

CAUTION

1. Precautions

1.1 Handling Precautions

Please read and observe the following precautions thoroughly. Coin Manganese Dioxide Lithium Batteries contain flammable materials, such as lithium and organic solvent. Improper battery handling may cause leakage, overheating, explosion or ignition of batteries, which may lead to injury or product failure.



WARNING

- Keep batteries away from children. Swallowing a battery can cause chemical burn or penetration of the mucous membrane tissue, in the worst case, may result in death.
If infant happens to swallow a battery, seek medical attention immediately to take it out.
- Never charge batteries. Charging batteries may cause battery electrolyte to seethe or battery internal pressure to rise. Leakage, heating, explosion or ignition of batteries may result.
- Do not heat or dispose of batteries in fire. Do not modify nor disassemble batteries. This may damage gaskets, and may cause ignition, heating, leakage or explosion.
- Insert batteries (+) (-) correctly. Erroneous insertion of batteries may result in battery short-circuiting depending on types of devices. Leakage, heating, explosion or ignition of batteries may result.
- In case of eye contact with battery electrolyte, immediately flush eyes thoroughly with water, do not rub the eyes, and consult a doctor.
- In case battery electrolyte comes into contact with the mouth, gargle and rinse thoroughly and consult a doctor immediately.
- Do not connect (+) and (-) of batteries by wire. Do not carry nor store batteries with metallic necklace or hairpin. It may cause short-circuit and a large current flow into batteries, as a result, leakage, heating, explosion or ignition of batteries may result.
- Keep away from fire if batteries have leakage or odor to prevent ignition of battery electrolyte.
- Do not solder batteries directly. Excessive heating may cause deformation of battery components such as gaskets, which may lead to battery swelling, leakage, explosion or ignition.
- When batteries are stored or disposed of, isolate or cover positive (+) and negative (-) terminals. If batteries are mixed with other batteries or metals, short-circuit may be caused and leakage, heating, explosion or ignition of batteries may result.
- Do not mix the used batteries together with new batteries or different types of batteries. Leakage, heating, explosion or ignition of batteries may result due to different characteristics.
- Do not fix batteries on the skin by adhesive cellophane tape; it may cause damage on the skin.

CAUTION

- Do not drop, apply strong force to nor deform batteries. Leakage, heating, explosion or ignition may result.
- Do not store, use nor leave batteries at high-temperatures or high-humidity such as inside of cars in the sun. Avoid exposure to direct sunlight to prevent leakage, heating, explosion or ignition.
- Do not wet batteries with water. This may cause ignition of batteries.
- Depending on types of devices, batteries positive (+) and negative (–) terminals may contact with metallic part at entrance of battery compartments. Insert batteries into devices in the way not to cause short-circuit.
- Depending on types of devices, batteries may not be suitable for use on certain specification or performance. Use suitable batteries correctly on devices in accordance with devices' instruction manuals and handling precautions.
- Do not store nor use batteries in high temperature and high humidity location and where batteries are exposed to direct sunlight. Storage in high temperature and high humidity location may cause leakage, heating, explosion or ignition and in some cases, batteries' performance and life may be deteriorated.
- When abnormality such as heating or deformation is found on batteries during use or storage, stop using the batteries. This may cause leakage, heating and explosion.
- Dispose in accordance with applicable federal state and local regulations.
- Be sure to provide an appropriate fail-safe function on your product to prevent a second damage that may be caused by the abnormal function or the failure of our product.
- Please contact us before using our products for the applications listed below which require especially high reliability for the prevention of defects which might directly cause damage to human life or property.
 - ①Aircraft equipment
 - ②Aerospace equipment
 - ③Undersea equipment
 - ④Power plant control equipment
 - ⑤Medical equipment
 - ⑥Transportation equipment(vehicles, trains, ships, etc.)
 - ⑦Traffic signal equipment
 - ⑧Disaster prevention / crime prevention equipment
 - ⑨Data-processing equipment
 - ⑩Application of similar complexity and/or reliability requirements to the applications listed in the above.

1.2 Precautions in Designing

To use the batteries efficiently, observe the following precautions.

- Do not solder the batteries directly. Excessive heating may cause deformation of batteries and components such as the gaskets, which may lead to batteries swelling, leakage, explosion or ignition of batteries.

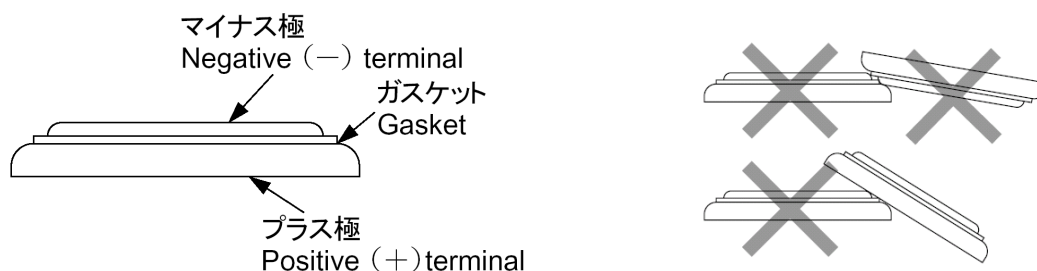
- Observe soldering conditions for tabbed batteries to be specified by manufacturers. Use tabbed batteries if soldering is required.
Excessive heating may cause deformation of gaskets, leakages or performance deterioration of batteries.
Make sure that the battery temperature does not exceed the operating temperature range while soldering (including residual heat).
- Use nickel-plated iron or stainless steel for the terminals that contact batteries.
- Make sure that terminal contact pressure is 100gf minimum for stable contact.
- Keep batteries and contact terminal surfaces clean and free from moisture and foreign matter.
- Before inserting batteries, check batteries contact terminals if they are normal, not bent or damaged. Bent terminals may not make good contact with batteries or may cause short-circuit.
- Do not over discharge batteries lower than 0V. It may lead to reversed polarity and cause ignition, heating, leakage or explosion.
- 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.

1.3 Precautions for Mounting

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

1. Overlapping Batteries

Coin Manganese Dioxide Lithium Batteries are shaped as shown below. They have exposed positive (+) and negative (−) metallic surfaces with a thin cylindrical seal, called the gasket, in between them. When the batteries are overlapped or mixed together in a disorderly way, their positive (+) and negative (−) terminals touch each other and may result in short-circuit.

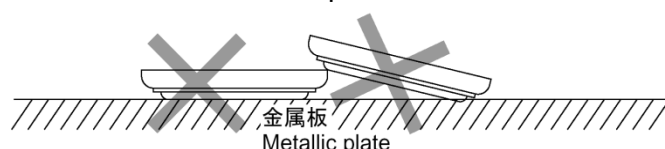


【Battery shape of Coin Manganese Dioxide Lithium Battery】

【Battery overlap】

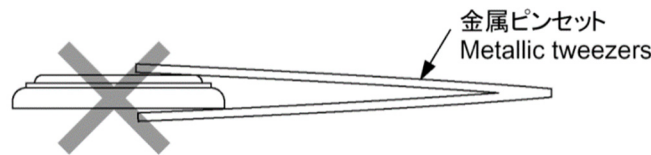
2. Batteries in Metallic Container or on Metallic Plate

Similar to the overlapping battery problem, when the 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 how the batteries are positioned.



3. When Held with Metallic Tweezers

When held with a pair of metallic tweezers as shown, batteries may short-circuit through the tweezers.



4. Short-circuits through Piled Circuit Boards

When circuit boards with the 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.

5. Discharge through Conductive Electrostatic Prevention Mats

Conductive mats are widely used to prevent static electricity from destroying semiconductors.

If a circuit board with mounted battery is put on a conductive mat, the soldered conductors may touch the mat, providing a discharge path for batteries.

6. Battery Handling by Naked Hand

If batteries are touched by naked hand, surface resistance may be increased due to sweat or sebum; contact performance may be deteriorated.

7. Improper Battery Mounting Polarity

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

8. Conductive Materials to prevent Static Electricity

Various protective materials are used to prevent static electricity. Most of these protective materials consist of particular combination of carbon, aluminum and other materials; it makes conductive performance effective. If both battery's positive (+) and negative (−) terminals touch these protective materials at the same time, batteries may discharge.

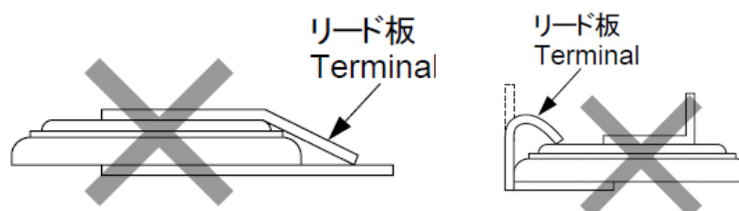
9. Electrical characteristics after short-circuit

Coin Manganese Dioxide Lithium Batteries may require considerable time to regain its normal voltage even after a slight short-circuit.

When batteries are short-circuited, wait an adequate time for batteries to recover before measuring electrical characteristics. Use a high impedance (1MΩ or higher) voltmeter to measure battery voltage.

10. When Batteries Lead Plates Touch Each Other

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



11. Solder Bridges

Solder may bridge between circuit board conductors, causing a short-circuit and draining batteries.

12. Short-circuits through Soldering Irons

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

Documents in the carton

リチウム電池を安全に取り扱うために

安全確保のための電池取扱い注意事項

リチウム電池にはリチウムや有機溶媒などの可燃性物質を内蔵しています。特に「運搬」や「保管上」取扱いを誤りますと、発火・破裂・発熱などにより、怪我をしたり、火災に至るおそれがあります。万が一の事故を防止するため、下記注意をお守りの上、お取り扱いください。

⚠ 危険

- 電池は乳幼児の手の届く所に置かないでください。

電池を飲み込むと、化学やけど、粘膜組織の貫通など、最悪の場合は死に至ることがあります。電池を飲み込んだ場合は直ちに取出す必要がありますので、必ず医師に連絡し、指示を受けて下さい。

⚠ 警告

- 電池をショートさせないでください。

⊕・⊖端子を金属で接続させたり、金属性のヘアピンやチェーンなどと一緒に保管・携帯はしないでください。

電池が相互に重なり、直接接触するような場合もショート状態になります。

電池は発熱し、破裂・発火する事があり、危険です。

- 電池を加熱しないでください。

リチウム電池を100℃以上に加熱したり、火中に投じますと破裂したり、激しく燃えることがあります、危険です。

- 電池に直接ハンダ付けをしないでください。

直接ハンダ付けをしますと、加熱によってガスケットやセパレータ等の樹脂材料が損傷し漏液したり、電池内部ショートによる発熱で、発火・破裂する事があります。また、ハンダ付け直後に異常が認められない場合にも、長期使用中に漏液等で搭載機能を損傷することがあります。

- 充電・分解・変形をしないでください。

電池内部のガス発生や漏液・破裂・発火の原因になります。

- 廃棄のとき電池をショートさせないでください。

廃棄のときは、⊕・⊖の端子が他の金属や電池で接触しないよう絶縁（テープなどを貼る）してください。

- 電池の⊕・⊖は正しく入れてください。

逆に入れると充電や、ショートなどで電池の漏液・破裂・発火の原因になります。

⚠ 注意

- ・新しい電池と使った電池、種類の異なる電池を混ぜて使用しないでください。
- ・直射日光・高温・高湿の場所を避けて保管してください。

※電池を機器に入れる前に、乾いた布で機器や電池の端子をきれいに拭いてください。端子が汚れていると、接触不良のため機器が正常に作動しないことがあります。

"Warning: Risk of fire and burns. Do not recharge, disassemble, heat above 100°C, 212°F, or incinerate. Keep battery out of reach of children and in original package until ready to use. Dispose of used batteries promptly. Never put batteries in mouth. Swallowing may lead to serious injury or death. If ingested, immediately seek medical attention and have the doctor phone local poison control center."