Product Specification

Li-MnO_2 Battery Specification

Model Number: CR1130 3.0V 48 mAh

Prepared By	Verified By	Approved By

Revision	Description	Issued Date	Approved By
A0	New release	2011-12-02	

1. Scope

This document describes the performance characteristics and testing methods for Li-MnO2 battery produced by Everwin Tech Co., Limited

2. Battery type and ratings

2.1 Battery type	CR1130
2.2 Nominal voltage	3 V
2.3 Nominal capacity	48 mAh (on continuous discharged at 20±2℃ under 68 KΩ, load to 2.0V end-voltage)
2.4 Outer dimensions	outer dimensions shall be as shown in (Fig1.) dimension drawing
2.5 Weight	0.9 grams.(approx)
2.6 Terminals	positive can (Mark "+")、negative cap
2.7 Operating temperature range	-20℃ ～ + 85℃
2.8 Electrochemistry	Positive: MnO_2 Negative: Metal Lithium Electrolyte: Contain salt-lithium electrolyte
2.9 Environment Matter	All materials used for battery production are in keeping with RoHS requirements.

3. Battery performance

3.1 Appearance

Batteries shall have no deformation, dent, stain, leakage and camber or burr on their sealing members.

3.2 Dimensions

Dimensions of batteries when tested in accordance with Subparagraph 4.3(2) shall be as shown in Fig1.dimensions drawing.

3.3 Characteristics

(1) Open-circuit voltage

Open-circuit voltage of batteries when tested in accordance with Subparagraph 4.3(3) shall meet the requirement set forth in Table 1.

(2) Closed-circuit voltage

Closed-circuit voltage of batteries when test in accordance with Subparagraph 4.3(4) shall meet the requirements set forth in Table 1.

[Table 1]

Test Items	Temperature	Initial *	After 12 Months	Remarks
Open-Circui Voltage	20±2℃	3.0V To 3.4V	3.0V To 3.4V	
	0±2℃	3.0V To 3.4V	3.0V To 3.4V	
Closed-Circuit Voltage	20±2℃	3.0V To 3.4V	3.0V To 3.4V	Load Resistance 68kΩ,0.8Sec.
	0±2℃	3.0V To 3.4V	3.0V To 3.4V	

(Note) * "Initial " Means Performance Values Measured Within 30 days After Delivery.

(3) Service life

Service life of batteries when tested in accordance with Subparagraph 4.3(5) shall meet the requirements set forth in Table 2.

[Table 2]

Test Items	Temperature	Initial *	After 12 Months	Remarks
Service Life	20±2℃ 0±2℃	1400 Hrs. or Longer 1260 Hrs. or Longer	1330 Hrs. or Longer 1190 Hrs. or Longer	Continuous Discharge Under 68kΩ Load to 2.0V End-Voltage

(4) Service life at high temperature

Service life of batteries when tested in accordance with Subparagraph 4.3(6) shall meet the requirements set forth in Table 3.

[Table 3]

Test Item	Storage temperature	Requirement	Remarks
Service Life At High Temperature	85±2℃	770 Hrs Minimum	Continuous Discharge At 85±2℃ Under 68 kΩ Load To 2.0V End-Voltage.

(5) Leakage characteristics

Batteries when tested in accordance with Subparagraph 4.4(1) shall have no leakage.

[Table 4]

Test Item	Requirement	Test Conditions
Leakage Characteristics	No Leakage	Temperature: 45 ± 2℃ Relative Humidity: ≤75% Storage: 30 Days Shall Be Inspected By Visual Means

4. Testing

4.1 Testing Condition

(1) Temperature and Relative humidity

Unless otherwise specified elsewhere, tests shall be conducted at ordinary temperature (20±2℃) 、Relative humidity (45%-75%).

(2) Storage of test specimen batteries

Specimen batteries to be tested shall be kept at the ambient temperature of 23 ±5℃、the relative humidity of 45%-75%.

4.2 Measuring instruments and devices

(1) Measuring instruments

Outer micrometers or dial gauges specified not less than 0.01mm, and vernier calipers specified not less than 0.02mm or those having equal or better accuracy shall be used.

(2) DC voltmeters

The tolerance shall be not less than 0.25% and the input resistance rating shall be 10MΩ or more.

(3) Load resistance

Load resistance shall include resistance throughout external circuits, and its tolerance shall be ±0.5%.

4.3 Test methods

(1) Appearance

Appearance of batteries shall be inspected by visual means.

(2) Dimensions

Dimension shall be measured with instruments specified in Subparagraph 4.2(1) above, provided that either one or both sides of such instruments shall be insulated in measuring the overall height of the batteries.

(3) Open-circuit voltage

Test specimen batteries shall be kept for 4 hours or longer at the ambient temperature specified in Table 1, and then the voltage between both terminals shall be measured at the same ambient temperature with a voltmeter as specified in Subparagraph 4.2(2).

(4) Closed-circuit voltage

Test specimen batteries shall be kept for 4 hours or longer at the ambient temperature

specified in Table 1,and then the voltage between both terminals shall be measured with a voltmeter as specified in subparagraph 4.2(2) while the specified load resistance 4.2(3) is connected between both terminals at the same ambient temperature as specified above; provided that the measured value shall be based on meter reading taken 0.8 seconds after the circuit is closed.

(5) Service life

Test specimen batteries shall be kept for 8 hours or longer at the ambient temperature specified in Table 2.and shall then be continuously discharged at the same ambient temperature and through the specified load resistance. The discharge shall be continued until the terminal voltage of the test specimens falls below the discharge end-point voltage of 2.0V, and the time during which the terminal voltage has been maintained equal to and above the discharge end-point voltage shall be taken as the service life.

(6) Service life at high temperature

Test specimen batteries, stored at the temperature in Table 3, shall be kept for 12 hours or longer at ordinary temperature and at ordinary humidity (45~75%RH) and shall then be continuously discharged through the specified load resistance. The discharge shall be continued until the terminal voltage falls below the discharge end-point voltage of 2.0V, and the time during which the terminal voltage has been maintained equal to and above the discharge end-point voltage shall be taken as the service life.

4.4 Other tests

Tests specified below shall be conducted as required. Except as specified in this paragraph. Test methods be in accordance with the provisions of Paragraph 4.4.

(1) Electrolyte leakage test

Test specimen batteries shall be examined for electrolyte leakage while they are kept at ordinary temperature and at ordinary humidity after having been stored at the temperature, humidity and period specified in Table 4.

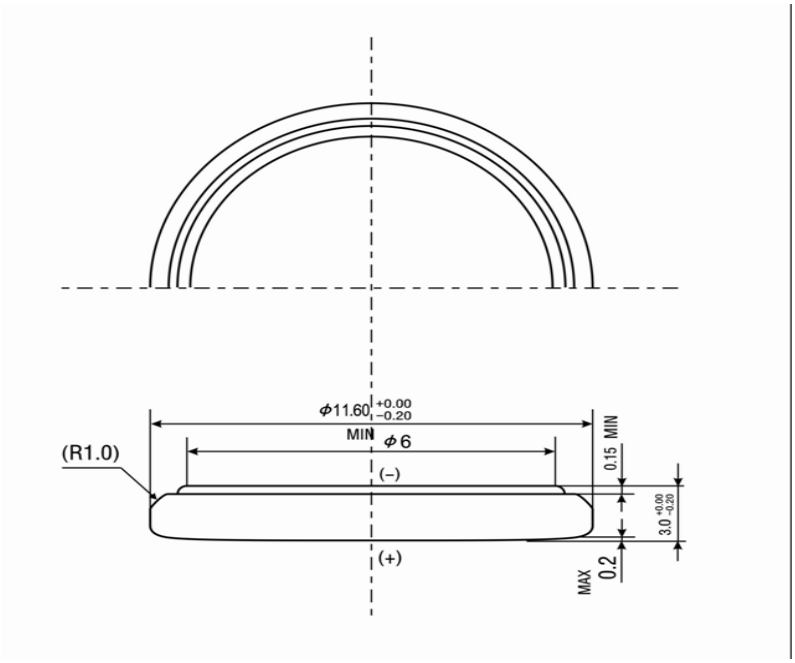

Fig1. Dimension drawing of CR1130 lithium battery

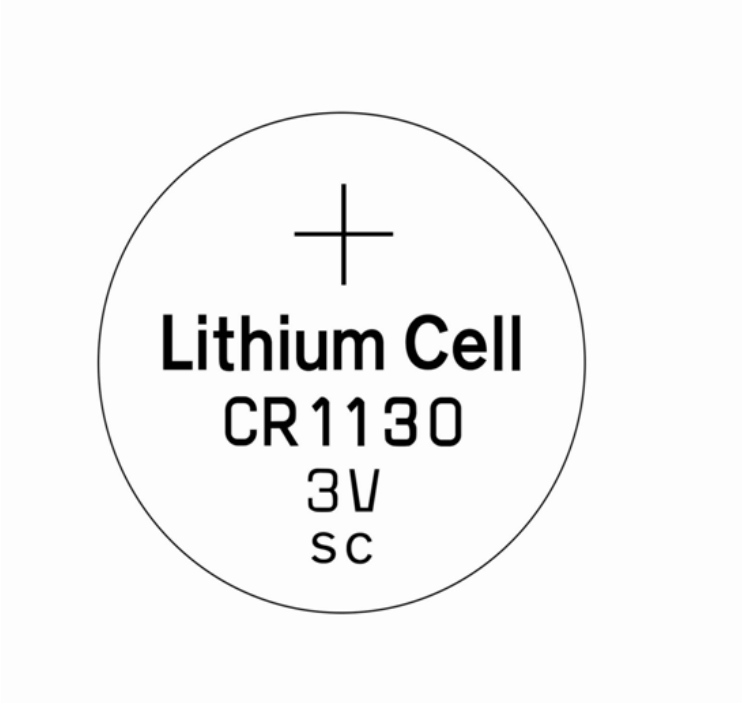

Fig2. Case Marking CR1130