# Lithium-Manganese Dioxide Coin Cell

## Specification

## Type CR2477H

Compiled by: Date

Audit: Date

Approval: Date

Customer: _____ Date:_____

# 1.Purpose：

The BONREX Specification is formulated in order to t eliminate the dispute resulted from different measuring method and condition. This specification could become part of qualified Agreement.

# 2. Type:

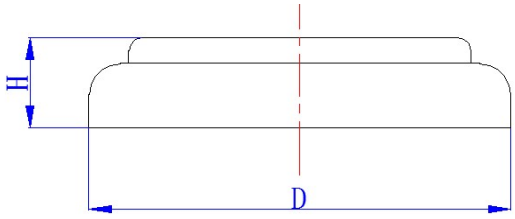
CR2477H

# 3. Basic Characteristics

[TABLE 1]

| NO | Item | Specified value |
| --- | --- | --- |
| 1 | Nominal Voltage | 3V |
| 2 | Nominal Capacity | 1000mAh |
| 3 | Max Continuous current | 3mA |
| 4 | Self -discharge rate Per year | ≤2% |
| 5 | Working temperature range | -40~85℃ |
| 6 | weight | Approx.9.5g |

# 4. Outer Dimensions




# 5. Requirement and measuring method.

[TABLE 2]

| NO | Item | requirement | Measuring method |
| --- | --- | --- | --- |
| 1 | Outer Dimensions | D: diameter ≤ 24.5mm<br>H: height ≤ 7.7mm | Measured by caliper with 0.01mm accuracy |
| 2 | Appearance | No leakage<br>No dirty<br>No deformation | Visual inspection. |
| 3 | Open circuit voltage | 3.22V~3.40V | at 23±3℃ measured by AVO meter with 5mv accuracy |
| 4 | Load voltage | ≥ 3.0V | at 23±3℃ measured by AVO meter with 5mv accuracy, Measure the time ≤ 2S at both ends of 7.5K Ω resistance battery in series with DC voltmeter |
| 5 | Internal resistance | ≤ 30 Ω | at 23±3℃ measured by IKHZ impedance meter |
| 6 | Nominal capacity | 1000mAh | at 23±30℃ and RH45% ~75%.The battery is discharged by 15KΩ to 2V |

| NO | Item | requirement | Measuring method |
| --- | --- | --- | --- |
| 7 | 3mA constant current discharge at room temperature | ≥ 500mAh | The battery is discharged by 3mA to 2.0V at 23±3℃ |
| 8 | High temperature storage | No leakage | After storage at 85 ℃ for four hours, keep it at room temperature for 24 hours without leakage. |

## 6. Capacity test

Rules for sampling and qualified criterion。

The normal capacity is tested with 8 samples. The average capacity should be above the specified value and there is no battery which the capacity is below the 90% of the specified value.

# 7. Safety and reliability:

[TABLE 3]

| *Experiment* | | *Requirement* | *test method* | *Remarks* |
| --- | --- | --- | --- | --- |
| Environmental experiment | High altitude simulation | NL、NC、NR、NE、NF | The tested battery shall be placed for at least 6 hours under the environment of pressure of 11.6Kpa and temperature of （ 23 ± 3 ）℃. | Quote UL1642 |
| | Temperature cycle | NL、NC、NR、NE、NF | Within 0.5h, the tested battery kept the temperature at 70 ± 3 ℃ for 4 hours. Reduce the temperature to 20 ± 3 ℃ within another 0.5h and keep at this temperature for 2hours.Thetemperature was then reduced to - 40 ± 3 ℃ within 0.5h and maintained at that temperature for 4 hours. Then the temperature was raised to 20 ± 3 ℃ within 0.5h.Repeat the above procedure for another 9 times. After the 10th time, the battery shall be stored at 20 ± 5 ℃ for at least 24 hours before inspection. | |
| Mechanical test | Vibration | NM、NL、NV、NC、NR、NE、NF | The tested cell experiences simple resonance with amplitude of 0.8mm (maximum displacement of 1.6mm).The frequency changes from 10Hz to 55Hz at the rate of 1Hz / min, and recovers after 90min to 100min.The battery was tested in three mutually perpendicular axes. | Quote UL1642 |
| | Shock | NM、NL、NV、NC、NR、NE、NF | The tested battery is fixed on the test machine. Each cell shall withstand three impacts of the same size, one on each of the three mutually perpendicular axes. Each impact is applied to a surface of the tested battery. During the impact, the acceleration mode of the battery is: in the initial 3 ms, the minimum average acceleration is 75 × 9.8 m / S2, and the maximum acceleration should be between 125 × 9.8 m / S2 and 175 × 9.8 m / S2. | |
| | Impact of heavy objects | NT, NE, NF | Place a 15.8mm diameter stick in the center of the battery.9.1 kg of weight falls on the sample from a height of 610 ± 25mm.The longitudinal axis of the battery is parallel to its surface and perpendicular to the longitudinal axis of the stick. Each battery was impacted only once. | Quote UN38.3 |

| | | | | |
|---|---|---|---|---|
| Electrical misuse test | External short circuit | NT, NR<br>NE, NF | After the battery reaches equilibrium in the environment of (55 ± 2) ℃, it experiences a short circuit with the total resistance of the external circuit less than 0.1 Ω at this temperature, and the short circuit continues until the battery shell temperature drops to (55 ± 2) ℃, and then continues for more than 1h.The battery needs to be observed for 6 hours before the test is over. | |
| | Forced discharge | NE, NF | At 23 ℃± 3 ℃, connect the discharged battery to the 12V. D.C. power supply, and adjust the resistance so that the initial discharge current is equal to the maximum discharge current 3mA specified by the manufacturer. The time of forced discharge is equal to the time of new electric discharge to 2.0V under this current. | |
| Explain:<br>Deformation: the deformation should be reported with reasons<br>Discharge: if electrolyte leaks out of the discharge port without opening it, it shall be judged as liquid leakage. | | | | |
| NM: no weight loss NL: no leakage NV: no discharge NC: no short circuit (the voltage after the test is not less than 90% before the test) NR: no rupture NE: no explosion NF: no fire NT: no overheating (the battery surface temperature is not more than 150 ℃) | | | | |

8.The company may change the specification. Please keep in touch with the company. We can negotiate and solve the specific indicators and acceptance methods according to the specific requirements of customers.

## 9. Cautions and storage

1) Cautions

—— Never heat the battery above 130℃ or throw it into the fire

—— Never swallow

—— Never Charge

—— Never disassemble or deform

—— Never reverse the terminals when inserting in equipment

—— Never short-circuit the battery

—— Never weld the battery with soldering iron.

—— Never use different type of battery together

—— Never touch liquid leaking from a battery

2） storage

—— Never let the batter contact with water. Never store the battery in hot and high humid place.

—— store the battery in original package at 0~30℃， RH45%~75%, place the batteries away from the sunlight.