

B3F

Miniature, Space-saving Switch



- Long mechanical / electrical service life
- Ideal for applications such as audio, office and communications equipment, TVs, etc
- Taped radial, vertical, high-force, and gold-plated contact type models available
- Flux-tight base structure allows easy soldering onto a PC board

Part	Rated Resistive Load - Switch	Actuator types	Contact form	Operating Force	Seal type	Termination Style	Service Life - Electrical (Min. @ Rated Loads)
B3F-1000	1 to 50 mA, 5 to 24 VDC	Top Actuated	SPST-NO	100g	Unsealed	Through-Hole PCB - Straight	1,000,000 ops.
B3F-1002	1 to 50 mA, 5 to 24 VDC	Top Actuated	SPST-NO	150g	Unsealed	Through-Hole PCB - Straight	300,000 ops
B3F-1005	1 to 50 mA, 5 to 24 VDC	Top Actuated	SPST-NO	260g	Unsealed	Through-Hole PCB - Straight	100,000 ops
B3F-1020	1 to 50 mA, 5 to 24 VDC	Raised Actuator	SPST-NO	100g	Unsealed	Through-Hole PCB - Straight	1,000,000 ops
B3F-1022	1 to 50 mA, 5 to 24 VDC	Raised Actuator	SPST-NO	150g	Unsealed	Through-Hole PCB - Straight	300,000 ops
B3F-1025	1 to 50 mA, 5 to 24 VDC	Raised Actuator	SPST-NO	260g	Unsealed	Through-Hole PCB - Straight	100,000 ops
B3F-1050	1 to 50 mA, 5 to 24 VDC	Top Actuated, projected plunger (for B32 Keycap)	SPST-NO	100g	Unsealed	Through-Hole PCB - Straight	1,000,000 ops
B3F-1052	1 to 50 mA, 5 to 24 VDC	Top Actuated, projected plunger (for B32 Keycap)	SPST-NO	150g	Unsealed	Through-Hole PCB - Straight	300,000 ops
B3F-1055	1 to 50 mA, 5 to 24 VDC	Top Actuated, projected	SPST-NO	260g	Unsealed	Through-Hole PCB - Straight	100,000 ops

B3F-3125	1 to 50 mA, 5 to 24 VDC	Side Actuated plunger	SPST-NO	260g	Unsealed	Through-Hole PCB, w/Ground	100,000 ops
B3F-3150	1 to 50 mA, 5 to 24 VDC	Side Actuated projected plunger (for B32 Keycap)	SPST-NO	100g	Unsealed	Through-Hole PCB, w/Ground	1,000,000 ops
B3F-3155	1 to 50 mA, 5 to 24 VDC	Side Actuated projected plunger (for B32 Keycap)	SPST-NO	260g	Unsealed	Through-Hole PCB, w/Ground	100,000 ops
B3F-4000	1 to 50 mA, 5 to 24 VDC	Top Actuated	SPST-NO	130g	Unsealed	Through-Hole PCB - Straight	3,000,000 ops
B3F-4005	1 to 50 mA, 5 to 24 VDC	Top Actuated	SPST-NO	260g	Unsealed	Through-Hole PCB - Straight	1,000,000 ops
B3F-4055	1 to 50 mA, 5 to 24 VDC	Top Actuated, projected plunger (for B32 Keycap)	SPST-NO	260g	Unsealed	Through-Hole PCB - Straight	1,000,000 ops
B3F-4050	1 to 50 mA, 5 to 24 VDC	Top Actuated, projected plunger (for B32 Keycap)	SPST-NO	130g	Unsealed	Through-Hole PCB - Straight	3,000,000 ops
B3F-4100	1 to 50 mA, 5 to 24 VDC	Top Actuated	SPST-NO	130g	Unsealed	Through-Hole PCB, w/Ground	3,000,000 ops
B3F-4105	1 to 50 mA, 5 to 24 VDC	Top Actuated	SPST-NO	260g	Unsealed	Through-Hole PCB, w/Ground	1,000,000 ops
B3F-4150	1 to 50 mA, 5 to 24 VDC	Top Actuated, projected plunger (for B32 Keycap)	SPST-NO	130g	Unsealed	Through-Hole PCB, w/Ground	3,000,000 ops
B3F-4155	1 to 50 mA, 5 to 24 VDC	Top Actuated, projected plunger (for B32 Keycap)	SPST-NO	260g	Unsealed	Through-Hole PCB, w/Ground	1,000,000 ops
B3F-5000	1 to 50 mA, 5 to 24 VDC	Top Actuated	SPST-NO	130g	Unsealed	Through-Hole PCB - Straight	10,000,000 ops
B3F-5050	1 to 50 mA, 5 to 24 VDC	Raised Actuator	SPST-NO	130g	Unsealed	Through-Hole PCB - Straight	10,000,000 ops
B3F-5100	1 to 50 mA, 5 to 24 VDC	Top Actuated	SPST-NO	130g	Unsealed	Through-Hole PCB, w/Ground	10,000,000 ops

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	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
	5.0 x 7.5 mm	General-purpose: 100 g	—	B3F-1110	
		7.3 x 6.5 mm	General-purpose: 100 g	B3F-1050	B3F-1150
			150 g	B3F-1052	B3F-1152
			High-force: 260 g	B3F-1055	B3F-1155
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		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		B3F-5050	B3F-5150
High reliability gold-plated contact		4.3 x 12.5 mm		B3F-5001	B3F-5101
		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.

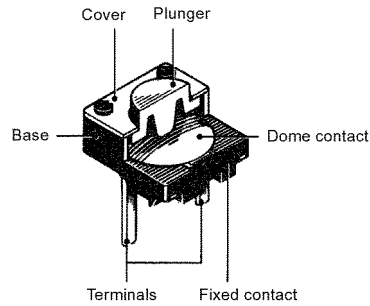
■ Life Expectancy

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.

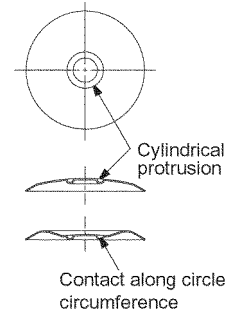
■ Operating Characteristics

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) 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

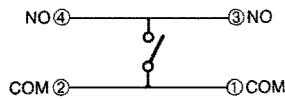


Contact along circle circumference
(circular contact)

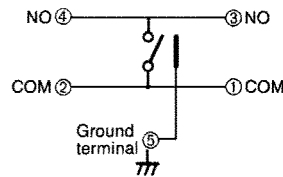
Switches have circular contact surface instead of single center point contact, increasing contact reliability.

■ Contact Form

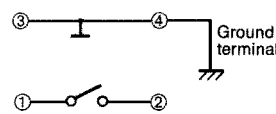
B3F-10□□
-40□□
-50□□
-10□□-G



B3F-11□□
-41□□
-51□□
-11□□-G



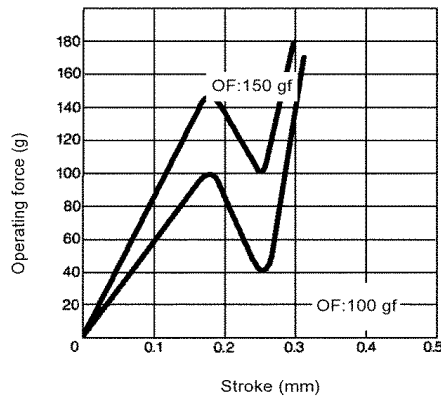
B3F-3□□□



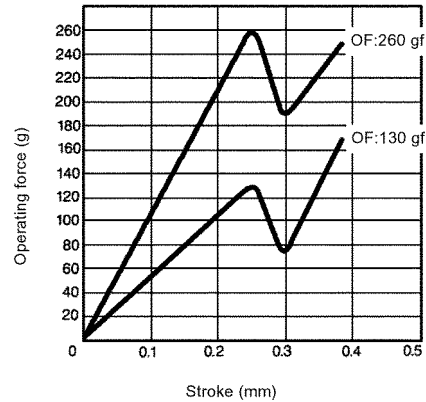
Engineering Data

■ Operating Force vs. Stroke (typical example)

B3F-1□□□/-3□□□/-6□□□



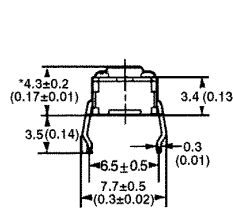
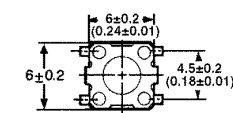
B3F-4□□□/-5□□□



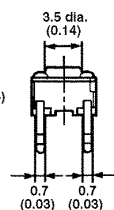
Dimensions

Unit: mm (inch)

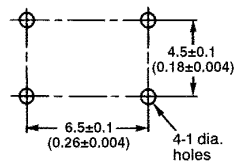
■ B3F-1000/-1002/-1005/-1020*/-1022*/-1025*



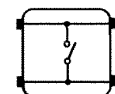
*Height of B3F-1020/-1022/-1025 is
5 +0.05
-0.2 mm



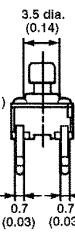
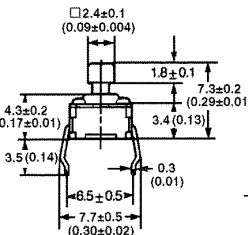
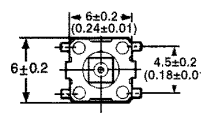
PCB mounting
(top view)



Terminal
arrangement/
internal
connections
(top view)

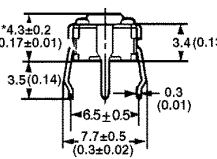
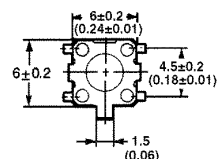


■ B3F-1050/-1052/-1055

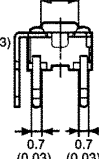


The height of the B3F-102□-G is 5±0.2 mm.

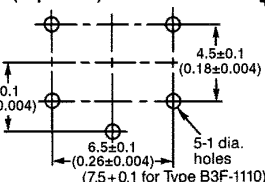
■ B3F-1100/-1102/-1105/-1120**/-1122**/-1125**



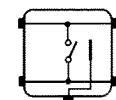
**Height of B3F-1120/-1122/-1125 is
5 +0.05
-0.2 mm



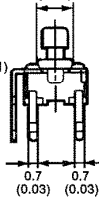
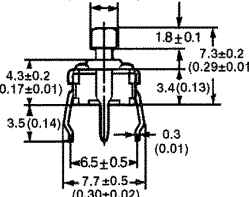
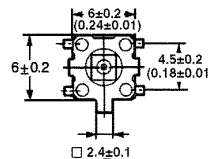
PCB mounting
(top view)



Terminal
arrangement/
internal
connections
(top view)



■ B3F-1150/-1052/-1055

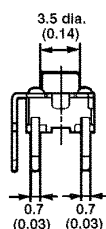
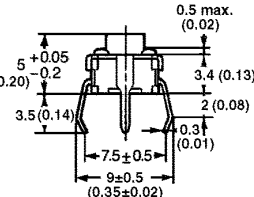
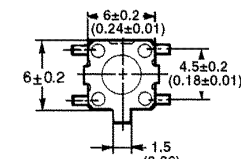


The height of the B3F-112□-G is 5±0.2 mm.

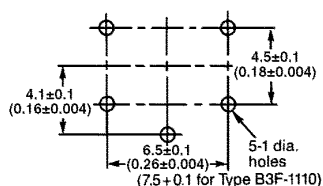
Note: Terminal numbers are not indicated on this switch. With the switch turned over so that the logo mark "OMRON" is visible on the upper part of the rear side of the switch base, the terminal on the right of the logo mark is numbered "1" and that on the bottom right is "3." Accordingly, two terminals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

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

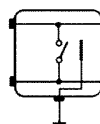
■ B3F-1110



PCB mounting
(top view)



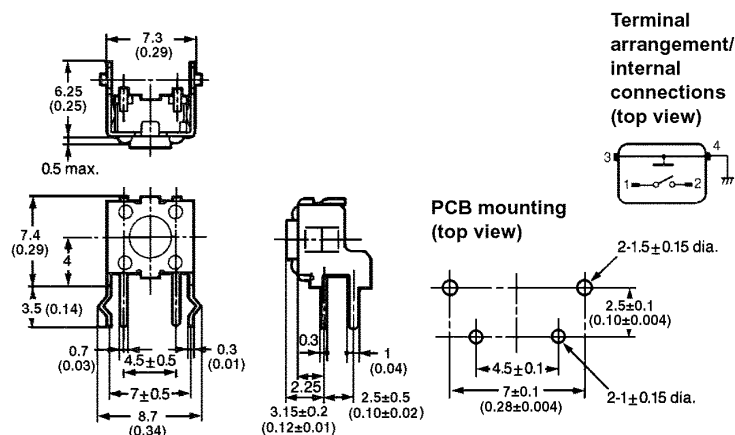
Terminal
arrangement/
internal
connections
(top view)



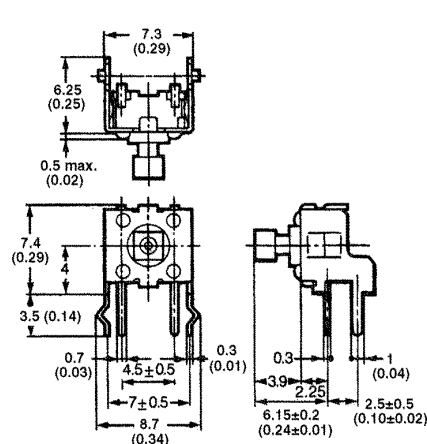
Note: Terminal numbers are not indicated on this switch. With the switch turned over so that the logo mark "OMRON" is visible on the upper part of the rear side of the switch base, the terminal on the right of the logo mark is numbered "1" and that on the bottom right is "3." Accordingly, two terminals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

Unit: mm (inch)

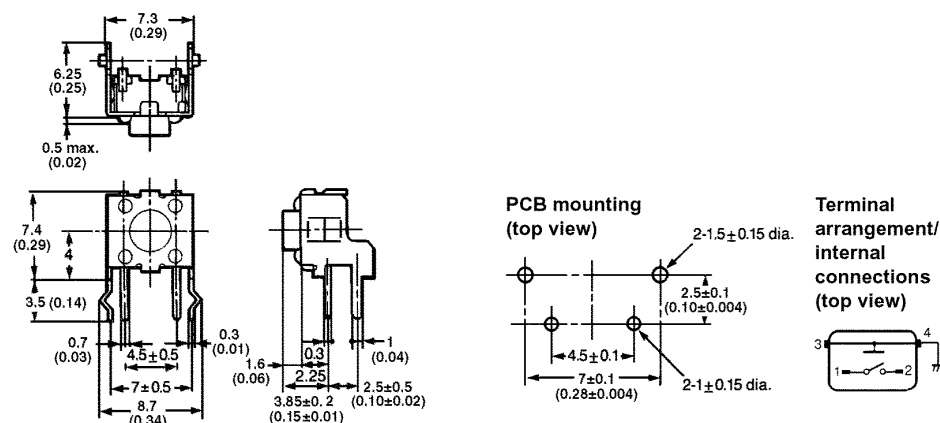
■ B3F-3100/-3102/-3105



■ B3F-3150/-3152/-3155

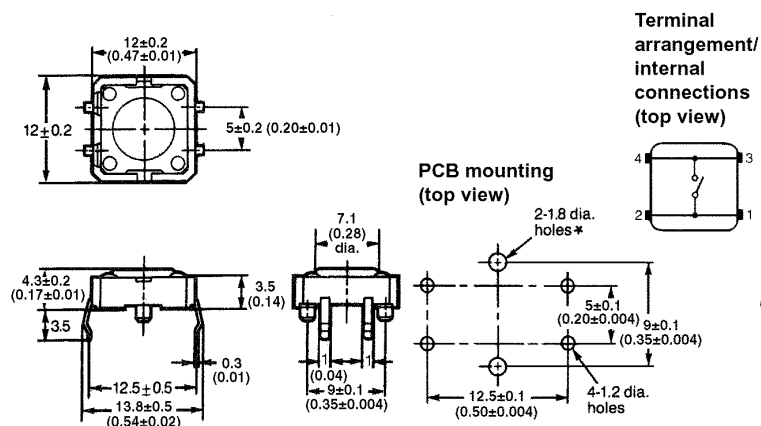


■ B3F-3120/-3122/-3125

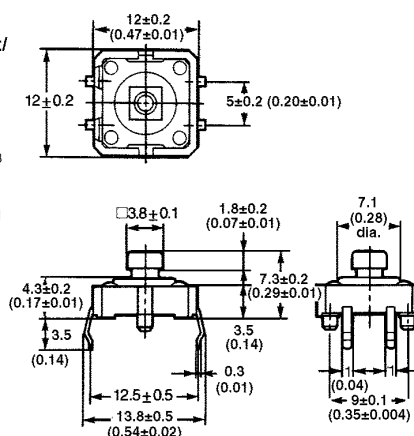


Note: Unless otherwise specified, a tolerance of ± 0.4 mm applies to all dimensions.

■ B3F-4000/-5000/-4005/-5001



■ B3F-4050/-5050/-4055/-5051



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

