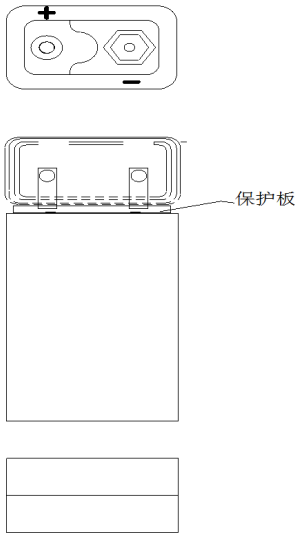



POWER-XTRA

Model : Power-Xtra 9V Li-ion 600 Mah Rechargeable Battery Ver: REV001 Stock Code: 900.600.503.269

1. Specification

| Technical Drawing and Dimensions | | | Image |
|---|---------------------------------------|---|---|
|  | | |  |
| No | Item | Parameter | Remark |
| 1 | Rating Voltage | 7.4V | |
| 2 | Capacity | Typical: 600mAh Minimum: 580mAh | 0.2C discharge after full charge。 |
| 3 | Open circuit voltage charging | ≥7.40V | |
| 4 | Impedance | 260mΩ (Max) | |
| 5 | Charging Mode | C.C/C.V. | Constant Current /Constant Voltage Constant voltage of 8.4 V。 |
| 6 | Charging | Standard Charging 0.2C | Charging Current130mA Minimum current: 0.05 C (32 mA) |
| | | Fast Charging 1C | Charging Current 650mA |
| 7 | Charging Time | Standard Charging | 7Hours |
| | | Fast Charging | 1.5Hours |
| 8 | End of Discharge Voltage | 5.40V | |
| 9 | Overcharge Voltage | 4.25±0.05V/cell | Detection of single battery voltage |
| 10 | Over Discharge Cut Off Voltage | 2.70±0.10V/cell | Detection of single battery voltage |
| 11 | Over current protection | 2.1—3.3A | |
| 12 | Short Circuit | Recover after removing the short circuit load | |
| 13 | Static power current protection board | 7uA (Max) | |
| 14 | Operating Temperature | Charging | 0~45℃ |
| | | Discharging | -20~60℃ |
| 15 | Storage Temperature | -5℃-35℃/Recommend (20±5℃) | Storage capacity should be 40%-50% full charge capacity |
| 16 | Cycle Life (80%) | 600 cycle | 0.2CCycle Life |
| 17 | Typical Weight | About 27.5g | |

2. Battery Constitution

| NO. | Name | Model | Remark |
|-----|---------------------------------|--------------------|--------|
| 1 | Two polymer lithium-ion battery | CELL Li84V600R4 | |
| 2 | One piece of protection board | IC S-8252AAT-M6TIU | |
| 3 | A set of | 9 v shell cover R4 | |

3. Battery Performances Test Criterion

3.1 Appearance

There shall be no such defect as scratch, flaw, crack, rust, leakage, which may adversely affect commercial value of battery.

3.2 Measurement Apparatus

(1) Dimension Measuring Instrument

The dimension measurement shall be implemented by instruments with equal or more precision scale of 0.01mm.

(2) Voltmeter

Standard class specified in the national standard or more sensitive class having inner impedance not less than 10 K Ω /V.

(3) Ammeter

Standard class specified in the national standard or more sensitive class. Total external resistance including ammeter and wire is less than 0.01 Ω .

(4) Impedance Meter

Impedance shall be measured by a sinusoidal alternating current method(AC 1kHz LCR meter).

4. Testing Condition (unless otherwise specified)

Temperature 20°C \pm 5°C, Relative humidity: 60 \pm 20%, Atmosphere pressure: 86~106Kpa.

5. Reliability Test

| Item | Inspecting Method | Standard |
|--------------------------------------|--|--|
| High temperature performance | When the battery is standard charged, it shall be put into a chamber at (55 \pm 2)°Cfor 2h, then discharged at 1.0C5A constant current to 9.00V. | Discharging shall not be less than 48 minutes; and the battery appearance has no deform, no leak-out and no explosion. |
| Low temperature performance | When the battery is standard charged, it shall be put into chamber at (-20 \pm 2)°Cfor 16-24h, then discharged at 0.2C5A constant current to 3.00V before it is taken out and put into the temperature of (20 \pm 5)°Cfor 2h for its appearance check with eyes. | Discharging shall not be less than 3 hours; and the battery appearance has no deform, no leak-out and no explosion. |
| Electrical load maintenance ability | When the battery has completed standard charged, it shall be disconnected and put aside for 28 Days at (20 \pm 5)°C, then discharged at 0.2C5A. | Discharging shall not be less than 4 hours |
| Constant Humidity & Heat Requirement | As the battery has completed fast charging with constant current, it shall be put into the (40 \pm 5)°C, 90%-95%RH thermos humidistat for 48h; then taken out at (20 \pm 5) °Cfor 2h. Check its appearance with eyes. Obtain its discharging time after it is discharged at 1C5A to its final voltage 6.00V. | The battery appearance shall have no distortion, no explosion, no fire, no smoke and no leak-out, and its discharging time should not be less than 36 minutes. |
| Vibration | After fully charging, fixing the battery onto the vibration platform. with amplitude 0.38mm circularly scanning vibrating in the frequency of 10HZ-55HZ from three directions X、Y、Z for 30min respectively in its scanning frequency velocity 10CT/min. | The battery appearance has no distortion, no explosion, no fire, no smoke and no leak-out. Battery open voltage should be over 7.4V. |

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| | | |
|---------------------------|--|--|
| Bump | After vibration testing, use a clip or directly fix the battery on to the platform in the direction of X、Y、Z vertical complementary axis, then adjust its acceleration and pulse duration as below to have a bump test. Pulse peak acceleration 100m/s ² . Bumps per minute 40-80.Pulse duration 16ms. Bump times 1000±10. | The battery appearance has no distortion, no explosion, no fire, no smoke and no leak-out. Battery open voltage should be over 7.4V. |
| Free Drop | After bump testing, the battery shall be immediately dropped from the height of 1000mm (minimum height) onto a 18mm~20mm hard board on the cement floor. Free drop one time respectively from X、Y、Z positive and negative axis(six directions). After that, the battery is discharged at 1C5A to its final voltage. | The battery appearance has no distortion, no explosion, no fire, no smoke and no leak-out. Its internal construction loosened discharging shall not be less than 48 minutes. |
| Overcharge Protection | When the battery is fully charged, go on loading for 8h with a twice rating voltage, 2.0C5A out put current, it starts the over charge protection function. | The battery appearance has no distortion, no explosion, no fire, no smoke and no leak-out. |
| Over discharge Protection | The battery is discharged at 0.2C5A in the constant current till it reaches over discharge protection voltage at (20±5) °C, connected with a 30Ω lead and discharged for 24h | The battery appearance has no distortion, no explosion, no fire, no smoke and no leak-out. |
| Short-circuit Protection | As the battery has completed charging, short circuit the positive and negative contacts with 0.1Ω resistor for 1h for appearance check, then disconnect the resistor between the contacts, the battery shall be charged at 1.0C5A mA in the constant current for 5S | Battery should be no explosion, no fire, no smoke or leakage; Instantaneous after charging the battery voltage automatic restore to the nominal voltage. |
| Heavy Collision | Putting the battery on the platform, using 9.1KG heavy hammer free drop from 0.61M height onto the fixed battery. | Allowing the battery to be deformed, but no explosion and no fire |
| The cycle Life | The battery shall be constantly charged at 1.0C5A in the temperature of (20±5°C). When its voltage reaches 4.20V, it shall be charged to constant voltage charging. It shall not stop charging until its current is no more than 0.01C5A .Put it aside for 0.5h-1h then discharge with 1.0C5A in the constant current to its final voltage9.00V. When the discharging is finished, the battery shall be put aside for 0.5h-1h and has the next charge and discharge recycle. The above recycle test shall be continued unless there are two continuous discharging time less than 36 minutes, which is taken as the end of the life. | It is cycles shall be over 600 times. |

6. Shipment

The battery should be packed in cartons under the condition of half capacity 20-50% for shipment. The violent vibration, impaction or squeezing should be avoided in the transport process; neither is exposed in the sunlight nor rain. The batteries shall be shipped by normal transportation such as by road, by train, by ocean or by air.

7. Storage

The battery storage shall be in the clean and dry ventilation room at the temperature of -5~35°C and shall keep out of fire or heat and avoid touching corrosion elements. The batteries shall be charged every 6 months during storage. Both the stored cells in the process of the battery and the batteries in delivery shall be “first come, first use”. The battery storage period is 12 months when into the warehouse. Batteries expired must have a thorough check. Only the applicable batteries can be dispatched to the purchaser; the inapplicable ones shall be rechecked, if it remains, the purchaser shall have the right to dispose bad ones.

8. Package and Marking

8.1. Package

According to the attached.

8.2. Marking

Every battery shall have the following Chinese characters: Product、type、rating voltage 7.4V、rating capacity、contacts plus or minus and warnings、produce date、lot No.、manufacturer、（or the marks of the above characters）。

9. Protection Circuit

9.1. BMS Parameter

| Order no. | Project | The minimum value | The median | The maximum | Unit |
|-----------|------------------------------|-------------------|------------|-------------|------|
| 1 | Overcharge Voltage | 4.20 | 4.25 | 4.30 | V |
| 2 | Overcharge Voltage | 4.05 | 4.10 | 4.15 | V |
| 3 | Discharge voltage protection | 2.60 | 2.70 | 2.80 | V |
| 4 | Put the recovery voltage | 2.90 | 3.00 | 3.1 | V |
| 5 | Over Current | 2.1—3.3 | | | A |
| 6 | Static electricity flow | 0.5 | 4 | 7 | μA |

10. Battery dimension

W26.4mm*H48.5mm*T16.4mm R4- The black shell

11. Appendix

11.1. Instructions and Safety Requirement

11.1.1 Recommending Usage

- 1 Please read the battery instructions and the label on its surface before use.
- 2 Use the battery indoors under normal condition, temperature: $(20\pm 5)^{\circ}\text{C}$, absolute humidity: $65\pm 20\%$.
- 3 When in use, the battery shall be kept out of heat、high voltage and avoided children's touching. Do not drop the battery.
- 4 Use the compatible charger. Do not put the battery into the charger over 24hours.
- 5 Do not touch contacts together. Do not demolish or assembly the battery by yourself. Do not put the battery in the damp place to avoid danger.
- 6 When the battery was stored for a long period, put it well in its half capacity. Do not wrap it with conduct material to avoid the damage caused by the direct contact between the metal and battery. Keep the battery in day places.
- 7 Well disposed the disused battery. Do not put it into fire or water.

11.1.2 Hazard Warning

- 1 Forbid Disassemble Batteries
The battery has protective component and circuit internally to avoid danger. Mishandling such as improper disassembly will destroy its protective function and make it heat, smoke, distort or burning.
- 2 Forbid Short-circuit Batteries
Do not touch the plus and minus contacts with metals. Do not put the battery with metal element together in either storage or movement. If the battery is short-circuit, it carries magnified current, which will cause damage and make the battery heat, smoke, distort or burning.
- 3 Forbid heat and burn the battery
If heating or burning the battery, it will caused the isolated element in the battery dissolved, protection function stopped or the electrode burning, over heated, which will make the battery heat, smoke, distort or burning.

- 4 To avoid use the battery near the heat
Do not use the battery near the fire and stove, or over 80°C, and over heating will cause the battery internal short-circuit and make it heat, smoke, distort or burning.
- 5 Forbid bathing the battery
Do not dampen the battery, or even immerse it in the water, which will cause internal protection circuit and its function lost or abnormal chemical reactions, which will lead to heating, smoking, distortion or burning.
- 6 Avoid charging near fire or in the sunlight
Otherwise, it will cause internal protection circuit and its function lost or abnormal chemical reactions, which will lead to heating, smoking, distortion or burning.
- 7 Danger in using non-indicated chargers in
Charging in abnormal condition, the battery will cause internal protection circuit and its function lost or abnormal chemical reactions, which will lead to heating, smoking, distortion or burning.
- 8 Forbid Damage Battery
Do not allow damage the battery with the metals gouged, forged or dropped etc., otherwise, it will cause over-heated, distort, smoke or burning, even in danger.
- 9 Forbid directly welding on the battery
Over-heated will cause the isolated element dissolved in the battery and losing protective function its cycle life, even will cause over-heated, distort, smoke or burning.
- 10 Forbid directly charging on the power socket or car kit cigarette
High voltage and amplified current will damage the battery and reduce its cycle life, even will cause over-heated, distort, smoke or burning.
- 11 Do not use this battery for other equipment
Improprate usage will damage the battery and reduce its cycle life, even will cause over-heated, distort, smoke or burning.
- 12 Do not touch the leak-out battery
The leak-out electrolyte will cause the skin uncomfortable. If it drops into eyes, do not rob the eyes but wash in time, and go to hospital for treatment.

12. Warning

- 1 This battery cannot mix with deposal or twice- recycled batteries in use. Otherwise, for its abnormal charge and discharge, it will cause over-heated, distort, smoke or burning.
- 2 Keep the battery out of children's reach and prevent them biting or swallowing the battery.
- 3 Do not insert the battery onto the charger for a long time If charging beyond the normal time, the battery is still in the charger, please stop charging. The abnormal charging will cause battery over-heated, distort, smoke or burning.
- 4 Do not put into microwave stove or any other pressure apparatus. Take the battery away from the cellular phone or the charger if it is instant heated or leak-out (or odors) and depose it. The bad battery will causes over-heated, smoke or burning.

13. Cautions

- 1 Notice
The battery shall be prevented to be exposed in effulgence so as not to cause over-heated, distort, smoke and weaken its performance and cycle life.
- 2 Electro Static-free
There is a protective circuit inside the battery to prevent contingency. Do not use the battery in the Electro static circumstances, (above 1000V), for it is easily destroyed the circuit board so that the battery doses not work and causes over-heated, distort, smoke or burning.
- 3 Discharging Temperature Range
Recommended discharging temperature range is 0-40°C, beyond which it will result in decadence of the battery performance and shortness of its life.
- 4 Read carefully the manual before use or whenever in need.
- 5 Charging Method
Use the special chargers in the recommended charging method to charge the battery.
- 6 First Usage
When you use the battery for its first time, do not put it into the cellular phone or any other equipment once you find it in unusual conditions such as unclearness or odors. The battery should be returned to the vendor.
- 7 Children Use
When Children use the battery, they should be under their parents' instructions and superintend in use.
- 8 Avoid Children's Touch
Battery should keep out of the place where children in reach. Prevent children taking the battery out of the charger or the cellular phone to play.
- 8 To avoid the leak-out liquid be exposed to the skin or clothes. If touched, please wash by clean water so as not to cause the skin uncomfortable

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10 Consultation

When you buy the battery, please note how to contact with the vendors, so that you may get intouch with vendors for consultation whenever in need.

11 Guarantee period

Guarantee is one year since it is out of the factory. Life time:600 cycles. Any damage by incorrect use and not quality problem, even in its guarantee period, free service won't be provided by the manufacture.

12 Safety Usage Guarantee

If the battery is used on other instruments, please contact with your manufacturer for how to get the best performance, at least consult its maximum current, fast charge and special application.

14. Quality Evaluation programmed

Quality evaluation composes of authoritative check and quality consistence check. Authoritative check is carried out on design decision, emended design and production decision. It should be confirmed by both Purchaser and Vendor on sampling proposal, check project, sequence and judgment etc., which in principle, should be all included. Quality consistence check should be divided into lot by lot check-up and periodical check-up, as to test the quality steadiness during the products in production (refer to GB2828-1987 standard). The detailed check-ups compose of appearance, internal resistance, rating capacity or 1C5A discharging capacity etc.

15. Environment Protection

This product accord with RoHS requirement.

16. Others

All the above are the agreed the battery descriptions and test regulation between Purchaser and Vendor. It can be carried out if there is no any new written agreement or modification notice occurred.