

LI-ION POWER TECHNOLOGY CO.,LTD.

3.2V 50AH

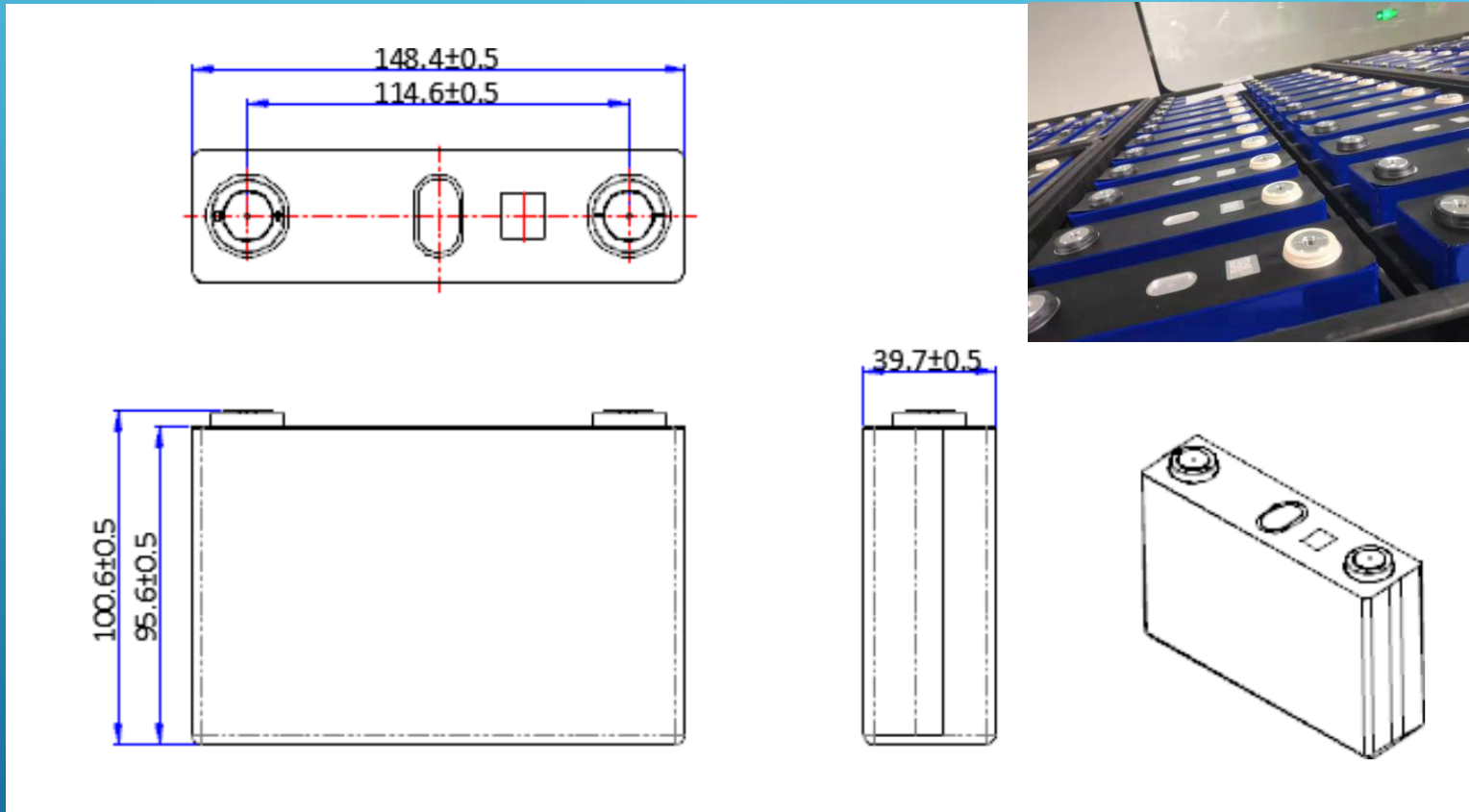
——LPT50BF

TECHNICAL DATA SHEET

6000 life cycles  
2C Continuous  
5C Peak

**MSDS**  
**UN38.3**

# DIMENSION





# SPECIFICATION SUMMARY

| Section No. | Parameter                     | Specification            | Condition            |
|-------------|-------------------------------|--------------------------|----------------------|
| 1           | Rated capacity                | 50Ah                     | Discharge current:1C |
| 2           | Minimum capacity              | 50Ah                     | Discharge current:1C |
| 3           | Nominal voltage               | 3.2V                     | —                    |
| 4           | Operating voltage             | 2.5V-3.65V<br>2.0V-3.65V | T>0°C<br>T≤0°C.      |
| 5           | AC IMP (1KHz)                 | ≤0.7 (mΩ)                | Fresh cell           |
| 6           | Average AC IMP (1KHz)         | 0.6 (mΩ)                 | Fresh cell           |
| 7           | Self-discharge rate/month     | ≤4%                      | 25°C±5°C             |
| 8           | Delivery SOC                  | 30%SOC                   | N.A.                 |
| 9           | Working charge temperature    | 0°C-55°C                 |                      |
| 10          | Working discharge temperature | -20°C-55°C               |                      |
| 11          | Storage temperature           | -10°C~45°C               |                      |



# SPECIFICATION SUMMARY

|    |             |   |  |
|----|-------------|---|--|
| 12 | Cell weight | $(1.17 \pm 0.02)$ kg                                    | N.A.                                       |
| 13 | Dimension   |   | N.A.                                       |
| 14 | Cycle life  | After 4000cycles, the discharge capacity $\geq 80\%C_0$ | $25^{\circ}\text{C} \pm 5^{\circ}\text{C}$ |

$C_0$ : The discharge capacity of the first cycle



# CHARGING MODE & PARAMETERS

## 1. Nominal charge current

1C (25°C±5°C)

## 2. Maximum continuous charge current

2C (25°C±5°C)

## 3. Charge cut-off voltage

3.65V (25°C±5°C)

## 4. Standard charging method

1C (CC-CV 1C to limited charge voltage at 0.05C)

## 5. Nominal charge temp

25±5°C (Cell temp)

## 6. Temp range of charging

0°C~55°C



# CHARGING MODE & PARAMETERS

## 7. Other Charging Modes

| Cell temp | Nominal charge | Fast charge | Pulse charge (10s) |
|-----------|----------------|-------------|--------------------|
| <0°C      | No charging    | No charging | No charging        |
| 0°C~10°C  | 1/3C           | 0.5C        | 1C                 |
| 10°C~20°C | 0.5C           | 1C          | 2C                 |
| 20°C~30°C | 1C             | 2C          | 5C                 |
| 30°C~40°C | 0.5C           | 1C          | 2C                 |
| 40°C~55°C | 1/3C           | 0.5C        | 1C                 |
| >55°C     | No charging    | No charging | No charging        |



# DISCHARGING MODE & PARAMETERS

| Section No. | Parameter                            | Specification       | Condition   |
|-------------|--------------------------------------|---------------------|---|
| 1           | Nominal discharge current            | 1C                  | 25°C ± 5°C  |
| 2           | Maximum continuous discharge current | 2C                  | 25°C ± 5°C  |
| 3           | Maximum pulse discharge current      | 5C                  | SOC > 40%: 60s; SOC < 40%: 10s  |
| 4           | Cut-off voltage                      | 2.5V<br>(Unit Cell) | 25°C ± 5°C  |
| 5           | Nominal discharge temp               | 25 ± 5°C            | Cell temp   |
| 6           | Temp range of discharge temp         | -20°C-55°C          | The discharging must be stopped immediately when the cell temperature is beyond -20 °C to 55 °C |



# DISCHARGING MODE & PARAMETERS

## 7. Other discharge modes

| Cell temp   | Nominal continuous discharge | Continuous discharge with varied C-Rate | Pulse discharge(10s) |
|-------------|------------------------------|---|----------------------|
| <-40°C      | No discharging               | No discharging                          | No discharging       |
| -40°C~-20°C | 0.1C                         | 0.5C                                    | 0.5C                 |
| -20°C~0°C   | 1C                           | 1C                                      | 2C                   |
| 0°C~55°C    | 1C                           | 2C                                      | 5C                   |
| >55°C       | No discharging               | No discharging                          | No discharging       |





# LOW TEMPERATURE DISCHARGE CAPACITY

| Section No. | Parameter                   | Specification | Condition   |
|-------------|-----------------------------|---------------|---|
| 1           | Discharge capacity at 25°C  | ≥100%         | Standard charging\discharging at 25°C(The temperature of the both sides of the cell)        |
| 2           | Discharge capacity at 0°C   | ≥80%          | Standard charging\discharging at 25°C\0°C(The temperature of the both sides of the cell)    |
| 3           | Discharge capacity at -10°C | ≥75%          | Standard charging\discharging at 25°C\ -10°C(The temperature of the both sides of the cell) |
| 4           | Discharge capacity at -20°C | ≥70%          | Standard charging\discharging at 25°C\ -20°C(The temperature of the both sides of the cell) |



# TEMP RISE OF CELLS

The temperature rise of each cell is measured in the middle of the wide surface of the cell, and the cell should be cooled by natural convection in a room where the ambient temperature is relatively stable and the space is large enough. Temperature sensors for each cell should

be calibrated and can record time. Under such conditions, the temperature rise refers to the difference between the temperature after discharge and the temperature before discharge.

| Section No. | Parameter                        | Specification             | Condition  |
|-------------|----------------------------------|---------------------------|--|
| 1           | Continuous discharging temp rise | $\leq 10^{\circ}\text{C}$ | The fully charged cell discharge with a constant current of 1C to 2.5V ) |
| 2           | Pulse discharging temp rise      | $\leq 5^{\circ}\text{C}$  | (SOC $\geq 10\%$ , 400A discharge 10s)                                   |



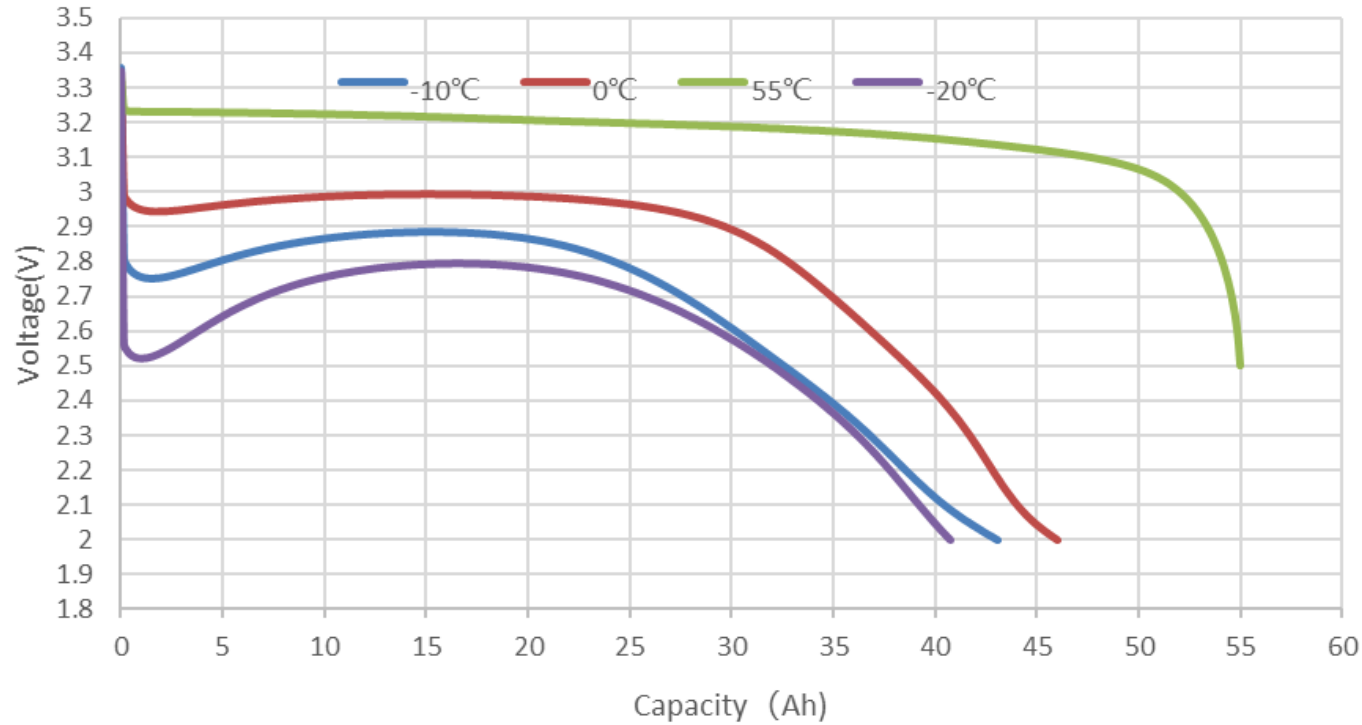
# STORAGE AND SHIPMENT REQUIREMENT

| Item                |                    | Criteria     |
|---------------------|--------------------|--------------|
| Storage temperature | Less than 1 month  | -10°C–45°C   |
|                     | Less than 3 months | -10°C–35°C   |
|                     | More than 3 months | 0°C–30°C     |
| Relative humidity   |                    | ≤75% RH      |
| State of charge     |                    | 30%(30% SOC) |

When the cell is not used for a long time, the cell should be charged and discharged every three months, and adjust the SOC to 30%.

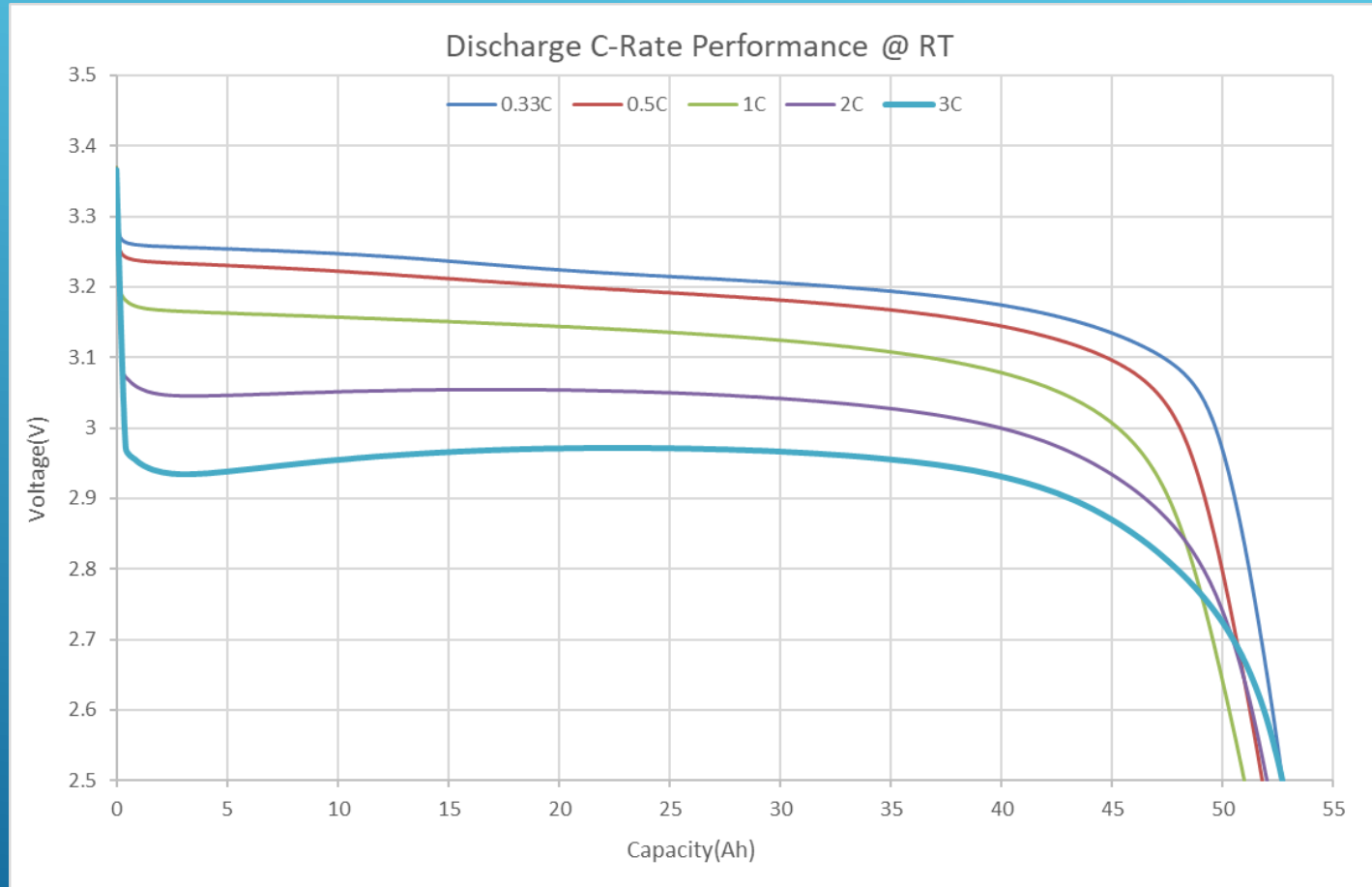
# TECHNICAL CURVES

Discharge Performance @ Varied Temp

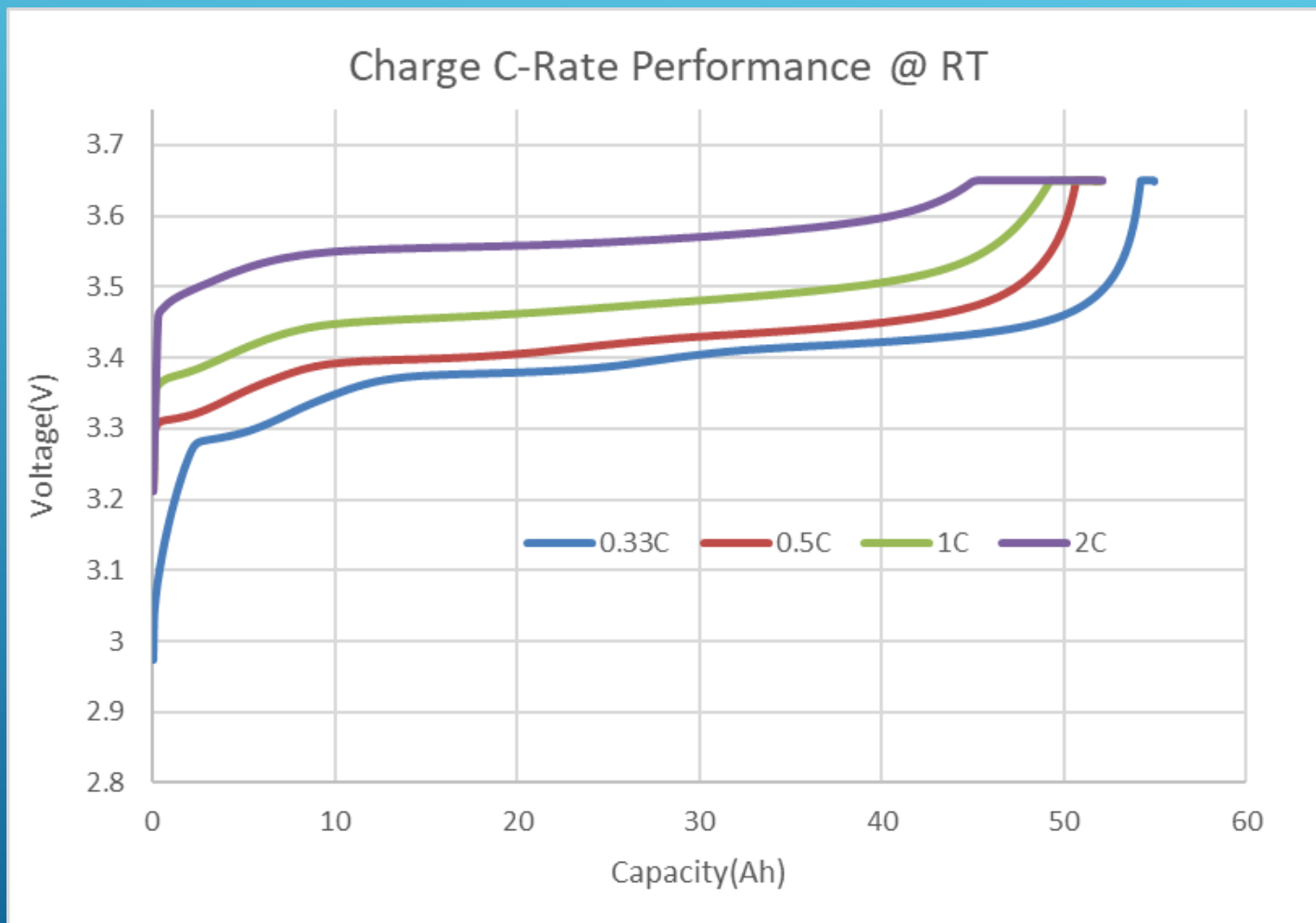




# TECHNICAL CURVES



# TECHNICAL CURVES



## ▶ **Shipment**

- ▶ The Cell shall be shipped in voltage range of 3.2 ~ 3.4V or in accordance with customers' requirement. The remaining capacity before charging shall be changed depending on the storage time and conditions.

## ▶ **Warranty**

- ▶ The Warranty period of cell is made according to business contract, However, even though the problem occurs within this period, LPT won't replace a new cell for free as long as the problem is not due to the failure of LPT manufacturing process or is due to customer's abuse or misuse.
- ▶ LPT will not be responsible for trouble occurred by handling outside of the precautions in instructions. LPT will not be responsible for trouble occurred by matching electric circuit, cell pack and charger.
- ▶ LPT will be exempt from warrant any defect cells during assembling after acceptance.

## ▶ **Precautions and Safety Instructions**

- ▶ Lithium-ion rechargeable batteries subject to abusive conditions can cause damage to the cell and/or personal injury. Please read and observe the standard cell precautions below before using utilization. The customer is required to contact LPT in advance, if and when the customer needs other applications or operating conditions than those described in this document.
- ▶ LPT will take no responsibility for any accident when the cell is used under other conditions than those described in this Document.

## ▶ Standard cell Precautions

- ▶ a. Do not expose the cell to extreme heat or flame.
- ▶ b. Do not short circuit, over-charge or over-discharge the cell.
- ▶ c. Do not subject the cell to strong mechanical shocks.
- ▶ d. Do not immerse the cell in water or sea water, or get it wet..
- ▶ f. Do not disassemble or modify the cell.
- ▶ g. Do not handle or store with metallic like necklaces, coins or hairpins, etc.
- ▶ h. Do not use the cell with conspicuous damage or deformation.
- ▶ i. Do not connect cell to the plug socket or car-cigarette-plug.
- ▶ j. Do not make the direct soldering onto a cell.
- ▶ k. Do not touch a leaked cell directly.
- ▶ l. Do not use for other equipment.
- ▶ m. Do not use Lithium-ion cell in mixture.
- ▶ n. Do not use or leave the cell under the blazing sun (or in heated car by sunshine).
- ▶ o. Keep cell away from children.
- ▶ p. Do not drive a nail into the cell, strike it by hammer or tread it.
- ▶ q. Do not give cell impact or fling it.



## ▶ Cell Operation Instructions

### ▶ Charging

- ▶ a. Charge the cell in a temperature range of 0°C to + 50°C.
- ▶ b. Charge the cell at a constant current of 0.3C until 3.65V, and then at a constant voltage of 3.65V until 0.05C. Charge rates greater than 1C are NOT recommended. (C : Rated Capacity of cell)
- ▶ c. Use a constant current, constant voltage (CC/CV) lithium-ion (Li+) cell charge controller.
- ▶ d. Do not continue to charge cell over specified time.

### ▶ Discharging

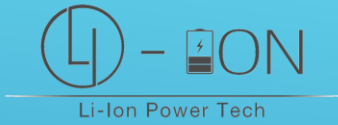
- ▶ a. Recommended cut-off voltage to 2.2V. Recommended max continuous discharge current is 3C.
- ▶ b. For maximum performance, discharge the cell in a temperature range of -20°C to +50°C.

## ▶ Storage Recommendations

- ▶ In case of long period storage (more than 3 months), storage the cell at temperature range of -10 ~ +45°C, low humidity, no corrosive gas atmosphere, No press on the cell; After more than 3 months, the batteries need to be charged according to the standard charge and discharge process.



BATTERY PACKS MADE OF 3.2V 50AH CELLS



- ▶ HK HQ Office: BRIGHT WAY TOWER, NO.33 MONG KOK ROAD, KOWLOON, HONGKONG
- ▶ USA Office: 7427 South Main Street, Midvale, Utah 84047
- ▶ China Factory: No.8, Dongtin Lake Road, Economic and Development Zone, Qinhuangdao, China.

▶ **Welcome to Contact:**

- ▶ [www.li-ionpowertech.com](http://www.li-ionpowertech.com)
- ▶ [info@li-ionpowertech.com](mailto:info@li-ionpowertech.com)