

■ Application Notes

When using our Light Touch Switches, please observe the following items ("prohibited items") and be cautious of the following in order to prevent dangerous accidents and deterioration of performance.

1. Application Limits

The following shall be described for safety precaution:

[Limitation of Application]

- (a) This product has been designed and manufactured for general electronic devices, such as home electronics, office equipment, information devices and communication devices.
 - (1) This product is not intended for use in more sophisticated applications which require a higher safety standard and more reliability, including if a failure or malfunction may cause bodily injury or property damage.
 - (2) If the product is intended for more sophisticated applications prior approval must be obtained.
Such applications shall include, but are not limited to, the following: aircraft equipment, aerospace equipment, disaster prevention equipment, crime prevention equipment, medical equipment, transportation equipment (such as vehicles, trains, ships, etc.), and information processing equipment that are highly publicized, and other equivalent equipment.
- (b) Regardless of its applications, in an event that this product is used for equipment with high safety standards, protective circuits or back up circuits must be used and safety tests must be performed.

2. Notes on soldering conditions

- For reflow soldering

When performing reflow soldering using a hot-air oven or an infrared oven, please follow the recommended reflow soldering conditions in the product specification sheet for each product. Since the temperature applied to a switch and its terminals varies with the type and size of the PWB and the mounting density of the parts, sufficiently check the conditions in advance.

Please do not apply any coating material to the switch after reflow soldering.

Please do not touch them until the switch and PCB get back to their normal temperature after reflow soldering.

There is a possibility the flux from solder paste infiltrates into the body if plenty of solder paste was applied by switch on the P.W.B.

So we recommend to use our proposed land design and solder thickness in order to prevent above problem.

Also please avoid putting additional land by the switch on the P.W.B.

We selected our recommended solder paste whose flux doesn't intrude easily, based on our experience and evaluation result of the paste.

Please choose a solder paste wisely by paying attention to solderability and flux's osmosis/spread.

Be careful not to apply excess heat to switch to prevent deformation/characteristics deterioration/peel off at reworking on switch mounted PCB.

Please follow the rework conditions in the delivery specification.

- For dip soldering

When performing dip soldering, comply with the recommended dip soldering conditions in the product specification sheet for each product. Do not wash the switch after solder dipping because flux may enter the switch, resulting in contact failure. Avoid use of jumper cables near the switches because flux may attach to them.

If processing double-sided through-hole boards, because of the risk of switch cases melting, avoid designs with through-holes located just under the switch case.

- Notes on other soldering conditions

Please be cautious not to give excessive static load or shock to switches.

Please be careful not to pile up P.W.B. after switches were soldered.

Cleaning

- If flux or solder is scattered on the surface of P.W.B when soldering, characteristics of this product may be damaged.
- Cleaning after soldering is not allowed. When cleaning is required this switch should be soldered after the cleaning.

3. Notes on design of a set

For switch mounting hole, see PWB mounting hole reference diagrams shown in "Dimensions". For shapes of operating parts in a set, refer to recommended shapes described in "Product Specifications for Information". We recommend to use harder material such as resin for key top, and we do not recommend softer material such as rubber may affect operation feeling. However in case if you still would like to use softer material, please consult with us beforehand. Operation feeling may deteriorate in case operation angle for set knob and the amount of eccentricity are out of our recommended range. Please design set knob within the range of our recommendation for the angle and the amount.

When designing set assemblies ensure that neither overload nor impacts are applied to the push board of the switch during the assembly process.

4. Prohibited items and notes on storage conditions

Do not store the switches under high temperatures and/or high humidity, or in a location where corrosive gas may be generated. Store the switches at room temperature and room humidity in a packed condition. Use them within a maximum of 6 months after delivery. Check the date of manufacture on the package box and apply the "first-in-first-out" rule. When a package box is opened, for protection against the external atmosphere, temporarily store remaining inventory items in polyethylene bags or containers.

5. Other prohibited items and notes

Avoid pressing the film portion of the product with sharp-edged object. Avoid the use of the switch under pushed ON condition is continued for a long time.

IP67

Switch shall not be operated during test. Water or dust ingress shall be limited enough to prevent deleterious effect to the switch function. However, IP67 shall be guaranteed under single product state, then there is a possibility that IP67 performance become impaired depending on your mounting condition or usage. So, please ask us in advance, if the switch is applied to important usage for water and dust resistant.

6. Prohibited items on fire and smoking

- Absolutely avoid use of a switch beyond its rated range because doing so may cause a fire. If misuse or abnormal use may result in conditions in which the switch is used out of its rated range, take proper measures such as current interruption using a protective circuit.
- The grade of nonflammability for resin used in Light Touch Switches is "94HB", which is based on UL94 Standards (flammability test for plastic materials). Prohibit use in a location where a spreading fire may be generated or prepare against a spreading fire.

7. For use in equipment for which safety requested

Although care is taken to ensure switch quality, variation of contact resistance (increase), short circuits, open circuits, and temperature rise are some problems that might be generated. To design a set which places maximum emphasis on safety, review the affect of any single fault of a switch in advance and perform virtually fail-safe design to ensure maximum safety by:

1. preparing a protective circuit or a protective device to improve system safety, and
2. preparing a redundant circuit to improve system safety so that the single fault of a switch does not cause a dangerous situation.

For actual use, be sure to refer to "Product Specifications for Information".