



Lithium Manganese Dioxide Battery

CR2450

Typed : _____ Date : _____

Checked : _____ Date : _____

Approved: _____ Date : _____

1. Scope

These specifications are applicable to the manganese dioxide lithium batteries supplied by SONIKCELL Co., Ltd.

2. Applicable Battery Type

Manganese dioxide Lithium Battery

3. Battery Type and Performance

3.1 Type

CR2450

3.2 Nominal voltage

3.0 volts

3.3 Nominal discharge capacity

580mAh (Load: 7.5K ohms, End voltage 2.0V)

3.4 Outside dimensions

As per drawing attached

3.5 Standard weight

6.20g

3.6 Appearance

Will be free from flaw, stain, deformation, uneven tone, electrolyte leakage and other defects which impair the value of the commodity.

3.7 Brand

The brand name of "lithium cell" is used.

3.8 Symbol of manufactured month

Manufactured month and year will be and year shown on the surface of the battery.

Example:

21 (Manufactured in Jan, 2012)

22 (Manufactured in Feb, 2012)

20 (Manufactured in Oct, 2012)

2Y (Manufactured in Nov, 2012)

2Z (Manufactured in Dec, 2012)

shown on the surface of the battery.



4. Main reference

Item		Unit	Figures	Condition
Nominal Voltage		V	3.0	Only appropriated for CR Battery
Nominal Volume		mAh	580	7.5kΩ continuously discharge load
Instantaneous short-cut circuit		mA	≥350	time≤0.5'
Open circuit Voltage		V	3.20-3.45	All CR Battery series
Storage temperature		°C	0-30	All CR Battery series
Appropriated temperature		°C	-20-60	All CR Battery series
Standard weight		g	Appro6.20	Only appropriated for this item
Discharge of life		%/yr	2	Only appropriated for this item
Quick Test Use of life	Initial	h	≥580	Discharge load 3kΩ, Temperature 20±2°C, under the condition of related humidity≤75%
	After 12 months	h	≥568.4	

5. Specification of product and Test method

Exception for specified explanation, all tests should process under below conditions:

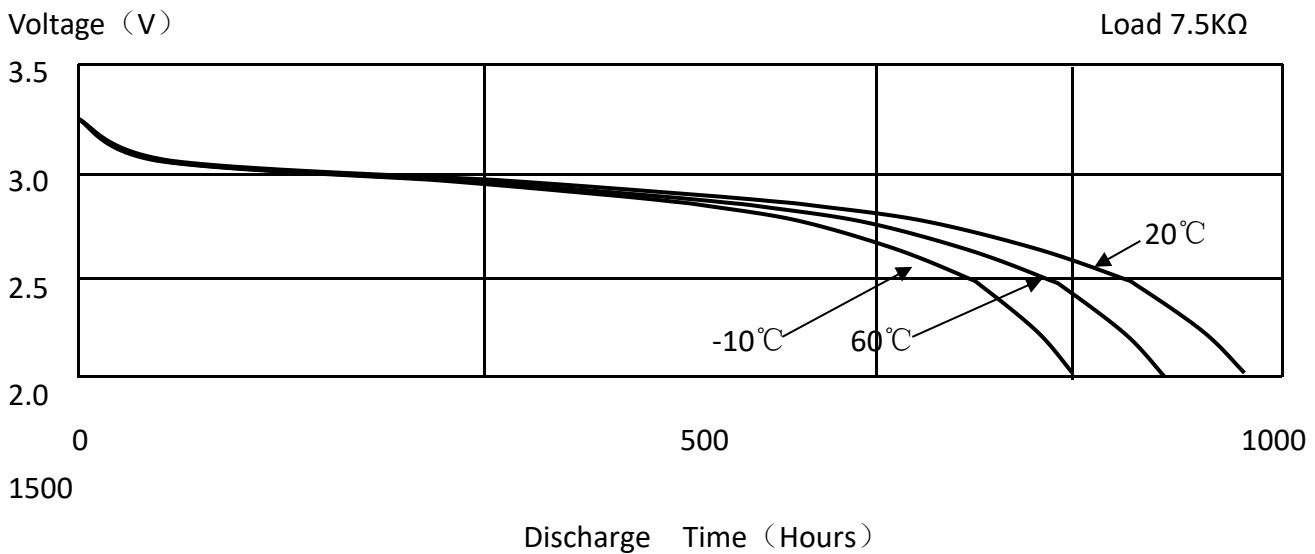
- (1) Environment Temperature : Temperature $20\pm 2^{\circ}\text{C}$ (2) related humidity: under $55\pm 20\%$

Test items	Test Methods	Standard
1. Dimension	Use of caliper under precision is 0.02mm or more precise, to avoid short-circuit, insulated materials should be put on the vernier caliper during test.	diameter (mm): 24.50 (-0.20) height (mm): 5.00 (-0.20)
2. Open circuit voltage	Precision is 0.25% or more precise, resistance of internal circuit is bigger than 1 MΩ DDM。	3.20-3.45
3. Instantaneous short-circuit	Using pointer multimeter for test, the time is not more than 0.5' , avoid duplicated test, the time for next test should be after half an hours.	$\geq 350\text{mA}$
4. Appearance	Visual test	Will be free from flaw, stain, deformation, uneven tone, electrolyte leakage and other defects. Installed to utensils, both terminal of battery should be under good connections.
5. Quick Discharged Volume	Standard Temperature $20\pm 2^{\circ}\text{C}$, related humidity $\leq 75\%$, discharge load 3kΩ, terminated voltage be 2.0V	$\geq 580\text{hours}$
6. Vibrate test	Vibrate frequency 100-150 times per min under continuously vibration for 1 hour	Stability
7. High temperature-resistant of weeping performance	Storage 30 days Under 45 ± 2 conditions	leakage $\% \leq 0.0001$
8. Circuit load of weeping performance	When terminated voltage is 2.0V, continuously discharge load for 5hrs	No leakage

6. Service life

Load resistance	7,500 ohms
Discharge method	24 hours/day
End voltage	2.0V
Minimum duration (Initial)	1 4 5 0 hours
Minimum duration (After 12 months storage)	1 4 2 1 hours

7. Discharge characteristics on load



8. Battery Testing

8.1 Temperature and Humidity

8.1.1 Conditions of Measurement

The battery will be measured under the conditions of temperature of 20+/-5 deg. C and

relative humidity of 65+/-15% unless otherwise stated.

8.1.2 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%.

The test will be carried out within 1 month after storage unless otherwise stated.

8.2 Instruments and Devices for Measurement

8.2.1 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 +/-1mV or it will be more accurate. The input impedance will be more than 10M ohm.

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

8.2.3 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.

8.3 Testing systems

8.3.1 Dimensions

The caliper is used as the instrument for measurement.

8.3.2 Appearance

The visual inspection is applied.

8.3.3 Open circuit voltage

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

8.3.4 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.

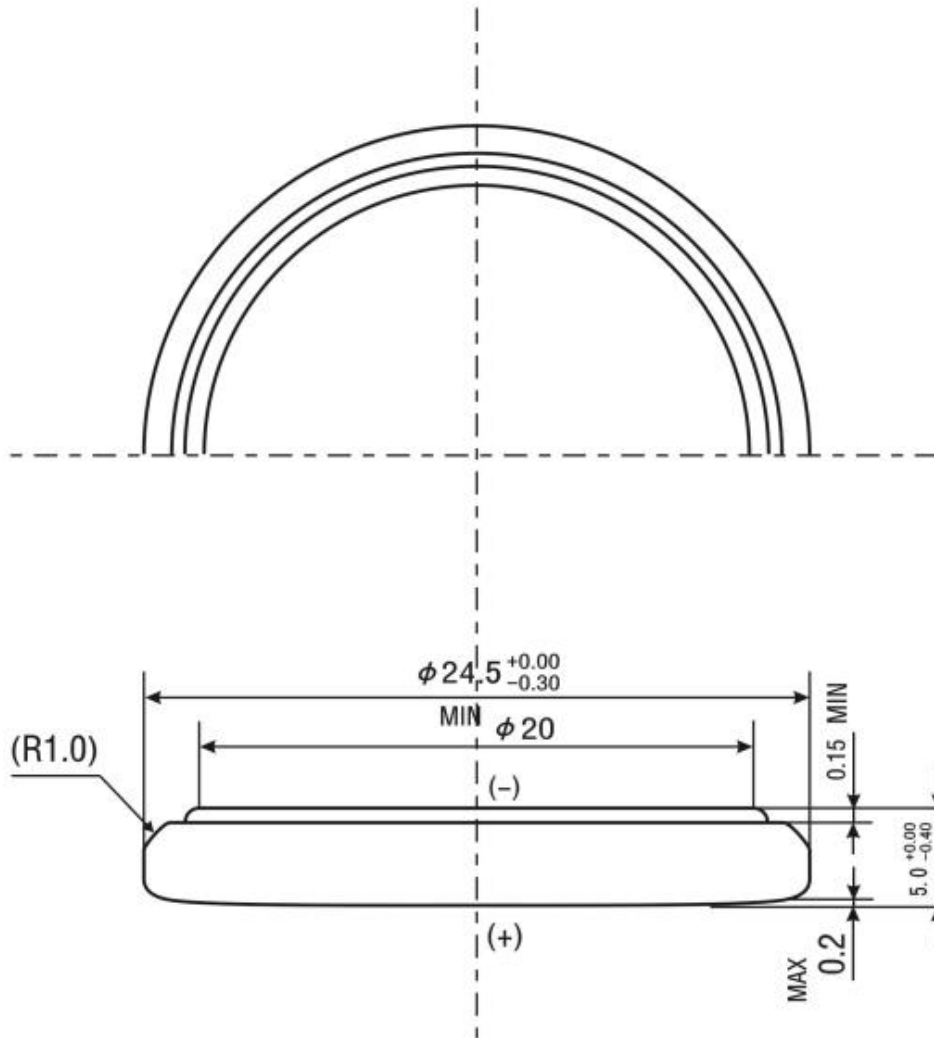
8.3.5 Resistance of electrolyte leakage

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.

9. Others

Subject the RoHS directive, this battery does not contain the following chemical substance:
lead, mercury, cadmium, hexavalent chromium, boric,
fire retardants (polybrominated biphenyl (PBB), polybrominated diphenyl (PBDE))



Unit: mm

			PROJECTION	SCALE	TITLE
				5/1	CR2450
Dwn. BY	HuShaoXiang	2012. 2. 28			WORKS DWG. NO. CCY31.2450.01-A
CHK. BY	TangQingFeng	2012. 2. 29			
APP. BY	XieYuXin	2012. 2. 29			



			PROJECTION	SCALE	TITLE
				5/1	CR2450
Dwn. BY	HuShaoXiang	2012. 2. 28			WORKS DWG. NO. CCY31.2450.01-B
CHK. BY	TangQingFeng	2012. 2. 29			
APP. BY	XieYuXin	2012. 2. 29			

Instructions for Usage and Safety

The battery consists of lithium, organic, solvent, and other combustible materials. Proper handling of the battery is of utmost importance; otherwise, the battery could lead to distortion, leakage (accidental seepage of liquid), overheating, explosion, or fire and cause bodily injury or damage to equipment. Please strictly comply with the following instructions to avoid the occurrence of accident.

WARNING for Handling

- **Do Not Ingest**
The battery should be properly stored and kept away from children in order to avoid them putting it into their mouths and ingesting it. However, if it happens, you should immediately take them to the hospital.

- **Do Not Recharge**
The battery is not a rechargeable battery. You should never charge it as it could generate gas and internal short-circuiting, leading to distortion, leakage, overheating, explosion, or fire.

- **Do Not Make Hot**
If the battery is being heated to more than 100 degrees centigrade, it would increase the internal pressure resulting in distortion, leakage, overheating, explosion, or fire.

- **Do Not Burn**
If the battery is burnt or put to flame, the lithium metal will melt and cause explosion or fire.

- **Do Not Dismantle**
The battery should not be dismantled as it will cause damage to the separator or gasket resulting in distortion, leakage, overheating, explosion, or fire.

- **Do Not Make Improper Setting**
The improper setting of the battery could lead to short-circuiting, charging or forced-discharging and distortion, leakage, overheating, explosion, or fire could be occasioned as a result. When setting, the positive and negative terminals should not be reversed.

- **Do Not Short-circuit The Battery**
The short-circuit should be avoided for positive and negative terminals. Do not carry or keep the battery with metal goods; otherwise, the battery could occasion distortion, leakage, overheating, explosion, or fire.

- **Do Not Directly Weld The Terminal or Wire to The Body of The Battery**

The welding will cause heat and occasion lithium melted or insulating material damaged in the battery. As a result, the distorting, leakage, overheating, explosion, or fire would be caused. The battery should not be soldered directly to equipment which it must be done only on tabs or leads. The temperature of soldering iron must not be over 50 degree C and the soldering time must not be more than 5 seconds; it is important to keep the temperature low and the time short. The soldering bath should not be used as the board with battery could stop on the bath or the battery could drop into the bath. It should avoid taking excessive solder because it could go to unintended portion on the board resulting short or charge of the battery.

- **Do Not Use Different Batteries Together**

It must be avoided for using different batteries collectively because batteries of different types or used and new or different manufacturers could occasion distortion, leakage, overheating, explosion, or fire. Please obtain advice from SONIKCELL Co., Ltd. if it is necessary for using two or more batteries connected in series or in parallel.

- **Do Not Touch The Liquid Leaked Out of Battery**

In case the liquid leaked and get into the mouth, you should immediately rinse your mouth. In case the liquid gets into your eyes, you should immediately flush eyes with water. In any event, you should go to the hospital and have proper treatment from a medical practitioner.

- **Do Not Bring Fire Close to Battery Liquid**

If the leakage or strange smell is found, immediately put the battery away from fire as the leaked liquid is combustible.

- **Do Not Keep in Touch with Battery**

Try to avoid keeping the battery in touch with the skin as it will get hurt.

WARNING for Disposal

There are different regulations in different countries or regions and please comply with those regulations. In general, the insulating tape or friction tape should be used to cover the (+) and (-) terminals before disposal. It is because the discarded battery still has electric capacity and when it is in touch with other metals or materials, it could occasion distortion, leakage, overheating, or explosion.

WARNING for Circuit Design for Back-up Use

The battery is not rechargeable. It is important that the diodes are applied for prevention of charging from the main power or other batteries when the battery is used for the device having memory or RTC back-up applications. In addition, the application of protective resistance is necessary as it can regulate the current as shown in the figure below. The following points have to be paid attention when choosing diodes and protective resistance.

- **Supplied voltage to load**

Due to the application of a diode and a resistance, the voltage generated will drop during operation,

you are reminded to pay attention to these drops of voltage for supplied voltage to load.

- Prevent charging by applying diodes

It is recommended to use the least leak current diodes. The charged capacity owing to leak current should be maintained within 1% of nominal capacity.

- Using and setting protective resistance

In order to refrain from changing the battery by large surges of current when the diode is failed, the protective resistance should be applied. It is recommended to adjust the protective resistance to make the maximum current not over the figures as stated in the table.

CAUTION (Handling / Storage)

- Do Not place the battery in ultrasonic

The short-circuit may be caused if the battery is placed in ultrasonic as the materials inside may be powdered occasioning distortion, leakage, overheating, explosion, or fire.

- Do Not roughly handle the battery

Distortion, leakage, overheating, explosion, or fire might be caused if the battery is received heavy impact or strong shock.

- Do Not short-circuit the battery while putting into equipment

It is advised to put the battery to the equipment in a prudent way. It is because the short-circuit may occurs to the battery through metal parts of the equipment.

- Do Not maintain contact pressure less than 2N

Due to the poor contact condition, the intended value may be higher than the battery voltage. For appropriate contact resistance, the contact pressure must be maintained not less than 2N.

- Do Not wrongly match the battery and equipment

Please use the proper battery conforming to the handling manual of the equipment. It is because the specifications or types of equipments are different and the battery may not fit all kinds of equipments.

- Do Not put the battery in hot place such as under the sun or in the car in the daytime

If the battery is put in hot place, it may cause distortion, leakage, overheating, explosion, or fire of the battery.

- Do Not allow the battery touch water

If the battery touches water may occasion distortion, leakage, overheating, explosion, or fire. It may also generate rust.

- Do Not stock the battery in the condition of high humidity and heat

In the high humid and hot condition, the battery may deteriorate. It may cause the battery distorted, leaked, overheated, or exploded.