EEMB BATTERY

Lithium Manganese Dioxide Battery

Specification

High Power Type

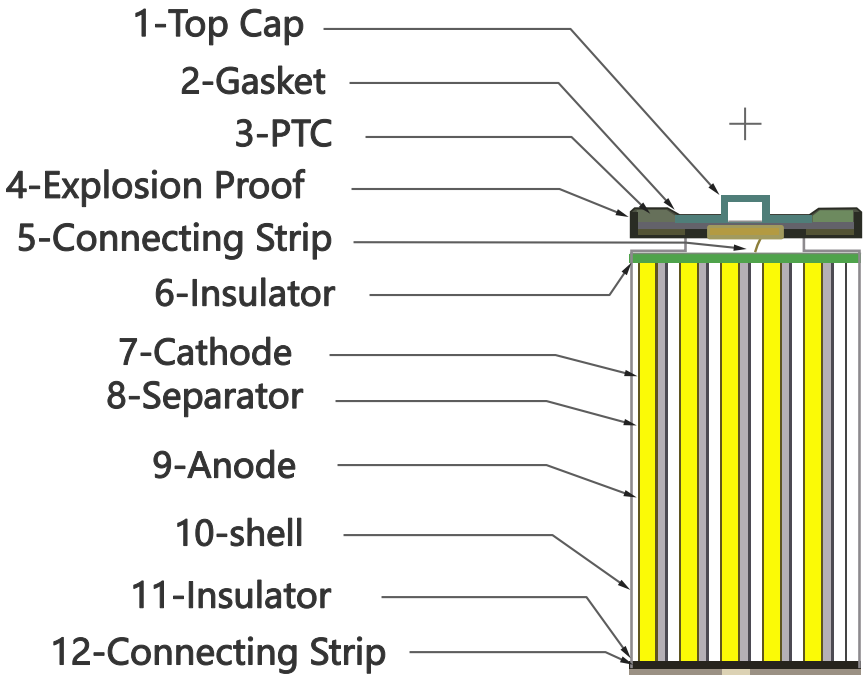
Model:	**CR2**
Capacity:	**850mAh**

Prepared	Checked	Approved
		

Customer：

Customer Approval（Customer confirmation）:		
Signature	**Checked**	**Approved**

Battery Structure



Catalog

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1. Scope

This product specification defines the requirements of the Lithium Manganese Dioxide battery supplied to the customer by EEMB Co., Ltd.

2. Features and Applications

Features:

- ✓ High energy density.
- ✓ Outstanding operational temperature range: -40℃ to +85℃.
- ✓ Stable discharge characteristics.
- ✓ Low self-discharge: less than 1% per year at room temperature.
- ✓ Superior shelf life and operational life: up to 10 years.
- ✓ Safe and environmentally friendly.

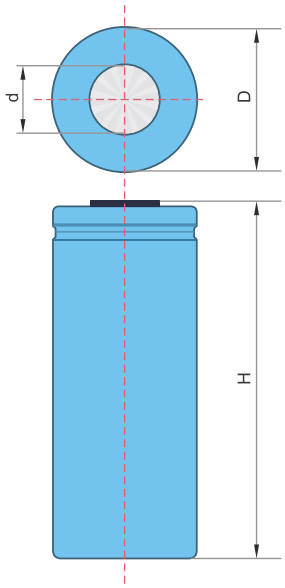
Applications:

- ✓ Water, gas and electricity meters
- ✓ Alarm system, GPS system, GSM system, Medical devices

3. Battery Basic Characteristics

No.	Item	Characteristics
2.1	Model	CR2
2.2	Nominal Capacity	850mAh
2.3	Nominal Voltage	3.0V
2.4	Standard Discharge Current	10mA
2.5	Max. Continuous Discharge Current	800mA
2.6	Max. Pulse Discharge Current	1500mA
2.7	Discharge Cut-off Voltage	2.0V
2.8	Weight	Approx. 11g
2.9	Operating Temperature	-40~+85℃
2.10	Storage Temperature	≤30℃
2.11	Storage Humidity	≤70%RH

4. Battery Cell Shape and Dimensions（Unit：mm）



Item	Specification
D	Max. 15.6
H	Max. 27
d	Max. 7.0

5. Appearance

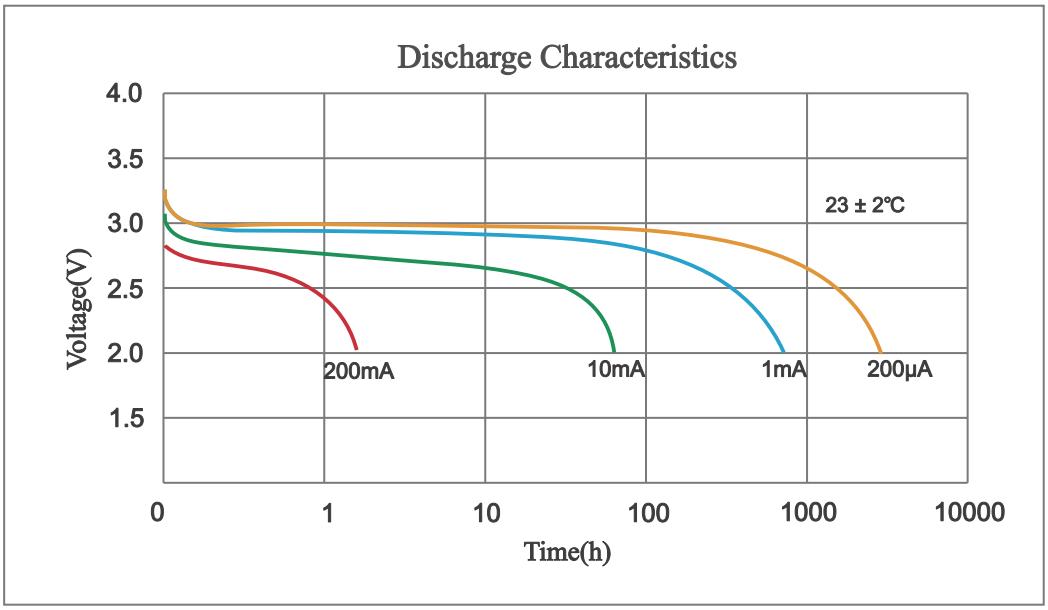
It shall be free from any defects such as remarkable scratches, breaks, cracks, discoloration, leakage, or middle deformation.

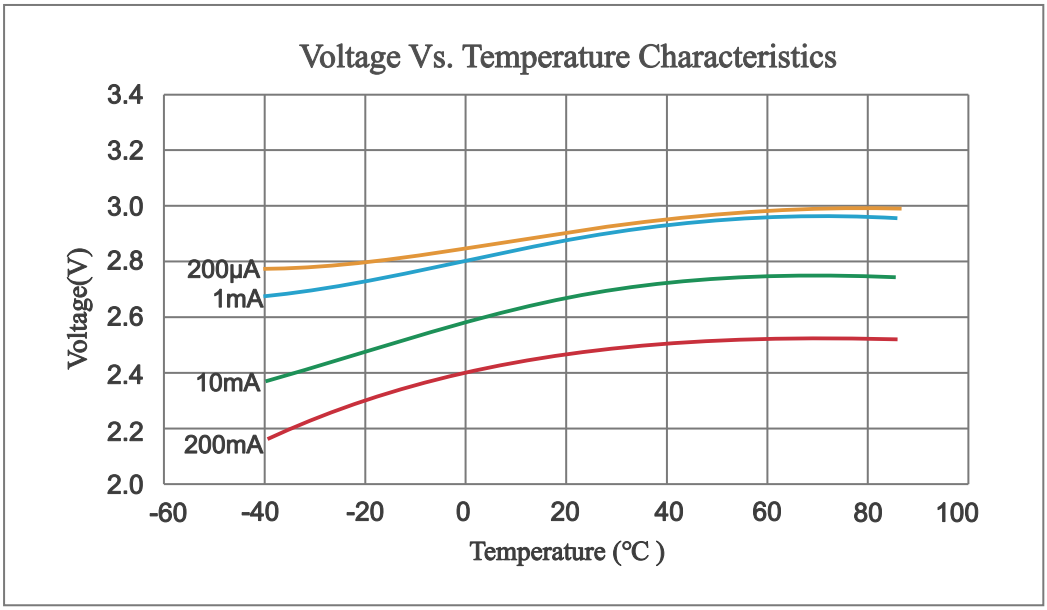
6. Performance and Test Methods

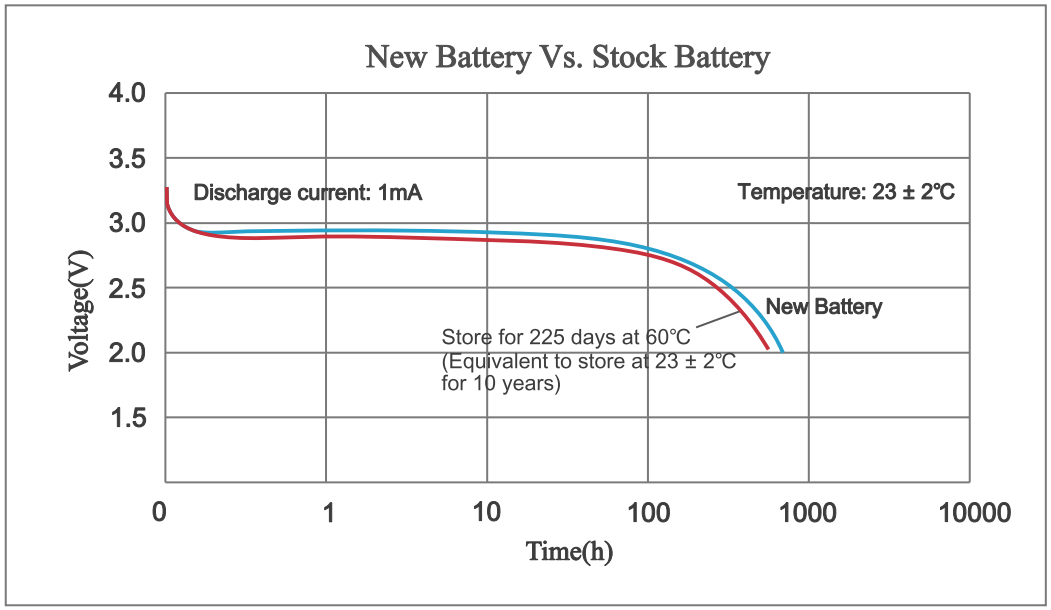
No.	Item	Standard	Method
6.1	Compression Test	No electrolyte loss, no rupturing.	Press the cell with 1120kg.
6.2	Short Circuit	No electrolyte loss, no rupturing.	Short circuit for 24 hrs with 0.1Ω.
6.3	High Temperature	No fire, no explosion.	Store at 150℃ for 2 hours.
6.4	Puncture Test	No electrolyte loss, no rupturing.	Total penetration of the cell by a nail ϕ3mm.
6.5	Vibration Test	No damage, leakage, no fire or explosion.	Amplitude at frequency range: 5 to 55Hz: ±0.75mm. Frequency range: 5Hz, 55Hz, 500Hz, 55Hz, 5Hz.

			Acceleration at frequency range: 55Hz to 500Hz: 100m/s. Cycle duration: 15min. Oscillation time of each main axis: 3h.

7. Characteristics Curve



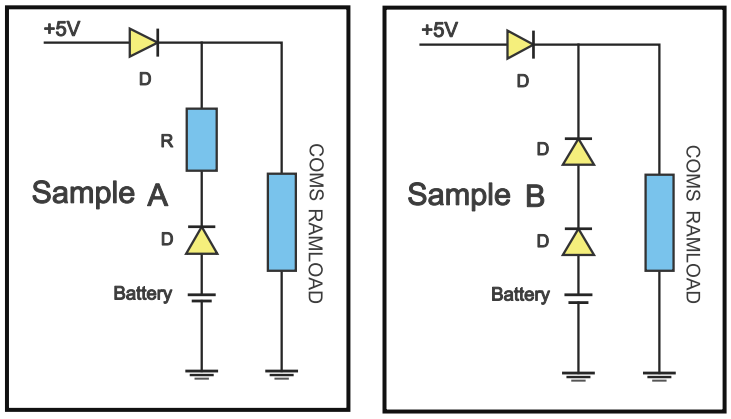




8. Memory Backup Circuit Design Suggestion

A primary lithium battery is not rechargeable, when used for memory backup in combination with another power source; current may flow into the battery from the other source. A protection diode and resistor into the circuit is needed to avoid battery charging or over discharging. Select a silicon diode or a diode with minimum leakage current, and design the circuit so that the amount of charging due to leakage current will not exceed 2% of the nominal battery capacity over the total period of use.

While used for memory backup, the following circuit shall be applied:



9. Matters Needing Attention

Strictly observes the following needing attention. EEMB will not be responsible for any accident occurred by handling outside of the precautions in this specification.

! Caution

- ✓ Use Nickel-plated iron or Nickel-plated stainless steel for the terminals that contact the battery.
- ✓ Make sure that terminal contact pressure is 50g minimum, for a stable contact.
- ✓ Keep the battery and contact terminal surfaces clean and free from moisture and foreign matter.
- ✓ Before inserting the battery, check the battery contact terminals to make sure they are normal, not bent or damaged. (Bent terminals may not make good contact with the battery or may cause short circuit.)
- ✓ When the batteries are piled up in a disorderly way, their positive and negative terminals may short-circuit, consuming some batteries while charging others, causing explosion.
- ✓ Lithium batteries that are almost exhausted can output a voltage that is almost the same as that of a new battery, please do not judge a battery only with a Voltmeter. Avoid using a mixture of old and new batteries; replace all batteries in a set with new one.
- ✓ Lithium batteries need a period of time to recover their normal voltage after even a slight short circuit. Therefore, if the battery is short-circuited, wait an adequate long time for batteries to recover before measuring their electrical characteristics.
- ✓ Use a high impedance (1M or higher) voltmeter to measure battery voltage.
- ✓ Battery characteristics vary with type and grade, even when batteries are the same size and shape. When replacing batteries with new ones, be sure to carefully check the symbols and numbers on them.

! Danger

- ✓ DO NOT recharge, short-circuit, disassemble, deform, heat or place the battery near a direct flame. This battery contains flammable materials such as lithium and organic solvent and performing any of the above actions could cause it to ignite explode or become damaged.

- ✓ DO NOT over-discharge the battery. In case the battery is over-discharged battery has potential of explosion. In case battery is over discharged, when connected with exterior power source or connected with other batteries in series, explosion may occur.
- ✓ Keep this battery out of the reach of children. If it is swallowed, contact a physician immediately.
- ✓ When storing a battery or throwing it away, be sure to cover it with tape. If the battery is contacted with other metal objects, it could cause fire or become damaged.

! Warning

- ✓ Thoroughly read the user's manual before use, inaccurate handling may cause leakage, heat, smoke, explosion, or fire, causing device trouble or injury.
- ✓ Insert the battery with the "+" and "-" ends correctly oriented.
- ✓ If the battery is used together with new batteries, do not use it with a different type battery.
- ✓ Do not solder the battery directly.
- ✓ Avoid storing the battery in direct sunlight, or in excessively hot and humid place.

EEMB reserves the final explanation. Please use battery strictly according to specification. EEMB will not be responsible for any inappropriate operation. EEMB keeps the right to change product specifications without previous notice. If any question, please consult with the manufacturer