



EVE ENERGY CO., LTD

Lithium Manganese Dioxide Battery TECHNICAL SPECIFICATION

Cell Type: CR14250SE

File No: EVE-RD-GL-CR14250SE-S-01-LF

Page: 4

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File Name	CR14250SE Specification	Edition	A3	Page	1 of 4
File No.	EVE-RD-GL-CR14250SE-S-01-LF	Effective date			March 03.2014

1 scope

This technical specification applies to CR14250SE (Li/MnO₂) battery supplied by EVE ENERGY CO., LTD.

2 structure and characteristics

2.1 Dimensions: Fig 1.

2.2 Structure: Fig 2.

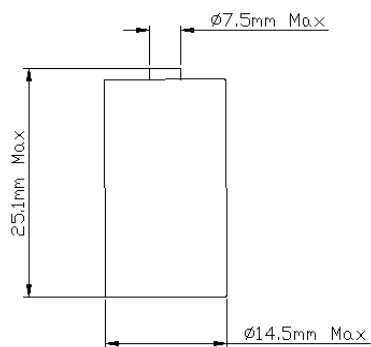


Fig 1

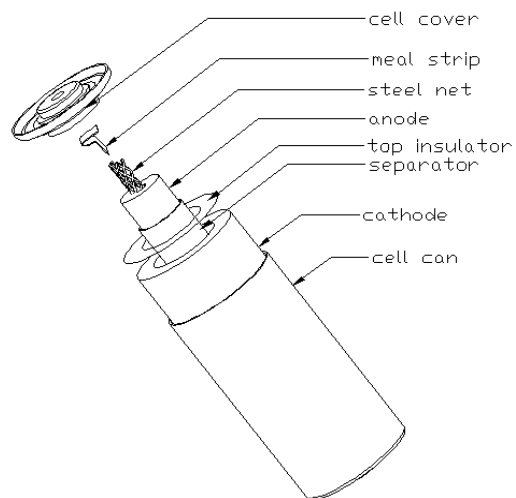


Fig 2

2.3 Basic Characteristics

Table 1.

No.	Items	characteristic
1	Type	CR14250SE
2	Open circuit voltage(OCV)	3.0V
3	Standard discharge current	0.5mA
4	Normal capacity	950mAh
5	Operational temperature range*1	-40~85°C
6	Max constant current	7.0mA
7	Self-discharged rate per year	≤1.0%
8	impedance/Ω	2~20Ω
9	Normal weight	10g
10	Self-life	≥10 years

*1 Consult EVE when using batteries at temperatures exceeding the -20~60°C range. Allowed temperature range (short-term) -40° C - 85 ° C (max. 14 days) (in the μA range)

File Name	CR14250SE Specification	Edition	A3	Page	2 of 4
File No.	EVE-RD-GL-CR14250SE-S-01-LF	Effective date			March 03.2014

2.4 Failure analysis for an increased temperature area

period of use	> 3 years	> 5 years	> 8 years	> 10 years	> 12 years	> 13 years	> 14 years	> 15 years
room temp. 21°C				< 0,5%	1-1,5%	1,5-2%	2-3%	3-4%
increased temp 45°C			< 2%	< 10%	< 30%	< 50%	-----	-----
increased temp 50°C			< 15%	< 30%	< 50%	-----	-----	-----
increased temp 60°C	< 5%	< 30%	< 50%	-----	-----	-----	-----	-----
increased temp 65°C	< 15%	< 50%	-----	-----	-----	-----	-----	-----
increased temp 75°C	< 50%	-----	-----	-----	-----	-----	-----	-----

2.5 External terminals

-/S、-/T、-/P、-2PT、-3TP、-3PT(Consult with EVE if you have the other requirements).

3 Test condition and method

3.1 Test environment

Temperature: 20±3°C, Relative Humidity: 65±10%, Atmospheric pressure: 96±10kPa. (unless otherwise specified)

3.2 Tools' requirements

3.2.1 Dimensional measurement: with accuracy of ±0.02mm.

3.2.2 Voltmeter: with an accuracy of±0.2% and input resistance of 10MΩ or higher.

3.2.3 Exactitude resistance: tolerance less than 0.5%.

3.2.4 Resistance box: tolerance less than 0.5%.

3.2.5 Constant temperature oven: tolerance within ±2°C.

3.3 Test method

3.3.1 Condition of the cells

Before testing ,cells should be stored for over 24h at 20±3°C , or over 12 hours at 45±3°C.

3.3.2 Initial test

Tested in the first 3 months after produced

3.3.3 Shape and Physical Dimensions:

The measuring instrument as specified 4.3 is used. The results should meet the requirement of fig1.

3.3.4 Open circuit voltage:

Use voltmeter, specified in 3.2.2 to measure voltage between "+" and "-". Results should meet the requirement of table 1.

File Name	CR14250SE Specification	Edition	A3	Page	3 of 4
File No.	EVE-RD-GL-CR14250SE-S-01-LF	Effective date			March 03.2014

3.3.5 Load voltage:

Parallel connect meter and 5.6kΩ resistance specified in 3.2 to measure voltage between "+" and "-".
Result should meet the requirement of table 1.

3.3.6 Discharge capacity:

Continually discharge at 5.6kΩ resistance to cut-off voltage 2.0v. Discharged time should be not less than 1800 hours, or results should meet the requirement of table 1.

3.3.7 Appearance:

No scathe, no crackle, no dirty spots, no distortion, and mark must be correct and clear.

3.3.8 Storage characteristics

Store sample cells for 12 months at normal temperature and normal humidity, then continually discharge as specified in 3.3.6. Self-discharge rate can be calculated as below equation, result should meet the requirement of table 1.

$$\text{Self-discharge rate(\%)} = \frac{A1-A2}{A1} \times 100$$

A1 — Average discharge capacity in initial period ;

A2 — Average discharge capacity after storage;

4 Safety characteristics

4.1 Vibration Test:

The battery is to be subjected to simple harmonic motion with amplitude of 0.8mm. The frequency is to be varied at the rate of 1 Hz per minute between 10 and 55 Hz, and return is not less than 90 nor not more than 100 min. The battery is to be tested in three mutually perpendicular directions.

4.2 Drop Test:

Each cell should be dropped 10 times from the height of 1.9m onto cement ground. Cell should be no leakage, no deformation, no fire or no burst.

4.3 Short circuit test:

The cell is to be short-circuited by connecting the positive and negative terminals of the cell with copper wire having a resistance less than 0.1Ω , Cell is to be completely discharged or its surface temperature has returned to ambient temperature. During the process, cell should be no fire and no explosion.

4.4 High temperature tolerance

Storing in the constant oven at 150±5℃ for 2 hours, the cells should not have explosion nor get fire, but slight distortion at the bottom is allowed.

File Name	CR14250SE Specification	Edition	A3	Page	4 of 4
File No.	EVE-RD-GL-CR14250SE-S-01-LF	Effective date			March 03.2014

5 Warnings and cautions

Please be sure to observe the following warnings. As primary lithium manganese dioxide batteries contain flammable substances such as lithium metal and organic solvents, they may cause heating, bursting, or fire.

Warnings

1. Do not charge
When this battery is charged, gas is generated inside and raises internal pressure, resulting in fire, heat generation, leakage or bursting
2. Do not heat, disassemble nor dispose of in fire.
Doing so may result in fire, heat generation, leakage and fire.
3. Do not insert batteries with the” + “and “- “polarities reversed.
Make sure that the polarities are in the right position when inserting the batteries into equipment. Improper usage may cause leakage or bursting.
4. Do not short-circuit.
If so resulting in heat generation or bursting. When carrying or storing batteries, avoid direct contact with metal objects such as bracelets or key chains by putting them in a separate bag.
5. Do not solder directly.
6. Do not force-discharge.
This may cause fire, heat generation, leakage or bursting.
7. Keep batteries out of children’s reach.
8. Be sure to wrap each battery when disposing or storing to avoid short circuit.
Putting batteries together may cause short circuiting, resulting in fire, heating or bursting.

Cautions

1. If leaked solvent gets in the eyes, wash them with fresh water and consult a physician immediately.
2. Do not use new and used batteries together. Do not use different type of batteries together.
3. Do not apply strong pressure to the batteries nor handle roughly.
Doing so may cause heat generation, leakage or bursting.
4. Keep batteries away from direct sunlight, high temperature, and high humidity.
5. Keep batteries away from direct sunlight, high temperature and humidity.
6. Read the equipment instruction manual and precautions carefully before use.
Some usages or types of equipment do not suit the specifications or performance of these batteries.
7. For proper disposal, follow local government regulations.

6 Notes

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