

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.
- 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	Bags
Standard		4.3 x 6.5 mm	General-purpose: 100 g	B3F-1000	B3F-1100
			150 g	B3F-1002	B3F-1102
			High-force: 260 g	B3F-1005	B3F-1105
		5.0 x 6.5 mm	General-purpose: 100 g	B3F-1020	B3F-1120
			150 g	B3F-1022	B3F-1122
			High-force: 260 g	B3F-1025	B3F-1125
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

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	Bags
Standard	Flat	4.3 x 12.5 mm	General-purpose: 130 g	B3F-4000	B3F-4100
			High-force: 260 g	B3F-4005	B3F-4105
	Projected	7.3 x 12.5 mm	General-purpose: 130 g	B3F-4050	B3F-4150
			High-force: 260 g	B3F-4055	B3F-4155
Long service life	Flat	4.3 x 12.5 mm	General-purpose: 130 g	B3F-5000	B3F-5100
					
	Projected	7.3 x 12.5 mm		B3F-5050	B3F-5150
					
High reliability gold-plated contact	Flat	4.3 x 12.5 mm		B3F-5001	B3F-5101
					
	Projected	7.3 x 12.5 mm		B3F-5051	B3F-5151
					

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
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 μA to 50 mA, 5 to 24 VDC (resistive load)
Contact resistance	100 MΩ max. (Initial Value, Rated: 1mA, 5VDC)				100 MΩ max. (initial value) (rated: 100 μA, 5 VDC)
Insulation resistance	100 MΩ 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%

1. Denotes the weight of standard type.
2. Data shown are of initial value.

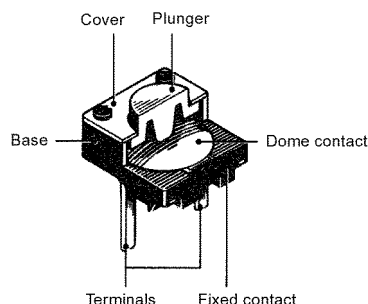
■ Life Expectancy

B3F-1000, B3F-3000, B3F-6000:
1,000,000 operations min (OF: 100gf) (B3F-1070: 500,000 operations min)
300,000 operations min (OF: 150 gf)
100,000 operations min (OF: 260gf)
B3F-G:
300,000 operations min (OF: 176gf)
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.

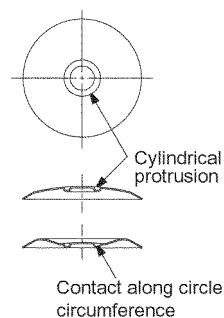
■ Operating Characteristics

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)	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

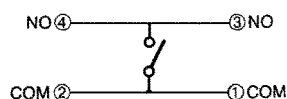


Contact along circle circumference
(circular contact)

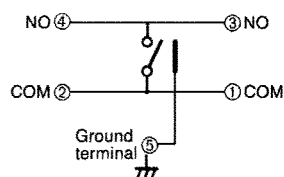
Switches have circular contact surface instead of single center point contact, increasing contact reliability.

Contact Form

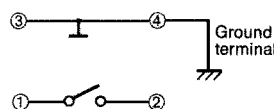
B3F-10□□
-40□□
-50□□
-10□□-G



B3F-11□□
-41□□
-51□□
-11□□-G



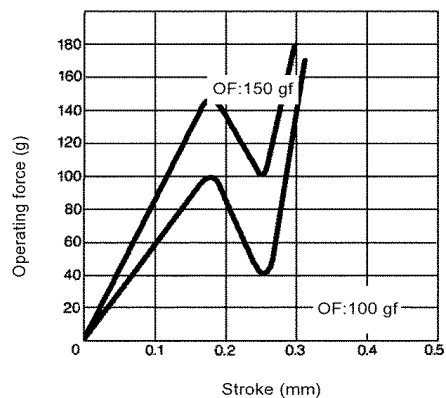
B3F-3□□□



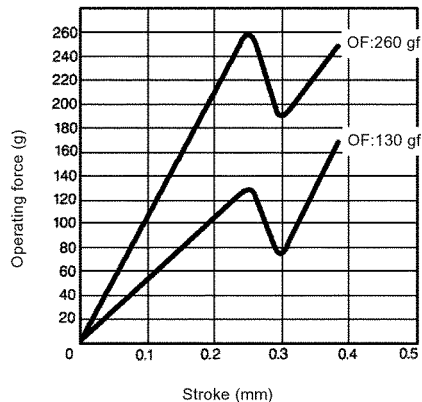
Engineering Data

Operating Force vs. Stroke (typical example)

B3F-1□□□/-3□□□/-6□□□



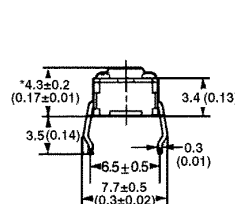
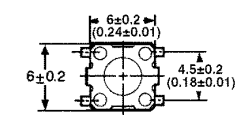
B3F-4□□□/-5□□□



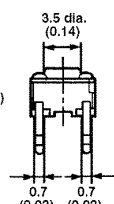
Dimensions

Unit: mm (inch)

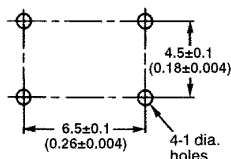
■ B3F-1000/-1002/-1005/-1020*/-1022*/-1025*



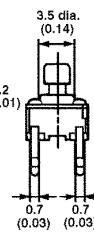
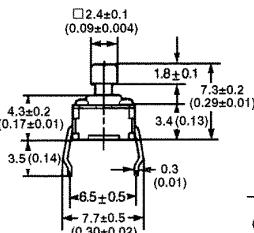
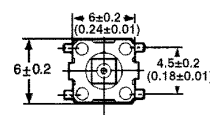
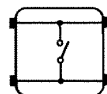
*Height of B3F-1020/-1022/-1025 is 5+0.05/-0.2 mm



PCB mounting
(top view)

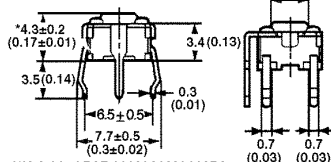
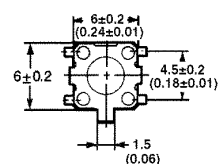


Terminal
arrangement/
internal
connections
(top view)

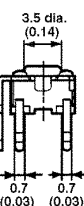


The height of the B3F-102□-G is 5±0.2 mm.

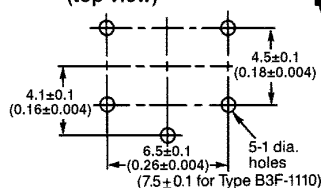
■ B3F-1100/-1102/-1105/-1120**/-1122**/-1125**



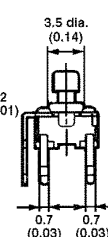
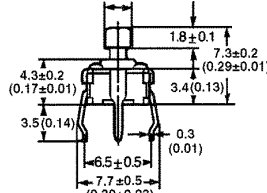
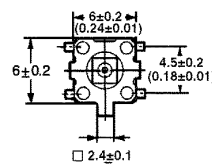
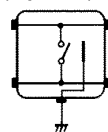
**Height of B3F-1120/-1122/-1125 is 5+0.05/-0.2 mm



PCB mounting
(top view)



Terminal
arrangement/
internal
connections
(top view)

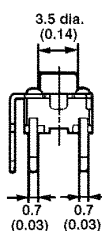
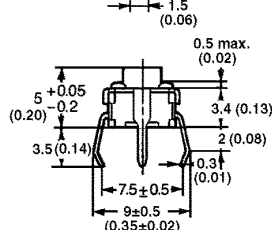
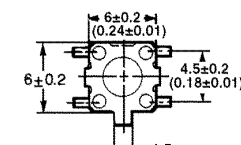


The height of the B3F-112□-G is 5±0.2 mm.

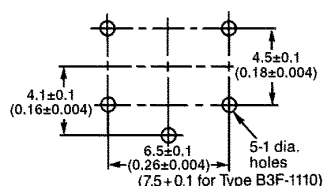
Note: Terminal numbers are not indicated on this switch. With the switch turned over so that the logo mark "OMRON" is visible on the upper part of the rear side of the switch base, the terminal on the right of the logo mark is numbered "1" and that on the bottom right is "3." Accordingly, two terminals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

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

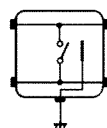
■ B3F-1110



PCB mounting
(top view)



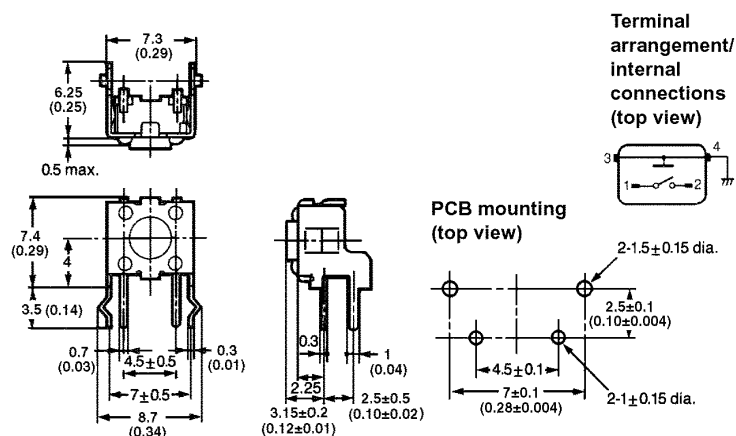
Terminal
arrangement/
internal
connections
(top view)



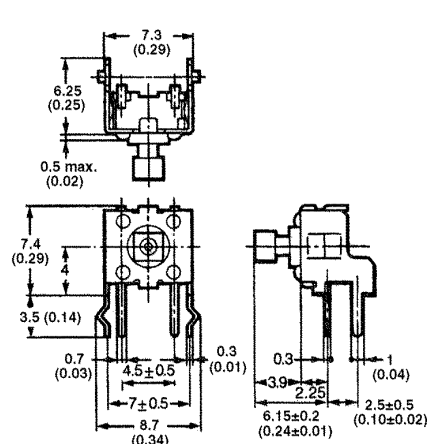
Note: Terminal numbers are not indicated on this switch. With the switch turned over so that the logo mark "OMRON" is visible on the upper part of the rear side of the switch base, the terminal on the right of the logo mark is numbered "1" and that on the bottom right is "3." Accordingly, two terminals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

Unit: mm (inch)

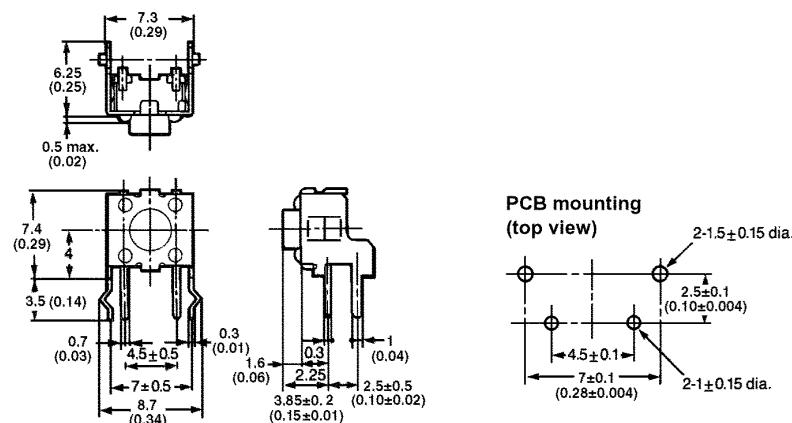
■ B3F-3100/-3102/-3105



■ B3F-3150/-3152/-3155

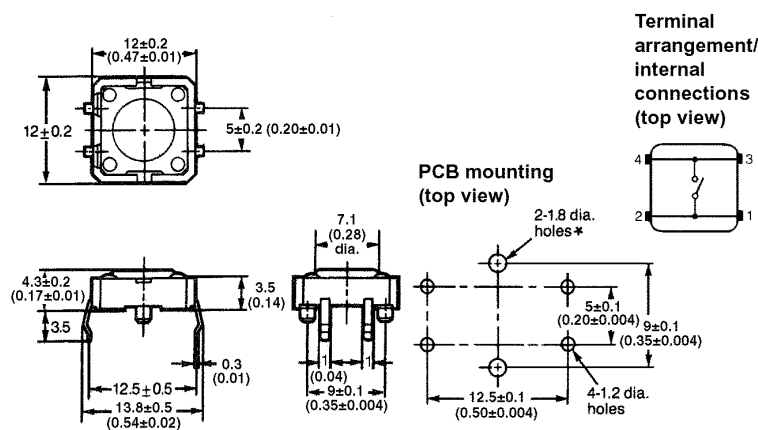


■ B3F-3120/-3122/-3125

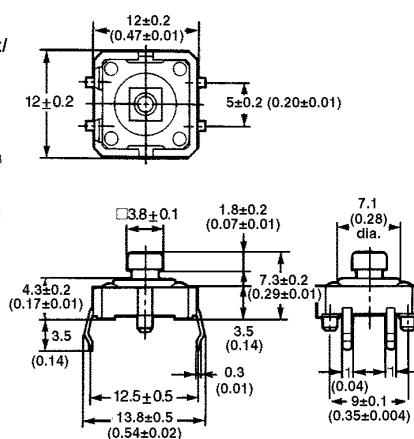


Note: Unless otherwise specified, a tolerance of ± 0.4 mm applies to all dimensions.

■ B3F-4000/-5000/-4005/-5001

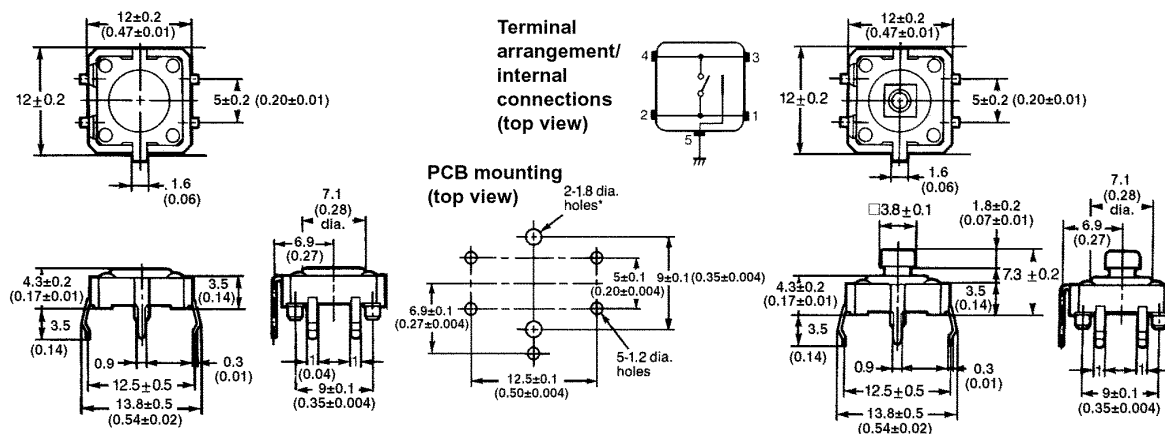


■ B3F-4050/-5050/-4055/-5051



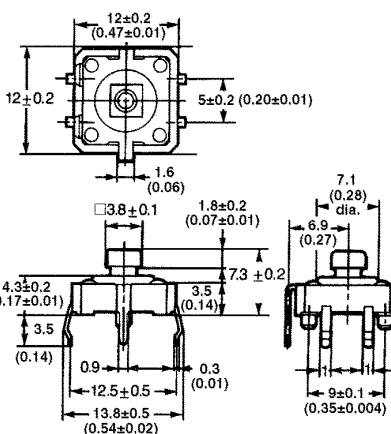
* Fit the projection of the switch into this hole to secure the switch.

■ B3F-4101/-5100/-4105/-5101

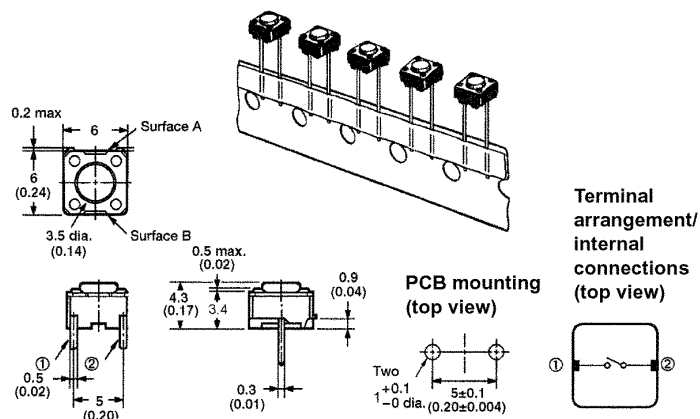


* Fit the projection of the switch into this hole to secure the switch.

■ B3F-4150/-5150/-4155/-5151

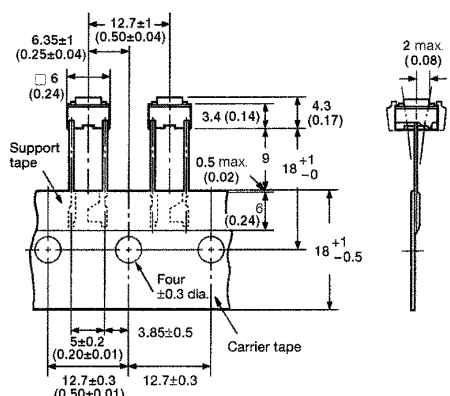


■ B3F-6000/-6002

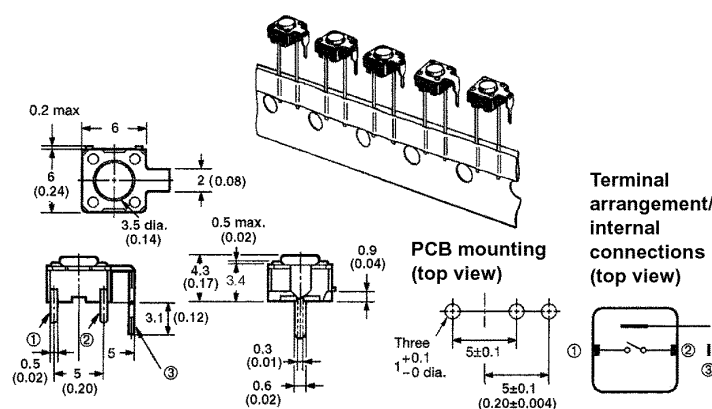


Note: The tape is random between surface A and surface B.
Unit: mm (inch)

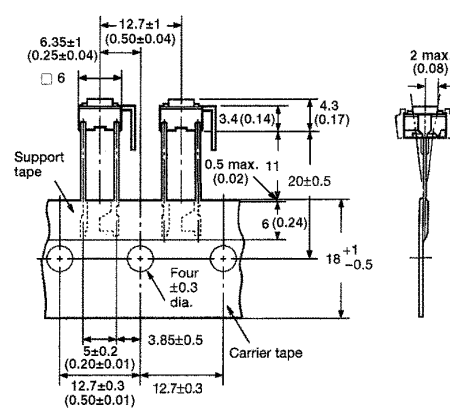
■ Tape-Packaging Dimensions



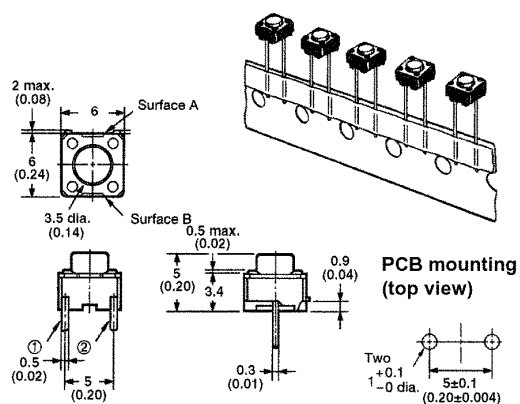
■ B3F-6100/-6102



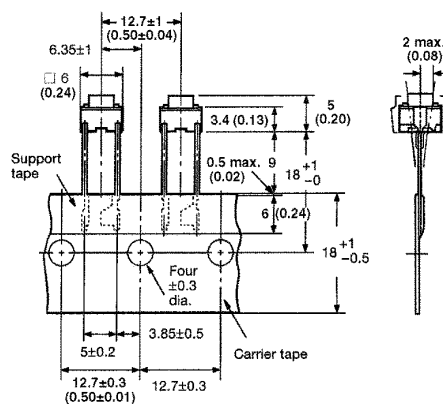
■ Tape-Packaging Dimensions



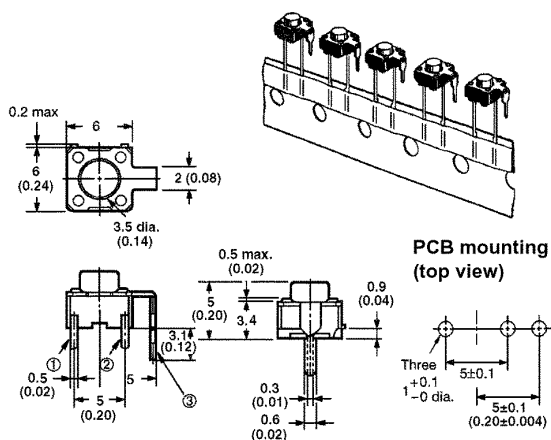
■ B3F-6020/-6022



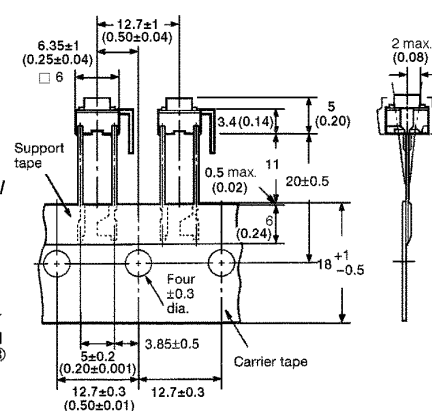
■ Tape-Packaging Dimensions



■ B3F-6120/-6122

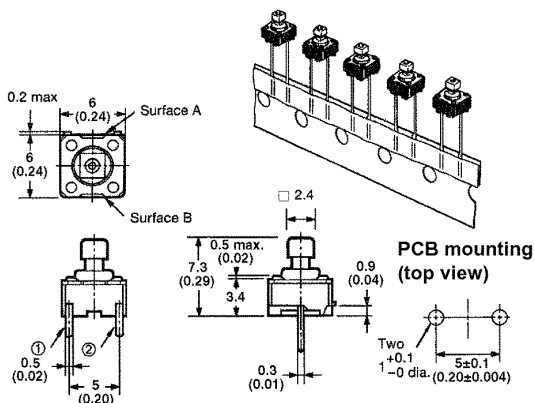


■ Tape-Packaging Dimensions

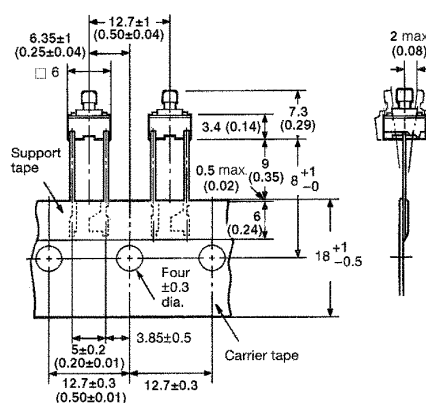


Note: Unless otherwise specified, a tolerance of ± 0.4 mm applies to all dimensions.

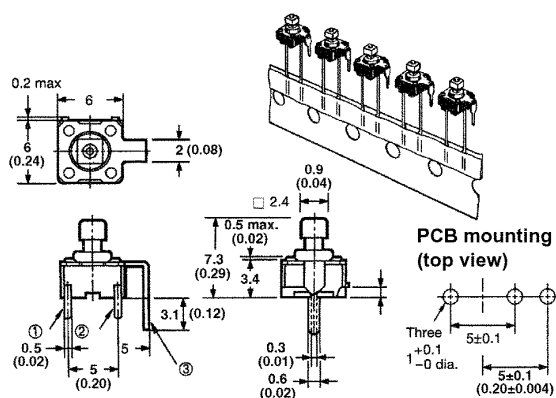
■ B3F-6050/-6052



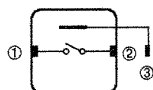
■ Tape-Packaging Dimensions



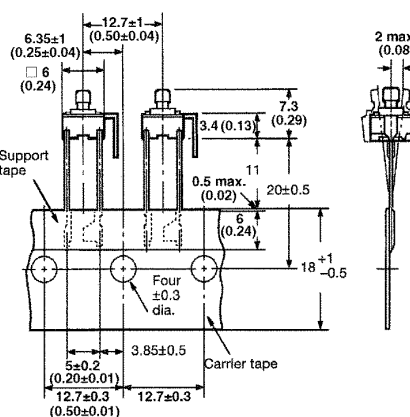
■ **B3F-6150/-6152**



Terminal
arrangement/
internal
connections
(top view)



■ Tape-Packaging Dimensions



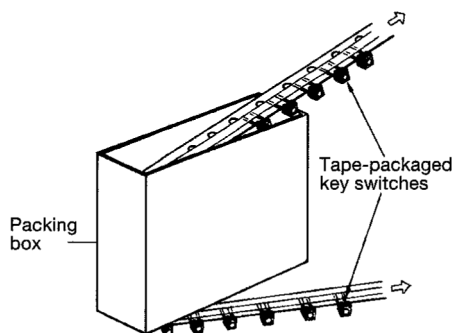
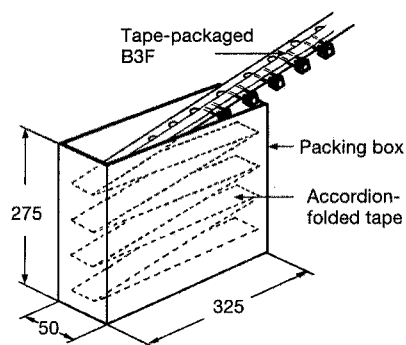
Note: Unless otherwise specified, a tolerance of ± 0.4 mm applies to all dimensions.

Hints on Correct Use

See the Tactile Switch User's Guide, "Tactile Switches - Technical Information" for information regarding processing and handling.

■ Taped Radial (Auto Insertion) Packaging

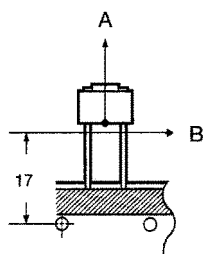
- Tactile switches packed on tape are placed into packing boxes as shown below.
- Number of switches per box: 1,000
- Tape may be drawn from the box either from the top or from the bottom.



■ 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



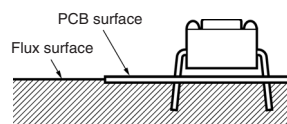
■ Automatic Soldering Baths

Soldering temperature: 260°C max.

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

Preheating Temp: 100°C max. (ambient Temp.) within 60 s.

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



Omron Electronic Components, LLC

Terms and Conditions of Sales

I. GENERAL

- Definitions:** The words used herein are defined as follows.
 - Terms:** These terms and conditions
 - Seller:** Omron Electronic Components LLC and its subsidiaries
 - Buyer:** The buyer of Products, including any end user in section III through VI
 - Products:** Products and/or services of Seller
 - Including:** Including without limitation
- Offer/Acceptance:** These Terms are deemed part of all quotations, acknowledgments, invoices, purchase orders and other documents, whether electronic or in writing, relating to the sale of Products by Seller. Seller hereby objects to any Terms proposed in Buyer's purchase order or other documents which are inconsistent with, or in addition to, these Terms.
- Distributor:** Any distributor shall inform its customer of the contents after and including section III of these Terms.

II. SALES

- Prices; Payment:** All prices stated are current, subject to change without notice by Seller. Buyer agrees to pay the price in effect at the time the purchase order is accepted by Seller. Payments for Products received are due net 30 days unless otherwise stated in the invoice. Buyer shall have no right to set off any amounts against the amount owing in respect of this invoice.
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- Taxes:** All taxes, duties and other governmental charges (other than general real property and income taxes), including any interest or penalties thereon, imposed directly or indirectly on Seller or required to be collected directly or indirectly by Seller for the manufacture, production, sale, delivery, importation, consumption or use of the Products sold hereunder (including customs duties and sales, excise, use, turnover and license taxes) shall be charged to and remitted by Buyer to Seller.
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- Suitability:** IT IS THE BUYER'S SOLE RESPONSIBILITY TO ENSURE THAT ANY OMRON PRODUCT IS FIT AND SUFFICIENT FOR USE IN A MOTORIZED VEHICLE APPLICATION. BUYER SHALL BE SOLELY RESPONSIBLE FOR DETERMINING APPROPRIATENESS OF THE PARTICULAR PRODUCT WITH RESPECT TO THE BUYER'S APPLICATION INCLUDING (A) ELECTRICAL OR ELECTRONIC COMPONENTS, (B) CIRCUITS, (C) SYSTEM ASSEMBLIES, (D) END PRODUCT, (E) SYSTEM, (F) MATERIALS OR SUBSTANCES OR (G) OPERATING ENVIRONMENT. Buyer acknowledges that it alone has determined that the Products will meet their requirements of the intended use in all cases. Buyer must know and observe all prohibitions of use applicable to the Product/s.
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ALL DIMENSIONS SHOWN ARE IN MILLIMETERS.

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

OMRON[®]

**OMRON ELECTRONIC
COMPONENTS LLC**

55 E. Commerce Drive, Suite B
Schaumburg, IL 60173

847-882-2288

OMRON ON-LINE

Global - <http://www.omron.com>

USA - <http://www.components.omron.com>

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