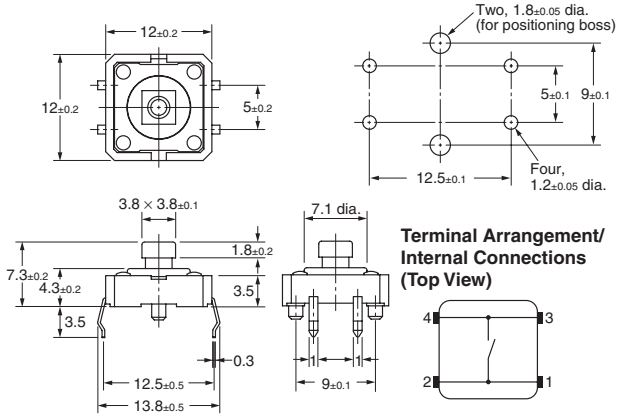


Terminal Arrangement/ Internal Connections (Top View)

Standard, Long-life, and High-reliability Models Projected Plunger Type (without Ground Terminal)

B3F-4050, B3F-4055, B3F-5050, B3F-5051

PCB Mounting (Top View) (Single-sided PCB, t=1.6)

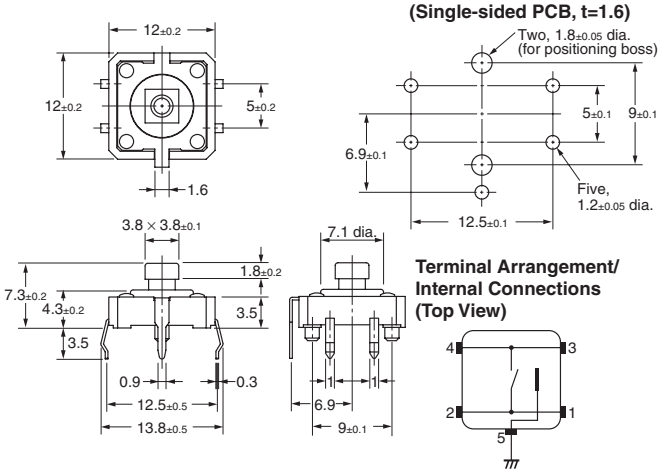


Terminal Arrangement/ Internal Connections (Top View)

Standard, Long-life, and High-reliability Models Projected Plunger Type (with Ground Terminal)

B3F-4150, B3F-4155, B3F-5150, B3F-5151

PCB Mounting (Top View) (Single-sided PCB, t=1.6)



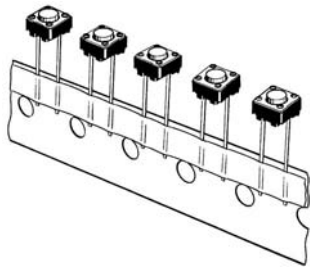
Terminal Arrangement/ Internal Connections (Top View)

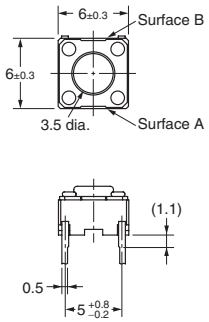
Note: The numbers used for terminals in the following graphics are indicated in the "Bottom View" diagram below. In this diagram, the Switch is rotated so that the terminals are on the right and left-hand sides, and the OMRON logo appears the right way up.

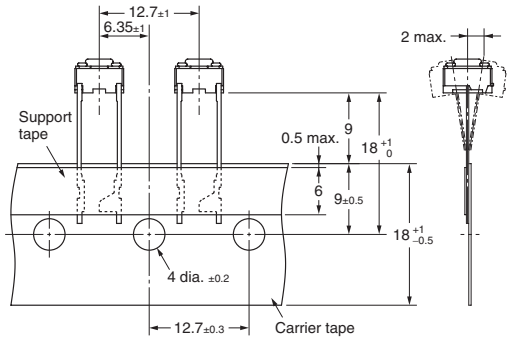
(Bottom View)

6 mm × 6 mm Radial Types (Taping Specifications): Sold in Units of 1,000 Switches

Flat Plunger Type (without Ground Terminal) B3F-6000, B3F-6002

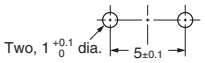




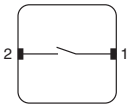


Note: The tape is random between surface A and surface B.

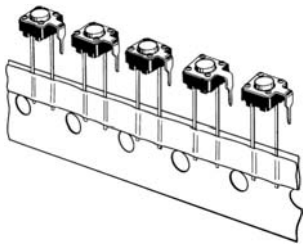
PCB Mounting (Top View) (Single-sided PCB, t=1.6)

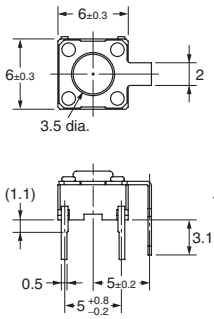


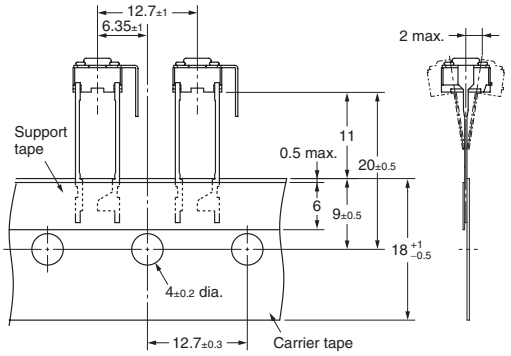
Terminal Arrangement /Internal Connections (Top View)



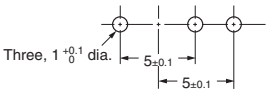
Flat Plunger Type (with Ground Terminal) B3F-6100, B3F-6102



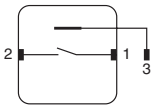




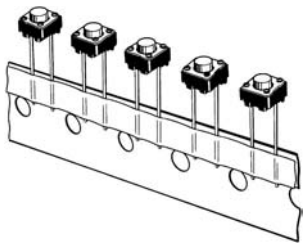
PCB Mounting (Top View) (Single-sided PCB, t=1.6)

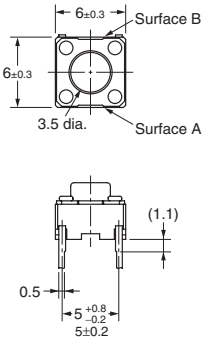


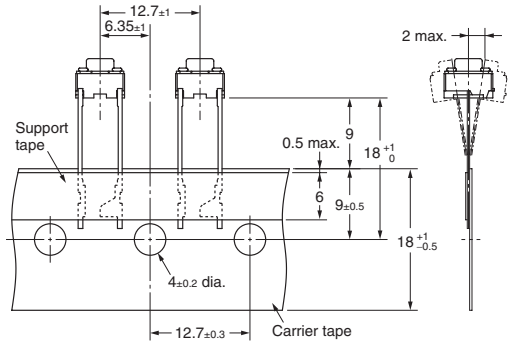
Terminal Arrangement /Internal Connections (Top View)



Flat Plunger Type (without Ground Terminal) B3F-6020, B3F-6022



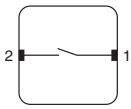




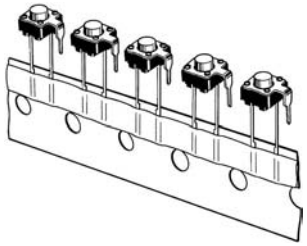
Note: The tape is random between surface A and surface B.

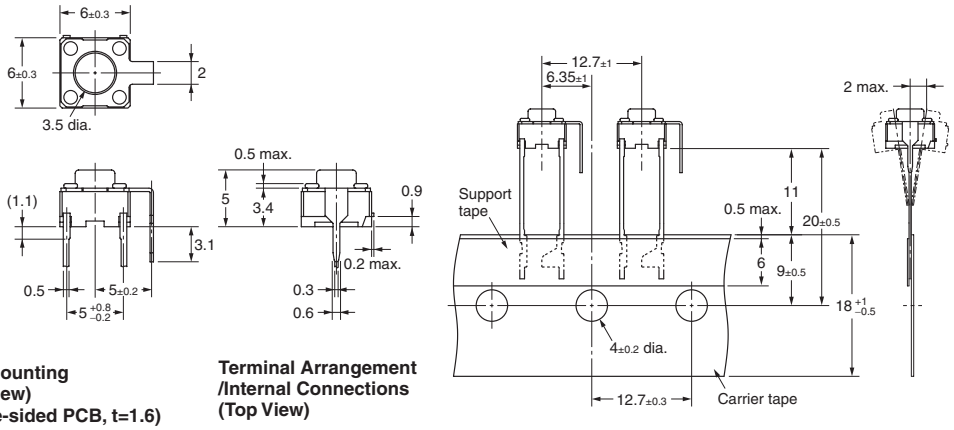
PCB Mounting (Top View) (Single-sided PCB, t=1.6)

Terminal Arrangement /Internal Connections (Top View)

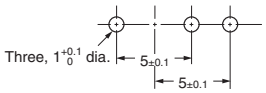


Flat Plunger Type (with Ground Terminal) B3F-6120, B3F-6122

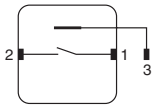




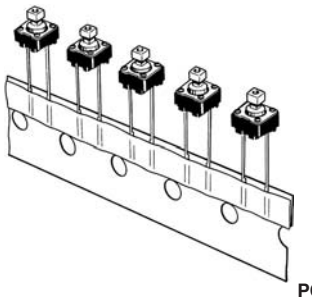
PCB Mounting (Top View) (Single-sided PCB, t=1.6)

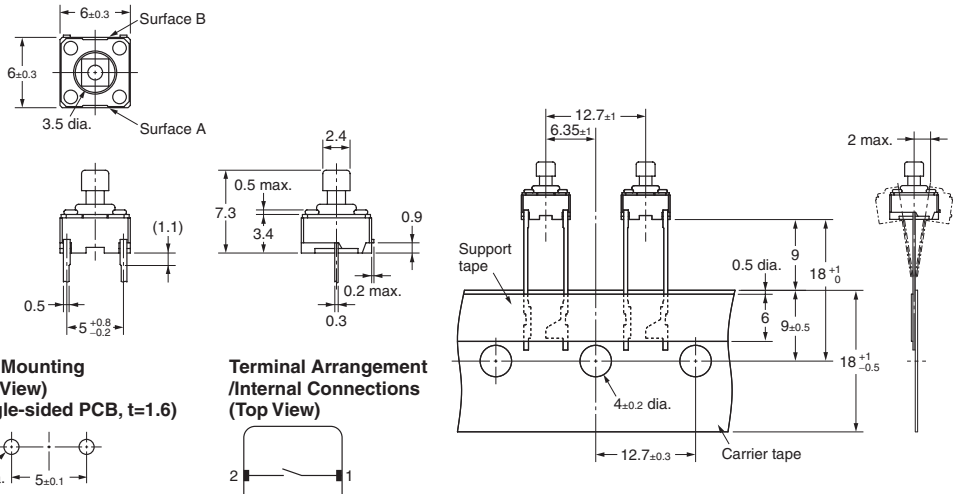


Terminal Arrangement /Internal Connections (Top View)



Projected Plunger Type (without Ground Terminal) B3F-6050, B3F-6052



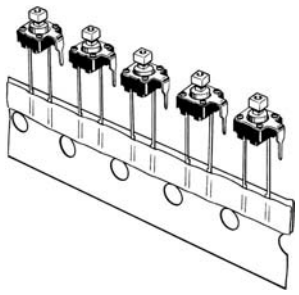


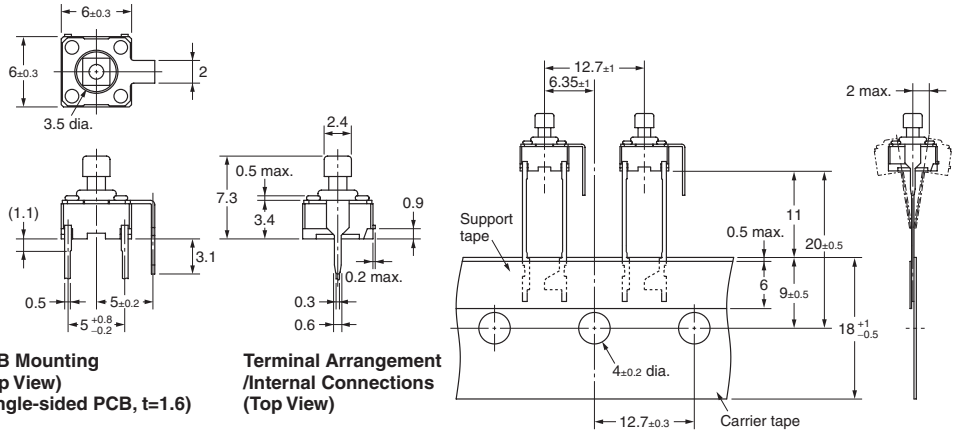
PCB Mounting (Top View) (Single-sided PCB, t=1.6)

Terminal Arrangement /Internal Connections (Top View)

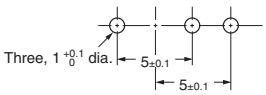
Note: The tape is random between surface A and surface B.

Projected Plunger Type (with Ground Terminal) B3F-6150, B3F-6152

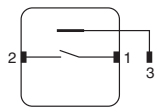




PCB Mounting (Top View) (Single-sided PCB, t=1.6)



Terminal Arrangement /Internal Connections (Top View)



Key Tops

B32-series Special Key Tops are available for projected plunger models. Refer to page 42 for details.

Precautions

Be sure to read the precautions common to all Tactile Switches on pages 5 to 7 for correct use.

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

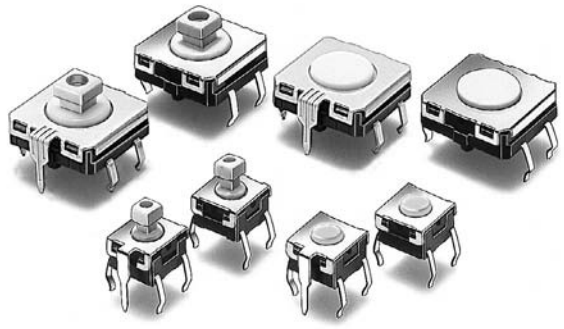
Cat. No. A070-E1-06

OMRON

Sealed Tactile Switch

B3W

Interchangeable with B3F-series Switches, with Sealed Construction to Ensure Highly Reliable Operation



- Sealed construction conforming to IP67 (IEC-60529) provides high reliability in locations exposed to dust or water. (✻ Excluding the terminal section.)
- Thin, compact in both 6 × 6 mm and 12 × 12 mm sizes.
- Available with ground terminals for protection against static electricity.
- Projected plunger types that allow the installation of B32-series Special Key Tops are available.

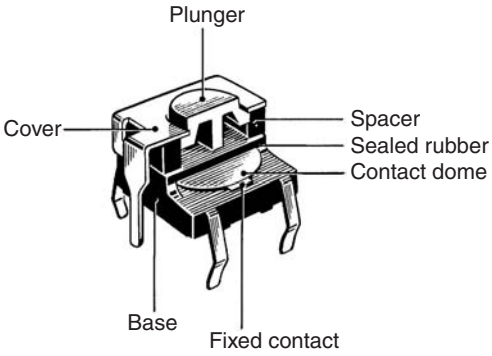
RoHS Compliant (Refer to page 8 for details.)

Ordering Information

Type	Plunger	Height	Operating force (OF)		Bags (in units of 100 Switches)	
					Without ground terminal	With ground terminal
6 × 6 mm B3W-1000	Flat type 	4.3 mm	Standard force	1.57 N {160 gf}	B3W-1000	B3W-1100
			High-force	2.26 N {230 gf}	B3W-1002	B3W-1102
	Projected type 	7.3 mm	Standard force	1.57 N {160 gf}	B3W-1050	B3W-1150
			High-force	2.26 N {230 gf}	B3W-1052	B3W-1152
12 × 12 mm B3W-4000	Flat type 	4.3 mm	Standard force	1.96 N {200 gf}	B3W-4000	B3W-4100
			High-force	3.43 N {350 gf}	B3W-4005	B3W-4105
	Projected type 	7.3 mm	Standard force	1.96 N {200 gf}	B3W-4050	B3W-4150
			High-force	3.43 N {350 gf}	B3W-4055	B3W-4155

Note: Orders must be made in units of 100 pieces (quantity per bag).

Nomenclature



Specifications

■ Ratings/Characteristics

Switching capacity	1 to 50 mA, 5 to 24 VDC (resistive load)
Ambient operating temperature	–25°C to 70°C at 60% max. humidity (with no icing or condensation)
Ambient operating humidity	35% to 85% (at 5 to 35°C)
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^2 {approx. 100 G} max. Malfunction: 100 m/s^2 {approx. 10 G} max.
Life expectancy	B3W-1000: 1.57 N (standard force):1,000,000 operations min. 2.26 N (high-force):300,000 operations min. B3W-4000: 1.96 N (standard force):3,000,000 operations min. 3.43 N (high-force):1,000,000 operations min.
Weight	6 × 6 mm: approx. 0.3 g, 12 × 12: approx. 1 g

■ Operating Characteristics

Item	**B3W-1000**		**B3W-4000**	
	1.57 N	**2.26 N**	**1.96 N**	**3.43 N**
Operating force (OF)	1.57 N {160 gf} max.	2.26 N {230 gf} max.	1.96 N {200 gf} max.	3.43 N {350 gf} max.
Releasing force (RF)	0.2 N {20 gf} min.	0.49 N {50 gf} min.	0.29 N {30 gf} min.	0.49 N {50 gf} min.
Pretravel (PT)	$0.25^{+0.2}/_{-0.1}$ mm		$0.3^{+0.2}/_{-0.1}$ mm	

Dimensions

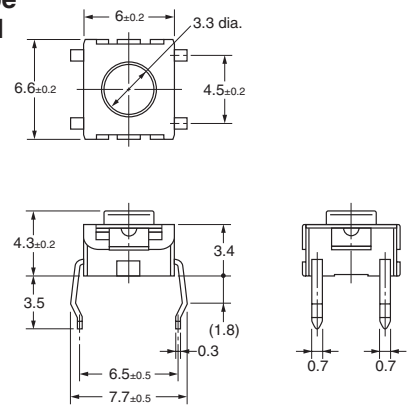
Note: **1.** All units are in millimeters unless otherwise indicated. Unless otherwise specified, a tolerance of ±0.4 mm applies to all dimensions.

2. No terminal numbers are indicated on the Switches. The numbers used for terminals in the following graphics are indicated in the "Bottom View" diagram below. In this diagram, the Switch is rotated so that the terminals are on the right and left-hand sides, and the OMRON logo appears the right way up.

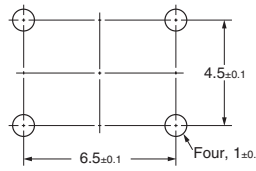
■ 6 × 6 mm Models

Flat Plunger Type (without Ground Terminal)

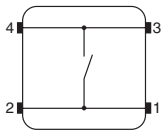
B3W-1000
B3W-1002



PCB Mounting (Top View)
(Single-sided PCB, t=1.6)

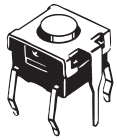


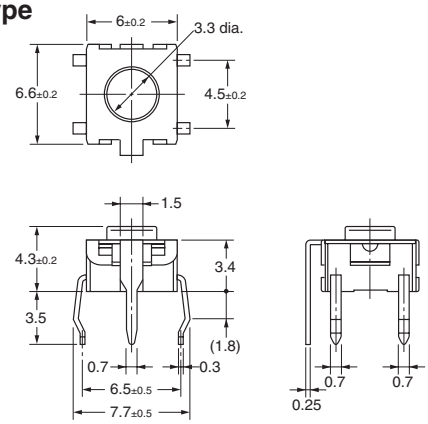
Terminal Arrangement /Internal Connections (Top View)



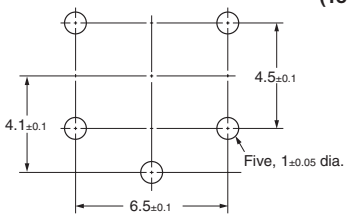
Flat Plunger Type (with Ground Terminal)

B3W-1100
B3W-1102

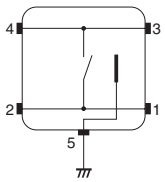




PCB Mounting (Top View)
(Single-sided PCB, t=1.6)

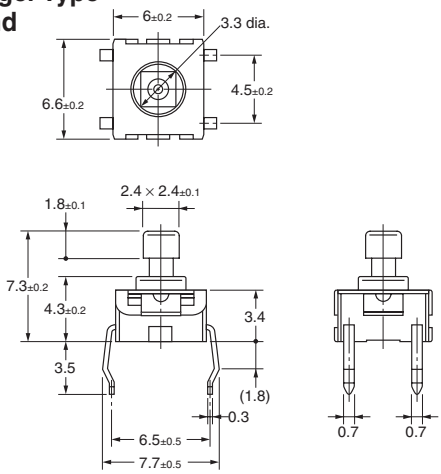


Terminal Arrangement /Internal Connections (Top View)

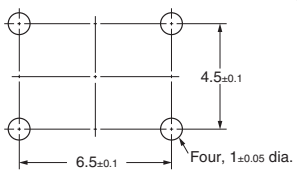


Projected Plunger Type (without Ground Terminal)

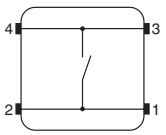
B3W-1050
B3W-1052



PCB Mounting (Top View)
(Single-sided PCB, t=1.6)

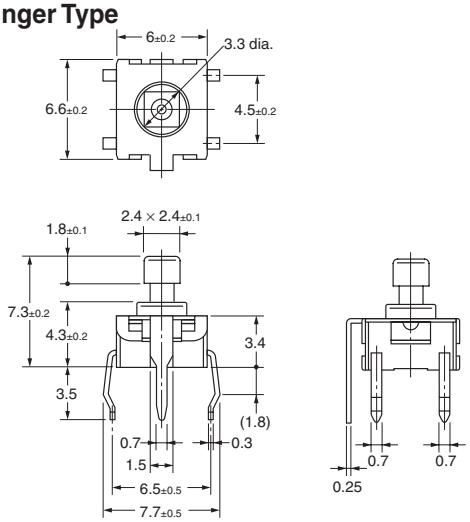


Terminal Arrangement /Internal Connections (Top View)

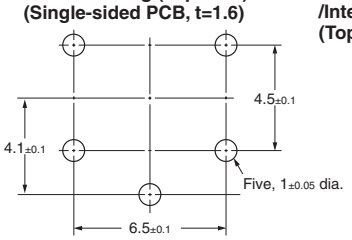


Projected Plunger Type (with Ground Terminal)

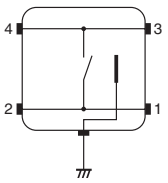
B3W-1150
B3W-1152



PCB Mounting (Top View)
(Single-sided PCB, t=1.6)



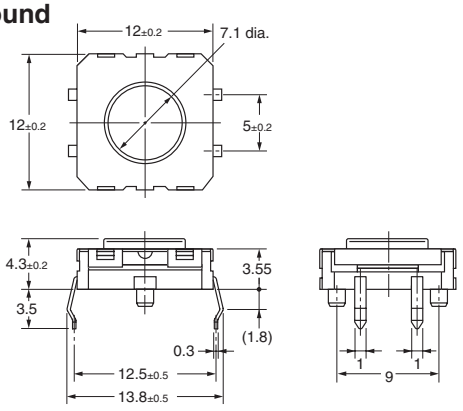
Terminal Arrangement /Internal Connections (Top View)



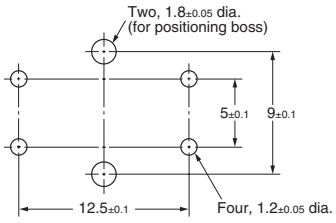
■ 12 × 12 mm Models

Flat Plunger Type (without Ground Terminal)

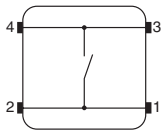
B3W-4000
B3W-4005



PCB Mounting (Top View)
(Single-sided PCB, t=1.6)

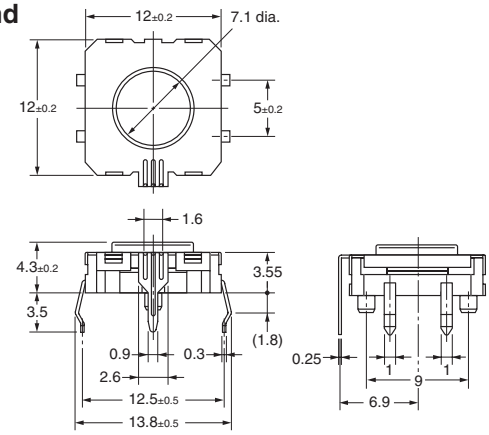


Terminal Arrangement /Internal Connections (Top View)

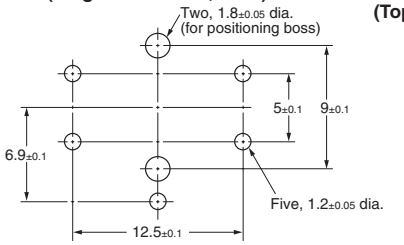


Flat Plunger Type (with Ground Terminal)

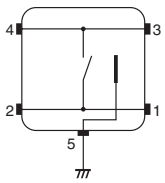
B3W-4100
B3W-4105



PCB Mounting (Top View)
(Single-sided PCB, t=1.6)

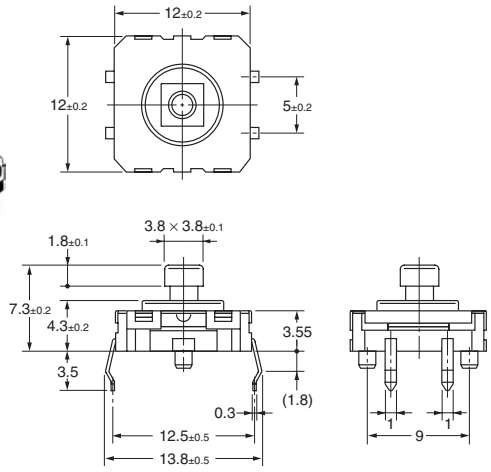


Terminal Arrangement /Internal Connections (Top View)

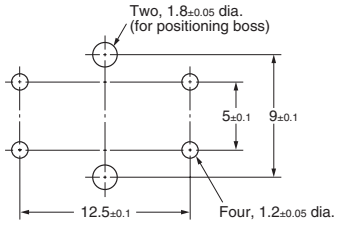


Projected Plunger Type (without Ground Terminal)

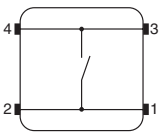
B3W-4050
B3W-4055



PCB Mounting (Top View)
(Single-sided PCB, t=1.6)

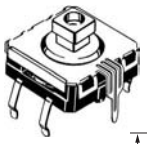


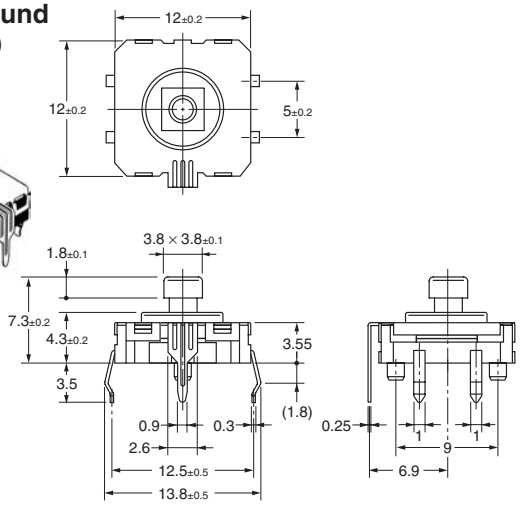
Terminal Arrangement /Internal Connections (Top View)



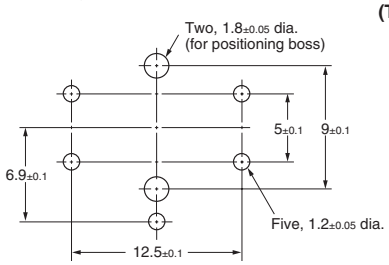
Projected Plunger Type (with Ground Terminal)

B3W-4150
B3W-4155

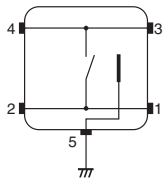




PCB Mounting (Top View)
(Single-sided PCB, t=1.6)



Terminal Arrangement /Internal Connections (Top View)



Key Tops

B32-series Special Key Tops are available for projected plunger models. Refer to page 42 for details.

Precautions

Be sure to read the precautions common to all Tactile Switches on pages 5 to 7 for correct use.

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. A075-E1-05A

OMRON

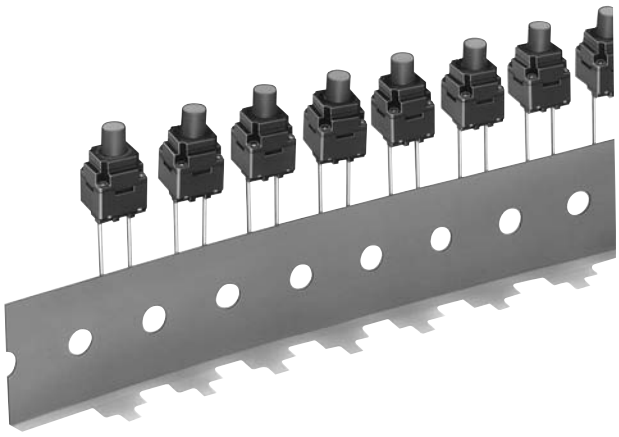
Sealed Tactile Switch

B3WN

Double-sealed Construction Ensures High Watertight and Dust-tight Performance

- Sealed construction conforming to IP67 (IEC-60529) provides high reliability even in locations exposed to dust or water.
- As compact as 8 mm × 8 mm.
- Allows the use of general-purpose radial-taping part insertion machines.

RoHS Compliant (Refer to page 8 for details.)



Ordering Information

■ List of Models

Model	Height	Operating force (OF)	Model without ground terminal	Quantity per package
	13 mm	1.96 N {200 gf}	B3WN-6002(S)	1,000 Switches
		2.55 N {260 gf}	B3WN-6005	

Note: Orders must be made in multiples of the order unit (multiples of 1,000). Switches are not sold individually.

Specifications

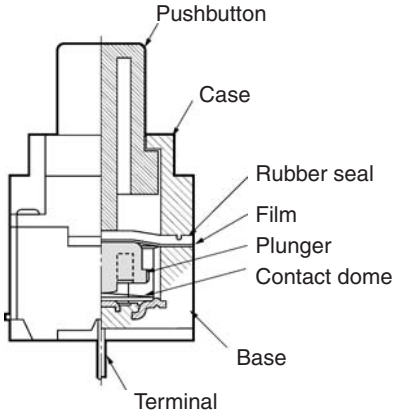
■ Ratings/Characteristics

Switching capacity	50 mA, 12 VDC (resistive load)
Ambient operating temperature	–25°C to 85°C at 60% max. humidity (with no icing or condensation)
Ambient operating humidity	35% to 85% (at 5 to 35°C)
Contact configuration	SPST-NO
Contact resistance	100 mΩ max. (initial value) (rated: 1 mA, 5 VDC)
Insulation resistance	100 MΩ min. (at 100 VDC)
Dielectric strength	250 VAC, 50/60Hz for 1 min
Bounce time	10 ms max.
Vibration resistance	Malfunction: 10 to 55 Hz, 1.5-mm double amplitude
Shock resistance	Destruction: 784 m/s^2 {approx. 80G} max. Malfunction: 100 m/s^2 {approx. 10G} max.
Life expectancy	100,000 operations min.
Weight	Approx. 0.7 g

■ Operating Characteristics

Item	B3WN-6002(S)	B3WN-6005
Operating force (OF)	1.96±0.69 N {200±70 gf}	2.55±0.69 N {260 gf}
Releasing force (RF)	0.49 N min.	
Pretravel (PT)	$0.3^{+0.2}_{-0.1}$ mm	

Nomenclature



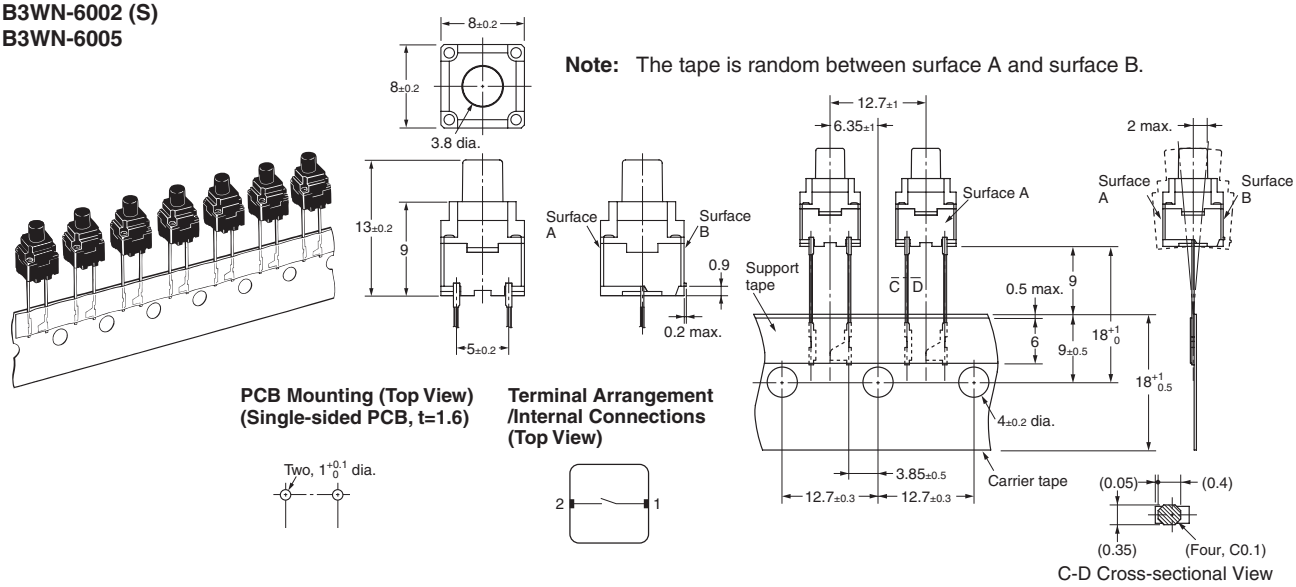
Dimensions

Note: **1.** All units are in millimeters unless otherwise indicated. Unless otherwise specified, a tolerance of ±0.4 mm applies to all dimensions.

2. The numbers used for terminals in the following graphics are indicated in the "Bottom View" diagram below. In this diagram, the Switch is rotated so that the terminals are on the right and left-hand sides, and the OMRON logo appears the right way up.

(Bottom View)

B3WN-6002 (S)
B3WN-6005



Note: The tape is random between surface A and surface B.

C-D Cross-sectional View

PCB Mounting (Top View)
(Single-sided PCB, t=1.6)

Terminal Arrangement /Internal Connections (Top View)

Precautions

Be sure to read the precautions common to all Tactile Switches on pages 5 to 7 for correct use.

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. A112-E1-04

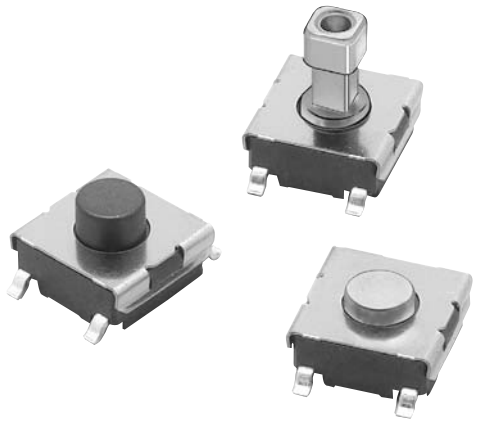
OMRON

Surface-mounting Tactile Switch | B3FS

Tactile Switches with Surface-mounting Terminals Ideal for High-density Mounting

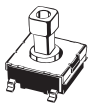
- Also available with embossed taping packaging.
- Allows reflow soldering.
- Projected plunger types that allow the installation of B32-series Special Key Tops are available.

RoHS Compliant (Refer to page 8 for details.)



Ordering Information

■ List of Models

Type	Plunger type	Height	Operating force (OF)	Bag		Embossed taping	
				Model	Quantity per package	Model	Quantity per package
6 × 6 mm B3FS-1000 models	 (Flat type)	3.1 mm	0.98 N {100 gf}	B3FS-1000	100	B3FS-1000P	3,000
			1.47 N {150 gf}	B3FS-1002		B3FS-1002P	
	 (Flat type)	4.3 mm	0.98 N {100 gf}	B3FS-1010		B3FS-1010P	1,000
			1.47 N {150 gf}	B3FS-1012		B3FS-1012P	
	 (Projected type)	7.3 mm	0.98 N {100 gf}	B3FS-1050		B3FS-1050P	
			1.47 N {150 gf}	B3FS-1052		B3FS-1052P	

Note: Orders must be made in multiples of the order unit. Switches are not sold individually.

Specifications

■ Ratings/Characteristics

Switching capacity	50 mA, 24 VDC (resistive load)
Ambient operating temperature	–25°C to 70°C at 60% max. humidity (with no icing or condensation)
Ambient operating humidity	35% to 85% (at 5 to 35°C)
Contact configuration	SPST-NO
Contact resistance	100 mΩ max. (initial value) (rated: 1 mA, 5 VDC)
Insulation resistance	100 MΩ min. (at 100 VDC)
Dielectric strength	250 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^2 {approx. 100G} max. Malfunction: 100 m/s^2 {approx. 10G} max.
Life expectancy	Standard models (0.98 N {100 gf}): 1,000,000 operations min. High-force models (1.47 N {150 gf}): 300,000 operations min.
Weight	B3F-1000: Approx. 0.2 g

■ Operating Characteristics

	B3FS-1000	
Item	**0.98 N**	**1.47 N**
Operating force (OF)	0.98±0.29 N {100±30 gf}	1.47±0.49 N {150±50 gf}
Releasing force (RF)	0.2 N {20 gf} min.	0.49 N {50 gf} min.
Pretravel (PT)	0.25 $^{+0.2}/_{-0.1}$ mm	

Dimensions

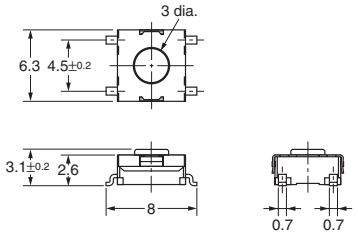
Note: **1.** All units are in millimeters unless otherwise indicated. Unless otherwise specified, a tolerance of ±0.4 mm applies to all dimensions.

2. The numbers used for terminals in the following graphics are indicated in the "Bottom View" diagram below. In this diagram, the Switch is rotated so that the terminals are on the right and left-hand sides, and the OMRON logo appears the right way up.

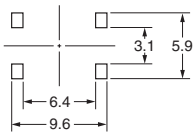
(Bottom View)

Flat Type

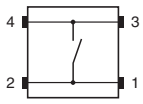
B3FS-1000
B3FS-1002
B3FS-1000P
B3FS-1002P



PCB Pad
(Top View)
(One-side PCB t= 1.6)

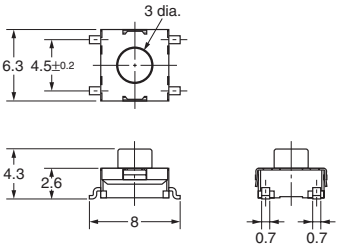


Terminal Arrangement/ Internal Connection
(Top View)

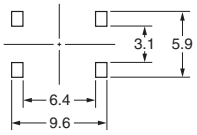


Flat Type

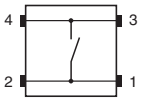
B3FS-1010
B3FS-1012
B3FS-1010P
B3FS-1012P



PCB Pad
(Top View)
(One-side PCB t= 1.6)

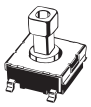


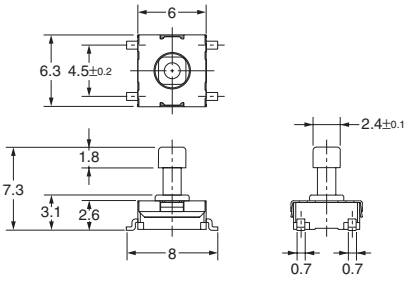
Terminal Arrangement/ Internal Connection
(Top View)



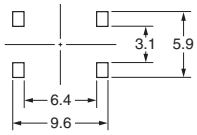
Projected Type

B3FS-1050
B3FS-1052
B3FS-1050P
B3FS-1052P

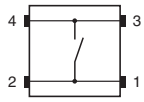




PCB Pad
(Top View)
(One-side PCB t= 1.6)



Terminal Arrangement/ Internal Connection
(Top View)



Key Tops

B32-series Special Key Tops are available for projected plunger models. Refer to page 42 for details.

Precautions

Be sure to read the precautions common to all Tactile Switches on pages 5 to 7 for correct use.

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. A113-E1-03

OMRON

Sealed Surface-mounting Tactile Switch

B3SN

Slim, Sealed Switches with Surface-mounting Terminals

- Slim profile helps to downsize products.
- Sealed construction conforming to IP67 (IEC-60529) provides high reliability in locations exposed to dust or water. (✻ Excluding the terminal section.)
- Available with ground terminals for protection against static electricity.
- Use of a stainless-steel spring provides a crisp clicking action.
- Gold-plating enables stable contact and insulation over long periods of time.
- Available in embossed taping packages for automatic insertion.

RoHS Compliant (Refer to page 8 for details.)

Ordering Information

■ List of Models

Type	Bags (in units of 100 Switches)	Embossed taping (in units of 3,000 Switches)
Standard, without ground terminal	B3SN-3012	B3SN-3012P
Standard, with ground terminal	B3SN-3112	B3SN-3112P
Gold-plated, without ground terminal	---	B3SN-3012P-G

Note: Switches in bags must be ordered in units of 100 pieces, and Switches on embossed taping must be ordered in units of 3,000 pieces. Individual Switches are not sold individually.

Specifications

■ Ratings/Characteristics

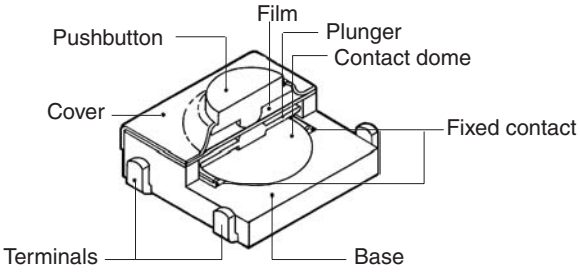
Switching capacity	1 to 50 mA, 5 to 24 VDC (resistive load)
Ambient operating temperature	–25°C to 70°C at 60% max. humidity (with no icing or condensation)
Ambient operating humidity	35% to 85% (at 5 to 35°C)
Contact configuration	SPST-NO
Contact resistance	100 mΩ max. (initial value) (rated: 1 mA, 5 VDC)
Insulation resistance	100 MΩ min. (at 250 VDC)
Dielectric strength	250 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^2 {approx. 100G} max.
Life expectancy	100,000 operations min.
Weight	Approx. 0.2 g

■ Operating Characteristics

Item / Type	Standard	Gold-plated (B3SN-G)
Operating force (OF)	1.57±0.49 N {160±50 gf} max.	1.76±0.59 N {180 gf} max.
Releasing force (RF)	0.29 N {30 gf} min.	

Item	Type	Standard	Gold-plated (B3SN-G)
Pretravel (PT)		0.25±0.15 mm	

Nomenclature



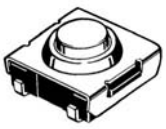
Dimensions

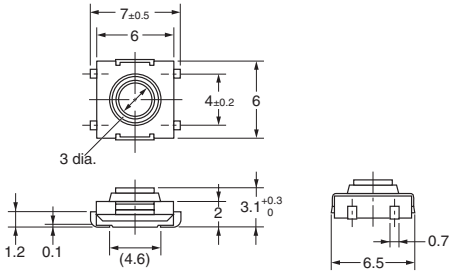
Note: **1.** All units are in millimeters unless otherwise indicated. Unless otherwise specified, a tolerance of ±0.4 mm applies to all dimensions.

2. No terminal numbers are indicated on the Switches. The numbers used for terminals in the following graphics are indicated in the "Bottom View" diagram below. In this diagram, the Switch is rotated so that the terminals are on the right and left-hand sides, and the OMRON logo appears the right way up.

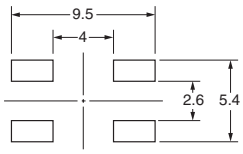
Without Ground Terminal

B3SN-3012
B3SN-3012P
B3SN-3012G

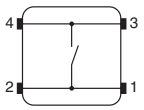




PCB Pad (Top View)

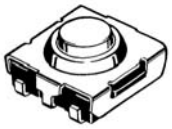


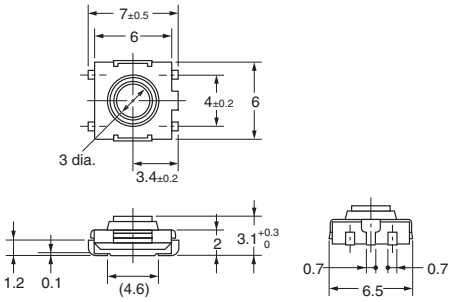
Terminal Arrangement /Internal Connections (Top View)



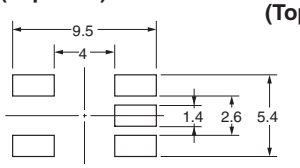
With Ground Terminal

B3SN-3112
B3SN-3112P

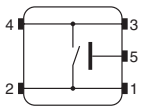




PCB Pad (Top View)



Terminal Arrangement /Internal Connections (Top View)



Precautions

Be sure to read the precautions common to all Tactile Switches on pages 5 to 7 for correct use.

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. C096-E1-04A

OMRON

Sealed Surface-mounting Tactile Switch

B3S

Featuring Surface-mounting Terminals, and a Sealed Construction for High Contact Reliability

- Sealed construction conforming to IP67 (IEC-60529) provides high contact reliability in locations exposed to dust or water. (✻ Excluding the terminal section.)
- Surface-mounting terminals for high-density mounting.
- Ground terminal available to protect against static electricity.
- Available in embossed taping packages for automatic insertion.

RoHS Compliant (Refer to page 8 for details.)

Ordering Information

6 × 6-mm B3S-1000

Height	Operating force (OF)	Without ground terminal		With ground terminal	
		Bags (in units of 100 Switches)	Embossed taping (in units of 1,000 Switches)	Bags (in units of 100 Switches)	Embossed taping (in units of 1,000 Switches)
4.3 mm	1.57 N {160 gf}	B3S-1000	B3S-1000P	B3S-1100	B3S-1100P
	2.26 N {230 gf}	B3S-1002	B3S-1002P	B3S-1102	B3S-1102P

Note: Switches in bags must be ordered in units of 100 Switches, and Switches on embossed taping must be ordered in units of 3,000 Switches.

Specifications

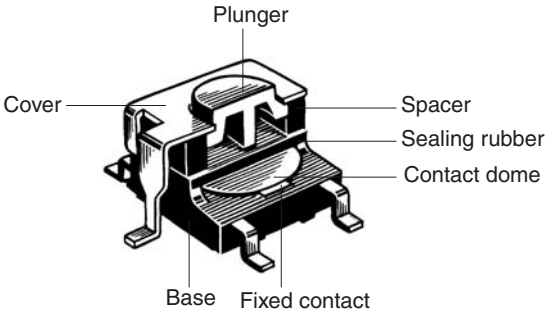
■ Ratings/Characteristics

Switching capacity	5 to 24 VDC, 1 to 50 mA (resistive load)
Ambient operating temperature	–25°C to 70°C at 60% max. humidity (with no icing or condensation)
Ambient operating humidity	35% to 85% (at 5 to 35°C)
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^2 {approx. 100G} max. Malfunction: 100 m/s^2 {approx. 10G} max.
Life expectancy	Standard force models (1.57 N {160 gf}): 500,000 operations min. High-force models (2.26 N {230 gf}): 300,000 operations min.
Weight	Approx. 0.3 g

■ Operating Characteristics

Item	B3S-1□00	B3S-1□02
Operating force (OF)	1.57 N {160 gf} max.	2.26 N {230 gf} max.
Releasing force (RF)	0.2 N {20 gf} min.	0.49 N {50 gf} min.
Pretravel (PT)	$0.25\ ^{+0.2}/_{-0.1}$ mm	

Nomenclature



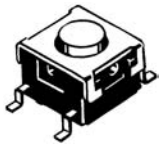
Dimensions

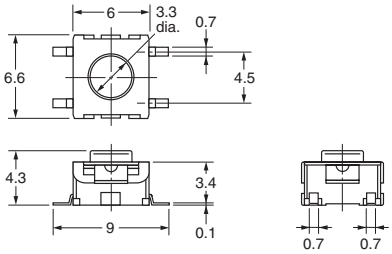
Note: **1.** All units are in millimeters unless otherwise indicated. Unless otherwise specified, a tolerance of ±0.4 mm applies to all dimensions.

2. The numbers used for terminals in the following graphics are indicated in the "Bottom View" diagram below. In this diagram, the Switch is rotated so that the terminals are on the right and left-hand sides, and the OMRON logo appears the right way up.

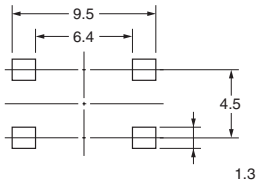
Without Ground Terminal

B3S-1000
B3S-1002

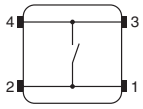




PCB Pad (Top View)

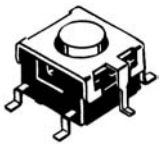


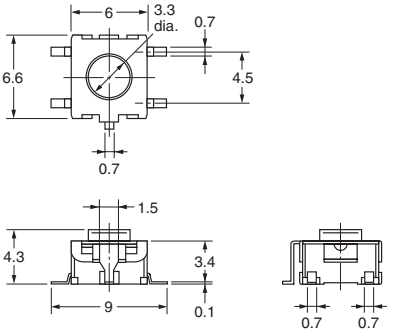
Terminal Arrangement /Internal Connections (Top View)



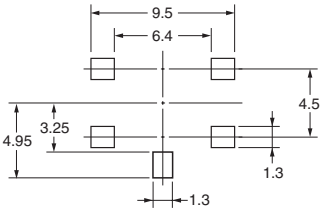
With Ground Terminal

B3S-1100
B3S-1102

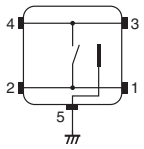




PCB Pad (Top View)



Terminal Arrangement /Internal Connections (Top View)



Precautions

Be sure to read the precautions common to all Tactile Switches on pages 5 to 7 for correct use.

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-E1-03A

OMRON

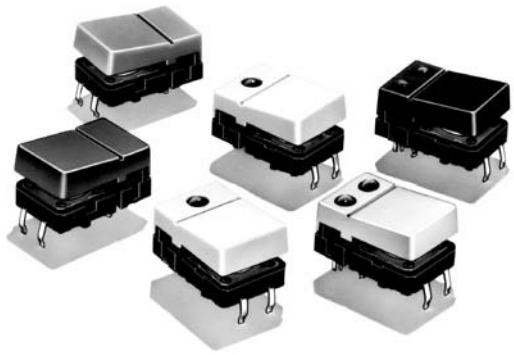
Hinged Tactile Switch

B3J

Hinged Design with Distinctive Snapping Action

- Quick, superior snap action through hook-type hinge construction.
- Available with 1 or 2 LEDs or without LEDs.
- The hinge button is available in a wide variety of colors (five standard colors).

RoHS Compliant (Refer to page 8 for details.)



Ordering Information

Color of hinged button	No LED	One LED			Two LEDs (left and right)		
		Red	Yellow	Green	Red/Yellow	Red/Green	Yellow/Green
Light gray	B3J-1000	B3J-2000	B3J-3000	B3J-4000	B3J-5000	B3J-6000	B3J-7000
Black	B3J-1100	B3J-2100	B3J-3100	B3J-4100	B3J-5100	B3J-6100	B3J-7100
Orange	B3J-1200	B3J-2200	B3J-3200	B3J-4200	B3J-5200	B3J-6200	B3J-7200
Yellow	B3J-1300	B3J-2300	B3J-3300	B3J-4300	B3J-5300	B3J-6300	B3J-7300
Blue	B3J-1400	B3J-2400	B3J-3400	B3J-4400	B3J-5400	B3J-6400	B3J-7400

Note: The minimum order unit is 300 Switches per box. Orders must be made in multiples of the minimum order unit.

Specifications

■ Ratings/Characteristics

Switching capacity	1 to 50 mA, 5 to 24 VDC (resistive load)
Ambient operating temperature	–25°C to 70°C at 60% max. humidity (with no icing or condensation)
Ambient operating humidity	35% to 85% (at 5 to 35°C)
Contact configuration	SPST-NO
Contact resistance	100 mΩ max. (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^2 {approx. 100G} max. Malfunction: 100 m/s^2 {approx. 10G} max.
Life expectancy	3,000,000 operations min.
Weight	Approx. 1.5 to 1.7 g

■ Operating Characteristics

Operating force (OF)	1.27±0.49 N {130±50 gf}
Releasing force (RF)	0.29 N {30 gf} min.
Pretravel (PT)	$0.3^{+0.2}/_{-0.1}$ mm

■ Built-in LED Performance

Item		Red	Yellow	Green
Forward voltage VF	**Standard value (V)**	2.0	2.0	2.1
Forward current IF	**Standard value (mA)**	20	20	20
Permissible loss P	**Absolute maximum value (mW)**	84	84	84
Reverse voltage VR	**Absolute maximum value (V)**	5	5	5

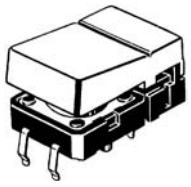
Note: Since the built-in LED does not contain any limiting resistors, externally connect limiting resistors within the limits shown in the above table.

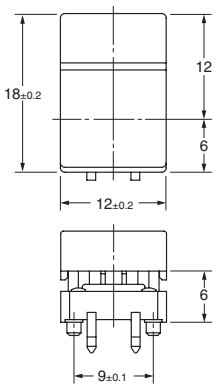
Dimensions

Note: All units are in millimeters unless otherwise indicated. Unless otherwise specified, a tolerance of ±0.4 mm applies to all dimensions.

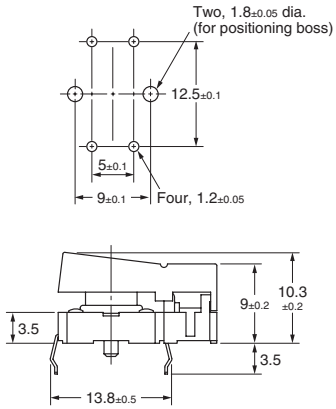
Types with no LED

B3J-1□00

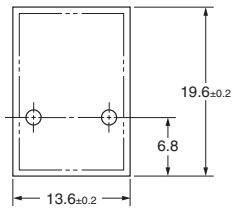




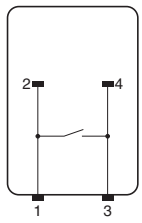
PCB Mounting (Top View)



Panel Cutout

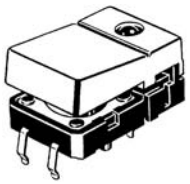


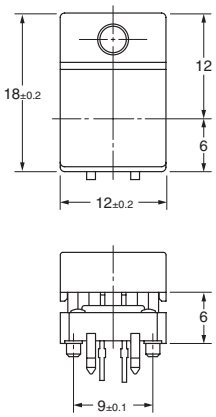
Terminal Arrangement /Internal Connections (Top View)



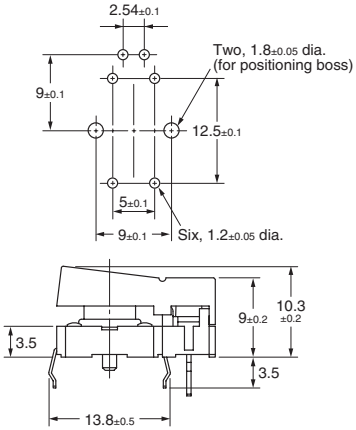
1 LED Types

B3J-2□00
B3J-3□00
B3J-4□00

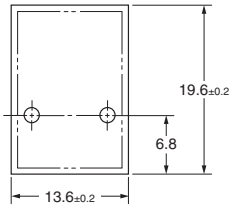




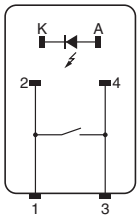
PCB Mounting (Top View)



Panel Cutout

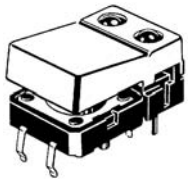


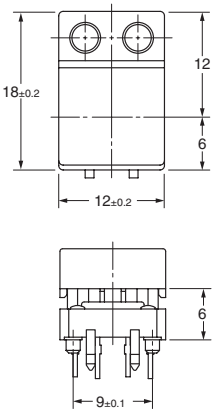
Terminal Arrangement /Internal Connections (Top View)



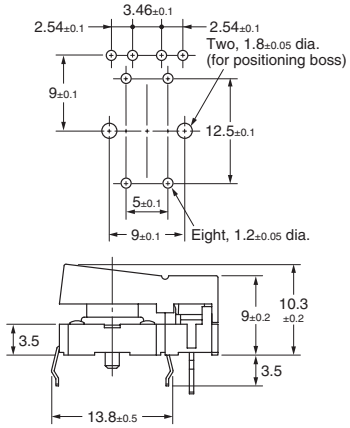
2 LED Types

B3J-5□00
B3J-6□00
B3J-7□00

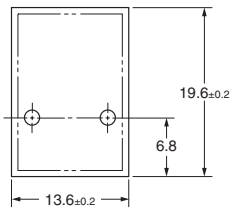




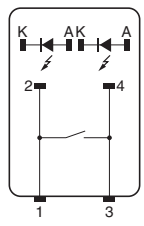
PCB Mounting (Top View)



Panel Cutout



Terminal Arrangement /Internal Connections (Top View)



Precautions

Be sure to read the precautions common to all Tactile Switches on pages 5 to 7 for correct use.

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. A071-E1-05

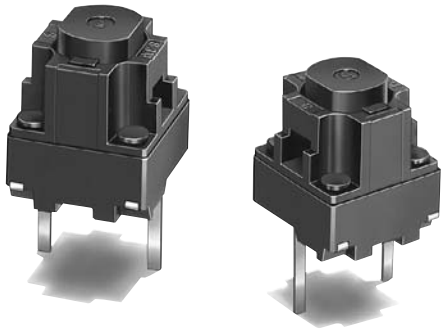
OMRON

Long-stroke Tactile Switch | B3M

Designed for a Long Stroke and Positive Click

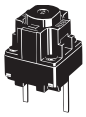
- Long stroke of 0.85 mm provides radically improved operability.
- Light touch with a minimum overstroke of 0.25 mm.
- High durability achieved with 2,000,000-operation capability.

RoHS Compliant (Refer to page 8 for details.)



Ordering Information

6-mm × 6-mm B3M

Model	Height	Operating force (OF)	Model without ground terminal	Quantity per package
	7.3 mm	0.69 N {70 gf}	B3M-6009	100 switches

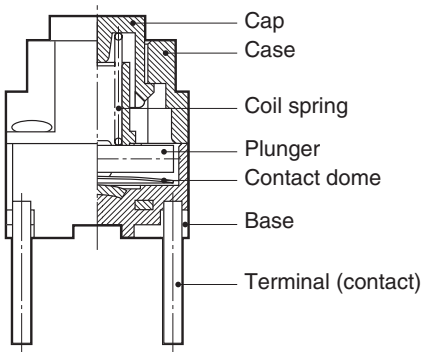
Note: Orders must be made in multiples of the order unit (multiples of 1,000).

Specifications

■ Ratings/Characteristics

Switching capacity	1 to 50 mA, 5 to 12 VDC (resistive load)
Ambient operating temperature	–25°C to 70°C at 60% max. humidity (with no icing or condensation)
Ambient operating humidity	35% to 85% (at 5 to 35°C)
Contact configuration	SPST-NO
Contact resistance	500 mΩ max. (initial value) (rated: 1 mA, 5 VDC)
Insulation resistance	100 MΩ min. (at 250 VDC)
Dielectric strength	250 VAC, 50/60Hz for 1 min
Bounce time	5 ms max.
Vibration resistance	Malfunction: 10 to 55 Hz, 1.5-mm double amplitude
Shock resistance	Malfunction: 100 m/s^2 {approx. 10G} max.
Life expectancy	2,000,000 operations min.
Weight	Approx. 0.27 g

Nomenclature

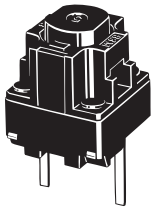


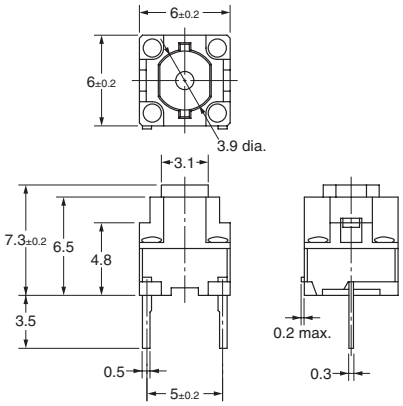
Dimensions

Note: **1.** All units are in millimeters unless otherwise indicated. Unless otherwise specified, a tolerance of ±0.4 mm applies to all dimensions.

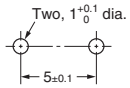
2. No terminal numbers are indicated on the Switches. The numbers used for terminals in the following graphics are indicated in the "Bottom View" diagram below. In this diagram, the Switch is rotated so that the terminals are on the right and left-hand sides, and the OMRON logo appears the right way up.

(BOTTOM VIEW)

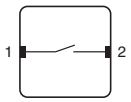




PCB Mounting (Top View)
(Single-sided PCB, t=1.6)



Terminal Arrangement
/Internal Connections
(Top View)



Note: Switch fixing direction (A and B) on the tape may change.

Operating Characteristics

Item	B3M-6009
Operating force (OF)	0.69±0.20 N {70±20 gf}
Releasing force (RF)	0.2 N {20 gf} min.
Pretravel (PT)	0.5 mm max.
Overtravel (OT)	0.2 mm min.

Precautions

Be sure to read the precautions common to all Tactile Switches on pages 5 to 7 for correct use.

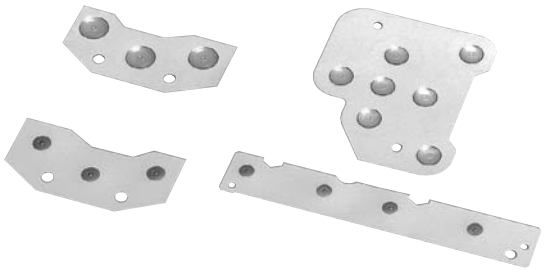
ALL DIMENSIONS SHOWN ARE IN MILLIMETERS.
To convert millimeters into inches, multiply by 0.03937. To convert grams into ounces, multiply by 0.03527.

Cat. No. C109-E1-03A

OMRON

Ultra-low Profile Dome Array | B3DA

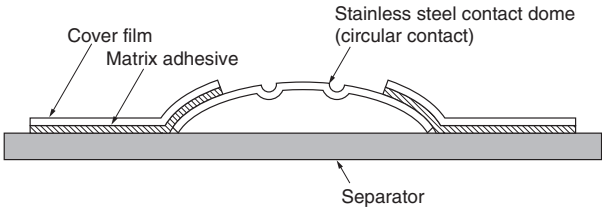
Excellent Dust Resistance and Crisp Clicking Action



- No soldering required.
  Attach directly to PCB to make an ultra-low profile tactile switch.
- Matrix adhesive used to create highly dust-proof construction with good ventilation.
- Lower profile, lighter weight, and crisp clicking action achieved using stainless steel contact dome keys.
- Original OMRON “circular contact” provides strong resistance to the ingress of foreign matter.
- Custom design and production are available to meet requests for special shapes and key layouts.

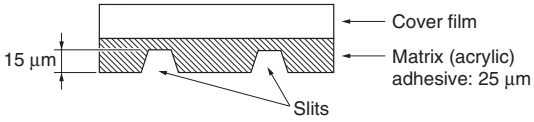
RoHS Compliant (Refer to page 8 for details.)

Structure



Matrix Adhesive

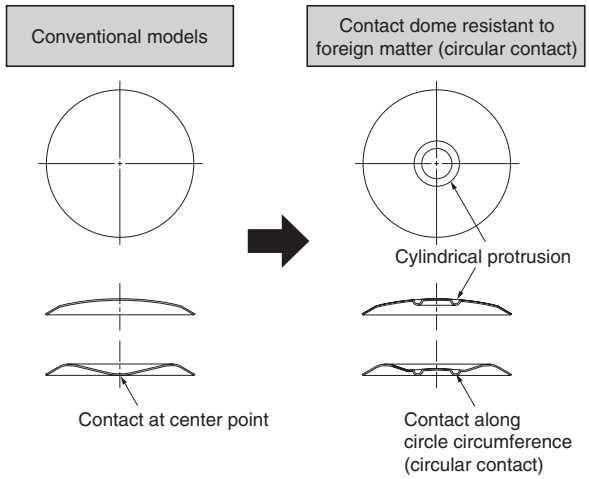
The surface structure of this adhesive has grid-shaped slits, as shown in the following cross-sectional diagram. These slits provide both ventilation and dust-proofing, which is required for contact dome operation.



Circular Contact

When Dome Arrays 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 Dome Arrays 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.



■ Specifications

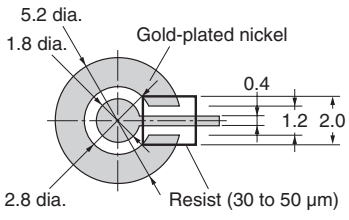
Item / Model	4-mm-diameter Dome Array	5-mm-diameter Dome Array
Diameter	4 mm	5 mm
Operating force (OF)	1.57±0.49 N {160 gf}	
Releasing force (RF)	0.2 N min.	
Pretravel (PT)	0.2±0.1 mm	
Height	0.25±0.1 mm	
Switching capacity (with the recommended contact form)	10 mA, 12 VDC (resistive load) (recommended min. load: 1 mA, 3 VDC (resistive load))	
Life expectancy	500,000 operations min.	1,000,000 operations min.
Ambient operating temperature	−40 to 80°C at 60% max. humidity (with no icing or condensation)	
Ambient storage humidity	10% to 90% (at 40°C max.)	
Material	Stainless steel	
Plating	Silver	

Note: Contact dome keys with specifications other than those given above are also available.

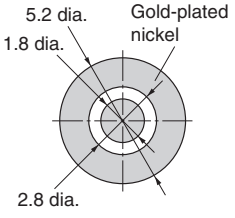
■ Recommended Contact Form

4-mm-diameter Dome Array

Single-side PCB

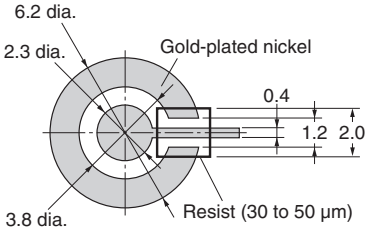


Multilayer PCB

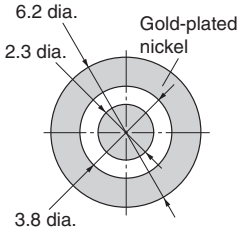


5-mm-diameter Dome Array

Single-side PCB



Multilayer PCB



Precautions

Be sure to read the precautions common to all Tactile Switches on pages 5 to 7 for correct use.

■ Precautions for Correct Use

Attaching to the PCB

Remove the Dome Array 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.

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

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

Reflow Soldering

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

Washing

Do not wash the Dome Array. The Dome Array 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.

Cat. No. A121-E1-03

OMRON

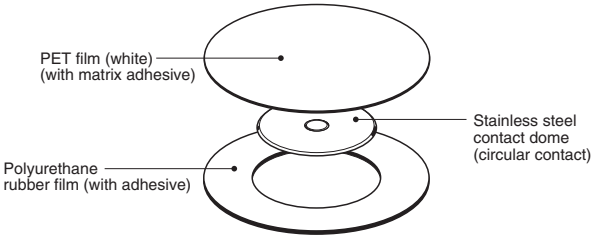
Ultra-low Profile Dome Key | B3D

Single-key Type Added to Series of Ultra-low Profile Dome Keys

- 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 achieved using stainless steel contact dome.
- OMRON's unique circular contact action ensures a high level of resistance to foreign particles.

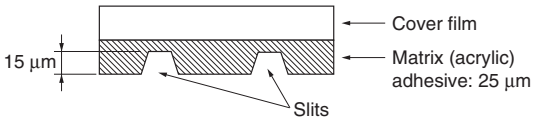
RoHS Compliant (Refer to page 8 for details.)

Structure



Matrix Adhesive

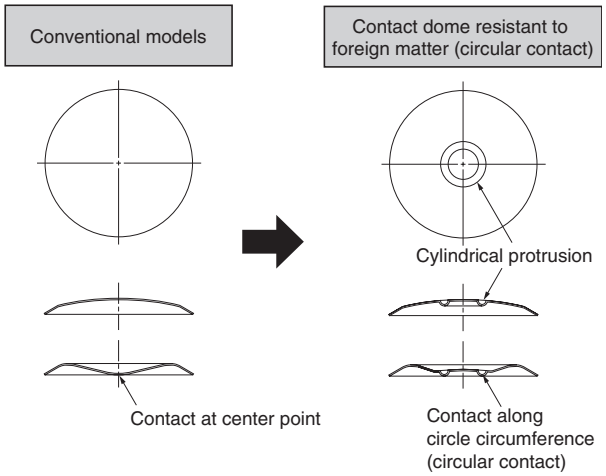
The surface structure of this adhesive has grid-shaped slits, as shown in the following cross-sectional diagram. These slits provide both ventilation and dust-proofing, which is required for contact dome operation.



Circular Contact

When 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.



■ Specifications

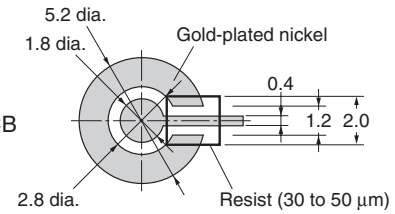
Item / Model	B3D-4112	B3D-5112
Diameter	4-mm dia.	5-mm dia.
Operating force (OF)	1.67 ±0.49 N {170 ±50 gf}	
Releasing force (RF)	0.2 N min.	
Pretravel (PT)	0.2 ±0.1 mm	
Height	0.3 ±0.1 mm	
Life expectancy	500,000 operations min.	1,000,000 operations min.
Switching capacity	10 mA, 12 VDC (resistive load) (recommended min. load: 1 mA, 3 VDC (resistive load))	
Ambient operating temperature	−40 to 80°C at 60% max. humidity (with no icing or condensation)	
Ambient storage humidity	10% to 90% (at 40°C max.)	
Material	Stainless steel	
Plating	Silver	

Note: The Dome Keys are sold only in units of 25 Dome Keys per sheet. Orders must be made in integral multiples of this quantity.

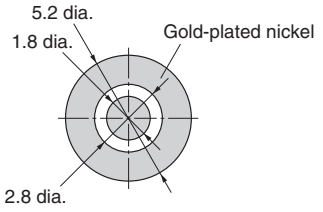
■ Recommended Contact Form on PCB

4-mm-diameter Dome Key (B3D-4112)

Single-side PCB

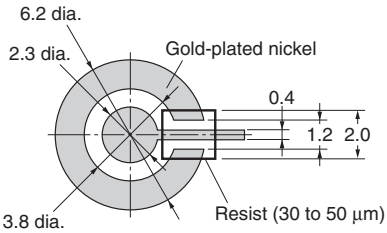


Multilayer PCB

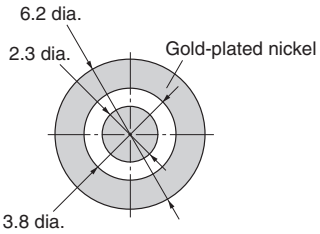


5-mm-diameter Dome Key (B3D-5112)

Single-side PCB

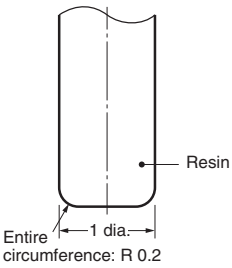


Multilayer PCB

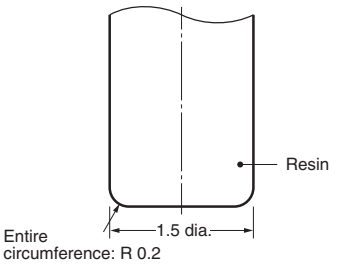


■ Recommended Operating Part Form

4-mm-diameter Dome Key (B3D-4112)



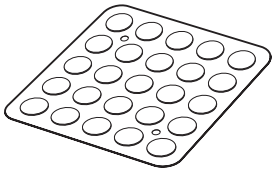
5-mm-diameter Dome Key (B3D-5112)

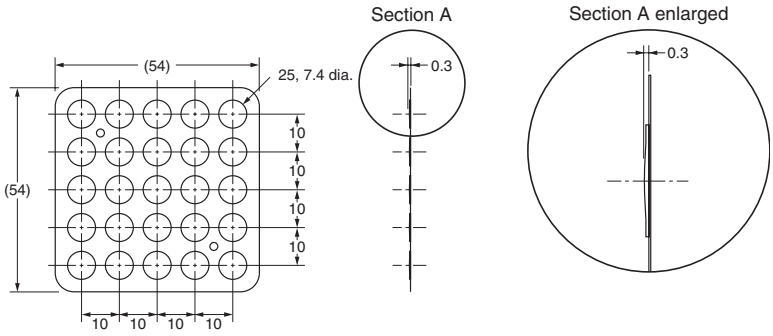


Dimensions

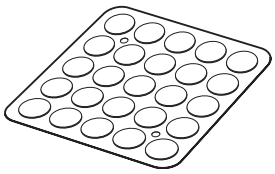
Note: All units are in millimeters unless otherwise indicated. Unless otherwise specified, a tolerance of ±0.4 mm applies to all dimensions.

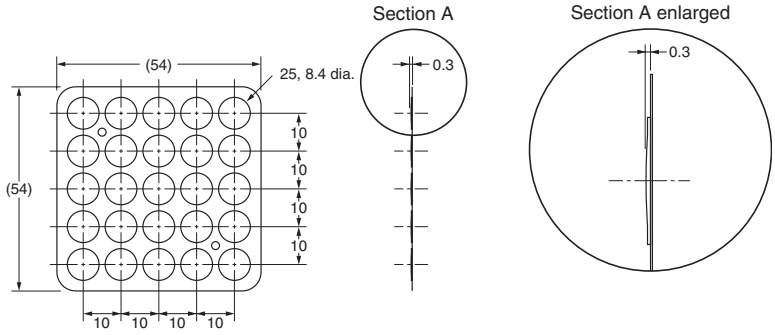
B3D-4112





B3D-5112





Precautions

Be sure to read the precautions common to all Tactile Switches on pages 5 to 7 for correct use.

■ Precautions 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. 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.

Cat. No. A158-E1-03

OMRON

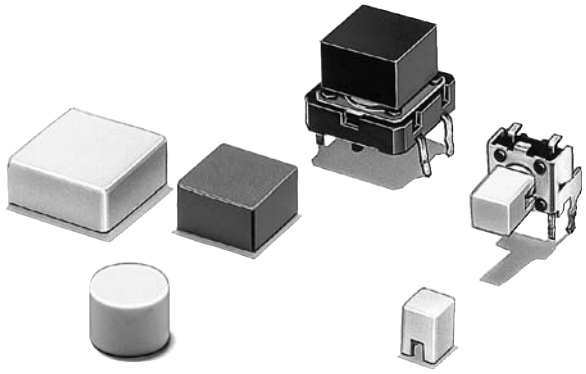
Tactile Switch Key Top

B32

Key Top Designed Specially for Projected-plunger-type B3F, B3FS, and B3W Switches

■ Available in a wide range of colors and sizes.

RoHS Compliant (Refer to page 8 for details.)



Ordering Information

For B3F, B3FS, and B3W Switches

Color	6 × 6 mm Switches (B3F-1000, B3F-3000, B3F-6000, B3W-1000, B3FS)			12 × 12 mm Switches (B3F-4000, B3F-5000, B3W-4000)		
	4 × 4 mm Key Top	6 mm dia. Key Top	D-type Key Top	9 × 9 mm Key Top	12 × 12 mm Key Top	9.5-mm dia.
Light gray	B32-1000	B32-2000	B32-2100	B32-1200	B32-1300	B32-1600
Black	B32-1010	B32-2010	B32-2110	B32-1210	B32-1310	B32-1610
Orange	B32-1020	---	---	B32-1220	B32-1320	B32-1620
Yellow	B32-1030	---	---	B32-1230	B32-1330	B32-1630
Blue	B32-1040	---	---	B32-1240	B32-1340	---
White	B32-1060	---	---	B32-1260	B32-1360	---
Red	B32-1080	---	---	B32-1280	B32-13880	---

Note: The minimum order unit is 1,000 Switches per package. Orders must be made in multiples of the minimum order unit.

Specifications

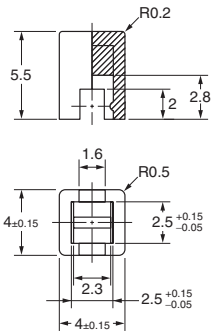
■ Characteristics

Ambient operating temperature	–25°C to 70°C at 60% max. humidity (with no icing or condensation)
Ambient operating humidity	35% to 85% (at 5 to 35°C)

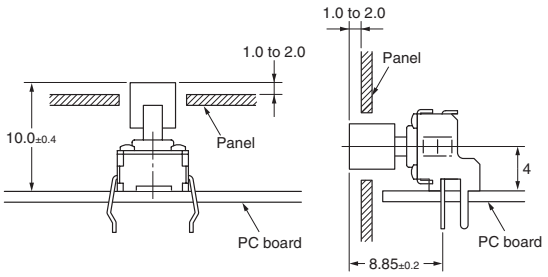
Dimensions

Note: All units are in millimeters unless otherwise indicated. Unless otherwise specified, a tolerance of ±0.4 mm applies to all dimensions.

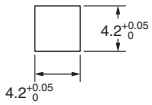
B32-10□0



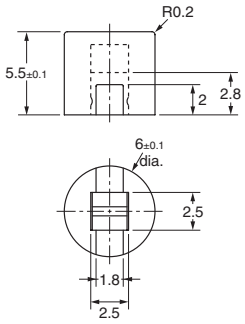
Reference Dimensions



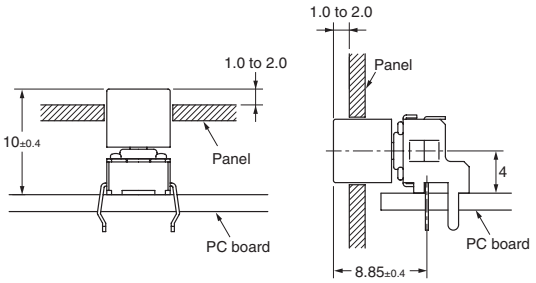
Panel Cutout



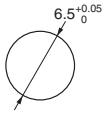
B32-2000
B32-2010



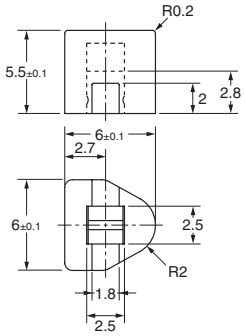
Reference Dimensions



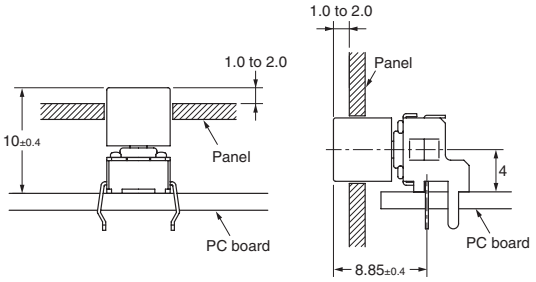
Panel Cutout



B32-2100
B32-2110



Reference Dimensions



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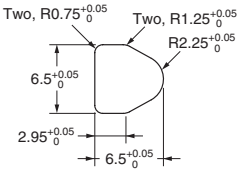
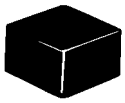
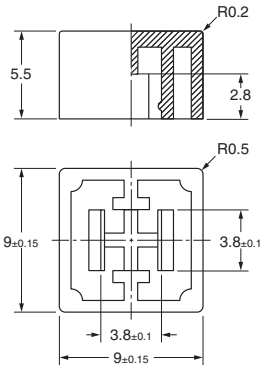


B32-12□0





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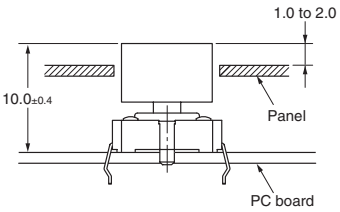

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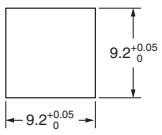
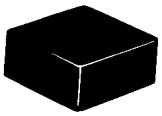
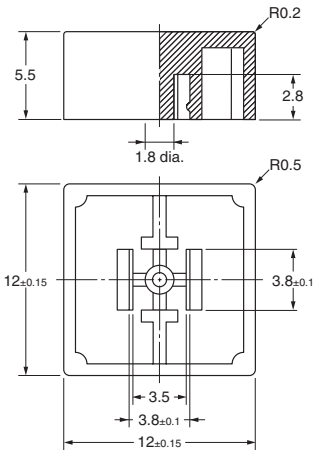


B32-13□0





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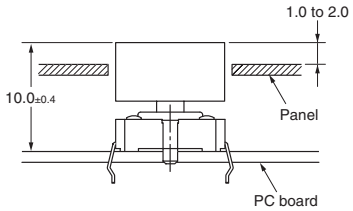

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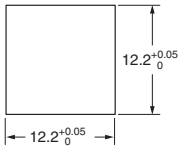

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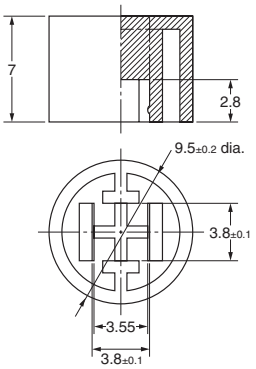

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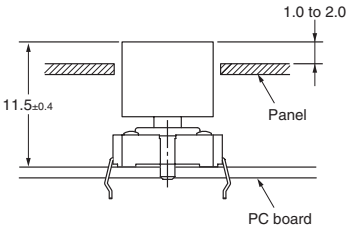

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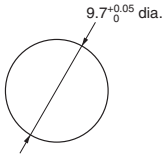

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To convert millimeters into inches, multiply by 0.03937. To convert grams into ounces, multiply by 0.03527.

Cat. No. A077-E1-04

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