

SPECIFICATIONS FOR
LITHIUM BATTERY
CR1220 MAS CH O

APPROVED SIGNATURE :
YOUR NAME :
YOUR COMPANY NAME :
DATE :

In order to confirm your acceptance of this specification,
Please return one copy signed by an appropriate authority.

Notice ! Any order placed for the product's herein specified, after you have received this documents, will be taken as your acceptance of this specification.

Approved : 山本智史

Issued Date : 2022.11.11

maxell
Maxell Asia ,Ltd.



Table 1

1: Open Circuit Voltage	
Initial	3.0 to 3.4V
After 12 months storage	3.0 to 3.4 V
2: Service life	
Load resistance	62,000 ohms
Discharge method	24 hours/day
End voltage	2.0V
Minimum duration (Initial)	827 hours
Minimum duration (After 12 months storage)	802 hours
3:Electrolute leakage resistance	
No electrolyte leakage will take place during a term of the test of Item1 to Item 2 in table 1.	

Initial test: A test commencing within one month after delivery.

Stored test: A test conducted after 12 months storage under the specified conditions after delivery.



4. Battery Testing

4.1 Temperature and Humidity

4.1.1 Conditions of Measurement

The battery will be measured under the conditions of temperature of 20 ± 5 deg. C and relative humidity of $65\% \pm 15\%RH$ unless otherwise stated.

4.1.2 Conditions of Storage

The sample batteries for testing will be stocked under the conditions of temperature of less than 25 deg. C and relative humidity of less than 75%RH. The test will be carried out within 1 month after storage unless otherwise stated.

4.2 Instruments and Devices for Measurement

4.2.1 The DC voltmeter will be used to carry out voltage measurement that can measure from 0V to 4V. The accuracy of the voltmeter will be $\pm 1mV$ or it will be more accurate. The input impedance will be more than 10M ohm.

4.2.2 All the resistance of the external circuit load resistance will be comprised and the tolerance will be within 0.5%.

4.2.3 The caliper will be used to conduct dimension measurement and the range for measurement is from 0mm to 150mm. The accuracy is 5/100mm or more.

4.3 Testing systems

4.3.1 Dimensions

The caliper is used as the instrument for measurement.

4.3.2 Appearance

The visual inspection is applied.

4.3.3 Open circuit voltage

The DC voltmeter is used to measure the voltage between both terminals

4.3.4 Service Life

The battery samples are kept under the condition of temperature of 20 ± 5 deg. C for over 12 hours. The battery samples will be discharged persistently through the discharge load mentioned in Table 1. The discharge test will be conducted till the discharge voltage falls down to not less than the final voltage specified in Table 1. The discharge time is the service life while



the discharge voltage remains above the final voltage as stated.

4.3.5 Resistance of electrolyte leakage

The visual inspection is used for checking the state of the leakage. The battery will be put 30cm away under 40 watt fluorescent lamp at one meter above.

5: Limited warranty

This product, if defective in materials or workmanship, will be replaced free of charge, when returned to Maxell.

Replacement is the sole obligation under this warranty. This warranty expressly excludes incidental and consequential damages caused by use of, or inability to use, this product.

When customer does any work on the battery except instructions in this specifications, for example wire is soldered to the tab or battery surface directly, Maxell can not warrant any battery performance including safety and the customer shall undertake the responsibility of all damage caused by this battery.

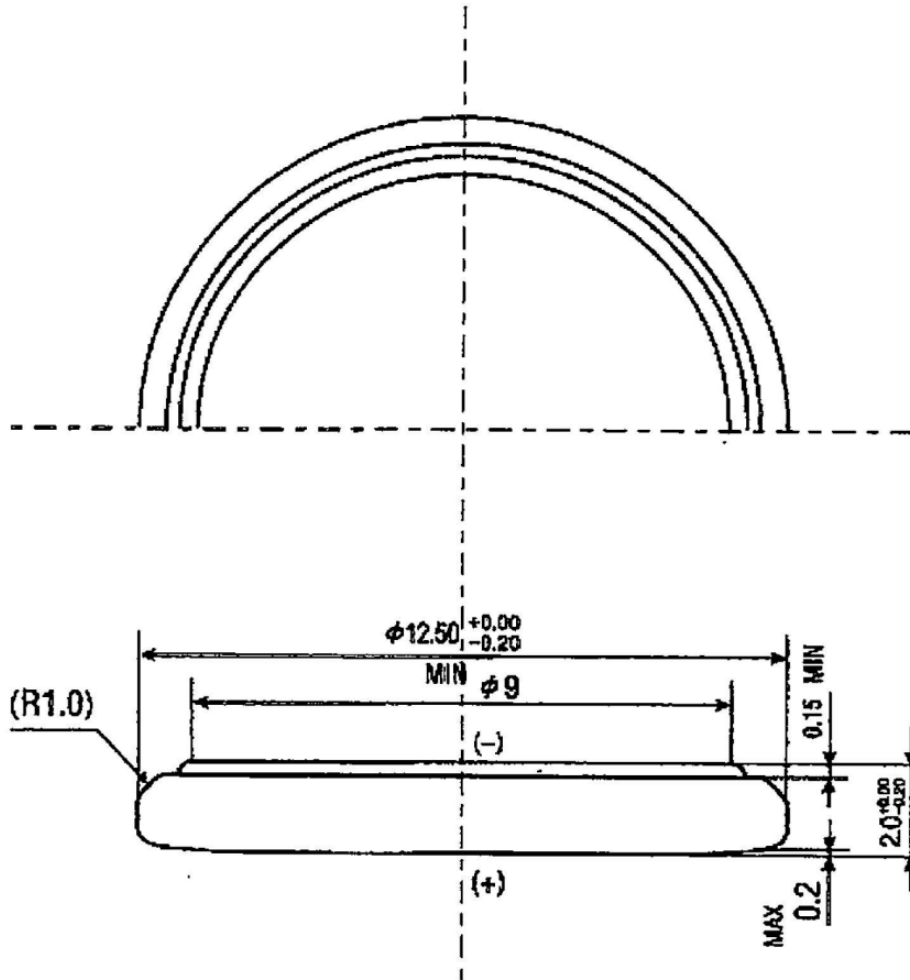
6: Others

This battery is free of six chemical substance subject to the RoHS directive.
six chemical substances:

lead, mercury, cadmium, hexavalent chromium, bromic, fire retardants (polybrominated biphenyl (PBB)), polybrominated diphenyl (PBDE))



Dimension of Battery CR1220



Unit : mm
SCALE : Free

20221107 MSH2023001



DRAWING SHEET OF OUTER DESIGN



SCALE : Free

TYPE CR1220	maxell	Maxell Asia Products CR1220 MAS CH O
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Safety and better use Instructions

This battery contains lithium, organic solvents, and other combustible materials. For this reason, improper handling of the battery could lead to distortion, leakage*, overheating, explosion, or fire, causing bodily injury or equipment trouble. Please observe the following instructions to prevent accidents.

(* Leakage is defined as the unintentional escape of a liquid from a battery.)



Handling

- **Never swallow.**

Always keep the battery out of the reach of infants and young children to prevent it from being swallowed. If swallowed, consult a physician immediately.

- **Never charge.**

The battery is not designed to be charged by any other electrical source. Charging could generate gas and internal short-circuiting, leading to distortion, leakage, overheating, explosion, or fire.

- **Never heat.**

Heating the battery to more than 100 deg.C* could increase the internal pressure, causing distortion, leakage, overheating, explosion, or fire. (* Consult Maxell regarding heat resistant coin type lithium manganese dioxide batteries.)

- **Never expose to open flames.**

Exposing to flames could cause the lithium metal to melt, causing the battery to catch on fire and explode .

- **Never disassemble the battery.**

Do not disassemble the battery, because the separator or gasket could be damaged, leading to distortion, leakage, overheating, explosion or fire.

- **Never reverse the positive and negative terminals when mounting.**

Improper mounting of the battery could lead to short-circuiting, charging or forced-discharging. This could cause distortion, leakage, overheating, explosion, or fire.

- **Never short-circuit the battery.**

Do not allow the positive and negative terminals to short-circuit. Never carry or store the battery with metal objects such as a necklace or a hairpin. Do not take multiple batteries out of the package and pile or mix them when storing. Otherwise, this could lead to distortion, leakage, overheating, explosion, or fire.

- **Never weld the terminals or weld a wire to the body of the battery directly.**

The heat of welding or soldering could cause the lithium to melt, or cause damage to the insulating material in the battery. This could cause distortion, leakage, overheating, explosion, or fire. When soldering the battery directly to equipment, solder only the tabs or leads. Even then, the temperature of the soldering iron must be below 350 deg. C and the soldering time less than 5 seconds. Do not use soldering bath, because the circuit board with battery attached could stop moving or the battery could drop into the bath. Moreover do not use excessive solder, because the solder could flow to unwanted portions of the board, leading to a short-circuit or charging of the battery.

- **Never use different batteries together.**

Using different batteries together, i.e. different type or used and new or different manufacturer could cause distortion, leakage, overheating, explosion, or fire because of the differences in battery property. If using two or more batteries connected in series or in parallel even same batteries, please consult with Maxell before using.

- **Never allow liquid leaking from the battery to get in your eyes or mouth.**

Because this liquid could cause serious damage, if it does come in contact with your eyes, flush them immediately with plenty of water and consult a physician. Likewise, if the liquid gets in your mouth, rinse immediately with plenty of water and consult physician.

- **Keep leaking batteries away from fire.**

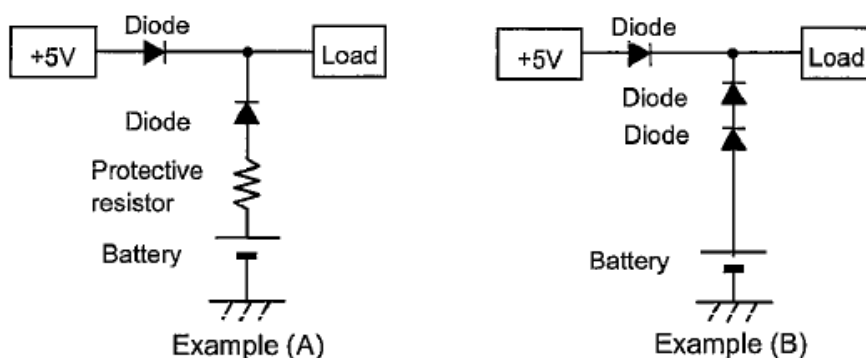
If leakage is suspected or you detect a strong odor, keep the battery away from fire, because the leaked liquid could catch on fire.

- **Never touch the battery electrodes.**

Do not allow the battery electrodes to come in contact with your skin or fingers. Otherwise, the moisture from your skin could cause a discharge of the battery, which could produce certain chemical substances causing you to receive a chemical burns..

**WARNING****Circuit Design for Back-up Use**

This is a primary battery and cannot be charged. If used in memory or RTC back-up applications, be sure to use diodes to prevent charging from the main power source or other batteries, and a protective resistor to regulate the current as shown in the figure below. Note that the points described below should be taken into careful consideration when selecting diodes and protective resistors.



- **Supplied voltage to load**

Because a diode and a resistor generate the voltage drop on operating, please take into consideration these voltage drops for supplied voltage to load.

- **Using diodes to prevent charging**

Please choose diodes with leak current as small as possible. Please keep the charged capacity due to leak current to within 1% of nominal capacity.

- **Using and setting protective resistors**

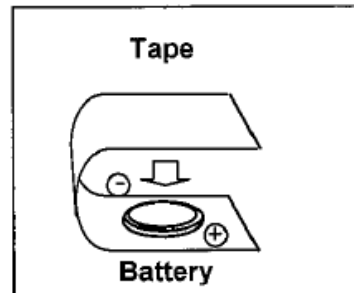
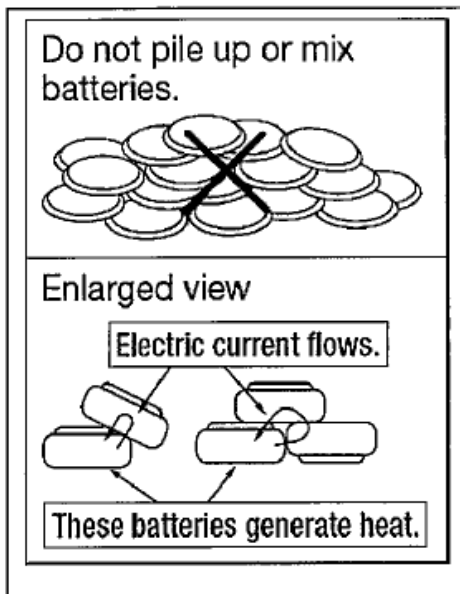
A protective resistor is used to prevent the battery from being charged by large surges of current during diode failure. Please set the resistor so that the maximum current shown in the right table is not exceeded. For example, say a CR2032 battery is used in sample circuit (A) in combination with a main power source 5 volt. Since the permitted charge current is 10mA and this battery's voltage is 3V, let the resistor be $R \geq (5V-3V)/10mA=0.2k \text{ ohm}$, meaning that at least 0.2k ohm is required.

Type	Maximum Current
CR2450HR	15mA
CR2450HR-Ex	15mA
CR2050HR	10mA
CR2032HR	10mA
CR2032H	10mA
CR2032	10mA
CR2025	10mA
CR2016	10mA
CR1632	4.0mA
CR1620	4.0mA
CR1616	2.5mA
CR1220	3.0mA
CR1216	2.5mA

Note: If the diodes broke down, it is necessary for safety to replace them as soon as possible even though using a protective resistor. Considering the trouble of diodes and resistors, other safety measures should be incorporated in the circuit design.

WARNING Disposal

The battery may be regulated by national or local regulation. Please follow the instructions of proper regulation. As electric capacity is left in a discharged battery and it comes into contact with other metals, it could lead to distortion, leakage, overheating, or explosion, so make sure to cover the (+) and (-) terminals with friction tape or some other insulator before disposal.



Example of battery insulation

CAUTION Handling/Storage

- **Never expose the battery to ultrasonic sound.**

Exposing the battery to ultrasonic sound may cause short-circuiting because the inside material is broken into pieces, leading to distortion, leakage, overheating, explosion, or fire.

- **Never subject the battery to severe shock.**

Dropping, throwing or stomping on the battery may cause distortion, leakage, overheating, explosion, or fire.

- **Never short-circuit the battery while installing into equipment.**

Please be careful when installing the battery not to short-circuit it with metal portions of the equipment.

● **Use the correct battery suitable for the equipment.**

The battery may not be suitable for the specific equipment due to the using conditions or type of equipment. Please select the suitable battery according to the handling instructions of the equipment.

● **Never use or leave the battery in a hot place such as under the direct rays of the sun or in a car in hot weather.**

If you do, this may cause distortion, leakage, overheating, explosion, or fire .

● **Never allow the battery to come in contact with water.**

If it does, this may cause the battery to rust or lead to distortion, leakage, overheating, explosion, or fire.

● **Never store the battery in hot and highly humid environment.**

Doing so may cause the performance of the battery to deteriorate. In certain environments, this may lead to distortion, leakage, overheating, explosion or fire.

● **Keep contact force more than 2N.**

The battery voltage may be lower than intended value because of poor contact condition, please keep contact force more than 2N for suitable contact resistance.

SPECIFICATION FOR INSPECTIONS

It is guaranteed that this specifications will be fulfilled by our products. Maxell shall identify the cause of the problem and proceed to take remedial actions if the products do not fulfill this specification of inspections.

1. Quality Standard

In accordance with the product specification

2. Unit of Inspections

Once cell shall be one unit of inspection

3. Definition of Lot

In principle, a group of products, which are manufactured by the same production systems, and are with same lot code marking.

4. Test Method

In accordance with the product specification

5. Sampling Plan

In accordance with the table as below

And this is applied only to the initial test.

No.	Inspection Item	Inspection Level	Sampling Plan	Acceptable Quality Level	
2	Dimension	n=9	Single	C=0	
3	Open Circuit Voltage	n=20	Single	C=0	
4	Service Output	n=9	Single	AQL=0.65	
5	Appearance	Major Defect	n=20	Single	AQL=1.5
		Others	n=20	Single	AQL=0.65

Major Defect: Defect that functionally influences on characteristics of the products.

Others: Defect that is not categorized in Major Defect.

Sampling inspection based on operating characteristics by attributes.

