■ Cautions

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.

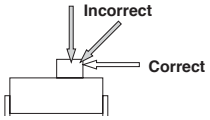
■ Correct Use

HANDLING

Operation

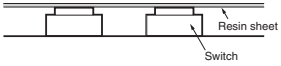
Do not repeatedly operate the Switch with excessive force. Applying excessive pressure or applying additional force after the plunger has stopped may deform the disc spring of the Switch, resulting in malfunction.

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.



DUST PROTECTION

The Switches are not sealed and should be protected with a resin sheet as shown below when used in dust-prone environments.



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.

SOLDERING

General Precautions

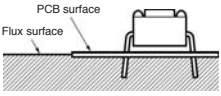
Before soldering the Switch on a multilayer PCB, test to confirm that soldering can be performed properly. Otherwise the Switch may be deformed by the soldering heat on the pattern or lands of the multilayer PCB.

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

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

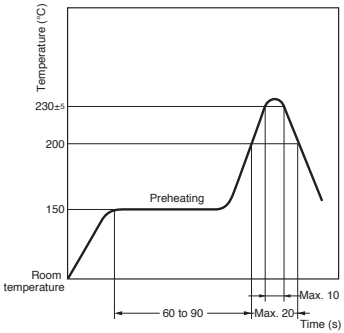
Soldering temperature: 260°C max.
Soldering time: 5 s max. for a 1.6-mm thick single-side PCB

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.



Reflow Soldering (Surface Mounting) (B3FS, B3SN, B3S, B3J)

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



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.

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

Washable and Non-washable Models

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

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.

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.

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.

Washing Precautions

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

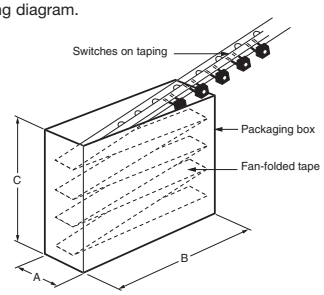
Do not clean washable models immediately after soldering. The cleaning agent may be absorbed into the Switch through respiration as the Switch cools. Wait for at least three minutes after soldering before cleaning washable models.

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

SWITCH PACKAGING (TAPING SPECIFICATION MODELS)

RADIAL TYPES

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



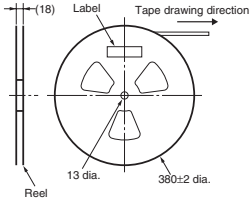
Model	A	B	C
B3F	50 mm	325 mm	275 mm
B3WN	53 mm	326 mm	350 mm

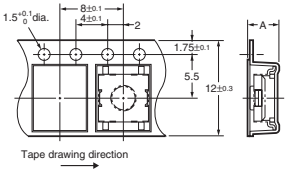
Do not apply any external force to the packaging box, or subject it to vibration. Doing so may deform the Switch terminals.

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.

Packaging Specifications for Embossed Tape (B3FS-1000P/-1002P, B3SN)



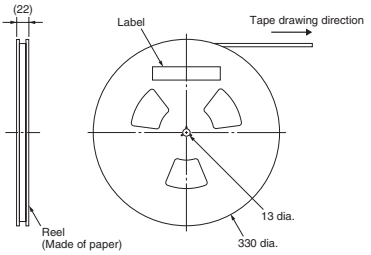


Model	A
B3FS-1000P B3FS-1002P	3.9 mm
B3SN	3.6 mm

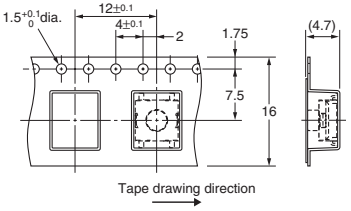
Standards	Conforms to JEITA.
Package	3,000 Switches
Heat resistance	50°C for 24 hours (without deformation)

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

B3FS-1010P

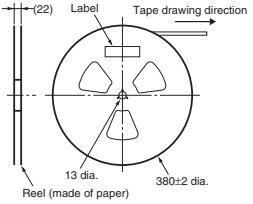


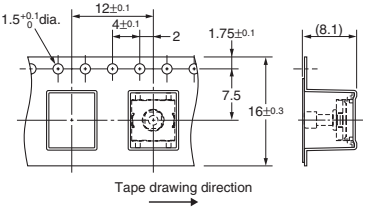
1.5$^{0.1}$ dia.



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

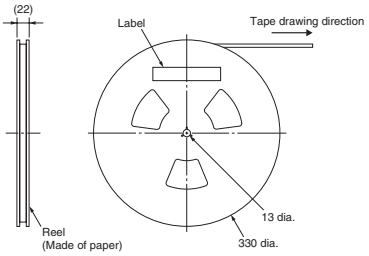
B3FS-1050P

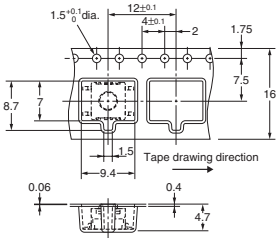




Standards	Conforms to JEITA.
Package	1,000 Switches
Heat resistance	60°C for 24 hours (without deformation)

B3S





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

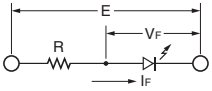
Note: Switches with ground terminals are packaged with the ground terminal on the opposite side of the guide hole.

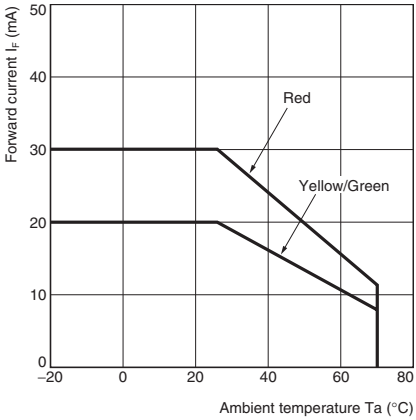
LEDs (B3J)

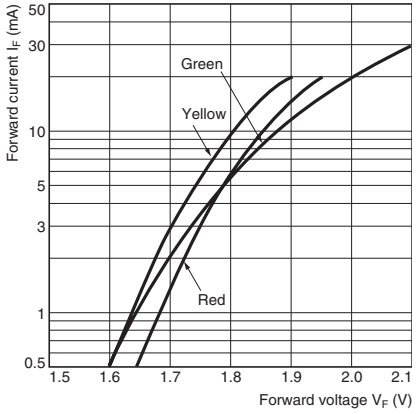
Make sure that the polarity of the LEDs is correct. The polarity is not indicated on the Switch, but the positive pole is located on the back surface of the Switch on the side without the OMRON mark.

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.

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







Model Number		B3F			
					
Size		6 x 6mm	6 x 6mm	6 x 6mm	12 x 12mm
Series		B3F-1000	B3F-1000-G	B3F-3000	B3F-4000
Features		Horizontal – Flat and projected	Horizontal – Flat – high reliability types	Vertical – Flat and projected	Horizontal – Flat and projected
Contact		Silver-plated	Gold-plated	Silver-plated	Silver-plated
Operating Force		0.98N (100gf) 1.47N (150gf) 2.55N (260gf)	1.76N{180gf}	0.98N (100gf) 1.47N (150gf) 2.55N (260gf)	1.27N (130gf) 2.55N (260gf)
Type	Flat Type (3.1mm height) – without ground				
	Flat Type (3.1mm height) – with ground				
	Flat type (4.3mm height – vertical model 3.15mm) – without ground	•	•		•
	Flat type (4.3mm height – vertical model 3.15mm) – with ground	•	•	•	•
	Flat type (5.0mm height – vertical model 3.85mm) – without ground	•	•		
	Flat type (5.0mm height – vertical model 3.85mm) – with ground	•	•	•	
	Flat type and others – without ground				
	Flat type and others – with ground	• (0.98N)			
	Projected type (7.3mm height – vertical model 6.15mm) – without ground	•			•
	Projected type (7.3mm height – vertical model 6.15mm) – with ground	•		•	•
	1 LED without ground				
	2 LEDs with ground				
Life Expectancy (operations)		1,000,000 (0.98N) 300,000 (1.47N) 100,000 (2.55N)	300,000	1,000,000 (0.98N) 3000,000 (1.47N) 100,000 (2.56N)	3,000,000 (1.27N) 1,000,000 (2.55N)
Enclosure rating		IP00			
Cleaning		Not possible			
Packaging	Bag (standard)	100	100	100	100
	Box (standard)	1500	1500	1500	500
	Embossed tape (model number P: suffix)	–	–	–	–
Key top for projected type	4 x 4mm	•		•	
	9 x 9mm				•
	12 x 12mm			•	•
	Diameter 9.5mm				•
Page Number		695			

Model Number		B3F			B3W	
						
Size		12 x 12mm		6 x 6mm	6 x 6mm	12 x 12mm
Series		B3F-5000		B3F-6000	B3W-1000	B3W-4000
Features		Horizontal – Flat and projected – Long life expectancy and high reliability types		Horizontal – Flat and projected – radial taped type	Sealed construction that allows immersion cleaning after soldering. Dust-proof for applications in adverse conditions	
Contact		Silver-plated	Gold-plated	Silver-plated	Silver-plated	
Operating Force		1.27N (130gf)	1.27N (130gf)	0.98N (100gf) 1.47N (150gf)	1.57N (160gf) 2.26N (230gf)	1.96N (200gf) 3.43N (350gf)
Type	Flat Type (3.1mm height) – without ground					
	Flat Type (3.1mm height) – with ground					
	Flat type (4.3mm height – vertical model 3.15mm) – without ground	•		•	•	
	Flat type (4.3mm height – vertical model 3.15mm) – with ground	•		•	•	
	Flat type (5.0mm height – vertical model 3.85mm) – without ground			•		
	Flat type (5.0mm height – vertical model 3.85mm) – with ground			•		
	Flat type and others – without ground					
	Flat type and others – with ground					
	Projected type (7.3mm height – vertical model 6.15mm) – without ground	•		•	•	
	Projected type (7.3mm height – vertical model 6.15mm) – with ground	•		•	•	
	1 LED without ground					
	2 LEDs with ground					
Life Expectancy (operations)		10,000,000		1,000,000 (1.96N) 300,000 (1.47N)	1,000,000 (1.57N) 3,000,000 (1.96N)	300,000 (2.26N) 1,000,000 (3.43N)
Enclosure rating		IP00			IP64	
Cleaning		Not possible			Possible	
Packaging	Bag (standard)	100		–	100	100
	Box (standard)	500		1,000 (radial)	1500	500
	Embossed tape (model number P: suffix)	–		–	–	–
Key top for projected type	4 x 4mm			•	•	
	9 x 9mm	•				•
	12 x 12mm	•				•
	Diameter 9.5mm	•				•
Page Number		695			704	

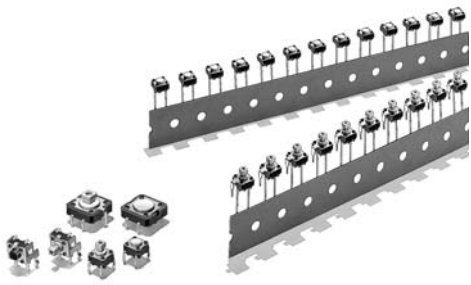
Model Number		B3FS	B3SN	B3S	B3WN
					
Size		6 x 6mm	6 x 6mm	6 x 6mm	6 x 6mm
Series		B3FS-1000	B3SN-3000	B3S-1000	B3WN-6000
Features		Surface mounting – ideal for high density mounting	Surface mounting with sealed construction	Surface mounting for high-density packaging	Double-sealed construction ensures water-tight and dust-tight performance
Contact		Silver-plated	Silver-plated	Silver-plated	Silver-plated
Operating Force		0.98N (100gf) 1.47N (150gf)	1.57N (160gf)	1.57N (160gf) 2.25N (230gf)	1.96N (200gf)
Type	Flat Type (3.1mm height) – without ground	•	•		
	Flat Type (3.1mm height) – with ground		•		
	Flat type (4.3mm height – vertical model 3.15mm) – without ground	•		•	
	Flat type (4.3mm height – vertical model 3.15mm) – with ground			•	
	Flat type (5.0mm height – vertical model 3.85mm) – without ground				•
	Flat type (5.0mm height – vertical model 3.85mm) – with ground				
	Flat type and others – without ground				
	Flat type and others – with ground				
	Projected type (7.3mm height – vertical model 6.15mm) – without ground	•			
	Projected type (7.3mm height – vertical model 6.15mm) – with ground				
	1 LED without ground				
	2 LEDs with ground				
Life Expectancy (operations)		1,000,000 (0.98N) 300,000 (1.47N)	100,000	500,000 (1.57N) 300,000 (2.25N)	100,000
Enclosure rating		IP00	IP64	IP64	IP67
Cleaning		Not possible	Possible	Possible	Possible
Packaging	Bag (standard)	100	100	100	–
	Box (standard)	1500	1500	1500	1000 (radial tape)
	Embossed tape (model number P: suffix)	–	3000	1000	–
Key top for projected type	4 x 4mm	•			
	9 x 9mm				
	12 x 12mm				
	Diameter 9.5mm				
Page Number		708	711	713	715

Model Number		B3J		
				
Size		12 x 18mm		
Series		B3J-1000	B3J-2000/3000/4000	B3J-5000/6000/7000
Features		Hinged tactile switch		
Contact		Silver-plated		
Operating Force		1.27N (130gf)		
Type	Flat Type (3.1mm height) – without ground			
	Flat Type (3.1mm height) – with ground			
	Flat type (4.3mm height – vertical model 3.15mm) – without ground			
	Flat type (4.3mm height – vertical model 3.15mm) – with ground			
	Flat type (5.0mm height – vertical model 3.85mm) – without ground			
	Flat type (5.0mm height – vertical model 3.85mm) – with ground			
	Flat type and others – without ground	•		
	Flat type and others – with ground			
	Projected type (7.3mm height – vertical model 6.15mm) – without ground			
	Projected type (7.3mm height – vertical model 6.15mm) – with ground			
	1 LED without ground		•	
	2 LEDs with ground			•
Life Expectancy (operations)		3,000,000		
Enclosure rating		IP00		
Cleaning		Not possible		
Packaging	Bag (standard)	–		
	Box (standard)	300		
	Embossed tape (model number P: suffix)	–		
Key top for projected type	4 x 4mm			
	9 x 9mm			
	12 x 12mm			
	Diameter 9.5mm			
Page Number		717		

Model Number		B3DA	B3D	
				
Size		–	4mm diameter	5mm diameter
Series		B3DA	B3D-4	B3D-5
Features		Dome arrays with dust-tight construction	Single-key type added to series of B3DA ultra-low profile dome array	
Contact		Silver-plated	Stainless steel	
Operating Force		1.57N (160gf)	1.67N	
Type	Flat Type (3.1mm height) – without ground			
	Flat Type (3.1mm height) – with ground			
	Flat type (4.3mm height – vertical model 3.15mm) – without ground			
	Flat type (4.3mm height – vertical model 3.15mm) – with ground			
	Flat type (5.0mm height – vertical model 3.85mm) – without ground			
	Flat type (5.0mm height – vertical model 3.85mm) – with ground			
	Flat type and others – without ground			
	Flat type and others – with ground			
	Projected type (7.3mm height – vertical model 6.15mm) – without ground			
	Projected type (7.3mm height – vertical model 6.15mm) – with ground			
	1 LED without ground			
	2 LEDs with ground			
Life Expectancy (operations)		500,000	500,000	1,000,000
Enclosure rating		IP00	IP00	
Cleaning		Not possible	Not possible	
Packaging	Bag (standard)	–	–	
	Box (standard)	–	500 (20 sheets x 25 B3D)	
	Embossed tape (model number P: suffix)	–	–	
Key top for projected type	4 x 4mm			
	9 x 9mm			
	12 x 12mm			
	Diameter 9.5mm			
Page Number		720	722	

A Wide Range of Models: 6 x 6 mm, 12 x 12 mm, Vertical and High-force.

- ROHS compliant.
- 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.



Ordering Information

6 x 6 mm Models

Type	Plunger	Height	Operating force (of)	Bags (100 Switches)	
				Without ground terminal	With ground terminal
Horizontal (B3F-1000)	Flat 	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-N	–
			2.55 N {260 gf}	B3F-1075	–
	Projected 	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	–
	Flat, high reliability gold plated 	4.3 mm	1.76 N {180 gf}	B3F-1002-G	B3F-1102-G
		5.0mm		B3F-1022-G	B3F-1122-G

6 x 6 mm Models

Type	Plunger	Height	Operating force (of)	Bags (100 Switches)	
				Without ground terminal	With ground terminal
Vertical (B3F-3000)	Flat 	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 	6.15 mm	0.98 N {100 gf}	–	B3F-3150
			1.47 N {150 gf}	–	B3F-3152
			2.55 N {260 gf}	–	B3F-3155

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

12 x 12 mm Models

Type	Plunger or LED colour	Height	Operating force	Bags (100 Switches)	
				Without ground terminal	With ground terminal
Standard (B3F-4000)	Flat	4.3 mm	1.27 N {130 gf}	B3F-4000	B3F-4100
			2.55 N {260 gf}	B3F-4005	B3F-4105
	Projected	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	4.3 mm	1.27 N {130 gf}	B3F-5000	B3F-5100
	Projected	7.3 mm		B3F-5050	B3F-5150
High reliability gold-plated (B3F-5000)	Flat	4.3 mm	1.27 N {130 gf}	B3F-5001	B3F-5101
	Projected	7.3 mm		B3F-5051	B3F-5151

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

6 x 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
Standard (B3F-6000)	Flat	4.3 mm	B3F-6000	B3F-6100	B3F-6002	B3F-6106
		5.0 mm	B3F-6020	B3F-6120	B3F-6022	B3F-6122
	Projected	7.3 mm	B3F-6050	B3F-6150	B3F-6052	B3F-6152

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

■ Accessories (Order Separately)

Special Key Tops are available for projected plunger models.

Specifications

■ Rating/Characteristics

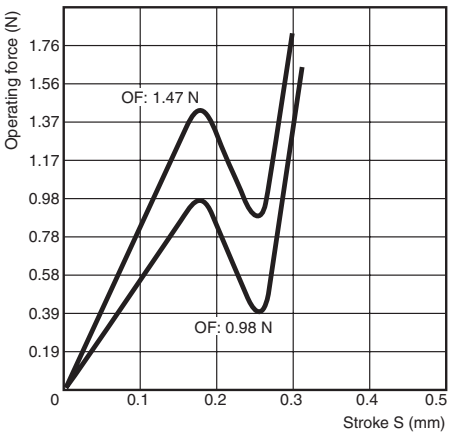
Switching capacity	1 to 50 mA, 5 to 24 VDC (resistive load), 100µ to 50 mA, 5 to 24 VDC for B3F-G series
Ambient temperature	-25°C to 70°C (with no icing)
Ambient humidity	35% to 85%
Contact form	SPST-NO
Contact resistance	100 mΩ max. (initial value) (rated: 1 mA, 5 VDC), 1µA, 5 VDC for B3F-G series
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) (B3F-1070: 500,000 operations min) 300,000 operations min (OF: 1.47 N) 100,000 operations min (OF: 2.55 N) 50,000 operations min (OF: 4.9 N) B3F-4000: 3,000,000 operations min (OF: 1.28 N) 1,000,000 operations min (OF: 2.55 N) B3F-5000: 10,000,000 operations min.
Weight	6 x 6 mm models: approx. 0.25 g 12 x 12 mm models (standard types): approx. 0.85 g Radial models: approx. 0.25 g

■ Operating Characteristics

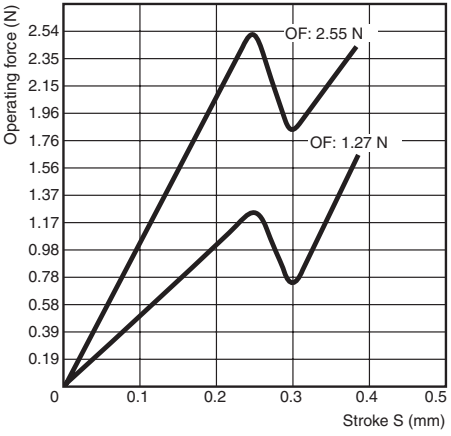
Operating force (OF)	**B3F-1000, B3F-3000, B3F-6000**				**B3F-4000, B3F-5000**	
	0.98 N	**1.47 N**	**2.55 N**	**4.9 N**	**1.27 N**	**2.55 N**
	B3F-1□□0 B3F-3□□0 B3F-6□□0	B3F-1□□2 B3F-3□□2 B3F-6□□2	B3F-1□□5 B3F-3□□5	B3F-10□6	B3F-4□□0 B3F-5□□0	B3F-4□□5
Operating force (OF)	0.98±0.29 N {100±30 gf}	1.47±0.49 N {150±50 gf}	2.55±0.69 N {260±70 gf}	4.9±1. 47N {100±30 gf}	1.27±0.49 N {130±50 gf}	2.55±0.69 N {260±70 gf}
Relapsing 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 min. {50 gf}
Pretravel (PT)	$0.25^{+0.2}/_{-0.1}$ mm				$0.3^{+0.2}/_{-0.1}$ mm	

Engineering Data

Operating Force vs. Stroke (Typical)
B3F-1000, -3000, -6000



B3F-4000, -5000



Dimensions

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

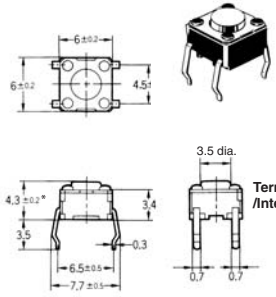
2. No terminal numbers are indicated on the Switches. The numbers used for terminals in the following graphics are indicated in the "Bottom View" diagram below. In this diagram, the Switch is rotated so that the terminals are on the right and left-hand sides, and the OMRON logo appears the right way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

(Bottom View)

6 x 6 mm Models

Horizontal, Flat Plunger Type(without Ground Terminal)

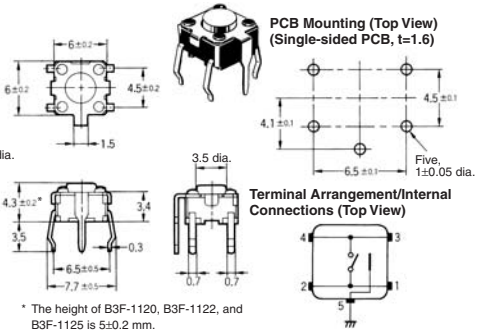
B3F-1000, B3F-1002, B3F-1005, B3F-1006
B3F-1020 (See note.), B3F-1022 (See note.),
B3F-1025 (See note.), B3F-1026 (See note.)



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

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

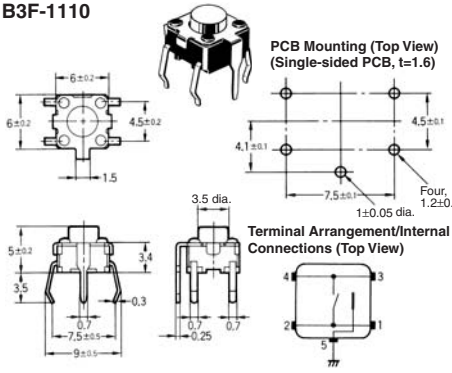
B3F-1100, B3F-1102, B3F-1105
B3F-1120 (See note.), B3F-1122 (See note.)
B3F-1125 (See note.)



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

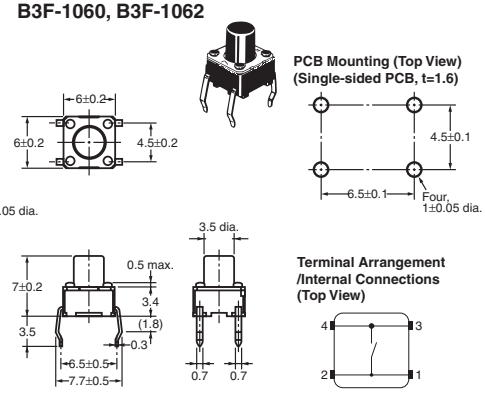
Horizontal, Flat Plunger Type (with Ground Terminal, Pitch: 7.5 mm)

B3F-1110

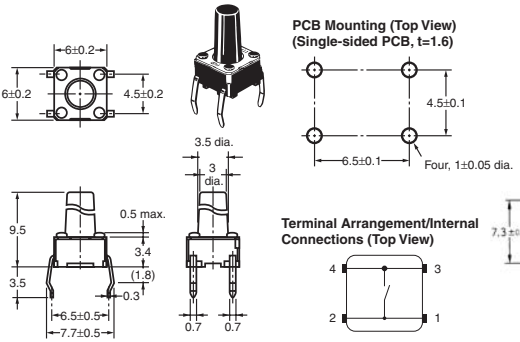


Horizontal, Flat Plunger Type (without Ground Terminal)

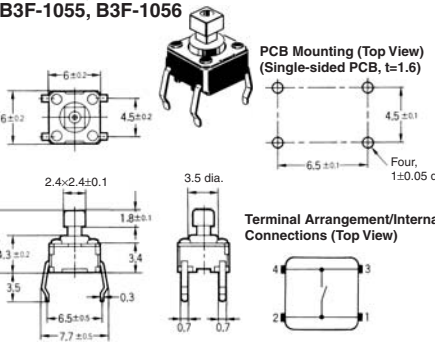
B3F-1060, B3F-1062



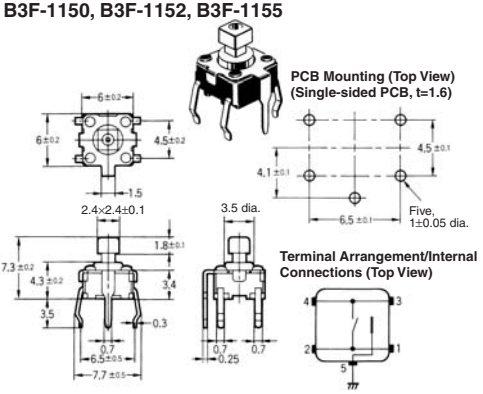
Horizontal, Flat Plunger Type (without Ground Terminal)
B3F-1070, B3F-1072-N, B3F-1075



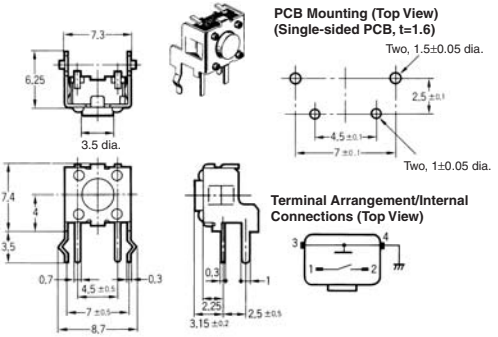
Horizontal, Projected Plunger Type (without Ground Terminal)
B3F-1050, B3F-1052
B3F-1055, B3F-1056



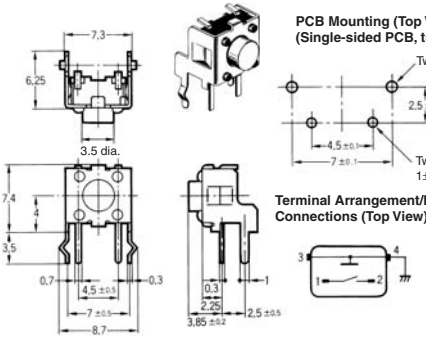
Horizontal, Projected Plunger Type (with Ground Terminal)
B3F-1150, B3F-1152, B3F-1155



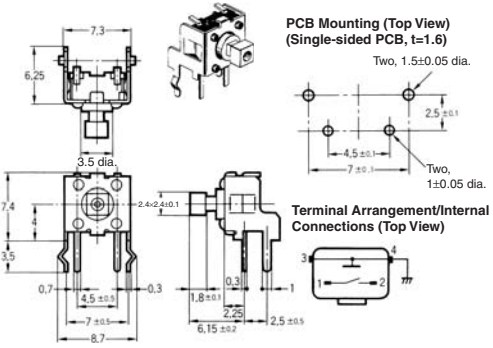
Vertical, Flat Plunger Type
B3F-3100, B3F-3102, B3F-3105



Vertical, Flat Plunger Type (Height: 3.85 mm)
B3F-3120, B3F-3122, B3F-3125



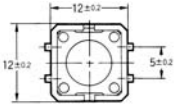
Vertical, Projected Plunger Type
B3F-3150, B3F-3152, B3F-3155



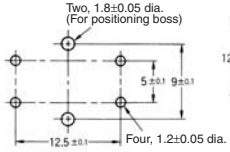
12 x 12 mm Models

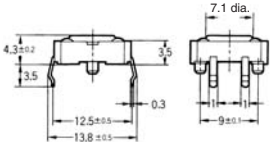
Flat Plunger Type (without Ground Terminal)

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

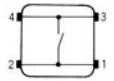


PCB Mounting (Top View)
(Single-sided PCB, t=1.6)



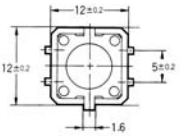


Terminal Arrangement/Internal Connections (Top View)

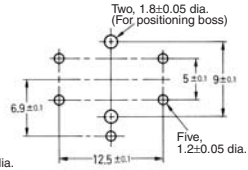


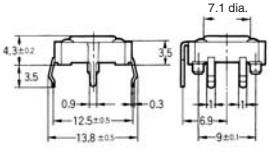
Flat Plunger Type (with Ground Terminal)

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

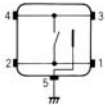


PCB Mounting (Top View)
(Single-sided PCB, t=1.6)



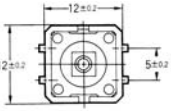


Terminal Arrangement/Internal Connections (Top View)

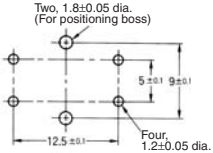


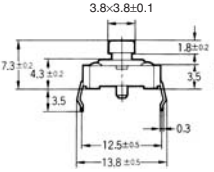
Projected Plunger Type (without Ground Terminal)

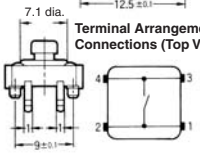
B3F-4050, B3F-4055, B3F-5050, B3F-5051



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



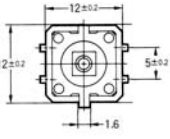




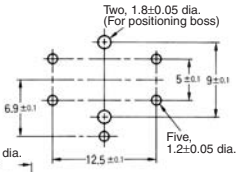
Terminal Arrangement/Internal Connections (Top View)

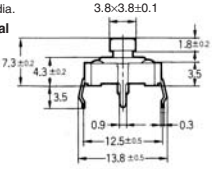
Projected Plunger Type (with Ground Terminal)

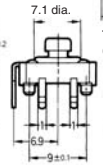
B3F-4150, B3F-4155, B3F-5150, B3F-5151



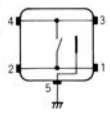
PCB Mounting (Top View)
(Single-sided PCB, t=1.6)





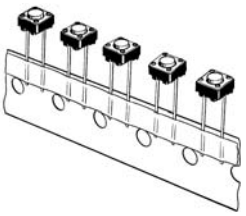


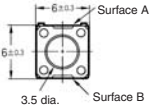
Terminal Arrangement/Intern
Connections (Top View)

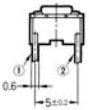


6 mm x 6 mm Radial Types (Taping Specifications): Sold in Units of 1,000 Switches

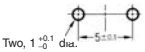
Flat Plunger Type (without Ground Terminal) B3F-6000, B3F-6002

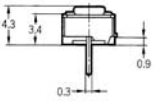




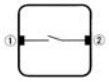


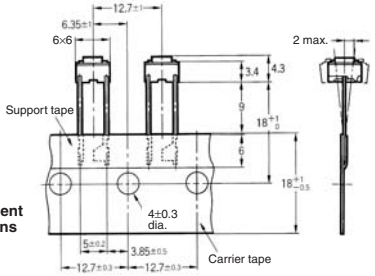
PCB Mounting (Top View) (Single-sided PCB, t=1.6)





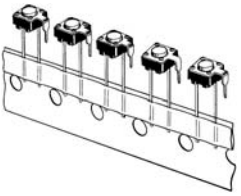
Terminal Arrangement /Internal Connections (Top View)

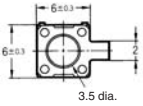


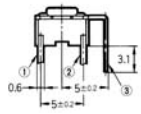


Note: The tape is random between surface A and surface B.

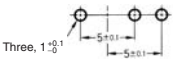
Flat Plunger Type (with Ground Terminal) B3F-6100, B3F-6102

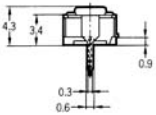




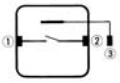


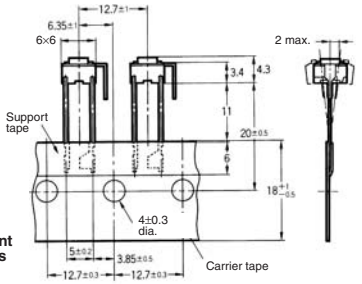
PCB Mounting (Top View) (Single-sided PCB, t=1.6)



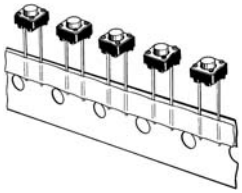


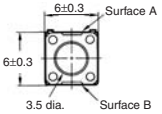
Terminal Arrangement /Internal Connections (Top View)

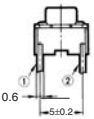




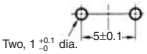
Flat Plunger Type (without Ground Terminal) B3F-6020, B3F-6022

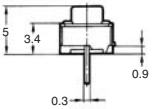




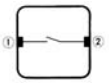


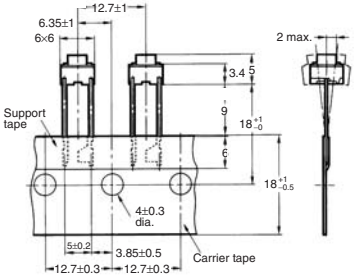
PCB Mounting (Top View) (Single-sided PCB, t=1.6)





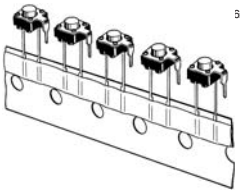
Terminal Arrangement /Internal Connections (Top View)

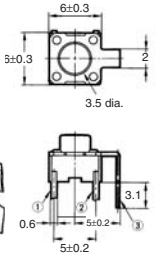




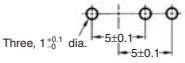
Note: The tape is random between surface A and surface B.

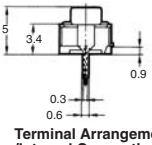
Flat Plunger Type (with Ground Terminal) B3F-6120, B3F-6122



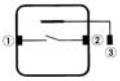


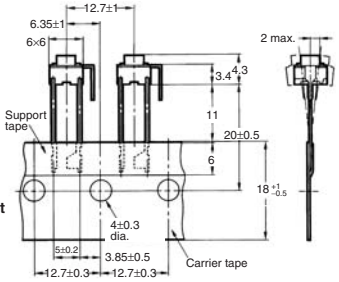
PCB Mounting (Top View) (Single-sided PCB, t=1.6)



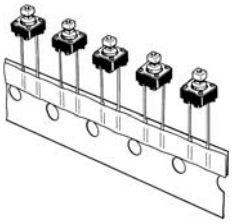


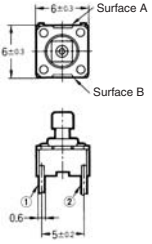
Terminal Arrangement /Internal Connections (Top View)



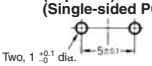


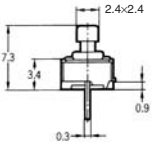
Projected Plunger Type (without Ground Terminal) B3F-6050, B3F-6052



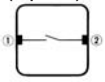


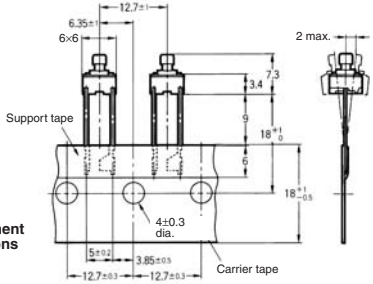
PCB Mounting (Top View) (Single-sided PCB, t=1.6)





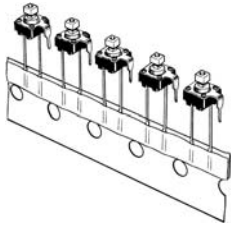
Terminal Arrangement /Internal Connections (Top View)

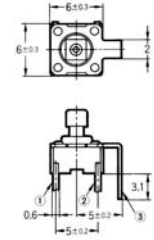




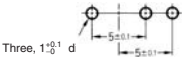
Note: The tape is random between surface A and surface B.

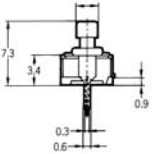
Projected Plunger Type (with Ground Terminal) B3F-6150, B3F-6152



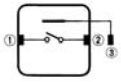


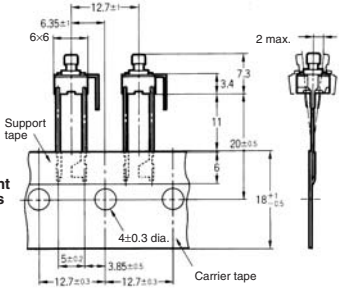
PCB Mounting (Top View) (Single-sided PCB, t=1.6)





Terminal Arrangement /Internal Connections (Top View)



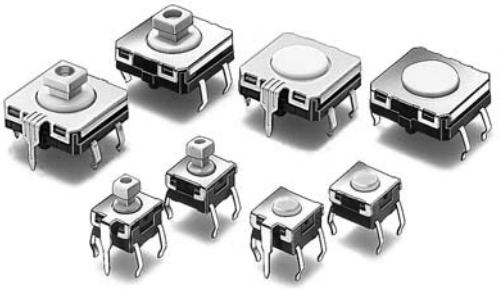


Key Tops

B32-series Special Key Tops are available for projected plunger models.

Allows Cleaning After Soldering with Alcohol Solvents

- ROHS compliant.
- Internal sealed construction allows immersion cleaning with alcohol solvents after soldering.
- Thin, compact construction in both 12 x 12 mm and 6 x 6 mm sizes.
- Snap-action contact construction for a positive click action.
- Available with ground terminals for protection against static electricity.
- Sealed construction also provides high reliability in dusty environments.



Ordering Information

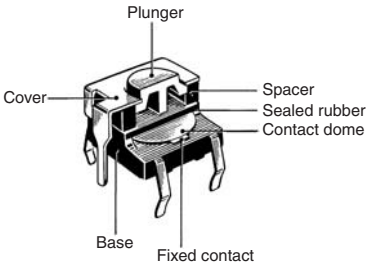
Type	Plunger	Height	Operating force (of)		Bags (100 Switches)	
			Without ground terminal	With ground terminal	Without ground terminal	With ground terminal
6 x 6 mm (B3W-1000)	Flat 	4.3 mm	Standard force	1.57 N {160 gf}	B3W-1000	B3W-1100
			High-force	2.25 N {230 gf}	B3W-1002	B3W-1102
	Projected 	7.3 mm	Standard force	1.57 N {160 gf}	B3W-1050	B3W-1150
			High-force	2.25 N {230 gf}	B3W-1052	B3W-1152
12 x 12 mm (B3W-4000)	Flat 	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 	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 multiples of 100 (the quantity per bag).

■ Accessories (Order Separately)

Special Key Tops are available for projected Switch models.

Nomenclature



Specifications

■ Ratings/Characteristics

Switching capacity	1 to 50 mA, 5 to 24 VDC (resistive load)
Ambient temperature	-25°C to 70°C (with no icing)
Ambient humidity	35% to 85%
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 x 6 mm: approx. 0.3 g, 12 x 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	

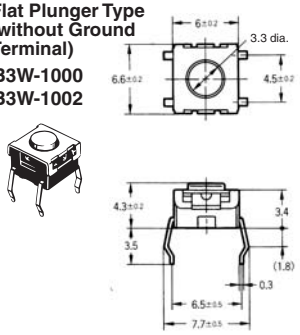
Note 1. All units are in millimetres unless otherwise indicated. Unless otherwise specified, a tolerance of ±0.4 mm applies to all dimensions.

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.

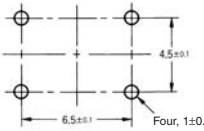
■ 6 x 6 mm Models

Flat Plunger Type (without Ground Terminal)

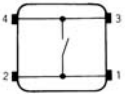
B3W-1000
B3W-1002



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

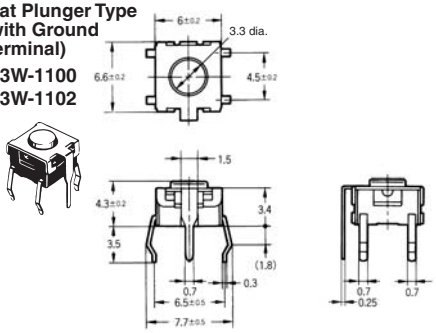


Terminal Arrangement /Internal Connections (Top View)

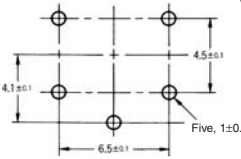


Flat Plunger Type (with Ground Terminal)

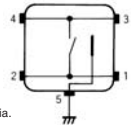
B3W-1100
B3W-1102



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

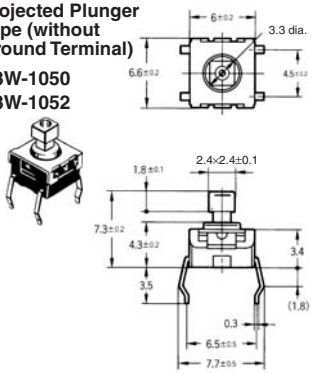


Terminal Arrangement /Internal Connections (Top View)

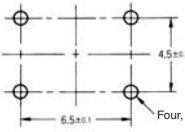


Projected Plunger Type (without Ground Terminal)

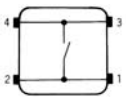
B3W-1050
B3W-1052



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

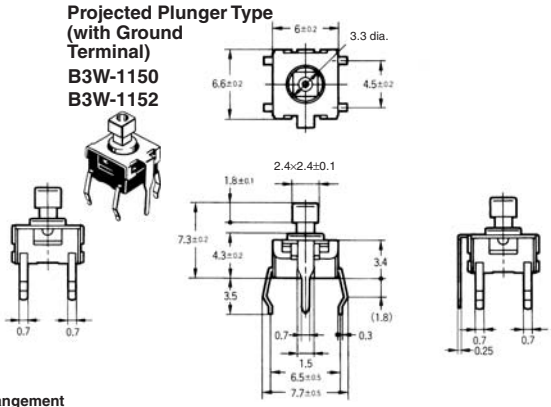


Terminal Arrangement /Internal Connections (Top View)

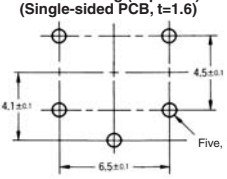


Projected Plunger Type (with Ground Terminal)

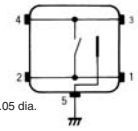
B3W-1150
B3W-1152



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



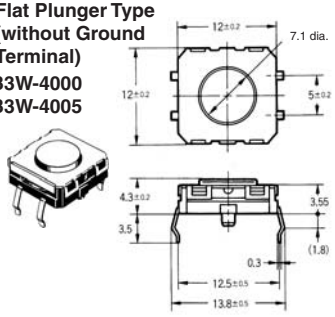
Terminal Arrangement /Internal Connections (Top View)



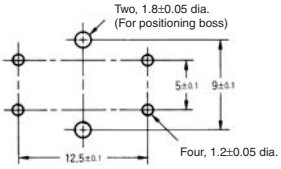
■ 12 x 12 mm Models

Flat Plunger Type (without Ground Terminal)

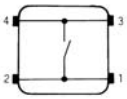
B3W-4000
B3W-4005



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

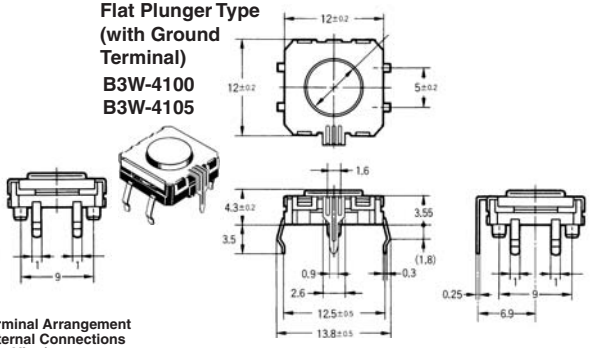


Terminal Arrangement /Internal Connections (Top View)

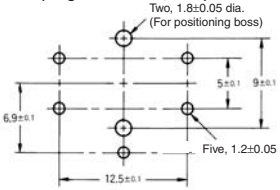


Flat Plunger Type (with Ground Terminal)

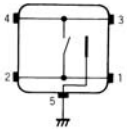
B3W-4100
B3W-4105



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

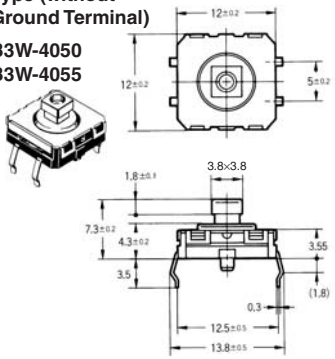


Terminal Arrangement /Internal Connections (Top View)

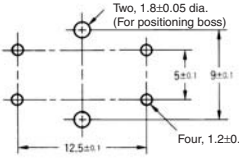


Projected Plunger Type (without Ground Terminal)

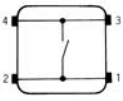
B3W-4050
B3W-4055



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

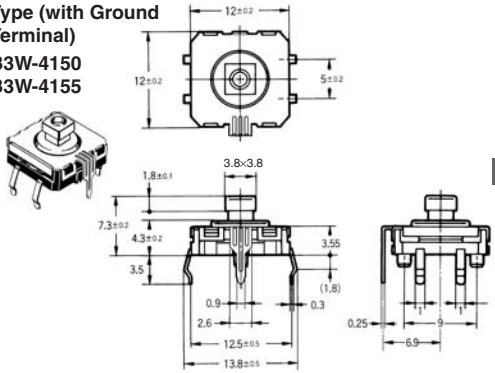


Terminal Arrangement /Internal Connections (Top View)

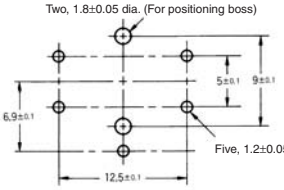


Projected Plunger Type (with Ground Terminal)

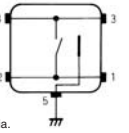
B3W-4150
B3W-4155



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



Terminal Arrangement /Internal Connections (Top View)



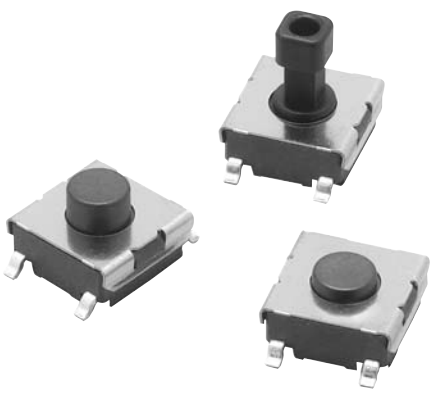
Key Tops

B32 series Special Key Tops are available for projected plunger models.

CAT. No. A075-E2-04

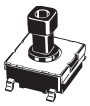
Surface-mounting Switches Ideal for High-density Mounting

- ROHS compliant.
- Tape packing style also available.
- Allows reflow soldering.
- Incorporates a snap-action contact mechanism that ensures sharp switching operations.



Ordering Information

■ List of Models

Type	Plunger	Height force (of)	Operating	Bag		Embossed tape	
				Model	MInimu order unit	Model	MInimum order unit
6 x 6 mm B3FS-1000 models	Flat 	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 	4.3 mm	0.98 N {100 gf}	B3FS-1010		B3FS-1010P	1,000
			1.47 N {150 gf}	B3FS-1012		B3FS-1012P	
	Projected 	7.3 mm	0.98 N {100 gf}	B3FS-1050 (See note.)		B3FS-1050P (See note.)	
			1.47 N {150 gf}	B3FS-1052 (See note.)		B3FS-1052P (See note.)	

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

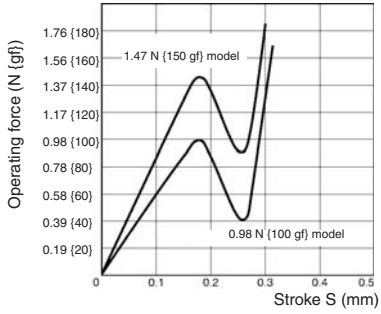
Specifications

■ Ratings/Characteristics

Switching capacity	50 mA, 24 VDC (resistive load)
Ambient temperature	Operating: -25°C to 70°C (with no icing)
Ambient humidity	Operating: 35% to 85%
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, 1.5mm double amplitude
Shock resistance	Destruction: 1,000 m/s² {approx. 100G} max. Malfunction: 100 m/s² {approx. 10G} max.
Life expectancy	Standard models (0.98 N): 1,000,000 operations min. High-force models (1.47 N): 300,000 operations min.
Weight	B3F-1000: Approx. 0.2 g

Engineering Data

Operating Force vs. Stroke Characteristics
B3F-1000



■ Operating Characteristics

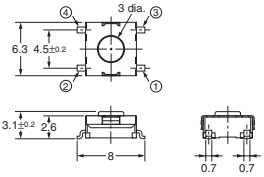
Item	B3FS-1000	
	0.98 N	1.47 N
Operating force (OF)	0.98±0.29 N {100±30 gf}	1.47±0.49 N {150±50 gf}
Releasing force (RF)	0.2 N {20 gf}min.	0.49 N {50 gf} min.
Pretravel (PT)	$0.25^{+0.2}/_{-0.1}$ mm	

Dimensions

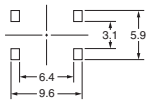
Note: All units are in millimetres unless otherwise indicated. Unless otherwise specified, a tolerance of ±0.4mm applies to all dimensions.

Flat Type

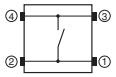
B3FS-1000
B3FS-1002
B3FS-1000P
B3FS-1002P



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

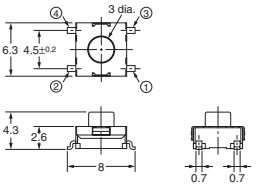


Terminal Arrangement/ Internal Connection
(Top View)

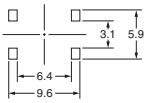


Flat Type

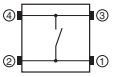
B3FS-1010
B3FS-1012
B3FS-1010P
B3FS-1012P



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

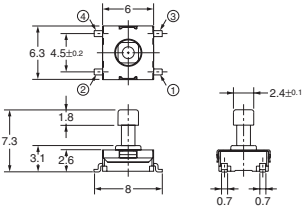


Terminal Arrangement/ Internal Connection
(Top View)

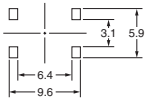


Projected Type

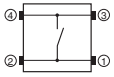
B3FS-1050
B3FS-1052
B3FS-1050P
B3FS-1052P



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.

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

CAT. No. A113-E2-02

Designed as Surface-mounting Device (SMD) Meeting High-density Mounting Requirements

- ROHS Compliant.
- SMD Tactile Switch ideal for high-density mounting.
- Compact and more than 1 mm thinner than conventional tactile switches.
- Available with ground terminals for protection against static electricity.
- Sealed construction conforming to IP64 (IEC-529) provides high reliability in dusty or humid environments.

Ordering Information

■ List of Models

Type	Bags	Embossed tape (see note)
Without ground terminal	B3SN-3012	B3SN-3012P
With ground terminal	B3SN-3112	B3SN-3112P

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

■ Operating Characteristics

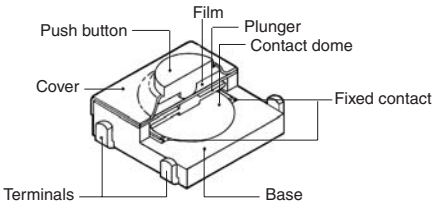
Operating force (OF)	1.57±0.49 N {160±50 gf} max.
Releasing force (RF)	0.29 N {30 gf} min.
Pretravel (PT)	0.25±0.15 mm

Specifications

■ Ratings/Characteristics

Switching capacity	1 to 50 mA, 5 to 24 VDC (resistive load)
Ambient temperature	Operating: –25°C to 70°C (with no icing)
Ambient humidity	Operating: 35% to 85%
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/s² {approx. 100G} max.
Life expectancy	100,000 operations min.
Weight	Approx. 0.2 g

Nomenclature



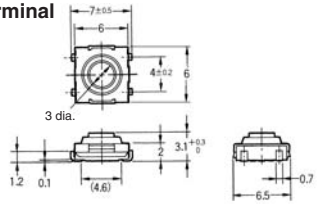
Dimensions

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

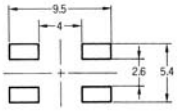
2. No terminal numbers are indicated on the Switches. The numbers used for terminals in the following graphics are indicated in the "Bottom View" diagram below. In this diagram, the Switch is rotated so that the terminals are on the right and left-hand sides, and the OMRON logo appears the right way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

Without Ground Terminal

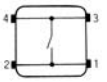
B3SN-3012
B3SN-3012P



PCB Mounting (Top View)

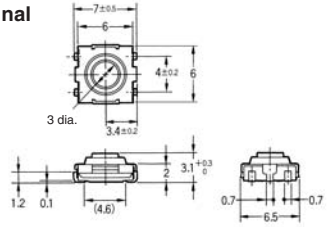


Terminal Arrangement /Internal Connections (Top View)

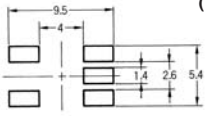


With Ground Terminal

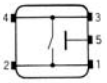
B3SN-3112
B3SN-3112P



PCB Mounting (Top View)



Terminal Arrangement /Internal Connections (Top View)



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

CAT. No. C096-E2-03

Surface-mounting Tactile Switch for High-density Packaging

- ROHS compliant.
- Dust-sealed construction provides high reliability in locations exposed to dust.
- SMD Tactile Switch ideal for high-density mounting.
- Sealed construction conforming to IP64 (IEC-529). Can be washed after soldering.
- Ground terminal available to protect against static electricity.

Ordering Information

6 x 6 mm Type B3S-1000

Operating force (OF)		Height	Without ground terminal		With ground terminal	
			Bags (100 Switches)	Embossed tape (1,000 Switches)	Bags (100 Switches)	Embossed tape (1,000 Switches)
Standard-force	1.57 N {160 gf}	4.3 mm	B3S-1000	B3S-1000P	B3S-1100	B3S-1100P
High-force	2.25 N {230 gf}		B3S-1002	B3S-1002P	B3S-1102	B3S-1102P

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

Specifications

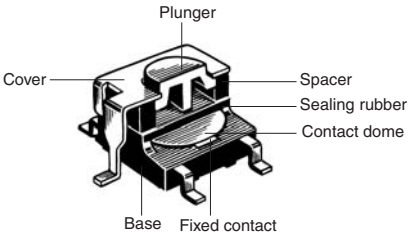
■ Ratings/Characteristics

Switching capacity	5 to 24 VDC, 1 to 50 mA (resistive load)
Insulation voltage	30 VDC
Ambient temperature	Operating: -25°C to 70°C (with no icing)
Ambient humidity	Operating: 35% to 85%
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): 500,000 operations min. High-force models (2.25 N): 300,000 operations min.
Weight	Approx. 0.3 g

■ Operating Characteristics

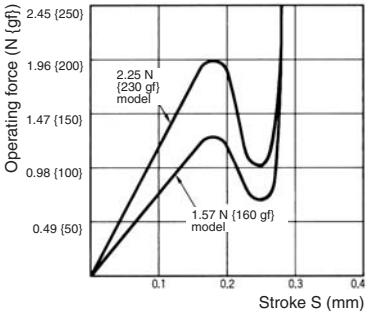
Item	B3S-1□00	B3S-1□02
Operating force (OF)	1.57 N {160 gf} max.	2.25 N {230 gf} max.
Releasing force (RF)	0.2 N {20 gf} min.	0.49 N {50 gf} min.
Pretravel (PT)	$0.25^{+0.2}/_{-0.1}$ mm	

Nomenclature



Engineering Data

Operating Force vs. Stroke (Typical)

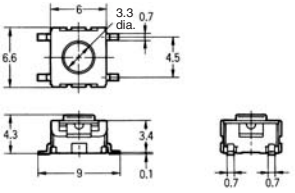


Dimensions

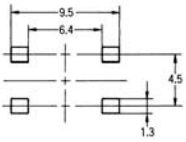
Note: All units are in millimetres unless otherwise indicated. Unless otherwise specified, a tolerance of ±0.4 mm applies to all dimensions.

Without Ground Terminal

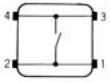
B3S-1000
B3S-1002



PCB Mounting (Top View)

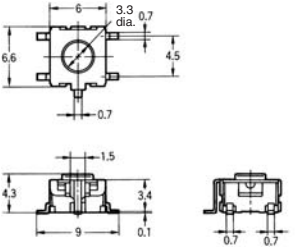


Terminal Arrangement /Internal Connections (Top View)

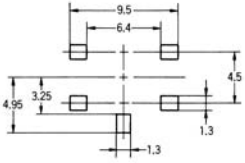


With Ground Terminal

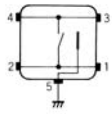
B3S-1100
B3S-1102



PCB Mounting (Top View)



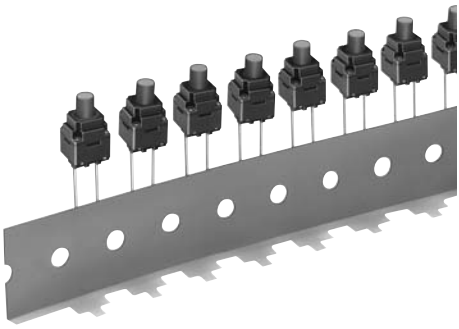
Terminal Arrangement /Internal Connections (Top View)



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

Double-sealed Construction Ensures Watertight and Dust-tight Performance

- ROHS compliant.
- Sealed construction conforming to IP67 (IEC-529) provides high reliability in dusty or humid environments.
- As compact as 8 mm x 8 mm.
- Allows the use of radial-taping part insertion machines.



Ordering Information

Model	Height	Operating force (of)	Model without ground terminal	Minimum order unit
	13 mm	1.96 N {200 gf}	B3WN-6002(S)	1,000 Switches

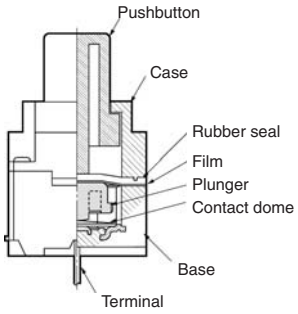
Note: Orders must be made in multiples of the minimum order unit (multiples of 1,000). Switches are not sold individually.

Specifications

■ Ratings/Characteristics

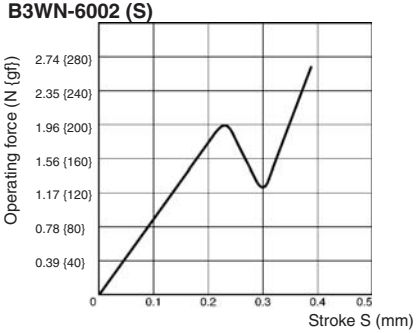
Switching capacity	50 mA, 12 VDC (resistive load)
Ambient temperature	Operating: -25°C to 85°C (with no icing)
Ambient humidity	Operating: 35% to 85%
Contact configuration	SPST-NO
Contact resistance	100 mΩ max. (initial value) (rated: 1 mA, 5 VDC)
Insulation resistance	100 MΩ min. (at 100 VDC)
Dielectric 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

Nomenclature



Engineering Data

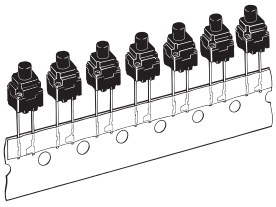
Operating Force vs. Stroke Characteristics
B3WN-6002 (S)

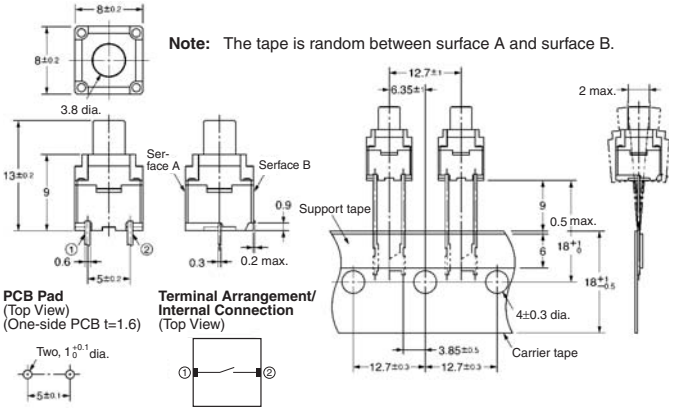


Dimensions

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

B3WN-6002 (S)





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

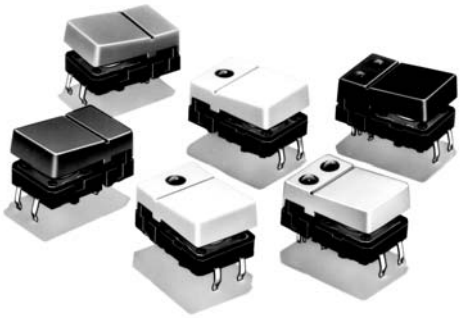
■ Operating Characteristics

Item	B3WN-6002 (S)
Operating force (OF)	1.96±0.67 N {200±70 gf}
Releasing force (RF)	0.49 N {50 gf} min.
Pretravel (PT)	$0.3^{+0.2}/_{-0.1}$ mm

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

Hinged Design Developed through Ergonomics

- ROHS compliant.
- 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).



Ordering Information

Colour	No LED	One LED			Two LEDs (left and right)		
		Red	Yellow	Green	Red/Yellow	Red/Green	Yellow/Green
Light grey	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

Specifications

■ Ratings/Characteristics

Switching capacity	1 to 50 mA, 5 to 24 VDC (resistive load)
Ambient temperature	-25°C to 70°C (with no icing)
Ambient humidity	35% to 85%
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/s² {approx. 100G} max. Malfunction: 100 m/s² {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

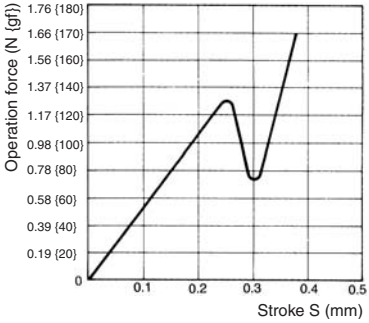
■ Built-in LED Performance

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.

Engineering Data

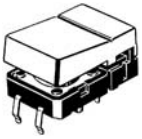
Operating Force vs. Stroke (Typical)

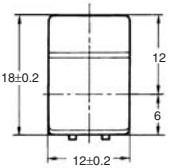


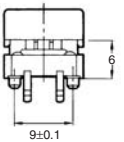
Dimensions

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

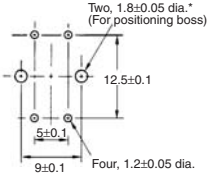
Types with no LED
B3J-1□00

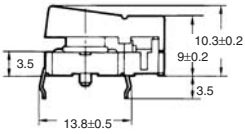




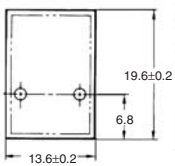


PCB Mounting (Top View)

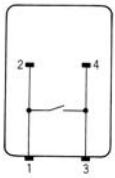




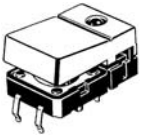
Panel Cutout

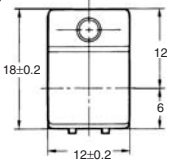


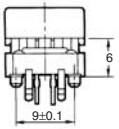
Terminal Arrangement /Internal Connections (Top View)



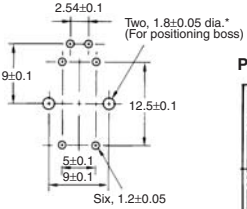
1 LED Types
B3J-2□00, -3□00, -4□00

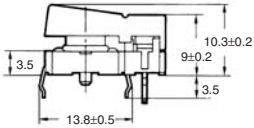




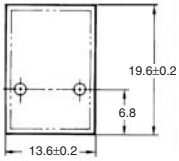


PCB Mounting (Top View)

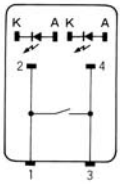




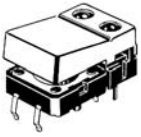
Panel Cutout

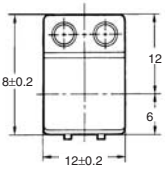


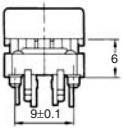
Terminal Arrangement /Internal Connections (Top View)



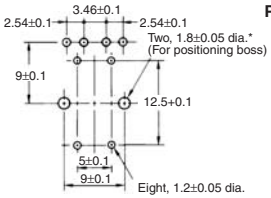
2 LED Types
B3J-5□00, -6□00, -7□00

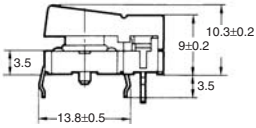




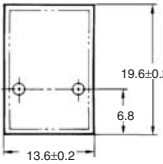


PCB Mounting (Top View)

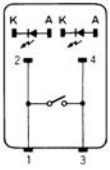




Panel Cutout

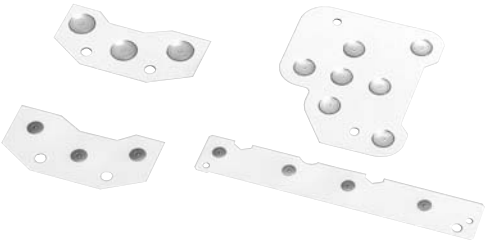


Terminal Arrangement /Internal Connections (Top View)



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

Ultra-low Profile Dome Array with Dust-Proof Construction and Crisp Clicking Action



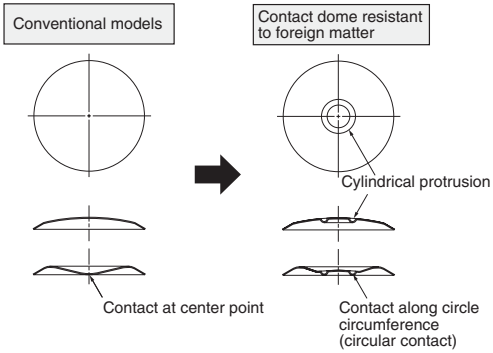
- ROHS compliant.
- No soldering required.
- Attach directly to PCB to make tactile switch.
- Matrix adhesive used to create highly dust-proof construction with good ventilation.
- Lower profile, lighter weight, and crisp clicking action achieved using stainless steel contact dome.
- OMRON's unique circular contact action ensures a high level of resistance to foreign matter.
- Can be designed and produced according to user specifications (e.g., external dimensions or key layout).

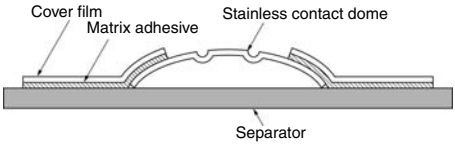
Structure

CIRCULAR CONTACT

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

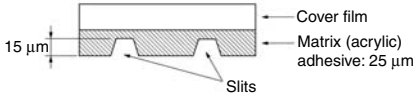
The circular contact construction provides contact along the circumference of a circle, thus preventing poor contact by avoiding the center point.





MATRIX ADHESIVE

This adhesive has grid-shaped slits for ventilation with the structure shown below. The height of the slits is 15 micrometers ensuring both ventilation and dust-proofing.



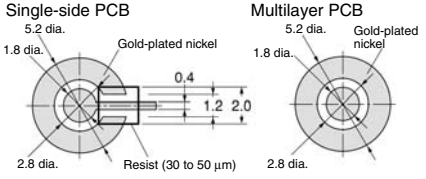
Specifications

Item	Specification
Diameter	4-mm dia. and 5-mm dia. models available
Operating force (OF)	1.57 ±0.49 N
Releasing force (RF)	0.2 N min.
Pretravel (PT)	0.2 ±0.1 mm
Thickness	0.25 ±0.1 mm
Life expectancy	4 mm dia.: 500,000 operations min. 5-mm dia.: 1,000,000 operations min.
Ambient operating temperature	-40 to 80°C
Ambient storage temperature	-40 to 85°C
Material	Stainless steel
Plating	Unplated, silver

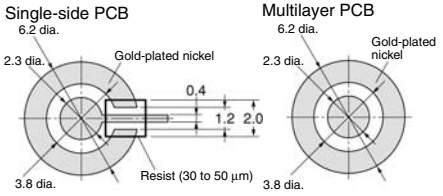
Note: Contact dome specifications not shown in this table are also available.

■ Recommended Contact Form on PCB

4-mm Diameter Contact Dome



5-mm Diameter Contact Dome



Precautions

CORRECT USE

ATTACHING TO THE PCB

Remove the Dome Array from the sheet using tweezers, and attach it above the contact on the PCB surface, which has been wiped clean in advance.

Do not reuse a B3DA Dome Array that has been detached from the PCB. Attach a new Dome Array 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 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 MILLIMETRES.
To convert millimetres into inches, multiply by 0.03937. To convert grams into ounces, multiply by 0.03527.

CAT. No. A121-E2-02

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

- ROHS compliant.
- 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.

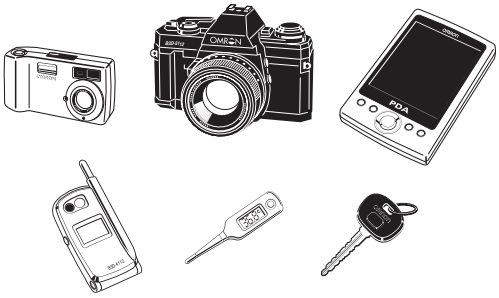
NEW

- OMRON's unique circular contact action ensures a high level of resistance to foreign matter.

Application Examples

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

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



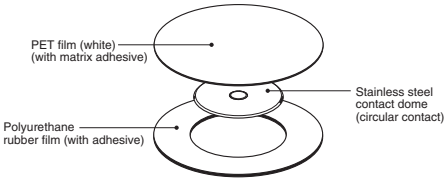
Specifications

■ Ratings/Characteristics

Item	Model	
	B3D-4112	B3D-5112
Diameter of contact dome	4-mm dia.	5-mm dia.
Operating force (OF)	1.67±0.49 N	
Releasing force (RF)	0.2 N min.	
Pretravel (PT)	0.2±0.1 mm	
Thickness	0.3±0.1 mm	
Life expectancy	500,000 operations min.	1,000,000 operations min.
Switching capacity	12 VDC, 10 mA (resistive load) (recommended minimum load: 3 VDC, 1 mA (resistive load)	
Ambient operating temperature	-40 to 80°C	
Ambient storage temperature	-40 to 85°C	
Contact dome	Stainless steel	
Plating	Silver	

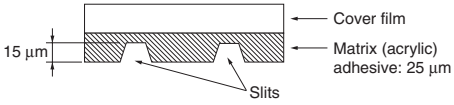
Note: The Dome Keys are sold in units of 500 (20 sheets, with 25 Dome Keys per sheet). Orders must be made in multiples of 500 Dome Keys.

Structure



MATRIX ADHESIVE

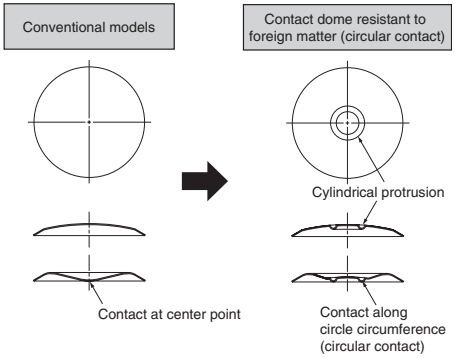
The surface structure of this adhesive has grid-shaped slits, as shown in the following cross-sectional diagram. These slits provide both ventilation and dust-proofing, which is required for contact dome operation.



CIRCULAR CONTACT

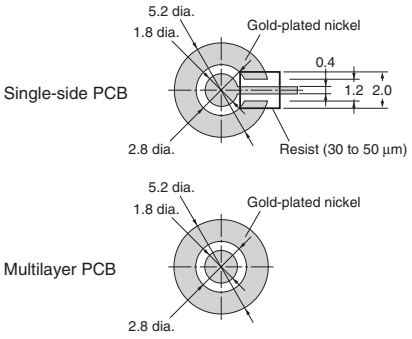
When contact dome keys are attached to the PCB, any PCB dust or foreign particles will tend to collect in the centre of the key when it is pressed. Therefore, poor contact occurs easily in keys that provide contact at the centre point only.

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

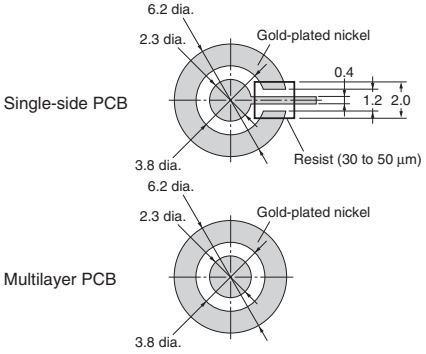


Recommended Contact Form

4 mm Diameter Contact Dome (B3D-4112)

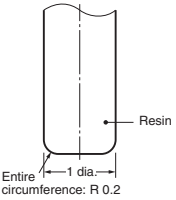


5 mm Diameter Contact Dome (B3D-5112)

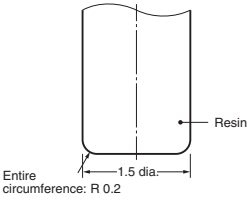


Recommended Operating Part Form

4 mm Diameter Contact Dome (B3D-4112)

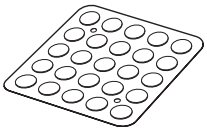


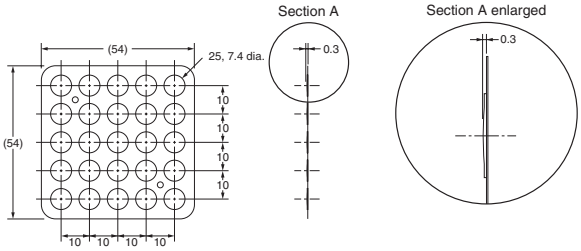
5 mm Diameter Contact Dome (B3D-5112)



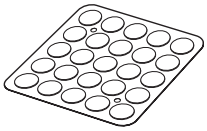
Dimensions

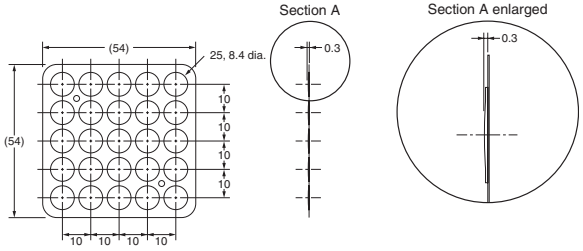
B3D-4112





B3D-5112





Precautions

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

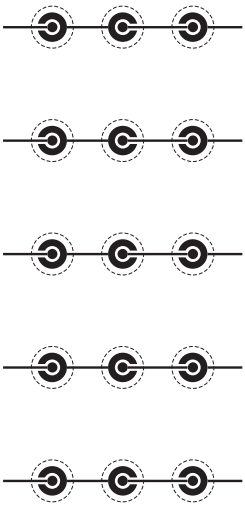
The Dome Key cannot withstand heat from reflow soldering. Always perform reflow soldering before attaching the Dome Key to the PCB.

WASHING

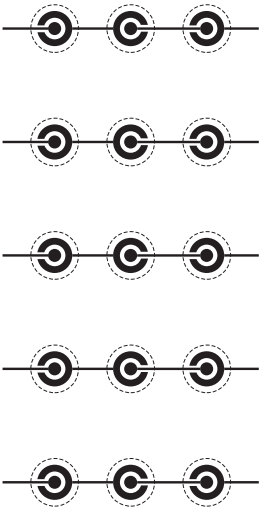
Do not wash the Dome Key. The Dome Key is not water-resistant and must not be exposed to water or other liquids.

PCB Pattern Diagrams

B3D-4112



B3D-5112

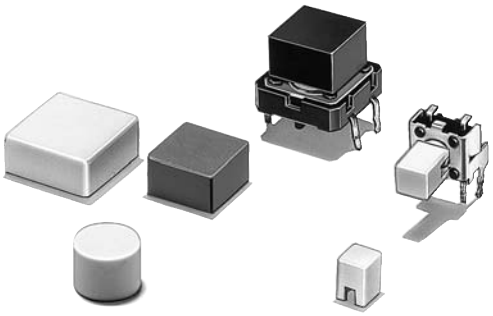


ALL DIMENSIONS SHOWN ARE IN MILLIMETRES.
To convert millimetres into inches, multiply by 0.03937. To convert grams into ounces, multiply by 0.03527.

CAT. No. A158-E2-02

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

- ROHS compliant.
- Available in a wide range of colors and sizes.



Ordering Information

For B3F and B3W Switches

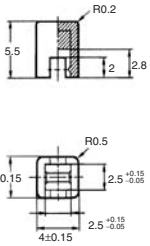
New

Colour	6 x 6 mm Switches B3F-1000, B3F-3000, B3W-1000, B3FS)	6 x 6 mm Switches		12 x 12 mm Switches (B3F-4000, B3F-5000, B3W-4000)		12 x 12 mm Switches
	4 x 4 mm Key Top	6 mm dia.	D shape	9 x 9 mm Key Top	12 x 12 mm Key Top	9.5-mm dia.
Light Grey	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	B32-1050	-	-	B32-1250	B32-1350	-
Red	B32-1080	-	-	B32-1280	B32-1380	-

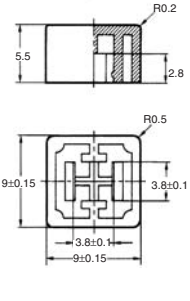
Dimensions

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

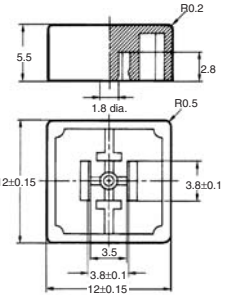
B32-10□0



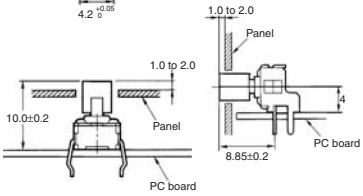
B32-12□0



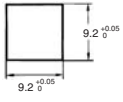
B32-13□0

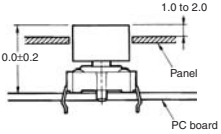


Panel Cutout

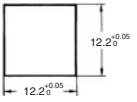


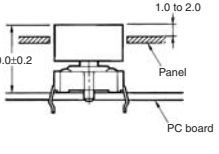
Panel Cutout



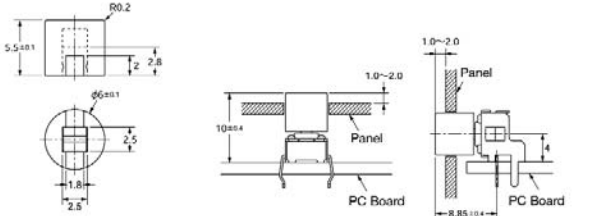


Panel Cutout

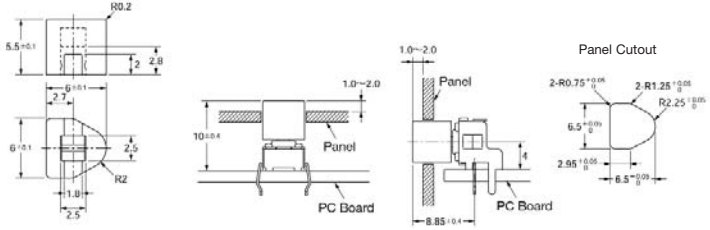




B32-2000
B32-2010



B32-2100
B32-2110



B32-16□0