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# TECHNICAL SPECIFICATION

# FOR

# MAXIMUM POWER CR2032 LITHIUM COIN BATTERY

CR2032-LITHIUM


**PROMULGATE DATE: May, 2021**

**SPEC. No.: TS-LiMn-2032**

## 1. Scope

This specification defines the technical requirements for 2032 lithium coin battery.

Cross Reference:

| Allmax | IEC | GB | JIS | ANSI | Common |
|---|---|---|---|---|---|
| CR2032 | CR2032 | CR2032 | CR2032 | 5004LC | 2032 |

## 2. Purpose

To assure that any Allmax Maximum Power CR2032 Lithium Coin Battery will meet and exceed our customers' expectation.

## 3. Normative Reference

IEC 60086-1: 2021 *Primary Batteries—Part 1: General*

IEC 60086-2: 2021 *Primary Batteries—Part 2: Physical and Electrical Specifications*

IEC 60086-4: 2019 *Primary Batteries—Part 4: Safety of Lithium batteries*

## 4. Fundamental Parameter

| **Item** | **Data** |
|---|---|
| Item No. | CR2032 |
| Chemical System | Lithium Manganese Dioxide (Organic electrolyte) |
| Primary Component | Lithium, Manganese dioxide, Graphite, Organic electrolyte |
| Nominal Voltage | 3.0 volt |
| Average Weight | 2.95g |
| Nominal Capacity | 240 mAh [a] |

| Item | | Data |
|---|---|---|
| Terminals | Materials of Positive Electrode | SUS430/SUS430+Ni-plated |
| | Negative Electrode | SUS430/SUS430+Ni-plated |
| Hazardous Material Content [b] | | Hg≤5 ppm, Cd≤20 ppm, Pb≤40 ppm |
| Packing | | 10 batteries/blister card [c] |

Note:

a) Discharge condition: 15k Ω 24h/d, end point voltage 2.0V at 20±2 ℃.

b) No Hg, Cd or Pb is added in the products during manufacture.

c) We can make various kinds of packages as per the customers' request.

## 5. Electrical Characteristics

| / | Off-load Voltage | Short Circuit Current | Acceptance Standard |
|---|---|---|---|
| Initial [a] | 3.20~3.45 V | ≥300mA | GB/T 2828.1-2012 commonly Ⅰ sampling AQL=0.4 |
| After 12 months | 3.20~3.45 V | ≥300mA | |

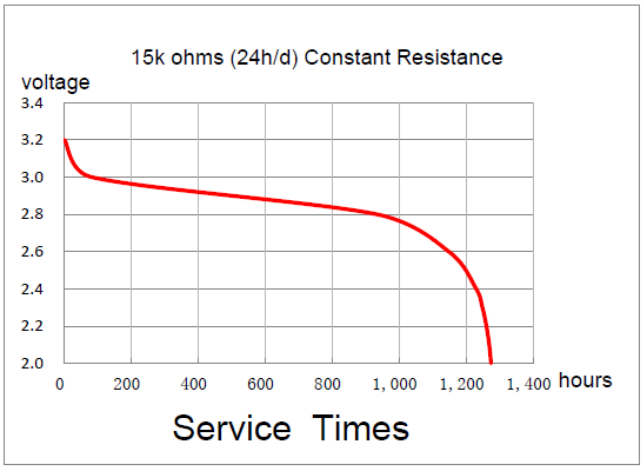
Note:

a) Initial means that within 30 days after manufacture date, at temperature 20±2 ℃, with relative humidity of (55±20)%.

Explanation:

Self-discharge：After 12 months Storage at temperature (20±2℃) and ordinary humidity (55±20%RH)，the self-discharge is below 2%.

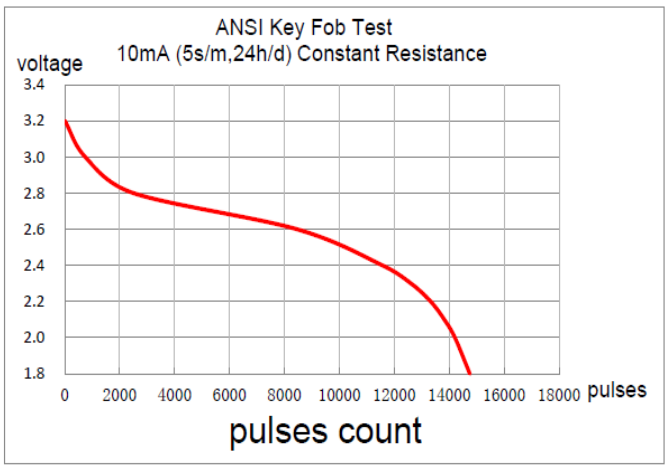
## 6. Service Time



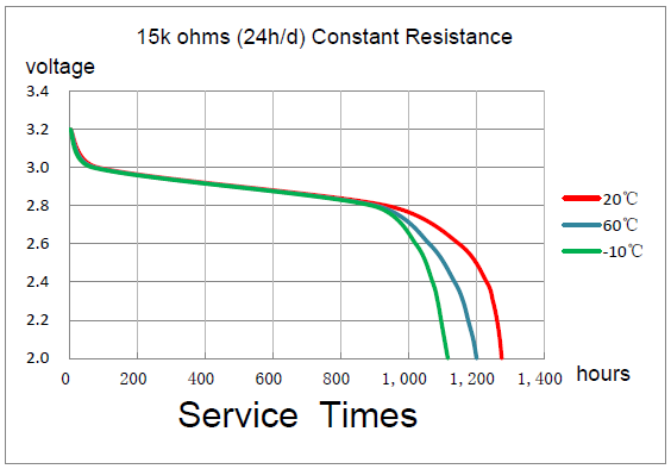

Application: Service Output Test


Application: Electronic Key Test


Application: Service Output Test




Application: Electronic Key Test




Application: Service Output Test At Different Temperature Conditions

Note:

Condition: temperature 20±2 ℃, relative humidity (55±20)%.

Explanation:

1) These are typical discharge curves for Allmax batteries.

2) 8 batteries were tested under each discharge condition.

## 7. Using Advice

The battery is applicable for car keys, electronic watches, glucometers, security devices, fitness devices, scales, electronic calculators, body thermometers and more.

## 8. Electrolyte Leak Proof Characteristics

| Item | Condition | End Period | Result | Acceptance Standard |
|---|---|---|---|---|
| Over-discharge | 15kΩ 24 h/d discharge at 20±2 ℃, (55±20)% RH | E.P.V=1.2V | There shall be no deformation exceeding the specified dimensions, nor leakage [a] recognized by human eye. | N=8 Ac=0 Re=1 |
| Leakage test under different conditions | At temperature 20±2 ℃, (55±20)% RH | 48 months | | Less than 50 ppm |
| | At temperature 45±2 ℃, (50±15)% RH | 30 days | | Less than 100 ppm |
| | At temperature 60±2 ℃, (90±5)% RH | 14 days | | N=40 Ac=1 Re=2 |

Note:

a) Leakage means unplanned escape of electrolyte, gas or other material from a battery.

## 9. Safety Characteristics [a]

| Item | Test Procedure | End Period | Result | Acceptance Standard |
|---|---|---|---|---|
| External short circuit | An undischarged battery is directly connected with its positive and negative polarity. | 6 hours | There shall be no excessive temperature rise no rupture no fire and no explosion b of battery. | N=5<br>Ac=0<br>Re=1 |
| Incorrect installation | One of four pieces of batteries connected in series has to be connected with its reversed polarity. | 24 hours | There shall be no explosion [b] and no fire of battery | N=20<br>Ac=0<br>Re=1 |
| Vibration | In the vibration frequency of 100-150 times/min vibration machine | 1 hour | There shall be no leakage, no venting, no short-circuit, no rupture, no explosion [b] and no fire of battery | N=5<br>Ac=0<br>Re=1 |

Note:

a) Condition: at temperature 20±2 ℃.

b) Explosion means an instantaneous release wherein solid matter from any part of the battery is propelled to a distance greater than 25 cm away from the battery.

## 10. Caution for Use

a) Improper use of batteries may result in explosion or leakage, causing personal injury and/or property damage.

b) Keep out of reach of children.

c) Do NOT charge or recharge the batteries.

d) Do NOT expose to heat or dispose of in fire.

e) Do NOT install backwards (+ and -), disassemble, or deform.

f) Do NOT short-circuit the batteries. When (+) and (-) terminals of the battery are connected, they become short-circuited.

g) Do NOT mix used and new batteries or batteries of different types or brands. Replace all batteries at the same time with the same brand and type.

h) Drained batteries should be removed and disposed of properly. Remove batteries from devices if they are not used for an extended period, unless it is for emergency equipment.

i) Store in a cool and dry location away from metal objects.

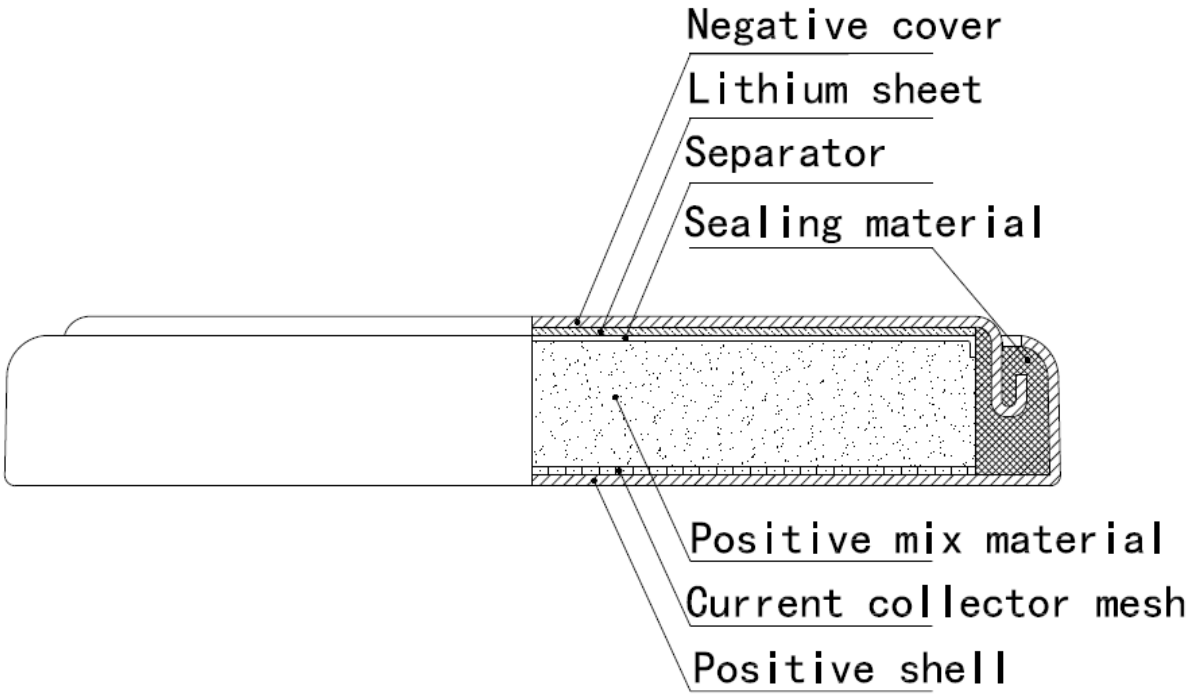
## 11. Shelf Life and Expiry Date Marking

Shelf Life: 10 years guaranteed under proper storage condition.

## 12. Battery Structure (Page 7)

## 13. Battery Dimension (Page 8)

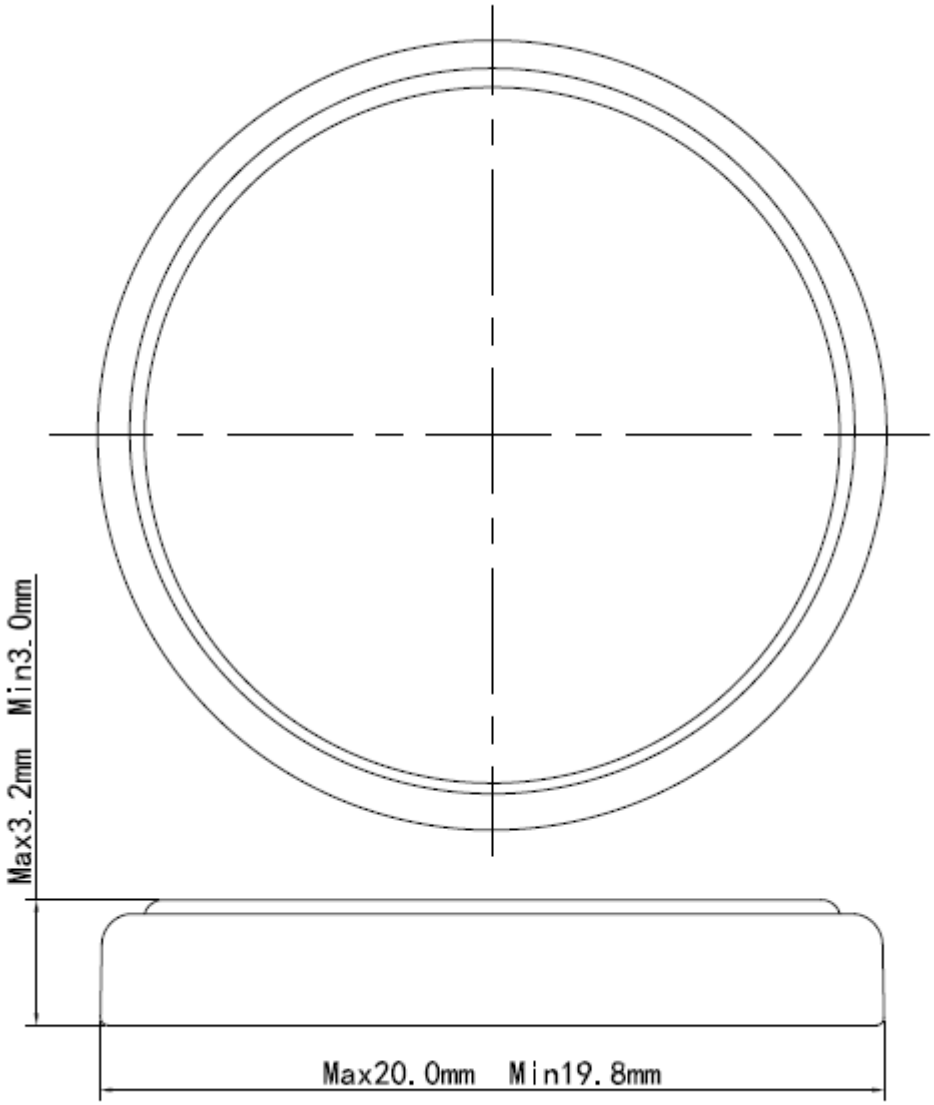
# Battery Structure




Battery Structure

2032

# Battery Dimension




Battery Dimension
2032