

Tactile Switch B3F

Miniature, Space-Saving Tactile Switch Provides Long Service Life and Easy Mounting

- Extended mechanical/electrical service life: 10×10^6 operations for 12 x 12 mm type and 1×10^6 operations for the 6 x 6 mm type
- Ideal for applications such as audio, office and communications equipment, measuring instruments, TVs, VCRs, etc.
- Taped radial type, vertical type and high force types are available as series versions
- Flux-tight base structure allows automatic soldering of the tactile switches onto a PC board
- Gold plated models available for increased contact reliability, resistance to corrosive gas and insulation fault prevention for ion migration in harsh environments
- RoHS Compliant



Ordering Information

■ B3F-1□□□, B3F-3□□□

6 x 6 mm type

Type	Plunger	Switch height x pitch	Operating force	Model			
				Without ground terminal		With ground terminal	
				Bags	Sticks*	Bags	Sticks*
Standard		4.3 x 6.5 mm	General-purpose: 100 g	B3F-1000	B3F-1000S	B3F-1100	B3F-1100S
			150 g	B3F-1002	B3F-1002S	B3F-1102	B3F-1102S
			High-force: 260 g	B3F-1005	B3F-1005S	B3F-1105	B3F-1105S
		5.0 x 6.5 mm	General-purpose: 100 g	B3F-1020	B3F-1020S	B3F-1120	B3F-1120S
			150 g	B3F-1022	B3F-1022S	B3F-1122	B3F-1122S
			High-force: 260 g	B3F-1025	B3F-1025S	B3F-1125	B3F-1125S
		5.0 x 7.5 mm	General-purpose: 100 g	—	—	B3F-1110	—
			General-purpose: 100 g	B3F-1050	B3F-1050S	B3F-1150	B3F-1150S
			150 g	B3F-1052	B3F-1052S	B3F-1152	B3F-1152S
Vertical		3.15 mm	General-purpose: 100 g	—	—	B3F-3100	—
			150 g	—	—	B3F-3102	—
			High-force: 260 g	—	—	B3F-3105	—
		3.85 mm	General-purpose: 100 g	—	—	B3F-3120	—
			150 g	—	—	B3F-3122	—
			High-force: 260 g	—	—	B3F-3125	—
		6.15 mm	General-purpose: 100 g	—	—	B3F-3150	—
			150 g	—	—	B3F-3152	—
			High-force: 260 g	—	—	B3F-3155	—

* Number of switches per stick: Without ground terminal 90/stick
 With ground terminal 75/stick

Important Note: Switches cannot be water-washed.

■ B3F-1□□□-G

6 x 6 mm type with Gold Plating

Type	Plunger	Switch height x pitch	Form of shipment operating force	Model	
				Without ground terminal	With ground terminal
				Bags (100 Switches)	
6 x 6 mm switches with gold plating		4.3 x 6.5 mm	176 g	B3F-1002-G	B3F-1102-G
		5.0 x 6.5 mm		B3F-1022-G	B3F-1122-G

Note: The minimum order is 100 Switches. Order in multiples of the minimum order.

■ B3F-4□□□, B3F-5□□□

12 x 12 mm type

Type	Plunger	Switch height x pitch	Operating force	Model			
				Without ground terminal		With ground terminal	
				Bags	Sticks*	Bags	Sticks*
Standard		4.3 x 12.5 mm	General-purpose: 130 g	B3F-4000	B3F-4000S	B3F-4100	B3F-4100S
			High-force: 260 g	B3F-4005	B3F-4005S	B3F-4105	B3F-4105S
		7.3 x 12.5 mm	General-purpose: 130 g	B3F-4050	B3F-4050S	B3F-4150	B3F-4150S
			High-force: 260 g	B3F-4055	B3F-4055S	B3F-4155	B3F-4155S
Long service life		4.3 x 12.5 mm	General-purpose: 130 g	B3F-5000	B3F-5000S	B3F-5100	B3F-5100S
		7.3 x 12.5 mm		B3F-5050	B3F-5050S	B3F-5150	B3F-5150S
High reliability gold-plated contact		4.3 x 12.5 mm		B3F-5001	B3F-5001S	B3F-5101	B3F-5101S
		7.3 x 12.5 mm		B3F-5051	B3F-5051S	B3F-5151	B3F-5151S

* Number of switches per stick: Without ground terminal 45/stick
 With ground terminal 40/stick

Important Note: Switches cannot be water-washed.

■ B3F-6□□□

Taped Radial (Auto Insertion) 6 x 6 mm type

Type	Plunger	Switch height x pitch	Operating force	Model	
				Without ground terminal	With ground terminal
B3F-6000	Flat 	4.3 x 6.5 mm	General-purpose: 100 g	B3F-6000	B3F-6100
			High-force: 150 g	B3F-6002	B3F-6102
		5.0 x 6.5 mm	General-purpose: 100 g	B3F-6020	B3F-6120
			High-force: 150 g	B3F-6022	B3F-6122
	Projected 	7.3 x 6.5 mm	General-purpose: 100 g	B3F-6050	B3F-6150
			High-force: 150 g	B3F-6052	B3F-6152

Note: The above switches must be ordered in units of 1,000.

Important Note: Switches cannot be water-washed.

■ Accessories

See “B32” Tactile Switch Key Top data sheet for keycaps that fit projected plunger B3F models.

■ Plunger Identification Table

Use this table to determine tactile switch type by plunger color.

Plunger color	Operating force	Type
Light gray	100 g	B3F-1000, 1150, 3100, 6000, 6050
White	100 g	B3F-1050, 1100, 3150, 4000, 4050, 4100
Black	100 g	B3F-1020, 1110, 1120, 3120, 6020, 6120
Blue	130 g	B3F-5000 Series
Yellow	150 g	B3F-1002, 1052, 1102, 3102, 3152, 4005, 4055, 4105, 4155, 6002, 6052
Medium gray	150 g	B3F-1022, 1122, 3122, 6022
Orange	260 g	B3F-1005, 1055, 1105, 3105, 6005, 6055
Pink	260 g	B3F-1025, 1125, 3125, 6025

Specifications

■ Characteristics

	Part Number				
	B3F-1□□□ B3F-3□□□	B3F-4□□□	B3F-5□□□	B3F-6□□□	B3F-1□□□-G
Service life (see note 1) [mechanical/electrical]	1,000,000 operations minimum	3,000,000 operations minimum	10,000,000 operations minimum	1,000,000 (300,000) operations min.	300,000 operations min.
Weight (see note 2)	Approx. 0.25 g	Approx. 0.85 g		Approx. 0.25 g	
Contact form	SPST-NO				SPST-NO
Switching capacity	1 to 50 mA, 5 to 24 VDC (resistive load)				100 μ A to 50 mA, 5 to 24 VDC (resistive load)
Contact resistance	100 M Ω max.				100 M Ω max. (initial value) (rated: 100 μ A, 5 VDC)
Insulation resistance	100 M Ω min. (at 250 VDC)				
Dielectric strength	500 VAC, 50/60 Hz for 1 minute				
Bounce time	5 ms max.				
Vibration	Malfunction durability: 10 to 55 Hz, 1.5 mm double amplitude				Malfunction: 10 to 55 Hz, 1.5 mm double amplitude for 30 to 60 s
Shock	Mechanical durability: 1,000 m/s ² (approx. 100 G) Malfunction durability: 100 m/s ² (approx. 10 G)				Destruction: 1,000 m/s ² max.
Ambient temperature	-25° to 70°C (with no icing)				
Humidity	35% to 85% RH				35% to 85%

Note: 1. Figure in parentheses denotes the service life of high force type.

2. Denotes the weight of standard type.

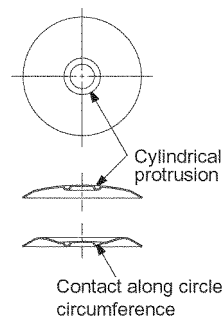
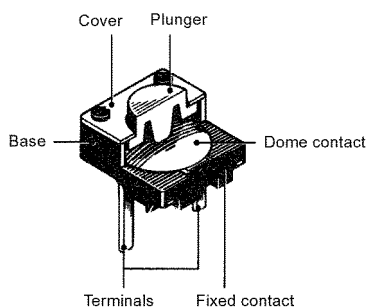
3. Data shown are of initial value.

■ Operating Characteristics

Characteristics	Part Number						
	B3F-1□□□ / -3□□□		B3F-4□□□ / -5□□□		B3F-6□□□		B3F-1□□□-G
	General purpose type	High force type	General purpose type	High force type	General purpose type	High force type	General purpose type
Operating force (OF)	100 $\pm$ 30 g	150 $\pm$ 50 g	130 $\pm$ 50 g	260 $\pm$ 70 g	100 $\pm$ 30 g	150 $\pm$ 50 g	1.76 $\pm$ 0.49 N
Release force (RF) min.	20 g	50 g	30 g	50 g	20 g	50 g	0.49 N
Pretravel (PT) max.	0.25 ^{+0.2} / _{-0.1} mm	0.25 ^{+0.2} / _{-0.1} mm	0.3 ^{+0.2} / _{-0.1} mm	0.3 ^{+0.2} / _{-0.1} mm	0.25 ^{+0.2} / _{-0.1} mm	0.25 ^{+0.2} / _{-0.1} mm	0.25 ^{+0.2} / _{-0.1} mm

■ Construction

B3F-1□□□-G



Contact along circle circumference
(circular contact)

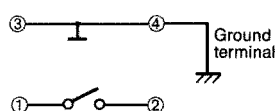
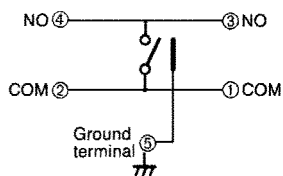
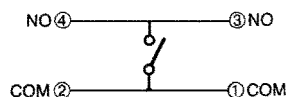
Switches have circular contact surface instead of single center point contact, increasing contact reliability.

Contact Form

B3F-10□□
-40□□
-50□□
-10□□-G

B3F-11□□
-41□□
-51□□
-11□□-G

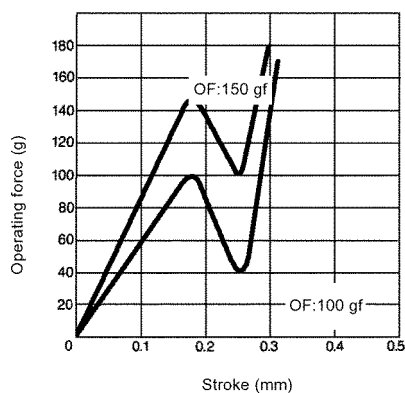
B3F-3□□□



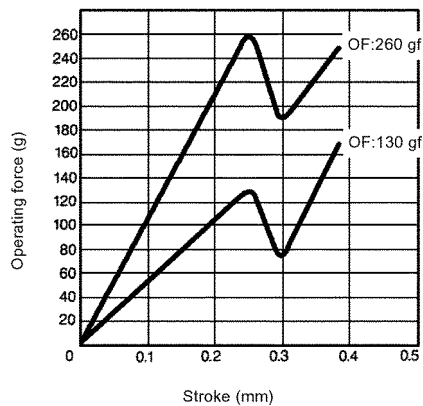
Engineering Data

Operating Force vs. Stroke (typical example)

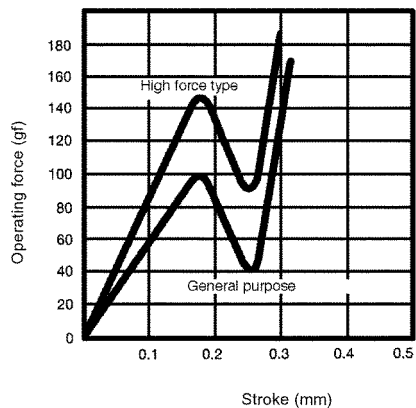
B3F-1□□□/-3□□□



B3F-4□□□/-5□□□



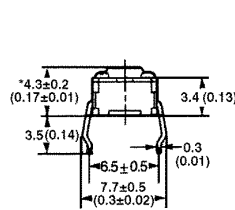
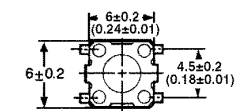
B3F-6□□□



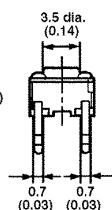
Dimensions

Unit: mm (inch)

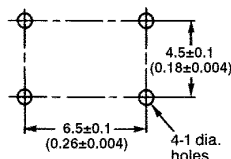
■ B3F-1000/-1002/-1005/-1020*/-1022*/-1025*



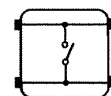
*Height of B3F-1020/-1022/-1025 is 5+0.05 mm -0.2



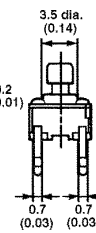
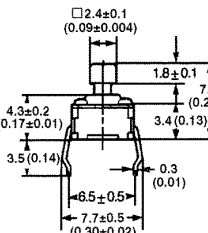
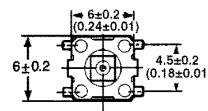
PCB mounting
(top view)



Terminal
arrangement/
internal
connections
(top view)

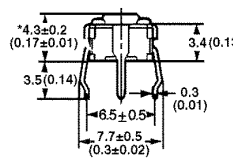
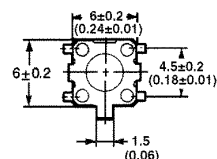


■ B3F-1050/-1052/-1055

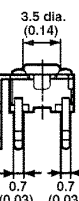


The height of the B3F-1022-G is 5±0.2 mm.

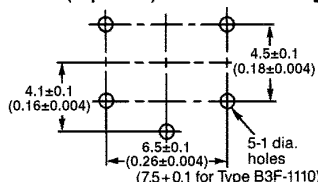
■ B3F-1100/-1102/-1105/-1120**/-1122**/-1125**



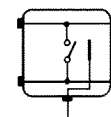
**Height of B3F-1120/-1122/-1125 is 5+0.05 mm -0.2



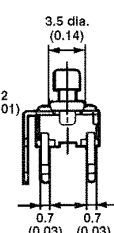
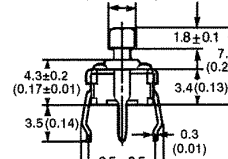
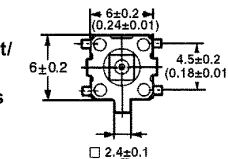
PCB mounting
(top view)



Terminal
arrangement/
internal
connections
(top view)



■ B3F-1150/-1052/-1055

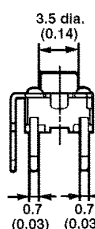
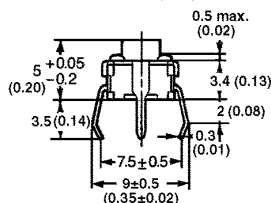
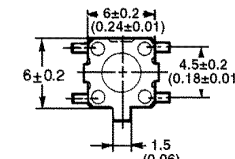


The height of the B3F-1122-G is 5±0.2 mm.

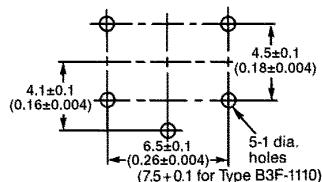
Note: Terminal numbers are not indicated on this switch. With the switch turned over so that the logo mark "OMRON" is visible on the upper part of the rear side of the switch base, the terminal on the right of the logo mark is numbered "1" and that on the bottom right is "3." Accordingly, two terminals on the left side are numbered "2" and "4" respectively.

Note: Unless otherwise specified, a tolerance of ± 0.4 mm applies to all dimensions.

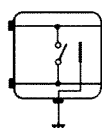
■ B3F-1110



PCB mounting
(top view)

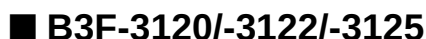


Terminal
arrangement/
internal
connections
(top view)

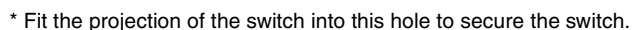


Note: Terminal numbers are not indicated on this switch. With the switch turned over so that the logo mark "OMRON" is visible on the upper part of the rear side of the switch base, the terminal on the right of the logo mark is numbered "1" and that on the bottom right is "3." Accordingly, two terminals on the left side are numbered "2" and "4" respectively.

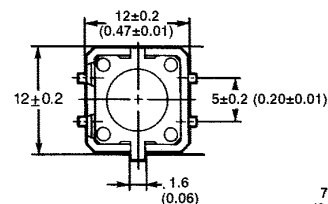
■ B3F-3150/-3152/-3155



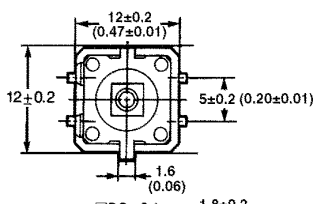
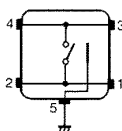
■ B3F-4050/-5050/-4055/-5051



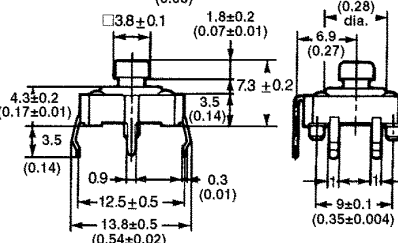
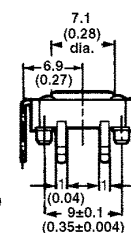
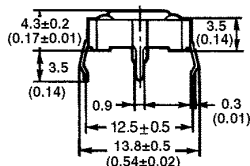
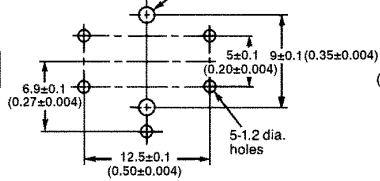
■ B3F-4101/-5100/-4105/-5101



Terminal arrangement/
internal
connections
(top view)

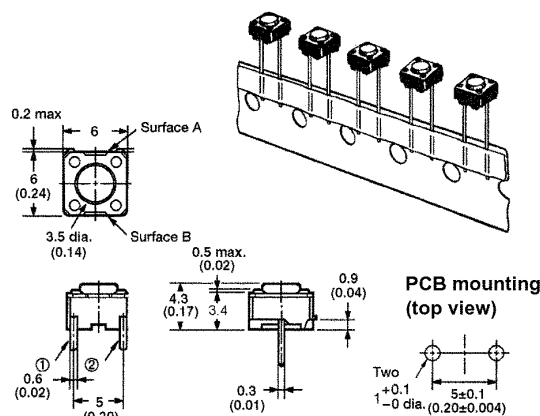


PCB mounting
(top view)

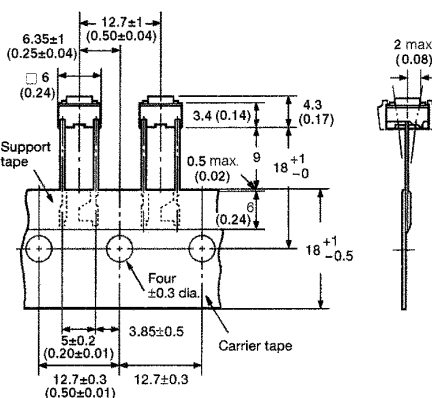
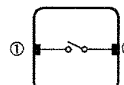


* Fit the projection of the switch into this hole to secure the switch.

■ B3F-6000/-6002



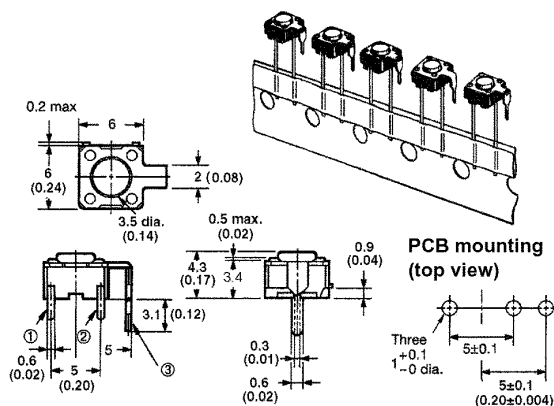
Terminal arrangement/
internal
connections
(top view)



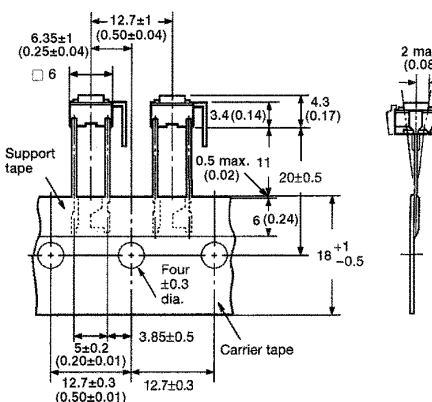
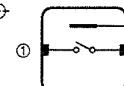
Note: The tape is random between surface A and surface B.

Unit: mm (inch)

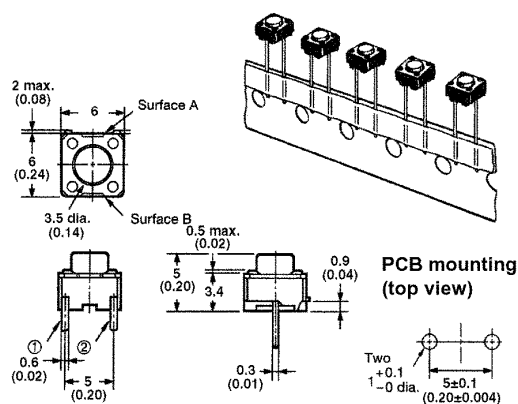
■ B3F-6100/-6102



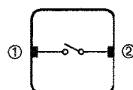
Terminal arrangement/
internal
connections
(top view)



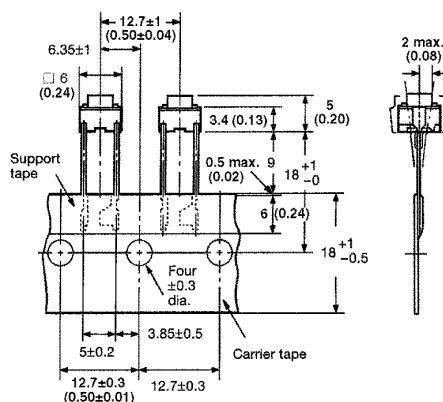
■ B3F-6020/-6022



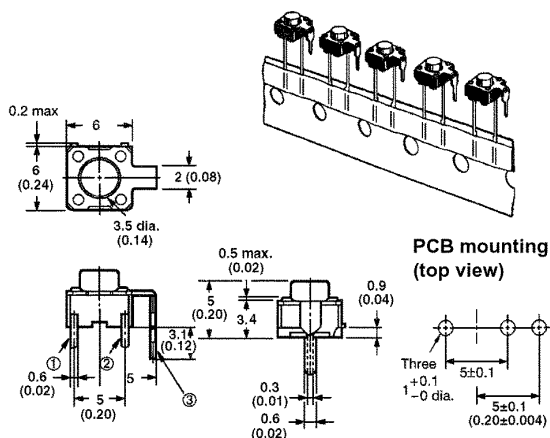
Terminal
arrangement/
internal
connections
(top view)



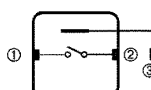
■ Tape-Packaging Dimensions



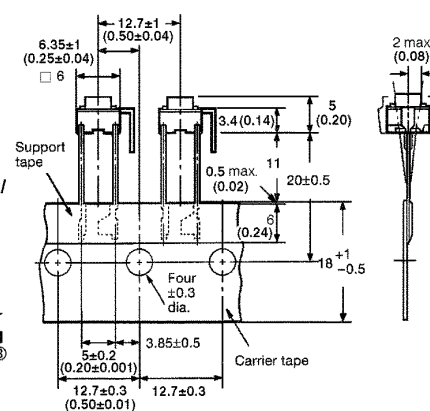
■ B3F-6120/-6122



Terminal
arrangement
internal
connections
(top view)

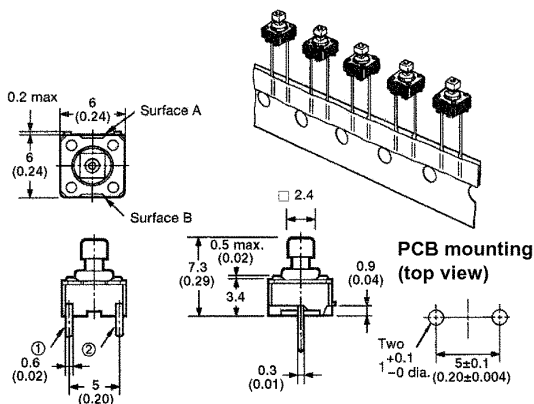


■ Tape-Packaging Dimensions

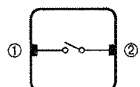


Note: Unless otherwise specified, a tolerance of ± 0.4 mm applies to all dimensions.

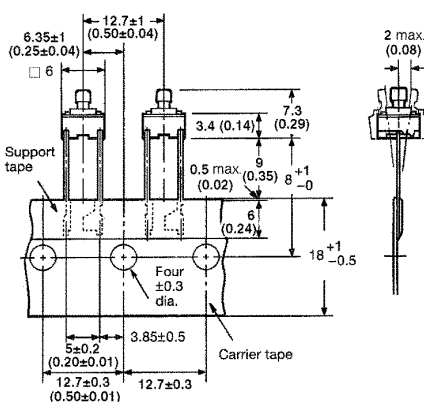
■ B3F-6050/-6052



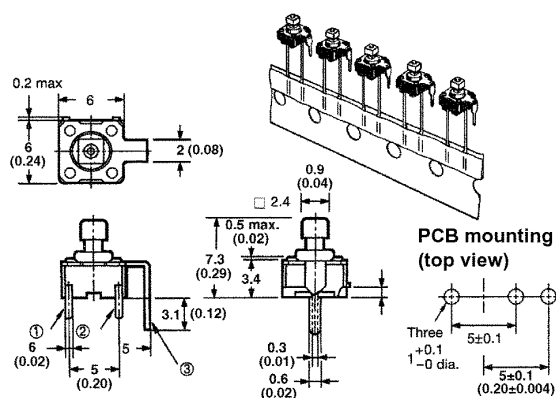
**Terminal
arrangement/
internal
connections
(top view)**



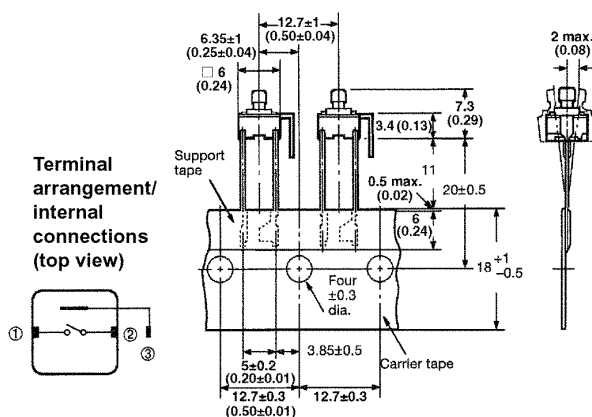
■ Tape-Packaging Dimensions



■ **B3F-6150/-6152**



■ Tape-Packaging Dimensions

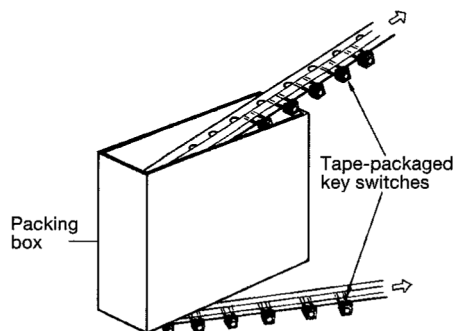
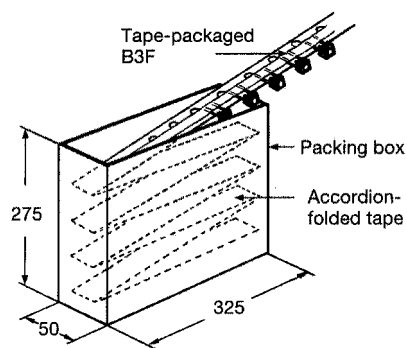


Note: Unless otherwise specified, a tolerance of ± 0.4 mm applies to all dimensions.

Hints on Correct Use

■ Taped Radial (Auto Insertion) Packaging

- Tactile switches packed on tape are placed into packing boxes as shown below.
- Number of switches per box: 1,000
- Tape may be drawn from the box either from the top or from the bottom.

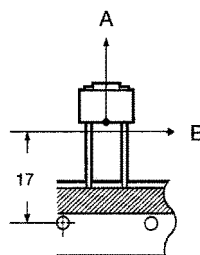


■ Taping Strength

The tactile switches will not release from the tape when pulled in directions A and B at the following forces.

A: 500 g

B: 100 g



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