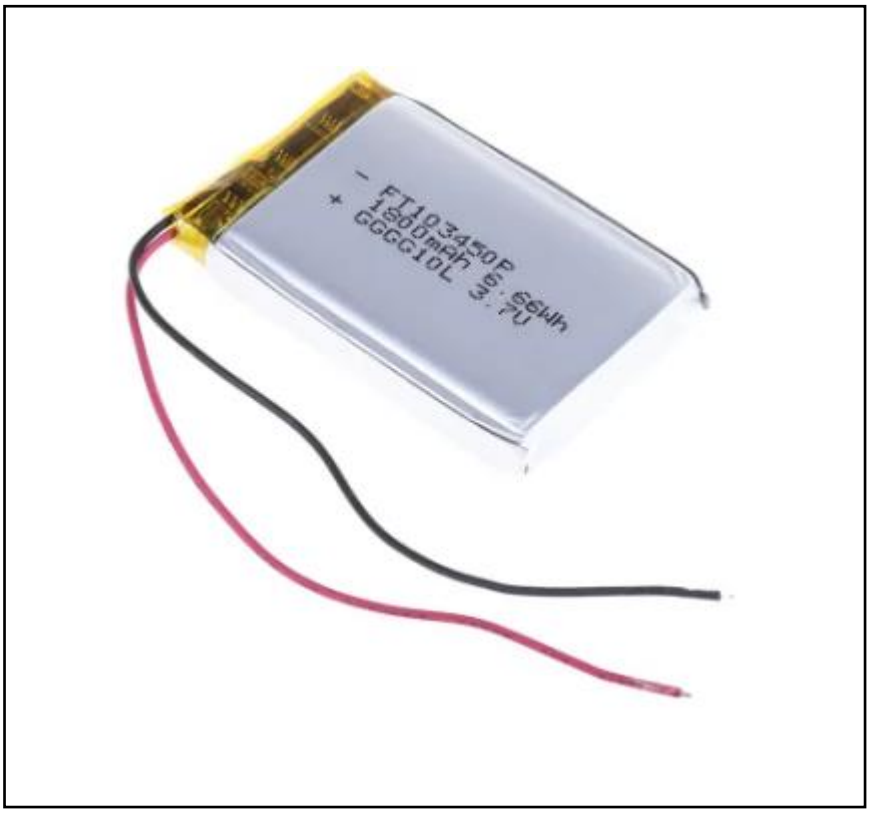
FEATURES

- Pre-wired with bare wire terminals
- Rechargeable
- Thermally stable
- Voltage: 3.7V
- Capacity: 1800mAh

RS PRO, 3.7V, 53.5 x 35 x 10.4 mm, Lithium Polymer Rechargeable Battery, 1.8Ah

RS Stock No.: 144-9405



RS Professionally Approved Products bring to your professional quality parts across all product categories. Our product range has been tested by engineers and provides a comparable quality to the leading brands without paying a premium price.

Product Description

This RS PRO Li-Polymer rechargeable battery is the best way of adding an autonomous and stable power supply to your project that requires mobility and long-lasting energy supply. Compared to NiMh cells these Li-ion battery packs offer twice as much energy with a low self-discharge. Lithium-ion battery packs are thermally stable and highly resistant to the cold. Flat shaped batteries provide a much higher specific energy than standard lithium batteries and are typically used in applications where weight may be an issue.

General Specifications

Size	53.5 x 35 x 10.4 mm
Chemistry	Lithium ion Polymer
Cycle Life	Discharge Capacity (301th cycle) ⩾Rated Capacity × 80%. *A cycle is defined as a Standard Charge, 10 minutes - rest and Standard discharge. The cell is to be cycled for 301 times.
Applications	Mobile Phones, House telephones, Computers, Walkie-Talkie devices

Electrical Specifications

Nominal Capacity	1800 mAh
Minimum Capacity	1700 mAh
Nominal Voltage	3.7V
Charging Voltage	4.20 $^{+0.03}_{-0.02}$ V
Discharge Cut-off Voltage	3.0V
End-of -Charge Current	0.02C_5A
Impedance	≤160mΩ
Terminal Type	Wire Lead
Standard Charge	0.2C_5A (340mA) CC(Constant current) charge to Charge Limited Voltage, then CV(constant voltage) charge till charge current decline to End -of -Charge Current at 23± 2°C.
Standard Discharge	0.2C_5A(340mA)discharge to the Discharge Cut-off Voltage at 23±2°C
Maximum Charging Current (Continuous))	0-10°C 0.2C(340 mA)/4.1V 0.02 C_5A cut-off, 10-45°C 0.5C(850mA)/4.2 V 0.02 C_5A cut-off

Maximum Discharging Current (Continuous)	-20-0°C 0.2C_5A (340 mA) 0-60°C 0.5C_5A (850mA)

PCM Specifications

Parameter	Minimum	Typical	Maximum
Overcharge Detection Voltage	4.300V	4.352V	4.350V
Overcharge Detection Delay Time	960ms	1200ms	1400ms
Over Discharge Detection Voltage	2.45V	2.50V	2.55V
Over Discharge Detection Delay Time	115ms	144ms	173msm
Discharge Over Current Detection	5A	7A	9A
Over Current Detection Delay Time	7ms	9ms	12ms
Short Circuit Detection Delay Time	220µs	320µs	380µs
Current Consumption in Normal	1.0µA	3.0µA	7.0µA
Impedance	-	30mO	45mO

Mechanical Specifications

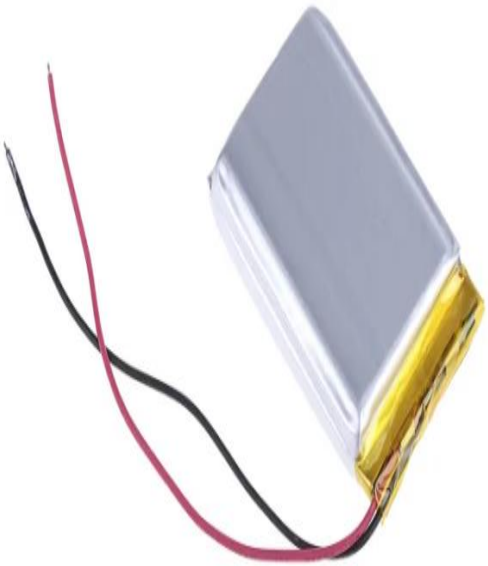
Dimensions	53.5mm x 10.4mm x 35mm
Height	53.5mm
Thickness	10.4 mm
Width	35.0mm
Wire Length	100 ±3 mm L=1.5 ±0.5 mm
Weight	36g

Operation Environment Specifications

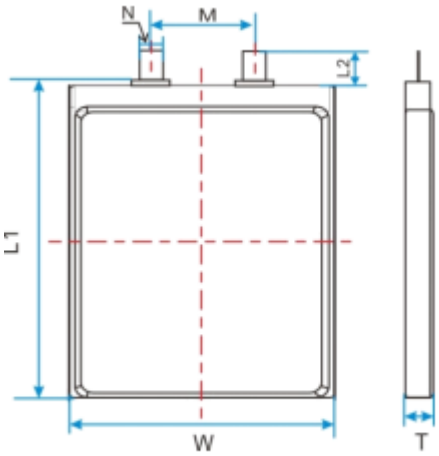
Operating Temperature Range: Charge	0~45°C
Operating Temperature Range: Discharge	-20~60°C
Relative Humidity	45% - 75% RH
Storage Temperature	-20°C to 60°C
Charge Temperature	0°C to 45°C
Discharge Temperature	-20°C to 60°C

Approvals

Compliance/Certifications	UN38.3, RoHS

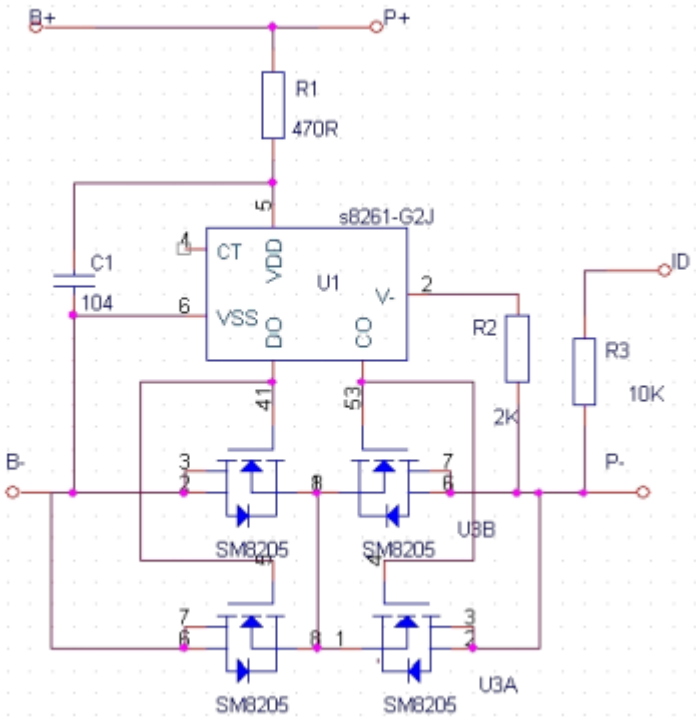


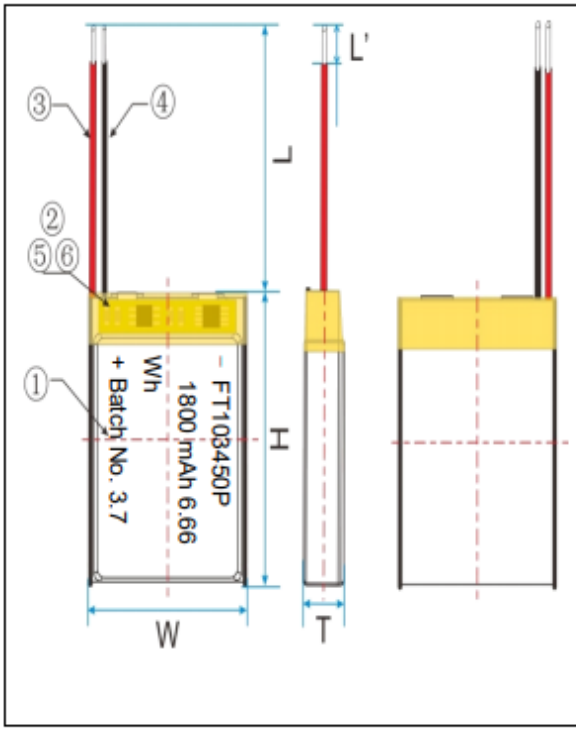

- FT103450P
1800mAh 6.66Wh
+ GGGG10L 3.7V


N
M
L2
L1
W
T

List of PCB BOM

No.	Element Code	Part Number	Type/Specification	Qty.
1	U1	Protection IC	S8261-G2J	1
2	U2	MOSFET	8205	1
3	R1	Resistor	470 RΩ，±5%	1
4	R2	Resistor	2 kΩ，±5%	1
5	C1	Capacitor	104/16 V ±20%	1
6	R3	NTC	10 K ±1% (B=3435)	
7		PCB		1





1 · External Dimension

Thickness： T(max)=10.4 mm

Width： W(max)=35.0 mm

Height： H(max)=53.5 mm

Wire length： L=100 ±3 mm

L=1.5 ±0.5 mm

2 · Material：

① Cell: FT103450P

②PCM

③Red Wire(+) UL3302 24 AWG

④Black Wire (-) UL3302 24 AWG

⑤Electrical Tape

⑥Electrical Tape

Testing Datasheet

1. Model

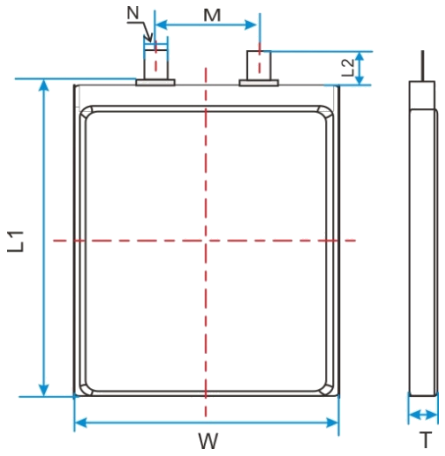
FT103450P

2. Basic Product Characteristics

No.	Item	Characteristics
2.1	Nominal Capacity	1800mAh
	Minimum Capacity	1700mAh
2.2	Nominal Voltage	3.7V
2.3	Impedance	≤160mΩ (AC impedance @1kHz, 50% SOC, （23±2℃）
2.4	Limited Charge Voltage	$4.20^{+0.03}_{-0.02}$V
2.5	Discharge Cut-off Voltage	3.0V
2.6	End-of -Charge Current	0.02C_5A
2.7	Standard Charge	0.2C_5A (340mA) CC(constant current) charge to charge Limited Voltage, then CV(constant voltage) charge till charge current decline to End-of-Charge Current at 23±2℃.
2.8	Standard Discharge	0.2C_5A (340mA) discharge to the Discharge Cut-off Voltage at 23±2℃.
2.9	Maximum Charging Current (continuous)	0~10°C 0.2C/4.1V0.02 C_5A cut-off 10~45°C 0.5C/4.2V0.02 C_5A cut-off
2.10	Maximum Discharging Current (continuous)	-20~0°C 0.2 C_5A 0~60°C 0.5 C_5A
2.11	Operating Temperature Range	Charge 0 ~ 45℃
		Discharge – 20 ~ 60℃
2.12	Storage Temperature Range	-20 ~ 60℃≤1month； -20 ~ 45℃≤3months； -20 ~ 30℃≤12months
	Operating and Storage Humidity Range	45~75% RH
2.13	Weight	36.0g

3. External Dimension

Item	Dimension （mm）
T	Max 10.2
W	Max 34.50
L1	Max 52.50
L2	8±1
M	14±1.5
N	4.0±0.2



4. Appearance

It shall be free from any defects which may affect commercial value of the cell such as remarkable scratches, cracks, deformation, leakage.

5. Basic Electrical Characteristics

No.	Items	Criteria	Test Method
5.1	Open Circuit Voltage	3.75V～3.95V	Measure with voltmeter.
5.2	Rated Capacity	≥1700mAh	Standard Discharge after Standard Charge and rest 10min.
5.3	1C_5A Discharge Capacity	≥90%×Rated Capacity	1C_5A discharge to the Discharge Cut-off Voltage after Standard Charge and rest 10min.
5.4	Temperature Characteristics	Discharge Capacity： 55℃:≥85%×Rated capacity； 0℃:≥80%×Rated capacity； -10℃:≥60%×Rated capacity	Aafter Standard Charge, the cell is stored at-20 ± 2℃ for 4hours, and then at the same temperature 0.2C_5A discharges to the Discharge Cut-off Voltage. According to this procedure, test 0 ± 2℃, 55 ± 2℃ discharge capacity, respectively.

5.5	Storage Characteristics	Retention Capacity: ≥85% ×Rated Capacity	Aafter Standard Charge, the cell is stored for 28 days，and then 0.2 C_5A discharges to the Discharge Cut-off Voltage to test retention capacity.
5.6	Cycle Life	Discharge Capacity (301th cycle) ≥Rated Capacity×80%	A cycle is defined as a Standard Charge, 10 minute-rest and Standard Discharge.The cell is to be cycled for 301 times.

Remark 1: All tests mentioned in this specification should be tested at 23 ± 2℃ and the standard air pressure.

6. Safety Characteristics

No.	Items	Criteria	Test Method
6.1	Overcharge	No fire. No explosion.	Charging to 6V with Maximum Charging Current after Standard Discharge, then CV Charge till current decline to End-of-Charge Current or CV time is more than 7hours.
6.2	Short-Circuit	No fire. No explosion. The temperature of the cell shall not exceed 150°C.	Rest for 30miniutes at 55±2℃ after Standard Charge, then short-circuit cells by connecting the positive and negative terminals with a circuit load having a resistance load(copper wire) of 80±10mΩ.Test can be terminated when cell surface temperature has returned to ±10°C of environment temperature.
6.3	Heating	No fire. No explosion.	The cell is to be heated in a gravity convection or circulating air oven after Standard Charge. The temperature of the oven is to be raised at a rate of 5±2℃per minute to a temperature of 130 ±2°C and remain for 10 minutes.

Remark 2: All safety characteristics are carried out by specialized personnel familiar with Li-ion knowledge or under instruction of our technical personnel after detailed consultation.

7. Reliability Characteristics

No.	Items	Criteria	Test Method
7.1	Static Humidity and Temperature	Retention Capacity: ≥80%× Rated Capacity Recoverable Capacity ≥85% ×Rated Capacity No deformation. No rupture. No smoke. No leakage.	After Standard Charge, the cell is stored at 40±2℃ and 90%-95%RH for 48hours, then rest for 2hours at 23±2℃. Standard Discharge to test its retention capacity, and then perform a cycle with Standard Charge and Standard Discharge procedure to test recoverable capacity.
7.2	Vibration	OCV≥3.6V; No rupture. No leakage. No fire. No explosion.	After Standard Charge, the cell is fixed to vibration table and subjected to vibration cycling that the frequency is to be varied at the rate of 1Hz per minute between 10Hz an 55Hz, the excursion of the vibration is 1.6mm. The cell shall be vibrated for 30 minutes per axis of XYZ axes.
7.3	Drop	Retention Capacity: ≥90%×Rated Capacity； No rupture. No leakage. No fire. No explosion.	After Standard Charge, the cell is to be dropped from a height of 1 meter onto board ground for 6 times, then test the retention capacity with Standard Discharge.

8. Parameter of PCB

8.1 List of Parameter

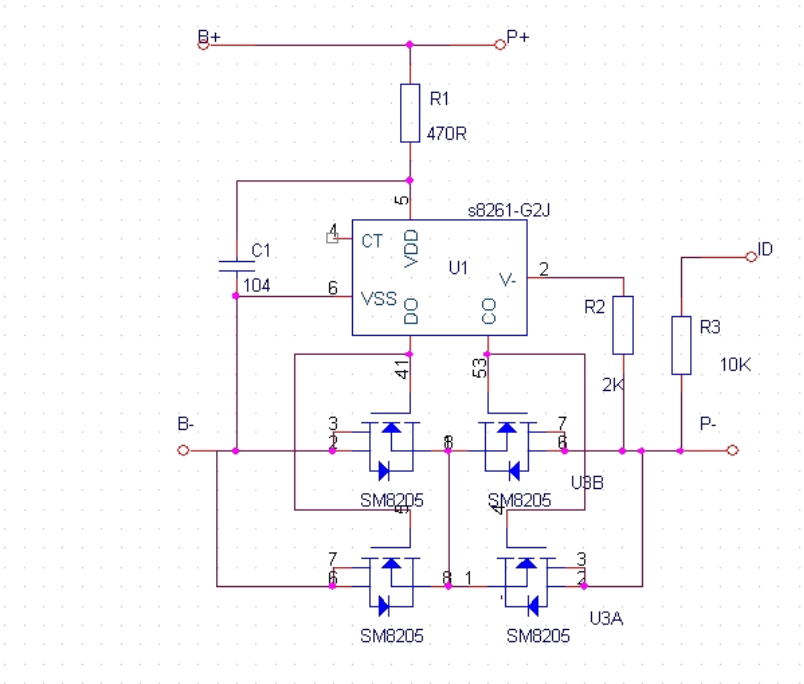
Parameter	Min.	Typ.	Max.	Unit
Overcharge Detection Voltage	4.300	4.325	4.350	V
Overcharge Detection Delay Time	960	1200	1400	ms
Over discharge Detection Voltage	2.45	2.50	2.55	V
Over discharge Detection Delay Time	115	144	173	ms
Over Current Detection	5.0	7.0	9.0	A
Over Current Detection Delay Time	7	9	12	ms

short circuit Detection Delay Time	220	320	380	μs
Current Consumption in Normal	1.0	3.0	7.0	μA
Impedance		30	45	mΩ

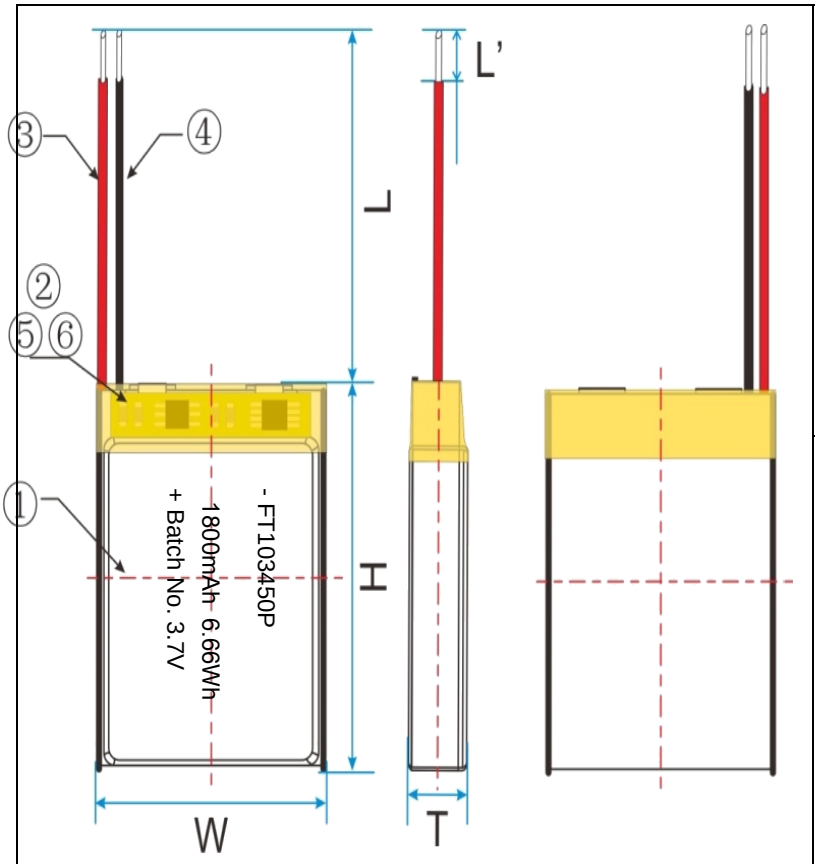
8.2 List of PCB BOM

No.	Element Code	Part Number	Type/Specification	Qty.
1	U1	Protection IC IC	S8261-G2J	1
2	U2	MOSFET	8205	1
3	R1	Resistor	470RΩ, ±5%	1
4	R2	Resistor	2KΩ, ±5%	1
5	C1	Capacitor	104/16V±20%	1
6	R3	NTC	10K±1%(B=3435)	
7		PCB		1

8.3 Circuit Diagram



9. External Dimension Drawing PACK



1．External Dimension

Thickness： T(max)=10.4mm

Width： W(max)=35.0mm

Height： H(max)=53.5mm

Wire length： L=100±3mm

L'=1.5±0.5mm

2．Material：

① Cell： FT103450P

②PCM

③Red Wire(+) UL3302 24AWG

④Black Wire (-) UL3302 24AWG

⑤Insulating Tape

⑥Insulating Tape

Danger !

- Never heat cell or throw it into fire.
- Never throw cell in liquid such as water、gasoline or drink etc, also do not wet cell
- Prohibition of use cell close to fire or in a car where temperature may be above 60℃. Also do not charge / discharge in such conditions.
- Never put batteries in your pockets or a bag together with metal objects such as necklaces, Hairpins, coins, or screws. Do not store or transport batteries with such objects.
- Never short-circuit the (+) and (-) terminals with other metals.
- Do not place cell in a device with the (+) and (-) in the wrong way around.
- Do not pierce cell with a sharp object such as a needle.
- Do not disassemble the cell.
- Never weld a cell directly.
- Do not use a damaged cell.
- Please carefully read the user's manual prior to use to avoid deteriorated performance, even cell leakage, heat, smoke, fire, explosion due to wrong operations.

! Warning!

- Do not put cell into a microwave oven, dryer, or high-pressure container.
- Never use cell with dry cells and other primary batteries. Also do not use mixed cells/batteries with different package, model, or brand.
- Stop charging the cell if charging is not completed within the specified time.
- Stop using the cell if abnormal heat, odor, discoloration, deformation or abnormal condition is detected during use, charge, or storage.
- Keep away from fire immediately when leakage or unpleasant smell is detected.
- If liquid leaks onto your skin or clothes, wash well with fresh water immediately.
- If liquid leaking from the cell gets into your eyes, do not rub your eyes. Wash them well with fresh water and go to see a doctor immediately.

! Caution!

- Before using the cell, be sure to read the user's manual and cautions on handling thoroughly.
- Charge with specific charger according to product specification. Charge with CC/CV model. Reverse charging is prohibited， for it will deteriorate the cell performance and lead to safety issues such as heat and leakage.
- Keep batteries out of reach of children to avoid being swallowed.
- If children use the cell, their guardians should explain the proper handling.
- Batteries have life cycles. If cell powers equipment much shorter time than usual, please replace the cell with a new one.
- When not using cell for long terms, remove it from the equipment and store in a place with low humidity and low temperature.
- While the cell pack is charged, used and stored, keep it away from places/objects with static electric.
- If the terminals of cell become dirty, clean it with dry cloth before using.
- Cell would be over-discharged by its self-discharge characteristics in case the battery is not used for long time. In order to prevent over-discharging, the battery shall be charged periodically to maintain between 3.7V and 3.9V. Cell is to be stored in a condition as Item. 2.12.