



Model: IFR26650
Capacity: 3300mAh
Voltage: 3.7V
Grade: A

1. Scope

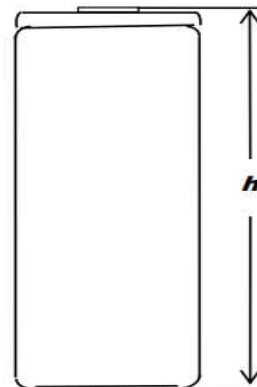
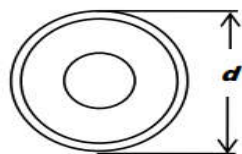
This specification is applied to the reference battery mentioned above.

2. Product Specifications:

Table 1 (1)

No.	Items	Specifications
1	Typical Rated Capacity	3300mAh
2	Minimum Rated Capacity	3250mAh
3	Nominal Voltage	3.2V
4	Voltage at end of Discharge	2.0V
5	Charging at end of Voltage	3.65V
6	Standard charge	Constant Current 0.2C Constant Voltage 3.65V 0.02C cut-off Charge time: Approx6.0h
7	Standard discharge	Constant Current 0.2C End Voltage 2.0V
8	Fast charge	Constant Current 1C Constant Voltage 3.65V 0.02C cut-off Charge time: Approx1.5h
9	Fast discharge	Constant Current 3C End Voltage 2.0V
10	Maximum Continuous Charge Current	1C
11	Maximum Continuous Discharge Current	3C
12	Operation Temperature Range	Charge: 0~45°C Discharge: -20~60°C
13	Storage Temperature Range	Less than 1 year: -20~25°C Less than 3 months: -20~40°C
14	Weight	Approx: 85g
15	Dimension	Height (h): 65.9±0.5mm Width (d): 26.1±0.2mm

Cell Dimension:



3. Performance and Test Conditions:

Standard Test Conditions:

The cell shall not be cycled more than five times before the test. Unless otherwise specified, test and measurement shall be done under temperature of $25 \pm 5^\circ\text{C}$ and relative humidity of 45~48%. If it is judged that the test results are not affected by such conditions, the tests may be conducted at temperature 15~30°C and humidity 25-85% R.H.

Standard Charge/Discharge

Standard charge: Test procedure and its criteria are referred as follows:

0.2C=Charging shall consist of charging at a 0.2C constant current rate until the cell reaches 3.65V. The cell shall then be charged at constant voltage of 3.65 volts while tapering the charge current. Charging shall be

terminated when the charging current has tapered to 0.02C. Charge time: Approx 6.0h,

The cell shall demonstrate no permanent degradation when charged between 0°C and 45°C.

Standard Discharge

0.2C=Cells shall be discharged at a constant current of 0.2C to 2.0 volts @ $25^\circ\text{C} \pm 5^\circ\text{C}$.

If no otherwise specified, the rest time between Charge and Discharge amount to 30min.

Appearance

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

Initial Performance Test:

Table 2 (2)

No.	Items	Test Methods Condition	Requirements
1	Open-circuit Voltage	The open-circuit voltage shall be measured within 24 hours after standard charge.	$\geq 3.33\text{V}$
2	Internal impedance	Internal resistance measured at AC 1KHz after 50% charge.	$\leq 35\text{m}\Omega$
3	Minimal Rated Capacity	The capacity on 0.2C discharge till the voltage tapered to 2.0V shall be measured after rested for 30min then finish standard charge.	≥ 3250

Temperature Dependence of discharge capacity

Cells shall be standard charged and discharged @ 0.2C to 2.0 volts. Except to be discharged at temperatures per Table 3. Cells shall be stored for 3 hours at the test temperature prior to discharging and then shall be discharged at the test temperature. The capacity of a cell at each temperature shall be compared to the capacity achieved at 23°C and the percentage shall be calculated. Each cell shall meet or exceed the requirements of Table 3.

Table 3 (3) :

Discharge Temperature	-10°C	0°C	23°C	60°C
Discharge Capacity (0.2C)	50%	80%	100%	95%

Cycle Life and Leakage-Proof

Table 4 (4) :

No.	Item	Criteria	Test Conditions
1	Cycle Life (0.5C)	Higher than 80% of the Initial Capacities of the Cells	Carry out 2000 cycle Charging/Discharging in the below condition. 1. Charge: Standard Charge, 2. Discharge: 0.5C to 2.0V 3. Rest Time: between charge/discharge: 30min. 4. Temperature: 25±5°C
2	Leakage-Proof	No leakage (visual inspection)	After full charge with standard charge, store at 60 ±3°C, 60±10% RH for 1 month.

4. Mechanical characteristics and Safety Test

Table 5 (5) Mechanical characteristics:

No.	Items	Test Methods & Condition	Criteria
1	Vibration Test	After standard charging, fixed the cell to vibration table and subjected to cycling that the frequency is to be varied at the rate of 1Hz per minute between 10Hz and 55 Hz, the excursion of the vibration is 1.6mm. The cell shall be vibrated for 30 minutes per axis of XYZ axes.	No leakage No fire
2	Drop Test	The cell is to be dropped from a height of 1 meter twice onto concrete ground.	No explosion, No fire, No leakage.

Table 6 (6) Safety Test

Item	Battery Condition	Test Method	Requirements
Crush	Fresh, Fully charged	Crush between two flat plates. Applied force is about 13kN (1.72Mpa) for 30min.	No explosion, No fire
Short Circuit	Fresh, Fully charged	Each test sample battery, in turn, is to be short-circuited by connecting the (+) and (-) terminals of the battery with a Cu wire having a maximum resistance load of 0.1Ω. Test are to be conducted at room temperature (20°C±2°C).	No explosion, No fire. The Temperature of the surface of the Cells are lower than 150°C
Short Circuit	Fresh, Fully charged	Each test sample battery, in turn, is to be short-circuited by connecting the (+) and (-) terminals of the battery with a Cu wire having a maximum resistance load of 0.1Ω. Test are to be conducted at temperature (60°C ±2°C).	No explosion, No fire. The Temperature of the surface of the Cells are lower than 150°C
Impact	Fresh, Fully charged	A 56mm diameter bar is inlaid into the bottom of a 10Kg weight. And the weight is to be dropped from a height of 1m onto a sample battery and then the bar will be across the center of the sample.	No explosion, Nofire
Forced Discharge	Fresh, Fully charged	Discharge at a current of 1C for 2.5h.	No explosion, Nofire

5.Handling of Cells:

5.1 Prohibition short circuit

Never mark short circuit cell. It generates very high current which causes heating of the cells and may cause electrolyte leakage are very dangerous.

The Li-Fe tabs may be easily short-circuited by putting them on conductive surface.

Such outer short circuit may lead to heat generation and damage of the cell.

An appropriate circuitry with PCM shall be employed to protect accidental short circuit of the battery pack.

5.2 Notice for Assembling Battery Pack

Shocks, high temperature, or contacts of sharp edge components should not be allowed in battery pack assembling process.

5.3 Cell connection

- 1) Direct soldering of wire leads or devices to the cell is strictly prohibited.
- 2) Lead tabs with pre-soldering may cause damage of components, such as separator and insulator, by heat generation.

5.4 Prohibition of disassembly

- 1) Never disassemble the cells

The disassembling may generate internal short circuit in the cell, which may cause gassing, firing, explosion, or other problems.

- 2) Electrolyte is harmful

5.5 Prohibition of dumping of cells into fire

Never incinerate nor dispose the cells in fire. These may cause explosion of the cells, which is very dangerous and is prohibition.

6. Period of Warranty

The period of warranty is one year from the date of shipment. Robu.in guarantees to give a replacement in case of cells with defects proven due to manufacturing process instead of the customer abuse and misuse.

7. Storing the Batteries

The batteries should be stored at room temperature, charged to about 30% to 50% of capacity. We recommend that batteries be charged about once per half a year to or event over discharge.

8. Note

Any other items which are not covered in this specification shall be agreed by both parties.

