

# Tactile Switch B3F

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



- Extended mechanical/electrical service life: 10 x 10<sup>6</sup> operations for 12 x 12 mm type and 1 x 10<sup>6</sup> 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	Bags
Standard		4.3 x 6.5 mm	General-purpose: 100 g	<b>B3F-1000</b>	<b>B3F-1100</b>
			150 g	<b>B3F-1002</b>	<b>B3F-1102</b>
			High-force: 260 g	<b>B3F-1005</b>	<b>B3F-1105</b>
		5.0 x 6.5 mm	General-purpose: 100 g	<b>B3F-1020</b>	<b>B3F-1120</b>
			150 g	<b>B3F-1022</b>	<b>B3F-1122</b>
			High-force: 260 g	<b>B3F-1025</b>	<b>B3F-1125</b>
	Projected	7.3 x 6.5 mm	General-purpose: 100 g	—	<b>B3F-1110</b>
			150 g	<b>B3F-1050</b>	<b>B3F-1150</b>
			High-force: 260 g	<b>B3F-1052</b>	<b>B3F-1152</b>
Vertical		3.15 mm	General-purpose: 100 g	—	<b>B3F-3100</b>
			150 g	—	<b>B3F-3102</b>
			High-force: 260 g	—	<b>B3F-3105</b>
		3.85 mm	General-purpose: 100 g	—	<b>B3F-3120</b>
			150 g	—	<b>B3F-3122</b>
			High-force: 260 g	—	<b>B3F-3125</b>
	Projected	6.15 mm	General-purpose: 100 g	—	<b>B3F-3150</b>
			150 g	—	<b>B3F-3152</b>
			High-force: 260 g	—	<b>B3F-3155</b>

**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		4.3 x 12.5 mm	General-purpose: 130 g	B3F-4000	B3F-4100
			High-force: 260 g	B3F-4005	B3F-4105
		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		4.3 x 12.5 mm	General-purpose: 130 g	B3F-5000	B3F-5100
					7.3 x 12.5 mm
		4.3 x 12.5 mm			
					7.3 x 12.5 mm

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	<b>B3F-6000</b>	<b>B3F-6100</b>
			High-force: 150 g	<b>B3F-6002</b>	<b>B3F-6102</b>
		5.0 x 6.5 mm	General-purpose: 100 g	<b>B3F-6020</b>	<b>B3F-6120</b>
			High-force: 150 g	<b>B3F-6022</b>	<b>B3F-6122</b>
	Projected 	7.3 x 6.5 mm	General-purpose: 100 g	<b>B3F-6050</b>	<b>B3F-6150</b>
			High-force: 150 g	<b>B3F-6052</b>	<b>B3F-6152</b>

**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

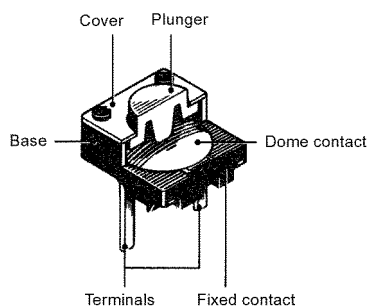
	Part Number				
	B3F-1□□□ B3F-3□□□	B3F-4□□□	B3F-5□□□	B3F-6□□□	B3F-1□□□-G
<b>Service life (see note 1) [mechanical/electrical]</b>	1,000,000 operations minimum	3,000,000 operations minimum	10,000,000 operations minimum	1,000,000 (300,000) operations min.	300,000 operations min.
<b>Weight (see note 2)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

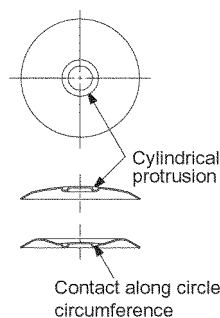
## ■ Operating Characteristics

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
<b>Operating force (OF)</b>	100 ± 30 g	150 ± 50 g	130 ± 50 g	260 ± 70 g	100 ± 30 g	150 ± 50 g	1.76 ± 0.49 N
<b>Release force (RF) min.</b>	20 g	50 g	30 g	50 g	20 g	50 g	0.49 N
<b>Pretravel (PT) max.</b>	0.25 <sup>+0.2</sup> / <sub>-0.1</sub> mm	0.25 <sup>+0.2</sup> / <sub>-0.1</sub> mm	0.3 <sup>+0.2</sup> / <sub>-0.1</sub> mm	0.3 <sup>+0.2</sup> / <sub>-0.1</sub> mm	0.25 <sup>+0.2</sup> / <sub>-0.1</sub> mm	0.25 <sup>+0.2</sup> / <sub>-0.1</sub> mm	0.25 <sup>+0.2</sup> / <sub>-0.1</sub> mm

## ■ Construction



### B3F-1□□□-G

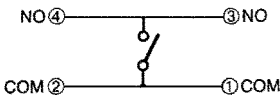


Contact along circle circumference (circular contact)

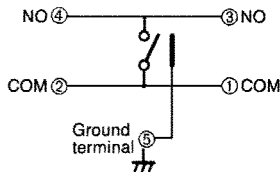
Switches have circular contact surface instead of single center point contact, increasing contact reliability.

# Contact Form

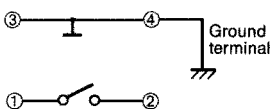
B3F-10□□  
-40□□  
-50□□  
-10□□-G



B3F-11□□  
-41□□  
-51□□  
-11□□-G



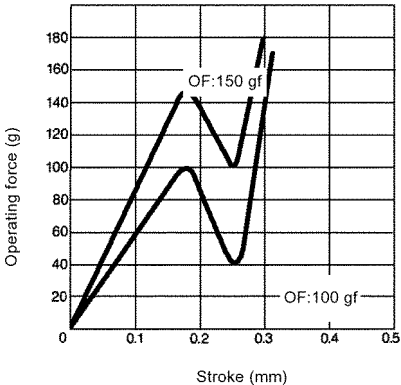
B3F-3□□□



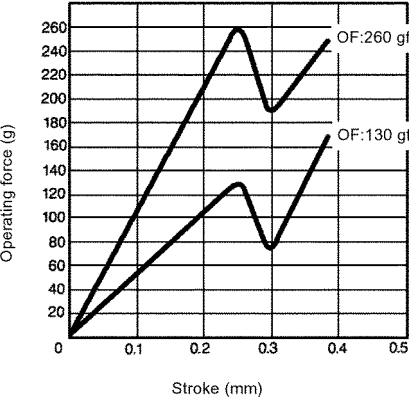
# Engineering Data

## Operating Force vs. Stroke (typical example)

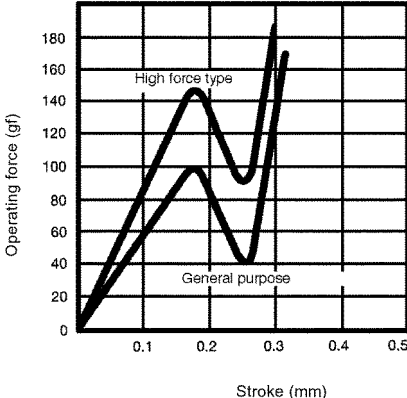
B3F-1□□□/-3□□□



B3F-4□□□/-5□□□



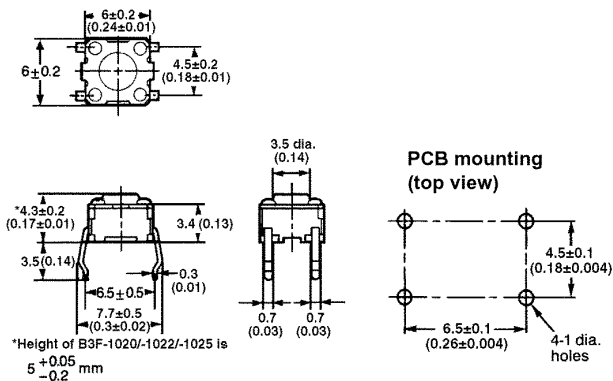
B3F-6□□□



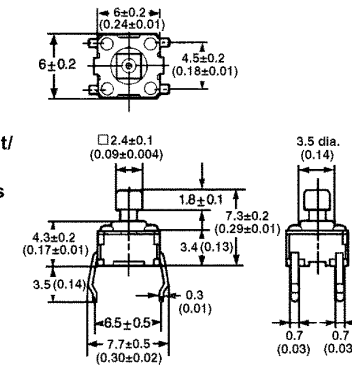
# Dimensions

Unit: mm (inch)

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



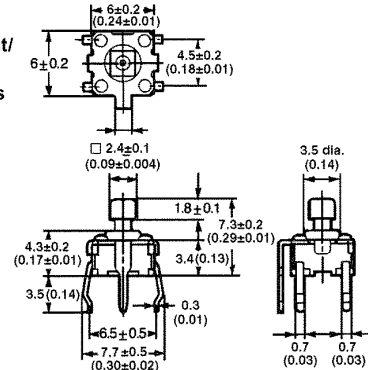
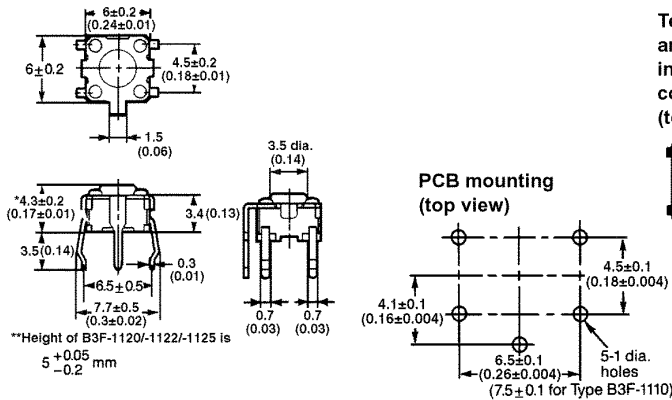
## ■ B3F-1050/-1052/-1055



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

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

## ■ B3F-1150/-1052/-1055

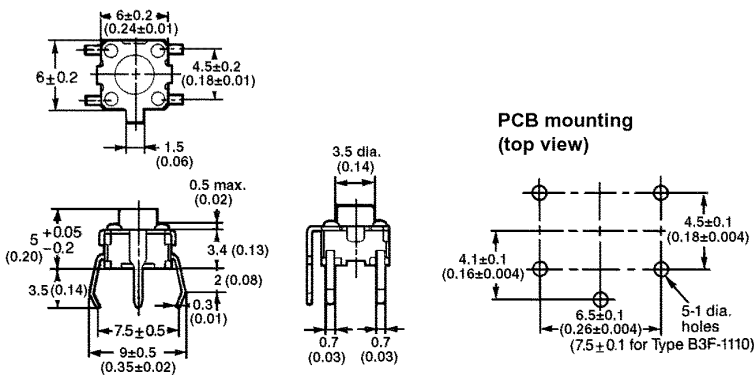


The height of the B3F-1122-G is 5±0.2 mm.

**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.

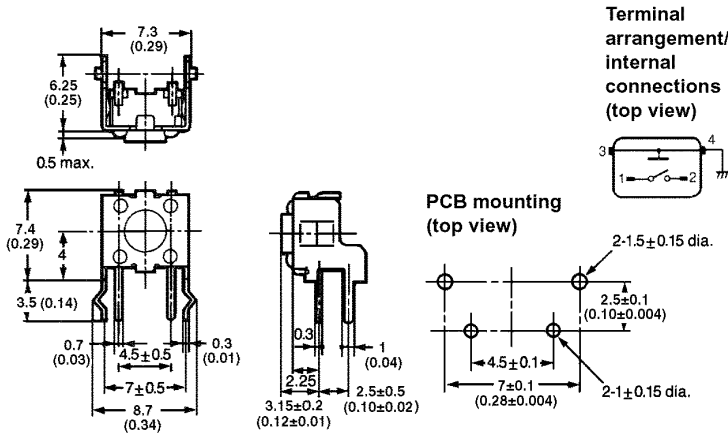
## ■ B3F-1110



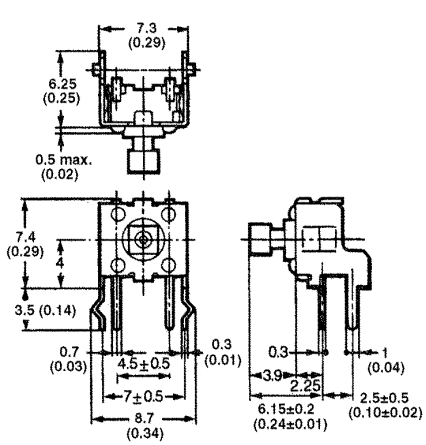
**Note:** Terminal numbers are not indicated on this switch. With the switch turned over so that the logo mark "OMRON" is visible on the upper part of the rear side of the switch base, the terminal on the right of the logo mark is numbered "1" and that on the bottom right is "3." Accordingly, two terminals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

Unit: mm (inch)

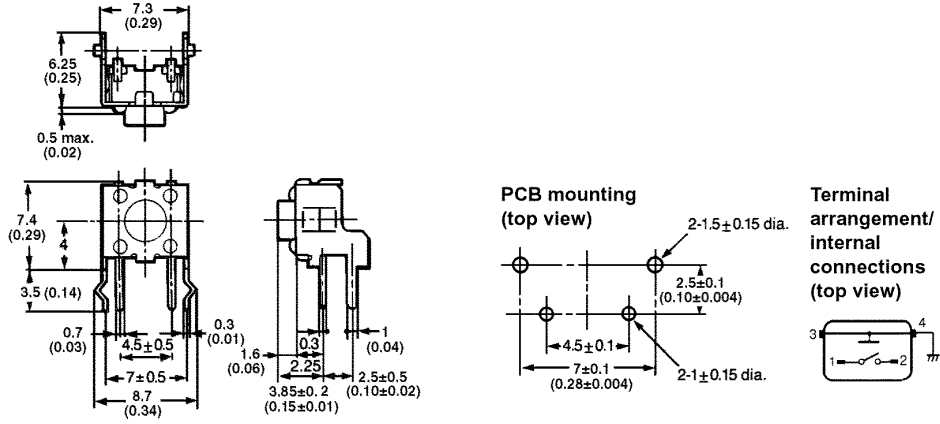
■ B3F-3100/-3102/-3105



■ B3F-3150/-3152/-3155

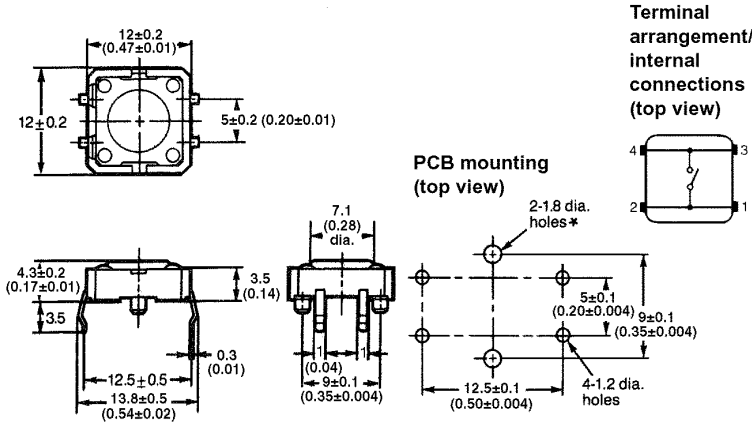


■ B3F-3120/-3122/-3125

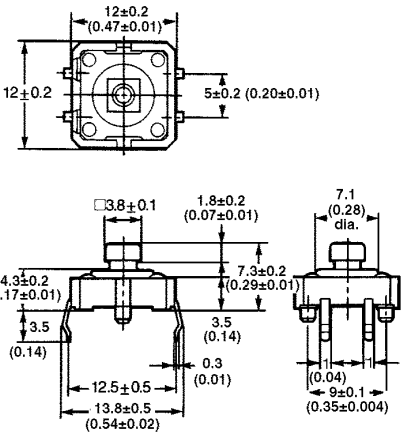


Note: Unless otherwise specified, a tolerance of ±0.4 mm applies to all dimensions.

■ B3F-4000/-5000/-4005/-5001

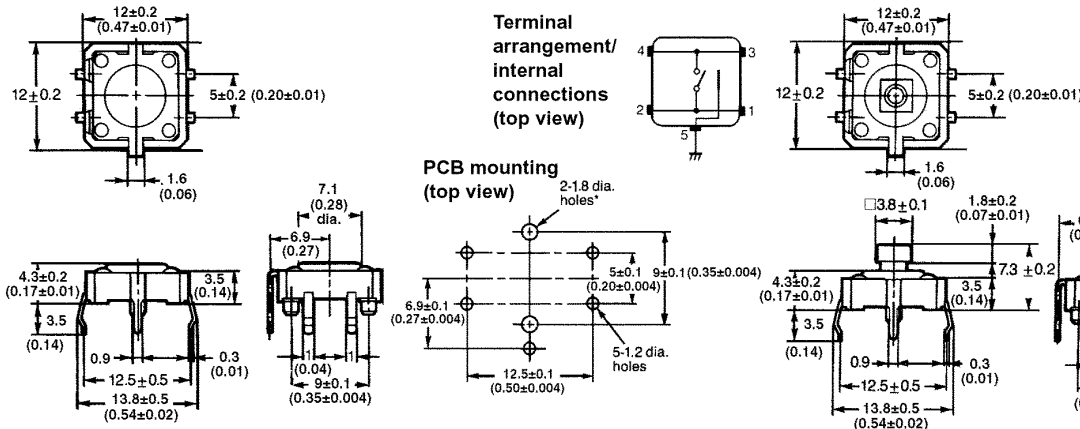


■ B3F-4050/-5050/-4055/-5051



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

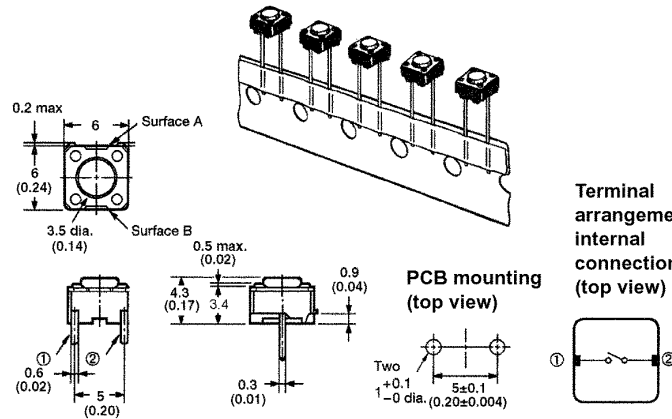
■ B3F-4101/-5100/-4105/-5101



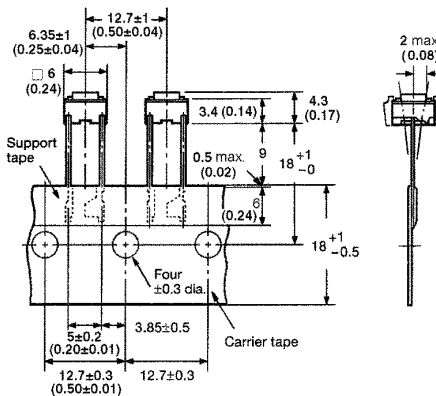
\* Fit the projection of the switch into this hole to secure the switch.

■ B3F-4150/-5150/-4155/-5151

■ B3F-6000/-6002



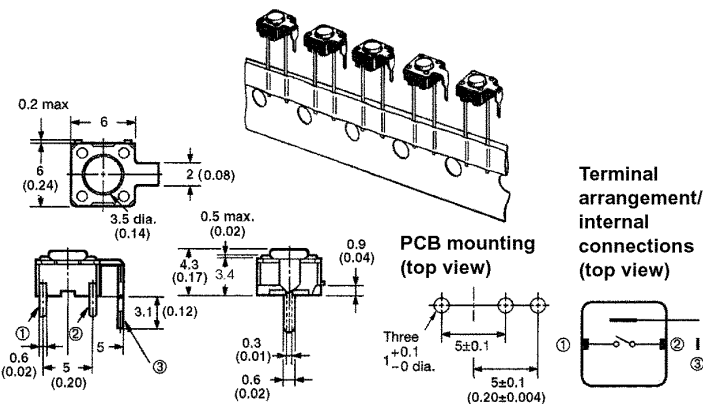
■ Tape-Packaging Dimensions



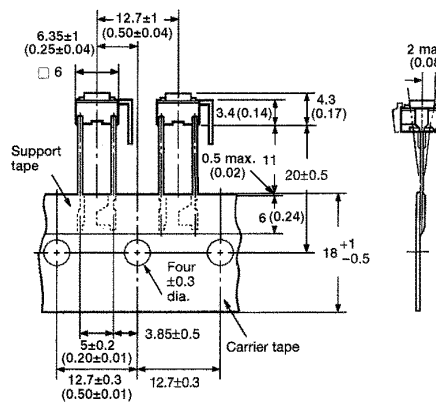
Note: The tape is random between surface A and surface B.

Unit: mm (inch)

■ B3F-6100/-6102

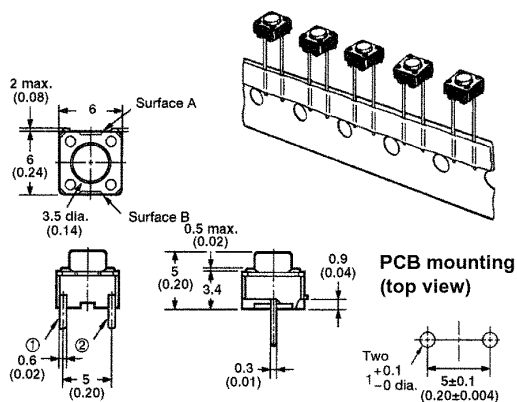


■ Tape-Packaging Dimensions

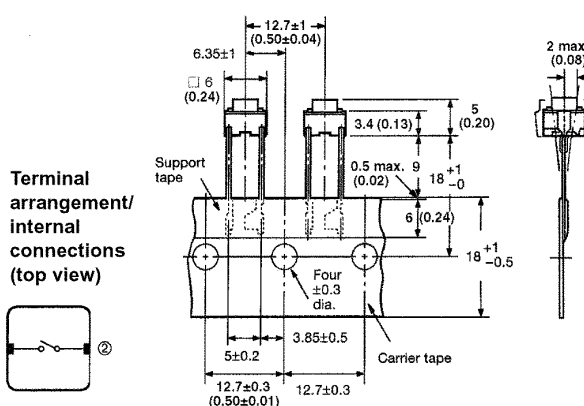




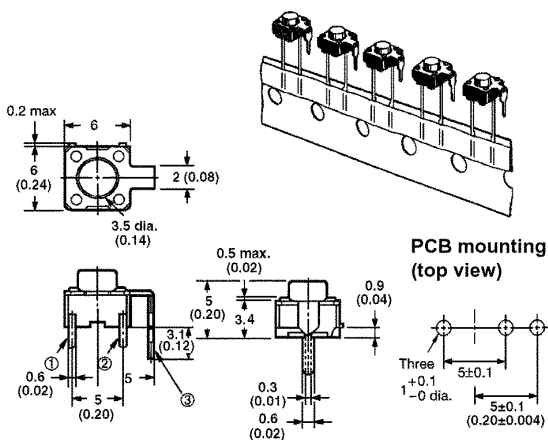
■ B3F-6020/-6022



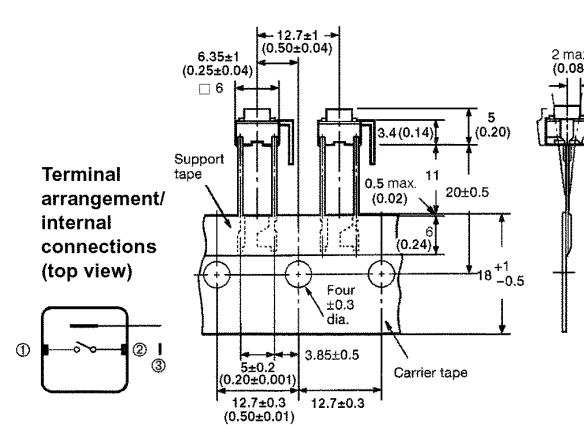
■ Tape-Packaging Dimensions



■ B3F-6120/-6122

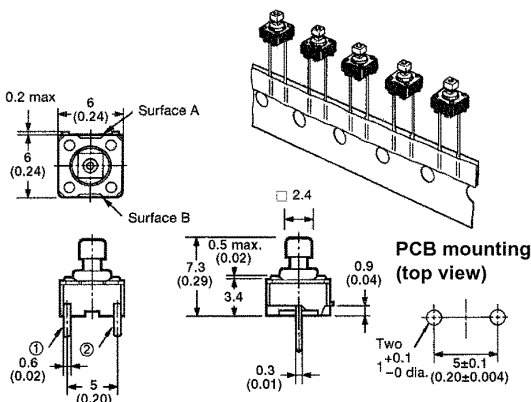


■ Tape-Packaging Dimensions

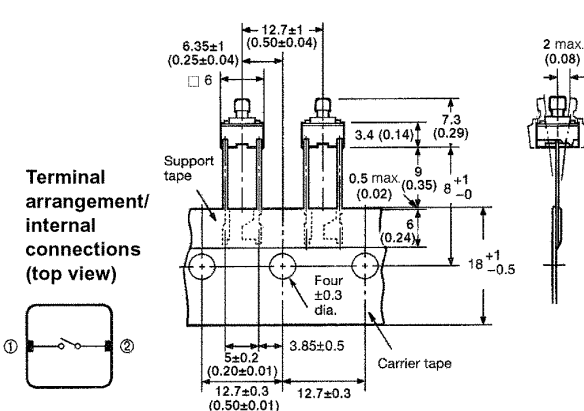


Note: Unless otherwise specified, a tolerance of ±0.4 mm applies to all dimensions.

■ B3F-6050/-6052

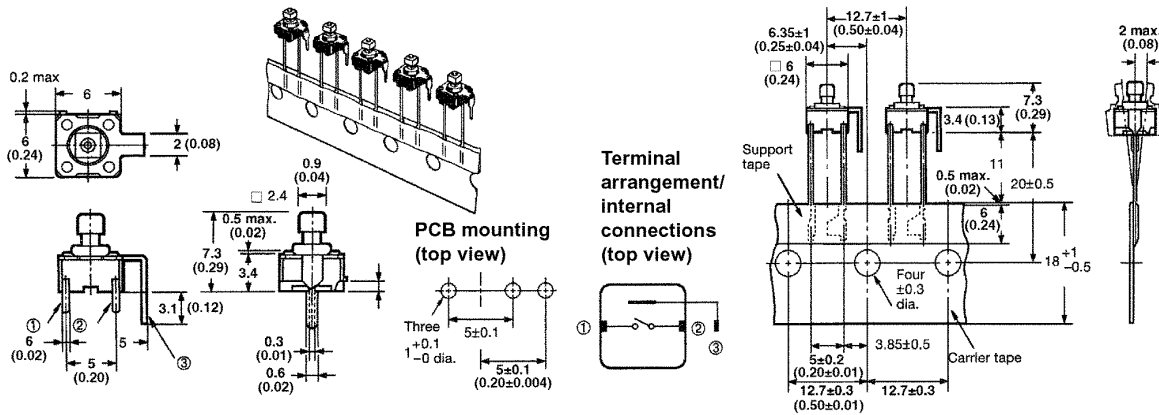


■ Tape-Packaging Dimensions



■ B3F-6150/-6152

■ Tape-Packaging Dimensions

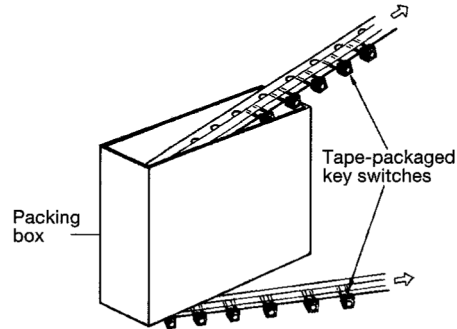
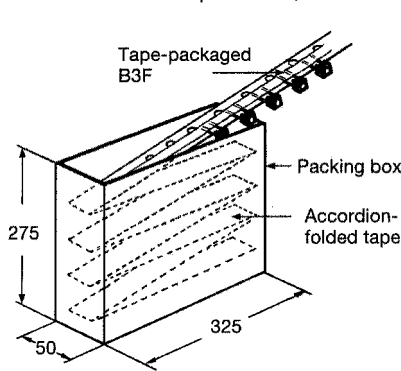


Note: Unless otherwise specified, a tolerance of ±0.4 mm applies to all dimensions.

Hints on Correct Use

■ Taped Radial (Auto Insertion) Packaging

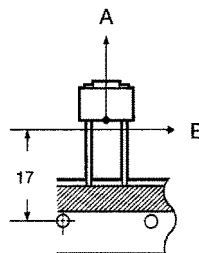
- Tactile switches packed on tape are placed into packing boxes as shown below.
- Number of switches per box: 1,000
- Tape may be drawn from the box either from the top or from the bottom.



■ 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



# 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 time of shipment. 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.
- Discounts:** Cash discounts, if any, will apply only on the net amount of invoices sent to Buyer after deducting transportation charges, taxes and duties, and will be allowed only if (a) the invoice is paid according to Seller's payment terms and (b) Buyer has no past due amounts owing to Seller.
- Interest:** Seller, at its option, may charge Buyer 1.5% interest per month or the maximum legal rate, whichever is less, on any balance not paid within the stated terms.
- Orders:** Seller will accept no order less than 200 U.S. dollars net billing.
- Currencies:** If the prices quoted herein are in a currency other than U.S. dollars, Buyer shall make remittance to Seller at the then current exchange rate most favorable to Seller; provided that if remittance is not made when due, Buyer will convert the amount to U.S. dollars at the then current exchange rate most favorable to Seller available during the period between the due date and the date remittance is actually made.
- Governmental Approvals:** Buyer shall be responsible for all costs involved in obtaining any government approvals regarding the importation or sale of the Products.
- 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.
- Financial:** If the financial position of Buyer at any time becomes unsatisfactory to Seller, Seller reserves the right to stop shipments or require satisfactory security or payment in advance. If Buyer fails to make payment or otherwise comply with these Terms or any related agreement, Seller may (without liability and in addition to other remedies) cancel any unshipped portion of Products sold hereunder and stop any Products in transit until Buyer pays all amounts, including amounts payable hereunder, whether or not then due, which are owing to it by Buyer. Buyer shall in any event remain liable for all unpaid accounts.
- Cancellation/Etc:** Orders are not subject to rescheduling or cancellation unless Buyer indemnifies Seller fully against all costs or expenses arising in connection therewith.
- Force Majeure:** Seller shall not be liable for any delay or failure in delivery resulting from causes beyond its control, including earthquakes, fires, floods, strikes or other labor disputes, shortage of labor or materials, accidents to machinery, acts of sabotage, riots, delay in or lack of transportation or the requirements of any government authority.
- Shipping/Delivery:** Unless otherwise expressly agreed in writing by Seller:
  - All sales and shipments of Products shall be FOB shipping point (unless otherwise stated in writing by Seller), at which point title to and all risk of loss of the Products shall pass from Seller to Buyer, provided that Seller shall retain a security interest in the Products until the full purchase price is paid by Buyer;
  - Delivery and shipping dates are estimates only; and
  - Seller will package Products as it deems proper for protection against normal handling and extra charges apply to special conditions.
- Claims:** Any claim by Buyer against Seller for shortage or damage to the Products occurring before delivery to the carrier must be presented in detail in writing to Seller within 30 days of receipt of shipment.

### III. PRECAUTIONS

- 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.
- Use with Attention:** The followings are some examples of applications for which particular attention must be given. This is not intended to be an exhaustive list of all possible use of any Product, nor to imply that any use listed may be suitable for any Product:
  - Outdoor use, use involving potential chemical contamination or electrical interference.
  - Use in consumer Products or any use in significant quantities.

- Energy control systems, combustion systems, railroad systems, aviation systems, medical equipment, amusement machines, vehicles, safety equipment, and installations subject to separate industry or government regulations.
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OMRON ELECTRONIC  
COMPONENTS LLC

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

**847-882-2288**

**OMRON ON-LINE**

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

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