

Tactile Switch (Hinged Type)

B3J

Hinged Design Developed through Human Engineering

- Quick, superior snap action through hook-type hinge construction.
- Available with 1 or 2 LEDs or without LEDs.
- Available in 8 hinge button colors for a total of 56 button color/LED variations.
- Used in audio equipments, office equipments, transmitters, measuring instruments, TVs, and VCRs.



Ordering Information

Model Number Legend:

B3J-□□00
1 2

1. LED

- 1: No LED
- 2: Red (One LED)
- 3: Yellow (One LED)
- 4: Green (One LED)
- 5: Red/yellow (Two LEDs)
- 6: Red/green (Two LEDs)
- 7: Yellow/green (Two LEDs)

2. Color of hinged button

- 0: Light gray
- 1: Black
- 2: Orange
- 3: Yellow
- 4: Blue
- 5: Green
- 6: White
- 7: Light green

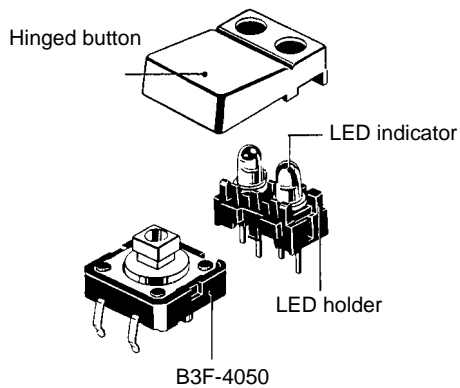
Color of hinged button	No LED	One LED			Two LEDs		
		Red	Yellow	Green	Red/Yellow	Red/Green	Yellow/Green
Light gray	B3J-1000	B3J-2000	B3J-3000	B3J-4000	B3J-5000	B3J-6000	B3J-7000
Black	B3J-1100	B3J-2100	B3J-3100	B3J-4100	B3J-5100	B3J-6100	B3J-7100
Orange	B3J-1200	B3J-2200	B3J-3200	B3J-4200	B3J-5200	B3J-6200	B3J-7200
Yellow	B3J-1300	B3J-2300	B3J-3300	B3J-4300	B3J-5300	B3J-6300	B3J-7300
Blue	B3J-1400	B3J-2400	B3J-3400	B3J-4400	B3J-5400	B3J-6400	B3J-7400
Green	B3J-1500	B3J-2500	B3J-3500	B3J-4500	B3J-5500	B3J-6500	B3J-7500
White	B3J-1600	B3J-2600	B3J-3600	B3J-4600	B3J-5600	B3J-6600	B3J-7600
Light green	B3J-1700	B3J-2700	B3J-3700	B3J-4700	B3J-5700	B3J-6700	B3J-7700

Specifications

■ Ratings/Characteristics

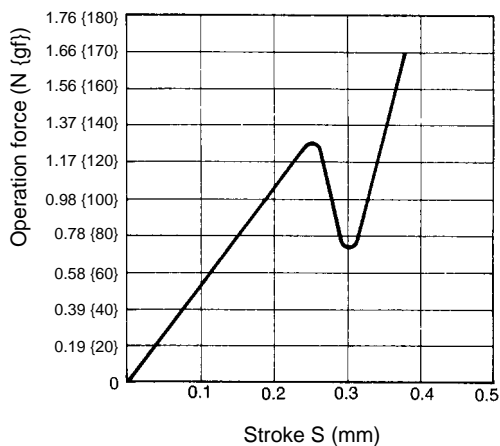
Switching capacity	1 to 5 mA, 5 to 24 VDC (resistive load)
Contact configuration	SPST-NO
Contact resistance	100 mΩ max. (rated: 1 mA, 5 VDC)
Insulation resistance	100 MΩ min. (at 250 VDC)
Dielectric strength	500 VAC, 50/60 Hz for 1 min
Bounce time	5 ms max.
Vibration resistance	Malfunction: 10 to 55 Hz, 1.5-mm double amplitude
Shock resistance	Destruction: 1,000 m/s ² {approx. 100G} max. Malfunction: 100 m/s ² {approx. 10G} max.
Life expectancy	3,000,000 operations min.
Ambient temperature	-25°C to 70°C (with no icing)
Ambient humidity	35% to 85%
Weight	Approx. 1.5 to 1.7 g

Nomenclature



Engineering Data

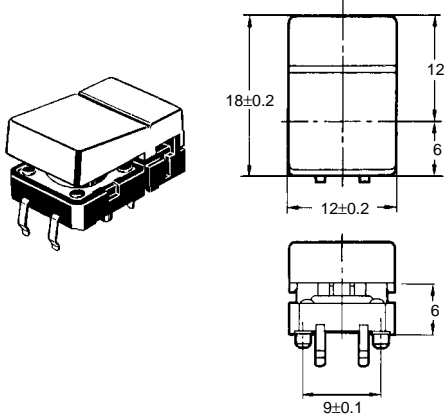
Operating Force vs. Stroke (Typical)



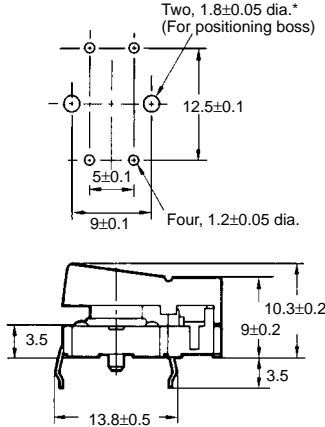
Dimensions

Note: All units are in millimeters unless otherwise indicated. Unless otherwise specified, a tolerance of ± 0.4 mm applies to all dimensions.

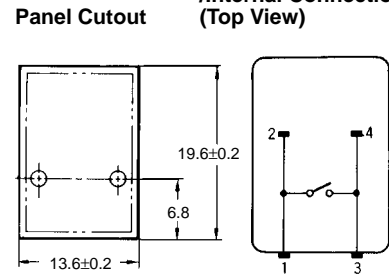
Types with no LED B3J-1□00



PCB Mounting (Top View)

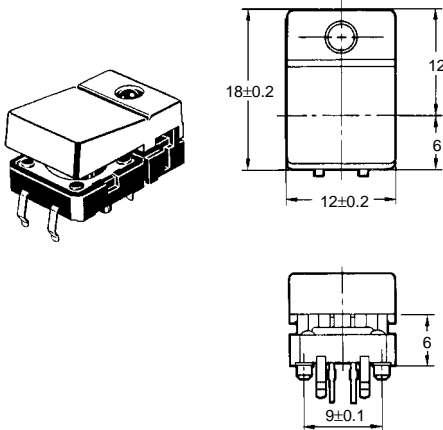


Terminal Arrangement / Internal Connections (Top View)

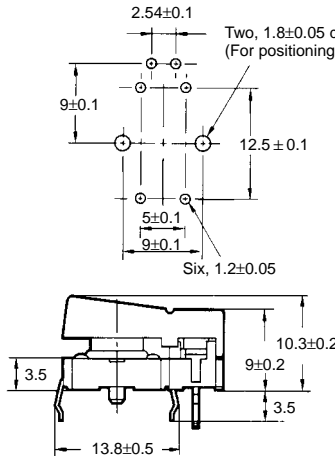


* Fit the projection of the Switch into this hole to secure the Switch.

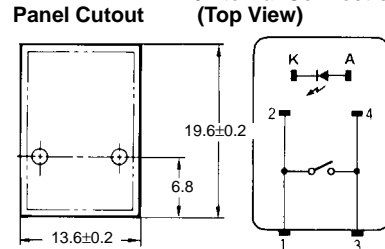
1 LED Types B3J-2□00, -3□00, -4□00



PCB Mounting (Top View)

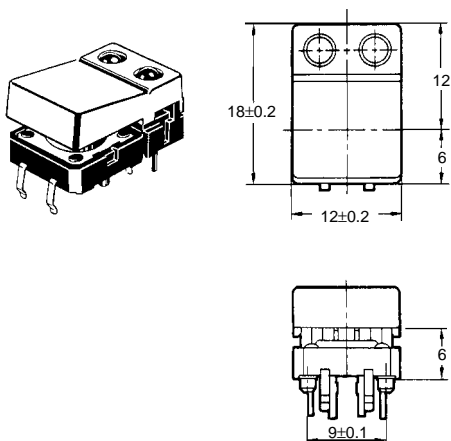


Terminal Arrangement / Internal Connections (Top View)

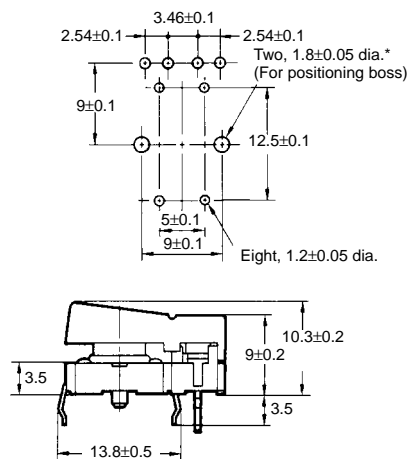


* Fit the projection of the Switch into this hole to secure the Switch.

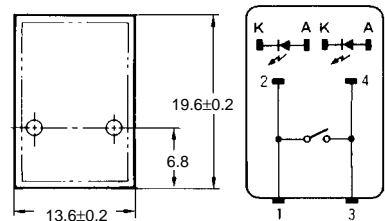
2 LED Types B3J-5□00, -6□00, -7□00



PCB Mounting (Top View)



Terminal Arrangement / Internal Connections (Top View)



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

Operating Characteristics

Item	B3S-1000
Operating force (OF)	1.27±0.49 N {130±50 gf}
Releasing force (RF)	0.29 N {30 gf} min.
Pretravel (PT)	0.3+0.2/-0.1 mm

■ Built-in LED Performance

Item		Red	Yellow	Green
Forward voltage V_F	Standard value (V)	2.0	2.0	2.1
Forward current I_F	Standard value (mA)	20	20	20
Permissible loss P	Absolute maximum value (mW)	84	84	84
Reverse voltage V_R	Absolute maximum value (V)	5	5	5

Note: Since the built-in LED doesn't contain any limiting resistors, externally connect limiting resistors within the limits shown in the above table.

Precautions

Operation

Do not repeatedly operate the Switch with excessive force. Applying excessive pressure or applying additional force after the push-button has stopped may deform the disc spring of the Switch, resulting in malfunction.

The Switches are not sealed and should be protected with a resin sheet as shown below when used in dust-prone environments.

Do not bend or pull on the LED terminals. Clinching them during PCB mounting or pulling on lead wires when soldering may cause malfunction.

PCB

The Switch is designed for a 1.6-mm-thick, single-sided PCB. Using PCBs that are different in thickness or using double-sided, through-hole PCBs may result in loose mounting, improper insertion, or poor heat resistance in soldering. Whether these problems arise or not will depend on the type of holes, patterns, etc. Therefore, it is recommended that a verification test is conducted before use.

PCB dimensions shown in *Dimensions* above indicate reference values for a single-sided PCB with a thickness of 1.6 mm. For through-hole PCBs, make terminal holes 10% to 20% larger within the specified design tolerance so that terminals can be inserted easily.

Soldering

The Switch can be soldered automatically or manually.

The automatic soldering of the Switch on a 1.6-mm-thick, single-sided PCB must be completed within five seconds at a soldering temperature of 260°C maximum.

The manual soldering of the Switch on a 1.6-mm-thick, single-sided PCB must be completed within three seconds at a soldering iron tip temperature of 350°C maximum.

When using a multi-layer PCB, test the PCB in advance because the Switch mounted to the PCB may be deformed by heat if the pattern or land design is improper.

Soldering may be repeated only once at a minimum interval of five minutes if the Switch is not soldered properly.

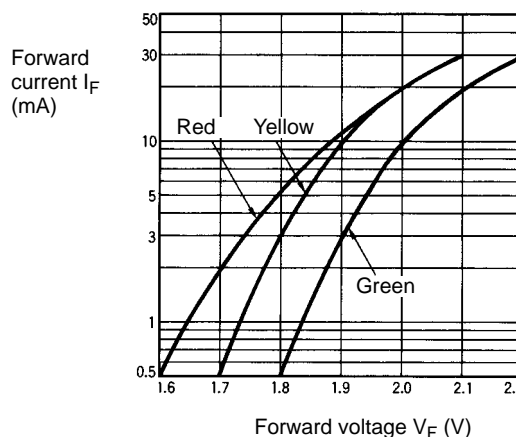
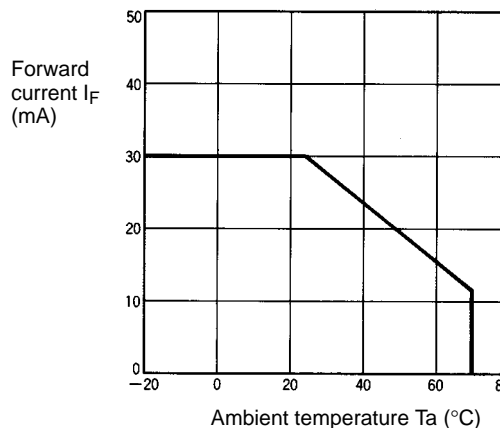
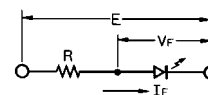
Make sure that no flux will rise on the mounting surface of the PCB.

The flux should not be removed or rinsed off after soldering. Doing so may cause flux or dust on PCBs to get inside the Switch, resulting in malfunction.

Indicators

- Connect a limiting resistor to the indicator. Since the Switch does not contain any limiting resistor, obtain a limiting resistance according to the following formula depending on the voltage to be used so as to satisfy indicator characteristics.

$$\text{Limiting resistance [R]} = \frac{\text{Voltage used [E]} - \text{Indicator forward voltage [V}_F\text{]}}{\text{Indicator forward current [I}_F\text{]}} \quad (\Omega)$$



ALL DIMENSIONS SHOWN ARE IN MILLIMETERS.
 To convert millimeters into inches, multiply by 0.03937. To convert grams into ounces, multiply by 0.03527.