

## Safety Precautions of 3V Lithium Coin Cells

Lithium Manganese Dioxide Coin Cell contains flammable materials, such as organics solvent. Improper battery handling may cause leakage, heating, explosion or ignition of the battery, which may lead to injury or product failure. Please read and observe the following precautions in designing and mounting thoroughly.

### Precaution in Designing

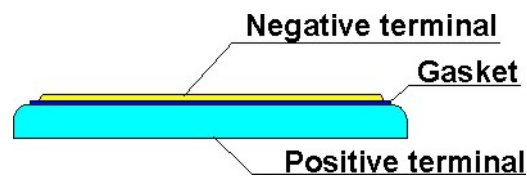
- Do not solder the battery directly. Excessive heating may cause deformation of the battery components such as the gasket, which may lead to the battery swelling, leakage, explosion or ignition.
- Observe the soldering condition for the tabbed battery to be specified by the manufacturer. Choose the tabbed battery if soldering is required. Excessive heating may cause deformation of the gasket, leakage or performance deterioration of the battery. Assure not to exceed the battery temperature higher than 60°C at soldering.
- Use nickel-plated iron or stainless steel for the terminals that contact the battery.
- Make sure that terminal contact pressure is 100g minimum for stable contact.
- Keep the battery contact terminal surfaces clean and free from moisture and foreign matter.
- Before inserting the battery, check the battery contact terminals to make sure they are normal, not bent or damaged. Bent terminals may not make good contact with the battery or may cause it to short-circuit.
- Do not over-discharge the battery lower than 0V. It may lead to reversed polarity and cause ignition, heating, leakage or explosion.
- Lithium Manganese Dioxide Battery that is almost exhausted still maintains high output voltage that is almost the same as that of a fresh battery. Avoid using a mixture of old and new batteries; replace all batteries in a set with new ones.
- Battery characteristics vary with type and grade, even when batteries are the same size and shape. When replacing batteries with new ones, be sure to carefully check the symbols and numbers on each battery.
- Please design equipment so that infants cannot easily remove batteries and swallow them.
- Consult the sales representative, when series or parallel connection of several batteries is required.

## Precautions for Mounting

Unlike other electronic components, Lithium Manganese Dioxide Battery(Coin-type) may be externally short-circuited before and after it is installed in circuit boards and without the power being turned on. This causes power drainage. As a result, the battery may lose its capacity before the equipment is even used. As short-circuits tend to occur in the following cases, please take care when handling the battery.

### 1. Overlapping Batteries

A Button lithium battery is shaped as shown below. It has exposed positive and negative metallic surfaces with a thin cylindrical seal, called the gasket, in between.

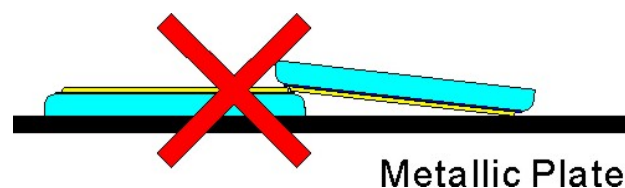


When batteries are overlapped or mixed together in a disorder way, their positive and negative terminals touch each other, causing short circuits.



### 2. Batteries put in a Metallic Container or on a Metallic Plate

Similar to the overlapping battery problem, when batteries are put in a metallic container or on a metallic plate, their positive and negative terminals may short circuit through the conductive surface depending on the placement



### 3. When a Battery is Held with Tweezers

When held with a pair of metallic tweezers as shown below, the battery short-circuits through the tweezers



### 4. When Battery Lead Plates Touch Each Other

When battery lead plates bend and touch each other or either terminal, the battery short-circuits.



### 5. Solder Bridges

Solder may bridge between board conductors, short-circuiting and draining battery.

### 6. Short-circuited though Soldering Iron

Similar to solder bridging, when the circuit board wiring is short-circuited by a soldering iron for an extended period, the battery is drained and consumed. Complete manual soldering within 5 seconds.

### 7. Shorts through Piled Circuit Board

When circuit boards with batteries are piled on top of one another, their conductive traces may touch, and form a battery discharge circuit that consumes the battery's power.

### 8. Discharge through Conductive Electrostatic Prevention Mats

Conductive mats are widely used to prevent static electricity from destroying semiconductors. If a circuit board with a battery mounted in put on a conductive mat, the soldered conductors may touch the mat, providing a discharge path for the battery.

### 9. Improper Battery Mounting Polarity

When the battery's positive (+) and negative (-) terminals are backward with respect to the battery mounting's polarity marks, the battery may be discharged, depending on the type of electric circuit.

### 10. Solder

When the battery's lead plates are dipped in a molten solder bath, the battery is temporarily short-circuited. Therefore, complete dipping within 5 seconds.