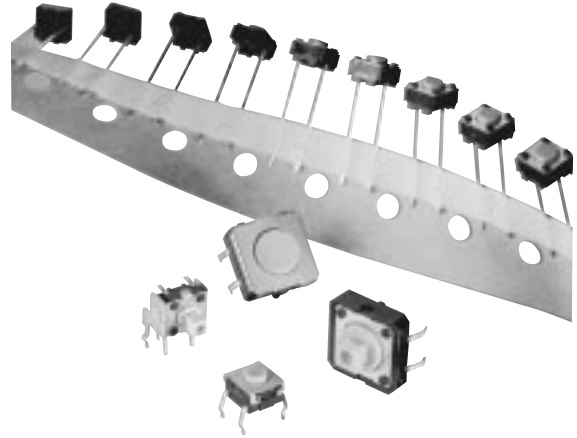


Miniature, Space-Saving Keyswitch Provides Long Service Life and Easy Mounting

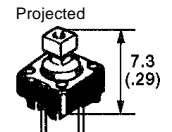
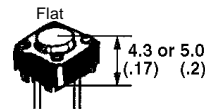
- Extended mechanical/electrical service life: 10 x 10⁶ operations for 12 x 12 mm type and 1 x 10⁶ operations for the 6 x 6 mm type
- Ideal for applications such as audio, office and communications equipment, measuring instruments, TVs, VCRs, etc.
- Taped radial type, vertical type, high force type, and gold-plated contact type are available as series versions
- Flux-tight base structure allows automatic soldering of the keyswitches onto a PC board



Ordering Information

- **B3F-1**□□□, **B3F-3**□□□

6 x 6 mm type



| Type | Plunger | Switch height x pitch | Operating Force | Part Number | | | |
|----------|-----------|-----------------------|------------------------|-------------------------|------------------|----------------------|------------------|
| | | | | Without ground terminal | | With ground terminal | |
| | | | | Bags | Sticks* | Bags | Sticks* |
| Standard | Flat | 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 |
| | Projected | 5.0 x 7.5 mm | General-purpose: 100 g | — | — | B3F-1110 | — |
| | | | 150 g | B3F-1050 | B3F-1050S | B3F-1150 | B3F-1150S |
| | | | High-force: 260 g | B3F-1052 | B3F-1052S | B3F-1152 | B3F-1152S |
| | | 7.3 x 6.5 mm | General-purpose: 100 g | B3F-1055 | B3F-1055S | B3F-1155 | B3F-1155S |
| | | | 150 g | — | — | — | — |
| | | | High-force: 260 g | — | — | — | — |
| Vertical | Flat | 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 | — |
| | Projected | 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

■ B3F-4□□□, B3F-5□□□, B3F-9□□□

12 x 12 mm type

| Type | Plunger | Switch height x pitch | Operating Force | Part Number | | | |
|--------------------------------------|------------|-----------------------|------------------------|-------------------------|------------------|----------------------|------------------|
| | | | | Without ground terminal | | With ground terminal | |
| | | | | Bags | Sticks* | Bags | Sticks* |
| Standard | Flat | 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 |
| | Projected | 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 | Flat | 4.3 x 12.5 mm | General-purpose: 130 g | B3F-5000 | B3F-5000S | B3F-5100 | B3F-5100S |
| | Projected | 7.3 x 12.5 mm | | B3F-5050 | B3F-5050S | B3F-5150 | B3F-5150S |
| High reliability gold-plated contact | Flat | 4.3 x 12.5 mm | | B3F-5001 | B3F-5001S | B3F-5101 | B3F-5101S |
| | Projected | 7.3 x 12.5 mm | | B3F-5051 | B3F-5051S | B3F-5151 | B3F-5151S |
| Surface illumination | Red LED | 7.3 x 12.5 mm | | — | B3F-9100 | — | — |
| | Green LED | 7.3 x 12.5 mm | | — | B3F-9200 | — | — |
| | Yellow LED | 7.3 x 12.5 mm | | — | B3F-9300 | — | — |

* Number of switches per stick: Without ground terminal 45/stick
 With ground terminal 40/stick
 B3F-9□□□ 36/stick

■ B3F-6□□□

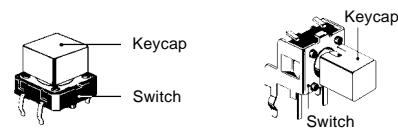
Taped Radial (Auto Insertion)
 6 x 6 mm type

| Type | Plunger | Switch height x pitch | Operating Force | Part Number | |
|----------|-----------|-----------------------|------------------------|-------------------------|----------------------|
| | | | | 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.

■ ACCESSORIES

Keycaps



| Keycap color | Applicable type: Size: | Part Number | | |
|--------------|---------------------------|-----------------|-----------------|-----------------|
| | | 6 x 6 mm | | 12 x 12 mm |
| | | 4 x 4 mm | 9 x 9 mm | 12 x 12 mm |
| Light gray | | B32-1000 | B32-1200 | B32-1300 |
| Black | | B32-1010 | B32-1210 | B32-1310 |
| Orange | | B32-1020 | B32-1220 | B32-1320 |
| Yellow | | B32-1030 | B32-1230 | B32-1330 |
| Blue | | B32-1040 | B32-1240 | B32-1340 |
| Green | | B32-1050 | B32-1250 | B32-1350 |
| White | | B32-1060 | B32-1260 | B32-1360 |
| Light green | | B32-1070 | B32-1270 | B32-1370 |
| Red | | B32-1080 | B32-1280 | B32-1380 |

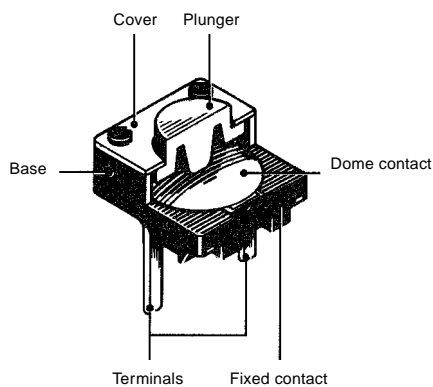
Note: Keycaps are available in different sizes and colors for exclusive use of the 6 x 6 mm and 12 x 12 mm projected plunger versions of Model B3F.

Plunger Identification Table

Use this table to determine keyswitch 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 |
| Blue | 130 g | B3F-5000 |
| Yellow | 150 g | B3F-1002, 1052, 1102, 1122, 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, 6025 |

■ CONSTRUCTION



Characteristics

| | B3F-1□□□ B3F-3□□□ | B3F-4□□□ | B3F-5□□□ | B3F-9□□□ | B3F-6□□□ |
|--|--|---|---|--|--|
| Service life (see note 1) [mechanical/electrical] | 1 x 10 ⁶ (0.3 x 10 ⁶) operations min. | 3 x 10 ⁶ (0.3 x 10 ⁶) operations min. | 10 x 10 ⁶ operations min. | 1 x 10 ⁶ operations min. | 1,000,000 (300,000) operations min. |
| Weight (see note 2) | Approx. 0.25 g | Approx. 0.85 g | Approx. 0.85 g | Approx. 0.85 g | Approx. 0.25 g |
| Contact configuration | — | — | — | — | SPST-NO |
| Switching capacity | 50 mA 24 VDC (resistive load) | | | | 5-24 VDC, 1-50 mA |
| Permissible load | 1 mA 5 VDC min. (resistive load) | | | | — |
| Contact resistance | 100 MΩ max. | | | | |
| 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 | | | | |
| Shock | Mechanical durability: 1,000 m/s ² (approx. 100 G) Malfunction durability: 100 m/s ² (approx. 10 G) | | | | |
| Ambient temperature | -25° to 70°C (with no icing) | | | | |
| Humidity | 35% to 85% RH | | | | |

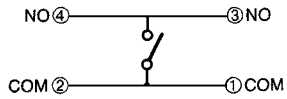
Note: 1. Figure in parentheses denotes the service life of high force type.

2. Denotes the weight of standard type.

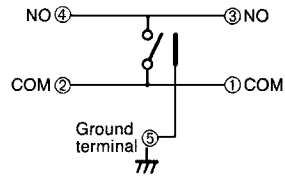
3. Data shown are of initial value.

CONTACT FORM

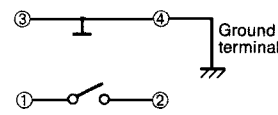
B3F-10□□
-40□□
-50□□



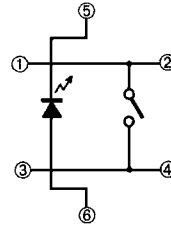
B3F-11□□
-41□□
-51□□



B3F-3□□□

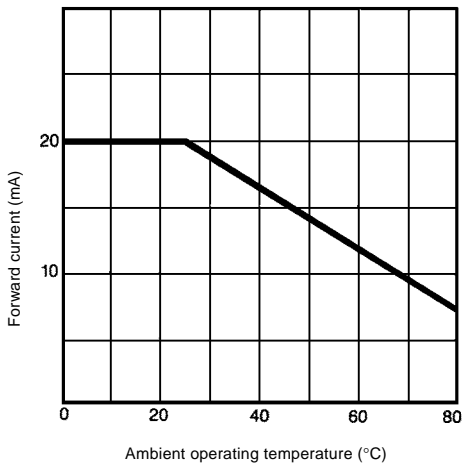


B3F-9□□□

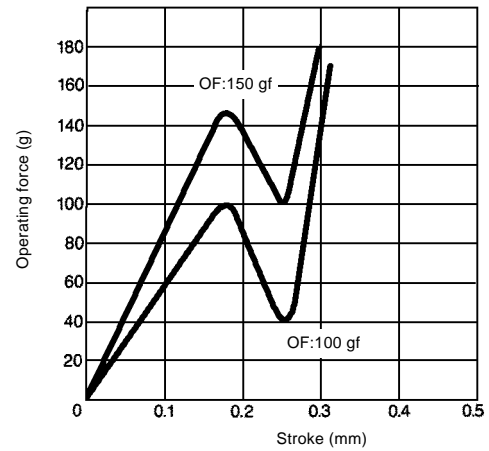


CHARACTERISTIC DATA

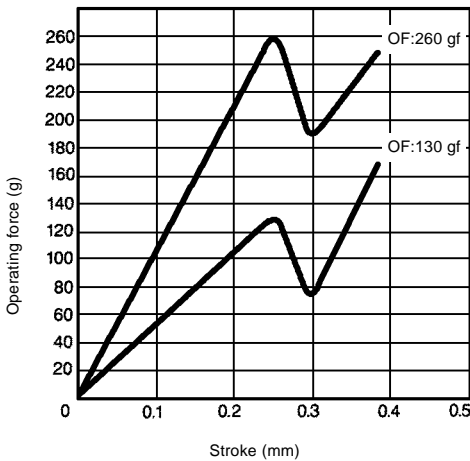
Forward current derating curve
BF-9□□□



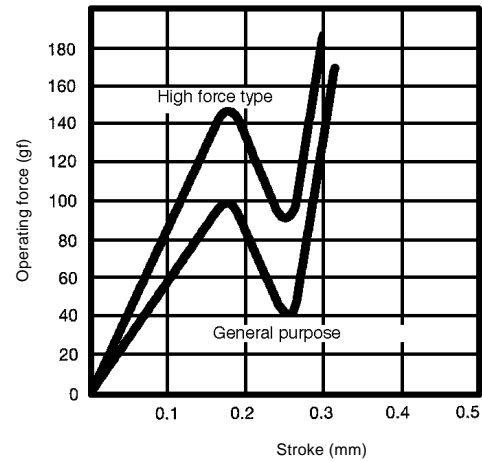
Operating force vs. stroke
B3F-1□□□ / -3□□□
(typical example)



B3F-4□□□ / -5□□□ / -9□□□
(typical example)



B3F-6□□□



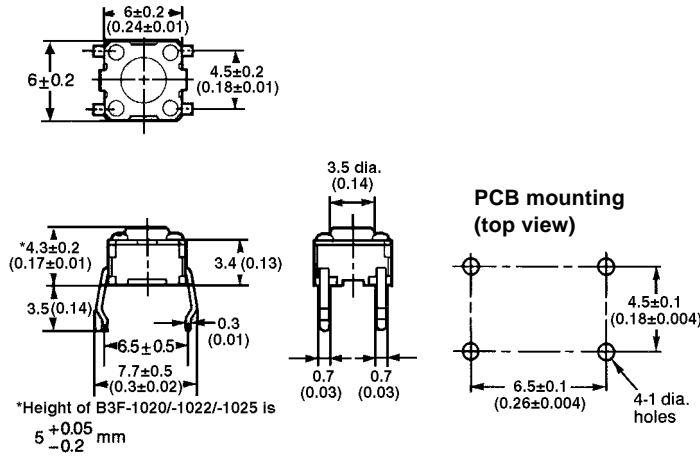
OPERATING CHARACTERISTICS

| | B3F-1□□□ / -3□□□ | | B3F-4□□□ / -5□□□ / -9□□□ | | B3F-6□□□ | |
|-------------------------|---|---|--|--|---|---|
| | General purpose type | High force type | General purpose type | High force type | General purpose type | High force type |
| Operating force (OF) | 100 ± 30 g | 150 ± 50 g | 130 ± 50 g | 260 ± 70 g | 100 ± 30 g | 150 ± 50 g |
| Release force (RF) min. | 20 g | 50 g | 30 g | 50 g | 20 g | 50 g |
| 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 |

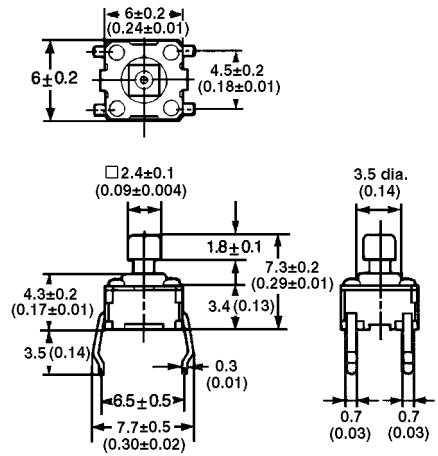
Dimensions

Unit: mm (inch)

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

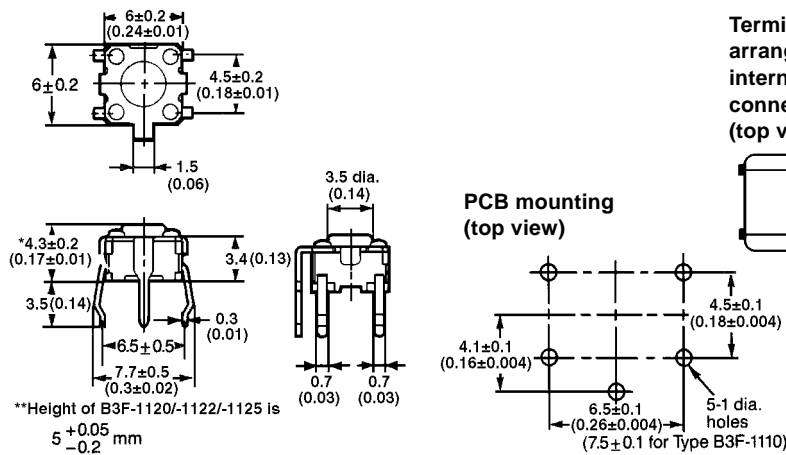


B3F-1050/-1052/-1055

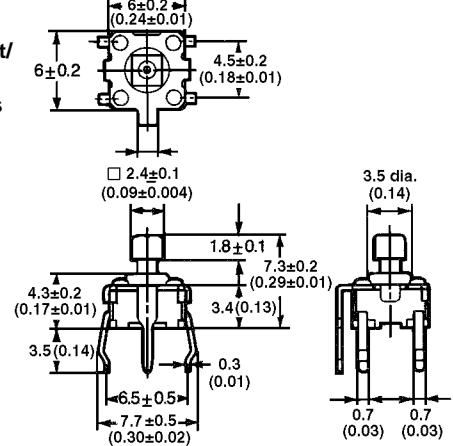


Note: Terminal numbers are not indicated on this switch. With the switch turned over so that the logo mark "OMRON" is visible on the upper part of the rear side of the switch base, the terminal on the right of the logo mark is numbered "1" and that on the bottom right is "3." Accordingly, two terminals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

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



B3F-1150/-1152/-1155

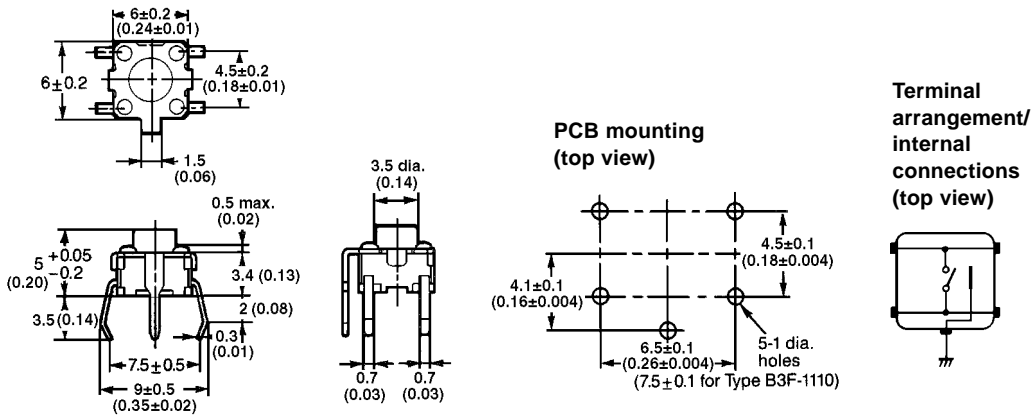


Note: Terminal numbers are not indicated on this switch. With the switch turned over so that the logo mark "OMRON" is visible on the upper part of the rear side of the switch base, the terminal on the right of the logo mark is numbered "1" and that on the bottom right is "3." Accordingly, two terminals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

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

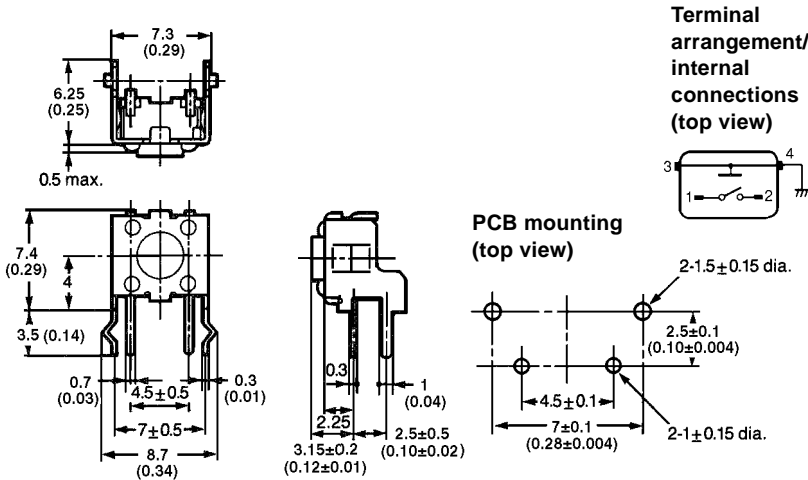
Unit: mm (inch)

B3F-1110

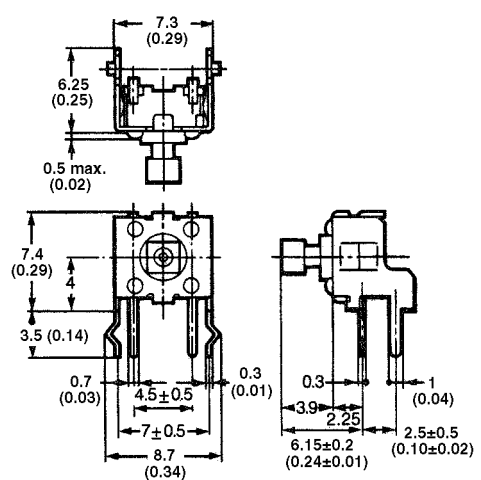


Note: Terminal numbers are not indicated on this switch. With the switch turned over so that the logo mark "OMRON" is visible on the upper part of the rear side of the switch base, the terminal on the right of the logo mark is numbered "1" and that on the bottom right is "3." Accordingly, two terminals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

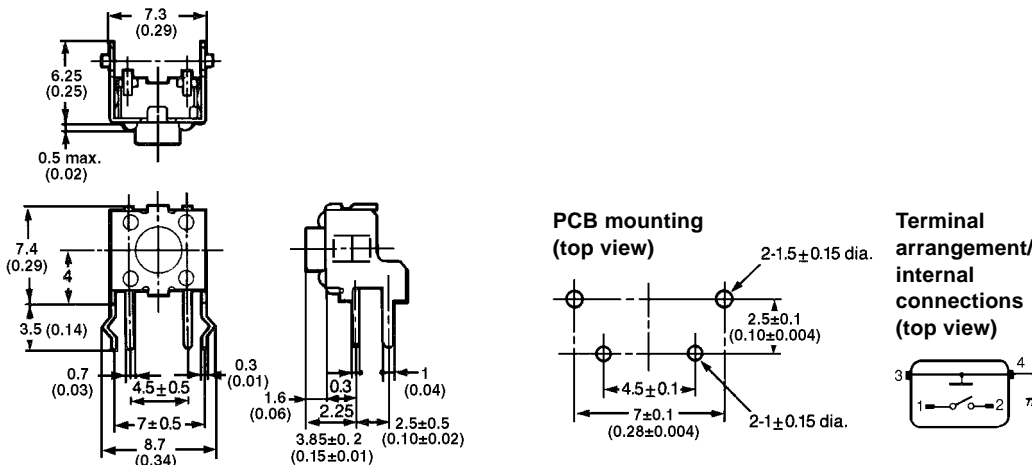
B3F-3100/-3102/-3105



B3F-3150/-3152/-3155

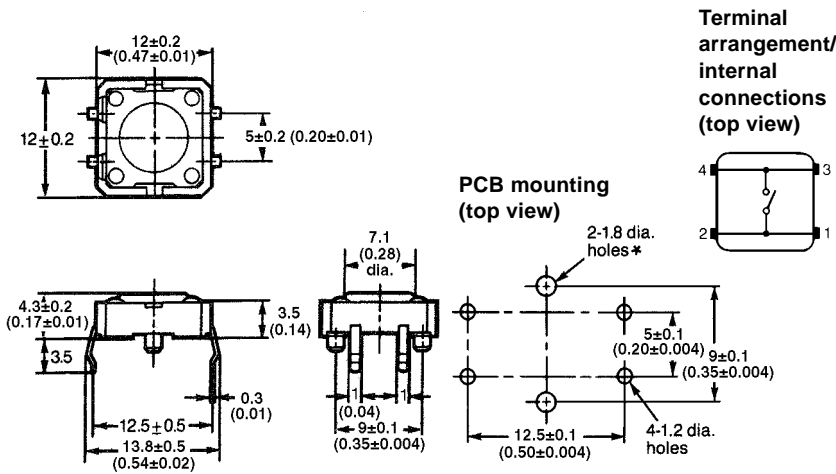


B3F-3120/-3122/-3125

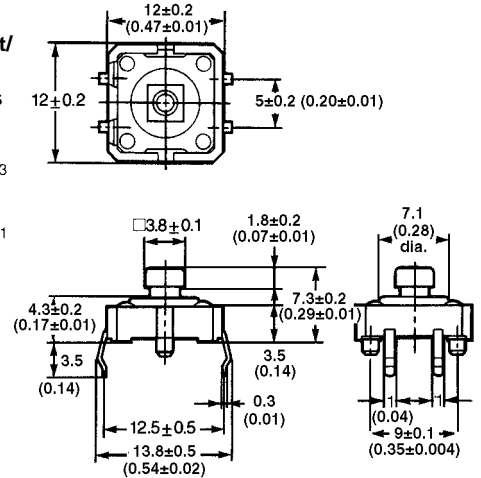


Note: Unless otherwise specified, a tolerance of ± 0.4 mm applies to all dimensions.

B3F-4000/-5000/-4005/-5001

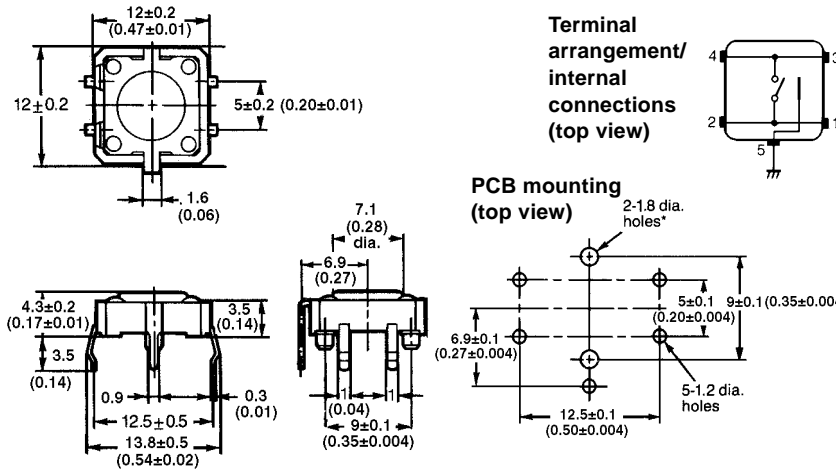


B3F-4050/-5050/-4055/-5051

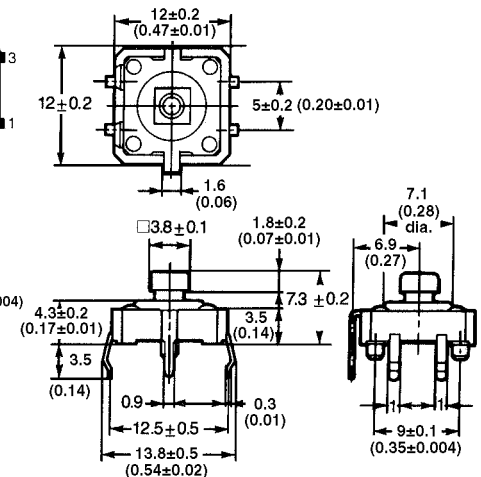


* Fit the projection of the switch into this hole to secure the switch.

B3F-4101/-5100/-4105/-5101

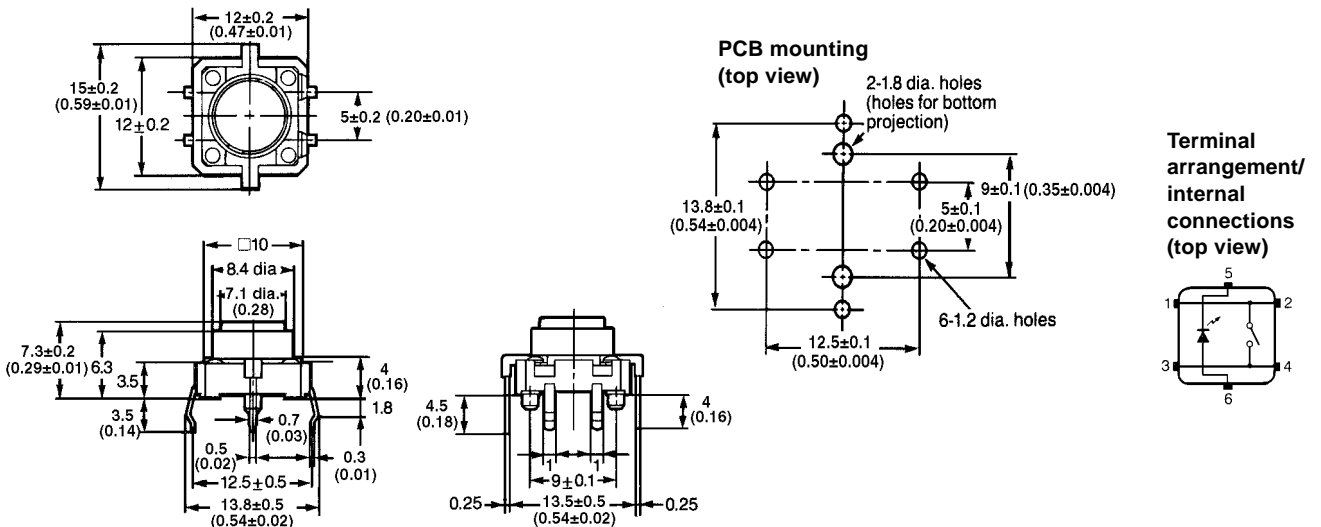


B3F-4150/-5150/-4155/-5151



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

B3F-9□□□

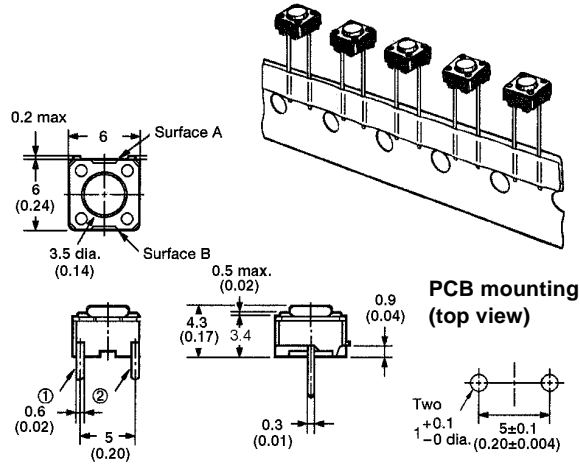


Note: Unless otherwise specified, a tolerance of ± 0.4 mm applies to all dimensions.

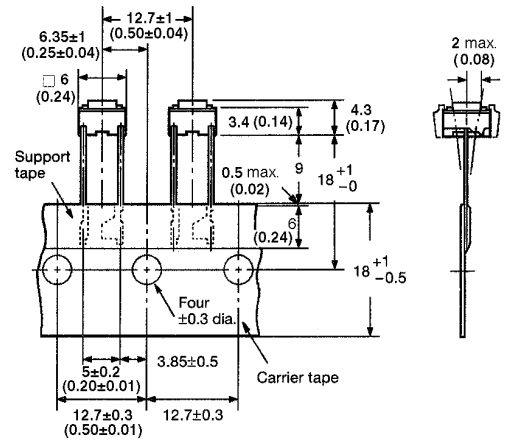
Unit: mm (inch)

B3F-6000/6002

Flat plunger type (without ground terminal)



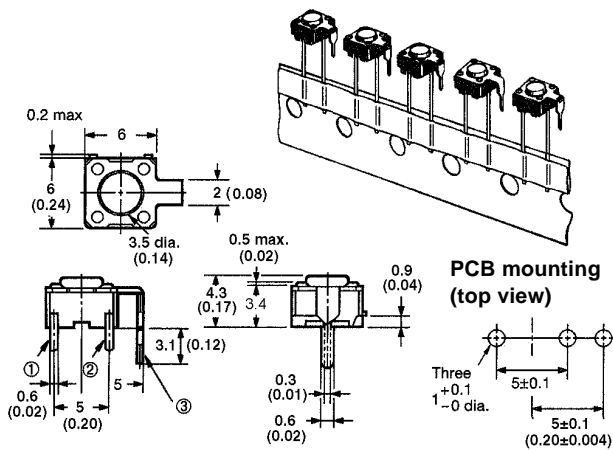
Tape-packaging dimensions



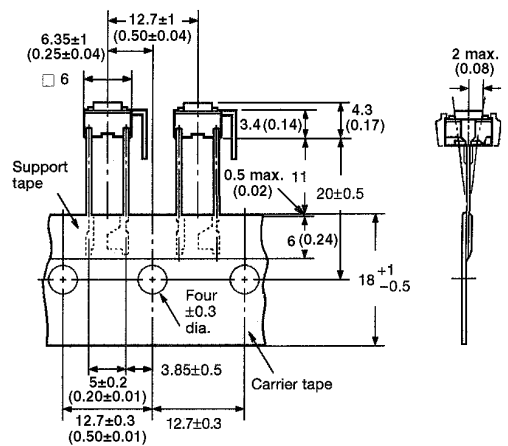
Note: The tape is random between surface A and surface B.

B3F-6100/6102

Flat plunger type (with ground terminal)

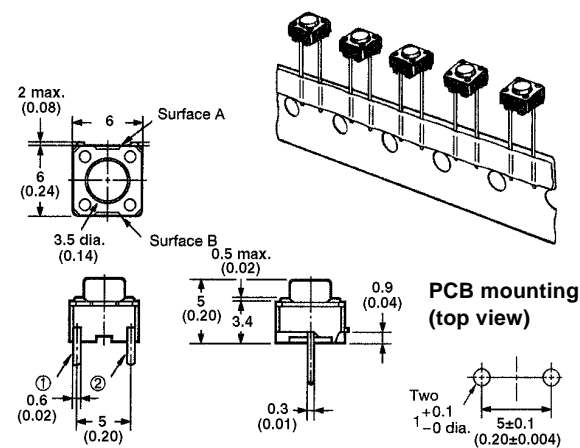


Tape-packaging dimensions

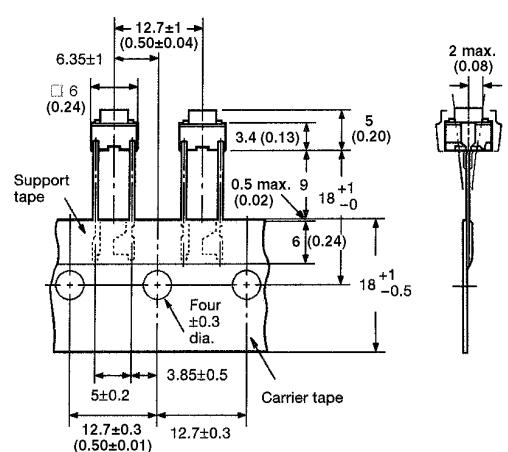


B3F-6020/6022

Flat plunger type (without ground terminal)



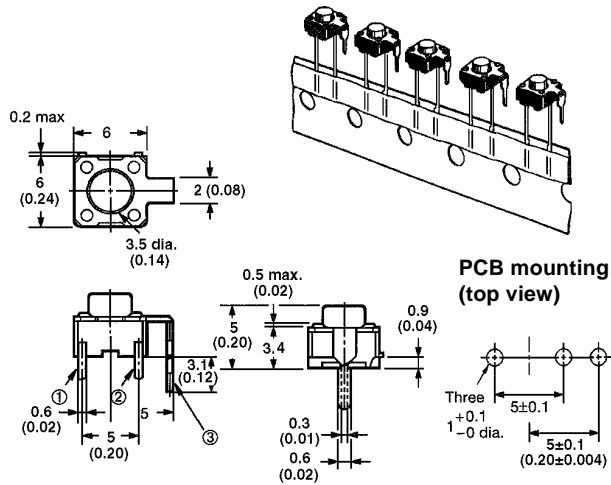
Tape-packaging dimensions



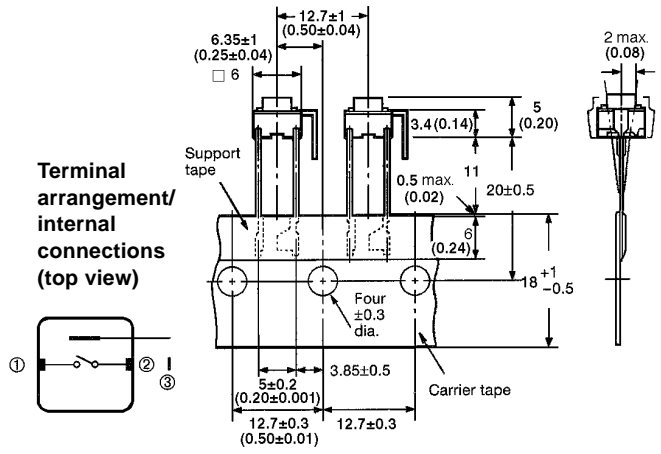
Note: Unless otherwise specified, a tolerance of ± 0.4 mm applies to all dimensions.

B3F-6120/6122

Flat plunger type (with ground terminal)

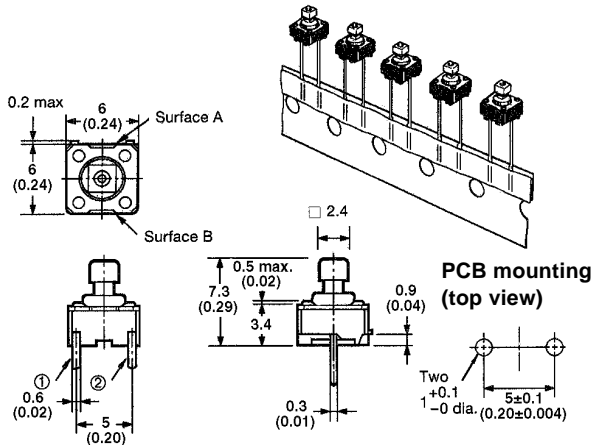


Tape-packaging dimensions

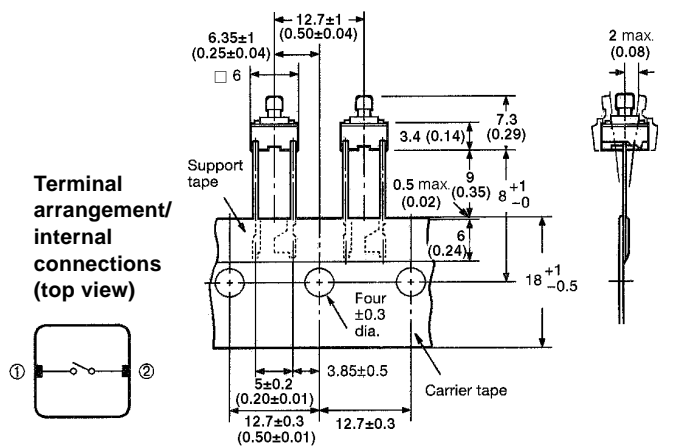


B3F-6050/6052

Projected plunger type (without ground terminal)

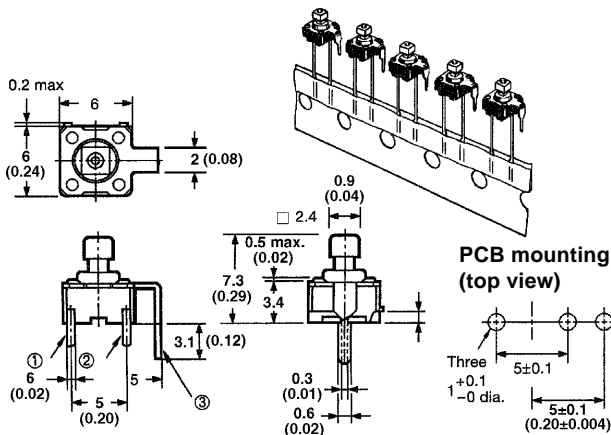


Tape-packaging dimensions

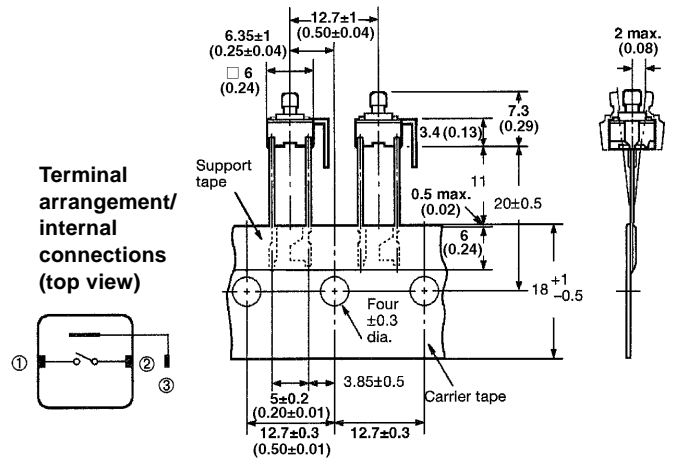


B3F-6150/6152

Projected plunger type (with ground terminal)



Tape-packaging dimensions

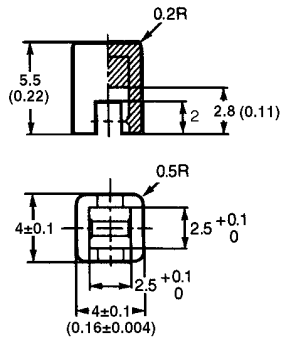


Note: Unless otherwise specified, a tolerance of ± 0.4 mm applies to all dimensions.

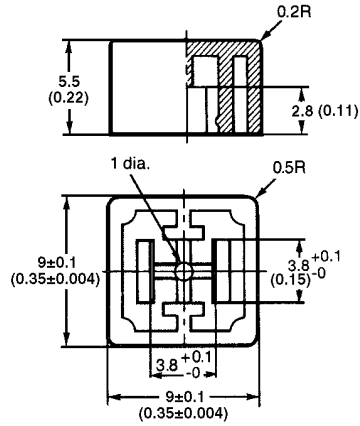
Unit: mm (inch)

KEYCAPS

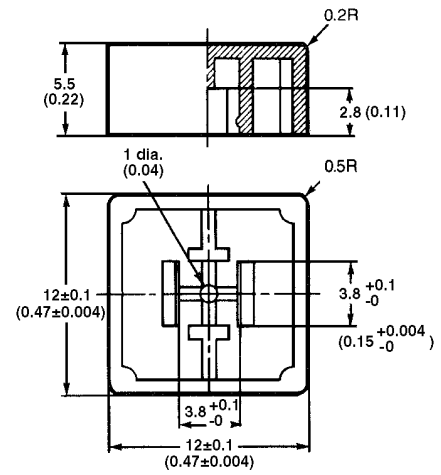
B32-10□0



B32-12□0

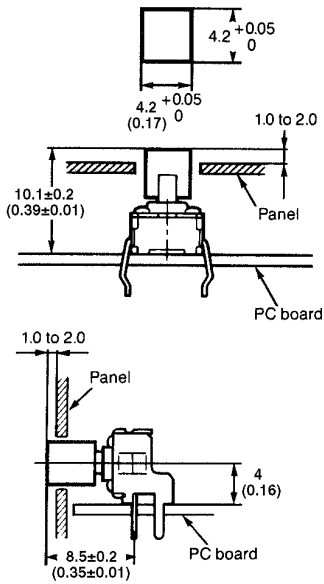


B32-13□0

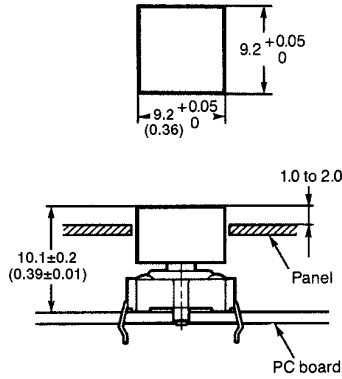


PANEL CUTOUTS

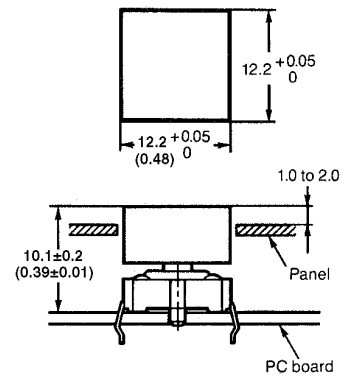
B32-10□0



B32-12□0



B32-13□0



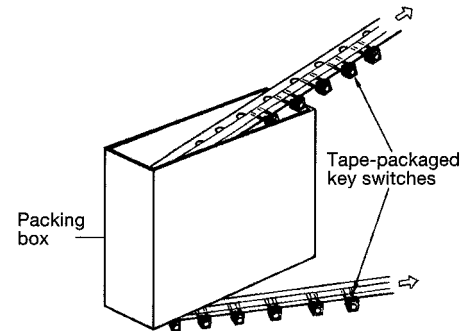
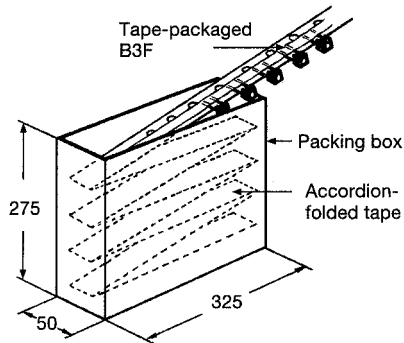
Note: 1. Unless otherwise specified, a tolerance of ± 0.2 mm applies to all dimensions.

2. Keycaps are available in different sizes and colors for exclusive use of the 6 x 6 mm and 12 x 12 mm projected plunger versions of model B3F.

Hints on Correct Use

■ TAPED RADIAL (AUTO INSERTION) PACKAGING

- Keyswitches 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.

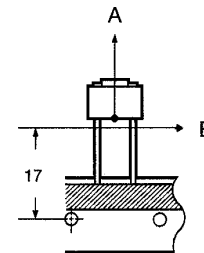


■ TAPING STRENGTH

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

A: 500 g

B: 100 g



OMRON

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Cat. No. GC SW5

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Specifications subject to change without notice.

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