

MTX-Batería Li-Ion 3.6 V – 950 mAhMTX-NO:118.002.005
DATE:2004/2/04**Datasheet**

Lithium-ion Battery

SPECIFICATION

Part Number: **MTX-Batería Li-Ion 3.6 V – 950 mAh**

| Prepared/Date | Checked/Date | Approved/Date |
|---------------------|----------------------------|-------------------|
| MILLER 12-DIC-03 | Martín Acosta 06-JAN-04 | NONO 08-JAN-03 |

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| | MTX-NO:118.002.005 DATE:2004/2/04 |
| MTX-Batería Li-Ion 3.6 V – 950 mAh | |

1.0 SCOPE

This Specification describes the requirements of the lithium ion rechargeable battery supplied by MATRIX ELECTRÓNICA.

2.0 BASIC CHARACTERISTICS

| | | |
|------|---------------------------|---|
| 2.1 | Battery Type | 053450 |
| 2.2 | Material of Case | Aluminum |
| 2.3 | Nominal Voltage | 3.7 V |
| 2.4 | Nominal Capacity | 950 mAh |
| 2.5 | Internal Resistance | 30-70 mΩ |
| 2.6 | Discharge Cut-off Voltage | 2.75V |
| 2.7 | Max Charge Current | 1.5C |
| 2.8 | Max Discharge Current | 1.5C |
| 2.9 | Max Charge Voltage | 4.2V |
| 2.10 | Charge method | CC/CV (constant current/constant voltage) |
| 2.11 | Dimension | Thickness: 5.2 ⁰ _{0.5} mm Width: 34.0 ⁰ _{0.5} mm Height: 49.7 ⁰ _{0.5} mm |
| 2.12 | Weight | About 28.5 g |
| 3.13 | Operating Temperature: | Charging Temperature: 0~45□ Discharging Temperature: -20~60□ |
| 3.14 | Storage Temperature | 1 month -20~60□ 3 month -20~45□ 1 year -20~25□ |
| 3.15 | Relative Humidity | 65±20% |
| 3.16 | Visual Requirements | Defects, such as scratches, flaws, dirty spots, rust, deformation, discoloration, leakage, etc., which damage commercial values shall not be presented. |
| 3.17 | Voltage of shipment | 3.70-3.80V |

3.0 TECHNICAL REQUIREMENTS



3.1 Testing Conditions (unless otherwise specified)

Temperature: 15~35℃
 Relative Humidity: 45%~75%
 Atmospheric pressure: 86~106Kpa

3.2 Electrical Characteristics

| NO | ITEM | TESTING INSTRUCTION | REQUIREMENTS |
|----|------------------|--|-----------------------------|
| 1 | Complete Charge | Charge the battery with 1C of constant current and 4.2V constant voltage for 2.5 hours. | \ |
| 2 | Nominal Capacity | Measure discharge capacity with discharge current 0.2C to 2.75V cut-off within 1 hour after complete charge. | 950 mAh |
| 3 | Cycle Life | Measure the capacity after 300 cycles of complete charge and discharge at 1C current to 2.75V cut-off | ≥ 80% of initial Capacity |
| | | Capacity after 30days storage at 25℃ from complete charge | Retention capacity ≥ 90% |
| | | Capacity after 7days storage at 60℃ from complete charge | Recovery capacity ≥ 90% |
| | | | ≥ 90% |



| | | | |
|---|--------------------------------|--|---|
| 1 | Temperature testing | Measure capacity with constant discharge current 1C to 2.75V cut-off at each temperature after complete charge at 25°C, Percentage as an index of the capacity compared with 100% at 25°C | 25% at -20°C 60% at 0°C 100% at 25°C 96% at 60°C |
| 2 | Constant temperature /humidity | Keep the battery at 40°C and 90%RH for 96hrs | Recovery capacity ≥ 85% |
| 3 | Vibration | The battery will be vibrated 10 times in three mutually perpendicular directions with amplitude of 0.35mm and changing frequency between 10 and 55Hz. The rate of scanning frequency is from 10HZ to 55 HZ with the rate of 1HZ per min. | The battery shall not rupture, smoke, catch fire, vent or leak. |
| 4 | Impacting Testing | The battery will be impacted 1000±10 times with the acceleration of 100 m/s ² and pulse lasting time 16ms. | |
| 5 | Free fall | The battery will be dropped free five times in three mutually perpendicular directions from the height of 1.0m onto a hard board with the thickness of 20mm | |

3.4 Safe Characteristic

| NO | ITEM | TESTING INSTRUCTION | REQUIREMENTS |
|----|---------------------|--|---|
| 1 | Short Circuit | The battery is to be short-circuited by connecting the positive and negative terminals of the battery with an external load of less than 50 mΩ | The battery shall not rupture, smoke, catch fire, vent or leak. |
| 2 | Over charge testing | The battery charged completely will be charged continuously for 8hrs with the external power supply of the limit voltage of 5.0V and the current of 1.2C | |

| | | | |
|---|------------------------|---|--|
| 3 | Over discharge testing | After complete charge, the battery will be discharged to end voltage. Then connect with external load of 30Ω for 24hrs. | |
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4.0 REQUIRED PROTECTION FUNCTIONS

To insure the safety, charger and the protection circuit shall be satisfied the items below. As safety device, please use in combination with the temperature fuse. The standard charge method is CC/CV (constant current/constant voltage)

| NO | Device | Items | Requirements |
|----|---|-------------------------------------|--------------|
| 1 | Charger | Charge termination voltage | 4.200±0.049V |
| 2 | Protection Functions (For reference) | Excess Charge detection voltage. | 4.275±0.025V |
| 3 | | Excess Charge release voltage. | 4.175±0.050V |
| 4 | | Discharge termination voltage. | 3.00±0.10V |
| 5 | | Excess discharge detection voltage. | 2.3±0.08V |
| 6 | | Excess discharge release voltage | 2.4±0.10V |
| 7 | | Excess current detection value | 2.7±0.2A |

5.0 WARRANTY PERIOD & PRODUCT LIABILITY

Warranty period of this product is 6 months from manufacturing code.

BK is not responsible for the troubles caused by mishandling of the battery which is clearly against the instructions in this specification.

When BK find any new facts which require modification of this document, we will inform you again.

6.0 INDICATIONS ON BATTERY PACK

The following warnings should be indicated on the battery packs.

- Use a specified charger .
- Do not throw the battery into fire , or heat.
- Do not short-circuit the battery terminals
- Do not disassemble the battery.

7.0 WARNINGS AND CAUTIONS IN HANDLING THE Lithium-ion BATTERY

To prevent a possibility of the battery from leaking, heating or explosion please observe the following precautions:

WARNINGS!



1. Do not immerse the battery in water or seawater, and keep the battery in a cool dry surrounding if it stands by.
2. Do not use or leave the battery near a heat source as fire or heater
3. When recharging, use the battery charger specifically for that purpose
4. Do not reverse the position (+) and negative (-) terminals
5. Do not connect the battery to an electrical outlet
6. Do not discard the battery in fire or heat it
7. Do not short-circuit the battery by directly connecting the positive (+) and negative (-) terminal with metal objects such as wire.
8. Do not transport or store the battery together with metal objects such as necklaces, hairpins etc.
9. Do not strike or throw the battery
10. Do not directly solder the battery and pierce the battery with a nail or other sharp object.

CAUTIONS!

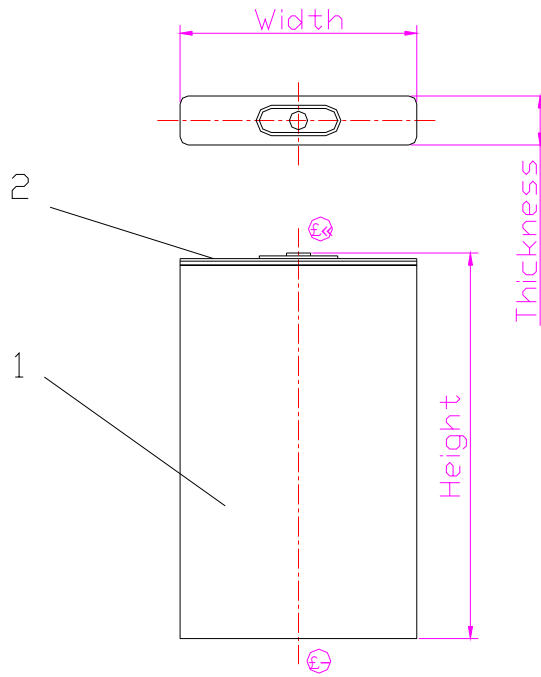
1. Do not use or leave the battery at very high temperature (for example, at strong direct sunlight or in a vehicle in extremely hot weather). Otherwise, it can overheat or fire or its performance will be degenerate and its service life will be decreased.
2. Do not use it in a location where static electricity is great, otherwise, the safety devices may be damaged, causing hidden trouble of safety.
3. If the battery leaks, and the electrolyte get into the eyes. Do not rub eyes, instead, rinse the eyes with clean running water, and immediately seek medical attention. Otherwise, it may injure eyes or cause a loss of sight.
4. If the battery gives off an odor, generates heat, becomes discolored or deformed, or in any way appear abnormal during use, recharging or storage, immediately remove it from the device or battery charger and stop using it.
5. In case the battery terminals are dirt, clean the terminals with a dry cloth before use. Otherwise power failure or charge failure may occur due to the poor connection with the instrument.
6. Be aware discarded batteries may cause fire, tape the battery terminals to insulate them



Appearance Drawing

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|----------------------------|--|
| Bare Battery 053450 | |
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Width: $34.0_{0.5}^0$ m

Thickness: $5.2_{0.5}^0$

Height: $49.7_{0.5}^0$ mm

| NO | Name | Description | Qty | Prepared | JACK | Date | |
|----|----------------|-------------|-----|----------|------|------|--|
| 2 | Insulate Plate | 053450 | 1 | Approved | | Date | |
| 1 | Bare Battery | 053450 | 1 | Checked | | Date | |

