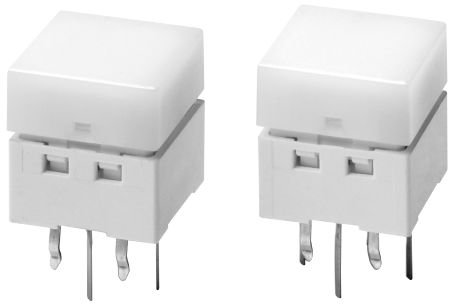
OMRON

Illuminated Tactile Switches | B3W-9

Compact Illuminated Through-hole-mounting Switches with Two LEDs

- Compact construction 10 × 10 × 11 mm (W × D × H) and 12 × 12 × 11 mm (W × D × H) with bright and uniform illumination.
- Three-color illumination (red LED + green LED = orange).
- Standard force (1.57 N) and high-force (2.26 N) models.



■ List of Models

10 × 10 mm Models

Operation type	Contact material	Height	Operating force (OF)	LED color	No. of LEDs	Cap color	Box	
							Model	Minimum packing unit
B3W-9000 Series: Standard force	Silver plated	11 mm	1.57 N {160 gf} max.	Blue	1	Blue	B3W-9000-B1B	300 pcs
					1	Transparent	B3W-9000-B1C	
					1	Milky white	B3W-9000-B1N	
					2	Blue	B3W-9000-B2B	
					2	Transparent	B3W-9000-B2C	
					2	Milky white	B3W-9000-B2N	
				Green	1	Transparent	B3W-9000-G1C	
					1	Green	B3W-9000-G1G	
					1	Milky white	B3W-9000-G1N	
					2	Transparent	B3W-9000-G2C	
					2	Green	B3W-9000-G2G	
					2	Milky white	B3W-9000-G2N	
				Green (high brightness)	1	Transparent	B3W-9000-HG1C	
					1	Green	B3W-9000-HG1G	
					1	Milky white	B3W-9000-HG1N	
					2	Transparent	B3W-9000-HG2C	
					2	Green	B3W-9000-HG2G	
					2	Milky white	B3W-9000-HG2N	
				Red	1	Transparent	B3W-9000-R1C	
					1	Milky white	B3W-9000-R1N	
					1	Red	B3W-9000-R1R	
					2	Transparent	B3W-9000-R2C	
					2	Milky white	B3W-9000-R2N	
					2	Red	B3W-9000-R2R	
				Red + Green	2	Transparent	B3W-9000-RG2C	
					2	Milky white	B3W-9000-RG2N	
				Red + High bright green	2	Transparent	B3W-9000-RHG2C	
				Red + Blue	2	Transparent	B3W-9000-RB2C	
				Yellow	1	Transparent	B3W-9000-Y1C	
					1	Milky white	B3W-9000-Y1N	
					1	Yellow	B3W-9000-Y1Y	
					2	Transparent	B3W-9000-Y2C	
					2	Milky white	B3W-9000-Y2N	
					2	Yellow	B3W-9000-Y2Y	

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Operation type	Contact material	Height	Operating force (OF)	LED color	No. of LEDs	Cap color	Box	
							Model	Minimum packing unit
B3W-9002 Series: High force	Silver plated	11 mm	2.26 N {230 gf} max.	Blue	1	Blue	B3W-9002-B1B	300 pcs
					1	Transparent	B3W-9002-B1C	
					1	Milky white	B3W-9002-B1N	
					2	Blue	B3W-9002-B2B	
					2	Transparent	B3W-9002-B2C	
					2	Milky white	B3W-9002-B2N	
				Green	1	Transparent	B3W-9002-G1C	
					1	Green	B3W-9002-G1G	
					1	Milky white	B3W-9002-G1N	
					2	Transparent	B3W-9002-G2C	
					2	Green	B3W-9002-G2G	
					2	Milky white	B3W-9002-G2N	
				Green (high bright-ness)	1	Transparent	B3W-9002-HG1C	
					1	Green	B3W-9002-HG1G	
					1	Milky white	B3W-9002-HG1N	
					2	Transparent	B3W-9002-HG2C	
					2	Green	B3W-9002-HG2G	
					2	Milky white	B3W-9002-HG2N	
				Red	1	Transparent	B3W-9002-R1C	
					1	Milky white	B3W-9002-R1N	
					1	Red	B3W-9002-R1R	
					2	Transparent	B3W-9002-R2C	
					2	Milky white	B3W-9002-R2N	
					2	Red	B3W-9002-R2R	
				Red + Green	2	Transparent	B3W-9002-RG2C	
					2	Milky white	B3W-9002-RG2N	
				Red + High bright green	2	Transparent	B3W-9002-RHG2C	
				Red + Blue	2	Transparent	B3W-9002-RB2C	
				Yellow	1	Transparent	B3W-9002-Y1C	
					1	Milky white	B3W-9002-Y1N	
					1	Yellow	B3W-9002-Y1Y	
					2	Transparent	B3W-9002-Y2C	
					2	Milky white	B3W-9002-Y2N	
					2	Yellow	B3W-9002-Y2Y	

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12 × 12 mm Models

Operation type	Contact material	Height	Operating force (OF)	LED color	No. of LEDs	Cap color	Box	
							Model	Minimum packing unit
B3W-9010 Series: Standard force	Silver plated	11 mm	1.57 N {160 gf} max.	Blue (high brightness)	1	Blue	B3W-9010-B1B	300 pcs
					1	Milky white	B3W-9010-B1N	
					2	Blue	B3W-9010-B2B	
					2	Milky white	B3W-9010-B2N	
				Green	1	Green	B3W-9010-G1G	
					1	Milky white	B3W-9010-G1N	
					2	Green	B3W-9010-G2G	
					2	Milky white	B3W-9010-G2N	
				Green (high brightness)	1	Green	B3W-9010-HG1G	
					1	Milky white	B3W-9010-HG1N	
					2	Green	B3W-9010-HG2G	
					2	Milky white	B3W-9010-HG2N	
				Red	1	Red	B3W-9010-R1R	
					1	Milky white	B3W-9010-R1N	
					2	Red	B3W-9010-R2R	
					2	Milky white	B3W-9010-R2N	
				Red + Green	2	Milky white	B3W-9010-RG2N	
				Red + High bright green	2	Milky white	B3W-9010-RHG2N	
				Red + Blue	2	Milky white	B3W-9010-RB2N	
				Yellow	1	Yellow	B3W-9010-Y1Y	
					1	Milky white	B3W-9010-Y1N	
					2	Yellow	B3W-9010-Y2Y	
					2	Milky white	B3W-9010-Y2N	
B3W-9012 Series: High-force			2.26 N {230 gf} max.	Blue	1	Blue	B3W-9012-B1B	
					1	Milky white	B3W-9012-B1N	
					2	Blue	B3W-9012-B2B	
					2	Milky white	B3W-9012-B2N	
				Green	1	Green	B3W-9012-G1G	
					1	Milky white	B3W-9012-G1N	
					2	Green	B3W-9012-G2G	
					2	Milky white	B3W-9012-G2N	
				Green (high brightness)	1	Green	B3W-9012-HG1G	
					1	Milky white	B3W-9012-HG1N	
					2	Green	B3W-9012-HG2G	
					2	Milky white	B3W-9012-HG2N	
				Red	1	Red	B3W-9012-R1R	
					1	Milky white	B3W-9012-R1N	
					2	Red	B3W-9012-R2R	
					2	Milky white	B3W-9012-R2N	
				Red + Green	2	Milky white	B3W-9012-RG2N	
				Red + High bright green	2	Milky white	B3W-9012-RHG2N	
				Red + Blue	2	Milky white	B3W-9012-RB2N	
				Yellow	1	Yellow	B3W-9012-Y1Y	
					1	Milky white	B3W-9012-Y1N	
					2	Yellow	B3W-9012-Y2Y	
					2	Milky white	B3W-9012-Y2N	

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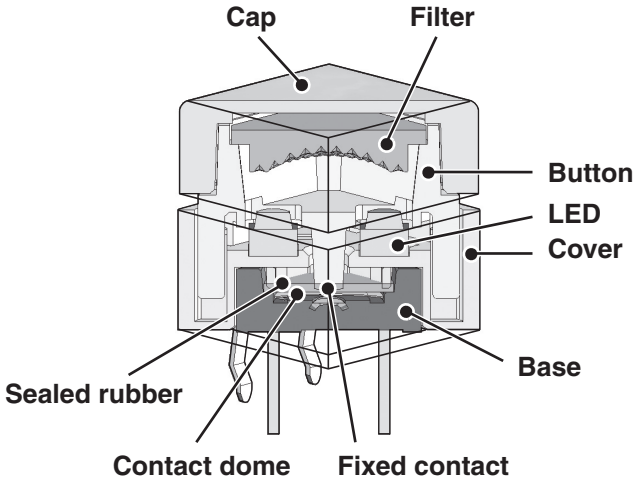
■ Ratings/Characteristics (Same for Both Standard and High-force Switches)

Rating (resistive load)	1 to 50 mA, 3 to 24 VDC
Minimum applicable load (reference value)	10 μA at 1 VDC (resistive load)
Ambient operating temperature	–25°C to +70°C at 60% max. humidity (with no icing or condensation)
Ambient operating humidity	35% to 85% (at +5 to +35°C)
Contact form	SPST-NO
Contact resistance (initial value)	100 mΩ max.
Insulation resistance	100 MΩ min. (at 250 VDC with insulation tester)
Dielectric strength	500 VAC, 50/60 Hz for 1 min
Bounce time	5 ms max.
Vibration resistance	Malfunction: 10 to 55 Hz, 1.5 mm double amplitude
Shock resistance	Destruction: 1,000 m/s^2 {approx. 100 G} max. Malfunction: 100 m/s^2 {approx. 10 G} max.
Durability	Switch section: 1.57 N (standard force):1,000,000 operations min. 2.26 N (high-force):300,000 operations min.
Degree of protection	IEC IP00
Washing	Not possible

■ Operating Characteristics

Item	Standard-force Switches (B3W-90□0)	High-force Switches (B3W-90□2)
Operating force (OF)	1.57 N {160 gf} max.	2.26 N {230 gf} max.
Releasing force (RF)	0.2 N {20 gf} min.	0.49 N {50 gf} min.
Pretravel (PT)	$0.25^{+0.2}/_{-0.1}$ mm	

■ Model Structure



■ LED Specifications

(Ambient temperature Ta = 25°C)

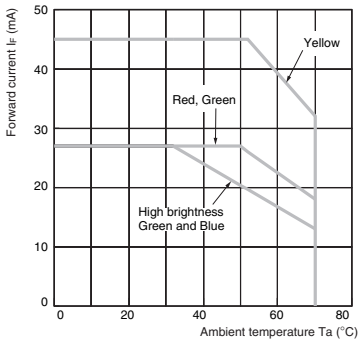
LED color	Red	Green	Green (high brightness)	Yellow	Blue
Maximum operating current I_{FM}	27 mA	27 mA	27 mA	45 mA	27 mA
Recommended operating current I_F	20 mA	10 mA	20 mA	20 mA	20 mA
Forward voltage (standard value) V_F	1.8 V	2.1 V	3.7 V	2 V	3.7 V
Maximum reverse voltage V_R	5 V	5 V	5 V	5 V	5 V
Ambient operating temperature	–25°C to 70°C				

Note: For Switches with two LEDs, red and green, the recommended operating current is 12 mA for the red and 20 mA for the green LED for application with three-color illumination.

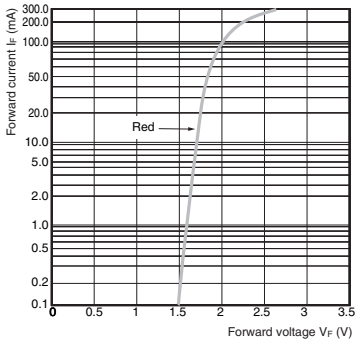
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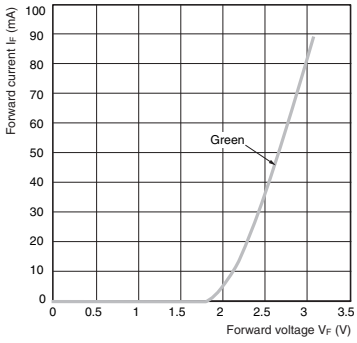
■ LEDs

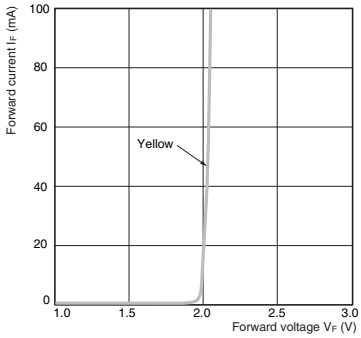
● Forward current reduction curve

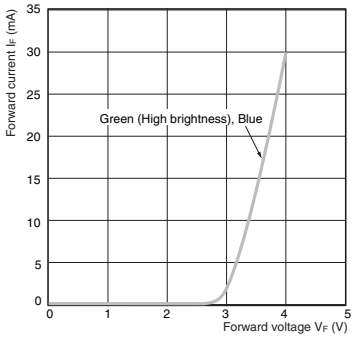


● Forward current and forward voltage curves





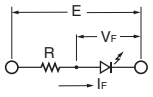




Note: **1.** Make sure that the polarity of the LEDs is correct. The polarity is not indicated on the Switch, but the positive pole is located on the back surface of the Switch on the side with the OMRON mark.

2. Connect limiting resistors to the LEDs. The Switch does not have built-in limiting resistors, so satisfy the LED characteristics by obtaining the limiting resistance according to the following formula based on the voltage to be used.

$$\text{Limiting resistance (R)} = \frac{\text{(Voltage used (E) – LED forward voltage (VF))}}{\text{LED forward current (IF)}}\ (\Omega)$$



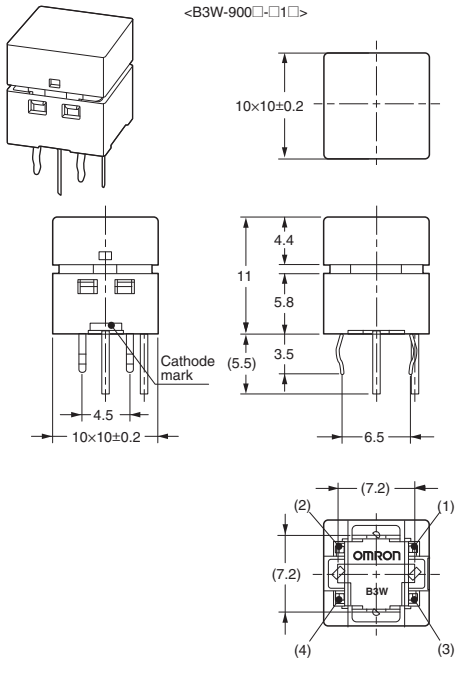
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■ Dimensions (Unit: mm)

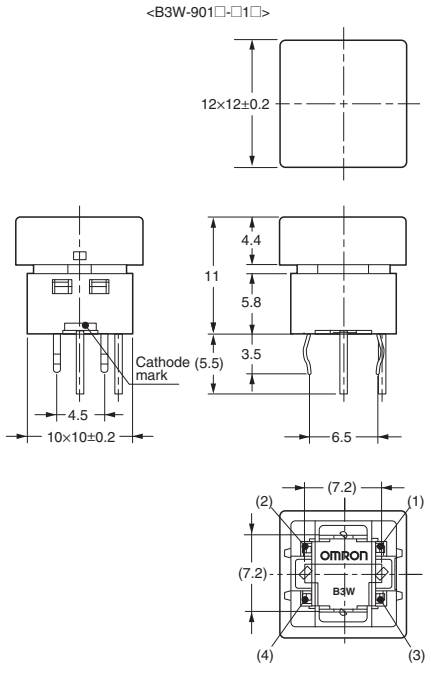
1 LED Types

B3W-900□-□1□
B3W-901□-□1□

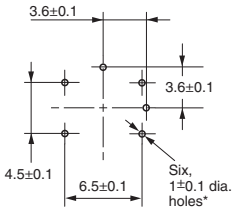
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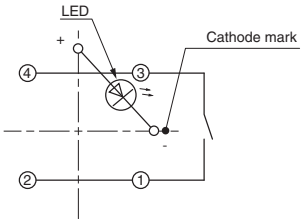
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PCB Processing Dimensions (Reference Only) (Top View)



Terminal Arrangement/ Internal Connections (Top View)

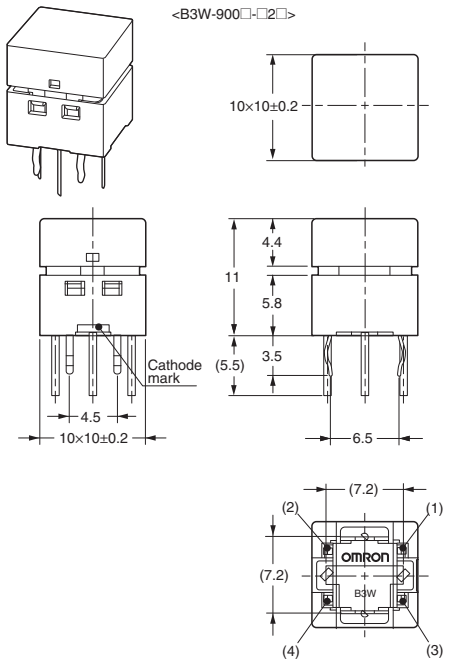


Note: If the poles of the LED are set incorrectly, it may result in malfunction.

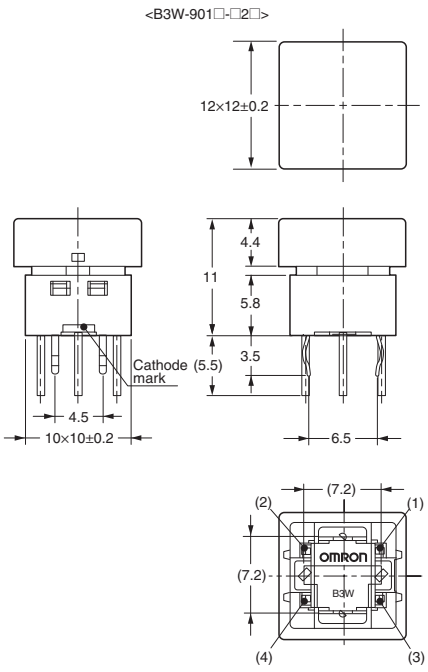
2 LED Types

B3W-900□-□2□
B3W-901□-□2□

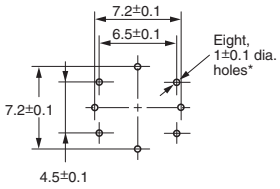
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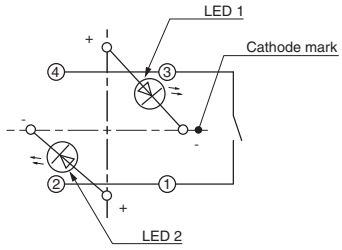
<B3W-901□-□2□>



PCB Processing Dimensions (Reference Only) (Top View)



Terminal Arrangement/ Internal Connections (Top View)



Note 1: If the poles of the LED are set incorrectly, it may result in malfunction.
2: For models with two-color LEDs, the color of LED 1 is at position LED 1. The color of LED 2 is at the position LED 2.
B3W-90□□-RG2□
LED 2 color
LED 1 color

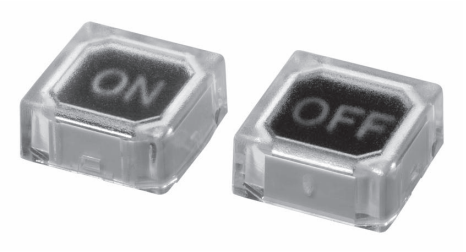
Note: Unless otherwise specified, a tolerance of ±0.4 mm applies to all dimensions. No terminal numbers are indicated on the Switches.

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■ Accessories

B3W-9□□-F□

Text Combination Films



Text Combination Films for B3W-9 Illuminated Tactile Switches

- Display two different labels in combination with a 2-LED B3W-9 Switch.
- Color combinations: Red/Green or Red/Blue

■ Model Number Legend

B3W-9□□-F□
1 2 3

1. **Color**
   R: Red
2. **Color**
   B: Blue
   G: Green
3. **Color and text combination**
   F1: Red OFF
   Blue or green ON
   F2: Red 切 (OFF)
   Blue or green 入 (ON)
   F3: Red 閉 (CLOSE)
   Blue or green 開 (OPEN)
   F4: Red ×
   Blue or green ○
   F5: Red ▼
   Blue or green ▲

Note: **1.** Five text combinations are available.
2. Films can also be customized with other text for 50 sheets (1,250 films) per lot. Delivery time is approximately five weeks. (Ask your OMRON representative for details.)

Text Combinations	LED colors	Model
"OFF" and "ON"	Red/Blue	B3W-9RB-F1
	Red/Green	B3W-9RG-F1
"切" and "入" (OFF) (ON)	Red/Blue	B3W-9RB-F2
	Red/Green	B3W-9RG-F2
"閉" and "開" (CLOSE)(OPEN)	Red/Blue	B3W-9RB-F3
	Red/Green	B3W-9RG-F3
"×" and "○"	Red/Blue	B3W-9RB-F4
	Red/Green	B3W-9RG-F4
"▼" and "▲"	Red/Blue	B3W-9RB-F5
	Red/Green	B3W-9RG-F5

■ Recommended B3W-9 Switches

Operating force / 2-LED Switches	Red/Blue	Red/Bright green
Standard-force Switches	B3W-9000-RB2C	B3W-9000-RHG2C
High-force Switches	B3W-9002-RB2C	B3W-9002-RHG2C

■ Minimum Order

25 films/sheet

B3W-9 Films are sold in units of 25 films. Orders must be made in multiples of 25 (the quantity per sheet).

Note: Text Combination Films are sold without the Switches. Order one of the above models of B3W-9 Illuminated Tactile Switches separately.

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■ Safety Precautions

Note: Refer to *Safety Precautions* in *Tactile Switches* (Cat. No. X037) for details on general safety precautions.

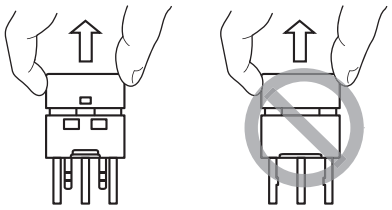
■ Precautions for Correct Use

LEDs

Switches with high-brightness green (HG) or blue (B) LEDs are susceptible to static electricity. Be careful when handling a Switch with these LEDs as it may cause the Switch to breakdown.

Removing the Cap

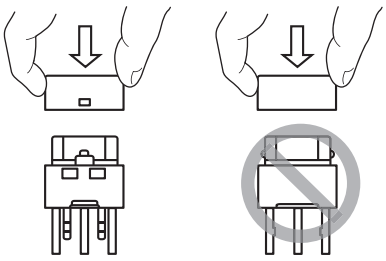
1. Hold the cap at the side away from the mating section. Pull straight up.
2. Do not remove the cap while the Switch is mounted. Doing so will apply force to the soldered section and LEDs, resulting in malfunction.



Correct **Incorrect**

Placing the Cap on the Switch

Hold the Cap at the side away from the mating section. Push straight down until the mating section meets.



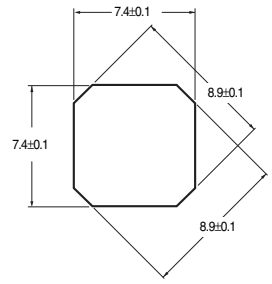
Correct **Incorrect**

Removing the Cap

The Cap can be removed up to two times. Excessively removing the Cap will cause the mating section to become weak, resulting the operating section not mating completely or the Cap may fall off.

Film Dimensions

Dimensions of the film are shown below. The thickness is 0.2 mm.



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