

Tenergy Corporation

Standard Documentation

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Name CR123A Specification Approval Sheet

DOC NO. D-QC-S-QA-007

REV. A

CONTROL NO. _____

Date _____

Prepared by _____

Checked by _____

Approved by _____

Rev: A

Control No:

CR123A Specification Approval Sheet

Quality Control Department

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Customer Inquiry

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1、Scope

This document describes the Product Specification of the CR123A Battery supplied by Tenergy Corporation.

2、Model: CR123A

3、Specification

| No. | Item | Specifications |
|-----|---|----------------------------------|
| 1 | Rated capacity | 1400mAh |
| 2 | Rated voltage | 3.0V |
| 3 | Capacity | |
| | 45mA discharge | 1400mAh |
| | Discharge end-point voltage | 2.0V |
| | 1000mA discharge | 1100mAh |
| | Discharge end-point voltage | 1.5V |
| 4 | Off-load voltage | $\geq 3.2V$ |
| 5 | Closed circuit voltage (3.9 Ω /0.5s) | $\geq 2.6V$ |
| 6 | Short circuit | $\geq 12.0A$ |
| 7 | Internal resistance | $\leq 500m\Omega$ |
| 8 | Cell weight | Approx. 16.0 \pm 0.5g |
| 9 | Operating temperature | -40 $^{\circ}C$ ~ 60 $^{\circ}C$ |
| 10 | Storage temperature | 10 $^{\circ}C$ ~ 25 $^{\circ}C$ |
| 11 | Cell dimension | Length: 34.5mmMax |
| | | Diameter: 17.0mmMax |
| 12 | Storage life | 5year |
| | | |

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4. Battery Performance Criteria

4.1. Visual inspection

There shall be no such defect as distortion, flaw, and leakage, which may adversely affect commercial value of the battery.

4.2. Standard environmental test condition

Unless otherwise specified, all tests in this Product Specification are conducted at below condition:

Temperature: $20\pm 5^{\circ}\text{C}$

Humidity: 45%~75%

Atmospheric pressure: 86~106kpa

4.3. Resistance leakage

Test batteries shall be stored for 24h at a temperature of (70°C) and Humidity ($60\pm 15\%$), followed by storage for at least 8h at ambient temperature.

Criteria: No electrolyte leakage, explosion or fire.

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4.4、Electrical Characteristics

| No. | Items | Test Method and Condition | Criteria |
|-----|------------------------|--|---|
| 1 | External short circuit | The test batteries subjected to a short-circuit condition with a total external resistance of less than 0.1Ω . This short-circuit condition is continued for at least 1h. | No Explosion No Fire |
| 2 | Free fall | Undischarged test batteries shall be dropped from a height of 1m onto a concrete surface. Each test battery shall be dropped six times. The test batteries shall be stored for 1h afterwards. | No Venting No Explosion No Fire |
| 3 | High temperature | Test batteries shall be stored for 5h at a temperature of 100°C , followed by storage for 8h at ambient temperature. | No Venting No Explosion No Fire |
| 4 | Charge | A test battery is connected in series with three additional undischarged batteries of the same type in such a way that the terminals of the test battery are connected in reverse. | No Explosion No Fire |
| 5 | Thermal shock | Test batteries shall be stored for 48h at a temperature of 75°C , followed by storage for 6h at a temperature of -20°C , followed by storage for at least 24h at ambient temperature. The maximum time for each temperature shall be 5min. | No Venting No Explosion No Fire No Leakage |
| | | | |

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4.5、 Mechanical characteristic

| No. | Items | Test Method and Condition | Criteria |
|-----|----------------|---|---|
| 1 | Vibration Test | Fixed the undischarged battery to vibration table and subjected to vibration cycling that the frequency is to be varied at the rate of 1Hz per minute between 10Hz and 55Hz, the excursion of the vibration is 1.6mm. The battery shall be vibrated for 30 minutes per axis of XYZ axes. | No Venting No Explosion No Fire No Leakage |
| 2 | Crush Test | A battery is to be crushed between two flat parallel surface.The force for the crushing is to be applied by a hydraulic ram with a 32 mm diameter piston.The crushing is to be continued until a pressure reading of 17.2Mpa is reached on the hydraulic ram, applied force of 13KN.Once the maximum pressure has been obtained it is to be released. | No Venting No Explosion No Fire |
| 3 | Shock Test | Force each shock the cell is to be accelerated in such a manner that during the initial 3 milliseconds the minimum average is 75g, the peak acceleration shall be between 125 and 175g.The shocks are to be applied in each of three mutually perpendicular directions.Each shock is to be applied in a direction normal to the face of the cell.Cell shall be tested at a temperature of 20±5°C. | No Explosion No Fire |

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5、Storage and Others

5.1、Storage

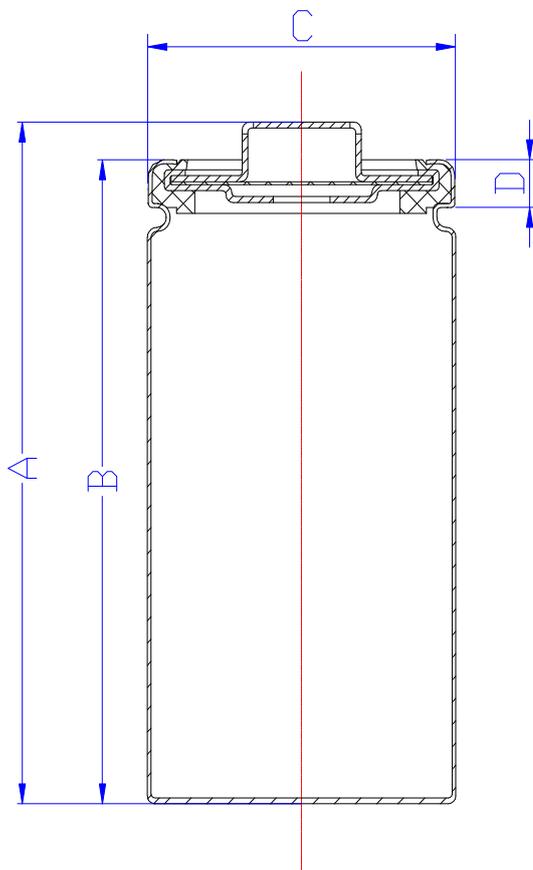
Storage Temperature: 10°C~25°C

5.2、Others: Any matters that this specification does not cover should be conferred between the customer and Tenegy Corporation.

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6、Drawing(all unit mm, not in scale)



| Items | Dimension and Spec. | |
|-------------|---------------------|-------------|
| A | 33.7±0.3mm | |
| B | 32.0±0.3mm | |
| C | Φ16.25±0.2mm | |
| D | 2.4±0.1mm | |
| Prepared by | Checked by | Approved by |
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7、 Appendix

Handling Precautions and Guideline For CR123A Battery

Preface

This document of “Handling Precautions and Guideline CR123A Battery” shall be applied to the battery manufactured by Tenergy Corporation.

Note (1) :

The customer is requested to contact Tenergy Corporation in advance, if and when the customer needs other applications or operating conditions than those described in this document. Additional experimentation may be required to verify performance and safety under such conditions.

Note (2):

Tenergy Corporation will not take no responsibility for any accident when the battery is used under other conditions than those described in this Document .

Note(3):

Tenergy Corporation will inform, in a written form, the customer of improvement(s) regarding proper use and handling of the battery ,if it is deemed necessary.

When used correctly, lithium batteries provide a safe and dependable source of power. However, if they are misused or abused ,leakage, venting or in extreme cases, explosion and /or fire may cause.

7.1、 Prohibition of battery immersion into liquid such as water; the battery shall never be soaked with liquids such as water, seawater, drinks such as soft drinks, juices, coffee or others.

7.2、 Prohibition of dumping of batteries into fire; Never incinerate nor dispose the batteries in fire. These may cause firing of the batteries , which is very dangerous and is prohibited.

7.3、 Do not insert batteries in reverse. Observe the + and - markings on battery and equipment.

7.4、 Do not short-circuit batteries when the positive(+) and negative(-) terminals of a battery are connected directly with each other, the battery becomes short-circuited. This can result in venting, leakage, and possibly fire which may cause firing, or other problems.

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7.5、 Electrolyte is harmful

In case the electrolyte come into contact with the skin, or eyes, physicians shall flush the electrolyte immediately with fresh water and medical advice is to be sought.

7.6、 Do not charge batteries-Attempting to charge a primary battery may cause internal gas and/or heat generation resulting in venting, explosion and possibly fire.

7.7、 Do not force discharge batteries.

7.8、 Do not allow children to replace batteries without adult supervision , Keep batteries out of the reach of children. In case of ingestion of a battery, seek medical assistance promptly.

7.9、 Do not mix batteries

7.10、 Prohibition of use of damaged batteries

The batteries might be damaged during shipping by shock. If any abnormal features of the batteries are found such as damages in a plastic envelop of the battery, deformation of the battery package, smelling an electrolyte, an electrolyte leakage and others, the batteries shall never be used any more.

The batteries with a smell of the electrolyte or a leakage shall be placed away from fire to avoid firing.

7.11、 Exhausted batteries should be immediately removed from equipment and dispose of.

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Customer Inquiry

Model:CR123A

Version :A

the customer is requested to write down your information and contact Tenergy Corporation in advance, if and when the customer needs applications or operating conditions other than those described in this document. Tenergy Corporation could design and build such products according to your special request.

| No. | Special Request | Criteria |
|-----|-----------------|----------|
| 1 | | |
| 2 | | |
| 3 | | |
| 4 | | |
| 5 | | |
| 6 | | |
| 7 | | |
| 8 | | |

Company Name:

Signature:

Date: